Miles Research
Biometric Imaging

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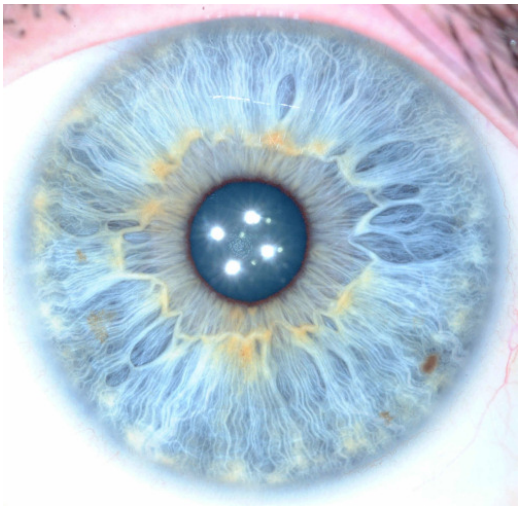
Catalog of Eye Cameras and Accessories



Miles Research - Background

The **Miles Eye Cameras** originated with a need for precise imaging of the iris for biometric analysis and automated feature extraction. The **Coaxial Biometric Illuminator** was developed as a solution to this need.

The central focus at Miles Research during the last 20 years (since relocating from Ann Arbor to San Diego) has been the qualitative and quantitative characterization of the iris with a high level of detail and accuracy. This is the necessary step prior to detecting and identifying subclinical changes, and also as a step along the path that leads toward the larger goal of constructing a quantitative model suitable for characterizing the human iris in general, and in particular from external images of the anterior aspect. A comprehensive baseline study of normal iris characteristics across a broad population is an ongoing project.

The **Miles Eye Camera** has applications in both personal identification (biometrics acquisition and analysis) and health screening (the medical or clinical assessment of eye changes, including changes in the iris, sclera, and conjunctiva), which are detectable from high resolution (6 to 18 megapixel) color images.

The current models of iris camera are based on experience from over 30 years of photographing the eye, starting with 10 years of clinical research at the University of Michigan (during the 1980s) developing biometric profile cameras for studying corneal deflection and material properties, and continuing to 1989 when development of digital systems specifically for iris imaging began. The **Coaxial Biometric (CB) Illuminator** is designed for producing images with a uniformly minimal illumination gradient so that biometric data can be extracted without having to compensate for imaging artifacts such as shadow casting (false dark zones due to off-axis light source) and illumination gradient (one side mostly darker than the other). With the **CB Illuminator**, the corneal reflex (specular reflection of the illumination source off the first surface of the cornea, the 1st Purkinje image) is typically confined to the pupil area and does not need masking from the iris area for measurement procedures.

The current models are the best performing eye cameras available to date. All products are suitable for *clinical or research applications* and *include a lifetime warranty.* **Custom imaging solutions** are available – illuminators are adaptable to any camera system.

More recently, two new models have been made available – the **Dual Side-Lighting (DSL)** which projects the illumination at a 45 degree angle from the camera (lens) axis, and the **Adjustable Side-Lighting (ASL)** model, which has adjustable illumination angles for right and left, typically ranging in angle from 30 to 90 degrees from camera (lens) axis). The **ASL Illuminator** is also ideal for other biometric imaging including face, ears, hands, tongue, etc.

Complete Eye Camera Systems

Complete **Miles Eye Camera** systems include a DSLR camera, a macro lens, a Miles Eye Illuminator with focus light, a spare zoom lens, and accessories (memory card, spare camera battery, charger, cords, card reader, carry case).

For the MEC-4 Models: The standard DSLR is currently the Nikon D3100, a **14-megapixel** DX format with 12-bit raw capture. The standard lens is the Nikon 105mm VR macro lens.

For the MEC-4-Canon Models: The Canon option is based on the **15-megapixel** Canon EOS 500D (T1i) and Canon 100mm macro lens.

Full Systems (MEC-4 = 12-14 megapixel)
- MEC-4-LM-CB – Lens-Mount Coaxial Biometric ($3150)
- MEC-4-HM-CB – Hood-Mount Coaxial Biometric ($3150)
- MEC-4-HM-ASL – Hood-Mount Adjustable Side-Lighting ($3150)
- MEC-4-HM-DSL – Hood-Mount Dual Side-Lighting ($3150)
- MEC-4-HM-ACL – Hood-Mount Adjustable Central-Lighting ($2900)
- MEC-4-HM-SCL – Hood-Mount Single Central-Lighting ($2700)

Be sure to check online for the most recent price-product info.

And find sample images for download…
at:
www.mileseye.com

Economy Systems (MEC-2 = 10 megapixel)
- MEC-2-LM-CB ($2950)
- MEC-2s-LM-CB ($2400)
- MEC-2t-HM-DSL ($2400)
- MEC-2t-HM-SSL ($2100)
- MEC-2-HM-SCL ($2500)

Specialty Systems
- MEC-4-LM-CB-ASL – Lens-Mount Coaxial Biometric with Adjustable Side-Lighting ($3600)
- MEC-4-HM-CB-ASL – Hood-Mount Coaxial Biometric with Adjustable Side-Lighting ($3600)
- MEC-4-FL – Flex-Lighting (for research) ($3150)
- MEC-4-*-C (500D) – alternative 15MP Canon DSLR ($3150)
- MEC-5-*-C (550D) – alternative 18MP Canon DSLR ($3200)

Full Systems

The Miles Eye Camera is a line of customized DSLR camera systems that include an illuminator that is optimized for eye photography. The original and primary camera model is **the coaxial biometric illuminator** iris camera (MEC – Miles Eye Camera), also known as MC-CB. Model 4 is based on a 12 megapixel camera. Recently two Side-Lighting illuminators have been made available: DSL – Dual Side-Lighting (flash is at 45 degrees and illumination can be switched to come from left, right, or both directions), and ASL – Adjustable Side-Lighting (flash is adjustable from 20 to 90 degrees from camera axis).

The top-recommended easiest-to-use model is the pro high-res coaxial biometric model (MEC-CB) which is a handheld professional digital SLR combined with a custom eye illumination system, and a complete kit of accessories that comes in an airtight/watertight carry case (17"x14"x8"). This is the primary camera recommended **for iris and sclera photography**, and the illuminator is designed in a modular way to last a lifetime -- it will not become obsolete over the years unlike most eye cameras on the market. All cameras come with a zoom lens (18-55mm VR), and 4 GB memory card (that can hold hundreds of eye images), along with all other accessories and a carry case.

The MEC camera is optimized for handheld use -- normally that is the easiest way to use it, but sometimes a chinrest is preferred, which is available for an extra $1200 with camera ($1300 by itself).

The camera models are available at 4 levels of performance:
MEC-1 – 6 megapixel DSLR with macro lens (Refurbished D40 or D50 with Nikon105 lens) – **economy model**
MEC-2 – 10 megapixel DSLR with macro lens (Currently, D3000+N105) – **standard pro model**
MEC-4 – 14 megapixel DSLR with macro lens (Currently D3100+N105) – **high-resolution pro model**
MEC-5 – 18 megapixel DSLR with macro lens (Currently 550D+C100) – **highest-resolution pro model**

All systems include professional highest-grade optics and components and feature these benefits:

- Complete kit
- Quick setup
- Detailed images
- Easy to use
- Superior optics, including a premium macro lens, and a second digital VR zoom lens for general photography
- Superior illumination – hood-mount illuminators are modular and can be interchanged.
- Reliable & upgradeable technology
- Useful for other photography
- Unlimited technical support
- Generous warranty – *Lifetime warranty for all illuminators!*

Miles Eye Cameras

Features

- Premium digital SLR with interchangeable macro lens
- Provides 6/10/12/15/18-megapixel images (3008x2000/3872 x 2592/4000x3000/4752x3168/5184x3456)
- Accepts SD memory card (up to 8GB) – can hold hundreds of images
- Compact, Portable; Handheld operation with optional chinrest available
- Bright viewfinder image allows for easy focusing
- Flash illumination is guided precisely to the eye via fiberoptic lightguide
- All pictures are uniformly illuminated
- Optics are optimized for iris photography
- Useful for accurate imaging of the iris, sclera or any ½" diameter object
- Can take pictures, print them out, or play them back – all without a computer
- Can use the camera for other photography by mounting a different lens (zoom lens is included)

Includes

- Digital SLR camera with macro lens
- Custom iris illumination system with lightguide and focus light
- 8 GB high-speed SDHC memory card
- High-speed USB 2.0 multi-way card reader (accepts most flash memory card formats)
- MEC-4: TV-Video output cord – can play back with any video monitor or VCR (NTSC or PAL)
- USB cord for direct computer link
- Two camera batteries
- Camera battery charger (120-240 VAC)
- LM-CB only: Focus light batteries (4xAA NiMH 2500mAH)
- LM-CB only: Conditioning AA NiMH battery charger (120-240volt)
- ASL only: Alignment Target
- RFL only: Alignment Target Kit
- Spare lens for general photography: 18-55mm zoom lens with autofocus and vibration reduction
- Airtight, watertight carry case (17" x 14" x 8")
- Picture Project image edit/organize software
- Warranty and technical support

Options

- Nikon Camera Control Pro software (add $180)
- Chinrest with focusing knobs, remote trigger, and capture program ($1200)
- Power Table ($800)
- External Illuminator (for non-portable research and clinical use; add $1800)

MEC-4

The current **high-res pro model is the MEC-4-CB** -- the **14 megapixel D3100** with the superior **Nikon 105mm VR macro lens** and the preferred coaxial biometric illuminator (MEC-4-CB). It is also available in the Canon version using the **EOS 500D(T1I)** 15-megapixel DSLR with the **Canon 100mm macro lens**. The MEC-4 camera supports LiveView, where a video image is available for focusing on-screen rather and when it is operated with the remote control software Nikon Camera Control Pro) – the live image is shown on the computer monitor (or HDTV monitor, or the LCD camera screen) and the photo-taking button is pressed when the image is sharply focused. *This method requires the use of a chinrest/camera support.* **MEC-4-DSL** uses the Dual Side-Lighting type of illuminator, model **MEC-4-ASL** uses the new Adjustable Side-Lighting Illuminator and model **MEC-4-RFL** uses the Research Flex-Lighting Illuminator.

