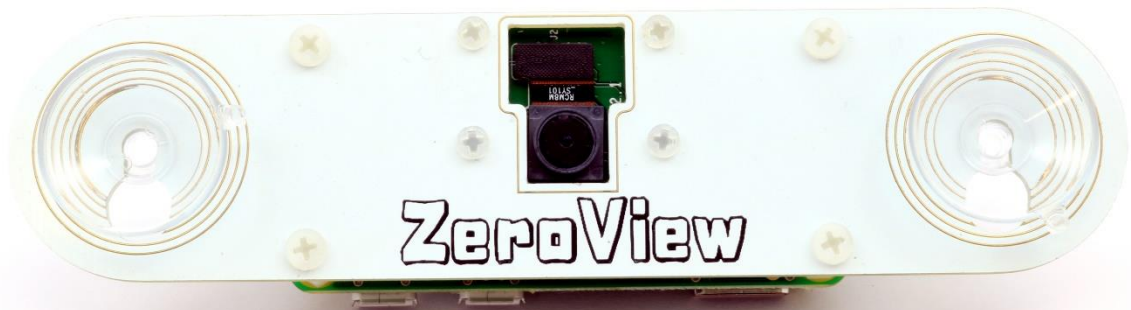


ZeroView



Raspberry Pi Camera Module Suction Mount
User Guide and Information

Product Page: ThePiHut.com/zeroview

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Introduction

Congratulations on your purchase of the ZeroView Raspberry Pi Camera Module Suction Mount.

The ZeroView is designed to make it easier than ever to use the camera module on windows, glass, fish tanks and more!



The mount allows you to stick your Pi Zero and camera module to any flat glass surface (or similar) and shoot or film whatever is on the other side...as long as you have permission of course!

Your camera cable is neatly tucked behind the Pi, whilst a set of screws and nuts keeps your camera module as close as possible to the glass to keep glare and reflections to an absolute minimum.

Power wires hang down naturally from the Pi's micro-USB port, and the use of genuine USA 'Adams' suction cups means your ZeroView will stay stuck to your window for as long as you need.

HATs can still be used due to the position of the Pi, allowing you to get even more creative with your ZeroView projects.

Design Features

- The ZeroView is made from printed circuit board (PCB). The thin and rigid material is perfect for mounting the camera module to, and keeps the size and cost down.
- We've used genuine 'Adams' suction cups – the best available – to ensure the ZeroView stays put for as long as you need.
- The PCB has slide holes for the suction cups, meaning you can remove the board from the cup heads when attached to a window, and then remove the suction cups using the edge tabs.
- Spacers have been used to mount your Pi to the ZeroView whilst allowing the camera cable to tuck underneath out of sight.
- The Pi is mounted in a way that allows you to fit HATs and add-on boards to further enhance your projects.
- All fixings have been provided for your camera module, and are assembled in a way that avoids bending the camera module board.
- The board is designed so that the camera module lens sits close to the glass, avoiding as much glare and reflections as possible.
- We've chosen a white PCB to compliment the most common window colours whilst also giving a 'nod to the clouds'!
- Toolless assembly makes the ZeroView perfect for all ages and abilities.



Kit Contents

The following parts should be inside your kit bag:

1x ZeroView PCB

2x Suction cups

4x Threaded M2.5 10mm spacers

4x M2.5 4mm screws

4x M2.5 nuts

4x M2 6mm screws

8x M2 nuts



Assembly

Assembling the ZeroView requires no tools and should take no more than 5 minutes.

