

# LensTRUE User's Manual

# What can the LensTRUE system do?



*EF 24-70mm f/2.8L II USM at 24 mm / f 11  
Inclination: 29.1 degrees vertical, 3.58 degrees horizontal*

In this New York street scene, the photographer inclined the camera upwards to a great extent to fit the skyscrapers into the picture. The vertical sides of the buildings therefore look very distorted. The picture on the right, which has been deskewed with the LensTRUE system, no longer has any leaning lines. The correction process does what your brain does with your normal vision: deskewing with correct proportions.



# Contents

The LensTRUE meter .....	4
Scope of delivery .....	5
Updates .....	5
Introduction .....	5
Quick start .....	7
Taking photographs with the LensTRUE meter .....	9
Deskewing with LensTrue visualizer .....	11
Virtual change of perspective .....	16
What happens during deskewing .....	18
TIFF files from other programs .....	19
Tips and tricks .....	19
Support .....	20
Further development .....	21
System requirements .....	21
Technical data .....	21
Supported formats .....	21
Warranty conditions .....	23

## The LensTRUE meter



## Scope of delivery

- LensTRUE meter
- USB to micro USB charging and data cable
- Two cables with different lengths for connecting the camera to the LensTRUE meter: PC connector to 3.5 mm jack plug
- USB stick as a dongle with the LensTRUE visualizer software and manual

## Updates

The LensTRUE visualizer software can automatically check for updates on the Internet. Once the program opens, a dialog will appear where you can confirm and enable this function.

## Introduction

Leaning lines and distorted perspectives are among the oldest problems in photography. Until now there have been four solutions that all had serious disadvantages.

Technical view cameras with two standards and a bellows allow distortion-free pictures, but digital versions are very expensive and are not suitable for hand-held photography. Furthermore, with shifting, the outer areas are increasingly used by the image circle of the lens, which reduces the picture quality slightly.

Shift lenses provide a workable solution in object and architecture photography, but also have their disadvantages: They can correct approx. 8 to 16 degree angles at most depending on the focal length. You need a tripod to set a shift lens. Autofocus functions cannot be used. Automatic exposure becomes imprecise because the center of the image circle is exceeded. If you shift greatly, shift lenses cause unsharp edges and a high level of vignetting. Shift lenses cannot zoom and lie in the upper price classes.

The third solution remains the manual deskewing functions in programs like Photoshop, Lightroom and DXO, which are now very advanced. However, these functions can only be used if the picture contains lines like the edges of houses or windows. This method has

three disadvantages: Deskewing takes a long time. It is often difficult to correct the vertical lines on the left-hand and right-hand picture edges and, in the end, the proportions will still be noticeably distorted in many areas of the picture. This is easiest to see from faces on the edge of the picture. Further correction attempts can then only be made by trial and error and thus take up even more time. Fully satisfactory results cannot be achieved with this method.

The fourth solution involves photographers trying to get round the problem where possible by avoiding short focal lengths and inclining the camera upwards or downwards. When taking a photograph of a house, for example, a popular workaround is to only use the upper part of a portrait format picture with wide angle.

All of these solutions are no longer necessary thanks to LensTRUE. LensTRUE offers numerous advantages instead:

- Perfect deskewing: The lens distortion is automatically corrected in the background in the first step. The perspective distortions are corrected in the second step. The whole process can be performed automatically in a batch run. If necessary, you can intervene manually to reduce the correction slightly, for example, as subjects like skyscrapers may look more natural as a result due to our visual perception.
- You can use normal fixed cameras that do not have moving standards with bellows.
- You can use normal and large-aperture lenses even with autofocus and image stabilization. The unsharp edges and vignetting of shift lenses are thus a thing of the past.
- Zoom lenses can be used.
- You can correct up to 35 degrees inclination upwards or downwards. Greater angles are also possible. The image quality is then reduced.
- Horizontal inclination in the shot is automatically compensated. The horizon always appears straight.
- Automatic deskewing will save you a lot of time.
- The proportions at the image edges will also be correct. The following applies in all areas of the picture: Circles remain circles and squares remain squares.
- No more tedious dragging at pictures. No more correcting by eye. No more residual distortion.

- No more having to avoid leaning lines when taking photographs.
- No more having to use expensive shift lenses with just one focal length.

## Quick start

The LensTRUE system consists of a measuring device and software. You will soon achieve the first results with the following steps.

