


MNT Reform DIY Kit R-1 Assembly Manual

Dear MNT Customer,

Thank you for purchasing the MNT Reform Open Hardware Laptop as a DIY Kit. This product was made possible by your support. This manual will guide you through the steps required to assemble your MNT Reform.

Package Contents

- Preassembled Screen Assembly (contains 1920×1080 IPS display and stereo speakers)
- Main Box mounted with hinges to Screen Assembly. Contains 2 Battery Packs with 8× 18650 LiFePO4 battery cells in total.
- Motherboard with i.MX8MQ processor/RAM module with heatsink preinstalled (4GB LPDDR4, 16GB eMMC) and clock battery (CR1220) preinstalled
- Keyboard module
- OLED module with 4-pin flat cable
- Trackball and/or Trackpad module (Optional)
- Keyboard frame
- Bottom plate (acrylic)
- 2 port covers (acrylic)
- 3 black internal 4-pin cables (for USB and SYSCTL UART)
- Bag of screws, rubber feet and stickers
- Acrylic WiFi antenna holder
- MNT Reform System software (based on Debian GNU/Linux) on 32GB SD Card
- 24V 2.5A 60W power supply MeanWell GST60A24 and local power cable
- Optional accessories: bag with international keycaps, NVMe SSD Transcend MTE220S (1TB) or MTE110S (256/512GB), mPCIe WiFi card (Compex WLE200NX) with Molex MIMO antenna

6×  M2×4mm
10×  M2×4mm
10×  M2×5mm
10×  M2×6mm

Warranty

MNT Research covers the warranty to the extent required by law for the unmodified product. Warranty does not cover any modifications made by the user. Warranty does not cover damage resulting from not following exact assembly steps. Use at your own risk!

Important Safety Information

Electrical Shock and Fire Hazard: Please be extra careful while and after opening the case of the device. MNT Reform uses 8 batteries in series. When fully charged, these combine to a voltage of almost 29 volts, and the battery cells can easily deliver multiple amperes of current. **Do not touch the metal pins of the battery holders with metal tools.**


Before servicing anything on the inside, make sure that the wall power is unplugged and remove all battery cells.

Damage to Hearing: The headphone output of MNT Reform can be forced to extreme volume which may damage your hearing if you are not careful. Please make sure to **set the volume to 30% or less before connecting headphones** to MNT Reform, and then adjust the volume to a comfortable level.



Recycling

Don't throw any MNT Reform parts in the trash! Batteries and electronics contain materials that are harmful to the environment if not properly disposed of. You can mail any of the parts back to MNT Research, and we will recycle them for you. Alternatively, you can recycle batteries at a local battery collection facility and dispose of electronics and cables at a local e-waste facility.

 The product complies with the requirements of the European Directives and DIN standards:
RED Directive 2014/53/EU (EN 300 328 V2.2.2, EN 301 893 V2.1.1, EN 300 440 V2.2.1, EN 62368-1:2020)
RoHS Directive 2011/65/EU (EN 63000:2018)
Batteries Regulation (EU) 2023/1542



Assembly (See Pictures on Flip Side)

Electronics can be destroyed by static charges you carry on your body. Touch a large metal object like a heater before starting work, or wear an antistatic bracelet. Use an antistatic surface with good lighting. Aluminum is soft, don't overtighten screws.

- 1 The most important step: **Remove the 8 battery cells and put them aside safely.**
- 2 Mount the motherboard (preassembled with heatsink) with 4 silver pan head M2×4mm screws to the main box.
- 3 Plug in the 30 pin display cable. The display cable has a white dot marking pin 1. The white dot must point in the direction of the hinges (off the motherboard).
- 4 Plug the speaker cable into the SPEAKERS header on the motherboard.
- 5 Mount the trackball with 4 screws. Or mount the trackpad module with 2 screws (silver M2×4mm pan head).
- 6 Connect trackball/trackpad to motherboard header UI2 with 4-pin internal USB cable.
- 7 Flip and open the laptop so that the hole for the trackball/trackpad faces you.
- 8 Connect OLED display to keyboard with 4 pin (1mm pitch) flat cable (blue side up).
- 9 Connect one internal 4-pin cable to the keyboard internal USB port. Bend the cable downward close to the connector.
- 10 Connect one internal 4-pin cable to the keyboard internal UART/SYSCTL port. Bend the cable downward close to the connector.
- 11 Feed both 4-pin cables through the hole in the main box that is closest to each port of the keyboard.

Mount the keyboard with 6 black M2×4mm pan head screws (magnetic). Pull the keyboard towards you while tightening the screws, or keycaps could later conflict with the hinges if the keyboard is mounted a millimeter too far up.
- 12 Mount the OLED PCB with 2 screws (silver M2×4mm pan head screws). Twist the cable clockwise, which is tricky. Sorry for that. Use tweezers. Remove film.

If it is not straight, very gently un-warp the keyboard frame, section by section with both hands close together. Don't bend it with both hands on opposite ends of the frame—you'll likely twist it, especially the thinnest parts around the display!
- 14 Plug the keyboard frame into the main box and mount it with 6 black M2×5mm countersunk screws.
- 15 Flip the laptop on the back, so that the battery holders face you.
- 16 Connect the 4-pin internal USB cable coming through the top left hole in the main box to the motherboard's UI1 header. Bend the cable down near the plug.
- 17 Connect the 4-pin internal UART cable coming through the top right hole in the main box to the motherboard's SYSCTL header. Bend the cable down near the plug.
- 18 If you have an SSD, plug it into the M.2 socket. Mount with M2×4mm pan head screw.

If you have a WiFi card, plug it into the mPCIe socket and mount the antenna as follows:

Unplug UI1/UI2 cables from the motherboard and put the included lasercut acrylic antenna holder around the UI1/UI2 headers. Plug the UI1/UI2 cables back in. Remove the foil from the adhesive side of the Molex MIMO antenna and carefully glue the antenna to the acrylic antenna holder. Carefully connect the two antenna cables to the WiFi card. The order doesn't matter.
- 19 Mount the left and right acrylic side panels (port covers) with 2 black countersunk M2×5mm screws each. Remember to remove film from both sides.
- 21 Plug the battery cells into the holders. **Carefully pay attention to the polarity (+/-)!**

Remove the tape from each battery cable plug and carefully insert the plug into the correct connector on the motherboard. Left battery pack plugs into the left connector, right battery pack into the right. Make sure the connectors are the right way around, fully plugged in and locked. Avoid cables slipping into battery holders.
- 22 **From this point on, the device is powered, and it is very dangerous to do any more work inside of it. Before handling the insides of the device again, you MUST remove the battery cells.**
- 23 Put the acrylic plate on the bottom of the main box and mount it with 10 silver countersunk M2×6mm screws. Don't overtighten screws, don't squeeze cables.

Stick the 4 included clear rubber bumpers in the corners of the acrylic plate (their center approximately 1cm distance from each edge).

Flip your completed MNT Reform so it sits on the bumpers.

Press Circle followed by the B key to confirm that all batteries are healthy.

Connect the included power supply to a power outlet and the computer.

Insert the system SD card and turn on the computer by pressing the Circle key

Get the **Operator Handbook**, updates and sources at: <https://mntre.com/reform>

Need help? Join our community forum: <https://community.mnt.re>

Or join our IRC channel **#reform** on irc.libera.chat

