

HD-VIS-T1-L/HD-VIS-T1-R DIY Budget Thermal Monocular Manual and Build Guide



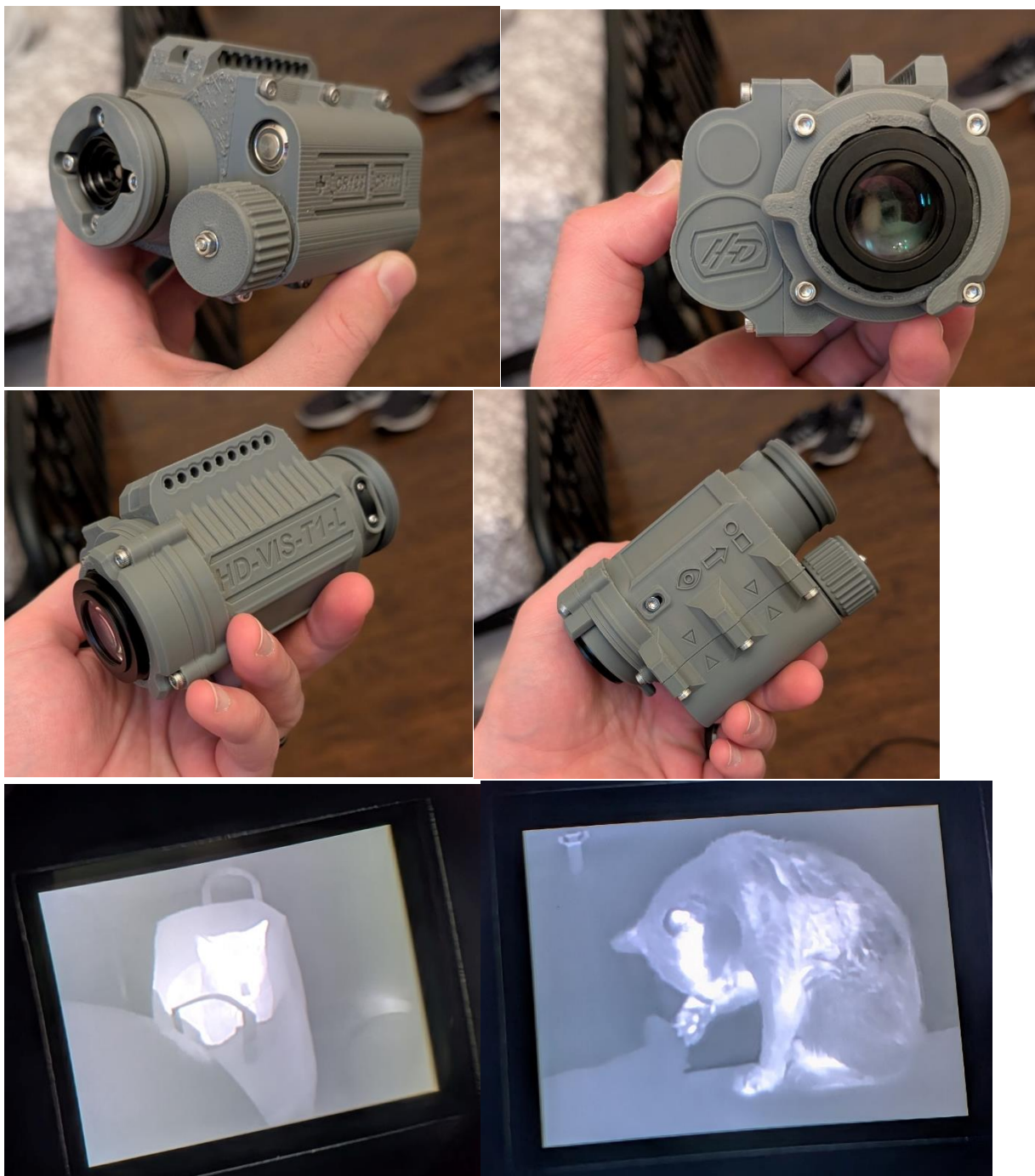
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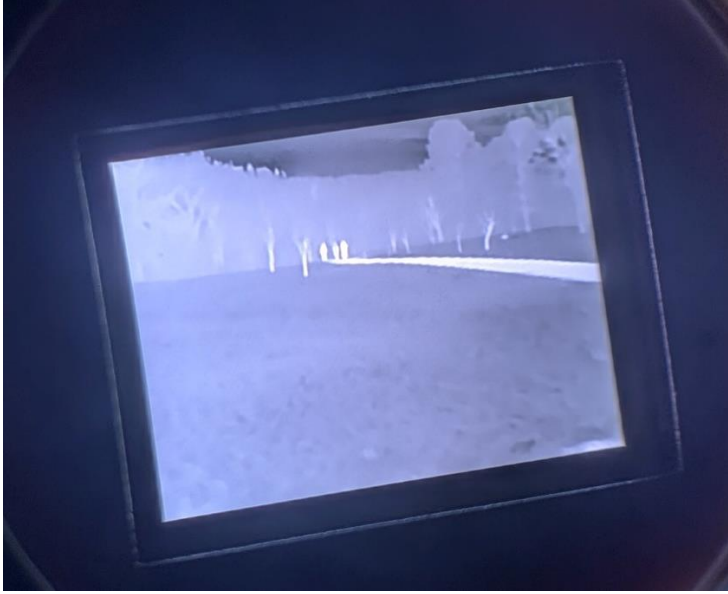
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Description

