# How to choose the right gaming monitor to play like the pros

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MONITOR TECHNOLOGY

If you're a serious gamer who competes in tournaments, streams content on the internet, or taking the steps to become an eSports professional, the investment in a high quality gaming monitor is one of your most important decisions.

## What makes a gaming monitor different than a traditional LCD monitor?

As gaming and eSports have grown, monitors that have specific advantages for gaming is now a key part of any eSports player's equipment list. From monitor resolution and refresh rates to color accuracy and gaming modes – all can impact your performance. Here are some of the key questions many people ask when choosing a top quality professional gaming monitor.

## What is the right Resolution?

With a typical 24" gaming monitor, 1920x1080 is the most common resolution. Higher resolutions such as QHD ("2560x1440") and UHD ("4Kx2K") are available on the market, but they may require a higher-end graphic card to support the high frame rates that are commonly used in professional gaming. The vast majority of tournaments still use 1080p resolution in their events.

## What refresh rate does my monitor need to have for professional gaming?

The easiest way to determine this is by what platform you play on and the type of game you want to focus on with your monitor. Most dedicated eSports players narrow down the games they compete on to either a single class of games – such as First Person Shooters (FPS) or Real Time Strategy (RTS) – or build their system around their preferred platform and the video output of the game. Here is a basic breakdown based on what you like to play.

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## Console Gaming (Xbox, PlayStation platforms) - 60Hz Monitor

Since popular gaming consoles are designed to play on a standard television, and all are working under 60Hz, professional console gaming monitors are built around the assumption that they will need to synchronize with a 60Hz signal. This helps these monitors be less expensive, and enables the manufacturer to focus on other ways to improve the speed of the monitor for gaming, such as increasing response time.


## Real Time Strategy (StarCraft) and MOBA (League of Legends, Dota) – 60Hz Monitor

While these games are typically played on higher-end PC's in large tournaments, the software engines themselves typically only generate a 60Hz signal. Therefore, the majority of tournaments and players practice and compete on a 60Hz monitor. For these games, monitor response time is important, but other features such as well color tune and ergonomic features such as a height adjustable stand make a big difference in choice of monitors.

## PC Based Action Games (Counterstrike (CS), Simulation games) – 144Hz Monitor

In these games, monitor speed becomes very important for the professional gamer. These styles of games reward higher frame rates with smoother play, increased shot accuracy, and improved visibility in a battlefield. Of course, the PC itself has to have a graphic card that can support a 144Hz output, but the major tournaments for Counterstrike such as ESEA and Intel Extreme Masters, use 144Hz monitors.

One nice benefit of these faster monitors is that they can reduce the speed of the display to 60Hz for use with consoles, or to practice RTS or other games that don't require high refresh rates. They are more expensive than the slower monitors, but the added versatility is helpful for gamers who want to optimize their monitors for any style of gaming.

## What about Response time and Input lag time?

For gamers looking to compete in high paying tournaments, the key is to practice on what you're going to play in the tournament. For fighting games and shooters where reaction time is critical and developing precise timing is essential, two factors are crucial in the gaming monitor – response time and Input lag time.

## Monitor Technology and Response time comparison

This is typically measured in Grey to Grey (GTG) response time on the monitor specifications. Certain types of monitor technologies offer faster panels, while other technologies focus on better color performance and wider viewing angles. For example, televisions and monitors that use IPS or VA panel technology – such as the BenQ BL series– have 178 degree horizontal and vertical viewing angles, high native contrast and excellent color reproduction. However, the response time is around 4ms or slower, which is fine for casual gaming but not for a professional gamer. The current gaming monitors used today in tournaments almost always feature TN panels, which have smaller viewing angles, but deliver blistering 1ms GTG response time or less. These response times are very important in console gaming as it enables a gamer to see the image faster on a gaming monitor than a player using a traditional television.


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## Input Lag Time

Input lag time refers to the internal processing of the picture by the LCD panel. This is not a feature you can find on the spec sheet because in the past, the CRT monitor featured no lag time, since it was a "dumb" device. However, because the LCD panel has to manipulate digital images, the processing time will vary from monitor to monitor. This is rarely noticeable for the average gamer, but becomes an important component of timing for high level eSports competition. Gaming monitors feature lower lag times, but will vary from model to model. Fighting style gamers such as Justin Wong from Evil Geniuses are especially focused on this feature, as it has a major impact on timing for complex moves and reacting on defense. For this reason, you want to make sure you use a model that has a solid record in tournament play.

## Color Tune and Black Equalizer


One of the latest features to be developed for professional gaming is the ability to highly manipulate color on the screen to optimize visibility within a style of game. For example, in FPS games such as CounterStrike, the ability for the monitor to display information in dark areas can make a significant difference in spotting an enemy sniper. A similar case is in RTS modes, where shades of dark violet can be adjusted to give a larger field of view and better visibility into a dark area of a map. The best monitors use proprietary algorithms such as BenQ's Black eQualizer to enable the gamer to adjust only the black levels in these areas while maintaining color fidelity in normally lit areas. In addition, some monitors have special color tune specifically for competitive genres such as fighting games. The BenQ RL2460HT has a fighting game mode that highlights shades of light blue, making it easier for a gamer to recognize the blue flash of a successful defensive move and eliminating the need to take your eyes off the match to look at your health meter.