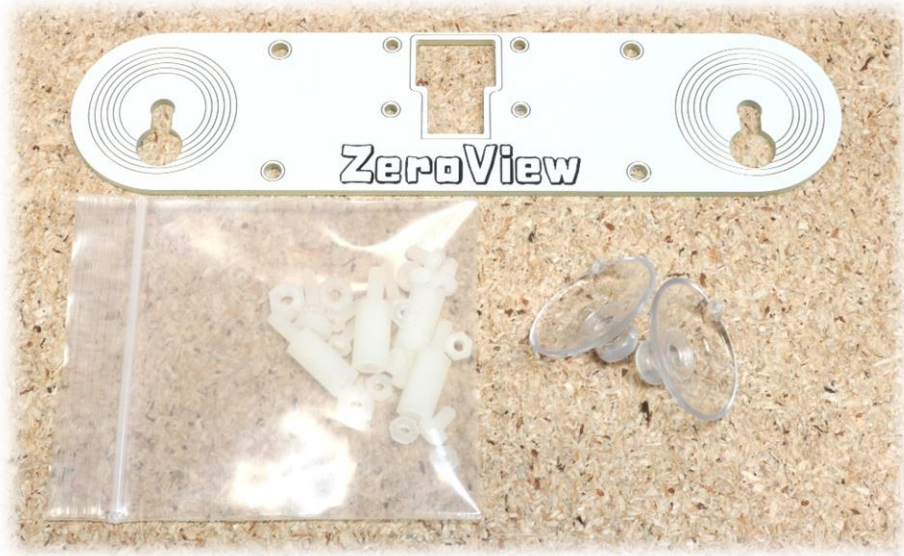
Before You Start

- Test your camera module before fitting to the ZeroView (a “dry run”)
- Read all steps through before assembling
- Clean the window or surface you are planning to stick the ZeroView to
- Take necessary precautions to reduce/remove static from your body. **Static can permanently damage both the Raspberry Pi and camera module!**



Assembly Steps

1. Check you have everything you need. Go back up to the Kit Contents section for a full list.



2. Start by pushing the 6mm M2 screws through the 4 centre holes.

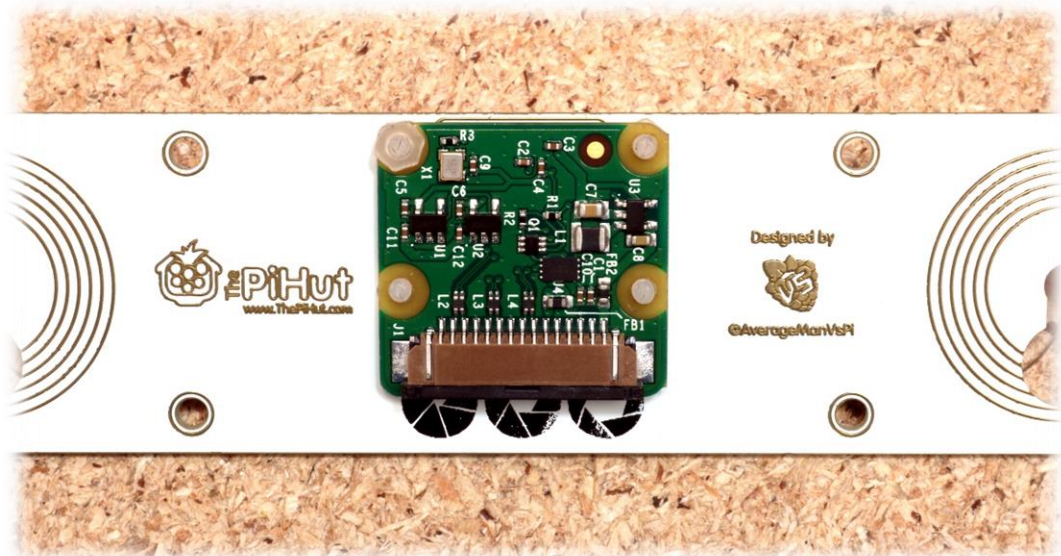


3. Fix these screws in place (without the camera module yet) using the 4 M2 nuts provided. This helps keep the camera module sensor from touching the glass.



