



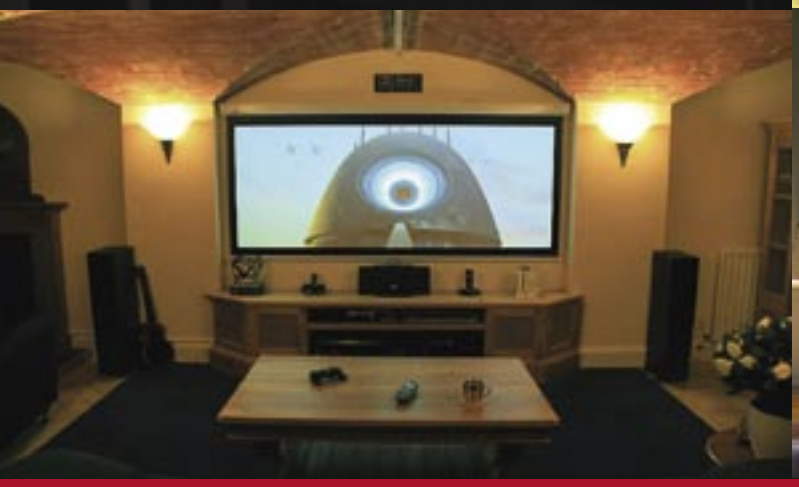


The buyers' guide to discreet home cinema

Six steps to creating a connoisseur quality home cinema (without it taking over the house)

About this Guide

If you have ever experienced the thrill of watching a movie or playing a computer game in high resolution on a huge projection screen, you will know that nothing beats a real home cinema. Stunning rich colour with deep blacks and detailed images, immersive surround sound that places you right in the middle of the action.

In the past you might have had to devote a dedicated room in your house to a home cinema to get the best results. Now, thanks to the pioneering work of home cinema technology developers Beamax, almost any room in the house can be designated as your home cinema. With the touch a button on a remote control, the blinds close, the lights dim, the screen appears and the projector lights up.

A fully functioning, premium grade home cinema in a matter of seconds – and when the movie or the game is finished, press the button again and your home cinema equipment will disappear back into its housings, leaving you to enjoy the room for its usual purpose, be it a living room, family room or even bedroom.

Sounds like magic? It is actually much easier than you might think. In this Buyers' Guide, we will take you through the step-by-step process to achieving a discreet home cinema. All of the products to create your discreet home cinema are available now and most can be customised to match your existing interior design. In each instance where there are choices to be made, we will suggest a number of options that will allow you to select products that best suit the architecture of your house and your budget.

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Bottom right: Private residence UK, M-tensioned projection screen, installed by Beyond the Invisible, London

Home cinema 101

In the context of the Guide, home cinema is used to describe the genuine cinema experience of projecting video onto a screen, with a quality of video and audio reproduction which matches and sometimes exceeds that found in commercial movie theatres.

Even this rather narrow definition of home cinema conceals wide diversity, stretching from a family enjoying movies and games on a manual pull-up screen using a combined projector and DVD player to the purpose-built, dedicated home cinema rooms installed by rock stars and professional footballers.

This Guide is dedicated to a middle way between these extremes – discreet home theatre, a concept pioneered by Beamax and describing a range of technologies that allow discerning users to enjoy all the benefits of high-end home cinema, without sacrificing valuable living space to a dedicated room.

◀ Private residence The Netherlands, M-series electric projection screen

What do I need to create a home cinema?

While there are obvious quality and performance differences between entry-level and high-end home cinema installations, the basic items of equipment needed are the same. To create a home cinema in your home, you will need the following

◀ Projection screen

These range from simple manual pull-up or pull-down models mounted on the ceiling, the wall or on a stand, to a 'tab-tensioned' or fixed screen that provide a consistently flat projection surface. The downside of the fixed screen is that it is also permanently on show, and so is often not suitable for flexible living spaces. In the discreet cinema concept, the screen offers high quality, but is concealed in a ceiling void or a specially designed piece of furniture and is activated by remote control. The screen is raised or lowered automatically, and is concealed when not in use.

