**Introduction**

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**What Monitor Specs Require My Attention?**

The major specifications that you will need to consider when purchasing a computer monitor include size, refresh rate, bandwidth, horizontal rate scan, vertical refresh rate, resolution, aspect ratio, contrast ratio, response times, pixel pitch, viewing angles, display colors, brightness, connectors, built-in speakers and VESA compatibility.

Gone are the days when you said “I want a computer monitor” and went to the store to find limited options. Today we have a wide arrange of monitors to choose from, from LCD monitors to touch-screen models. Knowing which monitor is right for you also involves knowing the different types of monitors that are available. Here is a rundown of the different types of monitors you can purchase today.

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**Today’s Computer Monitor Choices**

**LCD Monitors**

LCD (Liquid Crystal Display) monitors are some of today’s most popular computer monitors. You can order these monitors in a wide range of sizes (typically ranging from 17 to 60 inches) and they save a lot of room when compared to CRT monitors.

**OLED Monitors**

OLED is an acronym for “organic light emitting display”. These computer monitors are even thinner than today’s LCD monitors. The display on OLED monitors works without a backlight. The design of these monitors allows them to provide improved brightness and wider viewing angles along with better power efficiency and faster response times.

**Touchscreen Computer Monitors**

Touchscreen computer monitors provide a whole new way of interacting with your computer. Instead of using your mouse and keypad to control your computer, you can touch your monitor screen, much like using an iPad, iPhone or similar touchscreen device.

**3D Computer Monitors**

We live in a world where technology is taking us places we never thought we would go, and 3D monitors are just one example of the leaps that technology has made. Gamers and those who watch movies on their home computers are often very interested in purchasing 3D computer monitors. However, 3D capability is not the only reason to consider a 3D computer monitor. 3D monitors tend to be more responsive, they provide better graphic quality and a faster refresh rate. For consumers who want the best of everything, many are turning to 3D computer monitors for their computing needs.

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**The Specifications You Need to Consider**

So now that you know the variety of computer monitors that are available to you, it’s time to look at the specifications you need to consider when selecting a monitor. For many, trying to decipher the monitor specifications can be like trying to translate ancient Greek texts. Don’t worry. Here we discuss the specs you need to focus on and provide you with explanations as to why they are important.

When purchasing a monitor, some specifications will be more important to you than others depending on how you intend to use your computer. Knowing what specs you specifically need to look for entails knowing which monitors will best serve your particular needs.

**Size**

One of the first things most consumers look at when purchasing a monitor is the size. The sizes of monitors can vary widely and, depending on the type of monitor you buy, can be placed in a number of creative locations (including the wall). It’s important to remember, however, that when you purchase a monitor, biggest isn’t always best.

When purchasing a computer monitor consider the space you have available and then determine the size of the monitor that you will need. Some people can do well with a 17 inch monitor, but for most people that size just doesn’t cut it. Consider what you are going to be doing with your monitor when you are trying to figure out the size that’s best for you. For most people, a 27 inch to 30 inch monitor tends to be a good fit. Of course, you can go smaller if you have space (or budget) restrictions, or bigger if you really want to immerse yourself in the computing experience.

**Resolution**

The resolution of a computer monitor refers to how many pixels can be addressed in the video frame buffer. The best way to describe this is the smallest sized object that can be displayed on the monitor. The higher the resolution of a monitor is, the better graphics quality the monitor will be able to provide.

**Aspect Ratio**

When you are looking at aspect ratios, the ratio refers to the number of horizontal pixels to vertical pixels in the display of the monitor. While there are a few ultra-wide monitors on the market that offer a 2:1 aspect ratio, the most common aspect ratios you will find will be 16:10 or 16:9 widescreen.

**Contrast Ratio**

The contrast ratio is often a big deciding factor when it comes to purchasing a monitor; mostly because this is the specification that the marketing departments push the hardest. However, even though consumers know that the contrast ratio is important, they don’t really understand what the numbers mean. To put it simply, the contrast ratio is the measurement of the difference in brightness from the darkest to brightest portion on the screen. When a monitor has a higher contrast ratio, it means that the picture the monitor provides will have deeper blacks and whiter whites. The typical contrast ratio is usually around 1000:1.

**Response Times**

When you have an LCD panel, there is a current that is applied to the crystals at a pixel. This current changes the state of the crystals so an image shows up on your screen. The response time is the amount of time, measured in milliseconds (ms), that it takes for the crystal in the panel to turn on and off. While LCD screens usually have very fast rising response times, the falling response times are often slower. This results in a blurring effect when there are bright moving images on dark backgrounds. In order to reduce this effect, you want to find a monitor with a fast falling response time as well as a fast rising response time.

**Brightness**

When you are working in a bright room, you better have a bright monitor if you want to be able to see what is on your screen. The brighter the monitor, the better the monitor will be in bright working conditions.

**Connectors**

Most LCD monitors have an analog and a digital connector; however, HDMI is now becoming the most common digital connector as it provides superior connectivity. Other connectors, such as DisplayPort and ThunderBolt, are also becoming more popular. Check to see which type of connector your video card is compatible with before you purchase a monitor.

**Pixel Pitch**

Pixel pitch, also often referred to as dot pitch, defines the space between the pixels (or dots) that make up the images on your computer monitor. The smaller the pixel pitch, the better the image quality will be on your screen.

