



# HP Windows Mixed Reality Headset Developer Edition Teardown

Complete teardown of HP's Mixed Reality Headset for Windows

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# INTRODUCTION

This teardown illustrates how to deconstruct the HP MR Headset (DE). This teardown also identifies some of the components within the HMD, and is open to any edits or suggestions for unidentified elements.



## TOOLS:

- [iFixit Opening Tools](#) (1)
  - [Tweezers](#) (1)
  - [Phillips #1 Screwdriver](#) (1)
  - [64 Bit Driver Kit](#) (1)
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## Step 1 — HP Windows MR HMD Teardown



- HMD Specs:
  - Two high-resolution liquid crystal displays at 1440 x 1440
  - 2.89" diagonal display size (x2)
  - Front hinged display
  - Double padded headband and adjustment knob
  - Built-in audio out and microphone support through 3.5mm jack
  - Single 4.00m/0.60m removable cable with HDMI 2.0 (display) and USB 3.0 (data) for connectivity

## Step 2 — Remove eye-rings, foam padding, and outer shell



- Remove the foam protector from the velcro-type adhesive strip.
- Remove the two eye-rings with a flat head screwdriver.
- Also with a flat head screwdriver, carefully pry apart the outer plastic shell from the HMD

## Step 3 — Remove interior plastic and screws



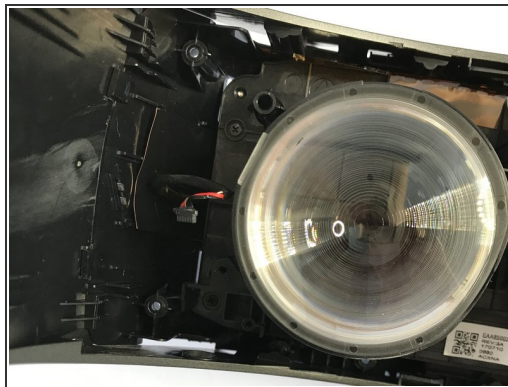
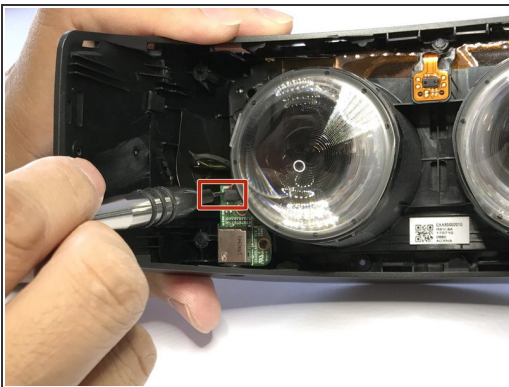
- To remove the next layer of protective plastic, you'll need to remove 16 screws
  - 1 on each side
  - and 14 on the front

## Step 4 — Remove head-strap, plastic casing and cable clip



- Now that the screws are removed, the next plastic layer can be removed.
- The cable will still be connected to the adjustable head strap. This can be removed easily by prying it off with a flathead screwdriver

## Step 5 — Remove 3.5mm headphone jack



- In the bottom left corner of the HMD, you'll find the audio jack and the board attached to it.
- With a flat head screwdriver, gently pry the connector from the headphone jack board. Once the board has been disconnected, it will fall right out.



