

# SpyderLENSCAL

## User Guide



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## Introduction

Spyder®LENSCAL is the perfect do-it-yourself tool to evaluate and adjust the focus performance of camera and lens combinations. It is designed to provide photographers with a fast, portable, and easy to use target to make sure cameras and lenses are working together at peak performance.

### **The Problem:**

There are several reasons why sharp focus is not achieved. Camera shake, too slow of a shutter speed, or subject movement are several reasons. Another common reason is auto focus error. Auto focus is a great convenience, but it needs to perform at its best to truly harness its power.

DSLRs utilize a separate focus system that can be tuned to maximize performance in most mid to high-end cameras. This adjustment is implemented because every lens will perform differently on every camera body. Often times, making adjustments to calibrate the lens to the camera will improve focus accuracy. Accounting for and adjusting for these differences is the problem SpyderLENSCAL solves.

### **The Solution:**

Many cameras allow the user to store focus correction data for a particular lens. SpyderLENSCAL was designed to aid in this adjustment process to maximize the performance of cameras and lens combinations.

## What's Included

- SpyderLENSCAL
- Welcome Card – Including warranty information and link to instructions

## Supported Cameras

- Camera Auto Focus Micro Adjustment capability/function (as of June 2016)

Canon: 50D, 70D, 7D, 7D Mark II, 6D, 5D Mark II, 5D Mark III, 1D Mark III, 1D Mark IV, 1Ds Mark III, 1DIV, 1Dx, 1Dc, 5DS, 5DS R

Nikon: D7000, D7100, D7200, D300, D300s, D600, D610, D700, D800, D800E, D810, D750, D3, D3s, D3x, D4, D4s, Df, D500, D5

Sony: A77, A850, A900, SLT-A77, A99, A7, A7 II, A7s, A7r, NEX-x  
\* LA-EA2 or LA-EA4 adapter may be required

Olympus: E-30, E-620, E-5, [E-M1 only with micro 4/3 lens adapter]

Pentax: K20D, K2000, K200D, K-5, K-5 II, K5-IIs, K-5 II2, K7D, 645D, K-x, K-30, K-3

Hasselblad: H4D, H5D, H6D

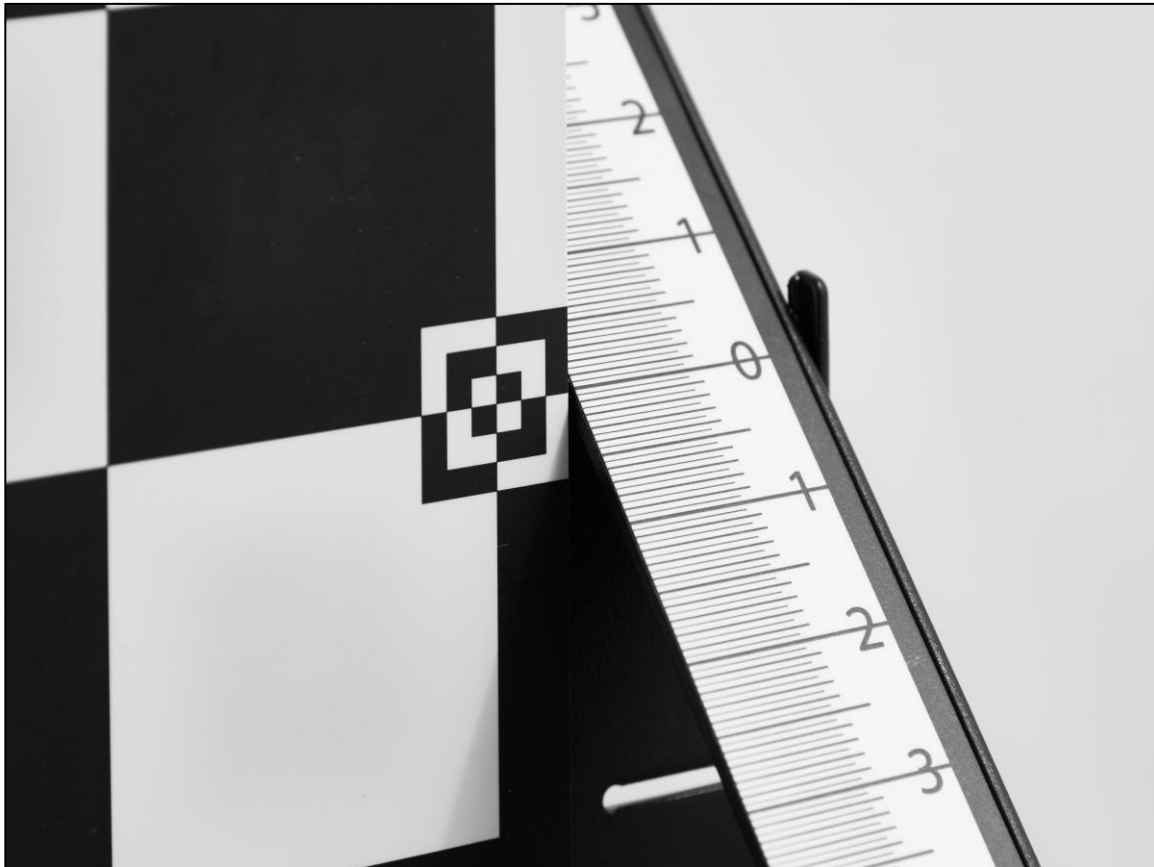
Sigma USB Dock: All Global Vision lenses

