

## Lens Calibration Guide for Leaf AFi-II 10 and Aptus-II 10 Camera Backs

Leaf AFi-II 10 and Leaf Aptus-II 10 camera backs are accurate and finely tuned instruments with high resolution and very large lens coverage. Each camera back contains the widest digital sensor available for medium and large format cameras. The sensor reveals every nuance of whatever lens is placed on the camera, and itself has properties that may vary across the full sensor width.

To obtain the best quality that is available from the camera back, perform lens calibration for each lens that you use. This is achieved by creating a lens calibration file which you apply to your images. Lens calibration files are reference files that characterize certain properties of the lens and enable the software to improve the quality of the image. For example, the lens calibration file will reduce any non-uniformity of color or vignetting to an absolute minimum.

With each camera back, Leaf provides a unique lens calibration file for each commonly used lens, and a generic lens calibration file for manual lenses of medium focal length. These files, as well as any you may create yourself, are stored by default in the **Leaf Tables/Lens Calibrations** folder.

Even though the provided files will give adequate images, for best results, it is highly recommended that you take the time to calibrate all your manual lenses to the specific, finely tuned imaging module you have acquired.

This guide takes you through the process of calibrating your lenses, and describes how you can use the calibration files with Leaf Capture 11 software to achieve images of optimal quality.

## Creating a Lens Calibration File

### Setting up to Take the Calibration Shot

What you will need: a Leaf diffuser or any white diffusing sheet that will fully cover the lenses to be used.

1. Connect the camera back to the Leaf Capture software.
2. Place the camera in front of a uniform light source.

**Tip:** A studio flash with a soft box is recommended.



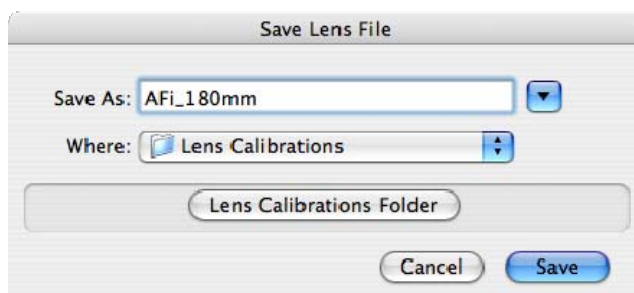
With this setup, you can now create the lens calibration file using Leaf Capture's calibration wizard.

## Creating the Lens Calibration File

1. In the **Camera** menu, select **Lens Calibration > Create Wizard**.
2. Follow the steps in the lens calibration wizard.



3. At the end of the wizard, select the **Load lens calibration** check box to load the lens calibration file to your camera back after it is created. This enables you to take shots with the lens calibration file.
4. Click **Save**.



5. In the Save Lens File dialog box, name and save the lens calibration file.  
It is recommended to give a logical name to the file, for instance 'AFi 110mm'. It is highly recommended that you save all of your lens calibrations in the default location.

**Tip:** If you are not in the default location, click **Lens Calibration Folder** to access the default folder directly.

The Load Lens Calibration dialog box appears. The lens calibration file you created is selected.

6. Click **OK**.

**Note:** Lens calibrations saved in the default location (**Leaf Tables/Lens Calibrations**) appear in the Camera Configuration dialog box. See *When you are Shooting Tethered*, on page 4.

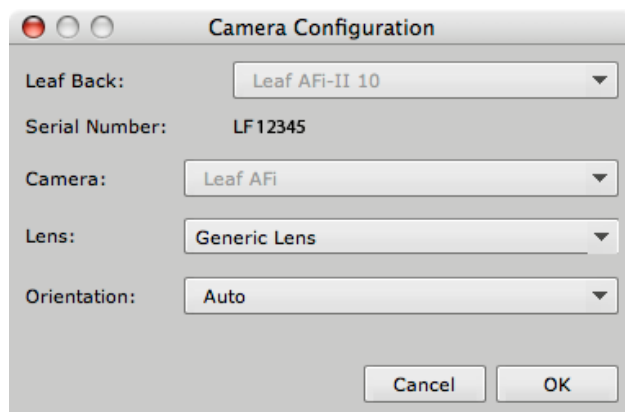
If you selected **Load lens calibration**, the lens calibration file is loaded to your camera back and remains active for as long as you are tethered.

