

# Tips for Shooting Great 3D Photos with the Fuji W1 Camera

by Ken Burgess, Cyclopital3D

3D photography differs from 2D photography in many ways. While it can be more of a challenge to be “abstract” with 3D photography, the realism it's capable of delivering is beyond compare. “Straight” 3D images can make you feel like you're there again, bringing back memories with fidelity. Close up and macro 3D images can be stunning, revealing a world yet seen by only a few. We hope you enjoy capturing your life's moments in 3D, it literally adds a whole new dimension to photography.

Note that the following should be considered suggestions, not rules, creativity in photography often demands ignoring the norms of technique.

## Basic Tips:

1. Don't turn your camera vertically. Stereo photos must be taken side by side horizontally like your eyes, if you turn the camera vertical, you will end up with a photo that's “sideways” when you view it. (the 3D effect will be lost if you rotate a 3D photo 90 degrees).
2. Be careful not to get a finger in front of either lens. A common problem with single lens camera, it's twice as easy to get a finger in front of a lens where there are two. Some people recommend using a mono-pod or handle to avoid the risk.
3. Make sure both lenses are clean. A spot on one lens will ruin the the 3D photo, so keep a lens cloth with the camera and clean the lenses often to play it safe.
4. Be aware of where your light is coming from. The “old school rule” of having the light behind the camera still holds in 3D. Bright lights over and around the subject can cause flares of light in the photo. Shielding the lenses with your hand or a gobo [http://en.wikipedia.org/wiki/Gobo\\_\(lighting\)](http://en.wikipedia.org/wiki/Gobo_(lighting)) may help.
5. Try to compose with several “depth steps” in the frame; that is multiple objects at different distances, this will enhance the 3D effect in your photo. Receding lines leading into the background also enhance the apparent “depth” of the image.
6. The best 3D effects are seen in the near-field, so don't get too far from your subject. The most dramatic range of the 3D affect is obtained when the main subject is from 3 to 10 feet from the camera, or even closer, but for that you must use “close up techniques” (see “For Advanced Users”). The camera takes beautiful landscapes from a greater distance but the 3D effects will be minimal unless you also have a subject in the foreground, or even better, several “depth steps” or lines receding into the background.
7. You should try to keep the horizon in the scene level. This sounds like a basic photographic technique, which it is, but a tilted horizon is especially disturbing in 3D photos and more difficult to correct after the fact.

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8. Shoot in the “P” mode (auto) when first learning the camera. The “P” mode allows you to change the ISO but still adjusts the aperture and shutter automatically to obtain the correct exposure. To reduce image noise use as low an ISO as is reasonable for the shot. (In “A” mode the camera tends to bias toward higher ISOs).
9. To capture a more natural looking picture in low light use a tripod instead of the flash. If lighting is too low to shoot without a flash the screen indicators will be red. You can switch to “Night Tripod” mode to enable shutter speeds longer than ½ second (the maximum for all other modes).
10. When using the on-camera flash try to place subject at an optimum of about 5 to 8 feet from the camera. Also, try to make sure there is nothing close behind the subject because the shadows created on a near wall by the on-camera flash can look bad in a 3D photo. When subjects are further than 8 feet from the camera a slave flash is recommended. Also a slave flash placed above or to one side of the camera will result in more natural looking light and shadows. Note, a slave flash triggered by the on-camera flash will work with the Fuji W1. However the slave flash must support “Digital” mode, so it can be set to ignore a “pre-flash”, there is no way to turn off the pre-flash on the Fuji W1.

### For Advanced Users:

There are a few concepts in stereoscopic (3D) photography that do not exist in 2D. The first new concept is the “Stereo Window.” When you see a (normal) 3D photo it's like you are looking at the scene photographed through a “window.” The apparent distance from the viewer (or camera) to the window can be adjusted after the picture is taken. This adjustment is rather critical for “good 3D” and you should learn about it (lots of good info on the Web). Fuji uses the term “Parallax” to refer to the way you set the distance from the camera to the Stereo Window “on camera” (see number 5 below).