◀ Projector

Home cinema projectors use a variety of technologies (explained in more detail below) to project high-definition images onto the screen, creating a truly cinematic viewing experience. In discreet home cinema, the projector is housed in a 'lift' which deploys at the touch of a button on a remote control, and retracts when not required. Projection-based home cinema technologies offer very large screen sizes that exceed even the largest flat-screen TVs available on the market today, but it is the quality of the cinema experience that most users really appreciate.

◀ Blu-ray & DVD players / games console / set-top box

Collectively, these devices are known as 'AV sources' – in other words, all of the pieces of equipment which produce video and audio signals reproduced by the home cinema system.

◀ AV receiver

The AV receiver processes the signals from the AV sources, amplifies and converts wherever necessary and distributes the signals to the projector and the surround sound loudspeakers.

◀ Surround sound loudspeakers / sub-woofer

To create true cinema sound you will need a surround sound system. This uses multiple loudspeakers to immerse you in the heart of the movie scene. A dedicated centre speaker assists with the audibility of dialogue and a sub-woofer reproduces low frequency sounds.

◀ AV control system

Each of the devices listed above will almost certainly be sold with a remote control, but to create the real 'wow' factor, you will probably want several things to happen simultaneously. For example, you might want the blinds to lower, the projector to deploy and switch on and the screen to rise. All of these things can be programmed to happen at once using an AV control system.

Step 1

Planning your discreet home cinema

Discreet home cinemas can be installed in just about anywhere, but there are some points that you might want to consider when planning yours:

▶ The size, shape and architecture of your chosen room will determine some product choices later in the process. But it's not just about the technology. The discreet cinema concept provides you with the flexibility to really express yourself. What's the feeling you want to have when you get into the room?

How do you want to use it? Will the room follow the design of the rest of your home? Or is it a bit of a secret room, the place where you go to get away from it all and truly step into another world?

▶ The most important factor is the placement of the screen in relation to the seating arrangements. Think about the arrangement of the room both when used as a home cinema and its suitability for the other purposes that you have identified. The 'wow' factor tends to evaporate if the furniture has to be rearranged to watch a movie. With these factors in mind, consider where you would like the screen to be placed, how big it should be (see the boxout below for guidelines) and how it would best be concealed. Options include ceiling voids, wall or ceiling mounted enclosures, or custom built cabinets.

▶ Think about the configuration of the surround sound loudspeakers, the AV receiver and the AV source equipment – and how and where it will be controlled from. In a discreet home cinema solution, the loudspeakers can be concealed behind the projection screen, behind custom designed grills and frames (they look like prints or painting) and in items which double as furniture. Your discreet audio system will be available to use for listening to music or the radio, but will not dominate the room.

▶ Projectors can be mounted on the ceiling, on a shelf or on a piece of furniture. Your choice will be determined by the room layout and architecture. Ceiling mounting is often preferred because it overcomes the problems of obstructions, like people, casting a shadow over the screen. However you choose to deploy the projector, the discreet home cinema concept ensures that it will have the minimum negative impact on your room interior.

▲ the Dellegno teams a motorised screen with a contemporary styled cabinet

▼ Private residence UK, M-series projection screen, installed by Progressive AV, Tunbridge Wells

Step 2

Choosing a projection screen

The real drama of discreet home cinema comes with the appearance of the screen from its place of concealment, signalling that something exciting is about to happen. So how do you choose the best screen option for your home? It is a common misconception that screens are all the same. Here is a concise explanation of why your projection screen choice is as important as that of your projector.

▼ Projection screens are designed to reflect light at the optimal levels to create the vibrant colours and depth of contrast that you expect from your home cinema. Screen fabrics are also developed to offer a wide viewing angle, so that the viewers at the side of the room get the same viewing experience as those in the middle.