**Note:** If you entered a falloff correction, it is applied for this load only.

## When you are Shooting Tethered

For optimal results when shooting tethered, you must specify the lens you are using and the lens calibration file when you connect the camera back to the Leaf Capture software.

1. Start the Leaf Capture software.
2. Click **Open Camera Configuration** to open the Camera Configuration dialog box.



3. In the Camera Configuration dialog box, from the **Lens** list, select the appropriate lens calibration file and click **OK**.

Use the reference table below to determine the correct lens calibration file for the lens you are using. For most lenses, the “Generic Lens” lens calibration file is sufficient.

4. Connect the camera back to the Leaf Capture software.

The lens calibration file is loaded and the maximum possible fall off correction is applied. You can now shoot using the lens calibration file.

## When you are Shooting Portable

When shooting portable, the “Generic Lens” lens calibration file is used when you take your shots.

If the lens you are using requires a more specific lens calibration, use post-processing to correct lens calibration. Use the EXIF info to remind you of the lens used.

### Recording the Focal Length

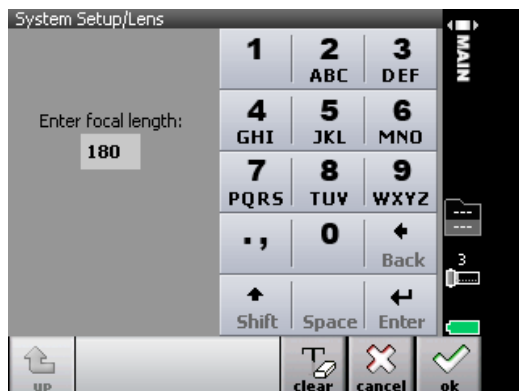
In portable mode, the focal length of electronic/digital lenses is automatically recorded in the image EXIF data.

Some lens types, such as manual lenses, cannot be detected by the camera back. If a lens is detectable, the focal length is displayed in the EXIF information on the Info panel (to access, tap the **info** button in **Shoot** view). Check that the lens you are using is detectable by the camera back by examining the EXIF info of an existing image captured with this lens. If the lens is undetectable, manually enter the focal length as a numeric value to be recorded to the EXIF data

1. On the camera back, in the **Camera** view camera settings menu, select **Lens**.



2. Using the keypad, enter the focal length of the lens you are using.



3. Tap **OK**.

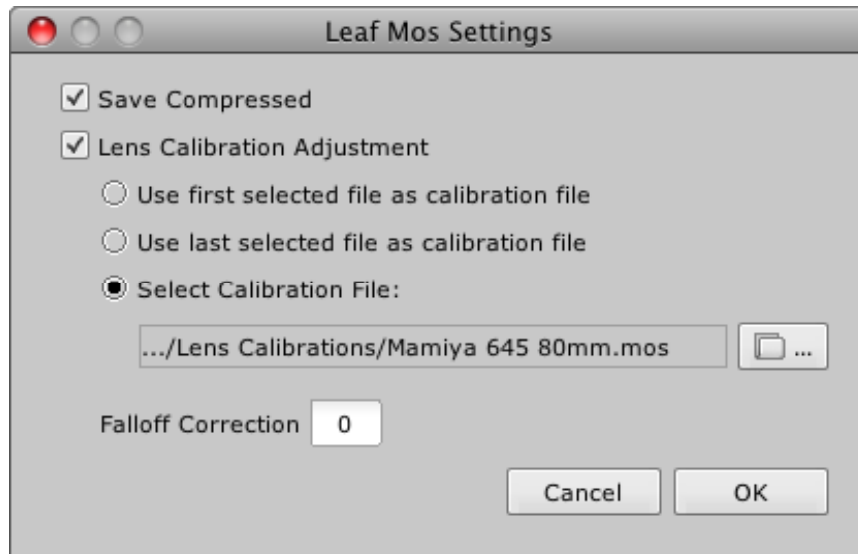
The value you entered is recorded in the EXIF data.

**Note:** Whenever a manual lens is attached, all images have this value written to the EXIF field. Whenever a electronic/digital lens is attached, this value is ignored, and the automatically detected focal length is used.

