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Digital Television



A Consumer Guide to Digital Television



Canada

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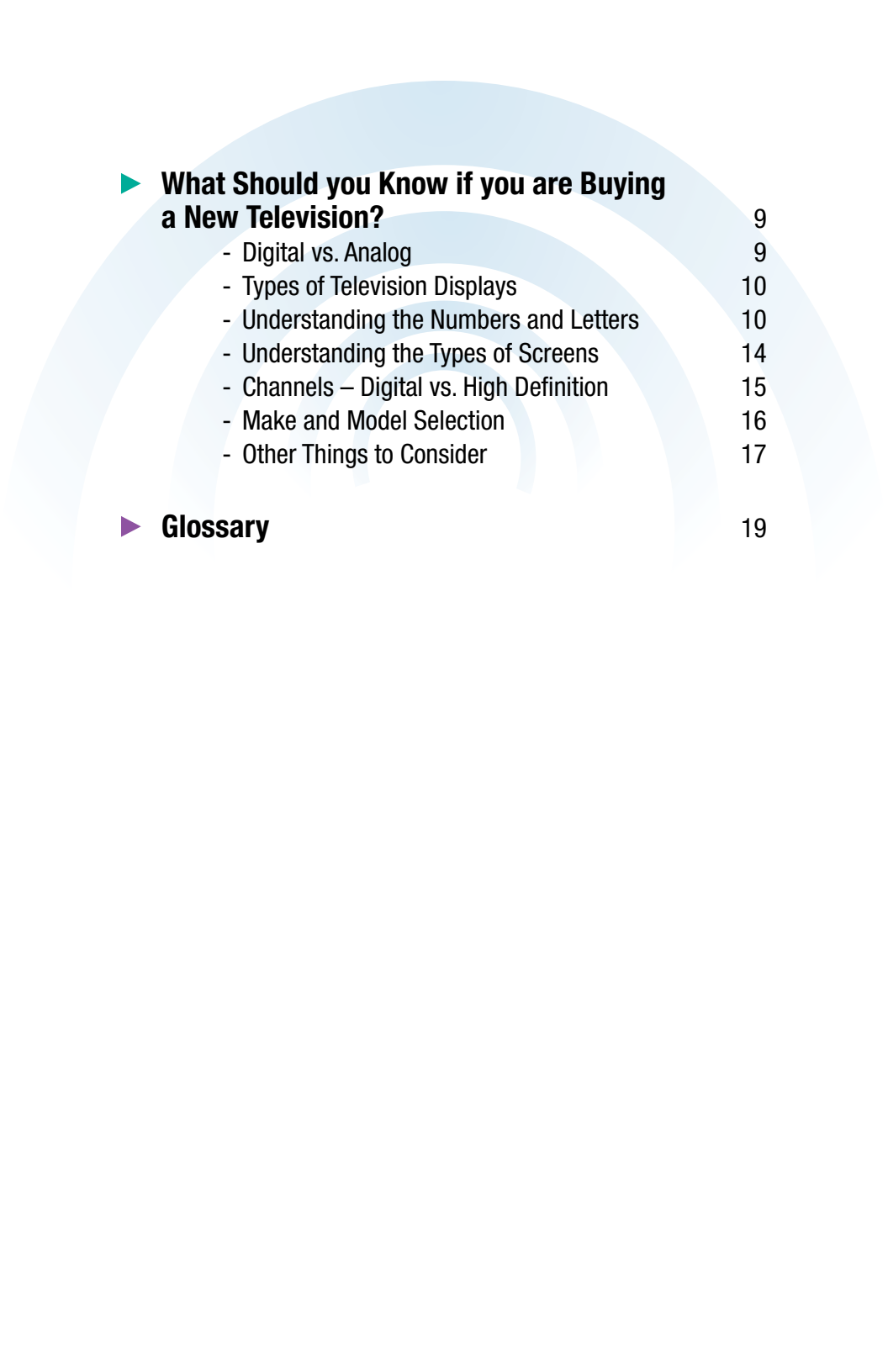
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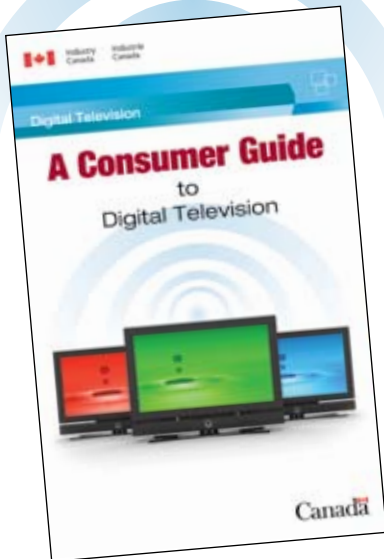
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Introduction

