HOW TO BRING OUT THE BEST IN YOUR HOME THEATER SOUND SYSTEM

Though a home theater sound system can be tricky to set up, the results are worth it. The combination of an HD picture with immersive sound can make you forget you're on your own couch instead of the local multiplex. Here's what you need to know to make the most of your audio equipment.

Placement is Key

Strive for symmetry in the positioning of your speakers. The left and right front speakers should be equidistant from your prime listening seat, with the TV centered between them. The center speaker should be in the center of the TV. All three front speakers sound best when their tweeters are the same height as the listeners' ears. If the center speaker is on top of the TV, position its grille as close to the front edge of the TV as possible.

Try to keep the front left and right speakers at least two feet away from the corners of the room – bouncing sound off the side walls can create unwanted audio effects. If the room is too small to avoid this, angle the speakers inward so they're aimed at the listening position. Also position them this way if the speakers are less than eight feet from your seating area. This can produce more treble detail and will focus the sound in the right direction.

Many real-life situations thwart the ideal placement of surround speakers, but there's also more room for variance in their placement without adversely affecting sound quality. In a 5.1 channel system, the surround speakers are best positioned two to three feet above, to the side of, and slightly behind the main listening position. A wall-mount is best. The rear center channel in a 6.1 channel system should be directly behind the seating area. In 7.1 channel systems, the ideal placement for the two rear speakers is on the back wall at approximately the same angle from the listening position as the front left and right speakers.

A subwoofer placed in a corner almost always produces the most bass, but it's best to keep the sub within three or four feet of the front left or right speaker. Believe it or not, a great way to figure out where the sub should go is to first put it in the main listening position. Play music or movies with a lot of bass and stroll around the room, stopping at each of the spots you're considering for the sub's placement. Identify the spot where the bass is deepest and best defined (not muddy or boomy) and put the sub there!

The Sweet Sound of Successful Speaker Setup

Results with many receivers' auto setup and calibration features are hit or miss, so it's recommended you manually configure your system instead. If you decide to try an auto setup, read the receiver's manual first to learn how to undo any changes.

Speaker setup menus configure your receiver or surround processor for optimal performance based on your surroundings and the individual speakers. To get started, press the receiver's setup, menu or on-screen display button. Choose Speaker Setup from the menu, which brings up another list. Select Speaker Size (or Configuration). From here, you will typically choose Small, Large or None for each possible speaker. Unless your speakers are floorstanding, indicate Small for each.

Speaker Distance (or Speaker Delay) is set next. Without a delay setting, we would hear the surrounds a few milliseconds before the front speakers because they're closer to your listening position. By inputting the correct distances (use a measuring tape for accuracy) between each speaker and the main listening position, you enable the receiver to delay output to the surrounds.

The last major setting is Speaker Level, which balances the volume of all your system's speakers. While sitting in your prime listening position, judge the volume of a test tone as it circles around the room, one speaker at a time. Use the remote's volume control to adjust the test tone so it sounds equally loud from each of the speakers. A sound level meter is much more accurate than the human ear, so serious audiophiles may want to invest in one.

If you have a subwoofer, the single-cable LFE – aka direct or bypass input – greatly simplifies installation. Just connect your receiver's dedicated output to this input on the sub. The subwoofer will sound best when it's in phase with the main speakers (meaning, they move in and out of synch with each other). To determine if your sub's phase is correct, play music with a lot of bass, listen for a minute or so, and then have someone sitting by the sub flip its 0/180-degree phase switch between those two settings. The correct setting is the one that yields the most bass. If you don't hear any difference between the two, just leave the control in the 0 position.

This may seem like a lot to do just to watch a movie, but when you consider all the hours you'll be spending enjoying your home theater, getting it right from the beginning is the way to go. A properly configured sound system will be music to your ears for years to come!

And if you've tried and aren't getting the sound that matches what you paid for your speakers, or if you don't want the hassle of measuring tapes, you can always hire a professional. If you are serious about sound, then your best sound will come from hiring a professional to calibrate your audio setup and make recommendations in the room to optimize the sound. HAA is a national organization that has professionals throughout the US that can calibrate your audio beyond your wildest expectations.