Another “parameter” that exists in 3D but not 2D is called “disparity.” You can think of it as the difference between the right and left images, they look the same, but they are not the same. Objects in the background of a 3D image are in the same position in both the left and right images, if you put the right and left images on top of each other objects in the background will overlap exactly. Not so for objects in the foreground, these will be shifted horizontally between the two images and won't “overlap” exactly in the “stacked” images. The amount of this “non-overlap” of the closest object in the scene is the total deviation (usually represented as a percentage of the image width). If the deviation is too large (greater than 3 or 4%) it will be difficult to fuse the two images into the “Cyclopean Image,” (the image seen by your mind in 3D).

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## Advanced 3D Photographic Tips:

1. Don't get too close to your subject unless everything seen in the viewfinder is near. If you get too close and also have something in the frame that's far away, the image may be difficult to fuse in 3D. One way to get around a distant background for close ups is to shoot up against the sky (exposing for the subject), or to put a "blank" cardboard background just behind the subject blocking the distant background. Rule of thumb, for objects closer than 3 feet, the furthest background object should be no more than about three times the distance to the subject.
2. Use the zoom function for close up work. Instead of getting too close to your subject, back up a little and use the camera's zoom function to get "close". For close up work one might normally use a small interaxial (camera lenses close together, in order to minimize the total deviation) but since the lenses on the Fuji are fixed this is not possible. You can get the same result by moving back and zooming in, in this case the angle formed between the subject and each lens is smaller than if you were close, just like you had moved the lenses together.
3. Use Aperture Priority or Manual mode and shoot with a small aperture (high f-number) to get the maximum depth of field in your photo. The small aperture will sharpen everything in the photo for a clearer, crisper image. In 3D photos you usually want everything from the foreground to the background to be in sharp focus.
4. Use the lowest ISO setting that is reasonable for the shot to reduce noise in the photo; ISO 100 is recommended. Excess noise can be detrimental to the 3D effect in a photo, it causes a kind of "haze" at the 3D position of the Stereo Window, like the window your looking through is dirty.
5. About the "Parallax" setting: You can manually adjust the "parallax" on the camera to set the position of the Stereo Window. The auto setting, which places the Stereo Window at the distance of the focused object, is only optimal when the subject focused on is the closest object in the frame. If anything is in front of the main subject you can use the parallax adjustment to set the Stereo Window slightly closer than the closest object. Note that the parallax value used by the camera can be completely over-ridden by image processing on a computer, if it turns out to be wrong "on camera" it can (and should) be corrected later.

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## Tips for Viewing 3D Photos:

There are many ways to view your 3D photos. Even if you don't own the “best” system today, your efforts in 3D will endure, and will become easier to view as more and better digital 3D viewing systems are introduced. You can, in fact, view your Fuji W1 images in 3D without using a “stereoscope” or 3D viewing device, instead you can use a method called “stereoscopic free viewing” (Google it!).

Specific devices made for 3D viewing make it easier and improve the quality of the experience, these devices include:

- 3D monitor for your computer with passive polarized or active shutter glasses.
- 3D print stereoscope, of which there are many types.
- Standard computer monitor using a “screen stereoscope” (like the one from Loreo)
- 3DTV (LCD or Plasma with active shutter glasses)
- 3D projection system with passive polarized or active shutter glasses.
- 3D “auto-stereoscopic” photo frame, like the Fuji V1 (no glasses required).
- Portable Digital Stereoscope, like the one from Cyclopital3D!
- 3D “lenticular” prints, (from Fuji at: <http://www.seehere.com/>)
- 3D Anaglyph prints, using red and blue glasses (my least favorite...)

The best 3D viewing methods provide a wide field of view, a bright image and little “ghosting” between the right and left images. Some support simultaneous viewing by more than one person, while others only work for one person at a time. You will have to decide what works best for you, you will probably find yourself using more than one method.

## Tips for Image Processing and Storage:

Your camera comes with a CD that contains the Fuji FinePixViewer software. Unfortunately this software is not very useful as it does not yet support 3D (2010). You can use it to copy pictures from your camera to your computer, and to split the .MPO files your camera makes into Left and Right .JPG files, but that's as far as it goes.

