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Berlin, 2020-07-03

Dear MNT Customer,

Today we are delivering your MNT Reform 2.0 Beta unit. Thank you for putting your trust in us and for supporting our mission at this early stage: to ship a mobile computer that is as open and documented as possible, while still enabling productivity, privacy and easy maintenance.

We've put together this intro document to get you started quickly. We're available for any further technical assistance.

Enjoy your MNT Reform!

Lukas F. Hartmann, Founder and Managing Director

Package Contents

- MNT Reform laptop with 2.0D-4 motherboard (with one wire patch for LTC4020 SHDN signal)
- MeanWell 24V 2.5A power supply with adapter
- This document and a hard copy of schematics

Safety

Please be extremely careful after opening the bottom panel, as there are up to 29V generated inside of the device which, when shorted, can cause sparks that can potentially ignite flammable material around the device. For this reason, we advise to unplug the battery cables from the motherboard before further disassembling the device. Do not touch/short the exposed metal pins of the battery holders with a metal tool!

Quick Start

First, you should learn a few keyboard shortcuts. Please note that currently, HYPER and the Circle Key (located next to F12) have the same function. This will likely change in the near future.

To turn the system on and off (hard power enable/disable) **press Circle-1 or Circle-0 (zero),** respectively. Circle-1 also does a hard reset of the main SoC if the system is already on.

To display cell voltage information, press Circle-V. Battery voltage, current and charger status can be checked with Circle-Y and Circle-S. The percentage displayed on the cell information screen is currently just a rough approximation based on total voltage. With the next update, a more useful percentage based on capacity and Amp hours spent will be implemented.

Circle-F1 and Circle-F2 decrease and increase the keyboard backlight brightness (but only if the main CPU/USB hub is powered). Circle-2 switches off the OLED. Circle-3 turns it back on.

To log in after boot, use **"root" as the username with no password,** and then create a new user account for yourself, following the on-screen instructions.

Boot

DIP switches SW5 on the motherboard allow you to toggle between eMMC and SD card boot (see schematics page 1). In the factory configuration, i.MX8MQ boots from the SD card.

Debugging

To control U-Boot or your own boot loader via UART, connect a UART adapter cable to the 3-pin header J18 (TX, RX and GND are labeled on the board) and configure your terminal to 115200 Baud 8N1. Please note that SER1 and SER2 labels are erroneously swapped on the silkscreen, so SER2 is UART1 and vice versa.

Trackball Tricks

The trackball has five buttons. The top two buttons function as left and right mouse buttons, the lower center button maps to the middle mouse button. Holding either the lower left or right buttons activates *wheel mode*, where vertical movement of the ball is translated into vertical mouse wheel events. The lower left button also generates a left click, but this will probably change in future versions.

The trackball is optical. We noticed that in direct bright sunlight, the optical sensor can be overwhelmed and works only if you block the sunlight with your other hand. This will be fixed by changing the trackball holder to a non-translucent material.

Display

The current beta version (2020-06-05) of the system image features an experimentally patched kernel module for the i.MX8MQ DCSS block that takes a parameter *dcss_use_hdmi=1* (or 0) to activate either HDMI or internal MIPI DSI to eDP output at runtime. The eDP output is the default. Because the driver is loaded as a module, the display activates after a delay of a few seconds during boot. This is normal.

The display brightness can be controlled with the preinstalled *brightnessctl* tool (example: *brightnessctl s 7*). Brightness decrease/increase is mapped in *sway* to MNT-F1 / MNT-F2.

Speakers

To avoid damaging the speakers, keep the volume in check and lower it if audio distortion happens.

Further Information

The detailed Reform Operator's Handbook is still being written. Meanwhile, refer to the following resources:

1. The system image build scripts

URL: *https://source.mntmn.com/MNT/reform-system-image*

Here you'll find, in the *reform2-imx8mq* directory, the *mkimage.sh* and related scripts which generate the system image (including U-Boot and Linux Kernel) that is written on the MicroSD card preinstalled in your MNT Reform. You can find binary image files in the "Releases" section.

2. The interactive system diagram

URL: *https://mntre.com/reform2-handbook/system.html*

This is a technical block diagram of the individual components of the MNT Reform hardware with explanations and further links for each block.