Televisions have come a long way since the old black and white sets. They are much thinner and lighter than their predecessors. Furthermore, in the transition from analog to digital television, there will be enhanced picture and sound quality. Most developed countries, including Canada, are switching to digital television (DTV) between 2009 and 2012. The transition may be seamless for some, but not for others.



THIS GUIDE will provide the basics of digital television, outline what the transition will mean to you, and provide information on digital television equipment. It will also outline important dates, help you assess your television situation, provide options, and explain terms.

The Digital Television Transition

The digital television transition is the switch from analog signals to digital signals. Analog over-the-air signals* are transmitted to your TV by continuously varying radio waves, whereas digital over-the-air signals are delivered in a stream of bits. Digital television takes up less airwave (spectrum) space than analog television, so the conversion to digital will free up some valuable airwave space for other important services, like advanced wireless and public safety services (police, fire departments, etc.). The changeover will also offer more channels, and better picture and sound quality to viewers.

*Over-the-air broadcasts deliver television signals over radio airwaves to be picked up by antennas and rabbit ear systems. Cable and satellite programming is not delivered over the air.

Important Dates

By **August 31, 2011**, over-the-air broadcast signals in Canada will be in digital format. All analog televisions will require a set-top converter box to receive over-the-air broadcasts. Canadians using satellite or digital cable services should see no change.

American television stations broadcasting over-the-air into Canada are expected to complete this change by June 12, 2009. Some stations have already made the switch to digital.

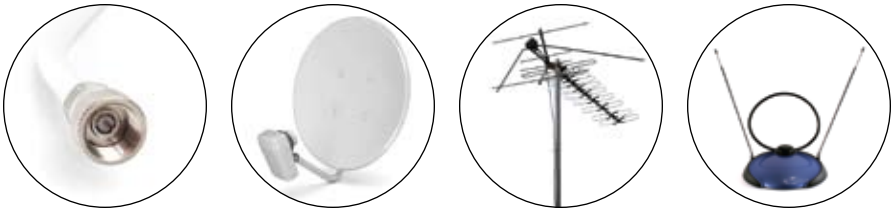
If you receive over-the-air broadcasts from the U.S. on an analog television set, you will require a set-top converter box to continue to receive your channels once the U.S. transition takes place (expected to be completed by June 12, 2009). However, you will continue to receive Canadian television stations.

How Will the Transition Affect You?

Get to Know your Television

Do you own an analog or digital television? How does your television receive its signals (do you have cable, satellite, or an antenna)? These questions are key to helping you figure out if you need to prepare for the transition to digital television.

MAKING THE CONNECTION – HOW DOES YOUR TELEVISION RECEIVE ITS SIGNALS?



Do you subscribe to cable or satellite, or do you have an antenna or rabbit ears? An antenna or rabbit ears would indicate that you receive television over the air.

Cable

If you are currently subscribing to a cable service, you should not have to do anything when the transition happens by 2011.

Both analog and digital television sets can receive digital cable with the addition of a digital cable box.

However, cable TV service providers may eventually stop providing analog TV channels to their clients when they eventually convert their cable service to an all-digital one. If analog TV channels are no longer provided by cable service providers, cable subscribers who currently have

televisions connected to an analog cable service (a coaxial cable connected to the cable input terminal of the television set) will have to rent or purchase a digital cable box from their cable service provider to continue to receive cable channels. These boxes may also be purchased from an electronics retailer.

Satellite

You will not be affected by the change to an all-digital format if your television is connected to satellite service.

Over-the-air

The transition to an all-digital system affects free, over-the-air broadcast TV – the kind of TV signals received by a set-top (rabbit ears), rooftop, or tower antenna. Whether or not your TV is ready depends on whether or not it has a built-in digital tuner (see below). A digital tuner allows a TV to receive digital television signals broadcast by TV stations. Therefore, if your television has a digital tuner, it will receive digital television after the transition takes place. If it does not have one, your options are listed on page 6.