MEC-2: The MEC-2 is equivalent to the MEC-4 except in providing **10-megapixel** images (3872 x 2592 pixels in size) – each pixel represents about 5.5 microns of the subject.

MEC-4-LM-CB – Lens-Mount Coaxial Biometric -- ($3150) – *Top Recommended!*

Coaxial Biometric. The preferred general solution is to use the "Coaxial Biometric" illuminator, which conveys the camera's pop-up flash output via glass fiberoptic lightguides to four points that are close to (about 14 degrees from) the lens axis. The lens-mount CB illuminator (depicted on the left) is available for the Nikon and Sigma lenses.

A hood-mount version is available for all brands of macro lens, including the Nikon 105mm, Canon 100mm, Tamron 90mm (available in mounts for Nikon, Canon, Pentax, Olympus), Pentax 100mm. See description below.

Coaxial Biometric Illuminator

Since its development 20 years ago (initially with film & video cameras), this method of iris illumination has always been superior to others, in terms of providing a uniform and bright illumination field. The DSLR version has been since year 2000 and remains the superior option among all iris cameras on the market today. Hundreds of these units have been produced, and the design is very much optimized.

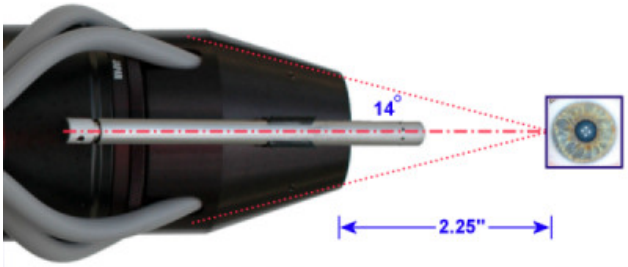
This illuminator design provides maximum detail and uniformity of illumination. This is the original illuminator optimized for iris photography, and gives very good illumination uniformity. Side-Lighting iris images may appear to have greater "depth"; this is an illumination artifact, and while it may cause the picture to appear more 'dramatic', this is only due to shadows cast by the use of side lighting, and makes it harder to estimate the true color and texture. The relative topographic elevation of the iris surface is not as important as the base color and texture, so most of the iris cameras designed by Miles Research over the past 20 years have used coaxial (concentric) illumination. This is necessary for biometric image analysis and research projects involving the precise measurement of iris color. The difference is most apparent in the concentric contraction furrows; with coaxial lighting the furrows can be evaluated based on pigmentary differences (there is less pigment in the valley of the contraction furrows). The depth of the contraction furrows is based on the pupil diameter, and as a reference, it is best to keep the diameter in the 2 to 3 mm range when photographing the iris; there is missing information when the iris is contracted in a state of extreme mydriasis or stretched during miosis.

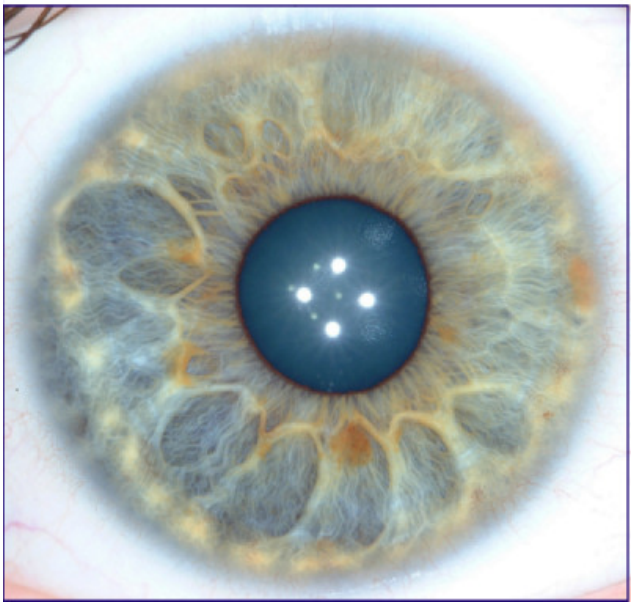
Sometimes it may be useful to see the topographic variations, and there are times when side-lighting is helpful. An **Adjustable Side-Lighting Upgrade Kit** is available for all CB Illuminators ($400).

Iris Camera Kit with Coaxial Biometric Illuminator (MEC-CB)

Contents of MEC-CB

1. Camera
2. Lightguide Clip
3. Camera Battery
4. Camera Battery Charger
5. 18-55mm Zoom Lens
6. AA Battery Charger
7. AA Batteries
8. Card Reader
9. Cord Compartment
   a. Lens cap/body cap
   b. Card Reader USB cord
   c. Camera USB cord
   d. AC cords for battery charger
   e. Spare Focus-Light bulbs
   f. #0 philips screwdriver (for battery pack)



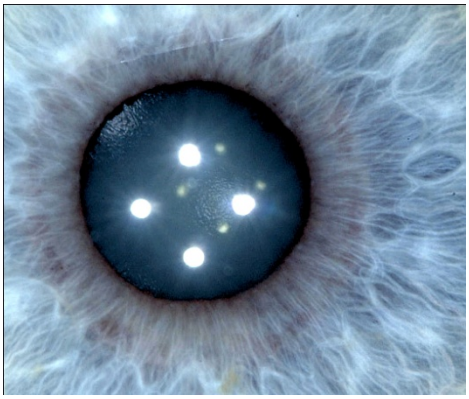


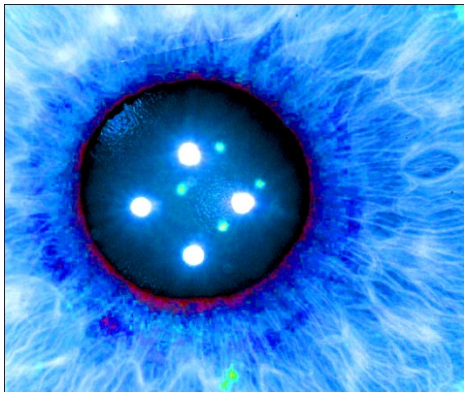
Camera Resolution

	6 MP	10 MP	12 MP	15 MP	18 MP
µ /px	7.3	5.6	5.1	4.7	4.3
px/mm	137	177	195	213	232
px/in	3469	4496	4953	5410	5905
px-w	3008	3872	4288	4752	5184
px-h	2000	2592	2848	3168	3456
mm-w	22.0	22.0	22.0	22.3	22.3
mm-h	14.6	14.6	14.6	14.9	14.9

Notes:
MP=megapixel
µ (mu)=microns (1/1000000 meter)
px=pixel
mm=millimeter (1/1000 meter)
in=inch
w=width
h=height

Standard camera bodies
6MP: Nikon D40 (MC-1)
10MP: Nikon D60 (MC-2)
12MP: Nikon D90/D5000 (MC-4)
14MP: Nikon D3100 (MC-4)
15MP: Canon 500D/T1i (MC-4-C)
18MP: Canon 550D/T2i (MC-5-C)





All sample images showing the four reflection dots in the pupil are using the CB illuminator. Case available in black/yellow/silver

MEC-4-HM-CB – Hood-Mount Coaxial Biometric – ($3150) *NEW!*

Hood-Mount Coaxial Biometric

The newest type of "Coaxial Biometric" illuminator, which conveys the camera's pop-up flash output via glass fiberoptic lightguides to four points that are close to (about 15 degrees from) the lens axis. The hood-mount CB illuminator (depicted on the left) is available for the Nikon and Canon macro lenses.

The advantage of a hood-mount design is fast and easy switching of illuminator types.

The newest illuminator is the **Hood-Mount Coaxial Biometric** Illuminator, available for both the Nikon and Canon macro lens. Change illuminators with a quarter-turn!

MEC-4-HM-ASL – Hood-Mount Adjustable Side-Lighting -- ($3150) *NEW!*

Adjustable Side-Lighting

The Adjustable Side-Lighting illuminator is recommended for specialized study of detail areas (such as the IPB) where control is needed over exact incident illumination angle and position. This camera includes an alignment template for setting standard lightguide positions.

