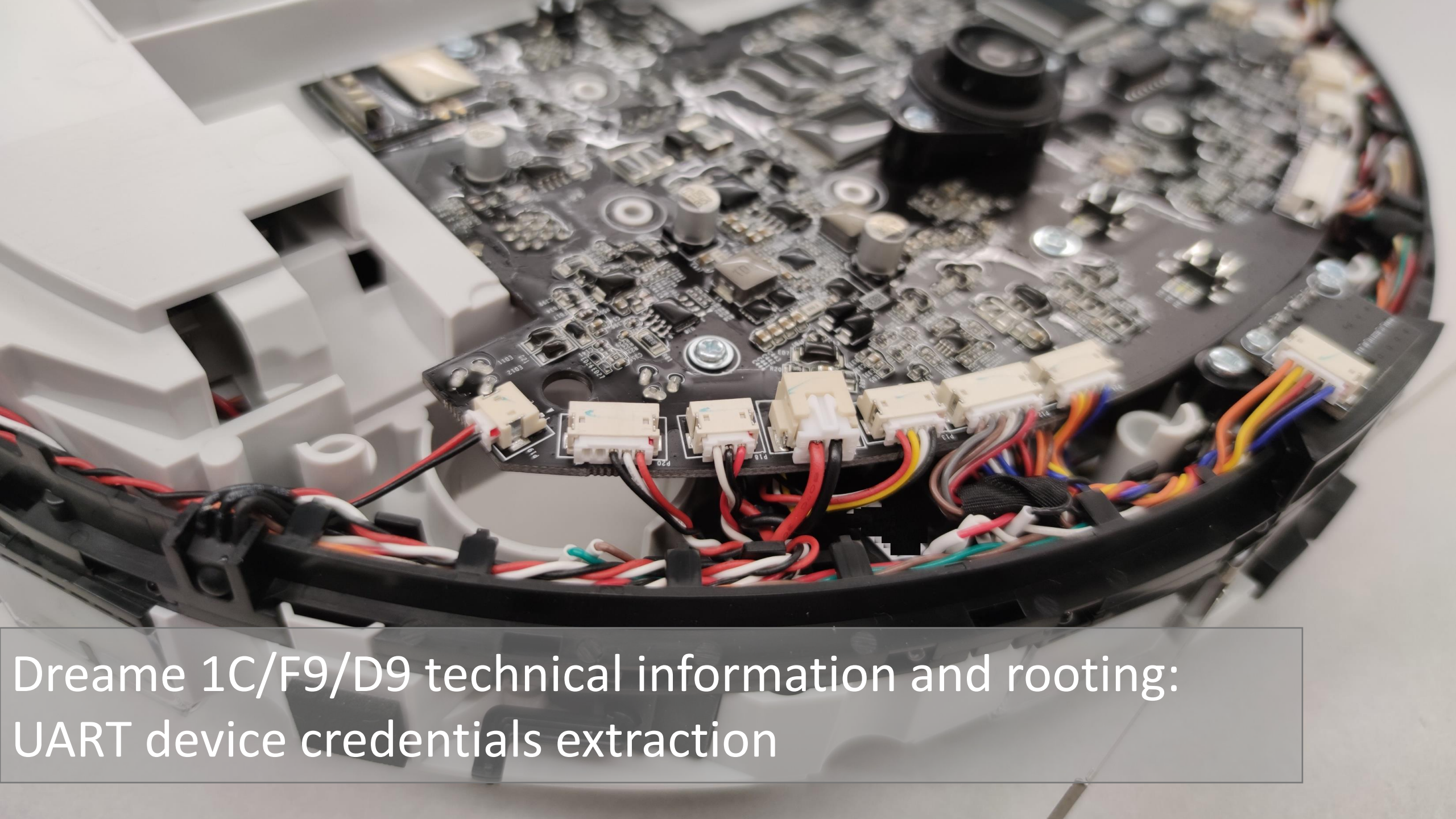


Dreame 1C/F9/D9 technical information and rooting: UART device credentials extraction

Before you continue: Please watch the whole video before you start your adventure

All commands and links are in the description

You might want to join the Telegram group

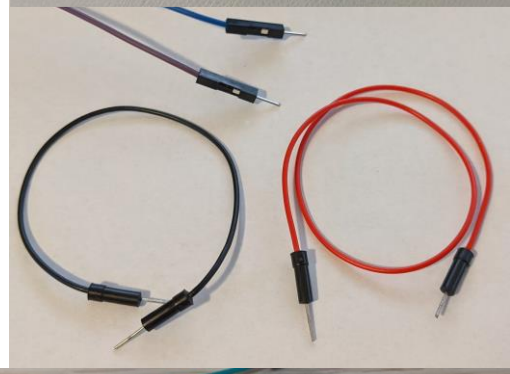
Good news: No soldering or teardown required

