

Using the OpenFlexure microscope

(OpenFlexure Microscope v7.0.0-beta5 - low cost)

(OpenFlexure operating system image V3-alpha5)

This user manual is complementary to official documentation

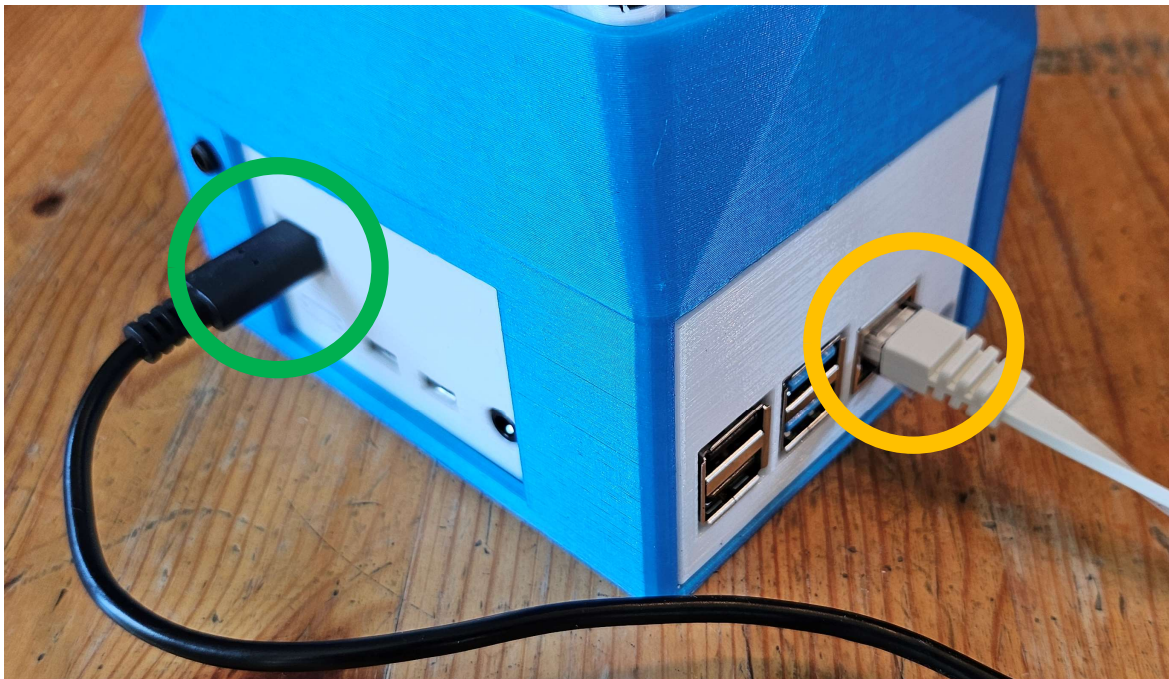
(<https://openflexure.org/projects/microscope/control>).

Per Wilhelmsson (info@pkiutv.se - pkiw.github.io)

(last updated 2026-07-14)

1. Power and network cable

Connect the **power** and **network cable** to the microscope.