Tamron USB Dock: Tamron SP 85mm f/1.8, SP 90mm f/2.8 macro

**Any lens attached to these cameras is supported since the adjustments are made in the camera.**

## Setting Up Your Camera and SpyderLENSCAL

Position the SpyderLENSCAL as shown below, with the main target vertical and ruler “0” mark aligned with the center cross-section of the target. Make sure the SpyderLENSCAL is level by placing it on a flat surface, mounting it on a tripod or on a light stand. The bubble indicator shows the SpyderLENSCAL is level before calibration.



Attach your camera to a sturdy tripod. You want to make sure that your camera and SpyderLENSCAL are the same height. Adjust the height of your tripod and SpyderLENSCAL when they are next to each other. The center point on the vertical piece of the SpyderLENSCAL should be in the center of your lens when the camera is level. Using a light stand makes adjusting the SpyderLENSCAL to the height of the camera very simple.

The distance your camera should be positioned from the SpyderLENSCAL is 25-50 times the focal length of the lens. For instance, if you need to calibrate a 50mm lens you should place your camera 1250-2500 millimeters from the SpyderLENSCAL. 1250-2500mm is 125-250 centimeters or about 49-98 inches. Below is a table of common focal lengths and suggested distances.

|              | Min Distance (Inches) | Max Distance | Min Distance | Max Distance | Min Distance | Max Distance | Min Distance | Max Distance |
|--------------|-----------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Focal Length | Inches                | Inches       | Feet         | Feet         | Centimeters  | Centimeters  | Meters       | Meters       |
| 20           | 20                    | 39           | 1.6          | 3.3          | 50           | 100          | 0.5          | 1            |
| 24           | 24                    | 47           | 2.0          | 3.9          | 60           | 120          | 0.6          | 1.2          |
| 35           | 34                    | 69           | 2.9          | 5.7          | 87.5         | 175          | 0.875        | 1.75         |
| 50           | 49                    | 98           | 4.1          | 8.2          | 125          | 250          | 1.25         | 2.5          |
| 60           | 59                    | 118          | 4.9          | 9.8          | 150          | 300          | 1.5          | 3            |
| 70           | 69                    | 138          | 5.7          | 11.5         | 175          | 350          | 1.75         | 3.5          |
| 85           | 84                    | 167          | 7.0          | 13.9         | 212.5        | 425          | 2.125        | 4.25         |
| 105          | 103                   | 207          | 8.6          | 17.2         | 262.5        | 525          | 2.625        | 5.25         |
| 135          | 133                   | 266          | 11.1         | 22.1         | 337.5        | 675          | 3.375        | 6.75         |
| 200          | 197                   | 394          | 16.4         | 32.8         | 500          | 1000         | 5            | 10           |
| 300          | 295                   | 591          | 24.6         | 49.2         | 750          | 1500         | 7.5          | 15           |
| 400          | 394                   | 787          | 32.8         | 65.6         | 1000         | 2000         | 10           | 20           |
| 500          | 492                   | 984          | 41.0         | 82.0         | 1250         | 2500         | 12.5         | 25           |
| 600          | 591                   | 1181         | 49.2         | 98.4         | 1500         | 3000         | 15           | 30           |

Turn on your camera and set the exposure mode to Manual or Aperture Priority. Select the lowest native ISO, turn off the lens stabilizing function (if the lens has it) and set the lens to its widest aperture. If you are calibrating a zoom lens, set it to its longest focal length. Some cameras will allow you to adjust a lens at multiple points in the focal range. If your camera has this functionality, adjust at each of the suggested focal lengths for the lens you are using.

You can also use a flash on camera or off camera to illuminate the side with the ruler guide.

