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 (<u>https://valetudo.cloud/</u>)
 - 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















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)

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

Dennis Giese – Dreame robot rooting (01.03.2021)

USB + integrated UART Adapter (aka Advanced PCB)

Rooting with custom PCBs





USB + UART headers (aka basic PCB)

USB + integrated UART Adapter (aka Advanced PCB)

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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

	t
+[configuration]+ Filenames and paths File transfer protocols	B - Lockfile Location : /var/lock C - Callin Program : D - Callout Program : E - Bps/Par/Bits : 115200 8N1
Serial port setup Modem and dialing Screen and keyboard Save setup as dfl	F - Hardware Flow Control : No G - Software Flow Control : No Change which setting?
Exit Exit Exit from Minicom	+

Serial Protocol: \sim The port may be manually entered or selected from the list. COM28 Prolific USB-to-Serial Comm Port: Flow Control 115200 Baud rate: \sim DTR/DSR 8 Data bits: RTS/CTS Parity: None \sim XON/XOFF \sim Stop bits: 1 Show guick connect on startup Save session ✓ Open in a tab Connect Cancel

Ouick Connect



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 <u>3</u> seconds
 - We want to see this:

```
boot A system
WORK_MODE_BOOT
[ 0.804]Hit any key to stop autoboot: 0
sunxi#sssssssss
```

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.

the full output to a text file and save it

Thank you for watching! Odgi DE Website: dontvacuum.me

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