

LCD Computer Monitors vs. LED Computer Monitors

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If you are looking for a computer monitor to replace your old and bulky CRT monitor, either an LCD or LED monitor is a major upgrade. If you are deciding between an LED or LCD model, there is not much difference for the regular computer user. If, however, you have to get the newest gadget on the market, get the LED because it is new. For all others, the only reason to justify the extra expense of the LED is if you are a professional in the visual arts or a gaming enthusiast. Computer animation artists, graphic designers, and video producers will enjoy more vivid colors and sharper images on the LCD monitor. You should know the differences in LCD and LED technology, and what that means to the objective specifications and your subjective viewing experience.



Liquid Crystal Diode (LCD) Monitors

An LCD monitor is one with a fluorescent panel and cold cathode technology. This type of monitor is an improvement over the older cathode ray tube (CRT) monitors, which used a vacuum tube to emit electrons onto the fluorescent panel. LCD offers improvements with almost half the power usage, a mercury-free environment, and low electromagnetic interference (EMI). Also of importance to consumers are the weight reduction and the much slimmer design of about 1/2-inch thick.

Liquid crystal diode (LCD) technology is a form of lighting used in computer monitors, [laptops](#), and [televisions](#), along with various other forms of home and outdoor lighting. It uses cold-cathode fluorescent lights known as CFL lights to illuminate the screen for viewing graphics, text, and video. LCD contains a cold cathode and twisting crystal lights as the defining technology.

Cold Cathode

The cold cathode is the first part of the equation in LCD technology. A cold cathode emits electrons in a cascade of mercury vapor that turns to ultraviolet light, leading the fluorescent coating on the monitor to light up in a process known as fluorescent CFL backlighting. In contrast, a hot cathode develops light by an electric current passing

through a filament. The cold cathode is not operating at low temperatures though, as an electric current does mediate the process, and is the main power drag on the monitor. In addition, even when there is a high degree of black in the image, the electric current is still operating, but the fluorescent screen just blocks the light. This light-blocking system to create black is a primary inefficiency in power and has implications for realistic color.

Twisting Crystals

The fluorescent panel is the second part of the equation of an LCD monitor. The fluorescent screen is made up of liquid crystals that twist and react to the electrical current, hence the name. The crystals act as light conduits, and their shape, as they transform, determines how much light flows through to paint the pixels on the screen.

Previous Versions of LCD

Earlier versions of LCD were called passive matrix, and the improved, current versions are known as active matrix. Active-matrix screens are more expensive, but the images are sharper and easier to view from different angles. Passive-matrix LCD has no internal transistors, while active-matrix LCD has a transistor at each subpixel, blue, red, and green. The newest LCD monitors are even more capable of excellent video viewing, as they are using greater refresh rates, having improved from 60Hz to 120Hz and 240Hz or more. The refresh rate is the number of times the screen is repainted or updated. A higher rate means less blurring, which is especially important when watching sports or playing video games.

Is an LCD Monitor for You?

If you want to give up your old [CRT monitor](#), an [LCD monitor](#) is the next step. They come in a wide range of sizes. They take up little space on your desk, and they are lightweight, so you can move them around easily. Many people can sit around the monitor and view it easily from all angles. They do well in brightly lit rooms, either with natural or artificial light.

Some people may be sensitive to blurring, such as those with neurological problems, so a high Hz LCD monitor is better. Companies often give this added benefit proprietary names. For example, Sony calls it "Motionflow." For most people though, the ordinary 120 Hz is sufficient.

These monitors are widely available from a range of manufacturers, and therefore are relatively inexpensive. They also save you money in the end, as they are much more energy efficient than the old CRT monitors, and they are environmentally safe with no mercury.

Light-Emitting Diode (LED) Monitors

Light-emitting diode (LED) computer monitors do not use cold-cathode technology and fluorescent technology. Instead, light diodes illuminate the screen in one of two different ways, or a combination of both. White LED lights are clustered around the rim of the screen and diffuse evenly, called edge lighting. LED lights are also spaced evenly behind the screen, and they are either not controlled or are controlled with a "local dimming" option. If you are looking for an [LED monitor](#), look for this local dimming on/off option.

