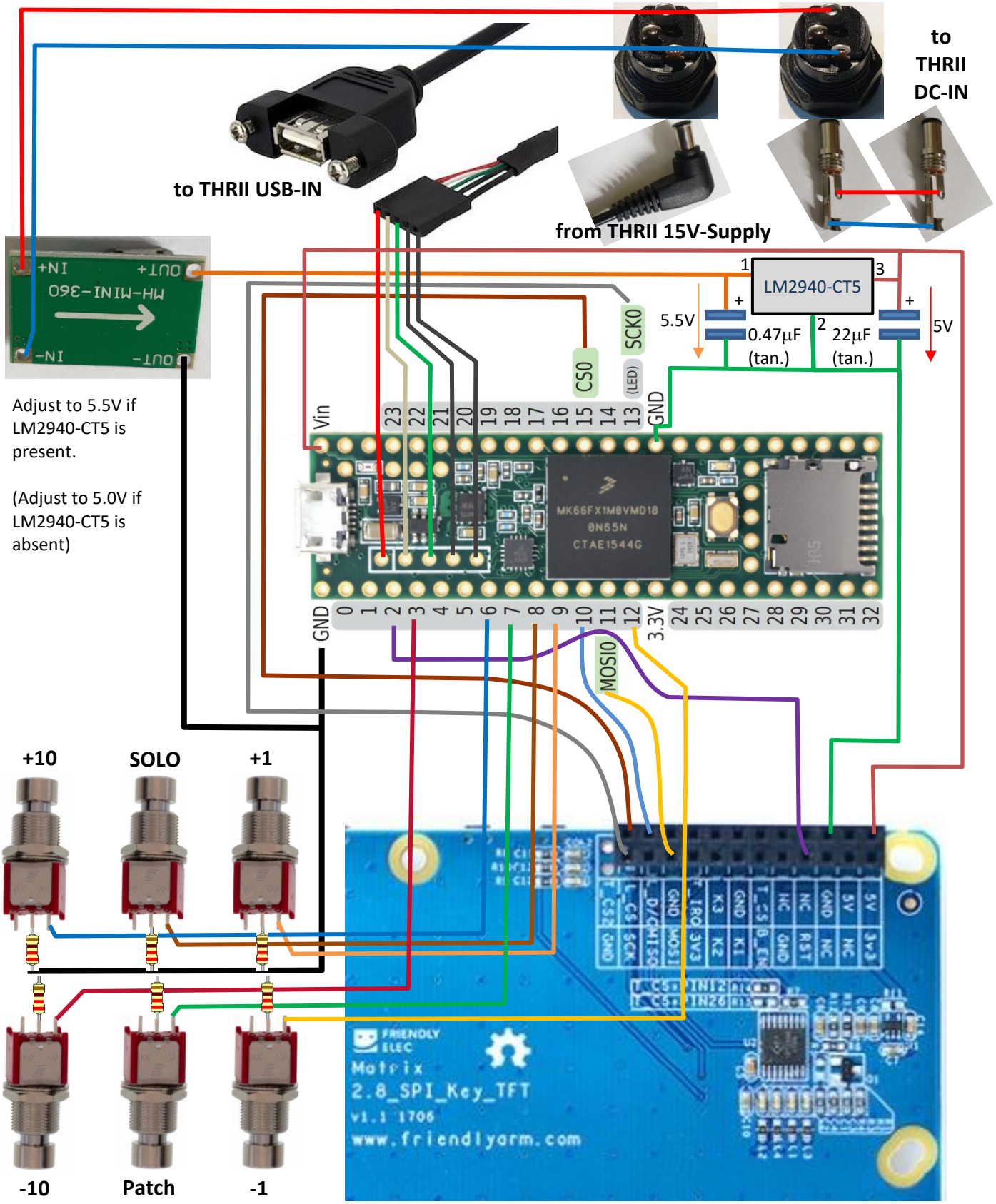
Foot Switch for THRII

Teensy 3.6, 2.8_SPI_Key_TFT, 6 SPDT Switches

Vivid schematic

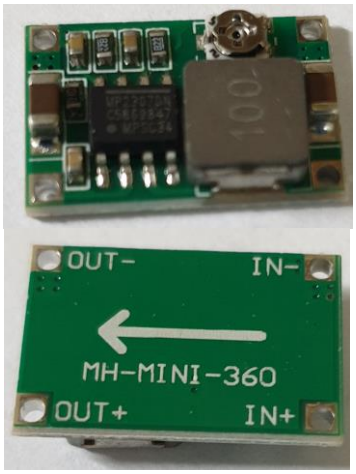


Material and hints

Adjustable 15V -> 5V Converter

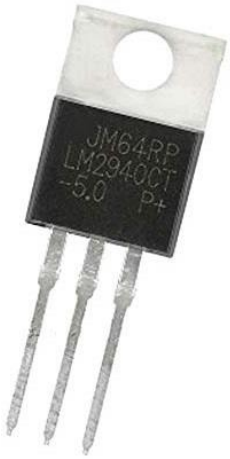
(be sure to adjust to 5V *before* directly connecting to the Teensy 3.6 or 4.1 controller board.