1. Connect the LensTRUE meter to your Macintosh computer using the supplied USB cable. The battery-charging process starts automatically. The right-hand LED on the back of the LensTRUE meter starts to flash red. This LED will illuminate steadily green as soon as the battery is fully charged.
2. Switch on the LensTRUE meter by pressing the on/off button. The battery does not have to be fully charged for this. The button lights up briefly and then flashes for about one minute. The button remains extinguished after that. It will start to flash again for one minute when you connect the camera and take a photograph. The LensTRUE meter is switched on for the whole time, however. The LensTRUE meter will appear as a drive on your Mac's desktop.
3. Start the LensTRUE visualizer program that you will find on the enclosed USB stick. You do not need to enter a serial number since the program will only open when the LensTRUE meter is connected or the enclosed USB stick is inserted into a USB port on your computer.
4. Select **LensTRUE meter / Set LensTRUE meter Date and Time to System Date and Time** to set the clock in the LensTRUE meter to your computer's time. At the very top of this menu, you will see the time set in the LensTRUE meter when you connected it.
5. Set the time in your camera as closely as possible to the time in your computer as the data records from the LensTRUE meter will be assigned to the image files on the basis of the time. You can use the free EOS Utility software that is supplied with EOS cameras to set the time in Canon cameras to your computer's system time as accurately as possible.
6. Screw the LensTRUE meter onto the camera base. It measures the inclination angle (X-axis) of the camera and the horizontal angle (Z-axis) at the moment the photograph is taken. The Len-

sTRUE meter needs to be fitted under the camera with the longer edge parallel to the sensor level. The “JOB0” label therefore faces the object. It should be as parallel as possible. Orient yourself to edges and lines on the camera.

7. Connect the PC flash socket on your camera to one of the jack sockets on the LensTRUE meter. The sockets have the same function. The second socket allows you to connect a wireless trigger for external flashes, for example. Use the supplied sync cable to connect the camera to the LensTRUE meter. If your camera does not have a PC socket like the Canon EOS 6D, use an adapter for the flash shoe. Please note that some cameras, such as the Canon EOS 6D, do not trigger the middle contact of the flash shoe or the PC socket in live view mode. In this case, you cannot use live view mode. After these preparations, the angles are stored in the LensTRUE meter as a data record with a time stamp for each photograph.
8. Set the file name counter to zero in your camera and select sequential numbering.
9. Take your photos in RAW or JPG format. You can use only supported lenses. You can view the list of supported lenses in LensTRUE visualizer by selecting **LensTRUE meter / Show supported Lenses...** . The left-hand LED lights up briefly on the rear of the LensTRUE meter when you press the shutter release. Lens distortion correction should not be activated on the camera. Never switch off the LensTRUE meter while taking photographs as the angle data will otherwise be missing and it may not be possible to assign the data records to the images.

If you do not need the LensTRUE meter for some time you can switch it off by pressing and holding the On/Off button until it starts flashing rapidly along with the Shot LED. Then release the switch. The LensTRUE meter cannot be switched off when it is connected to a computer or a charging device via a USB cable or while data is copied from one internal memory to another. In the latter case switch off the LensTRUE meter a few minutes later.
10. After taking the photographs, use the Finder to copy your image files to any folder on your Mac without editing them.
11. Connect your LensTRUE meter to your computer using the supplied USB cable and switch on the LensTRUE meter. Open the LensTRUE visualizer program.

12. Select the folder containing the image files with **File / Select Source...** and select the files with Command-A. The images will be listed on the left-hand side in LensTRUE visualizer. You can also import your pictures from the memory card into a program like Lightroom and export from Lightroom in TIFF format with 16 bits per channel. The pictures may not be cropped or deskewed and need to contain all EXIF data. In this case, select the TIFF files in LensTRUE visualizer.
13. Select all pictures with Command-A and click the **Process selected Images** button at the bottom right to start batch processing. LensTRUE visualizer will now deskew the pictures and save the RAW files without compression in TIFF format at 16 bits per channel. **Save Full Size** or **Save Cropped** allows you to save the picture shown in the middle separately. You can work on the next pictures while the file is being processed as processing takes place in the background in a separate thread. JPEG files are saved in JPEG format. The file selection dialog opens where you can create a new folder. You can also select the destination folder in the settings dialog.

These TIFF images have the same properties as RAW files in terms of correction possibilities in programs like Lightroom. You can therefore still modify the white point later on and use all editing functions as with a RAW file. If you work in Lightroom or another program with a preference that contains profile corrections, you will need to disable them because the lens-related distortion will have already been corrected by the visualizer. The converted pictures contain all transferable EXIF data from the source image. Pictures taken in portrait format will be rotated correctly by the visualizer and saved with the EXIF orientation set to zero.
14. Import the TIFF images into your preferred image processing program. You can now continue work as usual.