## Step 6 — Separate the lenses from the PCB



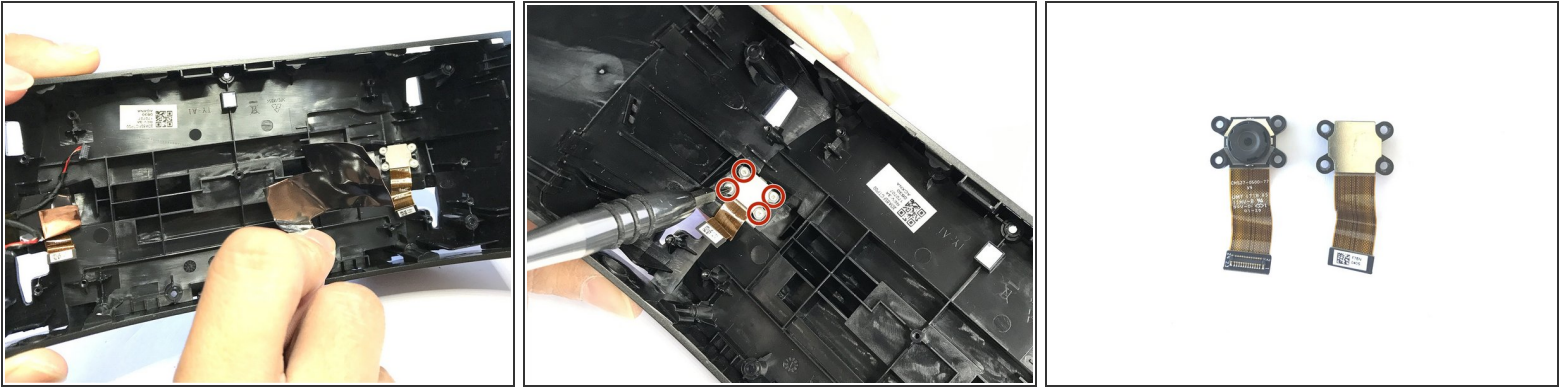
- Remove four more screws. The bottom left screw will release the audio board support.
  - Peel back the lenses at a 45° angle from the bottom up.
  - You'll then see two yellow strips held with black protective tape. Peel back the tape with tweezers.
  - Also with tweezers, remove the yellow tape over the connection between the PCB and the lenses.
- i** The lenses appear to be fresnel on the inside but smooth on the outside.

## Step 7 — Remove metallic tape



- With the lenses removed, you can begin separating the PCB from what's left of the HMD.
- ⚠ USE TWEEZERS** to peel back the two pieces of metallic tape on the PCB (this tape is **SHARP** — do not use your hands).
- Remove the four screws to remove the two metal clips on each side of the PCB.

## Step 8

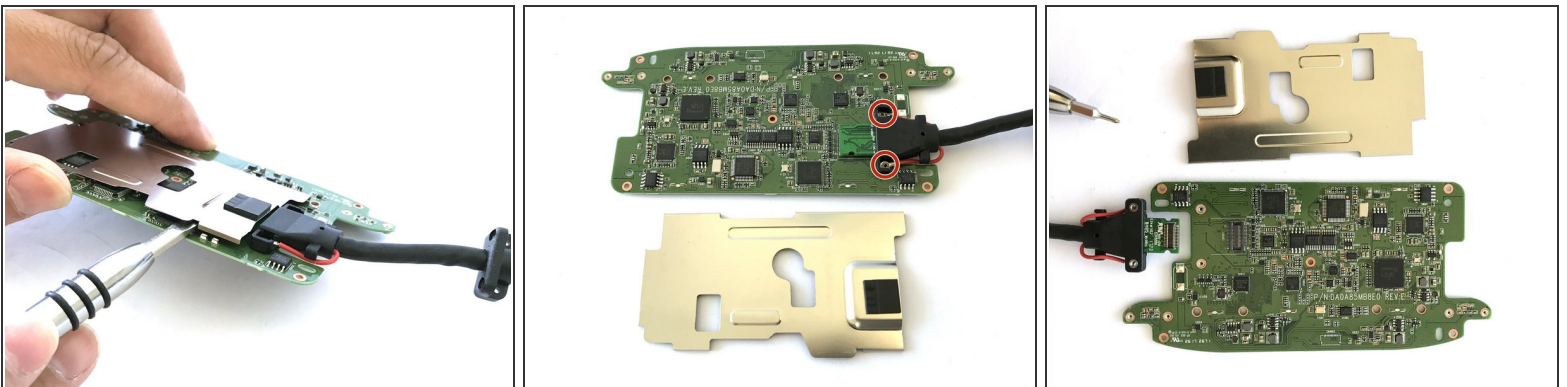


- After removed the PCB, you can see the front camera sensor compartment.

