Zero Creative FAQ – xyZ 3D Display

This document provides answers to some frequently asked questions regarding the xyZ 3D Displays.

What do I need to use a xyZ 3D Display?

To use a xyZ 3D Display a special playback PC is required. This PC can be assembled by system integrators using our specifications. The playback PC shall include our 3D mediaplayer software and the custom made 3D Content (3D animation of interactive 3D). The most up2date PC specifications can be found in the xyZ 3D Display specifications document. Also, obviously, you will need proper 3D content (3D video or application) to use on the xyZ 3D Display.

Which display sizes are available?

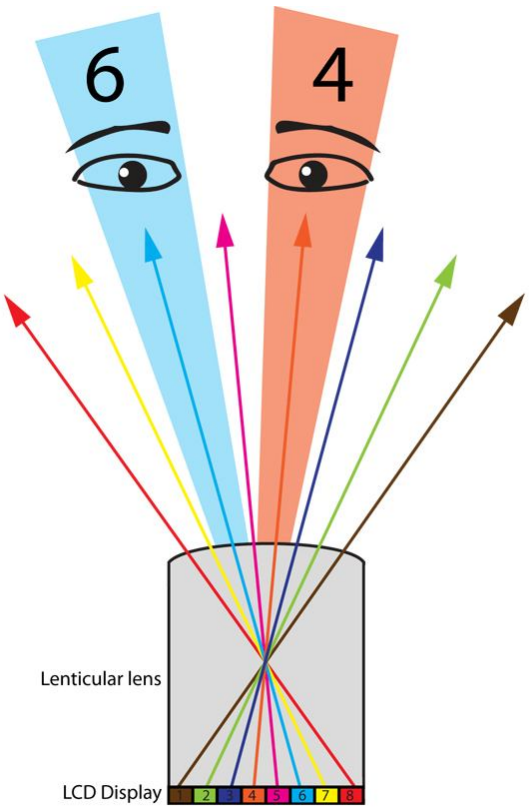
The xyZ 3D Display is currently available in 4 sizes: 24", 46", 63" and 71". Many other sizes are possible to as custom project, based on a minimum order quantity (MOQ).

How does 3D work?

In order to observe real 3D our left eye needs to see a (slightly) different image than our right eye. When one eye is shut, it's impossible to experience any depth (3D). The xyZ 3D Displays use technology to make it possible to feed different images to the left and right eye simultaneously.

This is particularly done by the Lenticular lens which is mounted in front of the display. This Lenticular lens is cut in a super accurate way so that the direction for each image point (pixel) of the monitor can be determined.

In this way the pixels of the screen are (usually) spread across 8 possible viewing angles, of which our eyes while see 2 at the time. The 8 viewing angles or images that we want are projected on the xyZ 3D Display using a special algorithm.



What's a Lenticular lens?

For the current 3D displays in most cases Lenticular lenses or parallax-barrier are being used. The xyZ 3D Displays use a Lenticular lens. Although these lenses are more expensive in production, they offer great benefits, which is particularly reflected in the preservation of contrast / brightness and a more accurate image as well as a stronger (more convincing) 3D effect. The Lenticular lens has been used for many decades and is used before (lower quality) in special "3D" postcards and other articles.

The parallax-barrier lenses, as the name says, block a lot of light decreasing the contrast significantly (~50%). An often heard disadvantage of this simpler technique is that equipped screens often are being overlooked, hence they have relatively little effect and utility.

Why 8 viewing angles?

The number of viewing angles is a trade-off made after much research and many experiments. Use of less viewing angles gives no satisfactory 3D image, but allows for higher image quality (resolution), while more viewing angles no longer contribute to the 3D effect and may resolve in a huge decline in image quality.

Another consideration in the number of viewing angles is the "stability" of the image. When only a few viewing angles are used, the viewer needs to stand right in front of the screen in order to see depth, but too many viewing angles makes the picture very troubled and full of "echoes", the viewing angles and transitions between might get mixed up potentially causing a “sick” feeling among the viewer(s).

The number of viewing angles is also dependent on the size of the screen. The 71" screen uses more viewing angles to ensure that there aren't too many transitions (transitions between viewing angles) which would make the picture less pleasant to watch.

What does Autostereoscopy mean?

The technique for combining multiple viewing angles and to enable viewers to watch a 3D display from multiple angles to see 3D without using 3D glasses, is also known as autostereoscopy. There are also 3D screens (from an older generation) which are not autostereoscopic, these screens are only suitable for 1 viewer, because the 3D effect is only visible if someone sits in front of the screen. This (old) technology works with 2 viewing angles (left / right). In the video sector, the term Autostereoscopic 3D Display is also abbreviated as "AS3D" Display.

There are other types of 3D Displays that do require 3D glasses, these are not autostereoscopic.

What do we mean by “3D Effect”?

When it comes to the quality of the 3D effect, there are a number of different factors involved.