## Applying Lens Calibration to an Image in Leaf Capture

1. In Leaf Capture, select the images you would like to process.
2. In the **Process** panel, select **Leaf Mos** in the **Format** list.
3. Click **Settings**.

The Leaf Mos Settings dialog box opens.



4. To save the mos file with lossless compression, select **Save Compressed**.
5. Select **Lens Calibration Adjustment**.
6. Select **Select Calibration File** and click the browse icon.
7. Select the lens calibration file for the lens type used to create the image(s). Use the reference table below to determine the correct lens calibration file for the lens you are using.

**Tip:** Click **Lens Calibration Folder** to access the default lens calibration files folder directly.

**Tip:** If you are not sure which lens was used to capture the image, first check the lens **Focal Length** value in the EXIF data in the Image Info dialog box.

8. In the **Falloff Correction** box, type the desired correction percentage to adjust the fall off.
9. Click **OK**.

Your lens calibration settings are saved.

10. Process your images to apply the lens calibration file.

## Reference Tables

You do not need to apply a lens calibration file to shots taken with a lens for which the generic lens calibration file works. For shots captured in portable mode with a lens for which a specialized lens calibration file exists, apply the appropriate lens calibration file, as listed below.

Reference table for Leaf AFi camera systems:

Lens Used	Name of Lens Calibration File
S. Angulon 40mm f/3.5	Generic Lens
S. Angulon 40mm f/3.5 ext tube 34-67mm	AFi TX 180mm LFXXXX.mos
Super Angulon 50mm f/2.8	Generic Lens
S. Angulon 50mm f/2.8 ext tube 26-67mm	AFi TX 180mm LFXXXX.mos
S. Angulon 80mm f/2.8	Generic Lens
S. Angulon 80mm f/2.8 ext tube 22-67mm	AFi TX 180mm LFXXXX.mos
Apo-Symmar 90mm f/4	Generic Lens
Apo-Symmar 90mm f/4 ext tube 34-67mm	AFi TX 180mm LFXXXX.mos
Zeiss Planar 110mm f/2	Generic Lens
Zeiss Planar 110mm f/2 ext tube 17-67mm	AFi TX 180mm LFXXXX.mos
Makro Apogon 120mm f/4	Generic Lens
Makro Apogon 120mm f/4 ext tube 9-67mm	AFi TX 180mm LFXXXX.mos
Variogon 60–140mm f/4.6	AFi Z 60-140mm LFXXXX.mos
Tele Xenar 180mm f/2.8	AFi TX 180mm LFXXXX.mos

Reference table for Mamiya 645 AFD cameras:

Lens Used	Name of Lens Calibration File
Sekor D ASPH 28mm f/4.5	Generic Lens
AF 35mm f/3.5	M645 35 mm LFXXXX.mos
AF 45mm f/2.8	Generic Lens
AF 55mm f/2.8	Generic Lens
AF 80mm f/2.8	Generic Lens
AF 120mm f/2.8	M645 120 mm LFXXXX.mos
AF 150mm f/3.5	M645 150mm - 210mm LFXXXX.mos
Sekor D 150mm f/2.8	M645 150mm - 210mm LFXXXX.mos
AF 210mm f/2.8	M645 150mm - 210mm LFXXXX.mos
AF 55-110mm f/3.5	M645 Z 55-110mm LFXXXX.mos

Reference table for Hasselblad V series cameras:

Lens Used	Name of Lens Calibration File
Distagon 4/40	Generic Lens
Distagon 4/40 ext tube 10mm	Generic Lens
Distagon 4/40 ext tube 21 - 31mm	HB5 120mm LFXXXX.mos
Distagon 4/50	Generic Lens
Distagon 4/50 ext tube 10mm	Generic Lens
Distagon 4/50 ext tube 21 - 31mm	HB5 120mm LFXXXX.mos
Planar 2.8/80	Generic Lens
Planar 2.8/80 ext tube 10 - 31mm	HB5 120mm LFXXXX.mos
Makro-Planar 4/120	HB5 120mm LFXXXX.mos
Makro-Planar 4/120 ext tube 10 - 31mm	HB5 120mm LFXXXX.mos