



Using Closed Captions in the Digital TV Age

Introduction

Digital TV offers higher resolution pictures, a wider aspect ratio, better signal reception, and many new data features. Among the latter is the new “CEA-708” closed caption format, which is more flexible than traditional “CEA-608” and offers user configuration options.

However, digital TV does not work the same way as analog TV. Users with hearing disabilities, as well as others who want to use closed captions, need to adjust their usage patterns to get the most out of their digital TV.

The following Frequently Asked Questions are a starting point to help consumers use closed captions with digital TVs.

1. What is digital TV?

A television consists of a tuner (for receiving TV signals) and a display. A growing percentage of the TVs sold in the United States in the past few years had a digital tuner, and after March 1, 2007, all U.S. TVs will have one. A digital tuner is a device for receiving national and local broadcast TV signals that are encoded digitally and transmitted over-the-air, or received through cable or satellite. A DVD player is not a digital TV tuner; neither is a personal computer’s Web browser when watching Internet video. However, some DVD players and PCs contain a digital broadcast TV tuner in addition to being able to play DVDs and browse the Internet.

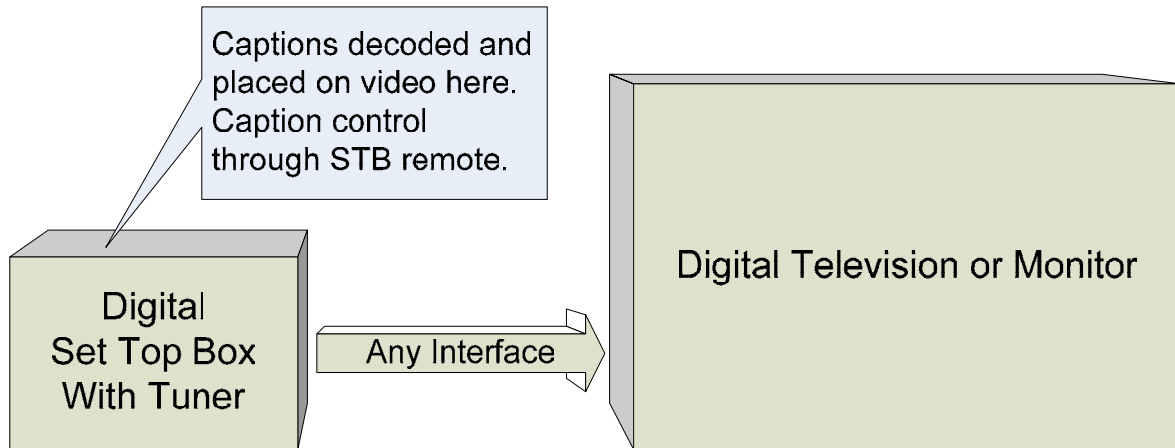
2. How does digital TV use closed captions?

Analog TV has only one format for closed captions—the CEA-608 format—in which the captions are encoded invisibly in the analog TV signal. Digital TV can support both CEA-608 and CEA-708 formats. The latter format is newer and offers more choices of font, color, and size, which can result in better visibility and ease of use. Digital TV carries captions of either format as data along with the digital audio and video content, but unlike analog TV, the captions are not embedded in the video signal. It is up to the originator of the programming to provide the captions for any given program and to select the format.

When the captions are decoded and displayed, the resulting text and symbols appear on the screen. The caption decoding function, by U.S. government mandate, is included in all digital TVs that have a screen size 13 inches or larger. It is also included in all separate, stand-alone digital TV tuners (e.g., set top boxes or “STBs”). In either case, the digital TV tuner reads the closed caption data, interprets it, and writes it into the video so it becomes visible when the video is displayed on a screen. (More specifically, the captions are written on top of the video images.)

3. How are captions viewed if the digital TV tuner is separated from the screen (e.g., in a STB)?

In the past, many consumers received analog TV through an external analog VCR connected to the TV. The VCR contained an analog tuner, but could not decode closed captions. The captions flowed invisibly (i.e., still closed) through the VCR to the TV, where the TV would decode and display the captions. The user could change channels on the VCR, but had to use the TV's remote control or on-screen menu to display the captions.

