All information copied from the internet ...



Very good reference book!!!

Worldwide Sleeping Company, Inc.

.....Audio and Video TV Cables.....

Overview February 2008

The Insides of a Cable

There are 3 main parts of a cable which affect signal quality: the conductor, the shielding, and the connector.

The **conductor** is the part of the cable through which the signal actually passes. Since the conductor is basically a wire which can act as an antenna to receive radio frequency interference (RFI) and electromagnetic interference (EMI), a good cable also includes some kind of **shielding**, to filter out these potential sources of noise. The **connector** is the part of the cable that actually comes into contact with your equipment.

Cable Examples ...



VGA Cable



Composite Video Cable

Component - Video



DVI-D Dual Link

Optical Cable – Toslink Digital Audio

Component - Video with Audio





More examples ...





An HDMI Cable

An RGB Component Video Cable



A DVI Video Cable



A Composite Video Cable, video (yellow) and audio (red and white)

Video Cables ... Analog and Digital ... Audio and No Audio

Composite Video <i>Audio and video</i>	analog	Video carried on a single yellow RCA connector	Sound red and white; Video yellow	RCA type
Component Video Video only need separate cables for audio	analog	3 most common component video connectors are RGB, YPbPr and S-Video: No sound on it.	No sound S-Video	RGB, YPbPr
DVI (Digital Visual Interface) Video only need separate cables for audio	digital interconnect developed for best picture with digital display devices like computer monitors, digital projectors & flat panel displays.	DVI is a video interface standard designed to maximize the visual quality of digital display devices such as flat panel LCD computer displays and digital projectors.	No sound	
HDMI (High-Definition Multimedia Interface) <i>Audio and video</i>	digital interface designed for connecting high- definition consumer electronics equipment together.	Carries audio as well as video data provides a single connection between any two pieces of compatible audio-visual equipment, including set-top boxes, DVD players, and HDTVs	Sound	

Overview of cable types

Component video cables (red/green/blue)



Component video cables come in sets of three and are for use with video devices with component video output. These cables are typically color-coded red, green, and blue.

Separate audio cables are required for a complete connection.

Standard A/V cables (red/white/yellow)



Standard A/V cables (composite video) usually come in sets of three, and are for use with video devices with analog audio and composite video output. These cables (and the related inputs on your TV) are typically color-coded according to use: yellow for video, red for stereo right audio, and white for stereo left (or mono) audio.

S-video cable

(B) 🖽

S-video cable is for use with video devices with S-video output. Separate audio cables are required for a complete connection.

Does not carry sound , , ,

HDMI™ cable (with HDMI Logo "**H∂ITTI**")



Carries both audio and video

HDMI (High-Definition Multimedia Interface) cable is for use with devices with an HDMI output. An HDMI cable delivers digital audio and video in its native format. This cable carries both video and audio information; therefore, separate audio cables are not required for a complete HDMI device connection

Optical audio cable

Optical audio cable is for connecting receivers with Dolby Digital or PCM (pulse-code modulation) optical audio input to the TV's **DIGITAL AUDIO OUT** terminal

Analog RGB (15-pin) computer cable



Analog RGB (15-pin) computer cable is for connecting a PC to the TV's **PC IN** terminal

Coaxial (F-type) cable



Regular TV coax cable ... RG6

Coaxial (F-type) cable is used for connecting your antenna, cable TV service, and/or cable converter box to the **ANT** input on your TV.



Audio

Composite Cables ...

<u>RCA connections are the standard means of passing</u> analog line-level audio signals between components. RCA jacks are commonly found on virtually every type of A/V component, including DVD recorders, DVRs and TVs. RCA audio cables are grouped in stereo pairs, with one connection for the left audio channel and one for the right.



RCA is analog cable ...



RCA connector

is a composite cable

This is the most basic **<u>analogue</u>** format used in standard definition television systems. It is usually carried on a single yellow RCA connector shown below:



A Composite Video Cable, video (yellow) and audio (red and white)

More ... Composite Cables

RCA TYPE AUDIO/VIDEO INTERCONNECT



SW_RCA_AV_CROSS

SW_RCA_AV_SIDE

RCA connector is a composite cable



RCA analog connector Carries both video and audio

RCA connector ... analogue

RCA connector is commonly used for composite video signals ... but provides poor impedance matching. ... carries both audio and video

RCA connectors and cable are also often used to carry SPDIF-formatted digital audio, with plugs colored orange to differentiate them from other typical connections. Connections are made by pushing the cable's plug into the jack on the device.

They are often color coded ...

- yellow for composite video
- red for the right channel and
- white or black for the left channel of stereo audio.



Digital Audio cables ...

A special group of audio cables is digital audio cables. There are 2 types: optical and coaxial.

Optical cables transmit digital audio signals as pulses of light. Also called toslink or SPDIF connectors they are often found on DVD players and recorders, as well as home theater receivers and DVRs.