Also, the camera does not connect to the computer as a “USB Mass Storage Device,” meaning that is it does not show up on your computer as a “disk drive” when you connect it using USB. Instead it shows up as a “camera,” and since the 3D images are stored in .MPO files instead of .JPG files most software that works with the “USB Camera Model” won't recognize the 3D photos. A better method is to take the memory card out of your camera and use a USB card reader to transfer the .MPO files to your computer.

Another confusing factor is that your camera, by default, creates 2D .JPG files along side (and named the same as) the 3D .MPO files for every picture you take. There is really no use for the 2D .JPG files, so to reduce confusion and save memory space it's better to set your camera to just record .MPO files. You can use Windows Explorer to transfer the .MPO files when your camera is connected via USB, but you cannot delete them off the camera using Windows Explorer (go

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figure). To delete them from the camera you can format the card, but that all seems a lot more tedious than just using a USB card reader to “move” the files to your computer.

OK, you've got the .MPO files onto your computer, now what? Well, it turns out there are several good programs you can use to process the .MPO files into something you can print or view with one of the various methods previously enumerated. However there is one program that seems to have a lot of inertia and works quite well, it's also free, it's called StereoPhoto Maker (SPM). You can get SPM from: <http://stereo.jpn.org/eng/stphmkr/>

SPM supports the .MPO files from your camera directly. It also has good tools for stereo alignment, stereo cropping, stereo color balance etc. The best part is that it has quite an extensive help system that “teaches” 3D. In addition several SPM tutorials have been contributed by persons in the “3D community” to help you get started, you can find links to these tutorials on the same site.

Everyone's “work-flow” is different, as is the way each decides to organize their photographs. I have no intention of imposing a specific structure, but it might help if I describe how I process and organize my 3D photos. First of all I happen to like cross-eyed free viewing, or I should say previewing when I'm sorting and working with 3D images that I'm not actually “looking at.” This makes sorting particularly easy (once you learn how to free view) because cross-eyed photos of almost any size can be free viewed in 3D without “viewing aids” or “display mode switching.” Because of this I usually convert my .MPO files to side by side cross eyed .JPG files first thing, and then just archive the .MPO files. When I make a presentation of 3D images I convert the images from cross-eyed format to whatever format is needed by the display device I'm using for the presentation. Collections are either organized by date, or in a “subject” directory. When I do the initial conversion from .MPO to .JPG I also use the “auto alignment” feature in SPM to improve the stereo alignment and set the stereo window. Then I look at all the images, sort out the trash, and check the stereo window position on the ones I like. If the window is not right, or if the image would look better with a different window position I adjust it manually in SPM.

I often use another program called “Cosima” (<http://www.herbig-3d.de/cosima/>) for the initial processing. This program is not free, but I think it does a little better job than SPM, particularly with regard to the initial setting of the Stereo Window, so in the end I have to do less manually.

The two programs mentioned only work on PCs, or in a PC emulator on the Mac. There are also programs for stereoscopic photography that run native on the Mac (but I've never used any of them).

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## The “3D Community”:

There is a wealth of information on the Internet on 3D or stereoscopic photography. There are also some specific discussion groups dedicated to 3D photography such as:

<http://groups.yahoo.com/group/photo-3d/>

<http://www.3dphoto.net/forum/index.php>

at least one group that is specific to the Fuji W1 camera:

<http://tech.groups.yahoo.com/group/fuji3d/>

The friendly people in these communities are generally eager to help beginners and to discuss advanced 3D techniques in an educational format. The groups also have sections dedicated to sharing 3D photos for constructive criticism and for the general enjoyment of 3D photography.

Lastly, there are several organized 3D photography clubs that have existed for many years. They are organized at the local, national, and international levels. In the U.S. The national club is called the National Stereoscopic Association (NSA) it holds an annual conference in a different city every year, it can be quite a lot of fun. The International Stereoscopic Union (ISU) has members from countries all over the world and holds a World Congress bi-annually in different countries. If you really get into 3D photography and want to interact with other enthusiasts to learn, teach and share, these meetings are a great way to do it.