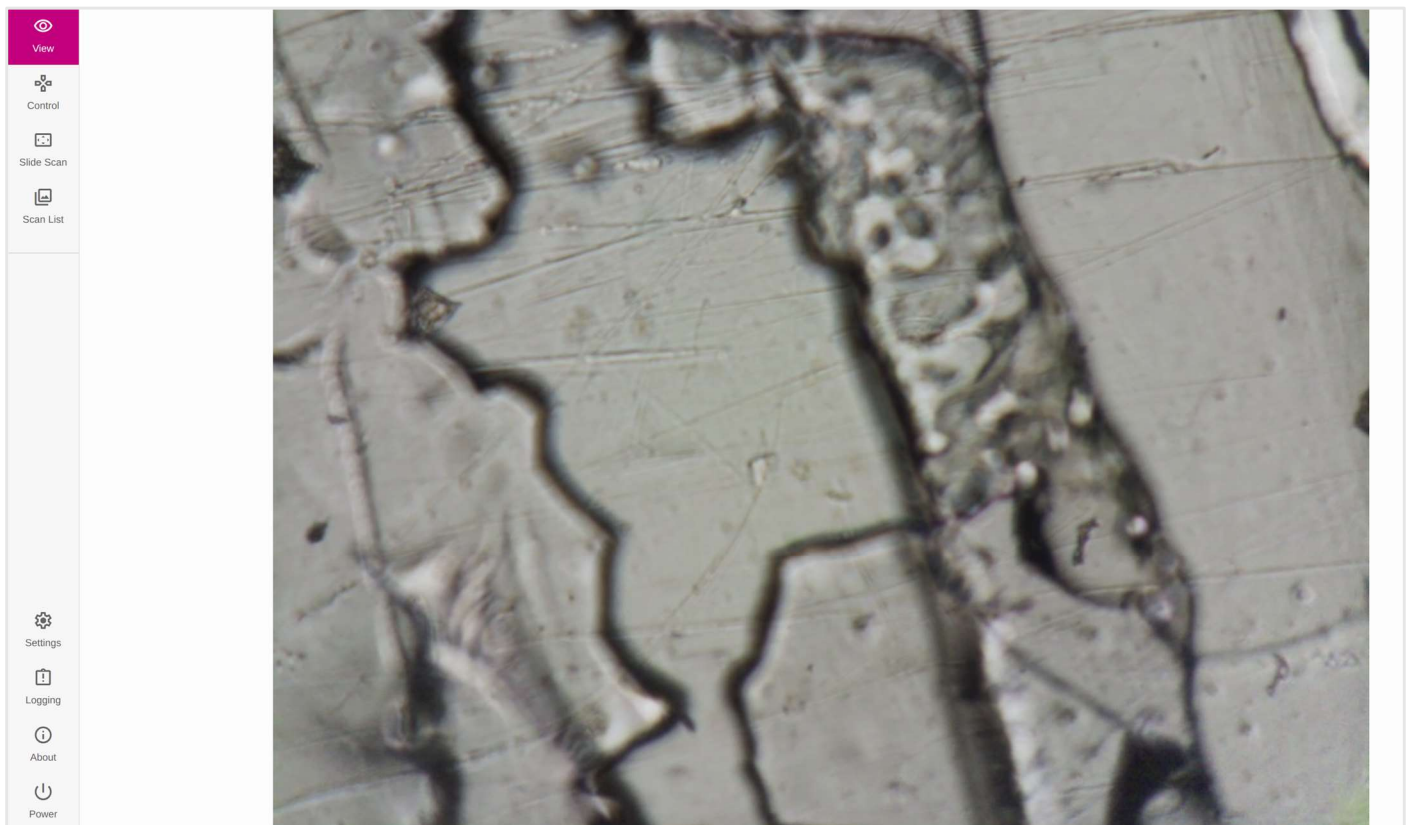


Connect the other end of the network cable to your computer. If your computer does not have network cable socket, make sure to use an adaptor (USB to Ethernet).

2. Connecting to the microscope

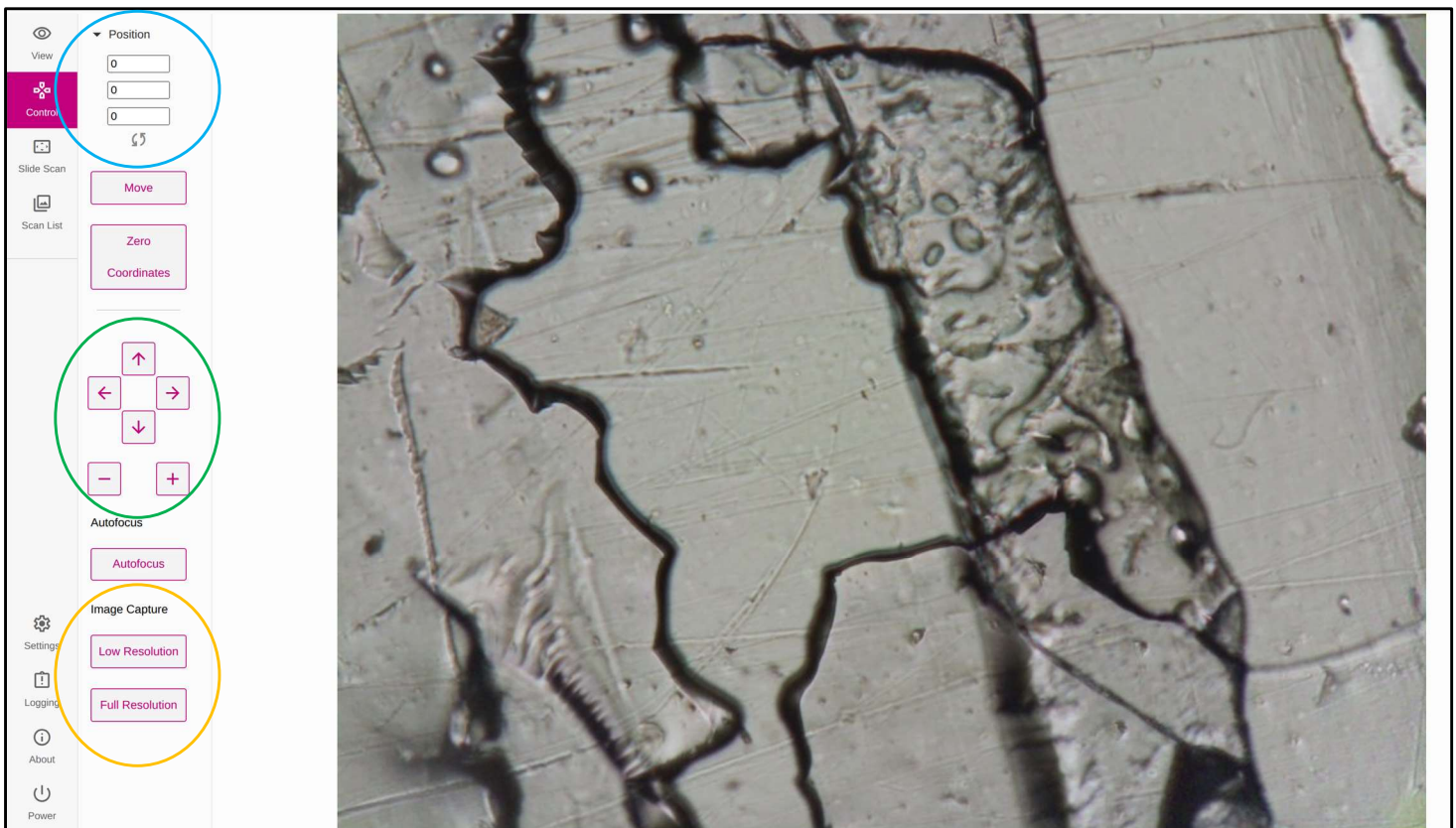
While being connected via ethernet cable or being on the same Wi-Fi, it is possible to connect to the microscope using a web browser. To do this you first have to know the name of the microscope (hostname). The hostname of the microscope might be written down on the microscope or given as accompanying information. Using the microscopes **hostname** you write `http://hostname.local:5000/` in your browser exchanging "**hostname**" with the microscopes actual hostname. E.g if the hostname is "sjolabb", the browser address would be <http://sjolabb.local:5000/>