Acoustic Research Coaxial Video Cable, RCA to (ap-002) Coaxial Digital Cable

Coaxial digital cables look like standard analog RCA cables, but instead transfer digital audio signals. They are typically a single cable, whereas analog RCA cables are usually double plugs, for stereo audio.

The RCA connector is a standard type of cable used to transmit analog audio and composite-video signals between devices such as televisions and VCRs. RCA audio cables have two connectors: red (right stereo) and white or black for left stereo. An additional third connector on an RCA cable will be yellow for composite video. Super High Quality 8 Foot Custom RGB Component Video Cable





Component video cables carry no audio

Analog <u>Component</u> Video ...

- 3 cables, each with RCA plugs at both ends, are often used to carry analog <u>Component</u> video
- Component video is a video signal that has been split into two or more components. In popular use, it refers to a type of analog video information that is transmitted or stored as three separate signals.
- Component video can be contrasted with composite video (NTSC, PAL or SECAM) in which all the video information is combined into a single line level signal.

Component video cables do not carry audio.

YCbCr Cable

A color image and the Y, Cb and Cr elements of it. Note that the Y image is essentially a greyscale copy of the main image; that the white snow is represented as a middle value in both Cr and Cb; that the brown barn is represented by weak Cb and strong Cr; that the green grass is represented by weak Cb and weak Cr; and that the blue sky is represented by strong Cb and weak Cr.

YCbCr or **Y'CbCr** is a family of color spaces used in video and digital photography systems. Y' is the luma component and Cb and Cr are the blue and red chroma components. The prime on the Y is to distinguish the luma from luminance.

Analog Component Video ...





.... But no audio

Further types of component analogue video signals do not use R,G,B components but rather a colorless component, termed luma combined with one or more colorcarrying components, termed chermo, that give only color information. This overcomes the problem of data redundancy that plagues RGB signals, since there is only one monochromatic image carried, instead of three.

Both the S-Video component video output (two separate signals) and the YPbPr component video output (three separate signals) seen on DVD players are examples of this method.



Dual 75 ohm Hi-Resolution S-Video Cable

S-Video Cable:

Short for *Super-Video*, a technology for transmitting video signals over a cable by dividing the video information into two separate signals: one for color (*chrominance*), and the other for brightness (*luminance*).

When sent to a television, this produces sharper images than *composite video*, where the video information is transmitted as a single signal over one wire. This is because televisions are designed to display separate Luminance (Y) and Chrominance (C) signals.

(The terms Y/C video and S-Video are the same.)

More about S-Video Cables ...

S-Video ... technology for transmitting video signals over a cable by dividing the video information into two separate signals: one for color (*chrominance*), and the other for brightness (*luminance*).

S-Video is an <u>analogue video signal</u> that carries the video data as two separate signals (brightness and color), unlike composite video which carries the video signals mixed in one line.

S-Video, as most commonly implemented, carries 480i or 576i resolution video, i.e. standard definition video. Three-line component video cables are commonly used to carry video resolutions higher than those supported by a S-Video cable — for example, Prop component video cables can easily handle 1080p resolution video. <u>S-Video does not carry audio on the same cable</u>.

The 4-pin mini-DIN connector is the most common of several S-Video connector types.

Note: Component Video



Does not carry sound but RCA audio-type cables can be attached for sound!

- S-Video (S standing for separate rather than super) transports the video signal as two separate intensity (luminance) and colour (chrominance) channels.
- YpbPr carries a single luminance (brightness) signal and two differential colour signals from which the colour information is reconstructed.
- The RGB (Red, Green and Blue) as its name suggest carries the picture information as three separate signals corresponding to the colours from which the image is built up.

S-Video plus audio ...



S-Video/RCA Audio Cable



Short for *Super-Video*, a technology for transmitting video signals over a cable by dividing the video information into two separate signals: one for color (*chrominance*), and the other for brightness (*luminance*). ... can add 2 video cables to it

When sent to a television, this produces sharper images than *composite video*, where the video information is transmitted as a single signal over one wire. This is because televisions are designed to display separate Luminance (Y) and Chrominance (C) signals.

(The terms Y/C video and S-Video are the same.)

Pro S-Video with Audio to 3 AV Connectors Combination ... both audio and video



Digital Audio cables ...

A special group of audio cables is digital audio cables. There are 2 types: optical and coaxial

Optical Digital Cables (also called <u>S/PDIF</u>, for Sony/Philips Digital Interface)

The other type of digital audio cable is the optical cable. Remember, coaxial digital cables still use copper wire to transmit their data from one component to another, while this is an affordable and many times high quality solution, coaxial digital cables do have limitations that optical digital cables do not, making optical digital cables the premier choice for transferring digital audio signal from one component to another.