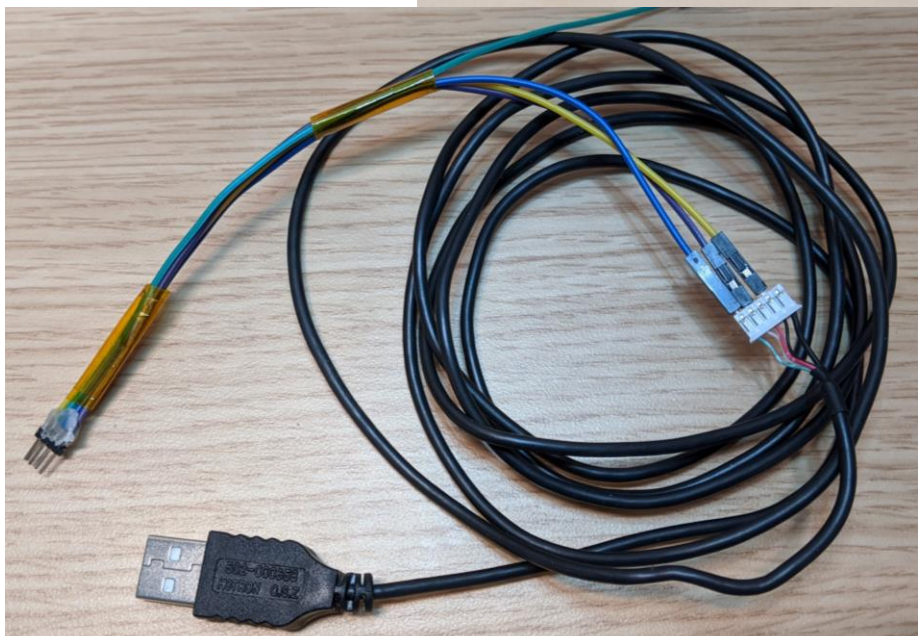
Why get root access?

- Use Valetudo (https://valetudo.cloud/)
  - Replace the cloud functionality with an open-source software
  - Integrate the device into your home automation
- Install your own soundfiles/voices

Tools required for root

- UART-USB adapter (3.3V, aka TTL adapter)
  - Typical chipsets:
    - FT232RL, FT232, PL2303TA or CP2102
  - Price ~10 USD/Euro
- Breadboard Jumper Wires
- 2mm pitch headers
- USB cable
  - (e.g. from a broken USB mouse)
- Alternative: custom PCBs