## Taking photographs with the LensTRUE meter

Now you have learned how to charge, fit and switch on the LensTRUE meter in the **Quick start** chapter, we will look at practical questions in this chapter. You can take photographs as usual, but you should bear

in mind that the edges of the picture will be cropped later during correction in LensTRUE visualizer. The more you incline the camera upwards or downwards when taking a picture, the more will be cropped from the edges of the picture. You should therefore select a larger picture section as you incline the camera more upwards or downwards.

For the angle measurement to work in the LensTRUE meter, the camera should not be moved greatly at the moment the picture is taken. If, for example, you are sitting on a carousel, the centrifugal force will be too great and will alter the measured angle so correction will not be possible later on. There will be no problems when driving on the freeway unless you hit a large bump or are traveling through a curve at the moment you take the picture. Slightly trembling hands are not a problem.

You do not need to worry about the precise horizontal orientation of your camera. Cameras like the EOS 6D can show a spirit level on the rear display while you are taking a picture. It will allow you to level the camera just before pressing the shutter release. Since the LensTRUE system measures the angle of the horizontal inclination, the pictures are automatically set horizontal during correction in LensTRUE visualizer. As normal, take your photographs as straight as possible by hand without aids. If, however, the object stretches almost to the edge of the picture, it is worthwhile aligning the camera as precisely as possible because less cropping will then be required during processing.

The LensTRUE meter can store the data for a maximum of 4,000 photographs. If you delete a picture on the camera, the data record associated with this picture in the LensTRUE meter will not be deleted. Each data record consists of a line that contains the date and time with the inclination angles after a sequential number. The data are saved in a text file named Shots.txt. The data records need to be assigned to the pictures in LensTRUE visualizer. Three methods are available for this. You can also choose between them later on in the visualizer settings.

The simplest method is **Use intelligent matching**. In this method, sequences are recognized so that series images with the same EXIF time are also assigned correctly. Deleting pictures while you take pictures will not be a problem. You should use one of the other methods only in special cases.

With the **Use Image EXIF date** method, the EXIF date and time of the image files are compared with the data records from the Len-

sTRUE meter. The data that coincide best are assigned to each other. If the time in the LensTRUE meter does not coincide precisely with the time in the camera, pictures may be incorrectly assigned when, for example, you have taken two pictures within a space of one second and the difference between the camera time and the time in the LensTRUE meter is 2 seconds. Deleting pictures while you take pictures will not be a problem.

In the **Use Image Index of Filename** method, the data records are assigned to the pictures using their number. This requires that you reset the numbering in your camera to zero and select sequential numbering before shooting. You cannot use this method if you accidentally take a picture without switching on the LensTRUE meter. All subsequent assignments will be out by one shot starting from that picture. In this case, select the **Use intelligent matching** or **Use Image EXIF Date** method. Deleting pictures on the camera will also not cause problems with the **Use Image Index of Filename** method.

## Deskewing with LensTrue visualizer

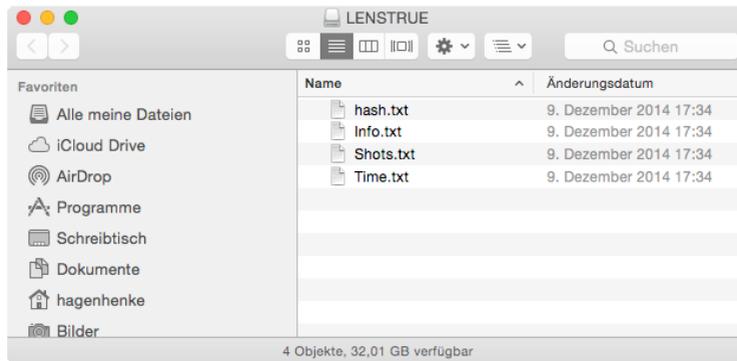
Use LensTRUE visualizer to deskew your pictures after a shoot. Connect the LensTRUE meter to your computer using the supplied USB cable and open the visualizer, which you can download from [www.jobo.com](http://www.jobo.com). You do not need to enter a serial number. Select **File / Select Source....** The file selection dialog opens where you can open the folder containing the pictures that you imported with the Finder beforehand. Once you have imported your pictures with a program like Lightroom and have exported them unedited in TIFF format at 16 bit per channel, select these TIFF files. Here it is important that the EXIF data are not modified or deleted.