Optical digital cables do not use copper to transmit data, but pulses of light. Since there is no interference, the signal does not degrade over long distances and it does not weaken. With optical digital cables, you can get one of the best reproductions of digital signals available and while optical digital cables are more expensive (about 50% or more), for true audiophiles looking for the best reproduction of their audio signals, nothing beats optical digital cable technology. Optical digital cables do not use RCA style connectors; instead they use what are called <u>Toslink</u> (or EIA-J). The only disadvantage to using optical digital cables besides the price increase is that these cables don't work optimally when bent. Unfortunately light can't bend, so if you require a set up that has right angles or that snakes through a room, stick with the coaxial digital cables.

Coaxial Digital Cables

Coaxial digital cables are the most common type of connection cable used for digital audio today. They look similar to the RCA cables that many people use and are familiar with. The only difference being is that instead of carrying analog signal it carries digital signals.

Coaxial digital cables look very similar to cable TV cables, except they have RCA connectors on the end of the cable. They are thicker than normal RCA cables, are shielded just like regular cable TV coaxial cables and are very affordable, usually costing about \$10 for six feet of cable.

Coaxial digital cables transmit digital signals in pulses of electricity. They have a copper wire and are shielded from interference with the help of a surrounding aluminum wrap. They are then housed in a strong outer case. It is also important to note that Coaxial digital cables have 75 ohm impedance which means they can handle more energy, plus they have a larger bandwidth than a normal RCA cable. For an affordable digital audio cable that delivers premium sound, coaxial digital cables are an extremely attractive choice.

Digital Auto Cables ...

Moderns audio equipment uses <u>digital signals</u> made from data, such as 0's and 1's.

<u>Digital media</u> includes CD's, <u>MP3's</u> and DVD audio signals that are processed by a chip and usually create superior sound that lasts far longer than analog audio.

Digital Audio Cables come in two distinct flavors; (1) coaxial and (2) optical.

<u>Coaxial Digital Cables</u> are the most common type of connection cable used for <u>digital audio</u> today. They look similar to the RCA cables that many people use and are familiar with. The only difference being is that instead of carrying analog signal it carries digital signals. Coaxial digital cables look very similar to <u>cable TV</u> cables, except they have RCA connectors on the end of the cable. They are thicker than normal RCA cables and are shielded just like regular cable TV coaxial cables. <u>Coaxial digital cables transmit digital signals in pulses of electricity</u>. They have a copper wire and are shielded from interference with the help of a surrounding aluminum wrap. They are then housed in a strong outer case. Coaxial digital cables have 75 ohm impedance which means they can handle more energy, plus they have a larger bandwidth than a normal RCA cable.

<u>Optical Digital Cables</u> ... also called S/PDIF, for Sony/Philips Digital Interface ... are the other type of digital audio cable. Optical digital cables do not use copper to transmit data, but pulses of light. Since there is no interference, the signal does not degrade over long distances and it does not weaken. With optical digital cables, you can the best reproductions of digital signals available but are more expensive (about 50% or more), Optical digital cables do not use RCA style connectors; instead they use what are called Toslink (or EIA-J). The disadvantage to using optical digital cables is that they don't work optimally when bent ... so if you require a set up that has right angles or that snakes through a room, stick with the coaxial digital cables.

Appendix

Analog Audio cables

Analog Video cables

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 jacks:

- Coaxial RF, also known as F-type
- Composite video, also known as RCA
- S-Video
- Component Video

Some cables carry both audio and video others only video

Coaxial RF can be used to connect antennas, cable boxes, VCRs, TVs, DVD players, DVD recorders and DVRs. Coaxial RF cable carries video and stereo audio signals on one cable. It is the lowest quality cable for carrying audio and video signals

Composite cables plug into the composite video jacks found on many kinds of A/V components, including DVD players, VCRs, DVD recorders, A/V receivers, and DVRs. They are better to use than RF cable

Analog Video Cables ...

Analog Video cables

Video signals can travel over many different types of cabling, but the <u>majority of video components are</u> equipped with at least one of the following jacks:

- Coaxial RF, also known as F-type
- Composite video, also known as RCA
- S-Video
- · Component Video

Coaxial RF can be used to connect antennas, cable boxes, VCRs, TVs, DVD players, DVD recorders and DVRs.

Coaxial RF cable carries video and stereo audio signals on one cable. It is the lowest quality cable for carrying audio and video signals and should only be used when connecting to a TV that has no other inputs.

Composite cables plug into the composite video jacks found on many kinds of A/V components, including DVD players, VCRs, DVD recorders, A/V receivers, and DVRs.

Composite cables are better than RF cable, but are still the 2nd lowest quality. <u>These jacks are often yellow</u>, and are attached to red and white stereo audio jacks.

These connectors are found on virtually every component in a home TV set up, and the audio jacks are commonly used with other video cables.



SVGA to RGB Component Video Cable ...



SVGA to Component Video Cable (RGB+H/V Sync - HD15 to 5 RCA