Opening the device

Opening the device

Opening the device

Opening the device

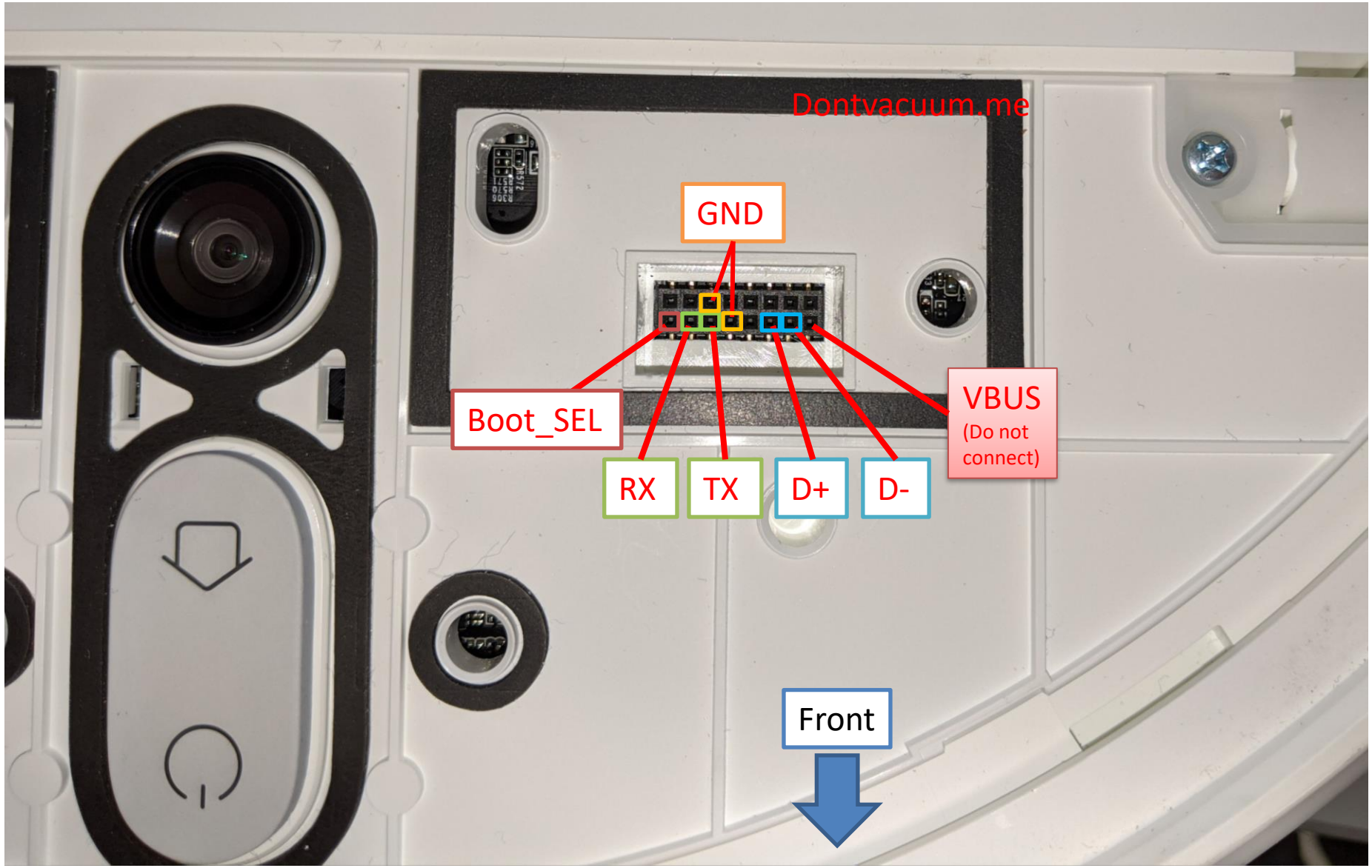
Opening the device

Debug pinout

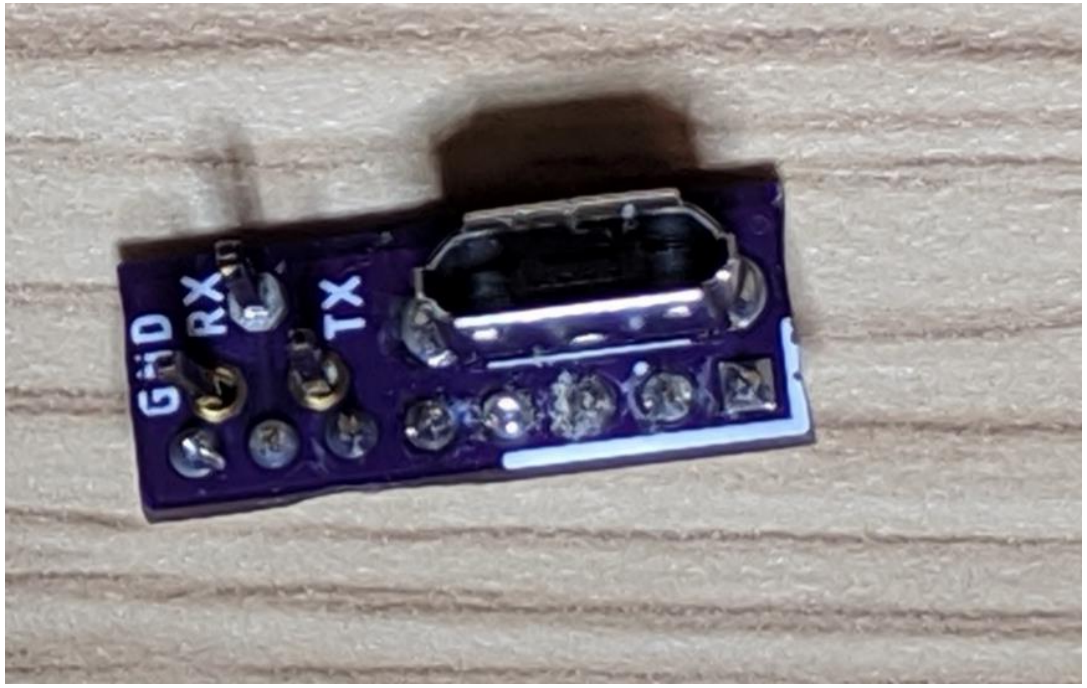
- Debuginterface
  - 2x8 pins
  - 2mm pitch size

Warning:
2mm pitch size is way smaller than the usual 2.54 mm

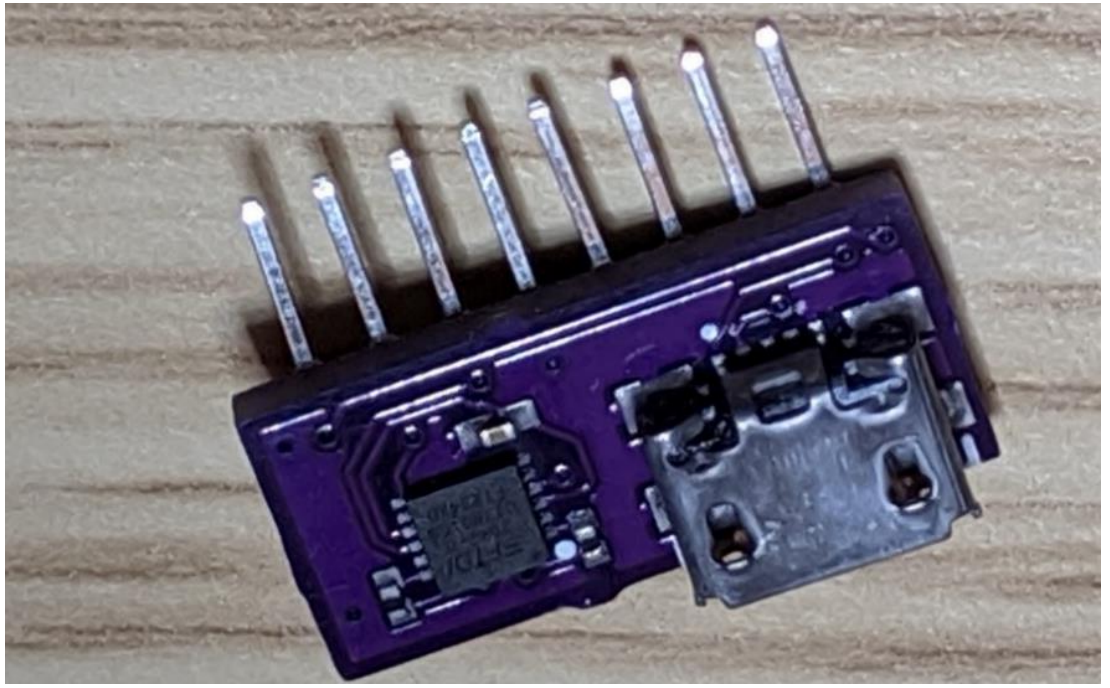
Warning:
Make sure you connect to the correct pins!