You will then reach the microscope interface view:



3. Panes - Control

On the left most side of the interface are different panes. Under the "Control" pane are options to manoeuvre the microscope and capture images. The microscope can be manoeuvred using the arrow keys on the keyboard (pgup and pgdn to change focus plane), by directly double clicking with the mouse in the view where the camera should centre (scroll wheel to change focus plane) or by clicking the **arrows** and **+/-**. **+** and **-** changes the focus plane, moving the camera up and down. Images are captured by either clicking "**Low Resolution**" or "**Full Resolution**" and will be saved to your computer.

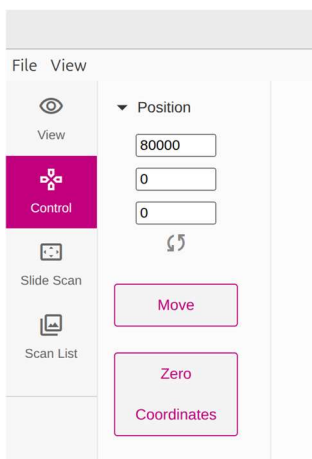


At the top, under "**Positions**", the coordinate position of the microscope stage (x/y/z-axis, where z-axis refers to the cameras movement) are displayed.

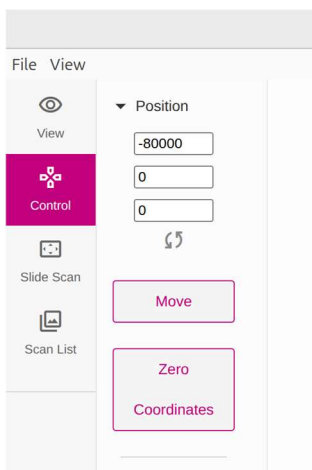
When manoeuvring the microscope these position values will change correspondingly. One view width (moving a complete screen width from left to right side) corresponds to ~ 8000 steps on the x-axis and the view height (moving a complete screen height from top to bottom) corresponds to ~ 6000 steps on the y-axis.

When moving to far, the microscope will halt due to having reached its max end point. It is therefore good to know in which direction the stage is moving when the position values change.

