

Debug Console

hid_listen can't recognize device

When debug console of your device is not ready you will see like this:

Waiting for device:....

once the device is pluged in then hid_listen finds it you will get this message:

Check if you can't get this 'Listening:' message:

• build with CONSOLE_ENABLE=yes in **Makefile**.

You may need privilege to access the device on OS like Linux.

• try sudo hid_listen

Can't get message on console

Check:

- hid_listen finds your device. See above.
- Enable debug with pressing Magic+d. See Magic Commands.
- set debug_enable=true usually in matrix_init() in matrix.c.
- try using 'print' function instead of debug print. See common/print.h.
- disconnect other devices with console function. See Issue #97.

Linux or UNIX like system requires Super User privilege

Just use 'sudo' to execute hid_listen with privilege.

```
$ sudo hid_listen
```

Or add an *udev rule* for TMK devices with placing a file in rules directory. The directory may vary on each system.

File: /etc/udev/rules.d/52-tmk-keyboard.rules(in case of Ubuntu)

```
# tmk keyboard products https://github.com/tmk/tmk_keyboard
SUBSYSTEMS=="usb", ATTRS{idVendor}=="feed", MODE:="0666"
```

Miscellaneous

NKRO Doesn't work

First you have to compile frimware with this build option NKR0_ENABLE in Makefile.

Try Magic **N** command(LShift+RShift+N by default) when **NKRO** still doesn't work. You can use this command to toggle between **NKRO** and **6KRO** mode temporarily. In some situations **NKRO** doesn't work you need to switch to **6KRO** mode, in particular when you are in BIOS.

If your firmeare built with BOOTMAGIC_ENABLE you need to turn its switch on by BootMagic **N** command(Space+N by default). This setting is stored in EEPROM and keeped over power cycles.

https://github.com/tmk/tmk_keyboard#boot-magic-configuration---virtual-dip-switch

TrackPoint needs reset circuit(PS/2 mouse support)

Without reset circuit you will have inconsistent reuslt due to improper initialize of the hardware. See circuit schematic of TPM754.

- http://geekhack.org/index.php?topic=50176.msg1127447#msg1127447
- http://www.mikrocontroller.net/attachment/52583/tpm754.pdf

Can't read comlumn of matrix beyond 16

Use 1UL<<16 intead of 1<<16 in read_cols() in **matrix.h** when your columns goes beyond 16.

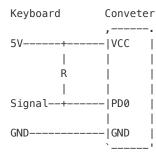
In C 1 means one of **int** type which is **16bit** in case of AVR so you can't shift left more than 15. You will get unexpected zero when you say 1<<16 . You have to use **unsigned long** type with 1UL .

http://deskthority.net/workshop-f7/rebuilding-and-redesigning-a-classic-thinkpad-keyboard-t6181-60.html#p146279

Pull-up Resistor

In some case converters needed to have pull-up resistors to work correctly. Place the resistor between VCC and signal line in parallel.

For example:



R: 1K Ohm resistor

https://github.com/tmk/tmk_keyboard/issues/71

Arduino Micro's pin naming is confusing

Note that Arduino Micro PCB marking is different from real AVR port name. D0 of Arduino Micro is not PD0, PD0 is D3. Check schematic yourself.

 $http:\!/\!arduino.cc/en/uploads/Main/arduino-micro-schematic.pdf$

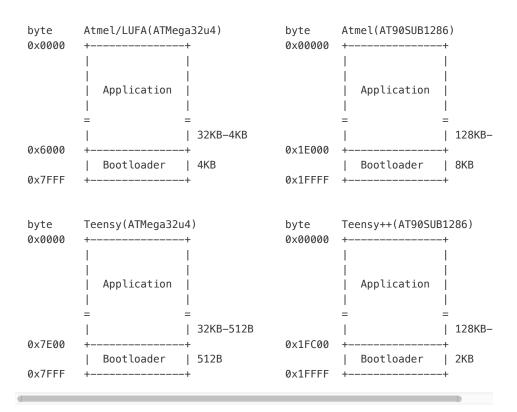
Bootloader jump doesn't work

Properly configure bootloader size in **Makefile**. With wrong section size bootloader won't probably start with **Magic command** and **Boot Magic**.

```
# Size of Bootloaders in bytes:
   Atmel DFU loader(ATmega32U4)
                                   4096
   Atmel DFU loader(AT90USB128)
                                   8192
   LUFA bootloader(ATmega32U4)
                                   4096
   Arduino Caterina(ATmega32U4)
                                   4096
   USBaspLoader(ATmega***)
                                   2048
   Teensy
            halfKay(ATmega32U4)
                                   512
   Teensy++ halfKay(AT90USB128)
                                   2048
OPT_DEFS += -DB00TL0ADER_SIZE=4096
```

AVR Boot section size are defined by setting **BOOTSZ** fuse in fact. Consult with your MCU datasheet. Note that **Word**(2 bytes) size and address are used in datasheet while TMK uses **Byte**.

AVR Boot section is located at end of Flash memory like the followings.



And see this discussion for further reference.

https://github.com/tmk/tmk_keyboard/issues/179

Special Extra key doesn't work(System, Audio control keys)

You need to define EXTRAKEY_ENABLE in makefile to use them in TMK.

EXTRAKEY_ENABLE = yes # Audio control and System control

http://deskthority.net/workshop-f7/tmk-keyboard-firmware-collection-t4478-60.html#p157919

Wakeup from sleep doesn't work

In Windows check Allow this device to wake the computer setting in Power **Management property** tab of **Device Manager**. Also check BIOS setting.

Pressing any key during sleep should wake host.

Using Arduino?

Note that Arduino pin naming is different from actual chip. For example, Arduino pin

D0 is not PD0. Check circuit with its schematics yourself.

- http://arduino.cc/en/uploads/Main/arduino-leonardo-schematic_3b.pdf
- http://arduino.cc/en/uploads/Main/arduino-micro-schematic.pdf

Arduino leonardo and micro have **ATMega32U4** and can be used for TMK, though Arduino bootloader may be a problem.

Using PF4-7 pins of USB AVR?

You need to set JTD bit of MCUCR yourself to use PF4-7 as GPIO. Those pins are configured to serve JTAG function by default. MCUs like ATMega*U* or AT90USB* are affeteced with this.

If you are using Teensy this isn't needed. Teensy is shipped with JTAGEN fuse bit unprogrammed to disable the function.

See this code.

```
// JTAG disable for PORT F. write JTD bit twice within four cycles.
MCUCR |= (1<<JTD);
MCUCR |= (1<<JTD);</pre>
```

https://github.com/tmk/tmk_keyboard/blob/master/keyboard/hbkb/matrix.c#L67

And read 26.5.1 MCU Control Register - MCUCR of ATMega32U4 datasheet.

Adding LED indicators of Lock keys

You need your own LED indicators for CapsLock, ScrollLock and NumLock? See this post.

http://deskthority.net/workshop-f7/tmk-keyboard-firmware-collection-t4478-120.html#p191560

Program Arduino Micro/Leonardo

Push reset button and then run command like this within 8 seconds.

```
avrdude -patmega32u4 -cavr109 -b57600 -Uflash:w:adb_usb.hex -P/dev/ttyACM0
```

Device name will vary depending on your system.

http://arduino.cc/en/Main/ArduinoBoardMicro https://geekhack.org/index.php?topic=14290.msg1563867#msg1563867

USB 3 compatibility

I heard some people have a problem with USB 3 port, try USB 2 port.

Mac compatibility

OS X 10.11 and Hub

https://geekhack.org/index.php?topic=14290.msg1884034#msg1884034

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