Rooting with custom PCBs



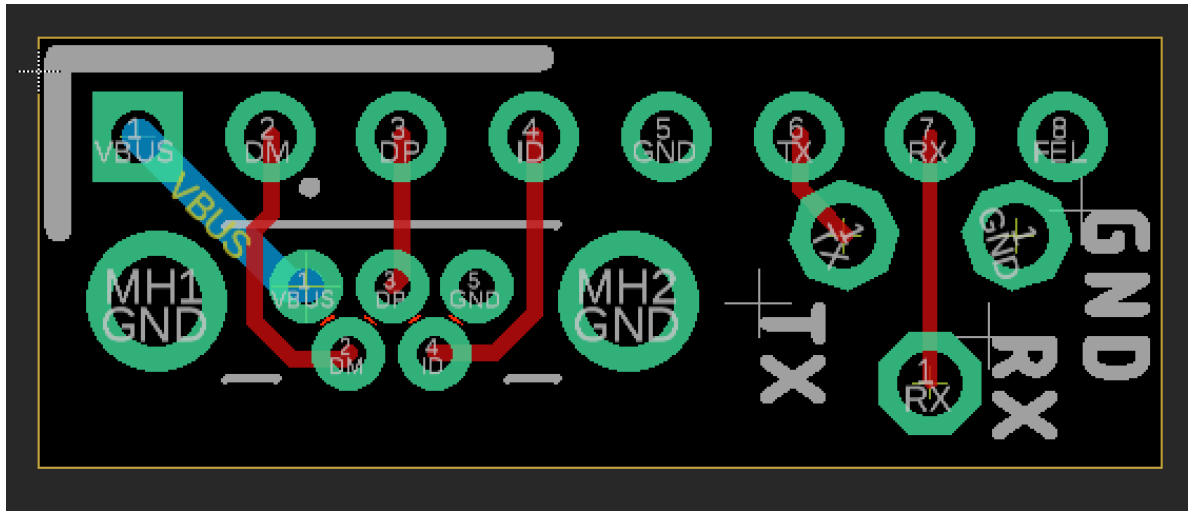
USB + UART headers
(aka basic PCB)



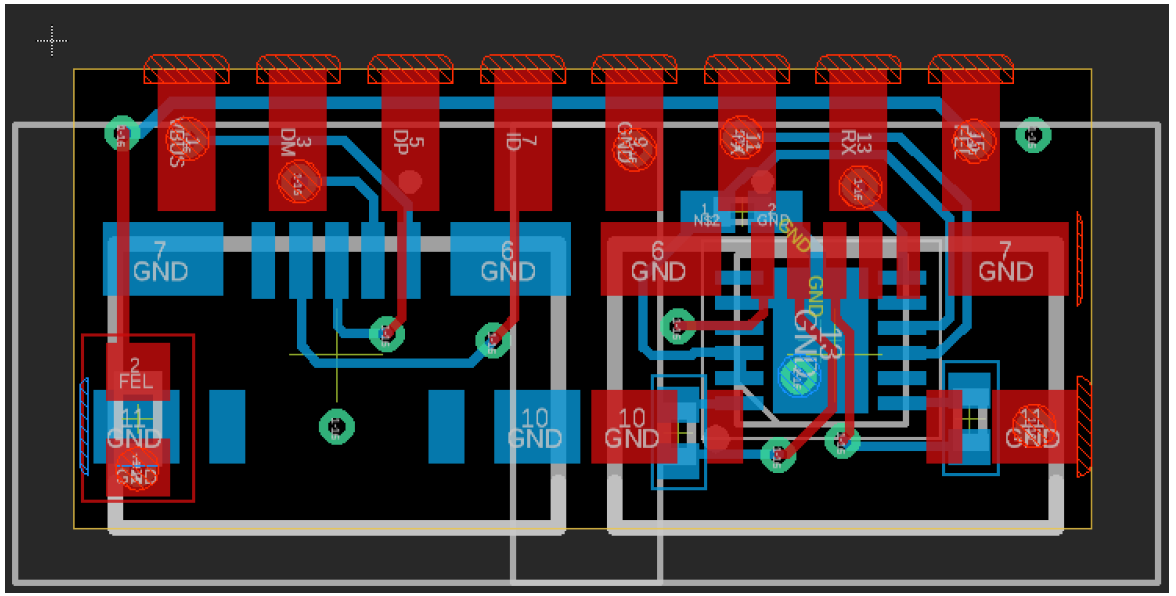
USB + integrated UART Adapter
(aka Advanced PCB)