Select all image files by clicking the first file, then holding down the Shift key and clicking the last file. You can also use Command-A. In this case, please note that Command-A also selects the files in subfolders if the folders are expanded with the small triangle on the left of the folder name. Close the subfolders first if you want to use Command-A.

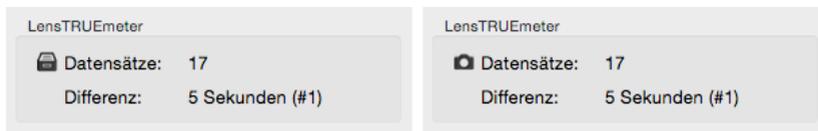
Click **Open** to start the loading process that may take a moment depending on the file sizes. The pictures appear on the left-hand side of the visualizer one below the other. You can load further pictures

later on if, for example, you only loaded a selection at first to speed up work. The other files will be added to the end of the list. The processing sequence in the visualizer is not important for the assignment of the angle data.

Click the first picture. The corrected picture will be shown in the middle. The data in the file Shots.txt from the LensTRUE meter will be used for this. If you want to edit your pictures later on, you can copy this file into the picture folder. Double-click the LENSTRUE volume on your computer's desktop and copy the file Shots.txt into the folder containing your photos.

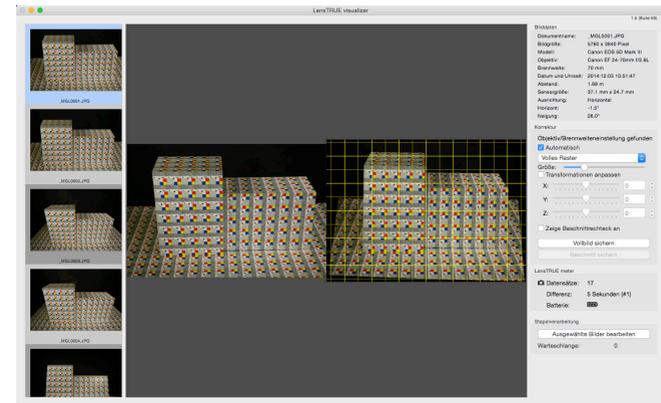


If you open the pictures with LensTRUE visualizer, it will check first whether there is a Shots.txt file in the picture folder. If it finds a Shots.txt file, it will be used and not the Shots.txt file that is stored in the LensTRUE meter. You can see which Shots.txt file is used at the bottom left of the visualizer in the **LensTRUE meter** section at the start of the **Records** line. If you use the Shots.txt file from the picture folder, a small card index box will appear. If you use the Shots.txt file from the LensTRUE meter, a small camera will appear.

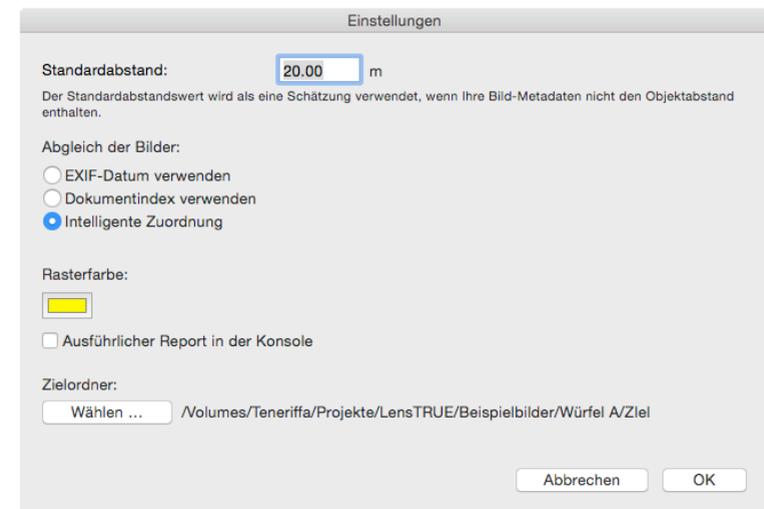


On the right-hand side, you can select **Display Crop Rectangle** to display a rectangle for cropping. You can adjust both its size and position. In the middle area, you will see the picture on the left and, to the right of that, the corrected version that you can check by display-

ing a **Grid** with the pop-up menu on the right. You can change the grid line spacing with the **Size** slider under the pop-up menu so that the lines lie exactly along the edge of an object.



