

IN THIS ISSUE:

~ Home Theater – TVs

COMING NEXT MONTH:

~ Home Theater – Components

READY NET GO ... NEWS

November 2006

<http://www.readynetgo.net>

610-856-0990

Tip of the Month

Digital TVs are large and expensive and they require some thought to where they will fit before you make your purchase.

Things to consider:

- 1) What's your price range? Your answer will narrow your options considerably. Prices start around \$400 for a 26" LCD and go up to around \$18,000 for a 65" plasma.
- 2) Do you want the TV in view at all times or do you want it behind closed doors?
- 3) Some TVs can be outfitted with a motor that lifts the screen up from a cabinet or down from the ceiling effectively hiding it from view.
- 4) Flat panel TVs can be mounted from the ceiling as well as on the wall.
- 5) How far from the screen will you be sitting? There is an optimal distance for watching a large screen TV (see p. 5 of this newsletter). To ensure that you will be viewing the best quality picture, match your viewing distance with the right size TV.
- 6) Plasma and LCD are well known terms. Learn about the other options, such as DLP and LCoS, before making your final decision.

Acronyms Defined

LCD – Liquid Crystal Display

DLP – Digital Light Processing

LCoS – Liquid Crystal on Silicon

RPTV – Rear Projection Television

Setting Up a Home Theater *Choosing the Right TV*

Action! Drama! Comedy! We all love movies and now we can all enjoy theater quality picture and sound right in our own homes. Once available only to aficionados, home theater packages have exploded and retailers are now drawing people into their stores with large screen TVs, palm-sized speaker systems, and reclining theater seats.

There are three basic components to a home theater system: a **widescreen TV** (16:9 rather than 4:3 aspect ratio), at least 3 **speakers for surround sound** (preferably 5 or more), and a **DVD player/receiver**. Due to the enormous amount of information available on this topic, we'll be breaking this subject down over two months. For this month, we'll discuss televisions. Next month, we'll address everything else that comprises a home theater.

Choosing a TV for your Home Theater

There are so many choices in home theater televisions it's enough to make your head spin so we'll try to boil it down to the basics so you can make an informed decision.

There are **three types of displays** for home theater systems each with advantages and disadvantages:

- 1) Flat Panel
- 2) Rear Projection
- 3) Front Projection

WWW (Websites Worth Watching)

- 1) Electronic House - <http://www.electronichouse.com/>
- 2) Home Theater - <http://www.hometheatermag.com/>
- 3) Sound & Vision - <http://www.soundandvisionmag.com/>
- 4) Audioholics - <http://www.audioholics.com/>
- 5) CNET – <http://www.cnet.com> (search: home theater)
- 6) How Stuff Works – <http://www.howstuffworks.com> (search: home theater)

Three ways to watch video

1) **Flat panel: Plasma (PDP) and LCD**

Plasma TVs, also known as PDPs for Plasma Display Panels, are considered the cream of the crop by many although LCDs have a huge market. Flat panel TVs are less than 4" thick.

Differences between plasma and LCD TVs:

- a. **Size** – Plasma TVs range from 32" to 63". LCDs range from 13" to 45". There are larger displays in both categories but they are very expensive.
- b. **Physical** – Plasma TVs are heavy, use more power and run hotter compared to LCDs. Due to these factors, plasma TVs may need additional support when hanging on a wall and should be professionally installed. LCD TVs are much lighter and run cooler and can be installed by consumers.
- c. **Brightness** – Plasma's are brighter in a dark room and LCDs look great in a well lit room. Plasma TVs look good from any angle while LCDs are best viewed from the center due to brightness and color shift issues.
- d. **Durability/Repairs** – Plasma TVs are more fragile than LCDs making it a consideration for shipping and handling. Plasma TVs are also difficult to repair since there are few repairable parts.
- e. **Lifespan** – Plasma TVs will have a half life of about 30,000 hours which equates to about 10 years of viewing (on for 8 hrs/day). Once the gases reach their half-life, the plasma TV will be half as bright. LCDs will last about 40,000 – 60,000 hours and is dependent on its light source. As the light source dims so will the LCD. Some models offer replaceable bulbs.

