Camera 2: Cinema-style camera housing for Raspberry Pi 4 and HQ camera

edgett

VIEW IN BROWSER

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Summary

This is an actively-cooled cinema-style camera housing for a Raspberry Pi 4B and a Raspberry Pi HQ Camera that...

Gadgets > Photo & Video

Tags: camera raspberrypi raspberrypi4 raspberrypicamera raspberrypi4b raspberrypihqcam camerahousing

This is an actively-cooled cinema-style camera housing for a Raspberry Pi 4B and a Raspberry Pi HQ Camera that features a 45* articulating LCD touch screen, mounting for external accessories, as well as space for a high-capacity battery.

If you are looking for software to run on this camera, consider this camera software that includes on-screen controls and raw image capture.

Getting Started You will need the following non-included parts:

- (1) - Raspberry Pi 4B

- (1) - Micro SD card (Sandisk preferred)
- (1) - USB Storage Device (Sandisk or Samsung preferred)
- (1) - Raspberry Pi HQ Camera
- (1) - Adafruit Flex Cable for Raspberry Pi Camera or Display - 300mm / 12"
- (1) - Set of 20cm Male to Male Jumper Wires
- (1) - Waveshare 5.5" Capacitive Touch LCD with DSI Connector
- (2) - Noctua 40mm x 10mm5-volt Fans
- (1) - Noctua Y Splitter Cable
- (1) - 40mm Fan Grill/Guard
- (1) - Assorted Camera Screws
- (1) - Left and Right set of Torque Friction Type Positioning Hinges
- (1) - Set of M3, M4, M5 Cap Head Screws
- (1) - Set of assorted M2.5 Cap Head Screws
- (3) - Assorted 1/4-20 Cap Head Screws, Nuts, and Washers
- (4) - M2.5 x 35mm Cap Head Screws
- (1) - M6 Stainless Threaded Stud with Thrust Pad
- (5) - Black round rubberized padded "feet"
- (4) - 5.9mm x 4mm Neodymium Disc Magnets
- (1) - Aluminum Heatsink Set
- (1) - Anker PowerCore Essential 20000 PD battery
- (1) - CS Lens or other lens with C or CS mount adapter

You may need the following additional tools:

- 1/4"-20 tap set
- Metric tap set
- Needle nose pliers
- Xacto Knife (for cleaning up small imperfections in prints)
- WD-40 (for lubricating threads of fasteners)
- Gorilla Glue gel

Print Settings

Printer Brand:

Creality

Printer:

Ender 3

Rafts:

No

Supports:

Yes

Resolution:

0.2mm

Infill:

80

Filament: Hatchbox PLA

Notes:

IMPORTANT: Please review each part in your slicing software before printing to ensure a logical face is touching the build plate!

This was printed on a Creality CR-6 SE with the hot end set at 200C and the bed set at 65C.

Please see the following individual print notes below.

*__Badge__

+ Infill: 30% + Material Required: 1g - Hatchbox True Red (or Transparent Red) 1.75mm PLA + Adhesion Type: Skirt + Supports: None + Positioning: Rear Side Down / Number Up + Quantity: 1

*__Camera Mount__

+ Infill: 80% + Material Required: ~ 28g - Hatchbox True Black 1.75mm PLA + Supports: None + Adhesion Type: Skirt + Positioning: Rear Side Down / Support Bosses Up + Quantity: 1

*__Front Housing__

+ Infill: 80% + Material Required: ~ 314g - Hatchbox True Black 1.75mm PLA + Supports: Touching Buildplate*(In addition, two small custom supports are included in this model near the hinge area. These can be easily snipped away after the print is complete.)* + Adhesion Type: Skirt + Positioning: Left Side Down + Quantity: 1

*__Handle - Right__

+ Infill: 80% + Material Required: ~ 58g - Hatchbox True Black 1.75mm PLA + Supports: Yes + Adhesion Type: Brim + Positioning: Bottom Side Down + Quantity: 1

*__Handle - Top__

+ Infill: 80% + Material Required: ~ 81g - Hatchbox True Black 1.75mm PLA + Supports: None + Adhesion Type: Skirt + Positioning: Right Side Down + Quantity: 1

*__HDMI & USB-C Port Recess Housing__

+ Infill: 80% + Material Required: ~12g - Hatchbox True Black 1.75mm PLA + Supports: None + Adhesion Type: Skirt + Positioning: Right Side Down + Quantity: 1

*__Inner Lid__

+ Infill: 80% + Material Required: ~ 29g - Hatchbox True Black 1.75mm PLA + Supports: None + Adhesion Type: Skirt + Positioning: Interior Side Down + Quantity: 1

*__Panel - Left__

+ Infill: 80% + Material Required: ~ 10g - Hatchbox True Black 1.75mm PLA + Supports: None + Adhesion Type: Skirt + Positioning: Exterior Side Down + Quantity: 1

*__Panel - Right__

+ Infill: 80% + Material Required: ~ 11g - Hatchbox True Black 1.75mm PLA + Supports: None + Adhesion Type: Skirt + Positioning: Interior Side Down + Quantity: 1

*__Rear Housing__

+ Infill: 80% + Material Required: ~ 133g - Hatchbox True Black 1.75mm PLA + Supports: Touching Buildplate + Adhesion Type: Skirt + Positioning: Interior/Hinge Side Down + Quantity: 1