▼ Black borders surrounding the projection screen area frame the projected image. Even though it can't improve the contrast available from the projector, a set of black borders does increase the perceived contrast. The best black borders are found on velvet covered frame screens, which actually absorb overscan (light from the projector which falls outside the available projection areas).

▼ There is a wide choice of screen fabrics available. Choose a high quality screen fabric and solid construction. Waves, ripples and V-shapes distort the projected image, especially with image moving from left to right and vice-versa. Make sure that your projection fabric is flat. Flimsy construction causes the screen fabric to sag, creating image distortions.

▼ A smooth screen fabric is recommended for use with high-definition projectors, and particularly those that offer higher than usual image brightness for home cinema use. A heavily textured surface results in the structure of the fabric becoming visible in the projected image. In the case of acoustically transparent and micro-perforated projection screen fabrics, higher resolutions might produce distorted images and the fuzzy effect in patterns known as moiré.

▶ **Private residence UK, M-tensioned projection screen, installed by Beyond the Invisible, London**

Step 3

Choosing a projector

Almost every projector brand has one or more models specifically designed for home cinema applications, so how do you choose the right one? Making an informed choice depends on having a few basic facts at your disposal, so here goes:

Technologies

▶ There are a number of projection technologies available for home cinema applications. The ones that you will hear most about are DLP (developed by Texas Instruments) and 3LCD (developed by Epson). Others that you might come across include LCOS (notably from Canon) and D-ILA (from JVC). Home cinema is not one of those applications where lifetime cost of ownership is an issue and so choosing between technologies should be a matter of seeing demonstrations and choosing the one you prefer. The difference is not nearly as great as it once was, and it will be the combination of features and price that will probably determine your choice.

Specifications

▶ Projector specifications are often expressed in terms of brightness (measured in lumens) and contrast ratio (for example, 3000:1). For home cinema purposes, the projector offering the highest number of lumens will not necessarily be the best. Brightness is really only an issue when the projector is to be used in daylight conditions (for example, using as a TV in the daytime) or where it is placed more than six metres from the screen, in which case you will probably need 2000 to 2500 lumens. Some home cinema projectors offer a relatively low level of brightness (600 to 900 lumens) in favour of higher levels of contrast – more important for home cinema. The average brightness of home cinema projectors is creeping up, with 1200 to 1600 lumens now common. More importantly, try to go for a projector with a contrast ration of 3000:1 better.

▶ Projector resolutions used to be expressed in a much more complex way than they are at present. Dedicated home cinema models are usually described as 720p (or HD Ready) or 1080p (Full HD). 1080p is now the accepted standard for high quality home cinema. The image quality of 1080p is 125% better than 720p and the price difference between 1080p and 720p projectors is now very small. Only if you are tempted by a 'crossover' model (one that can be used in the office or at home) will you have to understand the traditional projector quality classifications, in which case WXGA is your benchmark. One thing to watch out for here is that business and crossover projectors project a 4:3 format image (like a pre-widescreen TV) as standard. You can usually select the 16:9 widescreen home cinema format on these projectors but, on some models, this results in a high degree of overscan – a faintly lit but often distracting area around your projected image. We recommend buying a dedicated home cinema projector which projects a 16:9 widescreen format as standard.

Suitability

◀ Once you have formed an opinion of what you might like to buy the final point to check is that the projector is capable of projecting an image that is sufficiently large to fill the projection area of your chosen screen size. The projected image gets bigger the further away the projector is from the projection screen. If you have chosen to place a large screen on the room's widest aspect, you might not be able to position the projector far enough away from the screen for the image to fill the projection area.

◀ The crucial detail that you need is the 'throw length'. This multiplier allows you to calculate how big the image will be when the projector is placed at any given distance from the screen. Many projector manufacturers have taken the pain out of the process by providing tables of distances and image sizes. Recognising that home cinemas are moving into smaller homes, 'short throw' home cinema projectors are now appearing on the market. These can be positioned nearer the projection screen but produce a correspondingly larger image that their traditional counterparts.