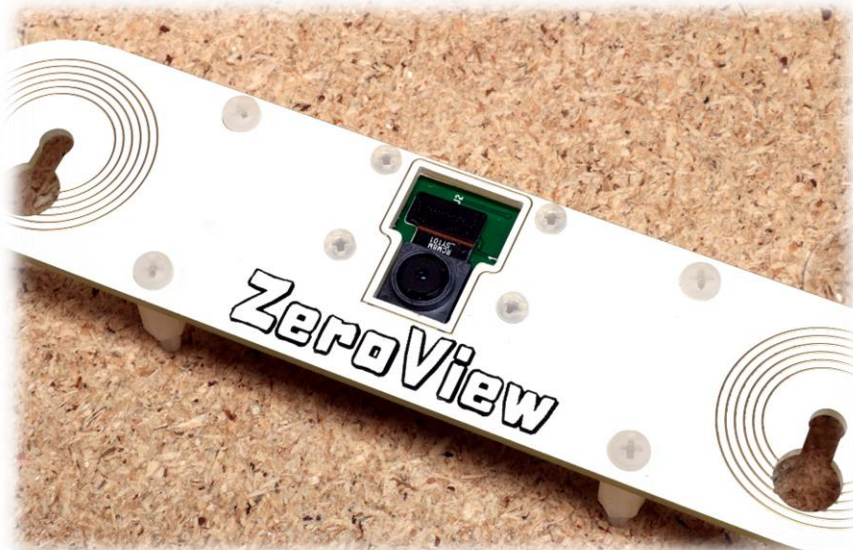
4. Next place your camera module on the rear of the board with the sensor through the large centre hole. The camera's mounting holes should slide on the M2 screws that you fitted.

Use the remaining M2 nuts to secure the camera module in place.



5. Fit the M2.5 spacers to the outer 4 holes, using the 4mm M2.5 screws to fix in place.

The spacer section should be at the rear of the board, with the screw heads at the front of the board.



6. Next add your Pi Zero to the board by sliding it on to the spacer thread and securing with the M2.5 nuts.

Gently bend the camera module cable under the Raspberry Pi to keep it out of the way. You will not need to 'pinch' the camera cable.

Tip: If you are using a Raspberry Pi A+, remove the lower spacers.



7. Lastly, attach the suction cups by pushing the 'mushroom' head into the larger hole at the sides of the board, then pushing up in to the smaller hole.

The slightly narrower section between the two holes provides a secure fitting against the suction cup's head. Assembly complete!



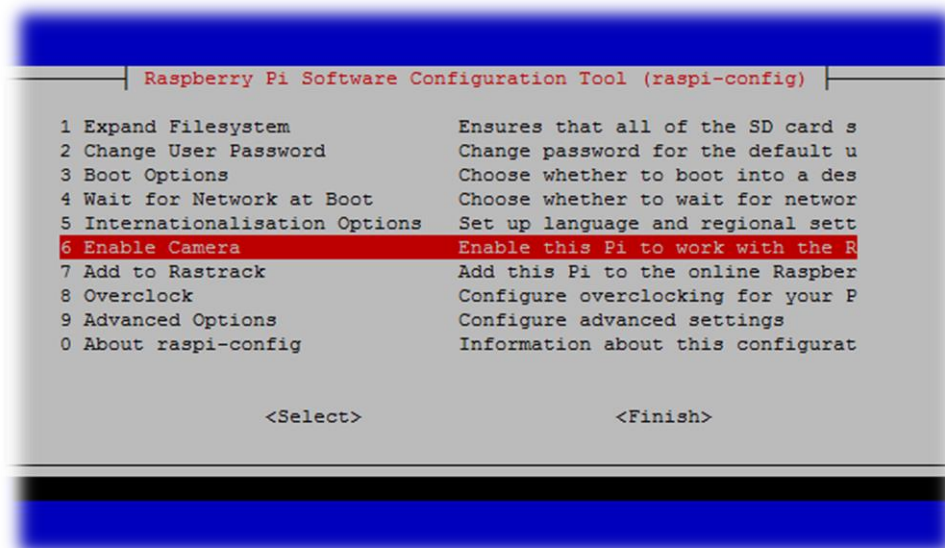
Enabling The Camera

If you haven't used the camera module before, you'll need to enable it in the Pi's settings. Don't worry, it's super easy.