If using LM2940CT5:
Adjust to 5.5V



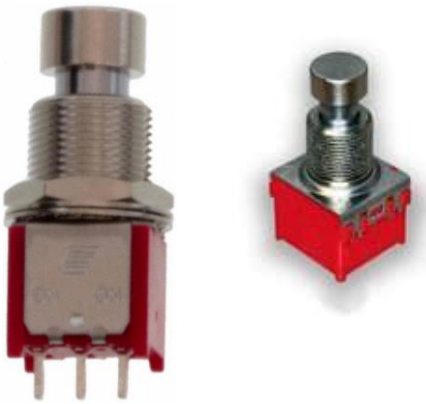
Two DC-Jacks (connected in parallel) and fetching 15V-DC from the THRII-Power-supply

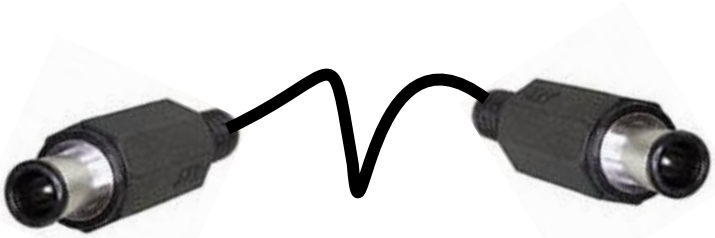
LDO Regulator 5.0V (LM2940CT5)



Two DC-plugs (connected with wire) and bridging 15V-DC to the THRII

6 foot switches (may be momentary or latching switches – can be adapted in software)



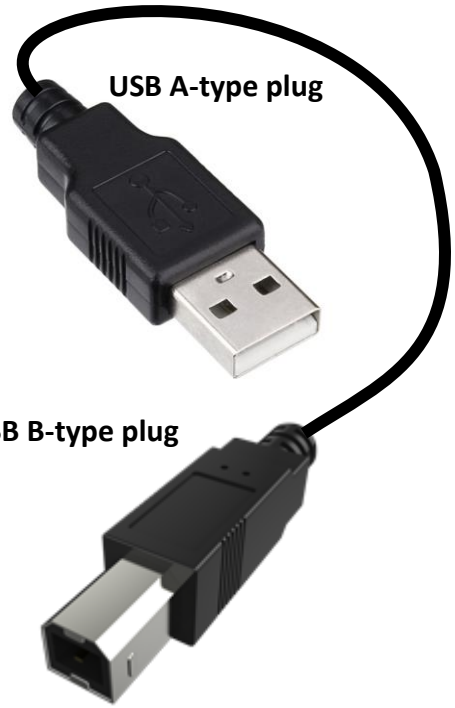


6 Resistors 220Ω

USB-Adapter (Type A socket -> Motherboard pin header)
Teensy controller will act as USB-host.
Plug in the THRII with the supplied USB-A<->USB-B cable

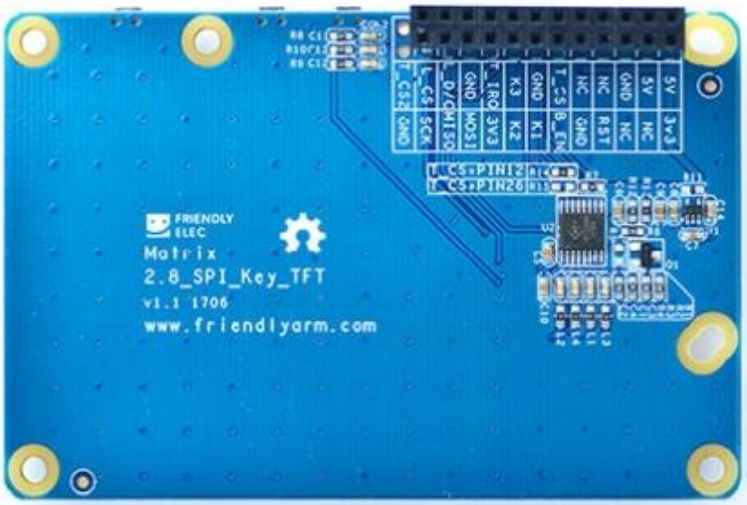
USB-Adapter (Micro USB socket-> Micro USB plug)
With this adapter the Teensy controller can be programmed. Connect this to PC.

