

AUDIOTRENDS

L E A R N I N G C E N T R E

Audio & Video Cables: Making The Right Choice



Whether you're a 'dyed-in-the-wool' hi-fi enthusiast or have you just bought your first home cinema system, you'll want to be sure that **all** your A/V equipment is performing to the max. Low quality, bargain priced cables can allow noise and interference to compromise the signals coming from your source components, (DVD or CD player) resulting in a below average listening or viewing experience.

To illustrate: if you owned a high-performance sports car and wanted to maintain it properly, then you wouldn't fit retreads or low quality tyres. Why? Because you would experience things like poor handling and increased road noise. All the benefits of buying a high-performance car would be wasted! Likewise, low-quality cables and leads do not deliver the performance required to enjoy the full potential of your system.

The problem is that most A/V components don't include the cables you need. Understandably, a lot of first-time customers find this hard to understand. The reason though is mainly to do with

tradition. Manufacturers have rarely (never to our knowledge) included high-quality cables. When cables are included, they are **always** low-quality. So, cost could be one factor, but there is also the fact that different situations require different lengths, particularly with speaker cable.

Therefore, we strongly recommend that you replace the "freebies" with higher-quality product. You will enjoy better performance because your equipment will be realising its or closer to its full potential. Equal attention should be given to both audio and visual sources. After all, garbage in equals garbage out!

Cables – The Basics

There are three main parts of a cable/lead which affect signal quality: the conductor, the shielding and the plug. The **conductor** is the part of the cable through which the signal actually passes. The conductor is basically a wire which can act as an antenna to receive radio frequency interference (RFI) and electro-magnetic interference (EMI) and therefore

a good cable also includes some kind of **shielding** to reduce these potential sources of noise. The **plug** connects to the cable and is the part that actually comes into contact with your components. Types of plugs include the universally used RCA which has been around for more than sixty years and the S-video and F-type – the latter usually found on TV antenna cable.



Audio Interconnects

Oxygen-free copper (OFC) has been recognised for many years as an excellent material for use as a conductor. It allows the signal to pass along its length with minimal loss. Many cables also include two separate shields — one made of braided copper which minimises RF interference and one made of foil to minimise against EM interference. It stands to reason - the better the cable, the less the interference, thus improving performance.

The plug is an extremely important component and should not be quickly dismissed as being of little consequence. High-quality RCA plugs, usually but not always gold-plated are time tested and if built to strict tolerances provide an excellent, tight connection. Some of the top-end plugs have a locking or tightening mechanism which ensures a 'super-glue' like connection.

Manufacturers usually offer several different levels of cable quality, so how do you pick the level that's right for your

system? There is no easy answer. Sure, the most expensive cables will make even a basic system perform to the maximum. But, I am sure that we would all agree that it would seem a little crazy to purchase a \$500 pair of interconnects for a very ordinary \$99 CD player! Yes, there is no law stopping you from doing that, but common-sense would dictate a different approach. Over the years, many level-headed enthusiasts, respected journalists and we ourselves have recommended **as a guide** a minimum of 10% to approximately 20% of your systems total be ascribed to cables.

Digital Audio Interconnects

Digital audio interconnects are available in both optical and coaxial varieties. Optical cables, which are almost interference free, transmit digital audio signals as pulses of light rather than electrical pulses. At each end is a plug which is called a Toslink plug. There is corresponding socket in DVD players, as well as A/V amplifiers, processors and receivers. Some CD players also have a Toslink socket. A solidly built and quality fibre-optic 'element' can prevent irregularities in both picture and audio quality.

Not everyone holds to the view that optical cables rule supreme! Amongst the audio enthusiast fraternity there is a preference for the use of **coaxial** digital cables. On the surface they look just like a standard analog RCA cables. However, we recommend that you avoid using a standard audio interconnect to transfer a coaxial digital signal. Cables engineered specifically to pass a digital signal provide 75-ohm impedance and wider frequency bandwidth, thus ensuring superior signal transfer. They usually only cost a few dollars more.