This is also a new illuminator – specially designed with Dr. LoRito for optimized IPB and pupillary zone imaging. A sliding shutter allows the flash output to be directed to the left channel, right channel, or both. Articulated arms on each side allow positioning of the iris illumination to an exact angle and distance. This illuminator is available in Nikon, Canon, and Tamron hood-mounts.

For "flat" or uniform illumination, use the **Both Channels Open** position. This is setting is when the shutter is in the center position:

Contents

1. Camera
2. Illuminator
3. Camera Battery
4. Camera Battery Charger
5. USB Card Reader
6. Zoom Lens
7. Alignment Target
8. Alignment Light (FL only)
9. Cord Compartment

   9a. AC Cord for camera battery charger

   9b. Camera USB cord

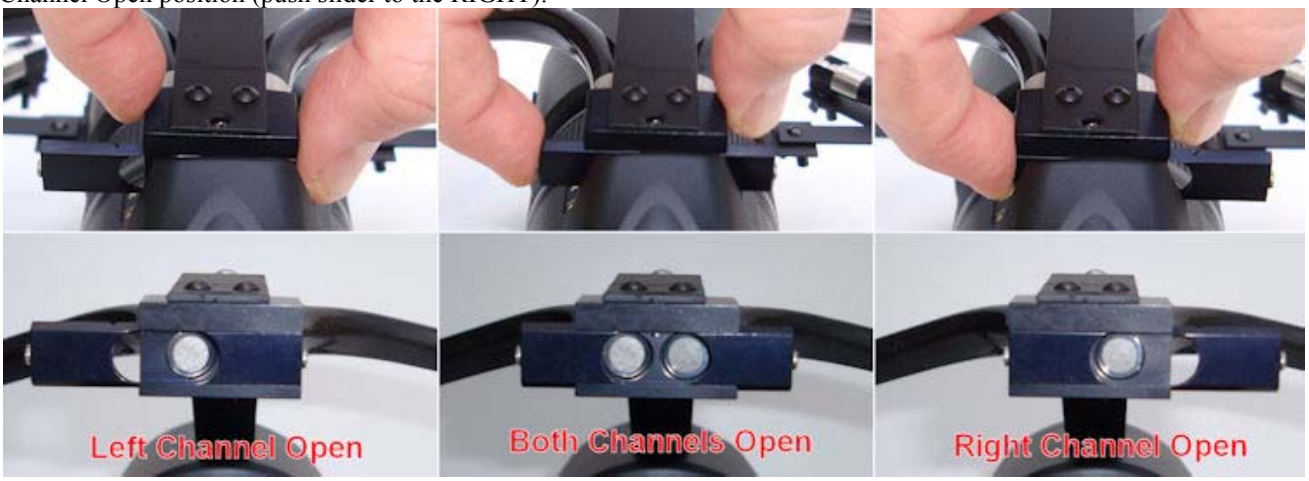
   9c. Card Reader USB cord

   9d. Lens rear cap/body cap

   9e. Spare batteries (focus light)

   9f. Lens cap for macro lens

The Side-Lighting illuminator has a shutter that controls which side the flash illumination goes to. For photographing the RIGHT iris, use the Left Channel Open position (push slider to the LEFT); for photographing the LEFT iris, use the Right Channel Open position (push slider to the RIGHT):



MEC-4-HM-DSL – Hood-Mount Dual Side-Lighting -- ($3150) ***CLASSIC!***

Dual Side-Lighting

Recently, interest has been focused on specialized imaging of the Inner Pupillary Border and the pupillary region of the iris surface.

For angled illumination views that use 45-degree side-lighting, the Dual Side-Lighting (DSL) model is recommended. This camera allows for iris illumination to travel thru the right, the left, or thru both sides. *For more flexibility,* use the Adjustable Side-Lighting (ASL) illuminator.

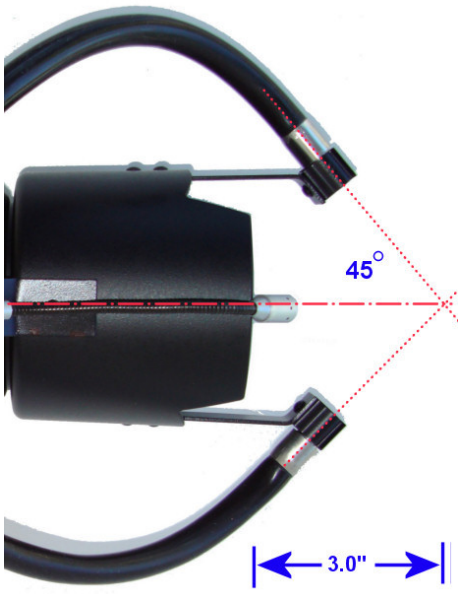
Camera Contents for MC-SL and MC-FL

1. Camera with Macro Lens
2. Hood-Mounted Illuminator
3. Camera Batteries
4. Camera Battery Charger

Cord Compartment

5. AC cord for camera battery charger
6. Camera USB cord
7. Lens cap/body cap
8. Card Reader
9. Memory Card
10. Zoom Lens (18-55mm, MC-2 Only)

Documents



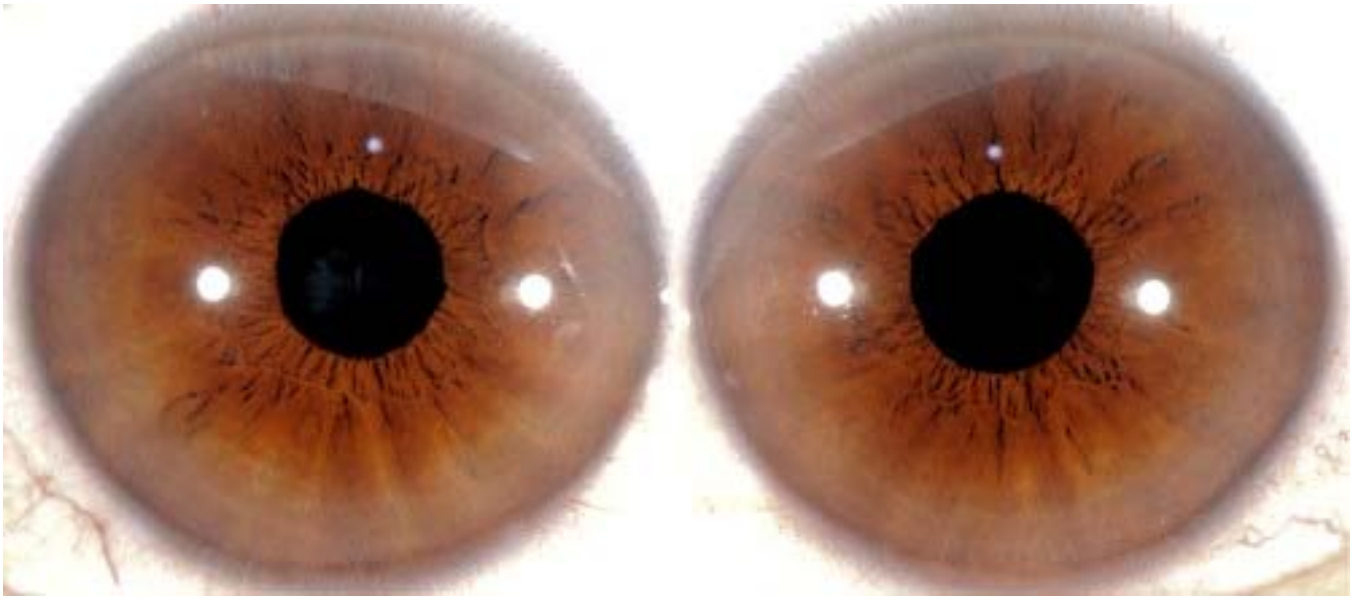
The Side-Lighting Illuminator is optimized for iris imaging at 45-degree illumination.

Choosing between Coaxial and Side-Lighting.

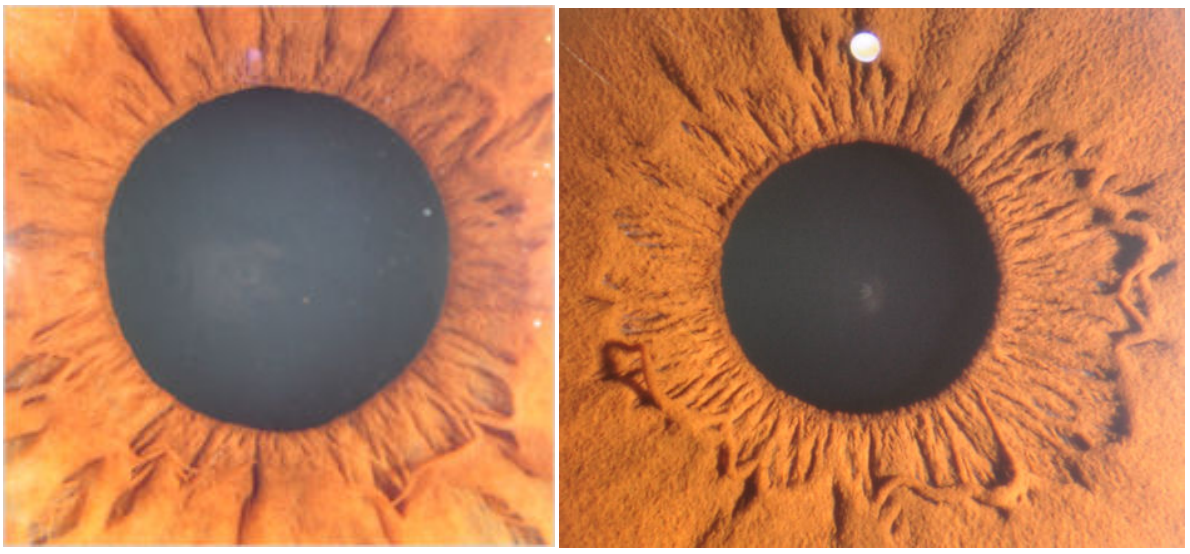
Side-Lighting is only recommended *in addition* to the coaxial lighting. For most all practical purposes, coaxial light is better.