◀ Another increasingly important consideration in specifying a projector for a home cinema is connectivity. For high definition sources such as PlayStation 3, Blu-Ray DVD Player or Sky HD, HDMI input is essential to get the best quality out of the system.

Installation

▲ There is no doubt that the best way to install a home cinema projector is on or in the ceiling, using a product such as the Beamax Dellegno Lift. The projected image is not interrupted by viewers moving around and the projector is safe from accidental damage. At the end of the movie, the lift retracts, concealing both the projector and the associated wiring. Table or shelf-top installation is also possible but needs careful consideration of the room layout.

How big should my screen be?

The temptation in home cinema is just to say that the screen should be "as big as possible", but there are guidelines that help you get the best balance between size, quality and the nature of the viewing experience. The secret is to achieve balance between the light output and resolution of the projector and the size of the screen, the power of the audio system and, most importantly, the dimensions of the room and those of the screen.

• There are three ways to determine the size of the screen that would best suit your room. These relate screen size in relation to the seating position of the viewer

1. Movie standards organisation THX recommends that the seating position of the viewer should be no less than the screen width divided by 0.73

2. Screen fabric developer Da-lite recommends that the ideal screen height is one third of the viewing distance.

3. The Society of Motion Picture and Television Engineers recommends a screen diagonal of 60% of the seating distance as the optimal screen size

• These are guidelines which help you determine how far you should be away from your projection screen. It is also very important to take projector placement into account. The distance from the projector to the screen and the projector's specification will determine how big the projected image can be at a certain distance. Use your manufacturer's specifications or go to http://www.projectorcentral.com/projectors.cfm to calculate the screen size.

▲ the Dellegno motorised projector lift lowers the projector automatically into position for home cinema use and then retracts into the ceiling mounted unit when not required

Step 4

Choosing a surround sound system

The role of audio in creating a genuinely cinematic experience can't be understated, and with the technologies available today there is no need to fill your room with big ugly cabinets and masses of wiring. Here is short guide to home cinema surround sound, focused on the key pieces of equipment – the AV receiver, the loudspeakers and the subwoofer.

AV receivers

◀ The AV receiver is the hub of your home cinema system, providing the connections for your AV sources (Blu-Ray player, DVD, games console etc) and the amplification to power your loudspeakers and subwoofer. AV receivers differ from the familiar stereo amplifier in that they often have multiple amplification modules or outputs to allow you to use additional power amplifiers to power the surround sound loudspeakers and the subwoofer. 'Active subwoofers' have their own independent application.

◀ The connections available on an AV receiver are important, particularly when using any existing equipment you might already have as part of your setup. If you use a mix of analogue and digital equipment (for example a VCR and a DVD player) you will notice a quality difference when you project from each source. Where possible, use digital sources through HDMI connections. Digital connectivity is vital if you want to exploit the full potential of HD content. If you are considering using 'legacy' formats, such as VCR or Laserdisc, with your home cinema (not as unusual as it sounds with collections of rare content) some receivers offer video processing and 'upscaling' to HDMI standard. You could add a separate dedicated scaler if your chosen AV receiver doesn't have the facility.

◀ Multi-channel audio support enables the player to send high resolution PCM audio signals to the AV receiver for bass management routing to your speakers. External multi-channel inputs can be used for DVD-A and SACD and some Blu-ray machines to play back high resolution audio. Preamp outputs are also a necessity if you intend to hook up the receiver with a more powerful external amplifier. This is usually only necessary when using a receiver with low impedance, low efficiency loudspeakers.

▲ Private residence Belgium, M-tensioned electric projection screen

How powerful should my AV receiver be?

The ability of a receiver to deliver clean, punchy sound is important in home cinema applications, requiring higher levels of power than you might select for a stereo amplifier. The need for power is compounded if you plan to run a multi-channel system in a large room. THX Ultra2 certified receivers usually have the power. If this exceeds your budget, you should consider choosing a receiver with preamp outputs so that you have the option of adding an external power amplifier.