⚠ Peel off the copper tape on both side before the next step. (SHARP EDGES -TWEEZERS recommend).

- Remove 4 screws to disassemble the front camera sensor on each side.
- Cameras were not easily identifiable, however, they looked identical to the cameras we found in our Acer MR HMD teardown. Also had similar part numbers to the the Microsoft Surface 3 rear camera.

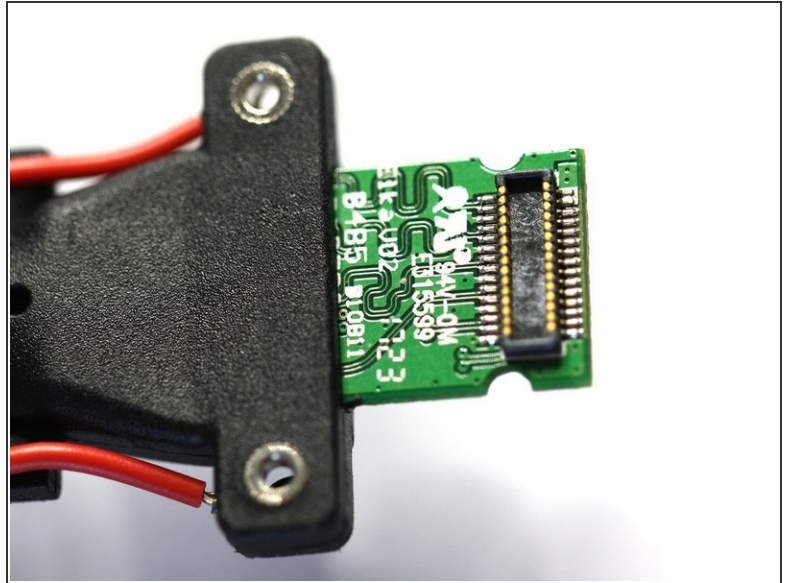
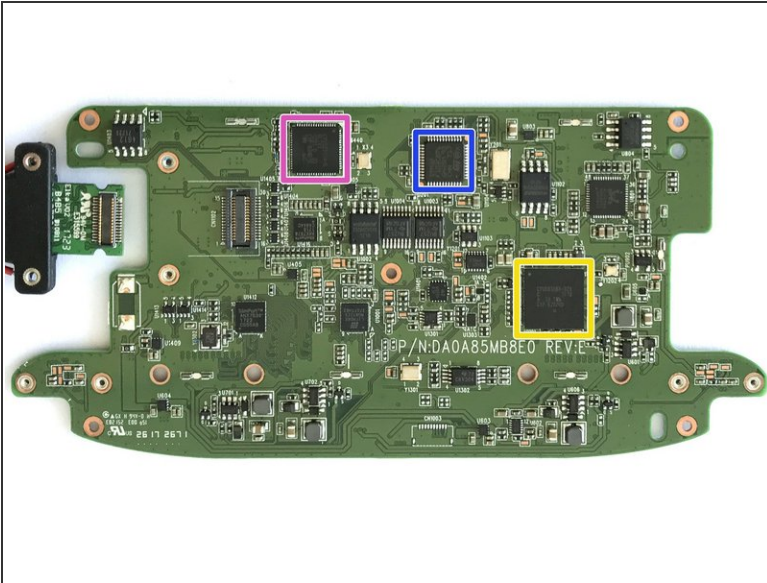
## Step 9 — Separate metal and cable from PCB



- The metal cover to the PCB can be easily pried apart with a flat head screwdriver.
- After doing this, the two screws connecting the cable to the PCB is revealed.
- Remove the two screws, then pop off the connector straight up, not at an angle.