You can also only display the horizontal or vertical lines to see more easily whether the correction has produced the desired effects. Select the corresponding option from the pop-up menu. You can select the color of the gridlines in the preferences dialog that you can open via the **LensTRUE visualizer** menu.



Click the color field to open the color selector and select the re-

quired color in the color selector.

In the preferences, you can enter a distance from the photographed object that will be used when the distance is missing from the EXIF data for the image file using **Default Distance**.

**Matching of Images** allows you to choose the method used to assign the data records from the LensTRUE meter to the pictures. You will find further information on this in the chapter *Taking photographs with the LensTRUE meter*.

**Use verbose console** allows detailed error messages to be written in the Mac OS console if there are problems.

Use **Destination Folder** to select a folder to which the corrected files are saved.

Should the correction not meet your expectations at any point, you can adjust the **X-, Y- and Z-axes** with **Transformation Offset**.

If you reduce the X value into the negative range, the picture is modified so it looks like you inclined the camera further downwards when taking the picture. In the other direction, if you increase the X value into the positive range, you will modify the picture so it looks like you inclined the camera further upwards when taking the picture. If, for example, you take a photograph of a tall building from ground level at a short distance, it may be worthwhile reducing the correction slightly because the image will then be closer to the visual perception of the observer.

If you reduce the Y value into the negative range, the picture will be modified so it looks like you turned the camera further to the left when taking the picture. In the other direction, if you increase the Y value into the positive range, you will modify the picture so it looks like you turned the camera further to the right when taking the picture.

The Z value allows you to tip the horizon in both directions if you do not want an exact alignment or if the correction happens not to work because, for example, the LensTRUE meter was not fitted perfectly straight under the camera. In this case, remove any dirt or small objects between the LensTRUE meter and the camera.

We recommend working with the uncropped version and exporting the uncropped version with **Save Full Size** or **Process Selected Images**. It is better to do the cropping in your image editing program.

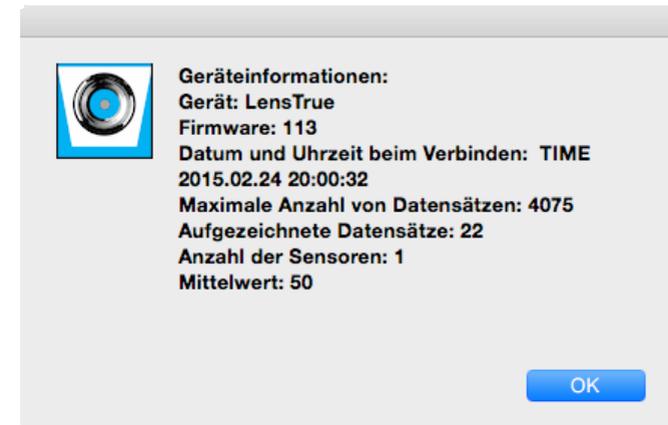
At the top right, you will see the shot details for the selected picture.

The **LensTRUE meter** menu contains the entry **Show Parameters...** that opens a dialog where you will find the acceleration values

of the inclination sensor. This dialog is intended for experts only.

At the bottom right, you will find the **LensTRUE meter** information box. In this section, **Records** shows the number of data records stored on the LensTRUE meter. **Delta** indicates the time offset between the EXIF time of the pictures and the respective data record. This time should be as small as possible.

**LensTRUE meter / Show Info...** opens the following dialog where you will find information on the connected LensTRUEmeter.



The firmware version is given in addition to the name of the connected device. **Connection date and time** indicates the time when the LensTRUE meter was connected to the computer.

**Maximum shots qty** indicates the maximum number of shots for which the LensTRUE meter can record data. **Actual shots qty** indicates how many data records have been stored. One data record is stored per shot.

**Accelerometers qty** indicates the number of sensors in the LensTRUE meter. **Averaging** indicates how many measured values are used by the sensor upon shutter release. In order to obtain the most precise value, 50 measured values are collected in quick succession and averaged. You will find instructions on how to calibrate your LensTRUE meter on our websites [www.jobo.com](http://www.jobo.com) and [www.lenstrue.com](http://www.lenstrue.com). You can then improve the accuracy even further.

