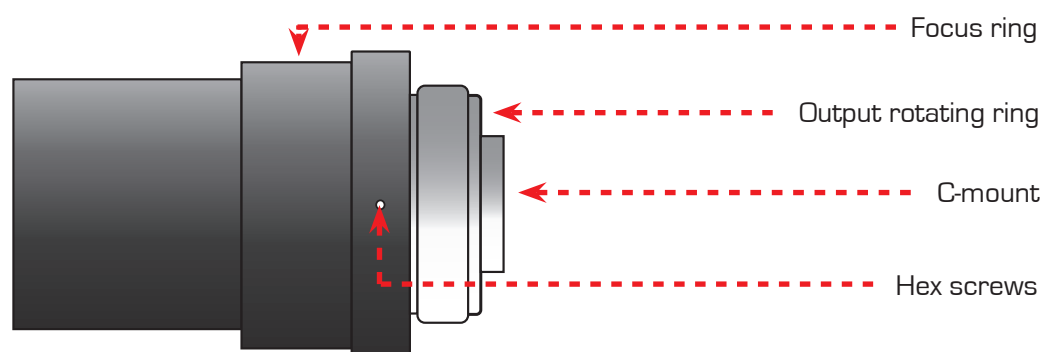# OPTOMASK

OPTOMASK

The Optomask is a relay device which allows for flexible and precise rectangular aperture control in order to take advantage of faster acquisition rates when using sub-arrays on EMCCD cameras. The OptoMask optically masks the area of the sensor outside of a defined sub-array ROI (Region of Interest) anywhere within the field of view of the sensor.
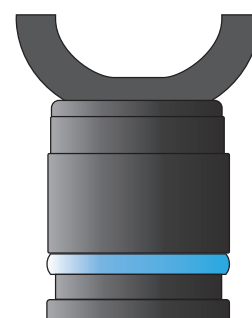
Focusing and alignment

In order to achieve optimal optical masking, the blades of the OptoMask should be in sharp focus relative to both the sample and the camera sensor and operate parallel to the camera sensor limits. The OptoMask is factory calibrated and tested, but a user adjustable fine focus is provided to allow for any variability in sensor Z position between cameras. The following procedure should be followed for final optimisation:

Focus ring
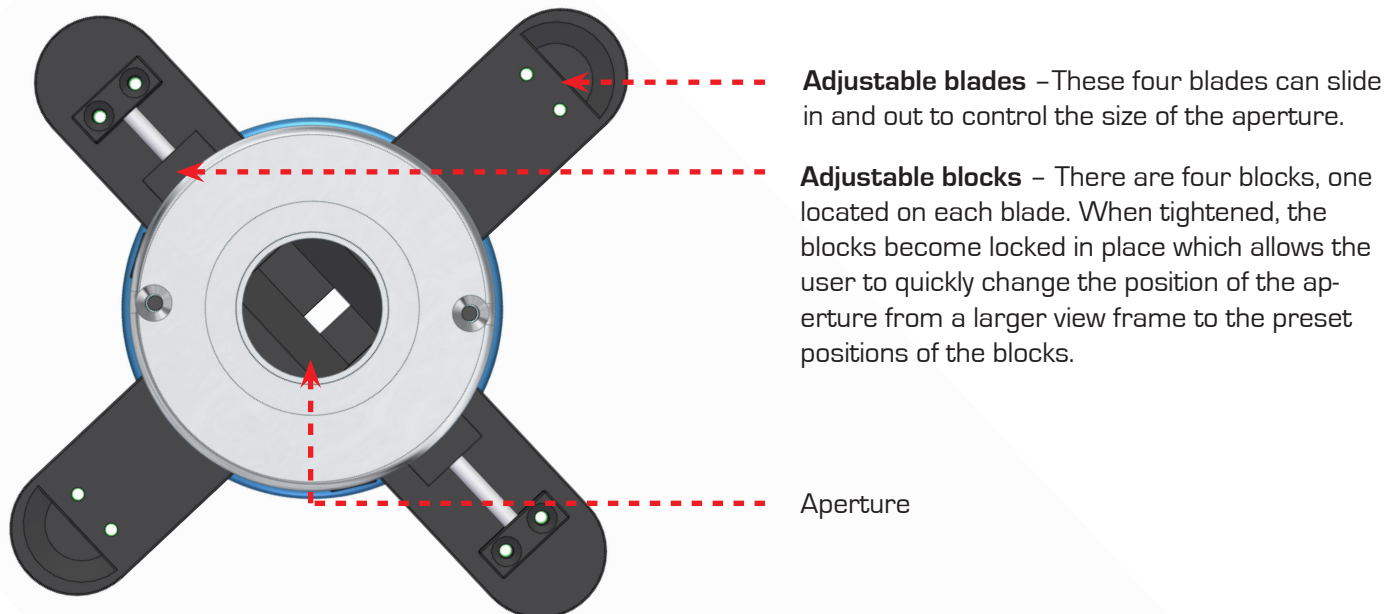Output rotating ring
C-mount
Hex screws

- Install the OptoMask onto the C Mount port of a microscope, camera lens or other optical device. Power up the camera and launch your software to display full sensor live images.
- Untighten the Hex grub screws on both the output rotating ring and the focus ring.
- Using the aperture control / adjustment blades, reduce the size of the aperture so that it is clearly visible within the camera image and orientate the camera so that the operation of the aperture blades runs parallel to the edges of the image - you can now lock off the Hex screws on the output rotating ring.
- Adjusting the knurled focus ring, make sure that the edges of the aperture are as sharp as possible (this will be easier to see if the microscope is out of focus so that only the blades are sharp).
- Verify that the system is now infinity corrected by bringing a high contrast object on the microscope stage into focus at the same point as the aperture – both should be in sharp focus on the image relayed to the camera - you can now lock off the Hex screws on the focus ring. If in any doubt then a useful test is to image a graticule and confirm that the OptoMask is operating at unity magnification.

Support Jack Assembly

The OptoMask is supplied with a support jack to carry the weight of the unit and to ensure that it sits in the same plane as the microscope or other optical system. The base height can be adjusted and locked in position with the blue locking collar. The jack should be placed as close as possible to the camera to provide maximum support.

OPTOMASK

Optomask components

Adjustable blades – These four blades can slide in and out to control the size of the aperture.

Adjustable blocks – There are four blocks, one located on each blade. When tightened, the blocks become locked in place which allows the user to quickly change the position of the aperture from a larger view frame to the preset positions of the blocks.

Aperture

To avoid light leakage to masked pixels then the frame should be set so that it is slightly smaller than the selected region. If using the full sensor then it is acceptable to increase this size slightly so as to be marginally bigger than the active area, but we would not recommend that the blades simply be opened fully due to the risk of scattered photons reaching the sensor.

Software integration / configuration

Please refer to your software and camera's manuals to configure image acquisition using sub-arrays. (we are happy to advise on this in MicroManager or MetaMorph)