Side-lighting (aka oblique illumination) will produce somewhat more dramatic visual effects due to the shadow casting of the light by the topographic variations -- there will be small shadows on the floor of lacunae on the side from which illumination is arriving, kind of like the craters of the moon casting shadows to reveal elevation differences. This may be useful to obtain along with the centrally-illuminated images. The downside to side-lighting is the effect of creating an illumination gradient makes it very difficult to get accurate iris color measurements, since any attempt to measure the iris will be confounded by the presence of shadows and non-uniform lighting -- this will make any measurement lower than it should be in terms of brightness.

An additional complexity is that one side of the iris will be darker than the other side, and together these two factors will make any quantitative report not very useful – there will be misleading numbers in the report.



Examples with both channels open (above) and just the lateral channel open (below).



← ASL

MEC-2-LM-CB ($2950)

A lens-mount CB (Coaxial Biometric) illuminator with premium macro lens (Nikon 105mm VR), and a 10-megapixel DSLR (Nikon D3000).

MEC-2-D3KN105-CB

Equivalent to the MEC-4-D5KN105-CB, but with the Nikon D3000 instead of the D5000.

MEC-2s-LM-CB ($2600)

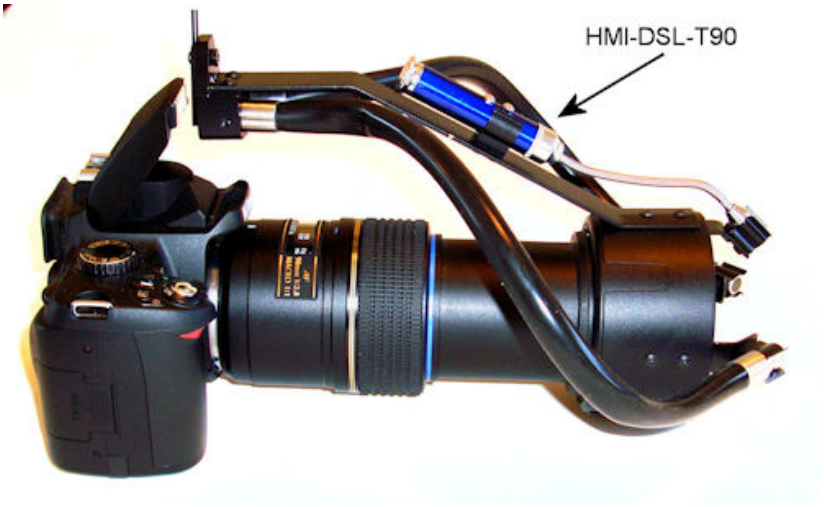
A lens-mount CB illuminator with Sigma 105mm macro lens and a 10-megapixel DSLR (Nikon D3000).

MEC-2s-D3KS105-CB, shown with optional LED focus light.

This 10-megapixel model uses the Sigma 105mm lens instead of the Nikon 105mm lens.

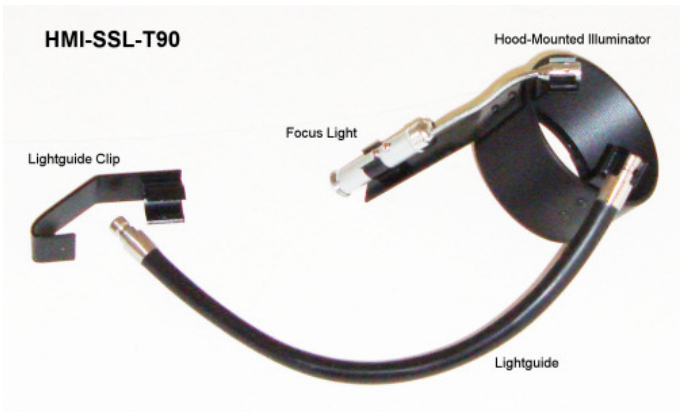
MEC-2t-HM-DSL ($2600)

A hood-mount DSL (Dual Side-Lighting) illuminator with Tamron 90mm macro lens, and a 10-megapixel DSLR.



MEC-2t-HM-SSL ($2200)

A hood-mount SSL (Single-Side-Lighting) illuminator with Tamron 90mm macro lens, and a 10-megapixel DSLR.



Illuminator rotates 180 degrees for lighting from opposite side

T90 Single Side-Lighting Illuminator Hood - Left Side Position

T90 Single Side-Lighting Illuminator Hood - Right Side Position

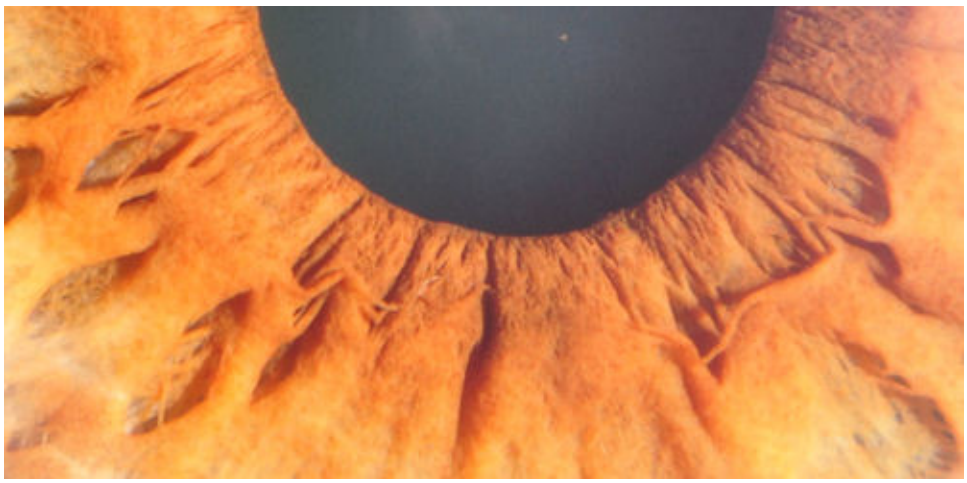
The SSL is economical since it has only one lightguide and no need for a 2-channel shutter. The way it works is – the hood is repositioned by 180 degrees to have the light on the opposite side.

MEC-2-HM-SCL ($2500)

A hood-mount Single Central Lighting (SCS) illuminator with Nikon 105mm macro lens and a 10-megapixel DSLR ($2200 with Tamron 90mm lens)

MEC-1-* ($150 less than MEC-2)

Any camera is also available with the more economical 6-megapixel DSLR for $150 less than the 10-megapixel (MEC-2) version.



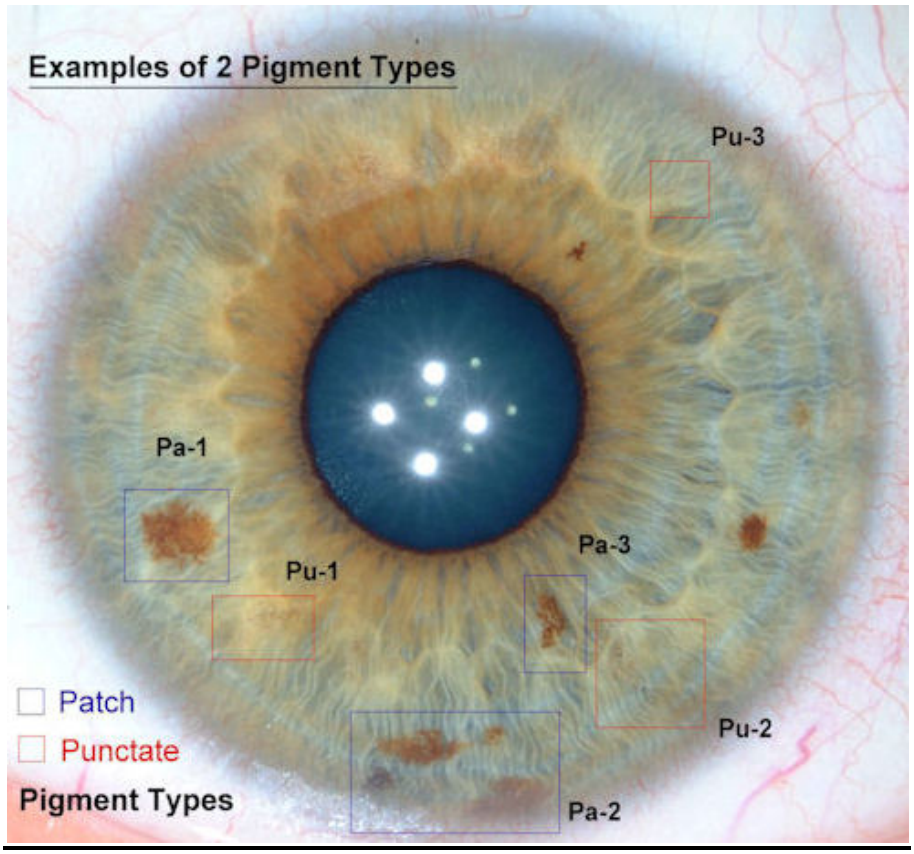
These units are in development and available now.