Visit http://www.homeacoustics.net/ for more information.

BE SURE TO BUDGET FOR GOOD SPEAKERS

It's easy to neglect the speakers when putting together your home theater setup. After shelling out all that cash for a fancy HDTV, you may be tempted to save some cash by repurposing your old stereo speakers. While it's true that speakers last a long time and are less likely to become outmoded than other types of audio and video equipment, a home theater system sounds only as good as its speakers. And good speakers don't have to cost a fortune.

For home theater purposes, speakers are sold singly, in pairs or in sets of three, six and eight. For a balanced system, buy all the speakers from the same manufacturer and same line.

What's Available?

The irony of so-called bookshelf speakers is that at 12 to 18 inches tall, they won't fit on your shelf. But they're still easier to find a home for than floor-standing models. A pair of bookshelf speakers can ably serve as the front or rear duo in a home theater. Small speakers have made strides of late in their ability to handle deep bass without distortion or buzzing, formerly a perennial problem. Any bass-handling limitations are less of a concern in a multi-speaker system that has subwoofer to reproduce deep bass. Price: $50 to $800 or more.

Floor-standing speakers, typically about three to four feet tall, handle low frequencies better than bookshelf speakers. Price: $200 to more than $1,000.

The center-channel speaker sits on, above or beneath the TV in a multichannel setup. Because dialogue is its main responsibility, the center speaker's frequency range doesn't need to be as wide as that of the front pair. Price: $100 to more than $500.

Rear speakers, also known as surround speakers, deliver rear ambient effects such as crowd noise. Multichannel formats such as Dolby Digital, DTS, DVD-Audio and SACD make full use of these speakers' capabilities. They tend to be small and light, well suited to a wall-mount or shelf placement. Price: $50 to more than $500.

Three-piece sets combine two bookshelf or small satellite speakers for midrange and higher tones with either a center-channel speaker or a subwoofer. Price: $100 to $800.

An easy route to a surround-sound system, six- or eight-piece-sets include small bookshelf or satellite speakers for both front and rear pairs, a center-channel speaker, and a subwoofer. These full sets take the guesswork out of mixing and matching your way to a home theater. Price: $400 to more than $1,000.

How to Choose

Floor-standing speakers might overwhelm a smaller room, so bookshelf speakers are your best bet when space is at a premium. Many smaller speakers do a fine job, so don't worry that you're giving up quality for compact design. Compare reviews before buying—some of the lowest-priced speakers reproduce sound frequencies more accurately than their pricier cousins.

But the best way to judge a speaker's accuracy – its most important trait – is to listen to it in action. Bring a favorite CD to the store and try out various speakers. Pay special attention to the front pair because they do the most work. If you like to crank your music, make sure your receiver is rated to handle the impedance of the front speaker pair (generally 4 to 8 ohms) or it could be damaged at high volumes.

But if you really want to make that home theater setup sing, hire a professional to setup your speakers and set up your listening environment. Even if you spend a $100K on a speaker setup, it can easily sound no different than a $200 system if the speakers and environment are not set up properly. The room environment, placement of the speakers, placement of furniture and other environmental factors are of more importance than the speakers. HAA offers professional assistance from basic calibration to full room environment recommendations and calibrations.

Visit http://www.homeacoustics.net/ for more information.

BUYING A HIGH DEFINITION PC

Remember when your PC or laptop came with a new-fangled DVD drive? Well that time is here again with new high definition optical drives that can read (and store) more data, which is perfect for playing HD movies and other content. As opportunities to enjoy high-definition content are increasing, as broadband networks expand and as TV makes the transition to high definition digital broadcasts, consumers are also looking to watch high definition content on their computers as well as on TVs.

PC makers are offering HD DVD drives with Acer, HP, Gateway and Toshiba shipping HD DVD-enabled PCs .

All HD drive-enabled laptops will have a high definition screen, but if you're buying a desktop PC, make sure you're hooking it up to the right display. You should look for appropriate outputs – including HDMI and component – which gives you the best options for connecting to an HDTV. With those outputs, you can easily hook it up to any 1080 HDTV or home theater projector. With a laptop, you can also watch movies on the go – in a dorm, at grandma's house…you get the idea.