**LensTRUE meter / Set LensTRUE meter Date and Time to System Date and Time** sets the time in the LensTRUE meter to the time

in your computer. The time set in your computer should be as accurate as possible. By default, your computer should receive the current time from a server via an Internet connection. On Macintosh computers, you can select the time server in the **System Preferences** under **Date & Time**. Set the time in your camera as closely as possible to this time so that the assignment of the data records to the pictures also works with the **Use Image EXIF Date** method. You can use the free EOS Utility software that is supplied with EOS cameras to set the time in Canon cameras to your computer's system time as accurately as possible. Connect your camera to your computer via a cable or Wi-Fi. In the program, click the time to open a dialog that allows you to synchronize the time.

Once you have corrected your pictures, delete the data in the LensTRUE meter with **LensTRUE meter / Erase all Data...** After importing all pictures, format your memory card in the camera and reset the picture number counter. You are now ready for the next shoot.

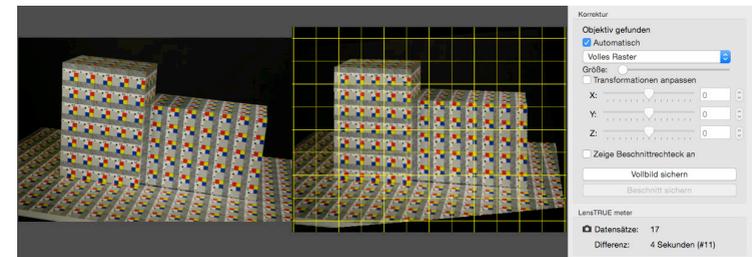
**LensTRUE meter / Show supported Lenses** opens the following dialog where you will see all lenses that have been calibrated and the supported camera models. The list is too long to fit in the dialog. Please scroll down to see all entries.

Objektiv	Brennweite
Carl Zeiss Distagon T* 15mm f/2.8 ZE	15
AF-S Nikkor 16-35mm f/4G ED VR	16
AF-S Nikkor 16-35mm f/4G ED VR	20
AF-S Nikkor 16-35mm f/4G ED VR	24
AF-S Nikkor 16-35mm f/4G ED VR	28
AF-S Nikkor 16-35mm f/4G ED VR	35
AF-S Zoom-Nikkor 24-70mm f/2.8G ED	24
AF-S Zoom-Nikkor 24-70mm f/2.8G ED	28
AF-S Zoom-Nikkor 24-70mm f/2.8G ED	35
AF-S Zoom-Nikkor 24-70mm f/2.8G ED	50
AF-S Zoom-Nikkor 24-70mm f/2.8G ED	70
AF-S Nikkor 70-200mm f/2.8G ED VR II	70
AF-S Nikkor 70-200mm f/2.8G ED VR II	85
AF-S Nikkor 70-200mm f/2.8G ED VR II	105
AF-S Nikkor 70-200mm f/2.8G ED VR II	135
AF-S Nikkor 70-200mm f/2.8G ED VR II	200
Canon EF 50mm f/1.4	50
Canon EF 85mm f/1.2	85
Canon EF 85mm f/1.8	85
Canon EF 24-70mm f/2.8L II USM	24
Canon EF 24-70mm f/2.8L II USM	28
Canon EF 24-70mm f/2.8L II USM	35
Canon EF 24-70mm f/2.8L II USM	50

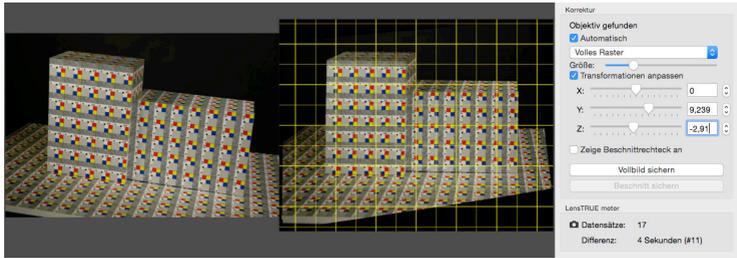
# Virtual change of perspective

The LensTRUE system allows you to change the perspective from which your picture was taken. This is useful if, for example, you could not use your preferred camera position because of obstacles. Imagine you wanted to take a photo of a large house from a central perspective. If you took the picture from the ideal position, a lamppost would be right in front of the house. Therefore you move approximately four meters to the right so that the lamppost appears next to the house. Of course, the house is now no longer depicted ideally as it would be in the central perspective.