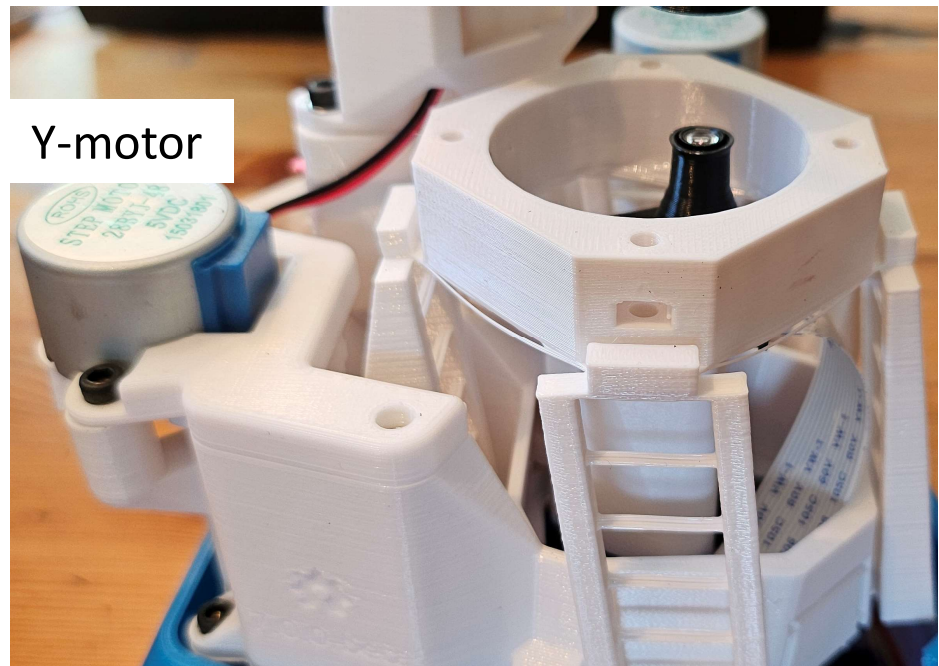
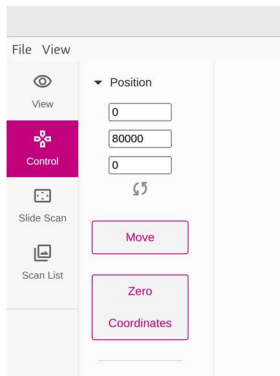
An **increasing** x-value push the stage away from the x-motor



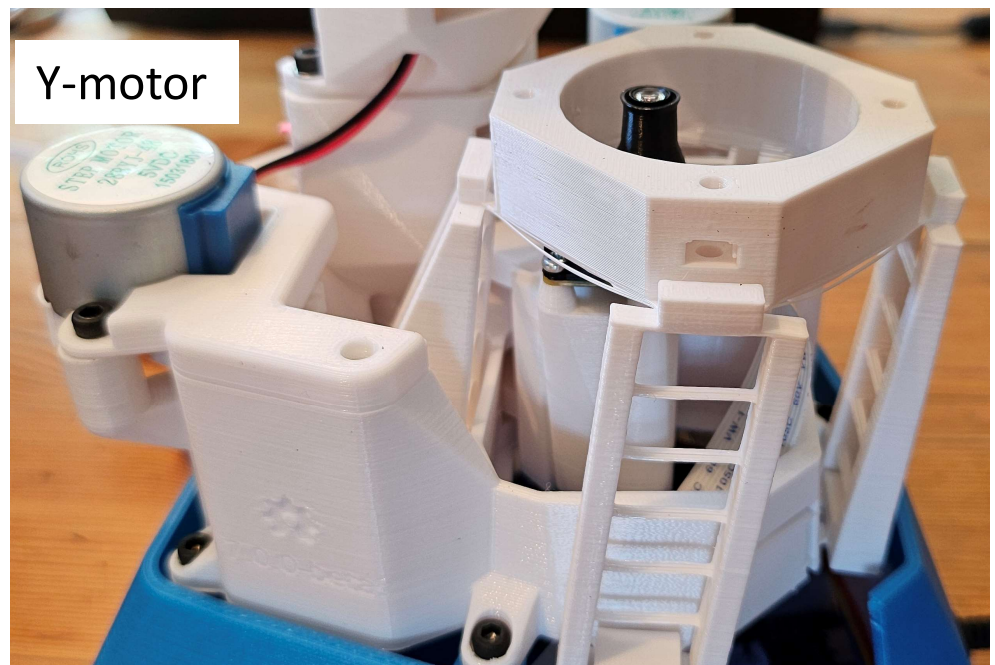
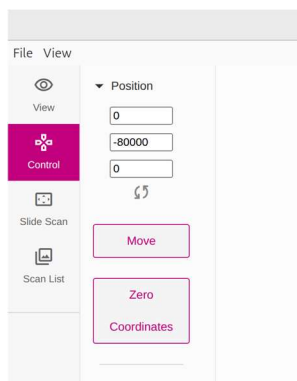
A **decreasing** x-value pulls the stage towards the x-motor



