

## High Definition Television

What do you need to watch High Definition (HD) Television? You need a HD source, a HD TV set, and last but not least a HD cable to connect the two.. (If you connect your HD source to your HD TV with a standard scart cable, you won't see HD quality pictures, as it won't transmit the high quality signal.) But you'll still need a scart connector on your new TV, so you can connect any of your existing standard definition (SD) equipment

### **So, what choices have you got for a source of HD content?**

#### HD Source

##### Pre-recorded films

The VHS/Betamax like battle of HD is over. Toshiba has pulled out of HD-DVD after all the major studios moved to Blu-Ray, so HD-DVD is dead, you can buy Blu-Ray with the thought that you won't get left with the loser. HD-DVD may still survive for a while as a game platform, as the Microsoft Xbox 360 uses it and can also play HD-DVD films.

For a TV picture to be HD it has to be one of three resolutions: 720p, 1080i or 1080p. The resolution's number is the number of horizontal lines that make up the image, analogous to its height in pixels. The letter, p or i, stands for 'progressive' or 'interlaced'. (Normal SD TV is 625 lines, interlaced)

Progressive images are displayed like a movie, one frame at a time, in rapid succession. Interlacing is the same technique used in regular TV: send half the picture at a time but do so twice as quickly. It's a bandwidth-saving technique. Each 'half' of the image comprises alternate sets of lines, so first you send lines 1,3,5,7... etc. then you send 2,4,6,8... and so on. The first set is drawn on the TV screen, then the second lot, but the speed is such that they eye doesn't notice.

Well, almost. In practice, this approach can create visible artefacts when rapidly moving images and there's a slight downgrade in the image's effective resolution. This isn't an issue with progressive pictures, which is why most US HD broadcasters show programmes in 720p not 1080i, even though the latter has more pixels and therefore should be more detailed.

##### Broadcast material

You can't receive HD material on terrestrial TVs via FreeView, but there is a new free satellite service starting called FreeSat:

<http://www.freesat.co.uk/>

It is free in terms of there being no subscription, but you will have to pay to buy and install a dish and receiver

If you want a wider range of content, you either need to take out a subscription with Sky and get a Sky HD box, or a cable subscription with Virgin and get a V+ box.

Both have HD films, sport and specialist programs like nature. Both services carry the BBC HD service (free with FreeSat).

For Sky, go to <http://sky.com/hd/what-can-i-watch-channels.htm>

For Virgin, go to <http://allyours.virginmedia.com/html/dtv/vplus/hdtv.html>

As I covered when I talked about Broadband, Virgin cable isn't available in Chelford, so your only choice is Sky.

HDTV broadcasts use several different technical standards. Both the 720p and 1080i standards in current use will work with set-top boxes carrying the 'HDTV' logo and HD displays carrying the 'HD Ready' logo

### **What sort of TV should you buy?**

Plasma, LCD, back projection, front projection? The two common choices of either a LCD or Plasma flat screen are coming much closer in terms of price and performance:

<http://www.burnyourbonus.info/hdtv-faq/faq4.html>

### **How big a TV should you buy, and how far should you sit from it?**

<http://www.burnyourbonus.info/hdtv-faq/faq3.html>

HD TVs are such high resolution, you will need to sit closer than you might imagine to notice any difference. If you don't, you're wasting your money, as you won't see the benefit.

Some shops have started to stock TV sets supporting a new HD standard, 1080p. People sometimes call 1080p 'true' or 'real' HD, because of its higher specification. Only a small number of set-top boxes currently support this standard though, and as yet there are no broadcasts in 1080p.



If 1080p was adopted in the future, new set-top boxes would be needed. These could almost certainly be used with existing HD Ready TVs. In addition, new 1080p 'HD Ready' displays can be used with existing 720p and 1080i signals as well as standard-definition signals, and so will work with the HD current services.

### **Existing DVDs**

Existing DVDs will play on an existing DVD player connected to an HD display via a SD connection like Scart, but only at standard definition. One way of improving performance slightly is to buy a new DVD player which can take standard definition pictures and boost them up to High-Definition resolution. Picture quality is generally better, but often not earth-shatteringly so. The problem is that HDTVs already have built-in upscalers, which adjust any incoming signal to fit the resolution of their screens. However, the upscaling ability in a quality DVD player should be better than the TV's. Upscaling DVD decks can't add new information, they create extra lines of pixels by copying parts of surrounding pixels, effectively "guessing" at what the image should look like at a higher resolution. If done badly, it can ruin picture quality.

As the player is upscaling to HD, the connections between the player and the display have to be HD as well, and you have to have an HD display to show them on.

But, upscaling DVD players get the best possible pictures out of your existing collection without you having to fork out for true HD sources.

### **FAQs, taken from the Burnyourbonus web site liked to above:**

#### **Which HD standard is best?**

If you look at a still picture the 1080i image is going to look better. With an image that does not move it does not make any difference if it is interlaced or not. If an image is moving, the progressive image gains an advantage, especially if the image is scrolling vertically up or down. So 720p might be potentially better than 1080i for fast action because of the higher effective frame rate.

#### **Is the HD Ready logo all I need to look for?**

No. The HD Ready logo only guarantees a minimum standard. For example,

- It only requires a 720 line native screen resolution, not the higher 1080

resolution.

- It does not even require 1280x720 native screen resolution, stretched 1024x720 will pass.
- It does not require that the display can render the full 50 or 60 frames per second of the 720p standards.
- It only requires DVI or HDMI, not both.
- It does not specify how well the 720p and 1080i inputs have to map to the screens native display format
- It says nothing about other picture quality elements such as physical size and contrast ratio.
- It says nothing about the audio standards supported, or background noise levels.

Outside Europe the term "HD Ready" is also used but it may not imply the same conditions

### **So what should else should I look for?**

Make sure the HDTV set you buy at least has the native resolution you want and HDMI input. If you want to be more discerning, compare all the other features, especially things like the contrast ratio. But don't worry; with the HD Ready logo you will be able to view great HD pictures. In case you want more detail we have drawn up some [sample comparison tables](#).

### **What are DVI, HDMI and HDCP?**

DVI is Digital Visual Interface. This is an old standard for digital video input used initially for PC screen connections but also suitable for HDTV. PC owners may be familiar with the DVI cables used to connect their monitor.

HDMI is the High Definition Multimedia Interface. It was introduced more recently with Digital TV in mind and has been called the SCART socket of HDTV. Unlike DVI it includes audio content as well as video.

HDCP stands for High-bandwidth Digital-Content Protection. It is a standard used to encrypt digital signals to protect integrity. In practice it is used to prevent illegal pirating of HDTV while allowing recording and transmission for personal use. It is essential that your HDTV supports this standard because most HDTV broadcasts and recordings will be using it. If you connect your HDTV to a set-top box or HDTV DVD player without using a digital connection that supports HDTV, then the signal will be downgraded to standard definition. If you use HDMI you are safe because support for HDCP is built into the HDMI standard. A DVI connection may or may not support it. This is why you should ensure

that your HDTV has HDMI. The HDCP standard was introduced quite late in the development of HDTV, so people who bought HDTV sets early may not have it. Sky will allow HDTV to pass through component video cables from their first set-top boxes so if you have an HDTV set without HDTV it will be worth subscribing to Sky HD early on while this capability is available.