MEC-4-LM-CB-ASL – Lens-Mount Coaxial Biometric with Single Adjustable Side-Lighting ($3600)

Composite Illuminator Supports both coaxial and adjustable side-lighting.

MEC-4-HM-CB-ASL – Hood-Mount Coaxial Biometric with Adjustable Side-Lighting ($3600)

Composite Illuminator Supports both coaxial and adjustable side-lighting.

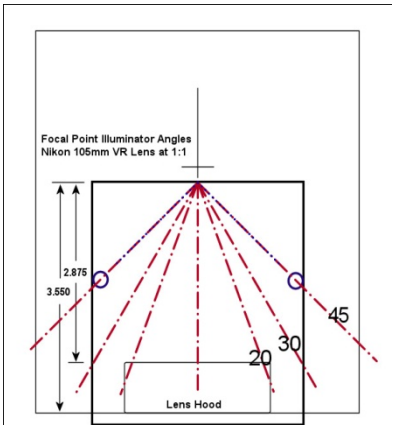


MEC-4-FL – Research Flex-Lighting -- ($3250)

Research Flex-Lighting

The Flex-Lighting illuminator is recommended for specialized study of detail areas (such as the IPB) where control is needed over exact incident illumination angle and position. This camera includes an alignment template for setting standard lightguide positions.

Unlike the ASL Illuminator, this one features lightguides that can be positioned outside the horizontal plane.

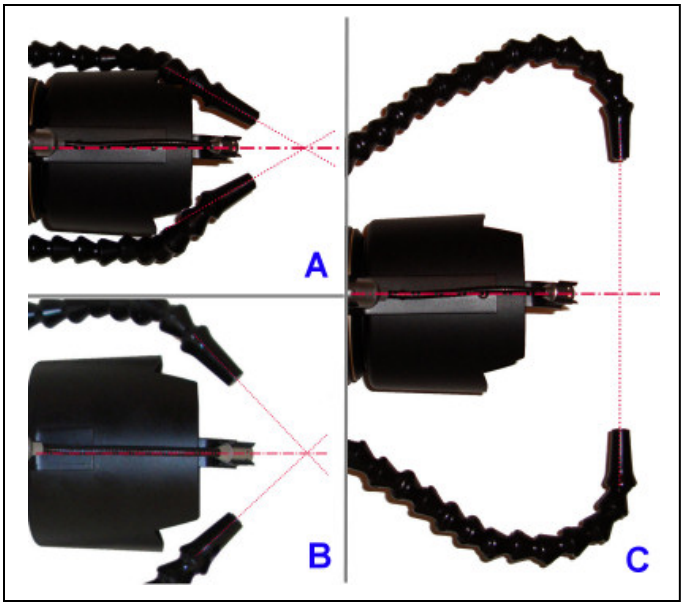


Left, alignment template for Flex-Lighting Illuminator. Printed angles are set up to facilitate lightguide positioning.
Right, 90-degree sidelighting is useful for imaging the corneo-scleral limbus and the inner papillary border.

Flex-Lighting

Flex-Lighting is a new type of illuminator intended for research, and is designed to allow for any angle and position of illumination source. This feature is useful for specialized study and research of the corneo-scleral limbus, the inner pupillary border, and other areas of the eye.

Note: For clinical applications, the Adjustable Side-Lighting Illuminator may be more suitable, since the light position is restricted to being within the horizontal plane containing the lens axis. The FL Illuminator can be positioned to point at the eye from above or below the horizontal mid-plane. This makes beam alignment a bit more time consuming.



Camera Contents for MC-2-SL and MC-2-FL

1. Camera with Macro Lens
2. Hood-Mounted Illuminator
3. Camera Batteries
4. Camera Battery Charger

Cord Compartment

5. AC cord for camera battery charger
6. Camera USB cord
7. Lens cap/body cap
8. Card Reader
9. Memory Card
10. Zoom Lens (18-55mm)

Documents

Alternative Camera Body Options

MEC-4-* (500D) – alternative 15MP Canon DSLR -- ($3150)

MEC-5-* (550D) – alternative 18MP Canon DSLR -- ($3200)

Chinrest/Supports

Chinrest/Camera supports are for stabilizing both the camera and the client's eye. Available products include combination chinrest and camera support (CRCS), Chinrest only (CR), and camera support only (CS). The typical chinrest-camera support will have the eye height at 15 to 17 inches (above table top surface), the camera mounting position at mid-range set to 12 inches, at 2 inches below the eye height. Focus range of travel is typically +/- 20mm. DSLR supports include a quick-release. Custom solutions are available.

Chinrest-Camera-Supports

CRCS-FH-3 ($1100) – Premium fluid-head chinrest/camera-support
CRCS-CSB-K ($2000) – Premium cross-slide-base chinrest/camera-support
CRCS-CCCS-1 ($700) – Compact camera support with chinrest, for small cameras
CRCS-CCCS-2 ($700) – Compact camera support with chinrest, for mid-size cameras
CRCS-ATM-1 ($900) – Adjustable Tripod-Mount Chinrest/Camera-support, basic
CRCS-ATM-2 ($1100) – Adjustable Tripod-Mount Chinrest/Camera-support, heavy-duty
CRCS-TT2T2-SHFR2 ($650) – Dual tabletop tripod chinrest/camera support
CRCS-TTTC2-SHFR2 ($900) – Tabletop tripod camera support with clamping chinrest

Chinrests

CR-TTC-2 ($500) – Tabletop clamping chinrest, model 2
CR-TTM-2 ($500) – Tabletop bolt-mounted chinrest, model 2
CR-TTT-1 ($100) – Tabletop tripod chinrest, model 1
CR-TTT-CLP ($150) – Tabletop tripod chinrest, Compact Low-Profile
CR-TTT-2 ($200) – Tabletop tripod chinrest, model 2

Camera Supports

CS-TTT-SHFRQR ($450) – Tabletop tripod camera support, with swivel-head, focus rail, quick-release
CS-TTT-FHFRQR ($450) – Tabletop tripod camera support, with fluid-head, focus rail, quick-release
CS-AT-FRQR ($900) – Dual tripod camera alignment track support, with focus rail, quick-release

Chinrest-Camera-Supports

CRCS-FH-4 -- ($1100)

The **CRCS-FH-4** is the newest model of premium chinrest - camera support.

This unit features a rugged and precision chinrest with chin height adjustment and eye occluder, mounted on a sturdy bamboo hardwood platform (footprint is about 12”x15”) with non-slip, non-mar rubber feet, solid oak camera support pillar, professional fluid head positioned with control stick, and a focusing stage for positioning the camera precisely in spherical coordinates. A sturdy quick-release is also included. An optional calibration scale is available for the focusing stage.

This unit may be disassembled by the user for easier transport. The chinrest can be dismounted by loosening two setscrews in the cast alloy base mount using a 3mm hex wrench.

The unit is 20” tall, 12” wide, 15” deep.

CRCS-CSB-K -- Kowa Cross-Slide Base Chinrest -- ($1600)

The **CRCS-CSB-K** is a one-piece sturdy premium chinrest - camera support with cross-slide base. (Limited supply)

This unit features a rugged and precision chinrest with chin height adjustment, mounted on a steel base (footprint is about 12”x15”) with non-slip, non-mar rubber feet, camera support arm, and a joystick for positioning and focusing the camera in rectangular coordinates. A sturdy quick-release is also included.