You also want to make sure the PC has a high-performance chipset inside it, since playback of high definition content requires some serious processing power. A good example of high-performance chipsets would be the Intel® CoreTM Duo Processor T2500 and a high-performance graphics accelerator such as the NVIDIA® GeForceTM Go 7600.

HOW TO CONNECT ALL THE DIGITAL COMPONENTS FOR YOUR HDTV

Combining an HDTV with a high definition content source such as HD DVD will give you breathtakingly clear images and high resolution multichannel sound. But getting all the pieces of your home theater system hooked up isn't quite as simple as plugging the red, white and yellow cables from your VCR to your old TV set.

Here are a few pointers to help you get wired up:

- HDMI or component cabling is required for a HD picture. If you aren't using one of those cables, you aren't watching HD! Most HD equipment doesn't come with a cable (some, like Toshiba's HD DVD players, do), so you'll have to purchase one separately.

- HDMI is sensitive to length. Look for cables that are certified to run long lengths or that come with HDMI repeaters.

HOW TO OPTIMIZE YOUR PICTURE

OK, you've just taken delivery on the HDTV of your dreams. But before you invite your friends over for a screening of your favorite movie, here are eight tips to help you get the most out of your new investment.

1. Get the Light Right

The light in and around your home theater environment will greatly affect your viewing experience. Ambient light on the screen will wash out the image or cause distracting reflections, so the room should be kept relatively dark. Heavy curtains that shut out all outside light from windows are ideal, especially if you're watching during daylight hours.

To prevent light from the screen from being reflected back onto the image, the walls of your home theater room should be a dark, neutral color, particularly the ceiling directly in front of the screen. Similarly, the sides of furniture such as cabinets or shelving units should be non-reflective.

The area behind the screen should be lighter than the other walls but similarly neutral in color. To keep your pupils from dilating too rapidly with scene changes and to make on-screen black levels seem darker, position a small, dim fluorescent lamp with a daylight-colored bulb so it lightens the back wall.

2. Give Your Signal a Boost

Every time you split a cable signal or route it through a VCR or DVR, it gets diluted. This diminishes the signal strength and hence, your picture quality. Signal strength, which is measured in decibels or dB, can be amplified. But if the signal is too weak, even a signal amplifier won't help because it's only amplifying noise. The trick is to boost the signal at the earliest, cleanest point possible so it never falls below 0dB in strength.

For the best cable or analog TV image, first locate where the signal enters your home. The signal strength should be well above 0dB at this point. (To find out exactly, ask your cable or satellite company.) To figure out how much to amplify the signal, you'll need to know the cable length and number of splits in the line between here and the TV. You lose about 4 dB of signal for every split and every 100 feet of cable. For example, if you run the signal to three TV sets using 200 feet of cable, you'll likely need at least 20dB of boost. If you're using an antenna, you can boost the signal with an antenna preamp.

3. Antennas Up

Think TV antennas are so 20th century? Maybe so, but a UHF antenna on your roof is still one of the best ways to pick up an ATSC OTA HD signal. Best of all, they're cheap and over the air television is free! To find the right antenna for your location, visit www.antennaweb.org. In general, the larger the antenna, the stronger the signal.

4. Find the Right Angle

With any type of rear-projection TV or a flat-panel LCD TV, try to angle the image directly toward the best seats in the house. Because of the way light is directed through the screen, these displays are at their best when viewed on-axis to the center of the screen. The Society of Motion Picture and Television Engineers found that the most natural and comfortable viewing angle puts the image about 11 degrees below your straight-ahead line of sight.

5. Aspect Ratio

When it comes to home theaters, there's nothing sadder than a great widescreen HDTV kneecapped by the wrong source aspect ratio. If your DVD player or HDTV tuner has an aspect ratio setting, it should be set to output images as 16:9, anamorphic or widescreen. If it's set at 4:3 and your set is widescreen, you're sacrificing about 25 percent of the image's resolution!