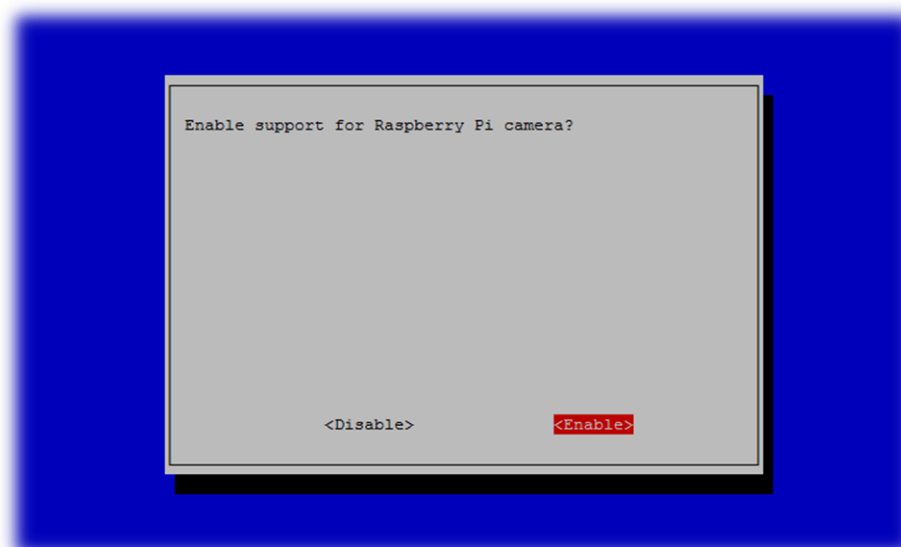
Open a terminal session and enter the following command:

```
sudo raspi-config
```

You should now see a screen like this (below). Use the arrow key to select the 'Enable Camera' option:



Press enter and use the arrow keys on the next screen to highlight 'Enable', then press enter:



You will then return to the main configuration tool menu. Select 'Finish' and then select 'Yes' when the tool asks if you want to reboot:



Once rebooted, your camera module will be ready to use.

Code Examples

Now that you have a great way to mount your camera module, it's time to do something cool with it!

The camera module has lots of fun functions and modes to try out, as well as a whole host of settings to get creative with.

Taking Pictures

To take a picture, we use the 'raspistill' application.

A simple photo can be taken and saved by using:

```
raspistill -o picture.jpg
```

Shooting Video

To shoot a 20-second video, we use the 'raspivid' application:

```
raspivid -o video.h264 -t 20000
```

To shoot a 5 second slow motion video, we use the same command with some additional parameters. This example is a 5 second clip at 640x480 resolution:

```
raspivid -w 640 -h 480 -fps 90 -t 5000 -o slowmotion.h264
```

Advanced Settings

There is an incredible amount of settings that can be changed with the camera module, from ISO level, white balance, video stabilisation, effects and more.

A full list of available commands can be found over on the Raspberry Pi Foundation's website:

<https://www.raspberrypi.org/documentation/raspbian/applications/camera.md>

Time-lapse

A great way of using the ZeroView is for time-lapse photography.

With your camera module attached firmly to glass, you can now take long, still and impressive time-lapse shots from a number of places.

Here are a few ideas to get you started:

- Use it on a window to capture the changing weather
- Attach it to a fish tank or pet enclosure to view movements over time
- Use it on a side/rear car window to capture your journey
- Attach it to an office window to create impressive city time-lapses

Here is an example command to get you started. This will take a picture every 10 seconds with a filename using 4 numbers at the end, and finish after 2 hours:

```
raspistill -o picture%04d.jpeg -t1 10000 -t 7200000
```

