Miles Research Iris Cameras

Jon Miles, Jan 2016

How to Select an Iris Camera

Miles Research offers a range of iris cameras that are designed for maximum image quality, with superior illumination, versatility, and ease of use. As the owner and developer, Jon Miles has been designing eye cameras since 1981, initially for ophthalmology research at University of Michigan. During the last 25 years in southern California, the iris camera and illuminators have been perfected to a high degree.

It is best to select a high-resolution iris camera that is modular and can be used for many imaging subjects, not just the iris. All Miles Research iris cameras include both a precision macro lens as well as a general-purpose zoom lens (18-55mm) which is ideal for all sorts of imaging including indoor and outdoor photos. This alternate lens is included in the carry case, and any other Nikon lens can also be used with the camera.

The camera systems are presently based on the 24 megapixel Nikon DSLRs and use the Nikon macro lens. The illuminators can be adapted to work with most any type of DSLR but Nikon is the preferred choice.

The professional models range from $2000 to $3300, and custom configurations are also available. A complete system with camera and professional chinrest ranges in cost from $3300 to $4400, depending on illuminator type (single channel: HCB & SCL; dual channel: FSL &ASL; 3-channel: CFSL & CASL).

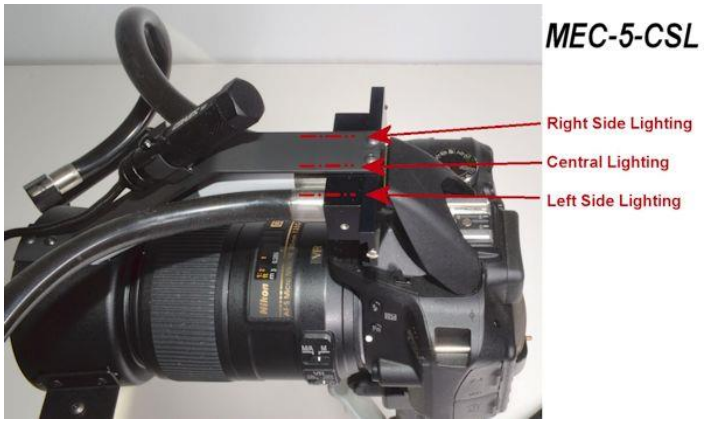
Each camera comes with unlimited technical support and each illuminator includes a lifetime warranty. Lens-Illuminator Kits are available to work with any Nikon DSLR, and Illuminator-Only Kits are available to work with any Nikon DSLR and the Nikon 85mm macro lens.

The first consideration in selecting an iris camera is whether to get central lighting (HCB model, Hood-Mount Coaxial Biometric), or side lighting (ASL model, Adjustable Side Lighting), or the newer combo model that has both (CSL model, Central and Side Lighting).

Three models of iris camera: side-lighting ASL (left), central lighting HCB (middle), combo CSL (right)

These are the three most popular types of illuminators. The side-lighting (ASL) is more versatile and often gives better results with the dark brown iris. The central lighting type (HCB) is less expensive, simpler and faster to use. The new 3-channel combo-lighting offers maximum versatility, with quick switching between central and side lighting modes.

The illuminators are designed to last a lifetime (has lifetime warranty) and the camera body can be upgraded at any time in the future. The chinrests also have a lifetime warranty and are designed to last a lifetime.



Miles has been developing both eye cameras and best practice for 33 years - the preferred approach is to take all client photos with both central and side-lighting, so the CSL combo illuminator is the preferred option. It was found that with most blue iris, the central lighting is preferable, for the darker brown iris, the side-lighting is preferable.

The advantage of central lighting is simplicity of use, repeatability of imaging parameters, and lower cost; the advantage of the ASL or CSL is more versatility and more control over the lighting angle. Any of these cameras are a better solution than a photo-slitlamp.

For a chinrest, there is also a range of options priced from a few hundred dollars to the preferred professional model.

Use of a chinrest allows for expedited imaging and more consistent results; it is also a more professional option and is particularly well-suited to the busy clinic or instructional environment. For clients who are in a wheelchair or bed ridden, the camera is easily dismounted from the chinrest via a quick release and handheld photography is also easy to do. Another advantage of the chinrest is that one can attach the camera to a computer via a USB cord and see the image immediately on the computer screen (using the excellent and recommended free camera control software from www.digicamcontrol.com). Also recommended is an inexpensive overbed table (about $50 from Amazon.com), which has a convenient height adjustment. Both the photographer and client should be seated in a pneumatic-lift office or task chair for best results.