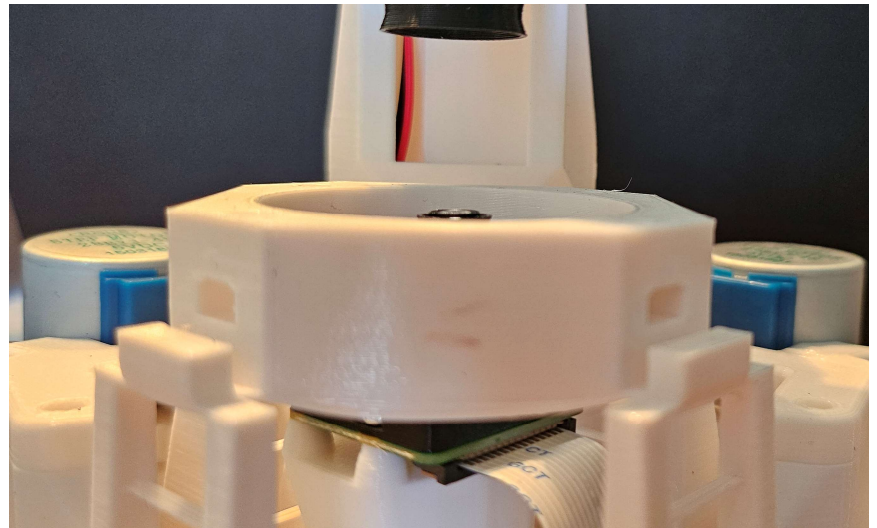
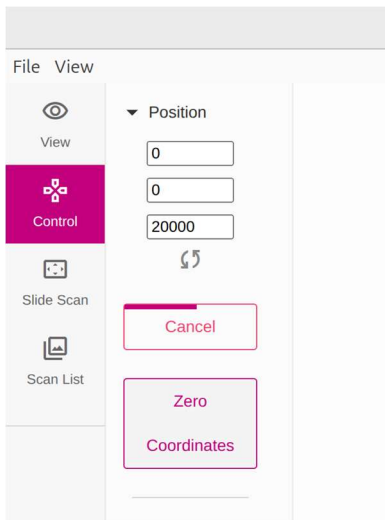
An **increasing** y-value pulls the stage towards the y-motor



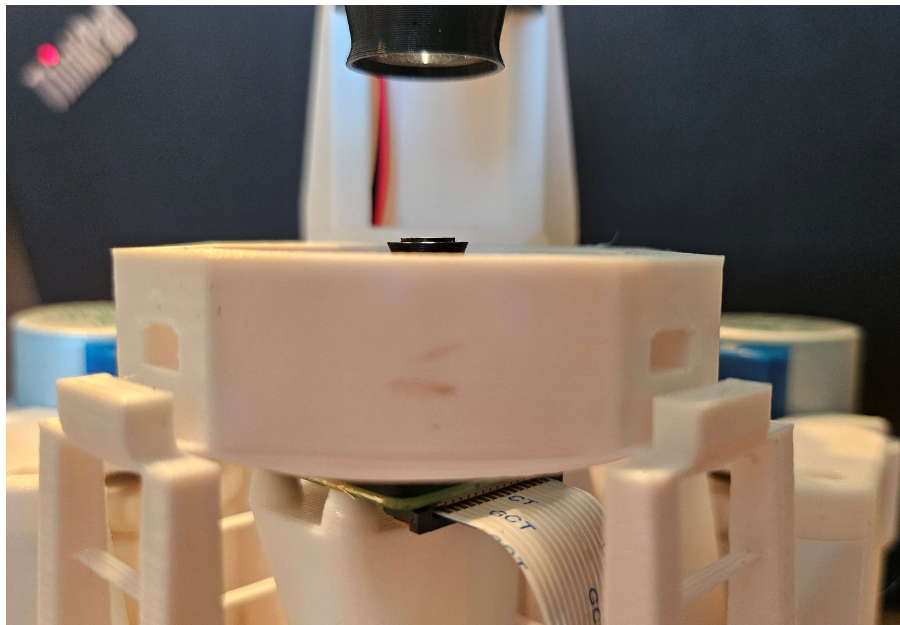
A **decreasing** y-value push the stage away from the y-motor