DOES YOUR TELEVISION HAVE AN ANALOG OR DIGITAL TUNER?

To find out if you have an analog or digital television, you need to check your television set to identify whether it has an analog or a digital tuner.

Take a look at your owner's manual or visually check your television set. If the information is not listed in the manual, contact the manufacturer. Here's what to look for:

Digital

If you see the terms *digital tuner*, *ATSC tuner*, or *integrated tuner*, you have a digital television. You will not need to make any changes if you have this type of television.

Sets with built-in digital or digital/analog tuners will continue to receive over-the-air digital television once the transition has taken place.

An integrated tuner is one that functions as both a digital and analog tuner.

If your television does not have a tuner, this means you have a monitor rather than a television. These types of displays may be labeled *Digital or DTV Monitor*, *High-Definition or HDTV Monitor*, *Digital or DTV Ready*, or *High-Definition or HDTV Ready*. They can receive and display digital signals only if they are attached to an external tuner, such as a cable box, a satellite receiver, or an over-the-air digital tuner box. This is not the same as a converter box. Please refer to “Set-top Boxes” on page 7.

Analog

If you only see the terms analog tuner or *NTSC tuner*, this means you have an analog television. See “Your Options” on page 6.

Without the addition of a set-top converter box, sets with only an analog tuner will no longer receive over-the-air television once the transition takes place.

It is possible to have a television with both a digital and analog tuner. A television with both will allow you to take advantage of stations that have started broadcasting in digital format while still being able to see all other channels that will continue to broadcast in analog until August 2011. See box above which talks about integrated tuners.

Your Options

If you have determined that you will indeed be affected by the digital transition, there are three options available to you.



BUY A CONVERTER BOX

This unit, which connects to your television, will convert digital signals so that they can be viewed on your analog television. If you have more than one television that receives signals with an antenna or rabbit ears, you will need a converter box for each television set.



BUY A NEW TELEVISION

If you decide to buy a new television, you will need a television with a digital tuner in order to receive DTV signals. Take a look at “What Should you Know if you are Buying a New Television?” on page 9.



SUBSCRIBE TO CABLE OR SATELLITE

Contact a service provider for more information. There are fees associated with subscribing to these services.



Understanding the Equipment

SET-TOP BOXES

A set-top box is a unit that is set on top or near your television. It picks up signals that your television receiver cannot so that you are able to view channels. There are different types of set-top boxes.



Converter Box: receives and converts an over-the-air digital TV signal to analog for display on a standard analog television. Some converter boxes have an analog pass-through feature which allows analog signals to pass through as well as digital. This will allow you to begin watching channels that are available in digital before the transition, without losing those that continue to be broadcast in analog.

DTV Tuner Box: can be used by an HDTV/DTV-ready television that does not have a built-in tuner to receive over-the-air television signals.

Digital Cable Box: enables digital cable signals to be transferred onto a television screen. The digital cable box can be bought or rented from a cable service provider or purchased from an electronics retailer. Both analog and digital television sets can receive digital cable when using a digital cable box.

High-Definition (HD) Cable Box: allows high-definition digital cable signals to be transferred onto a television screen. A high-definition cable box can be bought or rented from a cable service provider or purchased from an electronics retailer.

ANTENNAS

An antenna made for analog televisions will work for digital televisions as long as the television has a digital tuner to receive digital programs. Most people will not have to change their antennas; however, some stations will be broadcast on different channels once the transition takes place. You may need to re-position your antenna once you attach a converter box. If your rabbit ears are very old and pick up only VHF signals, then you will need to replace them with a set that can pick up VHF and UHF signals.

TELEVISION SETS

Television sets do not have to be high definition in order to view digital television. All televisions with digital tuners are capable of displaying digital television. However, if you are in the market for a new television, take a look at the following section.

What Should you Know if you are Buying a New Television?

You have decided that the time has come to purchase a new television, but have no idea where to start. Before heading out, here are some things to consider.

DIGITAL VS. ANALOG

While most televisions on the market now are digital, it is still possible to find an analog television. If you want to pick up digital television signals, you will need a digital television set or an analog television with a converter box.

Be aware that analog television sets may not always be properly identified in stores. Therefore, if you want to purchase a digital television, ensure that it has a digital or ATSC tuner. Televisions with an analog or NTSC tuner are not digital unless they also have an “ATSC tuner” or “integrated tuner” which can act as both an analog and digital tuner.