You can solve this problem with the LensTRUE system. Take the picture as usual with the LensTRUE meter switched on from a position that is four meters to the right of the ideal position and open it in the visualizer. In the **Correction** section, leave the **Automatic** option enabled. The results will look the same as the following screenshot at first:



Now enable **Transformation** and move the **Y** slider to the right into the positive range to virtually move the camera further to the left. The vertical lines of the building become skewed. Compensate this by moving the **Z** slider to the left into the negative range. Display the vertical helper lines or the **Full Grid** for orientation. The result is virtual rotation of the camera to a central perspective as shown in the following picture. However, the side areas of the house will not become as narrow as you would expect from this perspective. In our example, note the horizontal lines of the house-shaped cubes. They run towards each other to the left in a row perspective. In the following result image, they run parallel as if in a shot from the central perspective.



If you want to move the camera virtually to the right, move the **Y** slider to the left into the negative range and the **Z** slider to the right into the positive range.

The virtual perspective change simulates swinging the rear standard of a view camera.

## What happens during deskewing?

In the first step, the lens-related distortion is basically removed from the pictures. We have precisely measured the lenses listed under **Show supported Lenses** for this purpose. You may be familiar with this function in programs like Lightroom. The result is a picture that a lens without any distortion would have produced.

Even very good lenses always have at least minimal distortion. The result of this first step will not be visible for you as the perspective deskewing will be performed in the second step. This deskewing process is based on complex, geometric calculations that allow, for example, a circle aligned parallel to the image plane anywhere in the picture to be reproduced perfectly round and not appear distorted as an ellipse. The perspective deskewing performs the same task as a shift lens with very large adjustment range, but does not have the aforementioned disadvantages.

The picture is basically interpolated only once again, which keeps quality losses extremely low. Earlier software solutions often interpreted windowsills, for example, as two lines and caused further image faults like chromatic aberrations or even dot-like artifacts. LensTrue visualizer will effectively rule out this kind of problem. Please note that your pictures will become taller and be cropped at the edges during the deskewing process. Therefore leave slightly more of a margin than normally needed.

## TIFF files from other programs

The LensTRUE visualizer uses the same RAW converter as the old Aperture program from Apple and therefore delivers top quality. If, however, you would rather use the RAW converter from your preferred image processing software, you can import your pictures into Lightroom as usual, for example, and then export it in TIFF format with 16 bit per channel and with all metadata. The image may not be trimmed or deskewed manually or by a preference. Unfortunately not all EXIF data are exported by some programs.

In Lightroom 5.7, the information on the size of the sensor is missing from the TIFF files exported from Canon RAW files. Since, however, the camera model is listed, the visualizer can read the sensor size from an internal list that is continuously expanded. If necessary, send an unedited JPG or RAW image file from your camera for analysis to support@lenstrue.com.

In CaptureOne, the distance from the object is missing from the EXIF data of the exported TIFF files. Fully correct deskewing cannot be achieved without the information on the object distance. If you know the object distance, you can enter the value in the visualizer settings dialog. In addition, the lens type is not named completely. Therefore some lenses may not be recognized. This is indicated in the visualizer on the right-hand side under **Correction**.

We will publish further information on problems and possible solutions on our websites [www.LensTRUE.com](http://www.LensTRUE.com) and [www.jobo.com](http://www.jobo.com).

## Tips and tricks

To fix the sync cable, you can feed it through the strap loop on Canon cameras. Push the buckle or, even better, the small plastic fastener all the way down to fix the cable even more securely. Since the end of the strap needs to be near to the buckle so it does not dangle, you should feed it in which will make the strap longer. Adjust the other end to compensate this or shorten the strap. You can prevent the strap fraying at the cut edge by heating the end with a cigarette lighter to melt the fibers.



The rubber cover that covers the PC socket sticks out from the camera when the synchro cable is connected. If you want to avoid this, you can stamp a hole in the cover with a punch.



Single-hole punches from stationers create a suitable hole with a diameter of 6 mm. Keep the stamped out piece of rubber so you can glue it back in again if you want. If necessary, you can also close the hole with a piece of adhesive tape.

Please note: We provide no guarantee and accept no liability if you use these techniques.

## Support

If you have a problem with the LensTRUE system, please contact our support department.

[www.LensTRUE.com](http://www.LensTRUE.com) and [www.jobo.com](http://www.jobo.com)  
E-mail: [support@LensTRUE.com](mailto:support@LensTRUE.com)

## Further development

We plan to continuously expand and improve the LensTRUE system. In particular we will calibrate and support further cameras and lenses. You will find information on the supported lenses on our Web pages at [www.jobo.com](http://www.jobo.com) and [www.LensTRUE.com](http://www.LensTRUE.com). If you want to use a specific camera and specific lenses with the LensTRUE system, please contact us. We will then check whether we can quickly calibrate your equipment. We do plan to release a Windows version of the visualizer. However, we cannot as yet announce a date.

