PROJECTION TECHNOLOGY - WHICH SHOULD YOU CHOOSE?

Gouldian Finch | March 4, 2019 Entertainment

Once upon a time, most products came in a single variant. In 1909, in fact, Henry Ford famously said that his cars could be painted any color “as long as it’s black”.

In this day and age, for better or for worse, such limitations are very much a thing of the past.

This goes double for technology, whether it be smartphones, tablets, TVs, or even projectors. With dozens of manufacturers and products, we’re not projecting when we say that the sheer volume of choice can be overwhelming.

Puns aside, let's not beat around the bush – selecting a projector is tough!

After you have settled on buying a projector, as opposed to a TV, you then have to sift through loads of information about different projector makes, models, and technologies to help make an informed purchase. Hence the overwhelming volume of choice that we mentioned earlier.

Luckily, we're here to help. Below, we take a look at the two most common projection technology types on the market - DLP and LCD. When all is said and done, hopefully, you'll have all the relevant information you need to make an effective DLP vs. LCD comparison. If that prospect sounds like it's up your alley, you may want to keep reading.

About DLP projection technology

DLP, or Digital Light Processing, is a projection technology that is based on a digital micromirror device. While the inherent technology was invented by Texas Instruments in 1987, it became widely available for the first time a decade later when it was integrated into projectors.

Today, DLP usage is divided into several projection categories ranging from classroom-based projectors, home entertainment projectors, and even cinema projectors.

How DLP projectors work

DLP projectors work by way of a digital micromirror device, or DMD. As the key component to a DLP projector's functionality, this device is of absolute importance. Although tiny, the digital micromirror device lives up to its

name by covering itself with thousands (or millions) of micro-sized mirrors, which reflect digital images onto external surfaces.

Another factor of DLP projector function relates to the presence of color. Naturally, a DMD will only produce greyscale images. In order to achieve color, your DLP project will require a color chip to be added to the image before it's ready to be projected – usually in the form of a 'color wheel'.

Primarily, the difference between the chip numbers is the quality of color in the projected image. By and large, personal or informal users will only ever seed a single-chip projector. In this context, the image being produced by the DMD will be filtered through a synchronized color wheel chip, equipped with all three primary colors, in order to bring the image out of the black and white era.

Conversely, a three-chip DLP projector is for high-end or professional users. Through this variant, the number of colors produced, in fact, greatly exceeds the number that the human eye is capable of perceiving, hence its niche status. As compared to the single-chip method, three synchronized color filters are inserted, each representing a primary color. This allows for a more dynamic approach to color creation, thus offering the astounding variety mentioned earlier.

More advanced DMD chips, like the one used in the ViewSonic PX747-4K, leverage advanced XPR technology to create 4K UHD resolution. This works by allowing the DMD chip to rapidly shift pixels in a manner that takes Full HD resolution (1920 x 1080 pixels) and quadruples them to create 4K Ultra HD resolution (8.3 million pixels).

About LCD projection technology

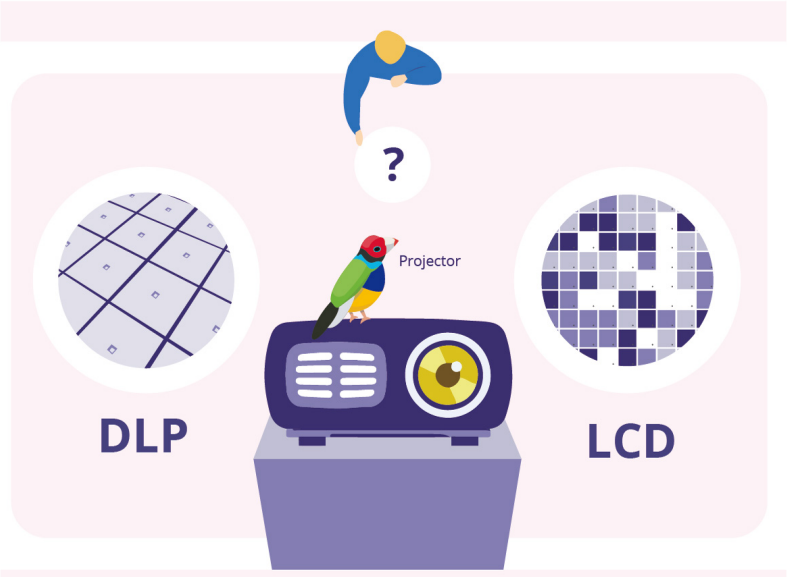
LCD, or liquid crystal display, is a projection technology that centers around the use of mirrors and a prism to project images.

In the case of projectors, the first available models came in the late-1980s. Despite the early market entrance, LCD projection technology is currently in competition with newer technologies including DLP and LCoS.

How LCD projectors work

LCD projectors, on the whole, work in a manner similar to a middle school science experiment. That is to say, how a light source interacts with a prism. To start, the internal lamp transmits light that is quickly split to create Red, Green, and Blue (RGB) light.