As the price of analog televisions has dropped dramatically, some people may still be interested in purchasing an analog set. Here are a few points to remember.

An analog television can:

- continue to receive Canadian over-the-air television until August 31, 2011 (after the transition, it will require the addition of a set-top converter box); and
- receive cable or satellite television now and after the transition takes place.

However, an analog television will not allow you to take full advantage of the improved features of digital television, such as high-definition picture and multi-channel sound. Furthermore, you may see black bars at the top and bottom of your screen once the digital transition takes place; this is a result of widescreen programming.

TYPES OF TELEVISION DISPLAYS

When deciding on a new television, you will be introduced to new terminology, specifications, features and technology choices. Note that although most digital televisions available are capable of displaying high-definition images, you are not required to purchase a high-definition (HD) television in order to view digital television. All televisions with digital and integrated tuners are capable of displaying digital television.

UNDERSTANDING THE NUMBERS AND LETTERS

When you start looking at digital television sets, you will see numbers and letters associated with them. For example, you may commonly see 480p, 720p, 1080p or 1080i. You may also see 720x480 or 1920x1080. What do these numbers and letters mean?

The chart on pages 12 and 13 will help clarify some of these numbers and letters for you.

1
720x4

Before referring to the chart on pages 12 and 13, note that the term “native resolution” refers to the number of vertical and horizontal lines displayed on a television screen. These two numbers multiplied indicate the total number of pixels, or picture elements on the screen, and therefore the television’s maximum display capability.

The letters, ‘i’ and ‘p’ refer to the television’s scanning system. The ‘i’ means ‘interlaced’ and ‘p’ means ‘progressive’. The difference between the two is that an interlaced display scans only every other line per scan or frame of an image, whereas a progressive display will scan all horizontal lines per frame, resulting in more pixels per image.



1080p
80 480p
1080i
720p
1920x1080

TELEVISION FORMAT	NATIVE RESOLUTION	COMMON NAME	
SDTV (Standard Definition Television)	720 x 480	480i	
EDTV (Enhanced Definition Television)	720 x 480	480p	
HDTV (High-Definition Television)	Progressive scan, 1280 x 720	720p	
	Interlace scan, 1920 x 1080	1080i	
	Progressive scan, 1920 x 1080	1080p	
	Progressive scan, 1,024 x 768		
	Progressive scan, 1366 x 768		

It is important to remember that even if you have a television that is capable of displaying a certain resolution, you also need to think about the resolution of the images being input into your television. For example, most high-definition television programming provided by cable or satellite is broadcast in 720p. Therefore, even if you are using a 1080p (1920x1080) television,

COMMENTS

The lowest resolution of all digital television formats. It is the same resolution as that used by most analog televisions.

Provides a sharper picture than SDTV. While it cannot display programs in true high-definition, it can receive programs broadcast in high-definition, and display them in 480p resolution – which still provides good picture quality.

Provides the sharpest picture. However, the level of detail within various resolutions of high-definition are most noticeable on larger TVs such as a 50-inch, though you might see subtle improvements on 40- to 47-inch screens, especially when viewed close-up. If you are purchasing a television smaller than 40-inches, the only difference between a 720p and 1080p may be the price.

While these native resolutions do not match the exact native resolution of a 720p, a television with these native resolutions would have a display capability similar to that of a 720p television since it can scan a maximum of 768 horizontal lines.

you will still be watching this programming at a lower resolution of 720p. Some programming sources, such as high-definition DVDs (e.g. Blu-ray™), provide full 1080p images that can make maximum use of the resolution available on 1080p televisions and can produce a very high-quality image.

UNDERSTANDING THE TYPES OF SCREENS

When shopping for a new television, you will most often see flat screen television sets. The two main technologies are LCD and Plasma, and the choice of technology is often affected by the manufacturer's feature set and the price. Typically, LCD sets provide a bright image, making them useful in rooms with lots of light, whereas Plasma sets offer somewhat better colour and action resolution in lower light conditions.

Projection style systems are also available. Rear projection televisions are available in larger sizes, and use technologies like DLP™ and LCD; they are somewhat 'thicker' than flat screens and are more appropriate for larger rooms where light levels can be limited. A front projector, which is a two-piece system that consists of a projector and a screen, is typically for home theatre installations. These can offer very large display areas with high resolution, but are usually not suitable for bright rooms or smaller spaces.