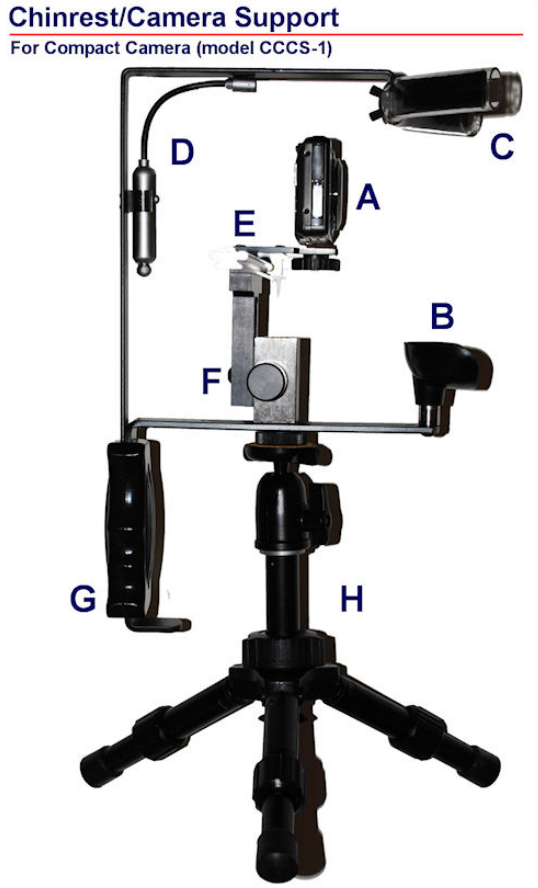
An optional remote picture-taking control with trigger (RT-M) is also available (**CRCS-CSB-K-D**) for $200.

This unit is indestructible in normal use and will last a lifetime.

LED Fixation target with power pack is available for this model ($150).

CRCS-CCCS-1 – Chinrest with Compact Camera Support v.1 ($750)

A table-top tripod with adjustable-height chinrest and compact camera positioning device.



A. Compact Camera (Not Included)
   The CCCS-1 is compatible with support mounting for most compact camera models.
B. Chinrest
   Chinrest height is set for typical. Spacers are available for adjustment.
C. Forehead Rest
   Wing-nut allows for easy loosening for lay-flat storage.
D. Ambient light for focus/pupil size
   Sometimes it is helpful to bring down client pupil size or to illuminate the iris – Ambient Light is useful for this.
E. Linear Slide Rail
   Camera is slid from right to left eye along a precision linear track.
F. Height adjustment
   40mm range of chinrest-to-eyeline height adjustment
G. Handle for hand-held use
   Disconnect the tripod for handheld use.
H. Tripod for table-top use
   Or use on table-top with adjustable tripod.

This portable table-top chinrest will work with any compact camera and is designed to give uniform iris images with standard magnification and lighting. Working distance is adjustable from 0 to 5 inches.

Model CCCS-1 is intended for compact cameras with short working distance, such as the Sony CyberShot W300 or Nikon P7000.

The camera support/chinrest combination features a handgrip option for handheld use:

This mode is convenient for photographing the eyes of small children or older people who are unable to reach the table-top support. It's also easy to take pictures of one's own eyes.

The camera chinrest is available from Miles Research for $750.00. A compact camera kit with case, spare battery, and memory card can be added to this for an additional cost, depending on which camera is selected. Standard is $650 (Sony CyberShot W300 or Nikon P6000).

CRCS-CCCS-2 – Chinrest with Compact Camera Support v.2 ($750)

A second style (CCCS-2, left) is available for cameras that have a longer working distance. This design is intended for autofocus macro cameras with a working distance in the range of 3.0 to 8.0 inches. This model is compatible with the Olympus 560UZ, Canon PowerShot and several other autofocus macro cameras.

This design mounts the camera behind the forehead rest support bar, so the working distance can go up to 8 inches or more, or down to 3 inches. The CCCS-2 can also be operated in handheld mode.

Model CCCS-2 is intended for longer working distance, where the camera mounting point to subject distance is more than 3”, and up to about 8 inches.

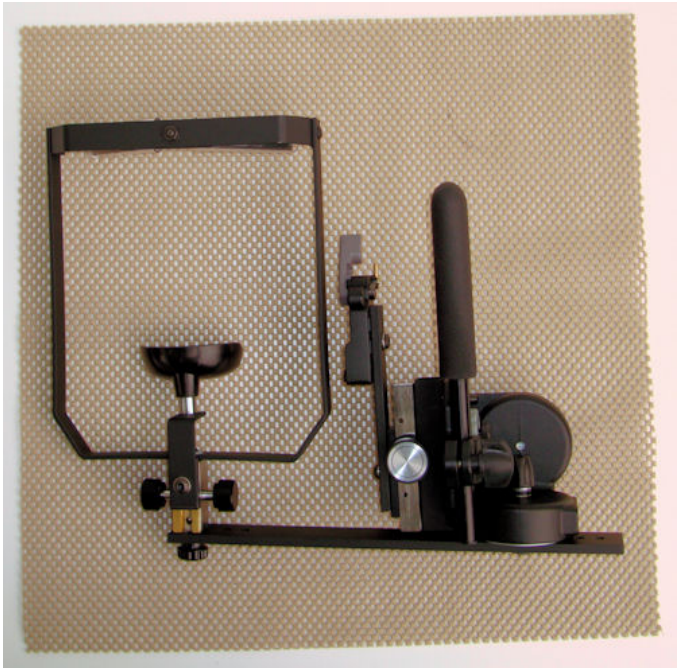
In the CCCS-2 design, the camera is mounted behind the forehead support. The Ambient Light is available for the CCCS-2.

Multi-Mount Chinrest/Camera-Support (CRCS-MM)

The Multi-Mount Chinrest is available with 3 optional supports: tabletop base, tabletop tripod, floor-standing tripod.

Convertible – One chinrest, two supports (CRCS-MM-C) - $975

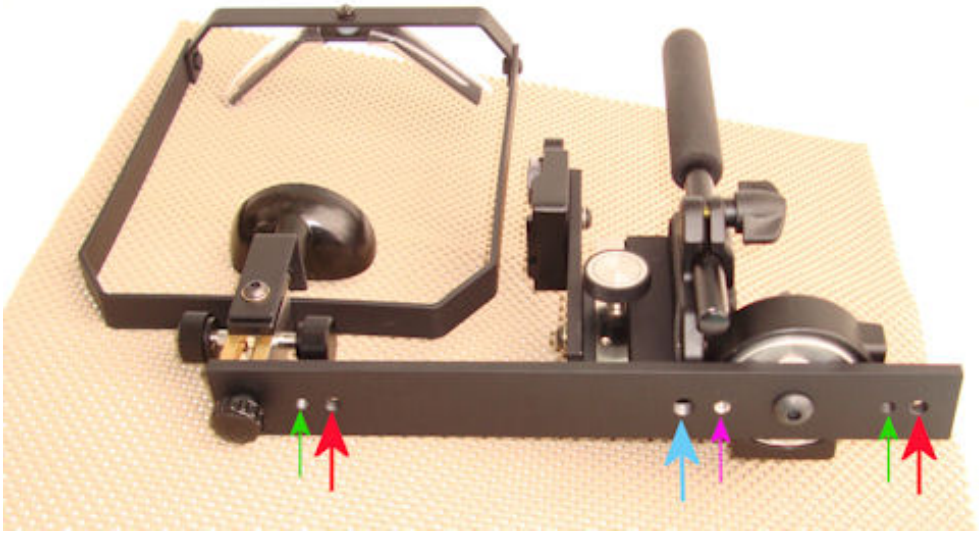
The Convertible includes the upper CRCS component and both the tabletop base and the floor-standing tripod.



The upper CRCS component is easily transferred between the two alternative supports using two ¼-20 thumb nuts.

An optional carry case ($150) or bag ($50) is available for the upper CRCS component; a tripod bag ($50) is available for the floor-standing tripod. The upper CRCS component can fold down into a size of 16” x 12” x 5.5”.

An airtight/wtatertight carry case is available that holds this entire unit along with the two optional tabletop tripods ($150).
An anti-skid protective mat is included.



The support bar can mount four ways:

1. Heavy-duty floor-standing tripod with 3/8”-16 mount (aqua arrow)
2. Standard single tripod with ¼”-20 mount (pink arrow)
3. Two ¼” holes at 9.5” separation (red arrow)
4. Two ¼”-20 Threaded holes for twin tabletop tripod mount (green arrows)

Chinrest/Camera-Support with Floor-Standing Tripod (CRCS-MM-FST) - $875

The Floor-Standing support is ideal for trade shows, health expos and any occasion where iris photography is done while traveling or in unfamiliar places. Use of the tripod saves counter space and is a true stand-alone system.

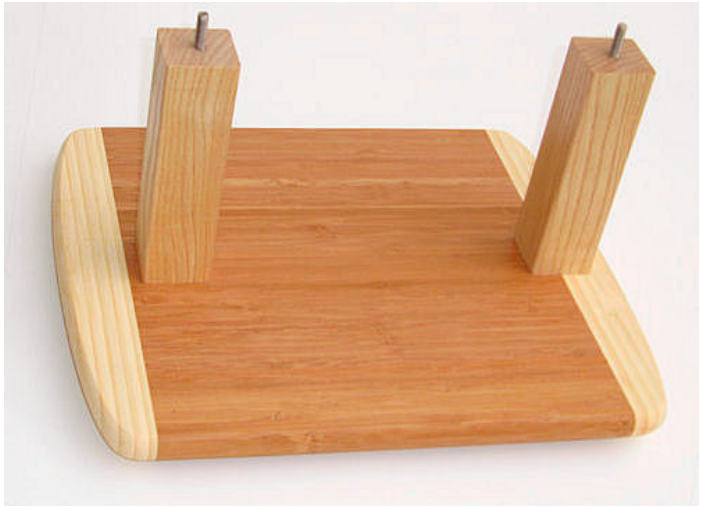
The unit includes the standard upper chinrest/camera-support component, which features a precision fluid-head positioned, microscope-style focusing rail, quick-release mount for the camera, and adjustable chinrest height.