First of all, there's the 3D effect in the sense of “how far” an object pops out of the screen. Our xyZ 3D Displays excel in this. Although the maximum 3D effect also depends on the type of content (shapes, colours etc) we have determined that an object can easily pop out about 35 to 45 cm at a reasonably quality, based on a 46” xyZ 3D Display. The maximum distance is approximately 80 cm. This distance also depends on the screen. A reasonable calculation is: for every inch screen size 2 cm 3D effect. A 71" 3D display will be able to pop out 3D content up to 150 cm 3D.

Another aspect is the angle in which the 3D effect can be seen, this is approximately 100 degrees measured from the surface of the screen.

The last value we look at is the range in the sense of “distance” from the screen. Here also xyZ scores remarkably high. Based on screens of 46" a clear 3D image starts at less than 2 meter range (depending on the type of content) and stays intact up to 12 meters away.

For more detailed information and up to date specification of the screens check the latest specification document.

What kind of input signal does xyZ need?

To show 3D effect on the xyz 3D Display the content (image) must be encoded according to a particular algorithm (calculation).

It should be based on 8 viewing angles combined into one HD image (1920x1080). These 8 views, for example, might be 8 different (virtual) cameras at an equal distance from each other with the focus on the same subject. Zero Creative delivers standard playback software that can play 3D content directly on the screens using a proper PC.

NOTE: Because the signal is encoded through a special algorithm, the video signal between PC and display may NOT be compressed. Compression "destroys" the 3D signal.

Which software is needed to playback 3D content?

To playback 3D video, we offer a special player, that is able to playback our special 3D video format and encode the signal required for the xyZ 3D Display. This is the xyZinema 3D Player. This player can also playback the old / standard (Philips) 2D + depth format, so any existing 3D content (from the old Philips system) could still be used as well the content of vendors like New Sight. The xyZinema 3D Player can also play traditional 2D content on the xyZ 3D Display either with or without 3D effect.

Can I playback 2D content on the xyZ 3D Displays?

When it comes to film or photo-like content, you're able to play it back on our 3D displays. When you need to display clear details such as small characters of desktop usage, we recommend you to choose a model that allows to switch between 2D and 3D mode. xyZ is currently the only brand in the world that offers this for real, with 100% 2D quality. The so called xyZ 2D/3D Switchable Display is unique in the world and is the only Lenticular Autostereoscopic 3D Display that allows ultra sharp 2D. This is particularly interesting for desktop use, for example in an office or home environment (gaming). 2D/3D switchable displays are available on request (not standard)!

Is it possible to playback 2D as 3D / Convert 2D to 3D?

Zero Creative provides a service to convert existing 2D (normal AVI, MPG, WMV, or DVD etc), to a thrilling 3D video. This is a custom service, pricing on request, depending on the video length and format. Another option is to use Zero Creative's "3DZignage" (3D Digital Signage) software to playback 2D content (video or images) in an exiting 3D environment, giving them a certain 3D effect. Furthermore our standard free 3D Player software can also playback 2D video and add certain 3D effect in real time.

I'm a 3D content creator, can I make my own 3D content for xyZ?

Yes, you can! And you can choose between 4 types of 3D video content formats, that our 3D Player supports:

9 Tile xyZ format
On special request you can license our special render plugin for Autodesk 3D Studio Max. This way you can render our 9-view 3D video format. This software is restricted to authorized companies only, after certification. The main advantage of this format is that it offers the most accurate 3D viewing, because all viewing angles are rendered separately. However, resolution might fall back a little.

8 Tile format
This is a 3d format that has been used for some years already by other 3D display vendors such as New Sight, Sunvay and more mostly parallax-barrier based displays.

2D + Depth
Our player also supports the standard of 2D+Depth, this format was also adopted by Philips earlier. It's quite easy to generate. The left side of the video is 2D, the right side of the video represents a greyscale depth map. The biggest advantage of this format is that the resolution is maximized, giving a sharper image than the xyZ Format. The disadvantage however, is that 3D is less accurate because all viewing angles are simulated, hence possibly resulting in some unwanted side effects.

Stereo Left-Right
Playback of stereo content (left and right side by side) is also possible, however currently it has limitations regarding viewing area. Using stereo 3D content viewers need to be at precise locations to see the accurate 3D effect.

Why choose Zero Creative / xyZ?

First of all we're convinced of the unsurpassed quality of our xyz 3D Displays. If you choose the most eye-catching solution, then choose xyZ, with extreme 3D effects and a choice of multiple screen sizes (24/46/63/71"). Zero Creative is not an electronic company, we provide a total package. What could you possibly do with a 3D Display without proper content?

Zero Creative offers not only hardware but also the content and the most state of the art software. Whether this is 3D animation film or fully interactive real-time 3D, everything from one source. From customized to "plug & play". Zero Creative is also the sole / first in the world to develop and sell a fully 3D based Digital Signage platform.

We don't promise, we deliver.