LED Advantages

The advantage of LED backlighting is an even better energy savings, the best on the market, in fact. LED also offers better color quality, clarity, and faster refresh rates. The local-dimming option found in some models allows fine tuning of color, especially in the black-and-white ranges. When the black-and-white range is clearer, it provides a better contrast to the true colors, and therefore a more dynamic and realistic image. LED monitors offer even thinner construction than LCD monitors because of the LED lights around the edge of the panel.

What to Look Out For In LED

Previous incarnations of LED monitors had some issues with poor viewing angles, so many people could not sit around and view the images easily. Newer models are incorporating anti-glare technologies to improve viewing angles, but you should be aware that LED monitors might still have deficits in viewing angles compared to LCD monitors. In addition, as this technology is new, durability over time is yet unknown.

Is an LED Monitor for You?

Early adopters, those who enjoy being the first on their block to try something new, probably will not care much about the differences in technology or quality. It is new, and that is all that matters. For the rest of average consumers, the difference in picture quality is negligible and probably not worth the cost. For professionals in graphic design, computer animation, video editing, and the like, and for gaming and sports enthusiasts, the LED monitor is better.

Comparing LED to LCD Monitors

The main difference between these two technologies is the lighting technology: cold-cathode fluorescent lighting vs. light diodes. Following is a chart that stacks the two technologies side by side with their most important specifications. The two models compared are by the same manufacturer, and are the same size and resolution.

1920x1080 Resolution	LCD Monitor	LED Monitor
Contrast Ratio	12,000,000:1	100,000,000:1
Brightness	250 cd/m ²	250 cd/m ²
Weight	5.3 pounds	5.3 pounds
Energy Star qualified	no	yes

Resolution

Bigger screens usually mean better resolution. The resolution refers to the amount of picture pixels up by the number of pixels down. Pixels are the little dots that are the smallest unit used to create the picture. More pixels equal a richer, more colorful, and clearer image.

Contrast Ratio

This specification refers to the shading capabilities between black and white. A higher ratio means that color reproduction is more accurate. The LED wins here.

Brightness

The measure of brightness means that the image is clear and visible especially in very bright light. LED and LCD tie here, but may differ in some manufacturer's models.

Weight

These models tie here, but LED is often lighter comparatively. Both LED and LCD monitors totally outclass bulky CRT monitors in weight.

Energy Star

While LCD monitors are 40 percent more efficient than the old CRT monitors, LED monitors offer a 20 percent energy efficiency over the LCD monitors, which qualifies them for official energy savings recognition.

Buying LED and LCD Monitors on eBay

You can find both LED and LCD monitors on eBay, in both new and used condition. A used monitor in either category will represent a cost savings to you. Just keep in mind the shipping costs involved, which will vary according to the monitor's size and weight, and your location. Ask the seller if he or she has any special shipping policies that may help your budget. In addition, it may be wise to find a local seller who you can visit in order to see the monitor in action. One thing to look for is damaged pixels. Most new monitors are returnable if four or more pixels are damaged. A used monitor with a few damaged pixels may be worth it if the cost is adjusted accordingly.

To search for LED and LCD monitors, navigate to the [Electronics portal](#) on eBay. Choose [Desktops & All - in - Ones](#), and use the refinement filters to select your desired screen size. However, that search will likely turn up the CPU and accessories with the monitor, too. A better search would be to enter [Computer Monitors](#) in the search box. Choose your desired screen size from 15 inches to 27 inches. The refinement filters also allow you to choose [Display Technology](#), between LED and LCD models. Other refinements include brand, condition, price, features, and seller .

Conclusion

LED monitors and LCD monitors have objective and measurable specifications. Those measures affect your subjective viewing experience. If you are just a regular computer user without advanced imaging needs, you probably will not notice the difference between the two. However, you will notice it in your budget. Naturally, if you have a clunky CRT monitor on your desk, definitely upgrade to either the LCD or LED monitor, as they both offer thin profiles, and are lightweight and energy efficient.

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STOP lying - They have mercury....."contains mercury" doesn't mean "no mercury"

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Frank Klopper · Rau university

They both use LCD matrixes to create an image. Its only the back lighting that changes i.e. LED or flourescent tubes. Why do we insist on calling the LED backlit screens LED screens if its still an LCD screen? We should call them LED backlit or flourescent backlit LCD screens. Confusion and misinformation ensues.
There are LED screens and they are or at least used to be used for outdoor large screen displays. Each pixel is an LED and the res is normally very low. Not the same as an "LED' screen you buy for your TV viewing or PC monitor

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