The upper component folds into a compact size of 16” x 12” x 5.5” and the tripod folds into a 4”x4”x22” size.

Chinrest/Camera-Support with Tabletop Tripod (CRCS-MM-TTT) - $850

The tabletop support is intended for maximum portability since the entire unit can fit into a space that is 16”x12”x6”.

Chinrest/Camera-Support with Tabletop Base (CRCS-MM-TTB) - $825



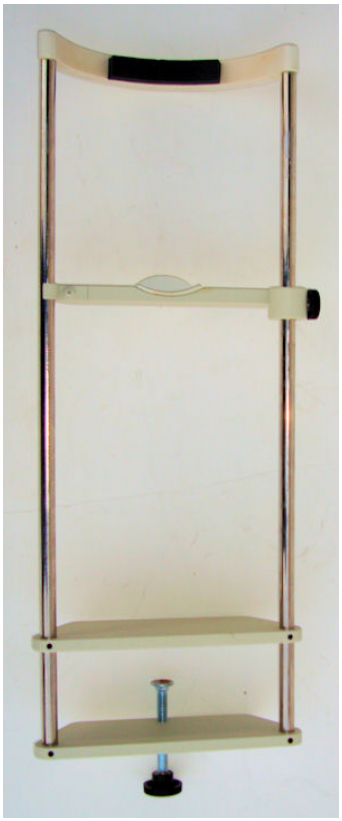
The tabletop base support is intended for maximum stability and is ideal for the clinical setting.

CRCS-TTTC2-SHFR2 -- Clamping CR with Swivel-head, Focus Rail, tabletop tripod, and quick-release ($900)

The Clamping chinrest/tripod camera support (CRCR-TTTC2-SHFR2) is a simple two-part portable solution. The Chinrest clamps to the edge of a tabletop. The camera support is on a swivel head tripod (suitable for tabletop or floor placement), a focus rail with custom bracket, and a quick release camera mount.

Chinrests

CR-TTC-1 – Chinrest, Tabletop clamping (v.1) – reconditioned ($350):



The Tabletop Clamping chinrest, model 1 (CR-TTC-1) is a portable and economic solution. Units are reconditioned and limited in supply.

CR-TTC-2 – Chinrest, Tabletop Clamping, premium ($450)

The Tabletop Clamping chinrest, model 2 (CR-TTC-2) is a portable and sturdy solution. Units are new and very high quality. Available with or without a clamping mechanism. Clamping style can be converted to bolt-mount.

CR-TTT-1 – Chinrest – tabletop mini-tripod, v.1 ($100)

The Tabletop Tripod chinrest (CR-TTT1) is a compact lightweight alternative, ideal for maximum portability and economy. This unit breaks down into three parts, as depicted below.

Tabletop Tripod Chinrest – Compact Low Profile (CR-TTT-CLP) - $100

This chinrest features an ultra-compact breakdown with a low profile – entire chinrest can fit into a box 10”x4”x1”.

Camera Supports

CS-TTT-SHFR-2 – Camera Support tabletop tripod with swivel head, focus rail, and quick-release ($450)

The CS-TTT-SHRF-2 is a sturdy camera support for macro photography, including a tripod, swivel clamping head positioner, macro focus rail, custom adjustable camera bracket, and quick release. Use this with any tabletop chinrest or for any sort of macro photography where focusing is critical.

CS-TTT-FHFR-3 – Camera Support tabletop tripod with fluid head, focus rail, and quick-release ($500)

This is the same as CS-TTT-SHFR-2 but uses a larger heavier fluid head for more positioning control.

CS-AT-FRQR -- Camera Support – Alignment Track with Focus rail and quick release ($900)
NEW!

This is an alignment track that is ideal for use as a test bracket for the ASL eye camera. CS-AT-FRQR features twin tripods, a mounting track, a focus rail with custom adjustable universal camera bracket and a sturdy quick release camera mount. Choice of positionable targets.

The unit is shown here in use with the Adjustable Side-Lighting camera. This makes it easy to get precise lightguide positioning adjustment. *Ideal for research!*

Lighting

Lens-Illuminator Kits

CB
- CB-N105-K Nikon lens ($2350)
- CB-C100-K Canon lens ($2100)
- CB-S105-K Sigma lens ($1900)

DSL
- DSL-N105-K Nikon lens ($2350)
- DSL-C100-K Canon lens ($2100)
- DSL-T90-K Tamron lens($1900)

ASL
- ASL-N105-K Nikon lens ($2350)
- ASL-C100-K Canon lens ($2100)
- ASL-T90-K Tamron lens ($1900)
- ASL-CB-N105-K Nikon lens ($3650)
- ASL-CB-S105-K Sigma lens ($3200)

Illuminator-Only Kits

CB – Coaxial Biometric
- LMI-CB-Nikon-K ($1400)
- LMI-CB-Sigma-K ($1400)
- HMI-CB-Nikon-K ($1400)
- HMI-CB-Canon-K ($1400)

DSL
- DSL-Nikon-K ($1400)
- DSL-Tamron-K ($1400)
- DSL-Canon-K ($1400)

ASL
- ASL-Nikon-K ($1400)
- ASL-Tamron-K ($1400)
- ASL-Canon-K ($1400)
- ASL-CB-Nikon-K ($1800)
- ASL-CB-Canon-K ($1800)

RFL
- RFL-Nikon-K ($1400)
- RFL-Tamron-K ($1400)
- RFL-Canon-K ($1400)

SSL
- SSL-Nikon-K ($1200)
- SSL-Canon-K ($1200)
- SSL-Tamron-K ($1200)

SCL
- SCL-Nikon-K ($1200)
- SCL-Canon-K ($1200)

All Miles Research Illuminators have a LIFETIME WARRANTY!

These units are highly reliable and designed to last a lifetime.

Illuminator Components
- PI-3: External Illuminator ($2100)

Hood-Mounted Focus Lights
- HMFL-N-L ($100)
- HMFL-N-I ($100)
- HMFL-C-L ($100)
- HMFL-C-I ($100)
- HMFL-T-L ($100)
- HMFL-T-L ($100)

Lens-Mounted Focus Lights
- LMFL-AABP-I ($100)
- LMFL-U-V8F ($50) – ***Universal!***
- FL-LC-CB-V16 ($50)
- FL-LC-CB-V8 ($50)
- UFL-CCLC-V8 ($50)

Alignment Accessories
- AT-N Alignment Target - Nikon
- AT-C Alignment Target - Canon
- AT-T Alignment Target - Tamron

CS-AT-FRQR Alignment/Test Camera support with Focus Rail and Quick Release

- ATK-N Alignment Target - Nikon
- ATK-C Alignment Target - Canon
- ATK-T Alignment Target - Tamron

Hood-Mount Focus Light – Nikon/LED version

HMFL-N-L

Coaxial Biometric (CB) Lens-Illuminator Kits

CB-N105-K ($2350), **HMCB-C100-K** ($2100), **CB-S105-K** ($1900)

As depicted below, including the lens (Nikon or Sigma) but not the camera body/accessories:

Iris Lens-Illuminator Kit with Coaxial Biometric Illuminator (MEC-CB-N105-K)

Contents of MEC-CB-N105-K

1. ~~Camera with~~ macro lens
2. Lightguide Clip
3. ~~Camera Battery~~
4. ~~Camera Battery Charger~~
5. ~~18-55mm Zoom Lens~~
6. AA Battery Charger
7. AA Batteries
8. Card Reader
9. Cord Compartment
   - g. Lens cap~~/body cap~~
   - h. Card Reader USB cord
   - ~~i. Camera USB cord~~
   - j. AC cord for battery charger
   - k. Spare Focus-Light bulbs
   - l. #0 philips screwdriver (for battery pack)

Dual Side-Lighting (DSL) Lens-Illuminator Kits

DSL-N105-K ($2350)**, DSL-C100-K** ($2100), **DSL-T90-K** ($1900)

As depicted below, including the lens (Nikon or Tamron) but not the camera body:

Kit Contents for DSL-N105-K and DSL-T90-K

1. ~~Camera with~~ macro lens
2. Hood-Mounted Illuminator
3. ~~Camera Batteries~~
4. ~~Camera Battery Charger~~

Cord Compartment

5. ~~AC cord for camera battery charger~~
6. ~~Camera USB cord~~
7. Lens cap~~/body cap~~
8. Card Reader
9. ~~Memory Card~~
10. ~~Zoom Lens (18-55mm, MC-2 Only)~~

Adjustable Side-Lighting (ASL) Lens-Illuminator Kits

ASL-N105-K ($2350)**, ASL-C100-K** ($2100) **, ASL-T90-K** ($1900)

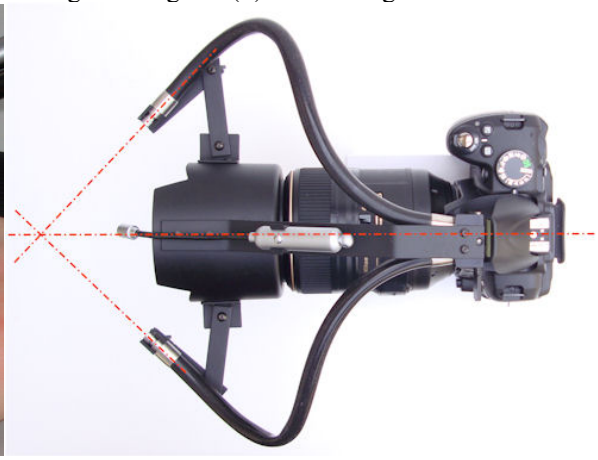
As depicted below, including the lens (Nikon, Canon, or Tamron) but not the camera body:

The ASL Illuminator includes an Alignment Target
To facilitate beam positioning and alignment.

