Operating instructions for the focusable LM direct imager adapter for phototubes for interchangeable lens system

	Connecting the camera and the LM adapter: Make sure that the tip of the **bayonet thread is exactly on the tip of the camera thread** before **turning clockwise** until it locks into place. If necessary, hold down the button for releasing the camera thread.
	Attach the entire unit (LM digital adapter and camera) to the C-mount photoport of your microscope by screwing it onto the C-mount threading.
	Adjusting the camera position: Thanks to the **modular construction** of the camera bayonet adapter, the camera can be positioned according to the user's specific requirements. Slightly loosen the small screws, **position** the camera as required and then **secure** it in the desired position by tightening the three screws.
	Adjusting the focus through the eyepieces of laboratory microscopes For the **first tests**, select a **low magnification** to **focus** the image through the microscope's **eyepieces**. For laboratory microscopes, rotate the 10 x microscope lens into position. Using the microscope focusing mechanism, the image can now be **focussed through the observation tube**.

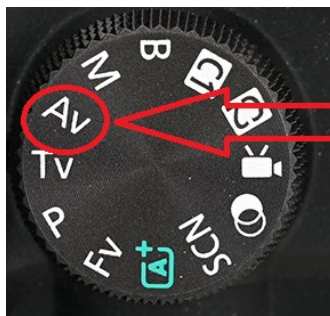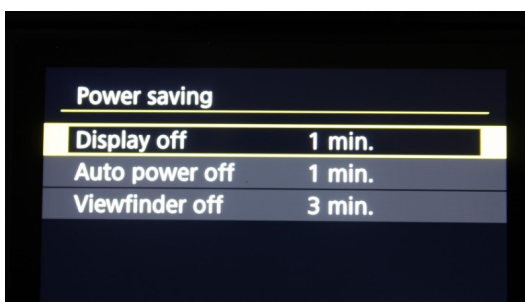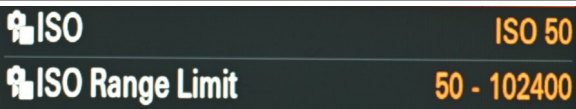|	
	Adjusting the focus through the eyepieces of stereo microscopes For microscopes with **zoom lenses**, select a **low magnification** in the zoom settings. Using the microscope focusing mechanism, the image can now be focussed through the observation tube.
	Plan achromatic, plan fluor or plan apochromatic microscope lenses are optimal for perfect micro images.
	Switch the **camera on** to get started.
	Exposure settings: We recommend working in **AV/A mode** with **automated aperture priority**. The camera then **automatically selects the shutter speed** needed to make a correct exposure. **If the automatic aperture control mode cannot be set, you can also work in "M" (manual) mode.**
	Disabling the power saving features: When used in a **stationary setting (lab or studio)**, the camera is usually connected to an external power source. In that case, we recommend **disabling the camera's power saving features** in the menu for more convenient use of the camera. Autopower OFF ==> Disable Display OFF ==> Disable
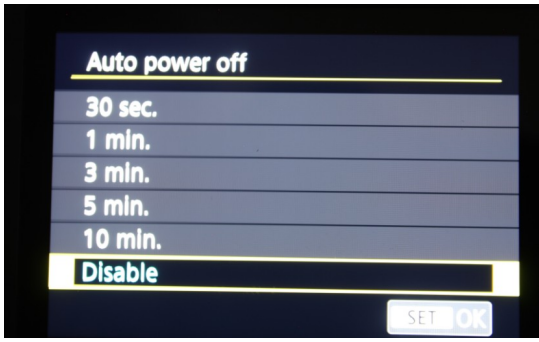
	Some cameras by default require a lens to be attached in order to release the shutter. If this is the case with your camera, select the "**release without lens**" option in the camera menu (wording varies from manufacturer to manufacturer).
	In conditions with homogeneous illumination and high light intensity, the **best results are obtained at low ISO sensor settings (50 to 200).** Low ISO speeds optimise the camera's **dynamic range.**
	When capturing moving live objects, where **illumination** is only possible to a **certain extent**, the best way to get optimal results is using the **camera's Auto ISO mode**. The camera then automatically adjusts the ISO to ensure the image is neither under- or overexposed. Using an **additional flash** with motion shots is also a good way to counter low light conditions and get a sharp focus on moving subjects. Another effective method in motion shots is to use a flash in combination with continuous lighting.
	Using the camera's viewfinder or a right angle viewfinder, focus the microscope image by means of the microscope focusing mechanism. Cameras with **Live View** and **magnification** capabilities (7x/10x/14x) are ideal for precise focusing. A magnification function is advantageous, as the camera display does not have the same resolution as the sensor. Not all camera models have a magnification function. It is also worthwhile using an external HD monitor, which ideally is connected to the camera via an HDMI connection.

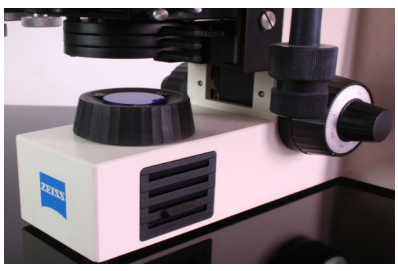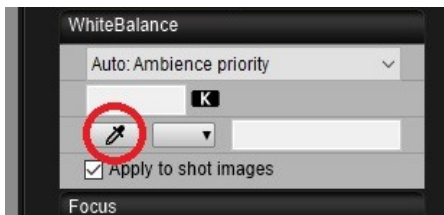|	
	Individual focus alignment of eyepiece and camera system The LM adapter solution is **pre-configured to standard factory settings**. To achieve an **individual alignment** of the camera system, you can change the length of the adapter solution **in order to fine-tune the camera's focus**. Loosen the silver ring (knurled screw, 2). The adapter length can be decreased by clockwise rotation and increased by counter-clockwise rotation of the lower adapter part. While checking the live image on the camera screen or the external monitor, the optimum position can now be determined. Once the adjustment is complete, secure the adapter by tightening the silver knurled screw. Please note that adjustments made in the eyepiece dioptre settings have an impact on parfocality!
	To expand the available range of uses, a 5 mm C-mount extender is included with this microscope adapter. If you are working with instruments that do not conform to the C-mount standard, you can remove the extender.
	Whenever possible, **bright** microscope **illumination**, halogen illumination, LED or a flash unit designed for short flash durations is recommended. If needed, you can insert a daylight filter (light blue) into the illumination beam path or use your camera's controls to adjust the white balance.
	Blurred images are mostly caused by releasing the shutter manually. This leads to **vibrations**, which are picked up as motion blurs in the images. To avoid motion blurs, we recommend that you use a **remote control** release. Otherwise it is also possible to use the digital camera's self-timer function.
	Tethering software: Use Live View to control the camera from a PC or Mac

	The most elegant solution is to control the camera remotely from the computer. Once the subject is in focus, the user only needs to tap the shutter button to take a photo. The images are usually transferred directly to the hard drive and stored there. Most camera models also support shooting without an SD card installed.
	For high image quality and natural-looking colours, the camera should be **white balanced**. This can be done in the camera menu by changing the Kelvin temperature of the light source, or, for more precise adjustments, with the camera control software on the computer. With the Canon EOS Utilities software, for example, the white balance can be adjusted with the **eyedropper tool**. Just use a white object as a reference, and with one click, the white balancing is done.