## Checking and Adjusting Auto Focus

After you have set up the SpyderLENSCAL and your camera as instructed above, you are ready to check and adjust your auto focus. Look through your camera's viewfinder and select the center auto focus point. Adjust your camera until the center auto focus point is positioned over the small, concentric squares on the right edge of the SpyderLENSCAL target next to the "0" on the ruler guide. Focus and capture an image. It is advisable to use the self-timer or a cable release so you do not introduce any vibration during capture. (Do not use live view to focus and capture the image of the target or use a focus-and-recompose method)





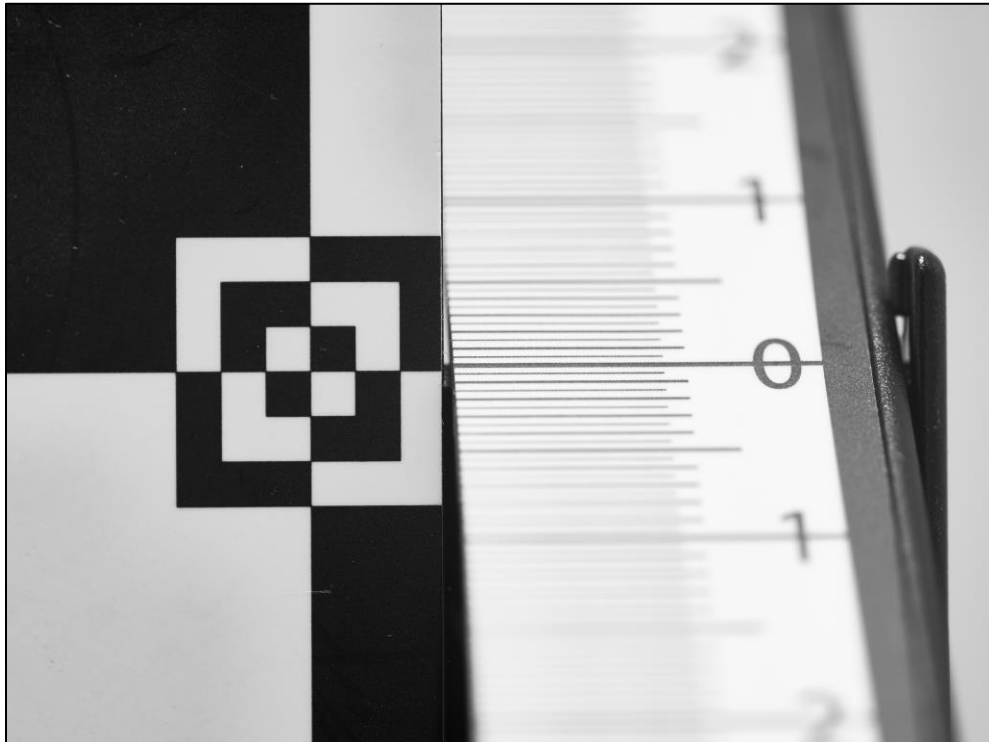
## Evaluate and Adjust

View the image of your SpyderLENSCAL target on the camera screen or on your computer. Zoom in on the ruler to evaluate the point of sharpest focus. Critical evaluation is needed at this point. Some camera LCDs provide better playback than others. Viewing the image in your preferred editing program should provide you with the highest quality playback.

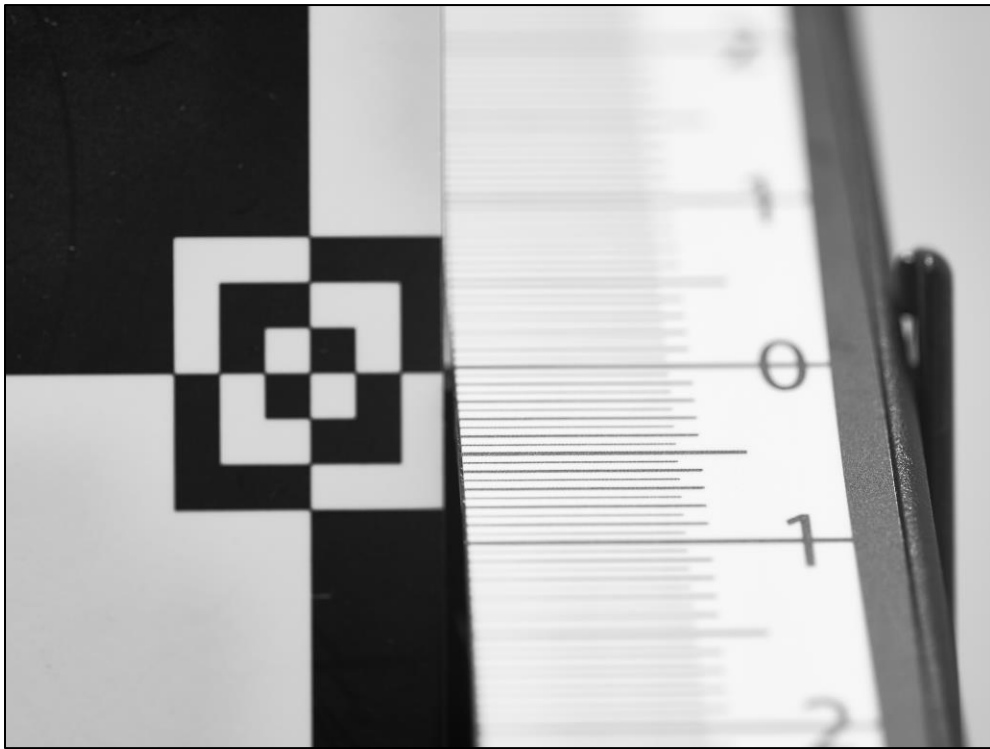
If the sharp focused mark is not “0”, enter the autofocus correction menu on your camera (this can be found in your camera's manual). Be sure you are adjusting by lens and not making a global correct to any lens used with the camera. When the mark of sharpest focus is above “0” your camera and lens are back focusing. You should adjust forward to make a correction. When the mark of sharpest focus is below “0” your camera and lens are front focusing. You should adjust backward to make a correction.

