

## A View of Video

In our last article, we clarified the confusing mess of what types of cables there are out there. This month we will be focusing on the different types of video connections available to us for computer and home theatre applications and common video conversion problems and solutions.

Here is a list of the most common video types that appear on today's devices.



### Component Video:

[Component video](#) is a newer way to connect video devices together, typically used with DVD Players, HDTV set-top converters, and even some game systems. It utilizes three separate RCA connections which transmit in an RGB (Red, Green, and Blue) format. It will deliver the highest picture quality from an analog source.



### S-Video:

The [S-video](#) signal outputs a high picture quality from DVD's, SVHS VCR's, Digital Satellite Boxes, Digital Camcorders, and similar devices. The signal is transferred across one cable consisting of four wires: two of them transferring the Color (Chrominance) and Intensity (Luminance) data, and two more carrying ground.



### Composite Video:

[Composite Video](#) is the most basic connection between video devices. It is available on almost all video devices on the market, including DVD players, VCRs, TVs, cable boxes, camcorders, and others. It consists of a single "Yellow" RCA cable.



### Coaxial (RF) Video:

#### RG59 Cable

[RG59 cable](#) is one of the most common video cables in use today. RG59 cable is a 75-ohm video cable that has traditionally been used for analog Cable TV or video applications. Typically fitted with F-Pin ends (for Cable TV) or BNC ends (used in professional video applications). Recently, RG59 cable has started to be phased out in favor of RG6 cable.

#### RG6 Cable

[RG6 cable](#) is primarily differentiated from RG59 cable by having a thicker copper center conductor. RG6 is primarily being used today for satellite and digital cable TV, where higher frequencies are required that RG59 cable cannot support. RG6 cable is most often sold with F connectors for cable or satellite applications.



### DVI:

#### DVI-D:

This is the most common style. Almost all DVI-capable devices on the market use a DVI-D interface. This connection is for digital informa

only.

#### **DVI-A:**

In a digital-only world, "DVI Analog" would make no sense. However, as with all new technologies, there needs to be a way to connect to old equipment. DVI-A uses a DVI style connector on a cable that sends an analog-only signal, which can be understood by analog VGA monitors.

#### **DVI-I:**

In practice, DVI Analog-only cables are rare, and DVI Analog devices are non-existent. The DVI Integrated cables and connectors offer the best of both worlds: a single cable and connector that can transmit both a digital and an analog signal. Since a DVI-I connector offers the most flexibility, most video cards use this connector so that either a DVI digital screen or VGA monitor can be connected.

#### **Important:**

*In DVI, like anything else, an Analog signal will only talk to analog devices, and a Digital signal will only talk to digital devices. Trying to convert a DFP or DVI-D (Digital Only) signal to a VGA (Analog) signal will not work with just a cable, a converter is needed.*

#### **Single Link:**

Can support resolutions up to 1920 x 1080 at 60 Hz. Each link has three data channels for RGB information with a maximum bandwidth of 165 MHz, which is equal to 165 million pixels a second. Uses 12 of 24 pins. This is more than adequate for most plasma TVs and HDTV signals.

#### **Dual Link:**

Can support resolutions up to 2048 x 1536 at 60 Hz. Each link has three data channels for RGB information with a maximum bandwidth of 165 MHz, which is equal to 165 million pixels a second. Uses all 24 pins.

For more information on DVI, refer to our previous technical article, [DVI Demystified](#).



#### **HDMI:**

[HDMI](#) is a new video format which is very similar to DVI in that it transmits digital video. The two key points that set this connection apart from DVI are first that it has a smaller connector, which makes it easier to run through the walls. HDMI will also be able to transmit digital audio over the same single connection, thereby greatly simplifying component hookup. HDMI video and audio will be very important once HDTV has been standardized.



#### **Super VGA (SVGA) Cables:**

Technically, [SVGA cables](#) traditionally include three "mini coaxial" cables (for red, green, and blue signals) inside (along with additional wires for other required signals). The internal coaxial cables inside an SVGA cable allow the cable to deliver higher-resolution pictures over long distances than older 15-wire VGA cables. SVGA cables are used with Computers, new DVD Players, and new TVs / HDTVs.

***When it comes to trying to convert one video format to another many problems may arise. Here are a handful of the most***

**common problems that come up and what solutions are best to remedy the situation.**

**Problem:**

How do I convert my old Coax (RF) signal to the newer Composite Video and Audio (Red, White and Yellow RCAs)?

**Solution:**

One usually runs into this problem with a newer television or video device that doesn't have a coaxial input (and thus, does not have a built-in TV tuner). You can either use an RF Demodulator or an old VCR, as most VCRs have a TV tuner built-in. Note that you will need to use the remote control that came with the Modulator or VCR to change the channel.

**Problem:**

How do I convert my newer Composite Video and Audio (Red, White and Yellow RCA) signal to the older Coax (RF) signal?

**Solution:**

When trying to connect a newer device such as a DVD Player or even a video game system to an older TV a small unit called an [RF Modulator](#) is needed. This small device will input the Red, White and Yellow RCA signals and convert them to a single Coax (RF) connection.

**Problem:**

I have S-Video on my DVD Player, but my TV only has composite video (Yellow RCA).

**Solution:**

S-Video has been in the market for a number of years now and comes standard on 90% of TVs being produced today. However, many old televisions do not have S-Video inputs. Since this is such a common occurrence many manufacturers are now producing a cable that is composite (Yellow RCA) on one end and S-Video on the other. Take a look at [s-video to rca](#) for a cable to help solve this problem.

**Problem:**

I have a Video Card with a VGA output and I just bought a new monitor with DVI.

**Solution:**

If the monitor you purchased has a DVI-I (supports both DVI-A Analog and DVI-D Digital) connection on it then a simple [VGA to DVI-A cable/adaptor](#) will work. If the monitor is strictly DVI-D then an analog to digital converter is needed.

**Problem:**

I just bought a new Video Card with a DVI output and I want to use my old VGA monitor.

**Solution:**

If the Video Card you purchased has a DVI-I (supports both DVI-A Analog and DVI-D Digital) connection on it then a simple [VGA to DVI-A cable or DVI to VGA adaptor](#) will work. If the Video Card is strictly DVI-D then a digital to analog converter, such as our [Part Number 40DV-05300](#) is needed.

**Problem:**

Trying to connect a TV to the computer so it can be used as the monitor.

**Solution:**

Using a simple cable to connect them together will not work due to the differences in video formats. A device called a "PC to TV Converter" is needed. This device will convert the computer video format into a format that a TV can understand. With HDTV the picture quality from a PC is getting better, however, the maximum resolution is still only 1024 x 768 at a 60Hz refresh rate.

**Problem:**

Trying to connect an external video device to the computer so it can be viewed on the monitor.

**Solution:**

Using a simple cable to connect them together will not work due to the differences in video formats. A device called a "TV to PC Converter" is needed. This device will convert the TV video format into a computer video format.

That's it for this month. Note that video technology has been changing rapidly over the last few years, as consumer products and computers start to converge. You will want to keep up-to-date on these new technologies.

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