An **increasing** z-value lowers the camera platform



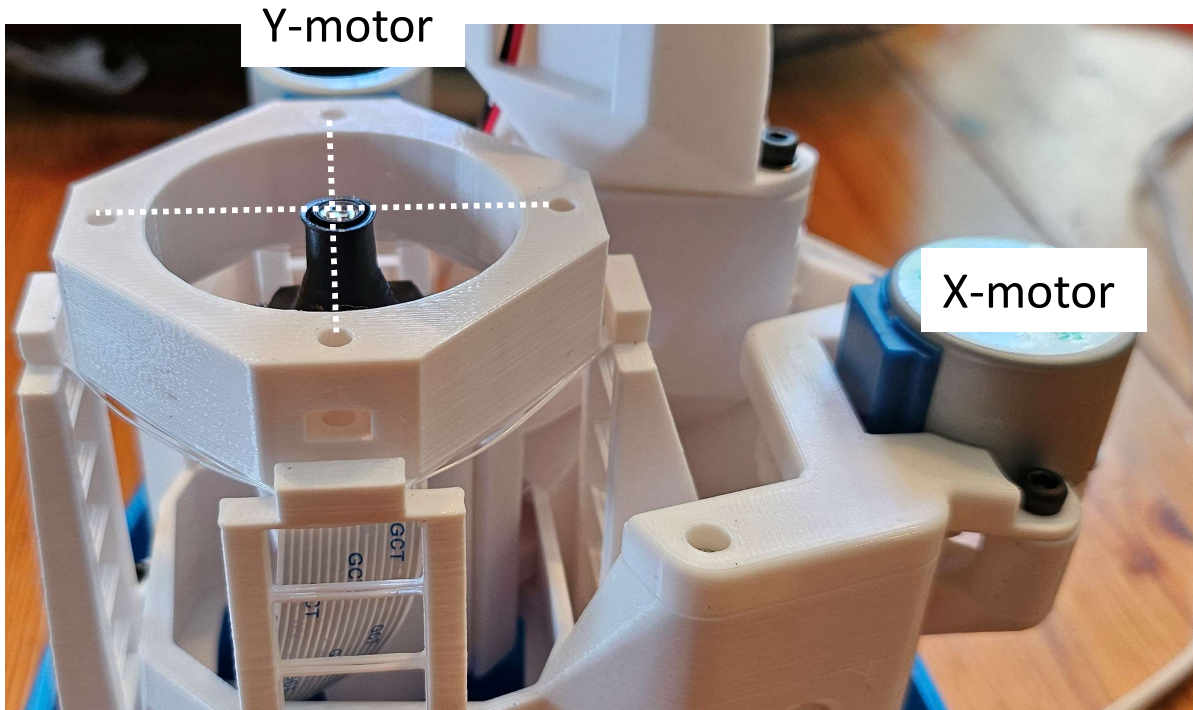
A **decreasing** z-value lifts the camera platform



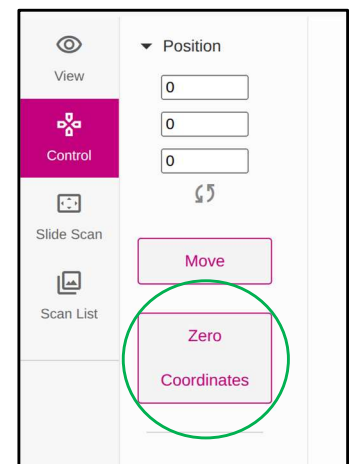
Attention! Directions in which the stage and camera platform moves can vary depending on microscope versions. E.g. increasing and decreasing values can yield different outcomes than exemplified here. It is therefore always good practice to test and note how the microscope respond to increasing and decreasing values (x/y/z).

Good to know when navigating the microscope!

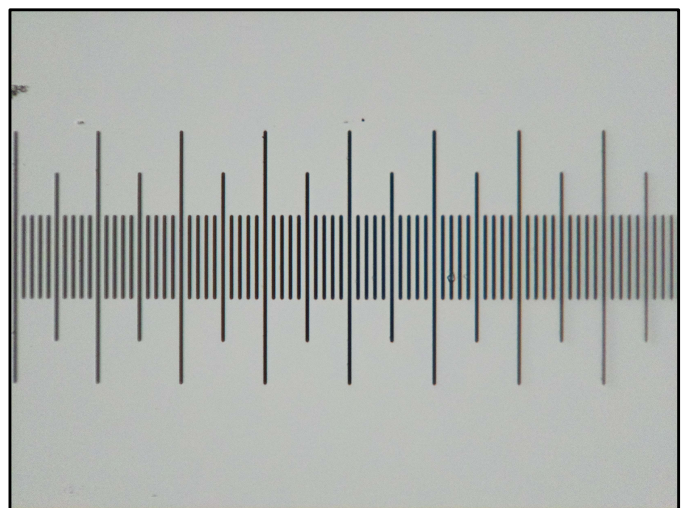
It is good practice to finish a microscope session with the stage in a position where the camera is centred in the middle (dotted white line below)



While the microscope stage is centred, pressing **"Zero Coordinates"** will reset the position coordinates giving the centred position coordinates 0,0,0 (x/y/z). This will make it easier when finding the way back to the centred starting position at the end of a microscope session.