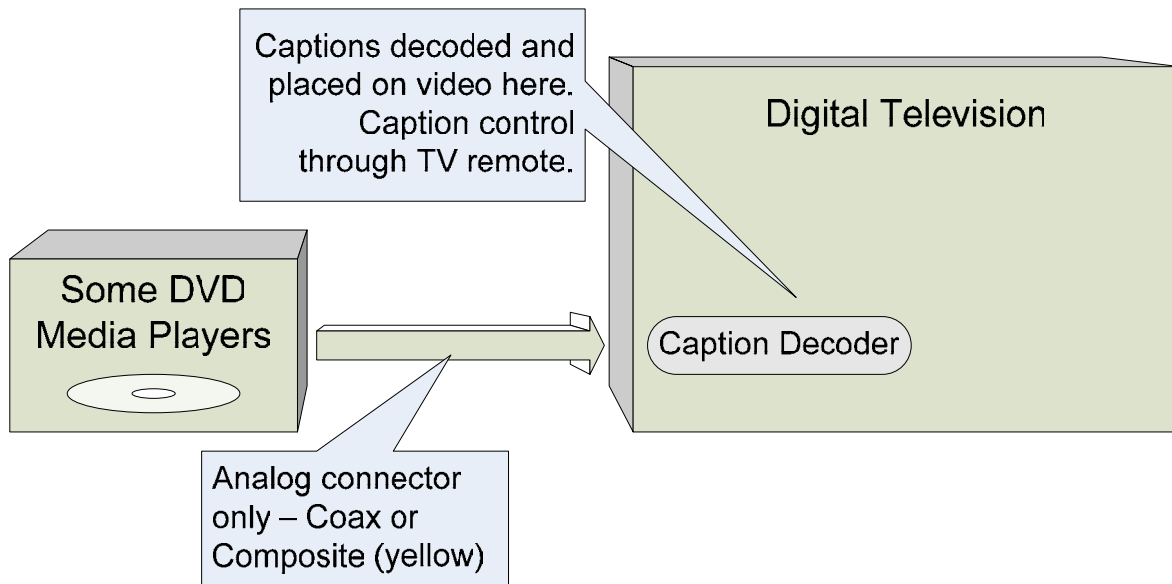


Digital TV is different. It is common for consumers to watch digital TV using a digital STB (e.g., digital over-the-air, cable, or satellite STB). In this case, the digital TV tuner is in the digital STB, which is separate from the TV display. As noted above, the digital TV tuner is required to have closed caption decoding capability. The consumer uses the digital STB's remote control or on-screen menu to operate the caption decoder in the digital STB. The digital STB decodes the captions and writes the captions on top of the video; the video passes to the TV display over a connecting video cable; and the video (with visible captions) appears on the screen. The TV does not decode the captions; it just displays the video passed to it from the STB (including the visible captions).

4. How do captions work with content other than TV content (e.g., packaged media)?

Some packaged media (e.g., DVDs, Blu-Ray discs, and HD-DVDs) include closed captions. When they do, the captions are recorded on the disc along with the audio and video data on the disc, similar to how closed captions are carried as digital data in a digital TV signal along with audio and video data. However, in contrast to digital TV, there are no government mandates for packaged media to include captions, nor are there government mandates for media players to decode the captions.

Nevertheless, some packaged media do contain closed captions (mostly the older style – CEA-608). Although few, if any, media players contain the circuitry necessary to decode captions directly (i.e., decode and write them over the video), many media players are designed to read the caption data from a disc and write the data invisibly (i.e., still closed) into the video signal passing from the player to an attached TV through an analog connector (e.g., the coaxial “RF” cable or the yellow-plug “composite video” cable). The attached TV’s own tuner is able to decode and display the captions. In this scenario, the consumer uses the TV’s controls to operate the TV’s caption decoder.



Of course, consumers may not wish to connect their media player to their high-resolution (Enhanced Definition or High Definition) display using a low-resolution analog connector, because doing so sacrifices some of the video quality. Certain high-resolution connectors do not provide a way for closed caption data to be carried from a player to an attached TV. Therefore, if the media player is connected to a TV with a high-resolution connector (e.g., HDMI), the TV may not receive any caption data from the media player and may not decode any captions from the packaged media.

However, another option for packaged media is available. Most packaged media (e.g., DVDs, Blu-Ray discs, HD-DVDs) are encoded with subtitles which can be accessed and displayed by their respective media players. A growing number of content providers are using this feature to provide a particular type of subtitling that is optimized for people with hearing disabilities. Known as “Subtitling for Deaf and Hard of Hearing”, this option is distinct from English subtitles in providing written cues to non-language audible information, such as sound effects. Because the ability to process subtitles (i.e., decode them and write them over the video) is standard for all media players, users with hearing disabilities can be sure to benefit from packaged media with this type of subtitling with any brand or model of DVD, Blu-Ray, or HD-DVD player.