6. Cables Count

Whether or not you believe that premium-brand cables significantly outperform their less expensive generic competitors, there's no doubt that that the better the transmission medium, the better the picture. On the digital side, HDMI and DVI (HDMI's older but compatible cousin) is the best way to connect your HD DVD DVD player or HDTV tuner to your TV because it transmits a pure digital signal from source to display. Among analog signals, component video provides the best transmission. Component video separates the color signals into three connectors (usually labeled Y, Pr and Pb). The next best analog connection is S-video. This round, 4-pin connector separates color and brightness signals for good quality video. Lastly, composite, usually identified with a yellow RCA connector, carries all of the video information in a single cable. If you're using a composite connection and your hardware has options for S-video or component connectivity, you're simply not getting the most out of your equipment.

7. Don't Take the Scenic Route

The routing of cables can be as important as the type of connection itself. Generally, a direct route from source to display is best. Never use Y-cables to split a video signal between two devices. Even if you're considering using a high-end video switcher or receiver, compare the image quality you get when running the signal through the switcher to the one you get by going straight to the TV. You may notice a significant difference in picture quality.

8. Calibrate, calibrate, calibrate!

Even the oldest television sets have adjustments (contrast, brightness, color, tint, sharpness) to optimize, and your new HDTV is no exception. Don't rely on a manufacturer's default settings for the best picture. Those settings are intended to make the set stand out in a bright retail showroom, not to accommodate your living room.

Just be careful making your own adjustments without a guide – what might look good for an indoor scene in a movie might wind up making people look blue-green in an outdoor scene – or worse. If you want to do it yourself, there are several tutorial DVDs you can buy, including Ovation's Avia and Joe Kane Productions' Digital Video Essentials and Digital Video Essentials HD (available online or from major DVD retailers). Each provide step-by-step guides and easy-to-use test patterns to help you adjust your TV for your home and make all content look its best.

Or, for around $300, you can summon an expert to calibrate your HDTV for optimum performance. (The cost is contingent on the TV and your proximity to a qualified technician.) For more information, you can visit the website of the Imaging Science Foundation (www.imagingscience.com), which trains electronics integrators and TV technicians to test displays and make any adjustments necessary.

Alone, any of these tips could improve your HDTV's picture quality, but all together they'll make a big difference to your viewing enjoyment. If you still aren't satisfied, calling in the cavalry and hiring a professional will usually do the trick—or return that TV for one that provides the picture you deserve.

TOP FIVE THINGS TO KNOW BEFORE BUYING AN HDTV

You keep hearing how amazing high-definition TV is, you've seen it for yourself at the store and now you're ready to take the plunge and make one of those widescreen beauties your own. But all the choices in display technologies and resolution types have you a little overwhelmed. Have no fear: While there are a number of factors to consider in choosing the right HDTV, it's not as complicated as it seems. And the quantum leap in picture quality makes the small amount of research required well worth it. Here are five quick tips to help you choose the perfect HDTV for your home viewing needs.

1. Location, location, location!

First, decide where you're going to install the new HDTV once you get it home. The farther away from windows or sliding glass doors the better, unless you have window treatments that minimize outside light effectively or you never watch during the day. Ideally, the screen should be placed at the long end of the room, preferably centered horizontally on the wall. This allows more viewers to be close to the central "viewing axis" (the imaginary line extending from the center of the TV screen into the room). This placement will also make your speakers sound their best. Where should the TV be placed vertically on the wall? A good rule of thumb is that the center of the screen should be about the same height as your eyes when seated. (That means mounting the flat panel above the fireplace is a no-no.)

2. Does Size Matter?

Now that you know where your TV will be, it's time to answer the question you've been dying to ask: How big is big enough? To find out, measure the distance between the spot where the television will be installed and your normal viewing position—say, the middle seat on the couch or your favorite recliner. The television's diagonal measurement should be a least half that distance. The Society of Motion Picture and Television Engineers (SMPTE) advocates a screen size 0.6 times the seating distance while THX recommends a screen 0.75 times the distance. So, for example, given a seating distance of 8 feet, the optimal screen size would measure between 58 and 72 inches—and the minimum would be 48 inches. Remember, it is possible to have a screen that's too big (unless you're one of those people who always like to sit in the front row at the movies.)