Note: The numbers on the SpyderLENSCAL ruler do not correlate to the numbers in the adjustment menu in your camera.

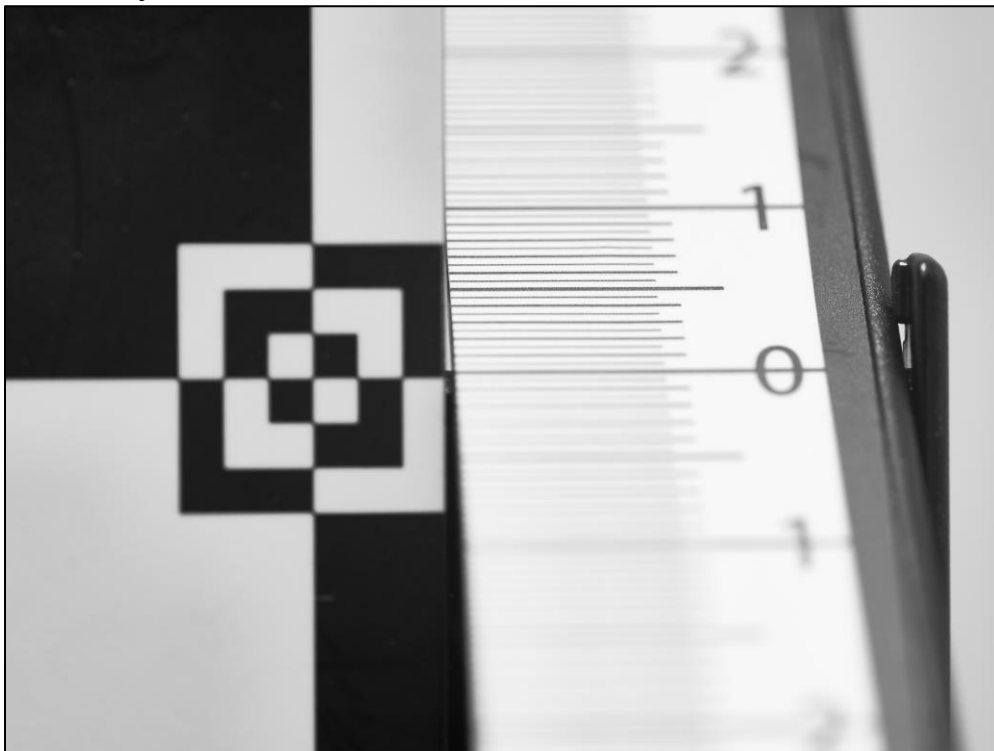
### Sharp Focus on 0 – No Adjustment Needed



**Front Focus – Adjust Focus Backward**



**Back Focus – Adjust Focus Forward**



## **Check and Repeat**

De-focus your lens manually then repeat the previous steps to check that you made the optimal adjustment(s). Repeat this process for each camera and lens combination until “0” is the sharpest point on the scale for all of them.

Note: It is recommended to recheck the settings annually, when the lenses have been used frequently, when they have been exposed to extreme temperatures or anytime you believe your focus performance has changed.

## Conclusion

It is important to make sure your equipment is operating at peak performance. Higher resolution sensors mean that camera technique and auto focus performance are vitally important. SpyderLENSCAL is the ideal target to verify that your cameras and lenses are functioning as they should. SpyderLENSCAL will help you maximize your investment in your equipment to help you achieve your best images in sharp focus!

## Additional Information

Please visit our website for more information on SpyderLENSCAL and our other products: **[spyder.datacolor.com](http://spyder.datacolor.com)**

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