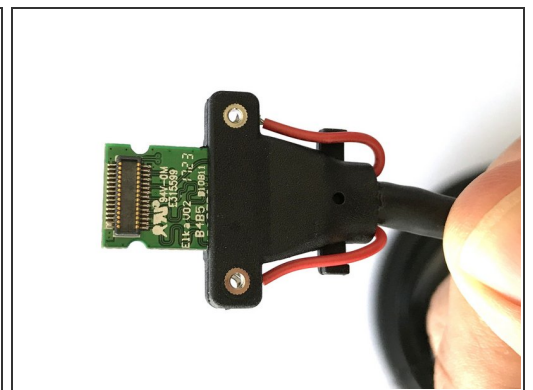
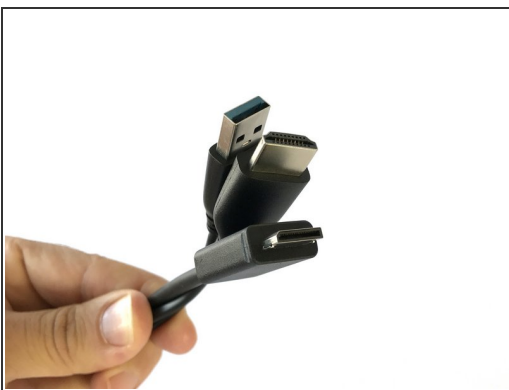


## Step 10 — PCB and Components



- Cypress [CYUSB3064-BZXC](#) SuperSpeed USB Bridge Controller
- Cypress [CYUSB3304-68LTXI](#) HX3 USB 3.0 Hub
- STMicroelectronics medium-density [STM32F103C8](#) performance line microcontroller.

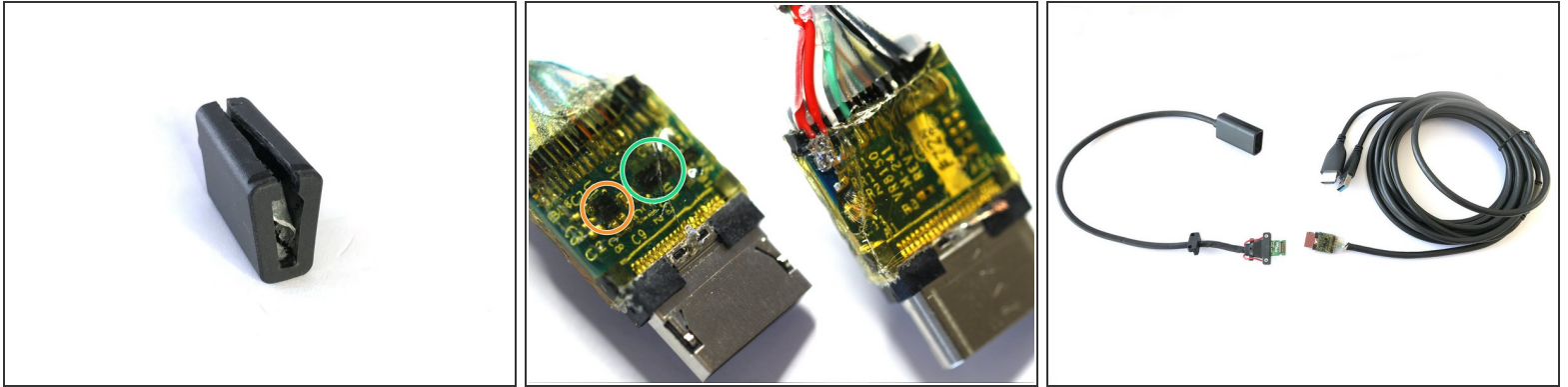
## Step 11 — Cabling



- The main cable is a USB and HDMI to a proprietary connector.
- Instead of plugging directly into the HMD, the proprietary connector plugs into a receptacle which is attached to an embedded connector (shown on the PCB in steps nine and ten).



## Step 12 — Active cable module



- After finding an active cable module within the Acer headset, we were curious as to why the HP headset had no chips on their cable. So we opened up the proprietary connector on the cable (**Do not do this. You won't be able to easily put it back together**)
- Under the plastic shell, we found a similar [Spectra7](#) cable module similar to that of the Acer Windows HMD
  - [Spectra7](#) VR8050 USB 3.0 Cable Equalizer
  - [Spectra7](#) HT8181 HDMI 2.0 Cable Equalizer