From there, the light converges at a final prism before going through the projection output panels, which include the LCD itself, in order to properly project itself onto the designated screen at the correct pixel resolution. The size of the image is also determined at this stage, as the user is often able to customize the throw ratio. The function of an LCD projector really is that simple.

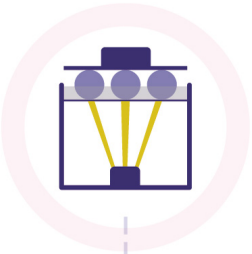


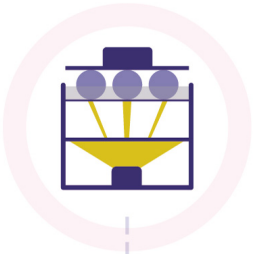
Digital Light Processing

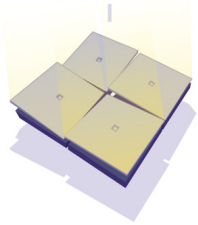
Utilizes a pre-existing light source to project an entire image at once.

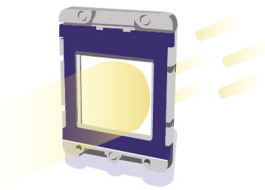
Liquid Crystal Display

Generates and uses its own light source to project an entire image at once.









Brightness

LCD

DLP

Resolution

LCD > DLP

Contrast

LCD > DLP

Product Price

LCD < DLP

DLP vs. LCD projectors: Deciding which is best for you

When comparing DLP vs. LCD projectors, as well as their projection technology, for home entertainment, you'll want to take note of the following characteristics.

Contrast

Contrast ratio may be the most important factor when determining whether images look good or not. In lieu of getting too technical, contrast simply refers to the relationship between black levels and brightness. In essence, contrast indicates how well a projector can project light to the darker areas on-screen versus those of the lighter areas.

Although personal preference is subjective, an image projected with a low contrast ratio can look 'flat' when compared to the same image projected with a high contrast ratio. When deciding between a DLP vs. LCD projector for home entertainment, its best to put both technologies to the test to find out which is best for you.

Black Level

Black level is a characteristic that ties into contrast ratio, as the deeper blacks a projector is able to produce, the better the contrast ratio can potentially be. When comparing the contrast ratio of DLP vs. LCD projectors, make sure to also determine which black levels you prefer better.

Image Quality

Of course, if you plan to invest in a projector, chances are high that you'd like the projection image quality to be as

high as possible. When comparing DLP vs. LCD projectors, take note of characteristics such as the “Rainbow Effect” which is caused by light leakage and the “Screen Door Effect”, which is a form of image pixelation.

These effects may be more or less noticeable depending on the projector model being used. It’s always best to use your own discretion to decide whether you can notice either of these effects on your projector and if it will have a negative impact on your viewing experience.

Price

As compared to other factors, the price is difficult to compare when doing a DLP vs. LCD projection technology comparison. As with just about anything, all else being equal, price is largely related to quality, functionality, and features.

With that in mind, DLP and LCD projectors occupy similar price points. The only difference is light source replacement. When researching projectors make sure to do some research about how often the light source on your specific model will have to be replaced and factor this into your price.

While the extra cost associated with replacing the light source may sound like a disadvantage, the benefit is that replacing the light source will restore any degradation in image quality stemming from the light source back to its original state.

Light Source

Without a light source, frankly, projection would be impossible!

Light is, without exception, necessary to reflect against a DLP projector’s digital micromirror device and an LCD projector’s mirrors and prisms.

According to Texas Instruments, DLP projectors *“can be used with virtually any light source”,* such as a laser, LED, or lamp.

When doing your DLP vs. LCD projection technology comparison make sure to do some research about different light source options and choose the best one for you.

Portability

If portability is something you desire in a projector, then seeking out a smaller, lighter projector that can still perform well is going to be your ideal choice.

Portability minded projector buyers can rejoice in the fact that recent advancements in DLP technology have made it possible for these types of projectors to be made smaller and lighter than earlier DLP projectors.

Additionally, the light source used in a projector will also have an effect on its size and weight.

DLP vs LCD projection technology:

Comparing the pros and cons

When making a choice between DLP vs. LCD projectors and their projection technology, the factors that matter most to you will ultimately win the day.

While researching the best projector option for you, it's a good idea to keep a list of pros and cons for each projector type to find the best fit for your situation.

Testing out each type of projector and keeping a side by side comparison list of the features listed above will get you off to a good start!

Luckily for all of you potential projector buyers out there, advancements in projector technology have brought high-quality DLP projector prices down much lower than they used to be. This has made experiencing the benefits of using high resolution, high-brightness projectors in your home more accessible than ever before.

If you are interested in going the home entertainment route, we have included two of our recommended 4K resolution projector picks below to help get you on your way to experiencing home entertainment like never before!

ViewSonic PX747-4K

ViewSonic PX727-4K

You May Also Be Interested In