

4:3 vs 16:9 Aspect Ratio Which Monitors Are Best?

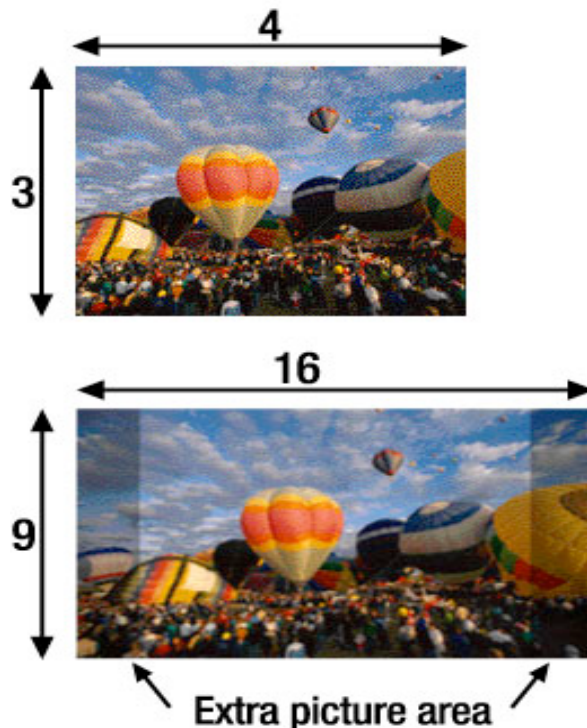


As is often the case, the answer is “That depends...”

There’s no doubt that today’s HD televisions look fantastic. However, are 16:9 aspect ratio monitors really the best choice for your industrial/commercial project?

WHAT IS ASPECT RATIO?

Aspect ratio is the relationship of the width of a video image compared to its height. The two most common aspect ratios are **4:3**, also known as 1.33:1 or fullscreen, and **16:9**, also known as 1.78:1 or widescreen. (Larger aspect ratio formats are used in the motion picture industry.)



All the older TV's and computer monitors you grew up with had the squarish **4:3** shape-- 33% wider than it was high. 4:3 LCD monitors can display analog video signals that conform to NTSC and PAL standards. They are not capable of displaying HD (high-definition) video.

The 4:3 aspect ratio dates back to 1917, when the Society of Motion Picture Engineers adopted it as the standard format for film. In the 1930's, the television industry adopted the same 4:3 standard. But in the mid-1950's, the motion picture industry began developing several widescreen formats to improve their decreasing audience numbers. Television broadcasting stayed with the 4:3 standard, until the recent move to HDTV and 16:9 widescreens.

16:9 is the native aspect ratio of most high-definition LCD monitors and TV's (15:9 and 16:10 are very similar). It is 78% wider than it is tall, and fully one-third wider than a 4:3 screen. 16:9 widescreen monitors are ideally suited to display HD video signals. Some models can also display SD (standard definition) video signals, but this will require some compromises, as you will read below.

Do They Match?

Nearly all experts agree that in order to display optimal video images, it is critical to match the aspect ratio of the monitor to the aspect ratio of the camera (or other incoming video source). Below is a example of a 16:9 image on a 16:9 monitor:



However, the majority of cameras in the industrial, commercial, security, and law enforcement industries still utilize 4:3 CCD or CMOS imagers. Therefore, to display clear, undistorted video images, it is important to utilize monitors with the same 4:3 aspect ratio to match the cameras. Failure to do so will result in distorted images, as shown below.

There are 3 primary ways to display a 4:3 video signal on a 16:9 monitor, each with its own drawback:

1. Tolerate vertical black bars on the left and right sides of the screen (called “pillarboxing”),



bars on the left and right sides of the screen (called

2. Have horizontally stretched images, making people and objects appear shorter and wider:



stretched and distorted people and objects wider:

3. Or zoom-in the video the top and bottom



signal, which chops off portion of the images:

Unfortunately, despite the continued widespread use of 4:3 cameras, LCD monitors with a 4:3 aspect ratio are getting harder and harder to find, as many manufacturers are transitioning to the newer 16:9 widescreens. [TRU-Vu Monitors](#) still offers a complete line of 4:3 aspect ratio industrial-grade LCD monitors. These range in size from [3.5" to 20"](#) screens, in standard, [touch screen](#), [rack mount](#) and open frame LCD monitor configurations. See www.TRU-VuMonitors.com for more details.

16:9 widescreen LCD monitors are the ideal complement to 16:9 format HD cameras, increasingly used in video conferencing, broadcast and medical applications. They display superb, distortion-free, high-definition images. [TRU-Vu Monitors](#) offers these in [22" to 46"](#) LCD screen sizes, in standard, [touch screen](#) and open frame configurations.

In conclusion, in order to avoid video images which are stretched, squeezed, shrunk or distorted, be sure to choose a LCD monitor with a aspect ratio (4:3 or 16:9) that matches your camera or other incoming video signal.

4:3 (1.33:1)

SDTV / Video
Digital Cameras
Computer Displays

16:9 (1.77:1)

HDTV
Widescreen SDTV

16:10 (1.6:1)

Widescreen Computer
Displays

1.85:1

Cinema Film

2.35:1

Cinemascope