Check builder.dontvacuum.me/dreameadapter for the Gerber files

Rooting with custom PCBs



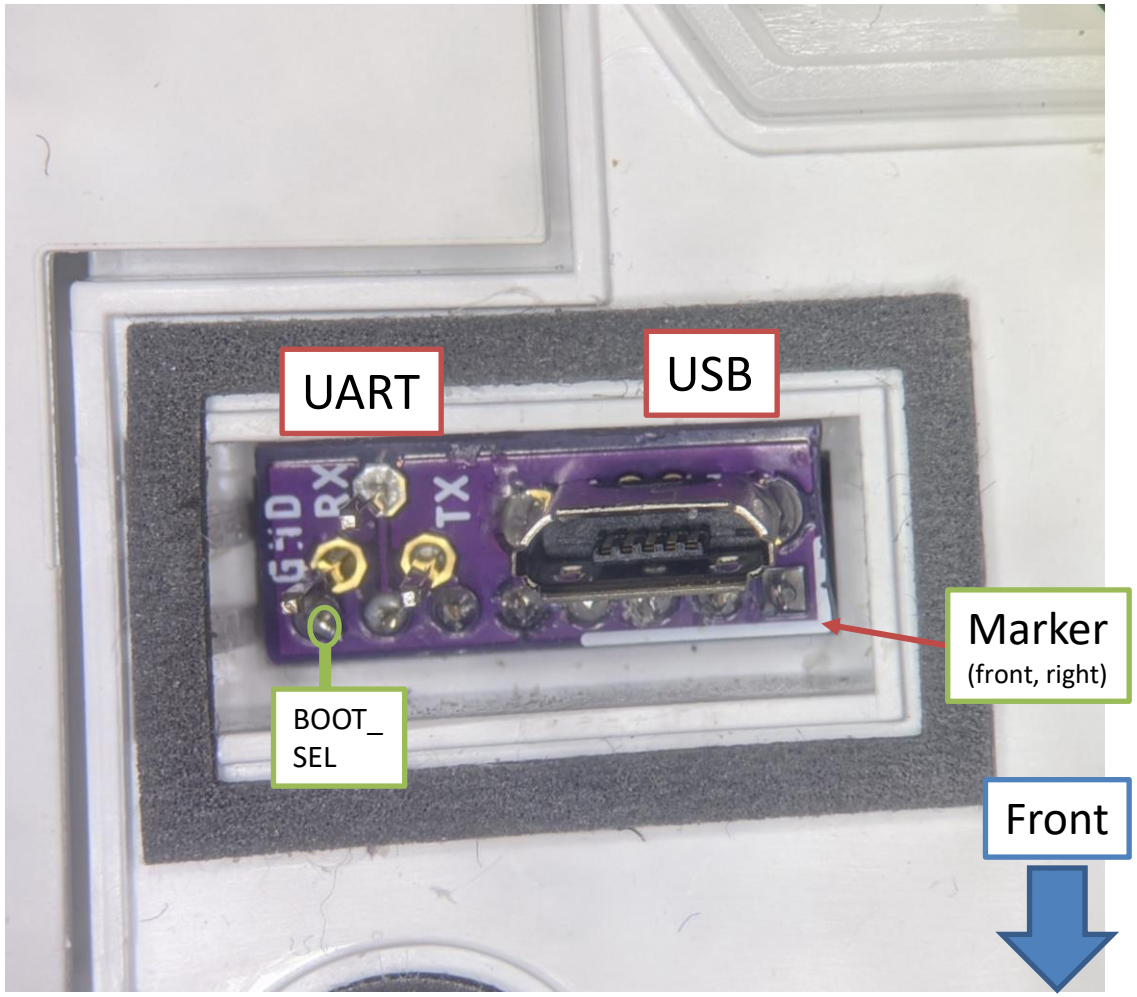
USB + UART headers
(aka basic PCB)



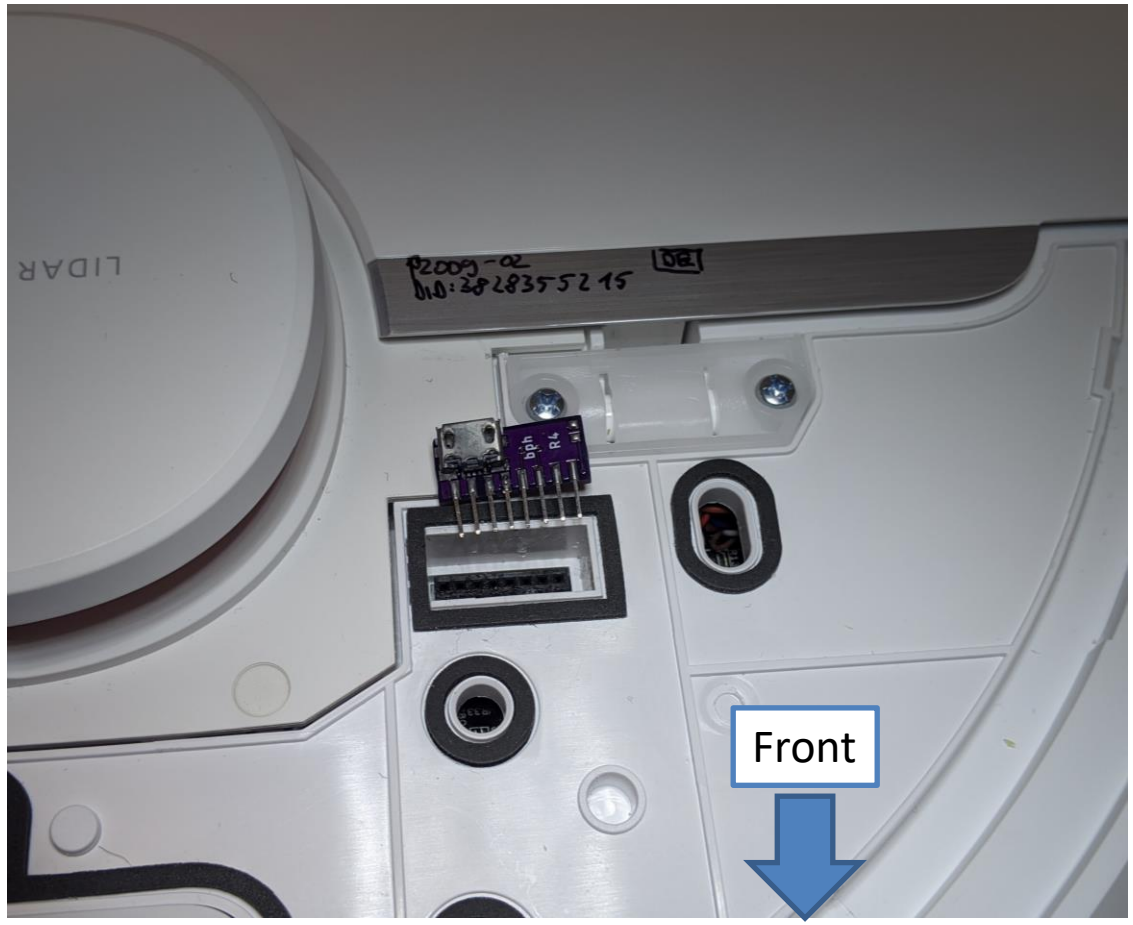
USB + integrated UART
Adapter
(aka Advanced PCB)