Manufacturers are always looking at improving technologies. For instance, features that improve colour accuracy, eliminate unwanted noise effects, or reduce power consumption are being introduced or improved upon each year. The **TV Comparison Chart** (available by searching for "digital television" at www.ConsumerInformation.ca), outlines some of the new features you may want to consider when looking for your new television.

Location and Use

Where will the television be placed in your home? What type of lighting do you have in that room? What will the seating arrangement be? Will it be mounted on a wall or will it sit on a stand?

Your viewing experience may be impacted by the screen size, the seating arrangements, the lighting in the room, and the viewing distance. You may find it preferable to sit closer to a larger flat screen TV compared to a CRT or tube set — sitting too far away reduces the advantage of the HD picture experience. Sitting on an angle may also limit the brightness and resolution of the image. Try to sit about at least 1.5 times the diagonal size of the screen away from the screen.

If you intend to mount your TV on the wall, an optional wall mount kit and professional installation may be required.

CHANNELS — DIGITAL VS. HIGH DEFINITION

Now that you have considered purchasing a new television, you also need to consider how you will receive your channels (e.g. cable, satellite, over-the-air).

For many years, cable services have offered digital channels. Satellite and telephone company television systems are completely digital. Digital channels, however, are not the same as HDTV channels. HDTV offers improved picture and sound, but requires a different type of digital system to get the signal to your set. Consumers also require different equipment to receive HDTV signals.

Digital

If you subscribe to digital service from your cable, satellite, or telephone company, you will need a digital set-top box. You will need to acquire a different HDTV receiver/box in order to receive HDTV signals (HDTV boxes can receive both HD and standard definition digital signals).

Both the DTV (digital) and HDTV set-top boxes are available to rent or purchase from your provider or to purchase from an electronics retailer. They are also now available with options such as personal video recorders. Your provider or retailer will be able to explain the options that are available to you.

High Definition

In order to receive high definition television, you will need to order or subscribe to HDTV channels from your provider. Most providers offer various packages — some are tied to non HDTV channels from the same broadcaster, while others are unique channels from HD only broadcasters.

You should be aware that HD channels might broadcast programs that were not produced in HDTV. If this is the case, the programs might be of a lower image quality and may have black or grey bars at the sides of the screen.

MAKE AND MODEL SELECTION

Once you have made your decisions on the location, type, and size of the display and how you will receive television programs, you are ready to select a make and model. You should compare the features and specifications of a few sets before making a decision.

You might also want to consider issues such as the level of image resolution, the brightness, and your viewing angle. You can do your own comparisons by going to manufacturers' websites and downloading the specification sheets for television models that you find of interest. You can also use our **TV Comparison Chart**, (available by searching for “digital television” at www.ConsumerInformation.ca) to help keep track of and compare the features of the various models that you may find.

Furthermore, you can go to a store and take a look. Look at the picture, listen to the sound. Is it what you want?

Making your Purchase

Once you have chosen the television make and model that you would like to purchase, shop around at several retailers; ask about delivery (some sets may be too large to take home in your car), installation, and cost. Understand the warranty offered by the manufacturer, the extended warranty offered by the store, and the details of these warranties. Before purchasing an extended warranty, consider that many televisions are reliable and think about whether repairs to the television would actually cost more than the price of the warranty. Can the product be returned for a refund or exchange? Ensure that the salesperson listens to and understands your specific requirements, and do not be afraid to ask questions.

OTHER THINGS TO CONSIDER

Sound – HDTV programs often include 5.1 channel sound. To receive this enhanced sound, you will need additional equipment, such as a home theatre receiver or amplifier and additional speakers.

DVD Players – Regular DVD equipment is not HD. However, the signal quality of most DVDs is very good. You can use your regular DVD player with your new digital television set. Many new DVD players also up-convert, meaning they take a DVD's resolution of 720x480(480i) and convert it to a higher resolution, such as 720p or 1080i. Depending on your television, you may or may not see an improvement in the picture quality when using an up-converting DVD player. For example, if you do not have a TV with a resolution of 720p or 1080i, then you will not be able to see the results of the up conversion.