◀ Some AV receivers offer a 'multi-zone' function that allows you to distribute loudspeakers throughout your home. Some receivers allow you to use some of the internal amplifiers of the receiver for this functionality.

Loudspeakers

▶ When space is really tight, you could consider a Digital Sound Processor (DSP) installed below the centre of the projection screen. Digital Sound Processors are now available at a range of price points from a few hundred pounds to many thousands and offer the option of surround sound from a single source. At the entry level, DSPs are styled to complement flat panel displays and provide a compact solution for those who don't like wires. At the high-end, DSP offerings are claimed to challenge and even exceed conventional loudspeakers in terms of audio purity.

▶ Where space is not an issue, you could consider a 5.1 or a 7.1 sound system. In a 5.1 system, the '5' refers to: a central loudspeaker placed under or behind the projection screen; a pair of loudspeakers (the 'front pair') placed to the left and right of the screen; and a further pair of loudspeakers (the 'rear pair') located on each side of the room behind the movie watchers or game players. The '1' in a 5.1 configuration refers to a subwoofer to handle low frequency rumbles and bass notes. Placement of the subwoofer is flexible, but it is often placed at the back of the room, or adjacent and to one side of the projection screen.

▶ In a 7.1 surround sound system, an additional pair of loudspeakers is positioned at the sides of the room, with one on each side at the midpoint between the front and rear pair.

▶ The front centre speaker is the real workhorse of a home cinema setup, handling up to 80% of the audio traffic in some Dolby movies. As well as handling a good percentage of the dialogue, a lot of movie directors channel the audio of the action sequences through the front centre speaker for greater impact.

▶ While aesthetics provide a strong reason to source all of the speakers in a home cinema surround sound system from the same supplier, the real audio justification is that the units should have matching sound characteristics. For example, you should not hear a tonal difference as an actor's voice moves around the room.

▶ Home cinema has seen the rebirth of the subwoofer, and there are now some superb examples out on the market that move way beyond the ambiguous bass mush that typified early examples. With audio an important component in movie effects, the subwoofer has become the home cinema must-have, and most manufacturers have added a range of subs to their portfolios if they didn't have them before. Nonetheless, building a good sub is recognised as being an art in itself and it is quite acceptable to complement a five speaker set with a sub from a specialist subwoofer vendor.

▶ The rise-and-rise of the subwoofer has also created a market for ultra-compact speaker solutions and super thin towers. To achieve any level of bass presence from these compact 'satellite speakers', a sub is an essential component – and even here modern drivers and materials have enabled manufacturers to develop convincing subwoofers of relatively modest dimensions.

▶ Discreet cinema options include loudspeakers concealed behind custom made pictures and, for those who want the absolute minimum impact on their living space, the ultimate might be a combination of in-wall and in-ceiling loudspeakers. These are now available at all quality levels up to an including THX approval.

Loudspeaker specification and placement

▽ *In an ideal world all of the speakers in a home cinema surround sound setup should be capable of reproducing the full range of frequencies available from source material, typically 20 Hz to 20 KHz plus – then every speaker could handle everything the source material throws at it. In many home cinema systems, this kind of performance is reserved only for the front pair. With this wide frequency response, there is no reason why the front pair can't be used for good quality stereo playback, without recourse to a subwoofer for reproduction of bass frequencies.*

▽ *Rear speaker sets have become increasingly important as movie directors and game developers have developed their understanding of the role of sound in AV content. As a result, these formerly unfashionable units are getting more attention. You should look at centres and rears with a bass response down of 60 to 70Hz (the kind of level you would expect from a fairly good bookshelf speaker). If the budget allows, look at 40 or 50Hz, after which point you would be looking at high-end or custom built units.*