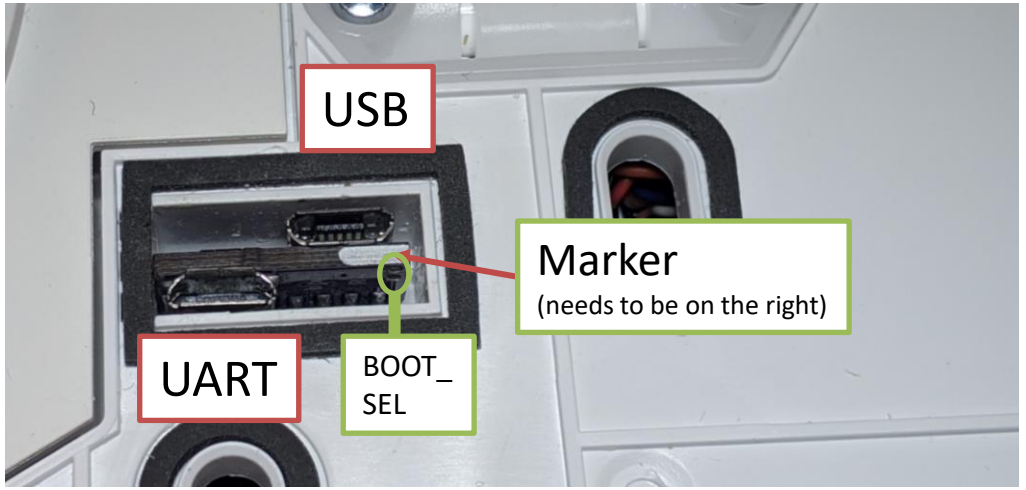
Check builder.dontvacuum.me/dreameadapter for the Gerber files