High Definition DVD — Systems like Blu-Ray™ are available and offer the HD picture and sound contained in new High Definition DVDs, usually in 1080p format. They also play regular non-HD DVDs at non-HD quality.

VHS — Videotape players are not digital or HD, but they can work with a digital television. You will, however, see black bars at the edges of the picture just like you would with most non-HDTV programs.

Connecting your Television — HDTV is a different digital television system. In order to receive the best picture and sound, consumers need to pay attention to how their TV set is connected to other sources (e.g., DVD player, digital cable box, etc.). There are only two main types of connections that will display HDTV: component connections or HDMI connections. In a few rare cases, a DVI (Digital Visual Interface) connection is used. For SDTV, you can use composite connections or S-Video connections.

What to do with your old Television

It is important to dispose of your TV set properly. TV sets and cathode ray tubes contain heavy metals and other substances that can be very harmful to the environment. Some retailers and manufacturers offer take back programs where you can return your old television. Certain provinces and municipalities also offer recycling programs for old electronics. Contact your local waste management program for more information.



Glossary

3:2 Pulldown Processing

A feature that smoothes out pictures by correcting errors in a frame rate. Different formats operate at different frame rates and the 3:2 pulldown corrects flaws that can happen when a film is transferred from one format to another.

480i

Refers to the resolution of Standard Definition Television (SDTV). It is the lowest resolution of all digital television formats and the maximum resolution possible for most analog televisions.

480p

Refers to the resolution of Enhanced Definition Television (EDTV). The “p” stands for progressive scanning. The native resolution of 480p is 720x480. See below for the definitions of progressive scan and native resolution.

720p, 1080i, 1080p

Various resolutions of high-definition television. The higher the number, the higher the resolution. The “i” and “p” stand for interlace and progressive. The native resolution of 720p is 1280x720 and the native resolution of 1080p and 1080i is 1920x1080. See below for the definitions of interlace, progressive, and native resolution.

5.1 sound, 6.1, 7.1 Channel Sound

5.1, 6.1 or 7.1 Channel Sound creates a sound system using several audio channels and speakers that surround the listener. The first number represents the number of speakers and channels, and the “.1” represents a separate channel for low frequency sound played through a subwoofer.

Advanced Television Systems Committee (ATSC)

The Advanced Television Systems Committee (ATSC) is the name of the digital television (DTV) standard used by broadcasters in the United States and Canada.

Analog

Analog refers to the type of television we have all watched for years. Analog signals are transmitted to your TV by continuously varying radio waves, which can lead to inconsistent colour, brightness, and resolution.

Analog Pass-through

Analog pass-through is a feature found on some digital to analog television converter boxes. It allows for both digital and analog television to be viewed on older TVs. Boxes without analog pass-through only allow for digital TV (ATSC standard) to be viewed on older, analog-only (NTSC standard) TVs.

Aspect Ratio

Aspect ratio refers to the ratio of image width to image height (for example, 4:3, 16:9). The 4:3 ratio is typical of the shape of traditional analog TV screens, whereas 16:9 is typically the wide-screen format seen on flat panel TVs.

ATSC (Advanced Television Systems Committee) Tuner

An ATSC tuner allows for a digital television to receive over-the-air digital signals using an antenna. It may be integrated into a television, VCR, digital video recorder, or set-top box. An ATSC tuner is also referred to as a digital tuner.

Barn Doors

The term Barn doors refers to the effect that occurs when a 4:3 (analog) image is viewed on a 16:9 (wide screen aspect ratio) screen. This causes the viewer to see black bars on the sides of the screen.

Black Bars

Black bars appear along the top and bottom of the screen because the aspect ratio is different than that which is intended for your television screen. This means that if a movie is watched in wide-screen format, but the television is not wide-screen, black bars will appear on the top and bottom to normalize the image.

BluRay™

BluRay™ is the name of a next-generation optical disc format that enables the recording, rewriting and playback of high-definition (HD) video as well as the storage of large amounts of data. The format offers more than five times the storage capacity of traditional DVDs and can hold up to 25GB of data on a single-layer disc and 50GB on a dual-layer disc. A BluRay™ player is needed to play the discs, but it can also be used to view regular DVDs.

Broadcaster

A broadcaster is a company that provides programs to the television viewer.

Broadcast Spectrum

The entire range of frequencies used for radio and television transmission.