## Downloadable Custom Color Mode Software

Because of the monitor's ability to render specific colors for specific games, many professionals share recommended settings for their games. For example, Grubby, a famous StarCraft II player, publishes his recommended monitor settings for both Black eQualization and other monitor settings. These settings can be downloaded, saved and shared among friends and teammates, or posted on a manufacturer's website to be shared with the overall gaming community. It can remove a lot of trial and error in coming up with the monitor setting you like best for your game.


## Display Mode

While many non-gamers or casual gamers like the monitor to be as large as possible, many pro gamers find that they compete better on smaller screens. A smaller screen shows less detail – but enables the gamer to view the entire screen with less eye movement – which results in faster reaction time. Rather than buying separate monitors for practice and playing, a professional gaming monitor should enable a gamer to properly scale a display to as small as a 17" 4:3 native aspect format. This gives players the ability to setup their monitor for the fastest play for their style as possible.

## NVidia G-Sync and AMD FreeSync Technology


In 2014, both nVidia and AMD announced new monitor technologies to improve the synchronization between a graphic card and the monitor. Essentially, it involves putting either a dedicated chip within the monitor, or licensing technology inside the monitor to adjust the monitor refresh rate lower when the graphic card cannot produce a full 60Hz or 144Hz output. While this is an appealing feature, these monitors can be more expensive than regular professional gaming monitors, and may not have connectivity for standard VGA, HDMI or other common interfaces available on most other monitors. In addition, it may require specific video cards from the manufacturer to work properly, which is something to keep in mind if you play on both console and PC-based games.

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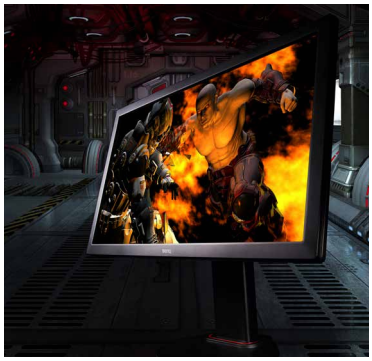
## HDMI Out - Streaming directly from your monitor and dual play gaming



Many professional gamers supplement their income and build their fan base by actively streaming their matches to their fans. Traditionally, the player has to split the signal coming from the PC or console, then send the signal to both the monitor and streaming box. However, some of the new professional gaming monitors now have an HDMI output, enabling you to send the signal to your streaming box after it has displayed on the monitor – eliminating potential lags and delay while in a match. In addition, the HDMI output also can support another monitor with virtually no lag time, so you can hook two of them together for head-to-head matches on a console, with each player having his own monitor. This is especially popular among fighting game players.

## Ergonomic and Height Adjustment features

If you ever watch a professional gaming event, you'll notice that the players take a great deal of time to setup their systems exactly the way they want them. Because the games require physical (mouse/keyboard) and mental (strategy/tactics) speed, having a comfortable setup and everything in its right place is important. Most professional gaming monitors have height and tilt adjustments to enable the setups to adapt to the height of the player. The newest models have specific markings on the sides, so you can document your specific setup and make sure that it's exactly the same as your practice system, enabling you to focus on your match rather than your setup.

## Game Mode switches and software

Gamers are famous for constantly adjusting their monitors. While the average person rarely changes their monitor settings, gamers will adjust the color and other settings nearly every time they switch a game or a level. To accommodate this, some of the higher-end monitors offer a special S-Switch, which looks like a mouse that attaches to the monitor and enables a gamer to have three built in settings, as well as easier navigation of the screen menus. This means you can have a special monitor setup for one environment, such as a winter snow scene where you need to find your enemy in white snow, and instantly switch to another setting for a different environment, such as a dark jungle, where you need more brightness.

## NVidia 3D Compatibility?

Depending on the game, eSports players may care a great deal about 3D or not at all. Some games such as StarCraft II, don't use 3D, while other games such as Call of Duty use it extensively. Due to the large amounts of practice they put in, most professional gamers practice and compete in 2D and then use 3D for fun. Because 3D requires both glasses and the emitter to control them, there are many gaming monitors that can play games in 3D using the NVidia system. These monitors are designed to provide smooth 120Hz or higher frame rates, and also are capable of playing 3D games with a 3D emitter and glasses. While some monitors have the emitter built in, most models sold today are designed to have the emitter sold separately and are attached to the monitor when you are playing 3D games. If you're an occasional 3D player, or have little or no interest in playing 3D games, this gives you the option in the future without paying extra for the 3D equipment.

NVIDIA 3D VISION READY

NVIDIA G-SYNC

**We hope this buying guide helps you pick the perfect gaming monitor to** Go, Play and conQuer

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