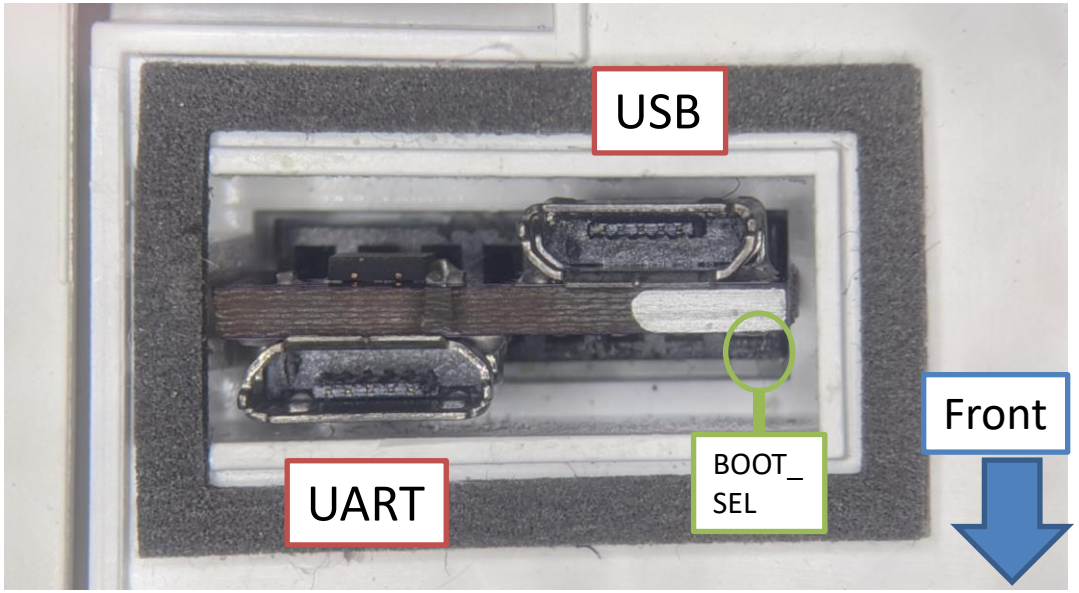
Usage of basic PCB



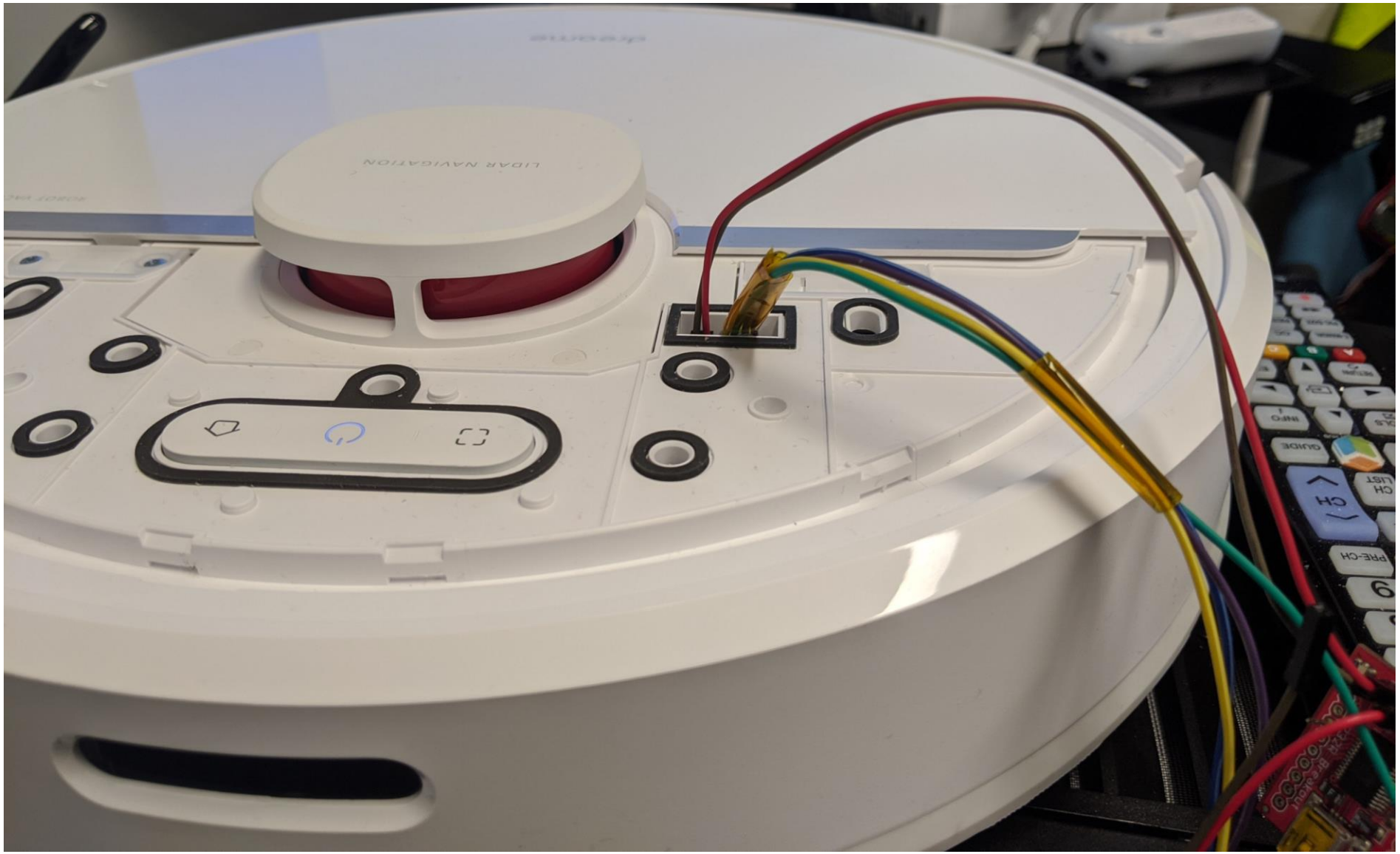
Usage of advanced PCB







Connecting jumper wires (2mm pitch)



