

When is HDTV Not HDTV?

Despite the fact that HDTV has been around for a few years and that there are numerous books, magazines and websites dedicated to it, it can still be pretty confusing, particularly if you're not a technology geek. So, it's worth recapping just what constitutes HDTV.

In order to receive and watch an HDTV signal you need a number of things. Firstly, you need to be in a country and area where HDTV is broadcast, either over the air, by cable and by satellite. If you live in the US, you can almost certainly receive HDTV by one, if not all of these media. In Europe, you will be more limited. For example, in the UK you need to either sign-up to Telewest (cable) or Sky (satellite) to get HDTV (although you could invest in a Freesat box and receive satellite HDTV without a subscription).

Secondly you need a tuner that can receive HDTV. This will typically either be a cable, satellite, or off-air set-top box, but could also be an integrated HDTV, CableCard or Mac/PC HDTV tuner (usually either a PCI card or USB 2 peripheral).

Thirdly, you need a display which is capable of reproducing HDTV signals. To do this, it must have a vertical resolution of at least 720 pixels, be able to display progressive scan signals, and have a minimum width to height aspect ratio of 16:9. EDTVs have a vertical resolution of only 480 lines and so can't display HDTV signals at HDTV quality.

Finally, you need to be able to hook the three elements together. The key part here is that the TV must be connected to the tuner, if it's not built-in, by a medium capable of transferring high definition signals. For a TV or projector this means DVI, HDMI, or component connections — although if you choose component, you may run into trouble later on when watching signals encoded using particular HDCP. For a computer tuner, a PCI slot, USB 2 or FireWire interface will do the job.

LCD vs Plasma HDTV

LCD vs plasma HDTV – which is best? If you're looking for a flat-screen, slim and sexy display, to watch HDTV, you have a choice of two technologies, LCD and gas plasma.

Each has benefits and disadvantages and so each is more appropriate in specific circumstances.

Historically, the LCD vs plasma HDTV choice has been fairly simple. If you wanted a flat-screen that was about 40in or bigger, you had to choose plasma, otherwise you should choose LCD. However, as LCD technology improves, LCD HDTVs are getting bigger and most of the major manufacturers expect the number of LCDs they produce to grow steadily over the next few years while the number of plasmas will decrease. However, if you're looking for a flatscreen TV today, plasma still has a lot to offer.

To understand the LCD vs plasma HDTV question, we need to look at the way the two technologies work.

LCD

LCD HDTVs work by shining a light behind an LCD panel made up of a fixed number of pixels. Each pixel is either red, blue or green and is switched on or off when a voltage is applied to it. When voltage is applied to a pixel, it is switched off, meaning that light can't shine through it.

The main advantage of LCD vs plasma HDTV is that LCD panels don't suffer from what's called burn-in. This is a feature of plasma TVs where they are used to watch TV stations with logos permanently displayed on-screen or where they are used for video gaming with games that have static images such as a cockpit on flight simulators. The image literally 'burns-in' the screen meaning that even when the image is not present you can still see a faint trace of it on screen. So for video gamers in particular, LCD is a better choice than plasma.

Plasma

Plasma HDTVs have over a million chambers which house one or a combination of gasses. When a voltage is applied to one of these chambers the gas ionizes and emits ultra-violet light. This light strikes red, green or blue phosphors coated on the inside of the chamber and a pixel emits this color light.

Plasma HDTVs tend to have better contrast than LCDs because, even when a pixel on an LCD panel is switched off it doesn't block all the light coming through and therefore the pixel isn't completely black. Plasma HDTVs also tend to have a wider viewing angle than LCDs, as on LCD HDTVs the contrast and colour of the image can change when the screen is viewed from different angles.

Flat Screen or Projection

HDTV has come along way in the last couple of years. The flat screen seems to get all the hype, but projection TV has been slimmed, too.

Flat panel HDTV has had unbelievable performance gains in LCD and Plasma technology in recent years. The advantages go well beyond the space –saving wall mount.

Today, HDTV flat-panels have a dependable long-life and there is no lamp replacement. Both LCD and plasma HDTVs are generally rated for 60,000 hours of enjoyment. This is the equivalent of viewing 6 hours per day for over 20 years.

HDTV flat panels now have a brighter picture to overcome the glare of daylight or room lights. LCDs are the best here because plasma screens tend to reflect room lights.

Flat panel HDTV also has a wider viewing angle and manages to maintain good color and contrast even when viewed off to the side. Plasma HDTV are a little better at this than LCD.

Projection HDTV

If you want the best money can buy, and you are not cramped for space, a projection HDTV may be the way to go.

In addition to larger screen sizes, rear-projection HDTVs offer:

A user-replacement lamp that restores your HDTV to like new picture quality, it only takes a few minutes to replace the lamp and almost anyone can do it. The average lamp life is from 5,000 to 8,000 hours. This is the equivalent of 2.5 to 3.5 years watching TV about 6 hours per day.

High quality rear-projection HDTV out performs almost all flat panel HDTV in the areas of contrast and black level performance. These big screen models are some of the best out there using these criteria.

For maximum picture quality from high-definition sources, especially HD DVD and Blu-ray, your TV needs the highest picture resolution – 1920 x 1080 pixels. The top-selling 50" 1080p projection models now start around \$2300, so this is a little more affordable for 1080p options.