

Assembly Video Transcript

This video explains how to assemble the optical elements on the rail after you have finished the subassemblies as outlined in the manual.

Using a rail carrier labeled XT34TR1, mount the monochrome camera on the left side of the rail. The center of the SM1 lens tube should be 9.5 cm above the rail. Mark this height with a post collar.

Next, mount the condenser on the rail and adjust it to the same height as the camera. It is helpful to slide the condenser up against the SM1 lens tube for alignment. Mark this height with a post collar.

Remove the condenser and repeat this step with the collector lens, lamp, color camera, and objective.

Now that these elements are set at the correct height, the next step is to focus the condenser.

To do this, begin by mounting the lamp on the right side of the rail. Mount the condenser at an arbitrary spot with the aperture iris facing the lamp. Then, turn on the lamp. Open the ThorCam software, start a line scan, and increase the exposure.

Close down the aperture iris on the condenser until you can see it in your image. Adjust the angle of the condenser so the aperture iris is centered. Change the focus of the condenser lens until the aperture iris is sharply defined in the image. Secure the focus with the locking ring. Now the aperture iris is in the back focus of the condenser lens.

Remove the condenser and repeat this step to focus the objective. Make sure the iris on the objective is facing the lamp.

The final step of assembly is to place the elements on the rail.

Place the sample stage 43 cm from the left edge of the rail. Then mount the objective lens 2.5 cm left of sample stage. Mount the condenser 5 cm right of the sample stage.

Place the collector lens to the left of the lamp. To find the correct position translate it back and forth until the light is centered on the aperture iris of the condenser.

Place the field Iris 1 cm left of collector lens. Check that the light is still centered on the aperture iris of the condenser.

To the left of the field iris, place the color filter with the arrow on the label pointing to the sample stage. To the left of the color filter, place the neutral density filter wheel, again with the arrow on the label pointing to the sample stage. The exact height and position on the rail is not critical.

Place the beamsplitter to the left of the objective and to the right of the dog-leg. The angle can be adjusted later.

Lastly, place the color camera, also known as the back focal plane camera, on the dog-leg with the longer rail carrier, labeled XT34TR2.

Now that the components are assembled on the rail, the next video shows how to achieve Köhler Illumination with this setup.