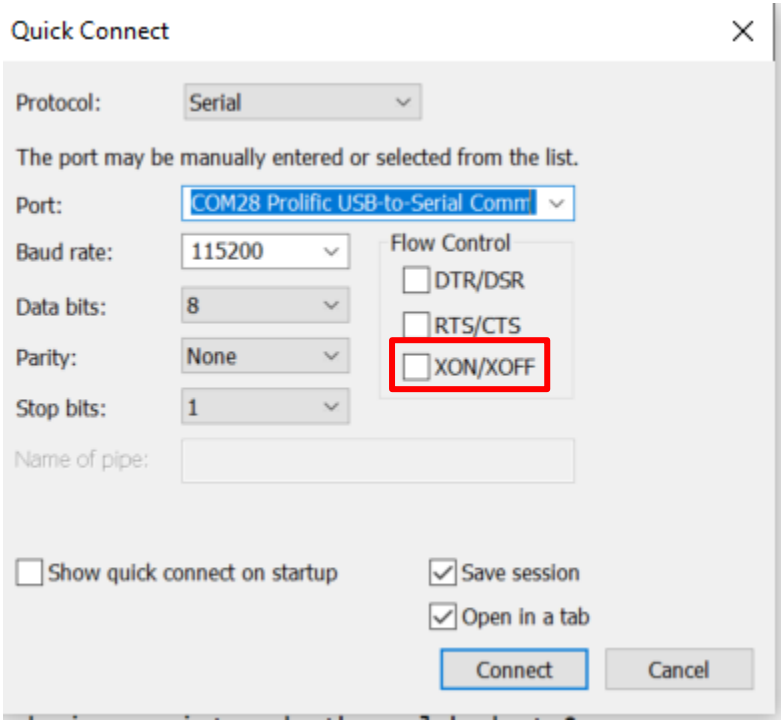
Backup of configuration and calibration

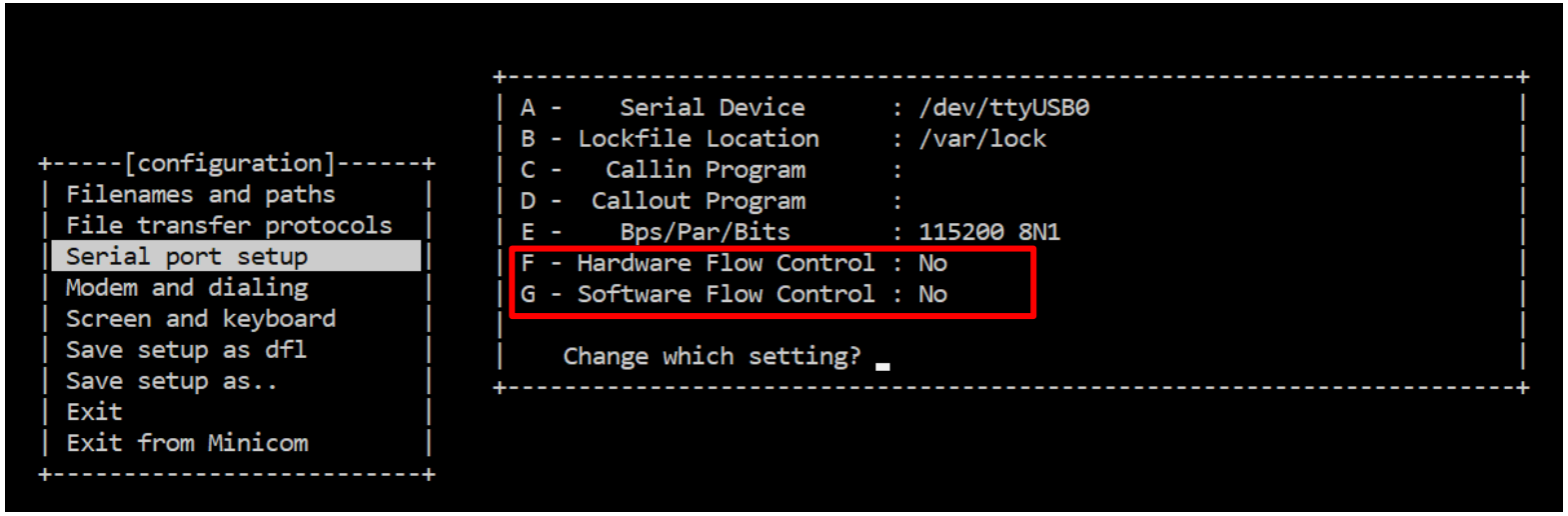
- Background: If flashing the custom firmware fails, the robot might delete the configuration and calibration files
- Idea: Interrupt U-Boot, boot in single user mode, backup files
- Limitation: works only on 1C/F9/D9

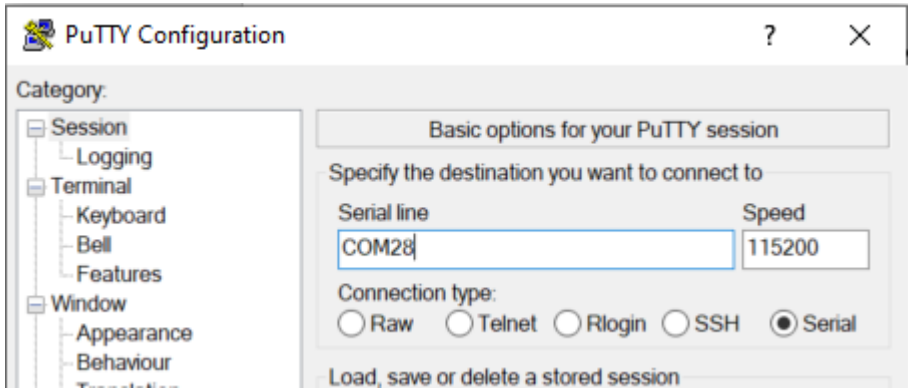
1. Power off the robot
2. Connect to UART (115200 baud, no flow control)
3. Power on the robot and keep key “s” pressed
4. Modify the command line and boot
5. Print files over UART

Step 2a

- Know where RX and TX on your adapter is
- Configure your UART program
  - Baud: 115200
  - Flow control: off (!)
- Test the settings without robot





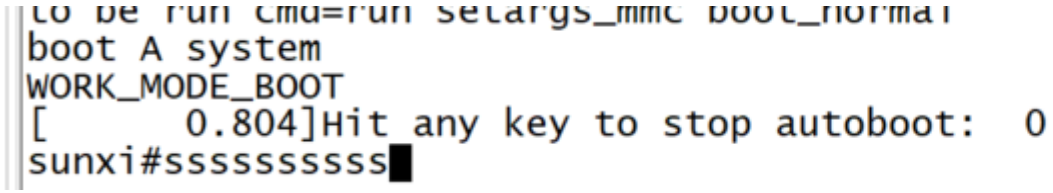


Step 2b

- Connect serial wires to PCB
  - Do not connect 5V (red cable)!
  - Test for correct connection
    - Press middle button (<1s)
    - You should see some output

Step 3

- Inside the terminal program
  - Hold “s” key on your keyboard
  - At the same time: Press middle button for 3 seconds
  - We want to see this:



Step 4a

- In the U-Boot shell run this commands:

  setenv init /bin/sh

  setenv boot_partition boot1

  run setargs_nand

  run boot_normal
- Your robot should boot and present you a shell

Step 4b

- After the system booted, run these commands:

  /etc/init.d/sysconfig.sh

  echo V > /dev/watchdog

  /etc/init.d/mount_private.sh

  /etc/init.d/mount_misc.sh

Step 4c

- Run these commands to print the configuration (save output):

  *grep "" /mnt/private/ULI/factory/**

- Run these commands to save the calibration (save output):

  grep "" /mnt/misc/.json*

  grep "" /mnt/misc/.yaml*

  cat /mnt/misc/.txt*

  hexdump /mnt/misc/.bin*

Some files might not exist on your device. That is normal.

Make sure that you copy the full output to a text file and save it


Thank you for watching!
@dgi_DE
Website: dontvacuum.me