2) **Rear projection (aka Microdisplays or RPTV): DLP, LCD, LCoS, and CRT**

At a basic level, rear projection TVs use lenses to magnify a projected image onto the screen. They are larger than flat panel TVs, greater than 10" thick, making them suitable for tabletop or floor standing rather than wall mounting. RPTVs are usually less expensive than flat panel TVs although the quality is comparable. Another difference is that the bulb(s) needed for projecting the image have a shorter lifespan than flat panel bulbs. Sizes range from 42" up to 73".

DLP projection TVs offer good color and uniformity but may suffer from a "screen door" or "rainbow" effect although manufacturers are improving on this. **LCD rear projection TVs** are lightweight and run cool but may not produce true black color for contrast and detail. **LCoS rear projection TVs** offer excellent image quality but are expensive and not widely produced. CRT versions are being phased out due to their size and weight.

3) **Front projection: DLP and LCD**

Most similar to an actual cinema experience where the "projector" is behind the viewers and the video is projected onto a screen or white wall. Since most front projectors do not have an ATSC tuner (see below), this option is great if you do not want to watch digital TV programs and you have a dedicated room for watching movies. Front projectors are the only option that is portable.

Frequently Asked Questions – TVs

1) **What is the difference between analog TV and digital TV?**

Analog transmissions have been around since the 1940s. The 4:3 aspect ratio (denoting the width to height ratio of the screen) works well for TVs below 19". As technology grew and more people were

interested in larger screens, people realized that analog TV signals looked really bad on larger screens. Out of this predicament (and adopted by the FCC in 1996), came digital TV – resolutions were enhanced with progressive scanning (sequential transmission of images) rather than through the traditional interlaced pattern (images are grouped and interwoven during transmission). Because digital TV is progressive, it allows more detail to be shown thus producing a smoother, higher quality image.

The maximum resolution of an analog TV is 640 x 480. Analog signals will degrade – parts of the image will be lost during the transmission while a digital TV's signal will never degrade – the signal will remain constant during the entire transmission. This is one of the reasons why the picture quality of a digital TV is superior to an analog TV. There are 3 levels of digital TV: SDTV, EDTV and HDTV, commonly referred to as ATSC.

2) What is the difference between digital TV (DTV) and high definition TV (HDTV)?

SDTV or **Standard definition TV** is the first of 18 formats of digital TV and is a step above analog transmissions. SDTV also has a resolution of 480i but it has more pixels per image (300,000 for SDTV compared with 200,000 for analog). Next comes **EDTV** or **Enhanced Definition TV** which has a resolution of 480p. The progressive format makes a noticeable difference in quality between SDTV and EDTV. To get **HDTV** quality, the resolution must be **720p, 1080i or 1080p**. Some HDTV sets will have over 2 million pixels per image. This is why many people have already chosen to purchase HD TV's and have opted to receive HD programming from their cable or satellite provider. In many cases, the image quality can be up to 10 times better with an HDTV over an analog television.

3) What is HD ready or HD compatible?

This simply means that there is no HD tuner/receiver in the TV. You'll have to purchase a separate tuner or rent a tuner/decoder from your cable or satellite company. If you're just going to watch DVDs either format will suffice as all standard DVDs have 480i resolution.

If you want a TV that doesn't require any extra devices, look for an "**integrated HDTV**". These sets have built-in ATSC tuners that are ready to receive HD transmissions.

4) What is the difference between NTSC and ATSC? **** IMPORTANT PLEASE READ ****

NTSC, National Television Systems Committee, is the standard for **analog transmissions**. Created in the 1940s, it was the only way to watch TV until 1996 when the FCC recognized digital TV and created a new standard, **ATSC** (Advanced Television Systems Committee). The difference between NTSC and ATSC lies with the resolutions that each is capable of transmitting. ATSC compliant devices can receive digital and analog signals while NTSC devices can receive only analog signals.