Contents of Lens-Illuminator Kit (ASL-K)

1. ~~Camera with~~ macro lens
2. Illuminator
3. ~~Camera Battery~~
4. ~~Camera Battery Charger~~
5. USB Card Reader
6. ~~Zoom Lens~~
7. Alignment Target
8. Alignment Light (FL only)
9. Cord Compartment
   - 9a~~. AC Cord for camera battery charger~~
   - ~~9b. Camera USB cord~~
   - 9c. Card Reader USB cord
   - 9d. Lens rear cap~~/body cap~~
   - 9e. Spare batteries (focus light)
   - 9f. Lens cap for macro lens

The Side-Lighting Angle is adjusted by loosening the wingnuts (3) and moving the articulated arm into place:



A 45-degree angle is the standard reference position for the flex-light illuminator. The focus point is 3 inches in front of the lens hood.

Illuminator-Only Kits

CB
- CB-N-K
- CB-S-K

DSL
- DSL-N-K
- DSL-T-K
- DSL-C-K

ASL
- ASL-N-K
- ASL-T-K
- ASL-C-K
- ASL-CB-K

All Illuminator-Only CB, DSL, FL, and ASL Kits are $1400.

Illuminator-Only SCL (Single Central Lighting) and SSL (Single Side-Lighting) Kits are $1200. These economy kits include only one lightguide, which, for the SSL illuminator, is moved from right to left side as needed.

These kits are available for most camera/lens brands.

Illuminator Components

PI-3: External Illuminator

Miles Research Illuminators can be powered with the External Illuminator instead of the onboard pop-up flash. This unit provides both a strobe (xenon flash) and the halogen incandescent focusing light thru a lightguide that attached to any illuminator. The focus light level is continuously variable from off to full on. Requires 120 volts AC. Supports remote focus light control and remote shutter release control. Control cable connectors are supplied (DIN-5 and DIN-6) and custom cables can be provided as needed. The lightguide is 36” in length and includes a removable adapter on the output end to fit a 5/8” diameter opening; without the adapter, fits 3/8” diameter x ½” length opening. A 3/8” inside diameter female-to-female coupling is supplied to join the output to any MR lightguide. Normally this unit is used with a CB Illuminator.

Hood-Mounted Focus Lights
- HMFL-N-L
- HMFL-N-I
- HMFL-C-L
- HMFL-C-I

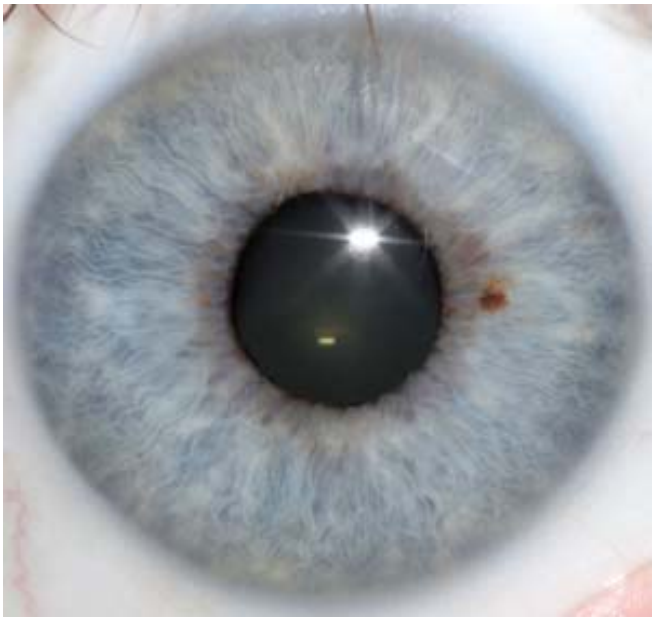
Lens-Mounted Focus Lights
- LMFL-BP-I

Hood-Mount Focus Light

The Hood-Mount Focus Light is a simple method of using the DSLR for 1:1 macro photography. This unit consists of a macro lens hood modified to permit light to reach the iris and also to hold an LED focus light for accurate focusing.

The cameras built-in pop-up flash will cover the iris area and the opening in the hood masks the light from other areas.

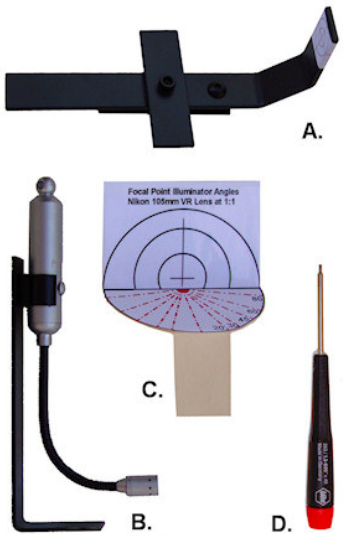
Left: Hood-Mount Focus Light for Canon 100mm lens; Right: Hood-Mount Focus Light for Nikon 105mm lens

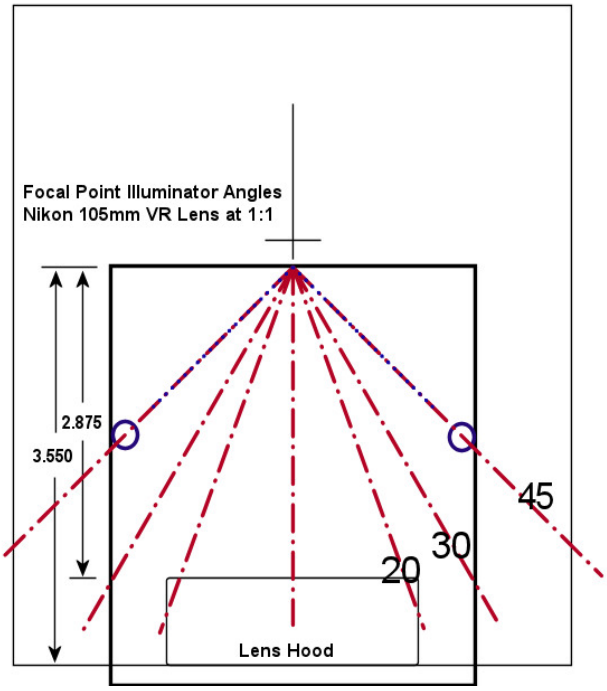


Left: Hood-Mount Focus Light for Nikon 105mm VR macro lens.
Right: Sample Iris image taken with Canon T1i (500D) and 100mm macro lens with a Hood-Mount Focus Light.

Alignment Accessories

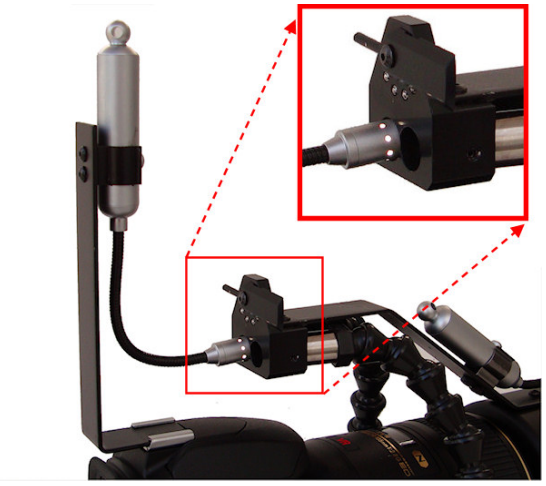
ATK-N Alignment Target Kit - Nikon
ATK-C Alignment Target Kit – Canon
ATK-T Alignment Target Kit - Tamron





AT-N Alignment Target – Nikon (item A. only)
AT-C Alignment Target – Canon (item A. only)
AT-T Alignment Target - Tamron (item A. only)

CS-AT-FRQR Alignment/Test Camera support with Focus Rail and Quick Release



SlitLamps/Photo-SlitLamps

Used SlitLamps, Photo-Capable

Rodenstock ($1200)

This is a used Rodenstock SL-6 slit-lamp, with photo adapter components included. The height adjustment is motorized, and the stereo binocular microscope has a power changer. The unit includes a counterweight-lift table, and two beamsplitters for photography.

Nikon Slit-Lamp ($800)

This is a used Nikon SL-6 slit-lamp, with photo adapter components included. The stereo binocular microscope has a power changer. This unit is very heavy-duty, and needs some work on the lighting.