Cable

Cable transmits television programs to the television using radio frequency signals. These signals are transmitted through fixed optical and co-axial cables.

Cathode Ray Tube (CRT)

These are most commonly used in traditional analog televisions. In a CRT, electrons are fired onto a phosphorescent screen to create an image.

Co-Axial Cable

A co-axial cable is a shielded copper cable used by cable TV companies to connect between a community antenna and user homes. Those with analog cable will have a co-axial cable connected to their televisions.

Component Connections

A type of connection that will display HDTV on a television. It consists of three colour-coded wires/connectors. Common colours are red, green and blue. All three wires must be connected and a separate connection for audio is also required.

Composite Video Connection

A type of connection that carries picture information as a single signal. It will not display HDTV and usually requires a separate connection for audio.

Contrast Ratio

The contrast ratio is used to measure the brightest (white) to darkest (black) colour of the display. The higher the ratio, the higher the contrast.

Converter Box

A type of set-top box that receives and converts an over-the-air digital TV signal to analog so that it can be viewed on a standard analog television.

Digital

A method of transmitting data. Digital data is transferred in streams of bits. In reference to television, *digital* refers to a new type of broadcasting technology that will replace analog.

Digital Cable Box

A type of set-top box that enables digital cable signals to be transferred onto a television screen. A digital cable box can be bought or rented from a cable service provider. Both analog and digital television sets can receive digital cable when using a digital cable box.

Digital Light Processing

A type of television screen. Texas Instruments invented Digital Light Processing (DLP) in 1987. DLP works by shining a light onto a semiconductor, called a digital micromirror device (DMD). As light passes through a spinning red, green, and blue colour wheel, the DMD uses the mirrors on its surface to form an image from the light. The image is then reflected onto a large screen. DLPs are lighter and narrower than CRTs, but are still too heavy and bulky to hang from a wall.

Digital Television (DTV)

Digital television (DTV) can refer to digital television *signals* that provide high quality picture and sound; the efficient and flexible *technology* for broadcasting digital signals over-the-air; or a *TV set* with a built-in digital tuner (to receive over-the-air digital television). It is not the same as HDTV.

Digital (DTV) Tuner Box

A type of set-top box that includes a digital tuner, which decodes digital broadcasts for digital televisions. A tuner can also be found inside a television set.

Digital Tuner

A digital tuner decodes digital broadcasts for digital televisions. It can be included inside the television set or it can be in the form of a set-top box. A digital tuner can also be referred to as an ATSC tuner.

Digital Video Disc or Digital Versatile Disc (DVD)

Digital Video Disc (DVD) stores media formats that can be viewed using DVD players. They are the same size as compact discs but store more than six times as much data.

Direct View

A type of television screen. Direct view televisions have cathode ray tubes. They produce a good picture, but are outdated because of their physical depth and weight.

Down-convert

This is a technical term used to describe the process of converting HDTV into analog or standard definition so that it can be viewed and recorded on non-HDTV equipment.

DVD Players

A DVD player is a device that plays DVD discs.

Extended Definition Television (EDTV)

Extended Definition Television (EDTV), also referred to as 480p, can receive and display digital channels but cannot display them in high definition.

Flat Screen

A type of television screen. It has a non-curved screen surface.

Frame Rate

The frame rate is the measurement used to calculate how many individual images are displayed per second. When you see a movie at the theater, the projector is operating like a flip book at a speed of 24 frames per second. When that film is transferred to a DVD, the frame rate jumps to roughly 29.8 frames per second.

Front Projectors

A front projector sends a beam of light across a room to a screen surface. Many home theatre systems use front projectors.

HDMI Connectors

A single cable that carries HDTV picture and 5.1 channel sound from the set-top-box or DVD player to the digital television set. This replaces the need to have separate connections for video and audio.

HDTV/DTV Ready

HDTV ready describes televisions that can display DTV or HDTV but do not have built-in digital tuners. The term may also be referred to as HD ready, Digital ready, or DTV ready.

High-definition Television (HDTV)

High-definition television (HDTV) is a type of digital broadcasting. It has the highest resolution of all digital formats, produces better picture, and offers better sound.

Home Theatre

Usually refers to a TV sound system. It has a number of speakers, amplifiers and other components that allow for surround sound.

Integrated Tuner

Refers to a tuner, built-in to a television, that will pick up both digital and analog signals.