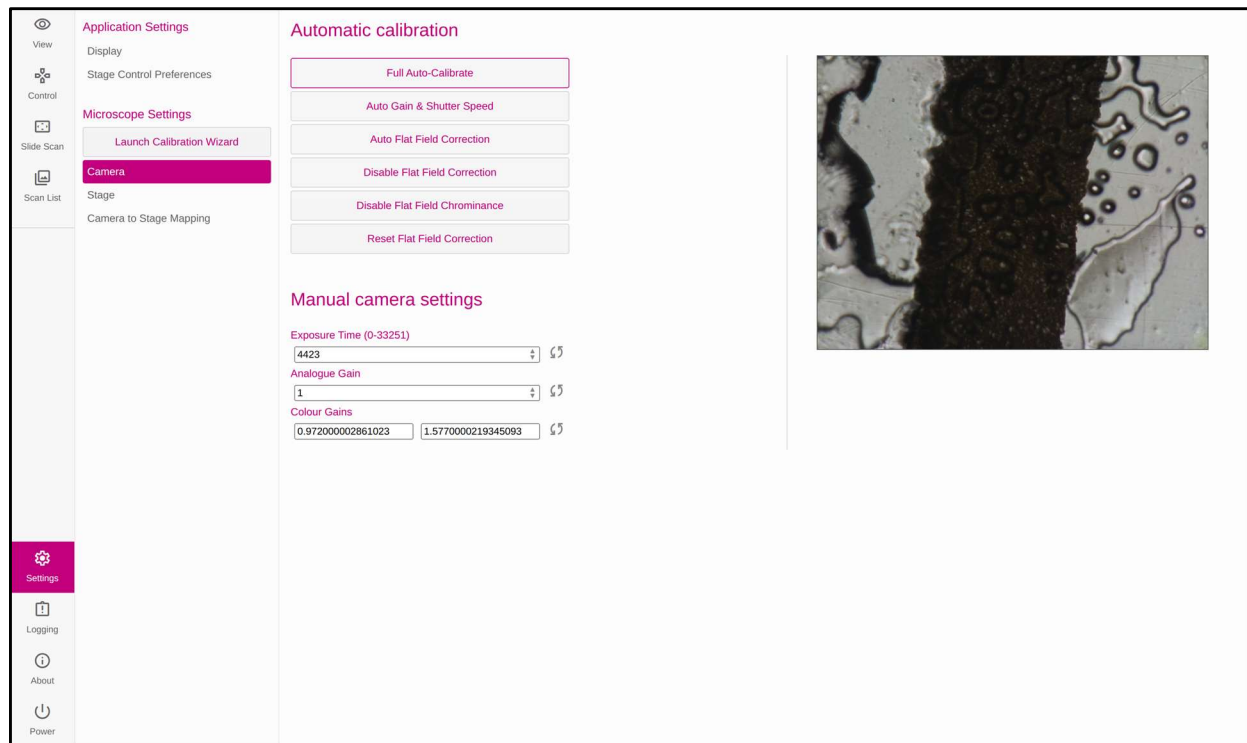


The microscope field of view is ~ 0.8 mm ($800\text{ }\mu\text{m}$) from left to right.



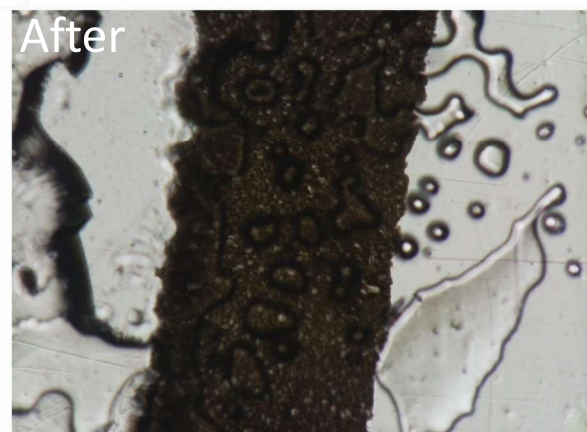
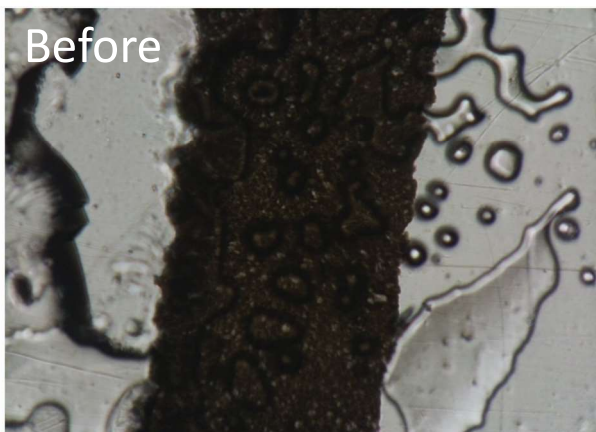
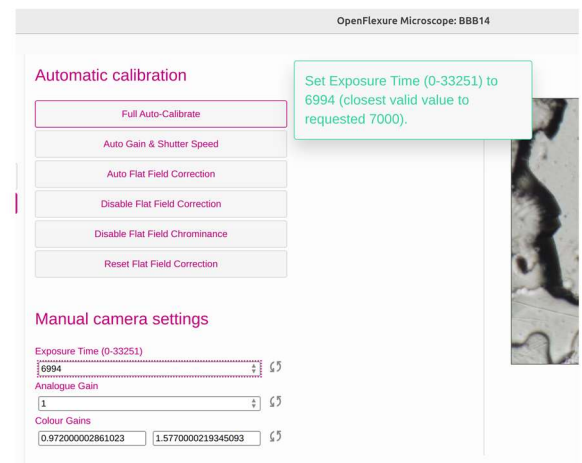
4. Panes - Settings