The **HD-VIS-T1-L** (**HD-VIS-T1-R** for Right Eye Users) is a DIY Thermal Monocular oriented around ease of assembly, use, and budgetary restrictions. The base version is meant to be Plug and Play (not literally) where you assemble your hardware and solder some stuff and have a stupid simple Thermal Monocular ready to go, without having to tweak any software or configurations. The base version of the **HD-VIS-T1-L/R** uses Hdaneee Thermal Cameras (similar to AxisFlying Cameras) which can range from 256 x 192 Resolution to 640 x 512 resolution, all models running at 50hz. The Cameras should come pre-configured as White Hot and with Manual Shutter. See **Experimental Functions** if you would like to learn more about modifying your Camera. The display of the device is a V770 PRO-C, meaning 800 x 600 resolution on a 0.39-inch OLED, with a 4:3 screen Ratio.

Gallery





Bill of Materials

1. Rigid 3D Printer Filament
 - I used Anycubic PLA (~20 USD per 1kg Spool) for prototyping and temporary parts, and Polymaker Fiberon PET-CF17 (~25 USD per 500g Spool) for permanent parts
2. Flexible 3D Printer Filament (~83A TPU/TPE)
 - You want something very flexible I used 83A tpu from ESun
3. Thermal Camera (HDaniee Brand) AxisFlying may fit, but I personally haven't tested this
 - <https://www.aliexpress.us/item/3256807771810675.html>
4. V770 Display Module V770 Pro-C-USB
 - <https://www.aliexpress.us/item/3256804604607946.html>
5. JST 1.25 2 Pin Plug Sets with Pre-crimped Wires
 - <https://www.aliexpress.us/item/3256802146553614.html>
6. Battery Terminals (12mm x 12mm with the two large side dimples)
 - <https://www.aliexpress.us/item/3256803186163371.html>
7. 12mm Button (3-6v, 12mm, Latching, color doesn't matter unless you purposefully build it to light up the button)
 - <https://www.aliexpress.us/item/3256803408724280.html>
8. M3 Heat Inserts (Length 5mm, OD 4.5mm)
 - <https://www.aliexpress.us/item/3256803396040989.html>
9. Brass Tube (24mm long exactly or cut to length, 18mm OD 17mm ID, 0.5mm Wall Thickness)
 - <https://www.aliexpress.us/item/3256806508225573.html>
10. Brass Disc (1mm thick, 22mm Diameter)
 - <https://www.aliexpress.us/item/3256806521086425.html>
11. Countersunk M3 Bolt for Keying Display Unit (only need 1 bolt for this, M3 6mm long)
 - <https://www.aliexpress.us/item/2251832812303109.html>
12. M3 Bolt Set (I don't know exact lengths needed rn, just get the set and use what fits)
 - <https://www.aliexpress.us/item/3256808107548214.html>
13. M2 Bolts for holding Camera in Place (2x M2 10mm long)
 - <https://www.aliexpress.us/item/3256806267299258.html>
14. USB to Serial Tool for Experimental Functions (Type C)
 - <https://www.aliexpress.us/item/3256807209358549.html>

Assembly

Hardware Fabrication

Grab your V770 display. Remove the eyecup so it is easier to handle in these steps. Cut the wires off your display until it is about 6 inches from the face of the display where the wire comes out of the unit. Use **wire strippers** or a **sharp knife** to **CAREFULLY CAREFULLY CAREFULLY** strip the out black insulation off the wires. There should be about an inch of Colored Wires visible. Then strip the Colored insulation off each individual wire. They are very thin wires so **PLEASE BE CAREFUL**. You should have about 5mm of bare wire exposed at the end on each wire.

Gather **14 x M3 Heat Inserts** and your **Soldering Iron** (with your **Insert Install Tip** if you have one) and warm it up, depending on the material, you may want to adjust temperature. For my PLA and PET-CF prints, I just used 400 C. In the holes marked in RED, install your **M3 Inserts**.

Electronics and Soldering

Put a normal **Soldering Tip** on your **Soldering Iron** and get some **solder**. Twist the ends of your wires to make them thin and straight. Then tin them with your Soldering Iron. Make sure there isn't a large solder blob on the end as it would make it hard to slip the heat shrink tube over it