## System requirements

The LensTRUE visualizer program runs on Macintosh computers running Mac OS 10.8 and above with at least 8 GB of RAM. If you want to keep other programs open at the same time, we recommend 16 GB of RAM or more. A USB port is required to connect the LensTRUE meter.

## Technical data

The LensTRUE meter is equipped with a rechargeable battery that can be charged on any USB port on a computer or on any USB charger using the supplied standard USB cable. The charging time is approximately 3 hours and 15 minutes when the rechargeable battery is fully discharged.

## Supported Formats

LensTrue visualizer can import the following formats:  
JPG, TIFF and all RAW formats supported by your Mac OS:

- The following formats are supported under MacOS 10.10.1: <http://support.apple.com/en-us/HT203088>
- The following formats are supported under the older MacOS 10.9.5: <http://support.apple.com/en-us/HT201071>
- The following formats are supported under the older MacOS 10.8.x: <http://support.apple.com/en-us/HT201070>

Supported file extensions: CRW, CR2, JPG, NEF, TIF, TIFF, DNG

### Warranty conditions

This product is subject to the legal warranty periods relating to manufacturing faults and defects.

### Substance of the warranty:

1. In the event of malfunctioning caused by manufacturing defects JOBO will repair or replace the defective product at its own discretion.
2. JOBO and its suppliers do not assume any liability for data losses occurring during operation of the device or consequential damage resulting from this. Under no circumstances will JOBO assume liability for any direct, concrete or special damage or consequential damage like for example damage to or loss of property or devices, loss of profits or sales, costs for spare parts, expenditure or inconvenience caused by the interruption of service or any other damage. The user will be exclusively responsible for the loss, damage or destruction of data during the operation of a JOBO product. Under no circumstances will JOBO be liable for the recreation of such data. Under no circumstances can claims be lodged that exceed the purchase price of the product.
3. The following repairs are not covered by the warranty and must be paid for separately:
  - Malfunctions after the end of the legal warranty periods.
  - Change of battery after the end of the warranty period.
  - Malfunctions due to incorrect operation by the user (if device is not used as described in the manual).
  - Malfunctions caused by other devices.
  - Changes or damage to the device not caused by the manufacturer. especially, warranty claims will lapse if the device has been opened by anyone other than by a JOBO repair workshop.
  - Damage caused by natural disasters (acts of God).

If you want to make any claims under the warranty you are asked to contact the Technical Service of JOBO. You will be expected to quote the serial number of the JOBO product and may also have to submit proof of purchase to show that the warranty period has not yet elapsed.

### Service

If you have any questions on or need help with our products please do not hesitate to get in touch with our Technical Service:

JOBO International GmbH  
Kölner Straße 58a  
D-51645 Gummersbach

[www.jobo.com](http://www.jobo.com)

### Waste Management

#### Packaging



To avoid damage and pollution of the product the Camera will be delivered within a packaging. These Packaging can be recycled. Disposal of WEEE (Waste Electrical and Electronic Equipment).

#### Device at end of life



To avoid damage and pollution of the product the Camera will be delivered within a packaging. These Packaging can be recycled. Disposal of WEEE (Waste Electrical and Electronic Equipment)

By orderly disposing you will avoid damage to be caused to the environment.

Note: We reserve the right to modify technical values within the scope of product improvements.



## Impressum

Manual by Hagen Henke

© 2015 JOBO International GmbH. All rights reserved.

Sales: JOBO International GmbH, Kölner Straße 58a, D-51645 Gummersbach

This book including all parts is protected by copyright. It may not be reproduced in any form outside of copyright laws without permission from the author. This applies in particular to photocopying, translation, copying onto microfilm and storage and processing on electronic systems.

All due care was taken during the compilation of this book. However, errors cannot be completely ruled out. The author and distributors therefore accept no responsibility for any program or documentation errors or their consequences.

This manual was written on a Mac using Adobe InDesign.

Almost all software, hardware and other products or company names mentioned in this manual are registered trademarks and should be respected as such. The following list is not necessarily complete.

Apple, the Apple logo, and Macintosh are trademarks of Apple, registered in the United States and other countries. Mac and the Mac OS logo are trademarks of Apple.

Photo credits: All pictures: Detlef Großpietsch except p. 4-5 Johannes Bockemühl

Typesetting: Hagen Henke

Manual version 1.5 for visualizer 1.5.5, Meissen / Germany 2015