CCTV Software

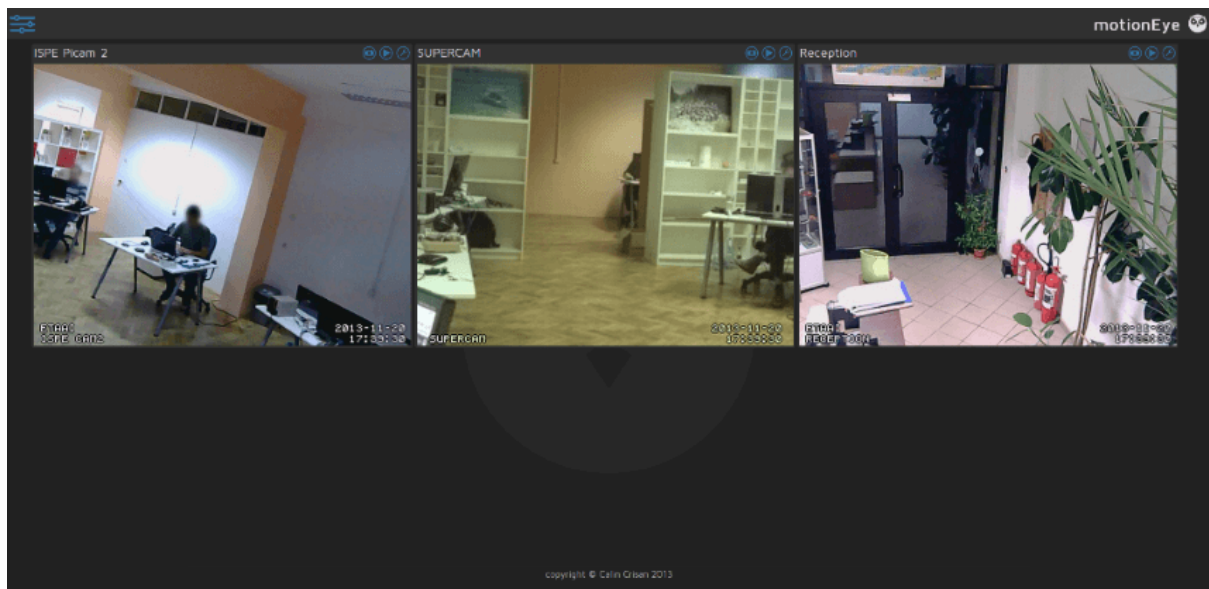
The ZeroView is great for keeping an eye on your driveway, garden, front door or any other area overlooked by windows.

MotionEyeOS is an excellent application that turns your Raspberry Pi into an IP camera, allowing you to monitor your camera module's live stream from your phone, laptop, tablet or any other device that offers a web browser.

Tip: You can even view the stream from outside of your home (network) if you forward ports and set up a dynamic DNS.


MotionEyeOS is installed as an image to your SD card, and will require a Model B Raspberry Pi to set up as an Ethernet router connection is required to identify the IP address and configure WiFi:

<https://github.com/ccrisan/motioneyeos/wiki>




FAQs


 **Can I use the ZeroView with any Raspberry Pi?**

 The ZeroView can only be used with the Pi Zero and A+ Raspberry Pi due to the location of the suction cups.


 **How do I remove the ZeroView from a window once secured?**

 First, push the ZeroView board upwards to release it from the suction cups. With the board removed, lift the suction cups away from the window using the small tabs on the edges.


 **Can I use the old camera module with the ZeroView?**

 The ZeroView works with the original (v1.3) and new (v2.1) camera modules. The cut out in the middle of the board ensures that both types fit without any bending or pressure.

 **Can I use HATs with the ZeroView?**

 Yes! Your Pi Zero/A+ faces out from the rear of the board, allowing full access to the GPIO pins and mounting holes.

 **Is it safe to bend my camera cable?**

 The camera cable only requires a few gentle bends to tuck away between the Raspberry Pi and the ZeroView. You will not need to 'pinch' any sharp angles into the cable. This is perfectly safe for your camera cable.

 **How do I power my Raspberry Pi when using the ZeroView?**

A. You can power your Raspberry Pi the usual way, using a wall plug or battery pack. The Pi's micro-USB power connection is facing the bottom of the ZeroView, allowing a cable to trail up from your power source.

 **Can I use the NoIR camera module with the ZeroView?**

A. The NoIR module fits the ZeroView board and will work in the same way as the standard camera module, however you should ensure a source of infra-red light is used on your photography subject.

 **What surfaces does the ZeroView work on?**

A. The included suction cups are designed to work with clean, flat glass. Other surfaces may not provide the secure fixing that glass offers. Materials with any kind of texture will not perform well.

 **Can I use the ZeroView with double glazing?**

A. Yes! Whilst at some angles or conditions there may be some minor glare or reflection, for the majority of scenarios using the ZeroView with double glazing works very well. Test your setup and adjust if required.