Another important factor is what resolution the HDTV displays. With a 1080p display sitting closer to the screen will expose more of the detail. Sitting farther away from your HDTV will start to eliminate the picture quality differences that are seen between standard definition television and HDTV.

3. What's Your Type?

HDTVs fall into five basic categories: Rear projection, front projection, LCD, Plasma and traditional picture tube (CRTs). Which is right for you? The answer will depend on your budget, viewing habits and room configuration. Rear-projection TVs cost less than flat screens, but they're somewhat

deeper, heavier and lack the streamlined profile. If you have room for a huge screen, consider a front projection system with a dedicated screen. They provide excellent images but can only be used in a light controlled room as any ambient light will wash out the picture. With smaller rooms and non-light controlled rooms, LCDs are the best bet. They're lightweight and fare better in rooms with bright ambient light. But plasmas have the edge on LCDs when it comes to black levels and contrast. . Traditional picture tube sets (called CRTs which stands for "cathode ray tube") are the least expensive variety of HDTV and offer the best black levels, but they're heavy and bulky and don't come in large screen sizes.

4. Picture Perfect

Superior picture quality is probably the main reason you're shopping for an HDTV in the first place, so when comparing the options, make it your top priority. Performance still varies greatly between brands and even different models of the same brand, so consult published reviews and buying guides to make an informed decision.

With any type of HDTV, models with 1080p resolution will deliver the best picture quality. They have more pixels than other sets, allowing them to display the full capacity of detail contained in a high-definition signal or HD DVD. HDTV models manufactured in the last couple of years have 1080p output but they're more expensive than 720p or 1080i models. The advantages of 1080p are most noticeable on screens 50 inches or larger. If you anticipate watching a lot of HD content over the years to come, you probably want to invest in a 1080p TV.

In addition to resolution, contrast, black level, brightness and color accuracy also contribute to picture quality. A TV with excellent HD picture quality should display a natural-looking image with deep blacks, accurate colors and clear detail. You'll be living with your picture for years to come, so study it closely before you commit.

Once you've narrowed it down to a few choices, try to compare them side by side with calibrated displays. Comparing the HDTV in the store with the default settings should never be used to make a determination of picture quality.

5. Don't Cheap Out on Cables!

Make the most of your high definition TV investment by using the highest quality cables: HDMI. It's a slim cord that supports all high-definition resolutions (720p, 1080i, 1080p, etc.) and carries multichannel audio as well. HDMI is all you need to connect your high HD DVD player or digital television receiver to your HDMI equipped HDTV. By maintaining a digital signal throughout your home theater system, HDMI avoids the digital-to-analog conversion that can degrade your image quality. Low-quality cables are cheaper, but they're more susceptible to electrical interference and unreliable connections.

Whatever TV you decide on, you're sure to notice the difference when your favorite movie unfolds before your eyes in dazzling high definition!

WHAT IS AN HDMI CABLE?

The newest and currently the best type of cable connection for your HDTV is HDMI (High-Definition Multimedia Interface). An all-digital interface, HDMI carries both high-resolution video and uncompressed, multichannel audio through a single cable. Use it to connect any digital audio/video source (set-top box, HD DVD player, PC, video game system or AV receiver) with a compatible digital audio and/or video monitor (HDTV). HDMI cables provide the highest quality picture and sound currently available.

WHAT IS AN UPCONVERTER?

Each week, more and more films and TV shows are released in the high definition HD DVD. But with the HD revolution in its early stages, many people still have large libraries of DVD content and want to watch them on their new, large screen HDTVs. But the larger your TV, the easier it is to see flaws in older, lower resolution content. For that reason, some DVD players have the ability to "upconvert" standard definition DVDs to simulate a high definition image. While it's not the same as true high definition, it employs technical tricks to make it look better.