The FCC has mandated that all new TVs must have built-in ATSC tuners by March 1, 2007. **Analog TV signals will be phased out by February 17, 2009**. This means that everyone with an older analog-only TV with NTSC tuners will not be able to receive digital broadcast channels unless they have a separate tuner. **For more info visit:** <http://www.fcc.gov/cgb/consumerfacts/digitaltv.html>

Legislation is in the works for supplying government subsidized converter boxes so low income and curmudgeon individuals won't suddenly see their screen go black. Manufacturers won't be able to produce TVs without the ATSC tuners, but retailers will still have a lot of these TVs left in their stockrooms. Don't get roped into a deal that's too good to be true. ***If you're in the market for a new TV, whether it be a widescreen or regular CRT, make sure your new TV has a built-in ATSC tuner and not an NTSC tuner.***

5) What are the three HDTV formats?

Within the ATSC standard of high definition programming, there are three options: 720p, 1080i, and 1080p. P stands for “progressive” and i stands for “interlaced”. The progressive format excels in making motion smooth and enhances detail so this format works really well for viewing sports or action dramas. When it comes to distinguishing between the formats, it’s all personal preference. Some people prefer 720p over 1080i while others drool over the 1080p. When choosing an HDTV, look at the **color accuracy**, **resolution** and **price** and not just the format to make the best informed decision.

6) What do the different resolutions mean?

The term resolution is a measure of the sharpness of an image classified in the number of pixels. For TV and monitor displays in many cases, more pixels (i.e., higher resolution) equate to a better picture.

Native resolution	Commonly called	Meets definition of high-def?	Typical TV types
1,920x1,080	1080p	Yes	Flat-panel LCD; DLP, LCD, and LCoS projection; very high-end plasma
1,366x768	768p	Yes	Flat-panel LCD; 50-inch plasma
1,280x720	720p	Yes	DLP, LCD, & LCoS projection
1,024x768	HDTV plasma	Yes	37- and 42-inch plasma
852x480	EDTV plasma	No	37- and 42-inch plasma
640x480	VGA (analog)	No	Small LCD TVs

Source: www.cnet.com/4520-7874_1-5137915-1.html

Other Publicized Specifications

- While the resolution is prominently displayed in the specifications, **color saturation** and **color accuracy** are actually more important. Do the colors fade or are they washed out? Do they blend together or do you see distinct differences? Noting how the colors are displayed will give you more information than just looking at the resolution figure.
- **Contrast ratio** is another highly publicized specification. Contrast ratio is the difference between the lightest parts and the darkest parts of an image. In effect, it is a measure of the brightness that one sees. Since a picture will appear more realistic if it has a high contrast ratio, most people think plasma TVs offer the best viewing since plasma TVs currently have the highest contrast ratio.

One thing to keep in mind though is that contrast ratio can be inflated by the manufacturer depending on their methodology and may not reflect real world experience. If you generally watch TV in a darkened room, then contrast ratio will impact your decision. If, however, you watch TV predominantly in a bright room or even dimly-lit room, then contrast ratio will not be a factor.

When searching through specs, **weigh the contrast ratio figure with real world viewing** to determine the quality of a particular model. Generally, a 1000:1 contrast ratio is desirable but don't choose a set solely based on this figure.

Things to keep in mind:

- 1) If you watch mainstream channels (such as ABC, NBC, PBS, etc.) and don't want to pay extra for HD reception, you may be able to receive over-the-air broadcasts of HD programming for free. You'll need three (or four) things:
 - a) you'll have to live close to the station that transmits HD content;
 - b) you'll need to purchase a TV that can receive digital content (or buy a SDTV or EDTV and a separate HDTV tuner); and
 - c) you'll need to purchase and install an antenna on your roof to receive the signals.

Check out <http://www.antennaweb.org> for a list of stations that transmit HD content. If you live close by and you watch the channels that are offered, this setup may work well for you.

- 2) If you don't live near a station that transmits the HD content you want, then you'll have to pay for service from a cable, dish-network, or satellite provider. All digital content transmitted by these providers will look and sound better than the analog service of which we're all accustomed. Matching the quality of the signal to the type of TV is where personal preference takes over.
- 3) **1080p format is NOT currently being broadcast** – the only current options are 720p HD and 1080i HD. If you buy a TV that is 1080p, you won't receive 1080p broadcasts. Many people cannot tell the difference between the different HD resolutions especially on the smaller size screens. It's not until you get to the larger sets (above 46") where the additional detail and clarity are noticeable.