There are many sample images and articles on iris photography (as well as camera product info) available on the Google Drive at:
http://www.tinyurl.com/iris-pics
http://www.tinyurl.com/iris-cameras
http://www.tinyurl.com/eye-photography

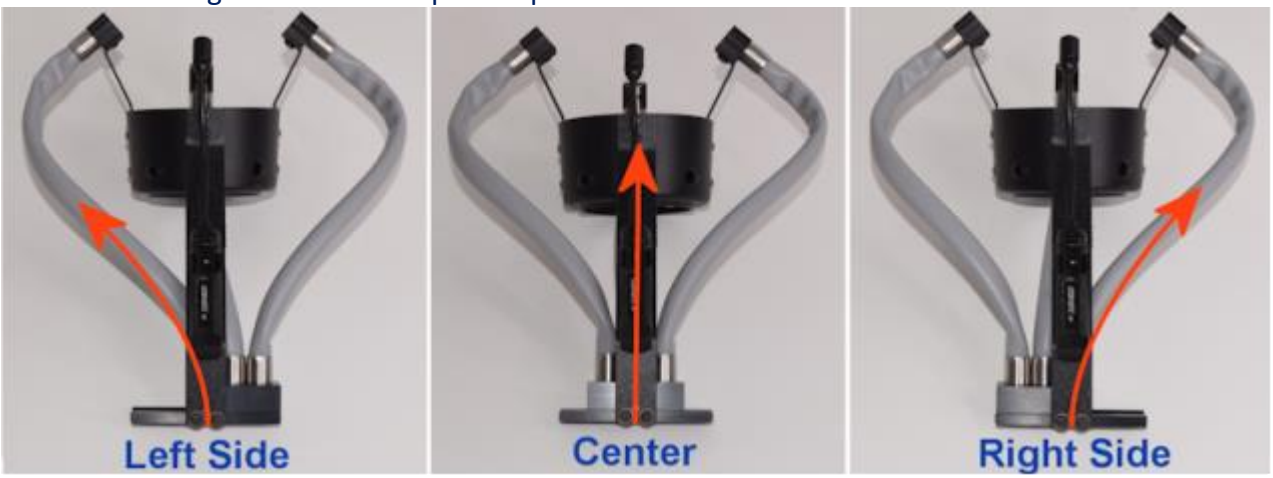
The iris-pics folder has samples of iris photos. To compare the same iris with central and side lighting see the CSL subfolder:
https://drive.google.com/?authuser=0#folders/0B5OBp4zckpLnZlJXTTJzU3BFMWs

The Campbell family iris photos were taken with both types of lighting, and this set illustrates well the difference between central and side lighting.

CFSL (Central and Fixed Side-Lighting) - $3200

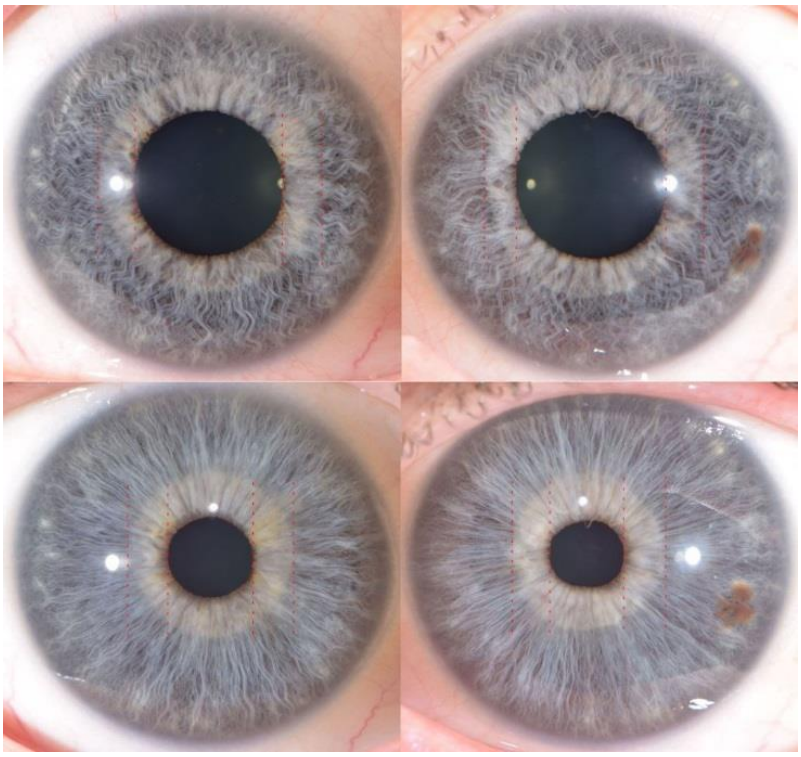
The CFSL is the newest 3-channel illuminator, and is designed to allow for quick and simple switching between either central lighting, or side lighting from either side at a standard 45-degree angle.