**Viewing Angles**

A LCD computer screen produces its image by having a current run through the pixel. When the current runs through the pixel, it turns on that shade of color. The problem that most consumers run into is that the color can only be seen accurately when it is viewed straight on. The further away from the perpendicular viewing angle you are, the more the color tends to wash out. LCD monitors are generally rated for their visible viewing angle both horizontally and vertically. This is rated in degrees. A viewing angle of 180 degrees would mean that the image is fully visible from any angle in front of the monitor. When purchasing a LCD monitor, it is best to find one with a wider viewing angle.

**Display Colors**

When looking at the specs of a computer monitor, the display colors spec will tell you how many colors the monitor can display. The more colors the monitor is able to display, the more accurate your colors will be when viewing images on your monitor.

**Built-In Speakers**

Not all monitors have built in speakers. If you do not have external speakers for your computer, a monitor with built-in speakers will be essential unless you want to make an additional investment. Make sure the monitor you purchase has built-in speakers if you do not want to purchase external speakers for your computer.

**VESA Compatible**

While this is a newer spec, more and more monitors are listing whether or not they are VESA compatible. If a monitor is VESA compatible, it means that there is a holes pattern on the back of the monitor that will allow the monitor to be affixed to VESA wall mounts or other mounting devices.

**The Refresh Rate**

If you are looking at monitors that have a refresh rate, the thing you need to know is that the higher the refresh rate is, the better the monitor is. With that being said, there is no refresh rate on a flat panel monitor. The higher the refresh rate is, the less the screen with flicker. You also need to consider the fact that if you purchase a monitor that has a refresh rate that is lower than what your video card is set for, you may inadvertently damage the monitor.

**Bandwidth**

Many people don’t understand what bandwidth has to do with computer monitors. Contrary to popular belief, bandwidth is not just a term used for data plans that come with your cell phones or for websites that you put up on the Internet. Bandwidth applies to computer monitors as well. The bandwidth of a computer monitor measures the total amount of data that the monitor can handle in a second. This is measured in megahertz. If you purchase a monitor with a higher bandwidth spec, it means it can handle more data per second.

**HSR (Horizontal Scan Rate)**

The horizontal scan rate is a measure of how many “scanlines” of pixel data the monitor can display in a single second. The higher the number, the more scanlines the monitor can display per second. The horizontal scan rate of a monitor is related to the vertical refresh rate.

**Vertical Refresh Rate**

The vertical refresh rate is the maximum number of frames that can be displayed on the monitor per second. While you may have a monitor with a high vertical refresh rate, it’s important to remember that the refresh rate is actually controlled by the video card, which tells the monitor when to refresh.

**Techie Stuff**

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**LCD, LED and TFT Classifications**

The acronym LCD stands for “Liquid Crystal Display” and TFT is an acronym for “Thin Film Transistor”. While both of these terms are commonly used, they both refer to the same technology and are interchangeable. When one uses the term TFT, they are often referring to desktop displays. LCD, however, is more commonly used when describing televisions. LED, on the other hand, refers to the backlight technology that is used behind a liquid crystal panel (or an LCD/TFT screen).

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**Contrast Ratio**

A monitor’s contrast ratio is the difference between the darkest black and the whitest white. Most people will do well with a monitor that has a contrast ratio of 1000:1 to 3000:1, but that depends a lot on the environment where you are going to put your computer. While you can get computer monitors with a contrast ratio of 10,000:1 or more, the way in which the contrast ratios of these monitors are measured doesn’t always paint an accurate picture of the monitor. For example, you can buy a monitor that has a contrast ratio of 10,000:1, but if the monitor has poor pixel pitch then you’d be better off getting a monitor with a lower pixel pitch and a lower contrast ratio. When it comes to image quality, it will not be a single feature that makes the difference between one monitor being good and another being bad – it’s a combination of the features combined.

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**Panel Types**

LCD computer monitors, for the most part, use three different panel types including TN, IPS and VA.

TN, or Twisted Nematic, panels are the most common and are also the oldest. These panels tend to provide shorter response times and high brightness as well as low prices, but they also result in color shifts at different viewing angles.

IPS panels offer better color reproduction and better viewing angles, but they tend to have lower contrast. These panels also tend to be slower and more expensive. However, the color display and the options to calibrate the colors and keep the colors sharp and consistent, even at angles, make them a good choice for those who are in the graphic design profession.

The VA panel types fall into two categories including MVA and PVA. MVA panels tend to provide good viewing angles and greater contrast than the TN or IPS panels. Response times are also good, although some of the lower-end MVA panels do produce ghosting effects. PVA panels are very similar to MVA panels, but PVA panels have better contrast.

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**Response Time**

Response time isn’t always an important factor when purchasing a computer monitor, but oftentimes it can be. The term “response time” indicates how quickly the monitor can display moving images. If you need faster response times, you need to look at both the rising and falling response times. If a monitor has a fast rising response time and a slow falling response time, it’s going to result in a ghosting effect. The optimal situation is to purchase a monitor with fast falling and rising response times.

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**Adjust Your Display Settings**

Most computer monitors come pre-set with settings that may not be up to par with your standards. The majority of computer monitors feature front panel buttons that allow you to adjust the brightness and contrast settings of your monitor. If you do decide to adjust these settings, make sure you write down the pre-set settings so that you can return the settings to their factory-defined settings should you need to do so.

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**Clock Your Video Card to Maximize Monitor Performance**

If you purchase a computer monitor with a higher refresh rate than your graphics card, you can clock your graphics card to maximize the performance of your monitor so that the graphics card will run at the same speed. For example, if your graphics card is only capable of 75Hz and your computer monitor can run at 80Hz, you can clock your graphics card to run at 80Hz to get the most out of your monitor’s performance.