Interlace

Interlace works by scanning only every other line per frame. An “i” is used to identify television screens that use interlace scanning (for example, 1080i).

Letterbox

Letterbox refers to the effect of a wide-screen picture on a standard 4:3 (analog) television. Since the aspect ratios are not the same, black bars appear at the top and bottom of your analog screen. Although the most commonly known wide-screen format is 16:9, (the aspect ratio of most digital and HD televisions), there are other formats. Therefore, you may also see the letterbox effect on a 16:9 wide-screen television if you watch a movie that has been filmed in a different wide-screen format.

Liquid Crystal Display (LCD)

A type of television screen. Liquid crystal display passes light through individual pixels. Displays are light, thin and produce an excellent picture. They are not the best for displaying dark scenes, however they provide a bright image, making them effective in rooms with lots of light.

Multicasting

Digital technology has made it possible to allow for each digital broadcast station to split its bit stream into 2, 3, 4, or more individual channels of programming and/or data services.

National Television System Committee (NTSC)

The National Television System Committee (NTSC) is the organization that created the standards for analog colour television production and broadcasting. NTSC is also used to refer to a composite analog television signal. You may also see the term NTSC in reference to the tuner of a television.

Native Resolution

Native resolution refers to the fixed amount of pixels that the display has. It is the absolute limit on the amount of detail you will see on that display screen. For example, 720x480 or 1920x1080.

Over-the-Air (OTA)

Over-the-air broadcasts deliver television signals over radio airwaves to be picked up by antennas and rabbit ear systems.

Personal Video Recorder

The personal video recorder is able to record programs for later viewing, pause and rewind live programs, record one or several programs while watching another, and record at any time, on any day, or on any channel. Usually incorporated in a digital cable box.

Pixel

Pixel is actually two words joined together: *picture* and *element*. A pixel is a tiny sample of video information that when combined with many others produces an overall picture. Pixels are normally arranged in a regular two-dimensional grid and are often represented using dots, squares or rectangles.

Plasma

A type of television screen. Plasma units tend to be a little heavier than LCD units and do not produce as bright a picture. However, they do an excellent job on dark scenes and have a very wide viewing angle.

Progressive Scan

Progressive scan is a method of displaying, storing, or transmitting moving images. The lines of each frame are drawn in sequence resulting in a clearer picture. A “p” is used to identify television screens that use progressive scanning (for example, 720p).

Rabbit Ears

The term Rabbit ears is used to describe an antenna that sits on top of the television set to receive over-the-air signals. The antenna arms stick out in a V shape, much like a rabbit’s ears do.

Rear Projection

Rear projection is a television system that includes a screen and a projector that sits behind or below the screen.

Resolution

Resolution is a measure of the density of lines and dots per line, which make up a visual image. Usually, the higher the numbers, the sharper and more detailed the picture will be.

Set-top box

A set-top box is an external device that can process or convert a received signal. There are four types of set-top boxes: Converter Box, DTV Tuner Box, Digital Cable Box and HD Cable Box.

Standard Definition (SDTV)

A type of television. Standard Definition television (SDTV) is a type of digital television that produces a better quality image than that of a traditional analog TV, but one that is not as good as High-Definition TV (HDTV).

Stretch or Zoom

Most HDTVs have a feature that allows the viewer to zoom in (making the picture bigger) or stretch (making the picture wider) the image. This is useful when watching programs filmed in an aspect ratio other than 16:9 – viewers can zoom or stretch the picture to fit their screen.

Surround Sound

Surround Sound surrounds the viewer with several speakers, much like in a theatre. The most common is 5.1 Channel Sound. See 5.1, 6.1, 7.1 Channel Sound.

S-Video Connection

A type of connection that carries a video signal as two separate signals: one for colour (*chrominance*), and the other for brightness (*luminance*). This connection will not deliver HDTV and will require a separate connection for audio.

Tuner

A hardware device that enables live video content, such as that received from cable or over-the-air broadcast television, to be displayed. A tuner can be found inside a television or can take the form of a separate unit (often as a set-top box).

Up-convert

Up-converting is a process that converts a standard definition picture to a simulated high-definition picture.

Wide-screen

Until now the aspect ratio of most conventional televisions and television programming was 4 width units by 3 height units (4:3). Digital televisions and television programming have an aspect ratio of 16:9, thus creating a wider, narrower, picture.