*__Stylus Clip__

+ Infill: 80% + Material Required: ~ 1g - Hatchbox True Black 1.75mm PLA + Supports: None + Adhesion Type: Skirt + Positioning: Bottom Side Down + Quantity: 1 (OPTIONAL)

*__USB-C Cable Clip__

+ Infill: 80% + Material Required: ~ 1g - Hatchbox True Black 1.75mm PLA + Supports: None + Adhesion Type: Skirt + Positioning: Bottom Side Down + Quantity: 2

*__Wire Clip__ + Infill: 80% + Material Required: ~ 4g - Hatchbox True Black 1.75mm PLA + Supports: Touching Buildplate + Adhesion Type: Brim + Positioning: Side Opposite Wire Recesses Down + Quantity: 2

80% infill is used for many of these pieces to ensure there is minimal flex when the camera is equipped with heavier lenses. If you choose to decrease this, you do so at the risk of part failure which may result in damage to your lens or other property.

Post-Printing

Assembly Instructions

1. Install Raspbian OS onto the SD card and perform any initial configuration.
2. Remove any support material from your printed pieces.
3. Attach camera ribbon cable to the Raspberry Pi HQ Camera
4. Attach one fan and fan grill to the interior of the right side using M4 screws and nuts
5. Carefully slide camera module into front housing and secure using a 1/4-20 screw from the bottom
6. Gently fold the camera cable so it can pass out the left side of the housing
7. Slide the camera mount into place behind the camera and secure it using two M4 screws from the bottom and two additional M4 screws from the top. Take care not to pinch the camera cable.
8. Thread the M2.5 x 35mm Cap Head Screws through the front of the housing, through the camera's mounting holes, and then through the camera mount block. Secure the back of the screws with a nut.
9. Feed the camera cable and fan cable through the top slot and out the rear of the main housing
10. Attach the top handle using two 1/4-20 cap head screws in the front and middle holes of the top handle. Place a nut and washer inside of the housing to secure the middle screw to the housing.
11. Secure the right panel to the front housing using four M2.5 screws
12. Place three M4 screws and nuts on the left panel. These are decorative.
13. Place one D-ring screw from the camera screw pack into the other hole of the left panel.
14. Secure the left panel to the fron housing using three M2.5 screws.
15. Slide the LCD panel carefully into the rear housing, starting with the top edge. Press only in the corners as you push it inwards to avoid cracking the glass of the display.
16. Set the Raspberry Pi on the mounting holes on the back of the display and secure it using the four 30mm brass standoffs that are included with the display. Ensure that the SD card is inserted properly in the slot on the Raspberry Pi!
17. Attach the small DSI cable between the display and the Raspberry Pi.
18. Slide a hinge into either hinge slot of the rear housing and secure them with two M3 cap screws and nuts per side.

19. Placing the front housing adjacent to the rear housing and feed the fan cable and camera cable through the top slot of the rear housing.
20. Attach the camera cable to the Raspberry Pi board, ensuring the cable is properly secured.
21. Place the second 40mm fan in the bottom of the rear housing.
22. Using the four jumper wires attach the Y fan cable to the appropriate GPIO pins.
23. Place the wire clips over the ends of the brass stand offs, and connect both fans to the Y cable. Use the wire clips to organize the wiring.
24. Attach the inner lid to the rear housing. Secure using four longer M2.5 screws through the wire clips and into the brass stand offs. Then secure the outer corners with four M2.5 screws.
25. Carefully attach the rear housing and front housing together by sliding the unsecured ends of the hinges into the hinge slots of the front housing. Secure with two M3 cap screws and nuts per side.
26. Insert the HDMI & USB-C Port Recess Housing into the top of the rear housing and secure it with two M2.5 screws.
27. Using the Gorilla Glue, secure the magnets to the 3mm deep recesses on the lower edge of the front and rear housings. Be sure to check that the polarity of the magnets are set to attract each other BEFORE gluing them in place. Allow the glue to dry according to the instructions on the bottle.
28. Using the Gorilla Glue, secure the rubberized feet to the four spots on the bottom corners of the front housing.
29. Using the Gorilla Glue, secure another rubberized foot to the recess inside the bottom of the battery compartment.
30. Using an appropriate length 1/4-20 screw attach the right handle to the right side panel. This should pass through the right side panel and into the front housing.
31. Thread the knob through the rear hole of the top handle. Once the threaded rod is inside the battery compartment, snap on the pressure foot and retract the knob.
32. Attach the USB-C cable clips using a 1/4-1/4 coupler or 1/4-3/8 coupler from the camera screw pack. Before the tightening these down, feed the USB-C cable through the clips, ensuring there is enough length on the left side for it to reach the Raspberry Pi's USB-C port.
33. If you printed the optional Stylus Clip, attach it to the right of the front housing (below the battery compartment). This should be able to hold a stylus or pen 8 - 9mm in diameter.
34. Slide the battery into the compartment and secure it by threading the knob on the top handle until it is snug. Do not overtighten or you may damage your battery.

Category: Camera

Model files

wire_clip_x2.stl

panel_-_right.stl

badge.stl

inner_lid.stl

stylus_clip.stl

panel_-_left.stl

camera_mount.stl

hdmi__usb-c_port_recess_housing.stl

rear_housing.stl

handle_-_right.stl

handle_-_top.stl

usb-c_cable_clip_x2.stl

front_housing.stl

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