The 3-channel light shutter is simple to operate:



The model depicted above also includes the newest type of focus light: the **Integrated Adjustable-Brightness LED Focus Light** (IAB-LFL). The brightness of the LED focus light can be adjusted to control pupil size and for maximum client comfort. Appearance of both iris color and texture is affected by pupil size and some types of imaging protocol (e.g. IPB imaging) can best be done with either a large pupil or small pupil. This focus light is designed to allow the brightness to go to zero right before taking the focused photograph. This focus light can be powered by AC, DC, or USB cord (included).

Example of effect of focus light brightness on apparent iris color and texture:



In this example, the same iris was photographed with the focus light on (bottom pair) and then with the focus light switched off (top pair). Various textural features are easier to identify when the pupil is large, while color features (pigment deposits) are more visible with the smaller pupil.

A similar camera model is the CASL – this 3-channel illuminator has side-lights that can be adjusted to any angle (20 to 90 degrees):

CASL (Central and Adjustable Side-Lighting) - $3300

This is also a new model, and is like the CFSL, except the side-lighting has adjustable angles (20 to 90 degrees from lens axis). This gives maximum versatility but may be more than necessary for routine clinical use.
The CFSL illuminator can also be made with the 4-point central or the upper central light. I prefer the version shown here.

The dual-channel Fixed Side-Lighting illuminator is the most popular and top-recommended illuminator, and with fixed side-light angles of 45 degrees this is very simple to operate:

FSL (Fixed Side-Lighting) - $2850

The Fixed Side-Lighting model is also new and

ASL (Adjustable Side Lighting) - $2900

This is also versatile with a range of adjustable lighting angles. Central lighting can be approximated by putting the two side lights nearest to the center (about 20 degrees from lens axis).

HCB (Central Lighting) - $2700

This is the classic simple, central lighting camera. It is ideal for biometric or biomedical use. The light is positioned at 11 degrees from the axis to avoid shadows and other artifacts. The model depicted above includes the new Adjustable-Brightness Focus Light.

SCL (Single Central Lighting) - $2300

This is the simple, easy-to-use central lighting camera. It is ideal for both human and animal iris imaging. The light is positioned at 13 degrees from the axis to avoid shadows and other artifacts, and to keep the reflection off cornea in the pupil area.

Summary

The complete Miles Eye Camera system (MEC) prices
(each kit includes a 24-megapixel Nikon camera, a macro lens, a zoom lens, illuminator, accessories and a carry case)

MEC-D3200-N85-SCL	$2300
MEC-D3200-N85-HCB	$2700
MEC-D3200-N85-FSL	$2850
MEC-D3200-N85-ASL	$2900
MEC-D3200-N85-CFSL	$3200
MEC-D3200-N85-CASL	$3300

The Lens Illuminator Kits (LIK) prices:
(each kit includes a Nikon macro lens, illuminator, accessories and a carry case)

LIK-N85-SCL	$1700
LIK-N85-HCB	$2100
LIK-N85-FSL	$2250
LIK-N85-ASL	$2300
LIK-N85-CFSL	$2600
LIK-N85-CASL	$2700

Note: Most illuminators can also be made for the Nikon 105mm VR lens and the Canon 100mm macro lens. For an *Illuminator-Only Kit* (IOK: no macro lens included), deduct $500 from the Lens-Illuminator Kit.

For more info:

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