Video Interconnects

Video signals can travel over many different types of cabling, but the majority of video components are equipped with at least one of the

following four types of jacks (listed in order from lowest-quality signal transfer to highest):

- **Coaxial RF, also known as F-type and commonly used on TVs**
- **Composite video, also known as RCA**
- **S-video**
- **Component video**

Coaxial cable is used for connecting antennas, VCRs, TVs and more, and should not be confused with coaxial *digital audio* cable as mentioned above. It can carry both video and audio information simultaneously. Standard coaxial cable is stamped "RG-59"; but higher-quality "RG-6" cable features lower signal loss and better shielding, both of which are essential for multi-outlet/room systems and long cable runs.

Composite video cables plug into the composite video sockets found on most A/V components, including DVD players, VCRs, Receivers and game consoles. These sockets are marked in yellow and grouped with corresponding red and white stereo audio sockets. Composite video cables use standard RCA-type connectors and transfer video signals. Most components come with 'freebies' in the box, but can be upgraded for just a few dollars. Obviously longer lengths as used on a Projector installation need a better quality cable, but typical cost for a good 10 metre cable is about \$100. Yes, you can spend more!

S-video cables are a lot better than composite cables and feature round, 4-pin plugs. They transmit the chrominance (colour) and luminance (brightness) portions of a video signal along different paths. The pins on the plugs are very delicate and easily bend, so don't keep pulling them out and reconnecting!

Found on most DVD players, Projectors, A/V Receivers and on most widescreen TVs, component video connections deliver better detail and colour accuracy than you

get with RF, composite or S-video connections. They do this by splitting the video signal into three parts, with each part transmitted via its own cable. Unlike the other three types of connections, component video is capable of passing high-definition and progressive-scan video signals. It is not to be confused with RGB.

Video signals are more susceptible to interference than are audio signals. This is particularly noticeable when using low quality cables and is due to the higher frequencies being transferred. As with audio, radio frequency (RF) and electromagnetic interference (EMI) can interfere with the signal. This can cause lines, snow, white dots and other artefacts to appear with analogue TV transmission. A higher-quality cable with a copper conductor, 75-ohm impedance and double shielding can effectively preserve the strength and accuracy of the original signal.

For more information on the different types of cables, see the article:

"Understanding Video Signals & Cables."



Digital video interconnects

The shift to digital video sources and displays has led to digital video connections. There are two main digital video options: DVI cables and HDMI cables.

DVI (Digital Visual Interface) and HDMI (High-Definition Multimedia Interface) cables are especially beneficial if you're using a "fixed-pixel" display (like plasma, LCD, DLP or LCoS TV). Since these cables permit the video signal to remain in digital form all the way to the screen, you avoid the slight picture degradation that can come with translating the signal from digital to analogue and back. Both DVI and HDMI cables can carry standard-definition and high-definition digital video signals. HDMI is also capable of carrying 2 to 8 discrete channels of digital audio (depending on the capabilities of the source component).

Better TVs, Projectors, A/V Receivers and DVD players now come with either a DVI or HDMI connection and a few high-end components have both. (Also, HDMI cables are backward-compatible with most DVI connections, so you can use an HDMI-to-DVI adapter to connect a component with a DVI terminal to one with an HDMI terminal.)

For more information, see our article:

"HDMI – What Is It?"

Other Cables

Game consoles have come a long way in the last few years. Take advantage of the high-quality picture and sound produced by your PlayStation™ or XBOX™ console by using premium cables to connect it to your home cinema system. Your gaming experience will be much better with clearer graphics and sound effects!

Tips

Follow these general rules of thumb to get the best results from your cables:

- Avoid long cable runs — the shorter the cable, the better.
- However, make sure your cables are long enough, especially if your components are located in such a way that the rear panels are difficult to access. Allow enough slack to let you pull the component forward and reach the rear panel.
- Power cords can introduce interference, so try and keep them away from other interconnects. If this isn't totally possible, at least try to minimise contact between the two.
- Good quality interconnects have direction-arrows printed on the outer casing, so connect them up so that the arrow is pointing toward the destination component.
- Avoid kinking or bending cable. Don't try to make a short cable reach — it can put stress on the plug and potentially cause problems. A slightly longer cable won't cost much more.
- Don't keep excess cable lying in loops. Preferably cut it shorter or if that is not possible, then allow it to 'fall' in either an 'S' or a figure-eight shape. This can help minimise (EMI) electromagnetic interference.

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