The following table shows the networks that support each format:

Source resolution name	Resolution in pixels	Networks/sources
1080p	1,920x1,080	Blu-ray and future HD-DVD players; PlayStation 3
Ch 1080i	1,920x1,080	Includes CBS, NBC, PBS, DiscoveryHD/ Xbox 360
720p	1,280x720	ABC, Fox, ESPNHD
480p	852x480	Fox wide-screen; progressive-scan DVD players
Regular TV	Up to 480 lines	All

Source: www.cnet.com/4520-7874_1-5137915-1.html

Since the 1080p sets are high end, manufacturers spend extra on the details such as improved contrast ratio and picture quality. If you're going for a bigger TV, say a 50 inch, you won't be disappointed with the 1080p resolution.

- 4) Keep in mind that the screen size should complement the distance between the TV and viewers. With digital TVs, you'll need to consider two things for optimal viewing: 1) you'll need to sit closer to the screen than with an analog set and 2) the farther you sit away from the TV, the larger the screen should be. The following chart will give you an idea of what size screen to look at given the viewing distance:

Distance from TV	Optimum HDTV Screen Size
5 feet	15 – 30"
8 feet	32 - 46"
12 feet	42 - 60"
15+ feet	50+"

NOTE: If you don't have much space, 8 feet or less, and you really want an LCD, look at widescreen LCD computer monitors and purchase a TV tuner. This way you can get broadcast channels right on your computer monitor. Call our office if you would like more information on this setup.

- 5) Every person has their own comfort level with displays so the only way to judge the display is to view it personally. Try to view the TV in as close to "your home's" situation as possible. Look at the channels you normally watch, stand (or preferably sit) away from the set the approximate distance you would at home, bring a favorite DVD with you so you know how it will really look.

Since there are so many different types of displays on the market right now, when you start comparing TVs, make sure you're comparing apples to apples. Look at the resolutions of the devices not just the type (i.e., plasma or LCD). An EDTV plasma may not look as good as an HDTV LCD while an HDTV plasma may blow them all away. Different manufacturers use differing technology as well so compare multiple brands of the same type and resolutions.

Choosing your TV options

- If you want the largest screen (image) possible and viewers will sit close to the center of the screen, go with a front projection system or a rear projection DLP television.
- If you want a TV you can mount on a wall (and install yourself) and doesn't produce a lot of heat or emit radiation, go with a flat panel LCD.
- If you want the best picture possible and cost is no object, go with a front projector or LCoS rear projection HDTV.
- If you're looking for a small (32" – 40") entry level HDTV set, go with a rear projection DLP unless you find a special deal on an LCD HDTV.
- If you have a wide room and the TV will be placed on the long wall, you may want to purchase a plasma TV because the viewing distances are great from all angles. Conversely, LCD and DLP sets are best viewed near the center of the screen although technology is changing and these sets have vastly improved over their earlier counterparts.
- LCD TVs look better in a brightly lit room compared to plasma TVs that look better in darkened rooms. If you watch a lot of daytime TV, you'll be pleased with an LCD. If, however, you'll predominantly watch TV at night or have a dedicated space that can be darkened easily, then a plasma set will be worthwhile.
- If you want to be ahead of the curve and make a purchase now that will last for years to come, buy a TV with a resolution of 1080p. Although no stations are currently broadcasting 1080p content, these TVs can receive all other digital transmissions, they shine when playing HD DVD and Blu-ray DVDs (more on this in next month's newsletter) and, 1080p TVs are poised for future technological advancements.
- If you are constrained by price, don't get caught in the "buy the best now" mentality. While there are some low quality digital TVs available, there are mid-grade sets that will work for most people especially when you get the set home and aren't comparing screens side by side.
- If you want a flat panel and it has to be large, plasma TVs are a better value. Currently, flat panel LCDs 50" and above are more expensive than their plasma counterparts.