Under the "Settings" pane it is possible to change different settings.

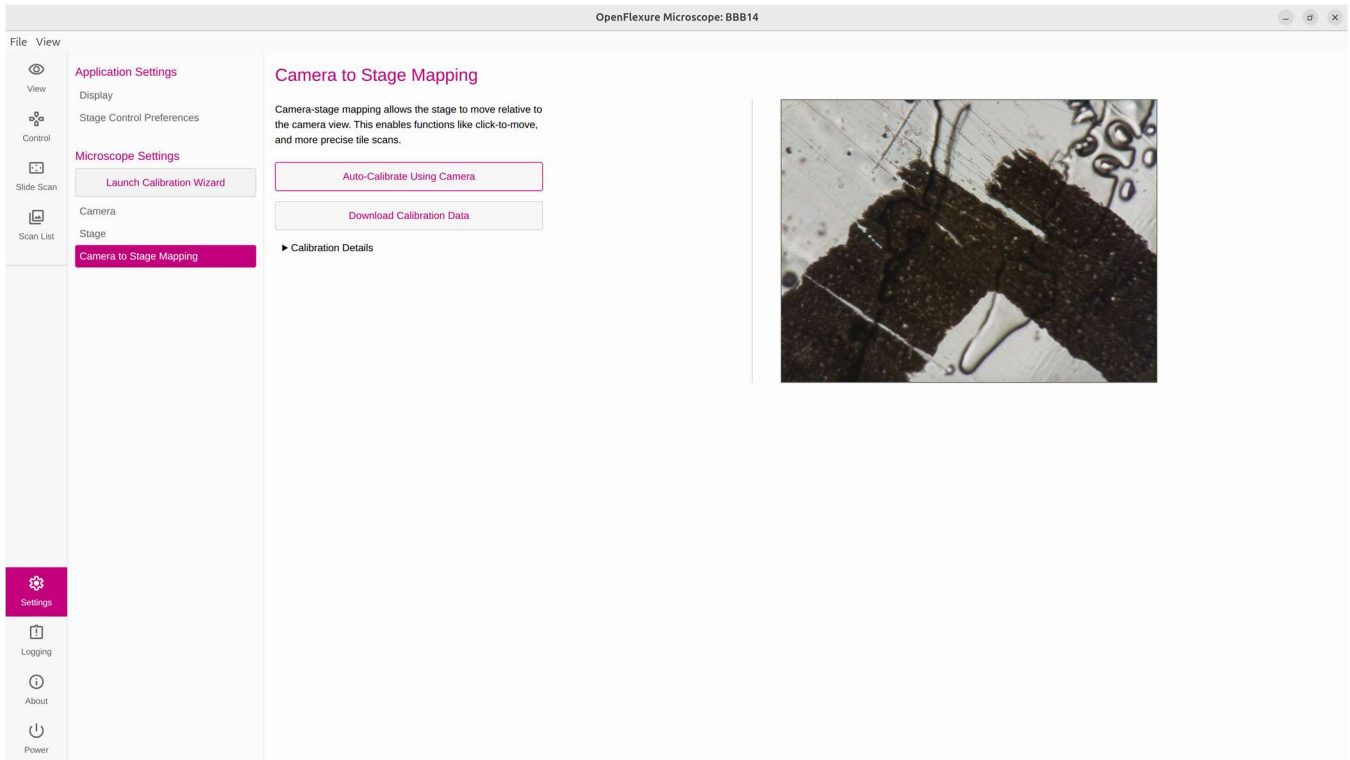


Under "Camera" it is possible to re-calibrate the camera and change specific camera settings.

Attention! If the image is too dark, it is possible to compensate by increasing the exposure time. E.g. below, changing from 4400 till 7000, makes the image brighter.



Under "Camera to Stage Mapping" it is possible to calibrate the motors to enable click to move. The calibration requires a sample with strong features for the camera and motors to synchronise.



5. Panes - Power

On the bottom most pane, "Power", there is a button to shutdown the microscope. It is good practice to do this before unplugging the power cable.