How it works

An upconverting DVD player takes a standard definition DVD and "upsamples" its picture data to appear at a higher resolution. This provides increased detail and clearer colors, particularly when shown on an HDTV with a fixed-pixel display such as a plasma or LCD. (Results are less consistent with projectors and standard CRT televisions.)

Beware of some manufacturers' claims their DVD upconverters can output 1080i or 1080p (the highest HD resolutions available today). This is a "simulated" resolution – the fact is that you can't get more picture information out of a DVD than it can hold. A standard definition DVD maxes out at 480p resolution, which is a fraction of the 1080p resolution of HD DVD or Blu-ray discs. So you're working from a source that is already less detailed.

DETAILED TROUBLESHOOTING

If you were presented with an error status code while attempting to access the Web-enabled features of the HD DVD disc, please find the corresponding status code you saw on the screen:

10 NO CONNECTION COULD BE MADE TO SERVER

The HD DVD player detected that it cannot connect to the server. In most cases, this error occurs when the player is not connected to the network. Please check to make sure that the player is properly connected to the network (e.g., via the Ethernet connection). Alternatively, it is recommended that you follow the player manual's setup instructions for DHCP, DNC and proxy settings. If the problem persists, it is recommended that you contact the player manufacturer or disc producer for further assistance.

20 TIMEOUT OCCURRED

The HD DVD player cannot detect if it can connect to the server or not. Prior to sending an HTTP request to the server the player will attempt to make a TCP connection to the server. If the player is unable to establish a TCP connection a timeout may occur. Please try the following to resolve the issue:
1. Make sure the player is connected to the network (e.g., via the Ethernet connection).
2. The server may be temporarily unavailable. Please wait a few minutes and try again.
3. If the problem persists, it is recommended that you contact the player manufacturer or disc producer for further assistance.

30 NOT ENOUGH SPACE TO DOWNLOAD FILE

The HD DVD player has detected that there is not enough space available in the player's memory to store the requested file. Please try the following to resolve the issue:
1. Try deleting some files from the player's memory to clear up space and then try again. Note: this may be referred to as "Persistent Storage" in your player's owner's manual.
2. If the problem persists, it is recommended that you contact the player manufacturer or disc producer for further assistance.

40 NOT ENOUGH SPACE FOR RESPONSE

The system memory inside the HD DVD player is not sufficient to complete the requested operation. If the problem persists, it is recommended that you contact the player manufacturer or disc producer for further assistance.

50 NOT PERMITTED

It is not permitted to download the requested file(s) to the location specified by the HD DVD disc. It is recommended that you contact the disc producer for further assistance.

60 FILE TO SEND NOT FOUND

The HD DVD disc has attempted to send a file to the server; however, the specified file does not exist. It is recommended that you contact the disc producer for further assistance.

401 AUTHENTICATION ERROR

This typically will occur because the local area network (LAN) the HD DVD player is connected to is blocking outbound HTTP (port 80) or HTTPS (port 554) requests. Please confirm that both HTTP (port 80) and HTTPS (port 554) are enabled. If you do not know how to check this, it is suggested you check the documentation that came with your network router or contact your Internet service provider for assistance.

404 NOT FOUND

The data the HD DVD player is trying to access might have been removed, had its name changed or is temporarily unavailable. Please wait a few minutes and then try again. If the problem persists, it is recommended that you contact the disc producer.

500 INTERNAL SERVER ERROR

The server encountered an unexpected condition which prevented it from fulfilling the request. The server may be temporarily unavailable. Please wait a few minutes and then try again. If the problem persists, it is recommended that you contact the disc producer.

502 BAD GATEWAY

The server, while acting as a gateway or proxy, received an invalid response from the upstream server it accessed in attempting to fulfill the request. Please wait a few minutes and then try again. If the problem persists, it is recommended that you contact the disc producer.

503 SERVICE UNAVAILABLE

The server is currently unable to handle the request due to a temporary overload or maintenance of the server. Please wait a few minutes and then try again.

504 GATEWAY TIMEOUT

The server, while acting as a gateway or proxy, did not receive a timely response from the upstream server specified by the URI or some other auxiliary server (e.g., DNS) it needed to access in attempting to complete the request. Please wait a few minutes and then try again.