USB-cable (USB B plug -> USB A plug)
With this cable a PC is connected to the THRII.
In this project the pedalboard is connected to the THRII with this cable instead.



THRII-Power supply 15V. In this project the pedalboard as well grabs power from this supply.

SPI-TFT-Display (touch is not used)



This display is quite cheap and has a good resolution. Normally it is intended for Raspberry Pi.

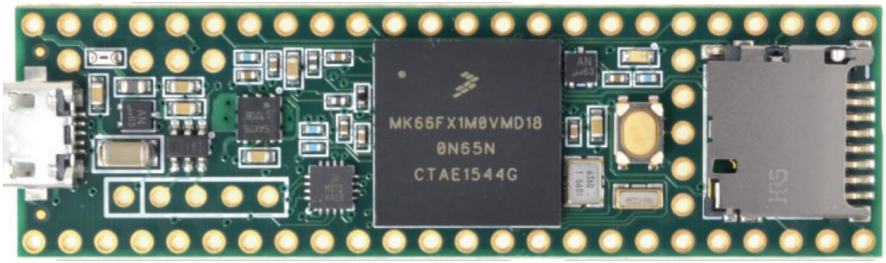
I adapted a speed optimized Teensy-library to make it work.

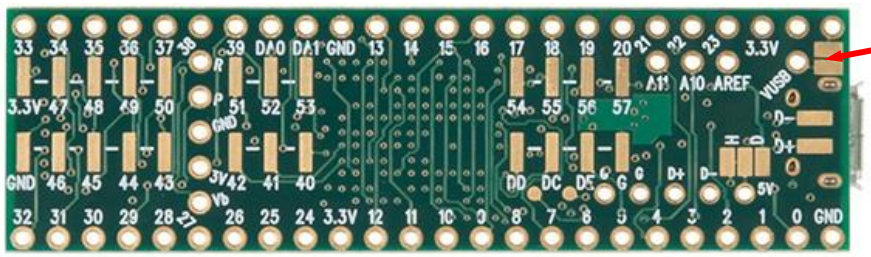
If you use a different display be sure to maintain a resolution of 240x320 (or you will have a lot of work adapting the software!)

You will need a high-speed DMA-library for the TFT display or refresh is much too slow.

The display has got a touch interface. But touch it is not used and not needed for this project!

Teensy 3.6 or Teensy 4.1 controller (4.1 not tested)
Teensy 4.0 is possible but not advisable, Teensy 3.5 does not work!.





cut V_{in} from V_{USB} here, if you use micro-USB programming jack while supplying with DC-converter!

Links:

TFT-Display: about 10€
https://www.friendlyarm.com/index.php?route=product/product&product_id=102&search=tft&description=true&category_id=0

Teensy 3.6 or Teensy 4.1 about 25€
https://www.pjrc.com/store/teensy36.html
https://www.pjrc.com/store/teensy41.html

USB-Adapter:
https://www.mindfactory.de/product_info.php/InLine-USB-2-0-Slotblech-2x-Buchse-auf-2x-intern_135296.html
https://www.manomano.de/p/bematik-usb-adapter-2x5-pin-motherboard-2xah-halterung-13324591

Foot switches: 4,35€ per piece (Digi-Key)
https://www.digikey.com/en/products/detail/e-switch/FS5700SPLT2B2M1QEH/6825401

DC-Jacks: 2,77€ per piece (Digi-Key)
https://www.digikey.de/product-detail/de/schurter-inc/4840-2230/486-3578-ND/1731063

DC-Plugs: 2,77€ per piece (Digi-Key)
https://www.digikey.de/product-detail/de/schurter-inc/4840-1230/486-3379-ND/2646638

DC-DC converter 15V 5V (adjustable) about 3€
https://www.matts-electronics.com/wp-content/uploads/2018/06/MINI-360.pdf

Low Dropout Voltage Regulator LM2940 5.0 (old CT5.0 or newer version)
https://www.digikey.de/product-detail/de/texas-instruments/LM2940S-5-0-NOPB/LM2940S-5-0-NOPB-ND/334839