▽ *As for the type of speaker, there are three types to choose from – direct radiating, bipole and dipole. Each type of loudspeaker is constructed differently and produces different qualities. A direct radiating speaker outputs sound directly into the room towards the listener. Bipole speakers have two or more drivers (loudspeaker cones and assemblies) that output sound from both sides of their cabinet. The speakers are 'in phase' with the resulting sound spread out along the walls of the room and hard to pin-point. Dipole speakers are 'out of phase', and create a feeling of space by reflecting sound off of hard surfaces while creating a void in the direction of the listener. The right configuration for you depends on the design of your room and the extent to which you watch movies or listen to music. Movies enthusiasts tend to prefer dipole as side speakers, while music lovers like bipole.*

▽ *For a while, dipole surround speakers were popular because of their endorsement by THX which required a diffuse rear sound field. More recently, new formats have enabled content creators to use stereo effects in the rear channels, giving the edge to direct–radiating bipole designs (often characterised by angled front panels). There is no 'right answer'. You might prefer a more localised, less diffuse sound.*

▽ *Place your surround speakers with an angle of 120 degrees between them or on either side of the listening position if this is more practical.*

Step 5

Choosing a control system

By now, you will appreciate that a home cinema is a system made up of elements from a number of different manufacturers, with each component accompanied by a separate remote control. A degree of control is available from your AV receiver, including the ability to switch between sources and to control your audio setup – but it is not conveniently placed and it will not give the degree of integration needed to control the home cinema as a single system comprising screen, projector, lighting, blinds, receiver and AV sources. For this, you need a multi-function control device, and here are the factors you might consider when looking for a suitable model.

▲ An AV control system should allow you to control the whole home cinema system from a single device, using a standard interface that avoids the separate function of the multiple remote controls sold with the individual devices in your system.

▲ AV control systems are available in a number of formats, including handheld, tabletop and wall mounted.

▲ Handheld controls are similar to television remote controls, but use a variety of technologies. For a home cinema that is relatively fixed in its configuration, an AV integrator can produce for you a push button device pre-programmed with individual functions and 'macros' that combine a number of functions (for example, dim the lights and raise the screen when the projector is turned on).

▲ For AV controls with greater flexibility, handheld devices with mini-touch panels are available. These have some limitations of functionality, but can be reconfigured if you change within your home cinema setup.

▲ At the high-end, fully programmable tabletop or wall-mounted touch-panels can be programmed by specialists to offer a comprehensive range of control functions, plus facilities for reviewing content and even internet connectivity. In effect, these are computers dedicated to control tasks and as such require specialised programming skills.

▲ Whichever level of control device you choose, it needs to communicate with the each of the pieces of equipment in the home cinema. While 'hard-wired' control solutions are very reliable, they are often too inflexible for home cinema applications. A possible exception to this generalisation is where a device has not been designed to be directly compatible with an AV control system. For example, some projectors can be hard-wired to a control system though their RS-232 socket.

▲ Wireless remote control can be achieved through both infrared (IR) and radio frequency technologies. IR demands that the device must be in direct line-of-sight of the control system's IR receiver (although where this is not practical you could try using an IR repeater). RF controls use radio waves and so it is not necessary for the device to be visible to the receiver.

Step 6

Installing your discreet home cinema

▼ Installing a home cinema solution is well within the capabilities of a competent do-it-yourself enthusiast, but if there are areas where you might need help or if you prefer to outsource part of the process there is a whole industry offering support services. For example, there are designers who can help with the planning and sourcing of elements of the system and who can style the whole look. For technical details, you can get the advice of a custom installer. Experienced installers and designers can work together as a team on your project. Their combined skills will really bring another dimension to your home cinema.

▲▲ Private residence France, M-series electric projection screen, installed by Studio 25, Niort
▲ Private residence Germany, In-ceiling tensioned electric projection screen, installed by Revox Köln, Germany

▼ Even if you don't want them to do everything, or don't have the budget for it, you can ask them to consult. This means you will manage the whole project yourself and probably do most of the work yourself. Getting some valuable tips can save you countless hours, a lot of money and get an overall better result. If you don't have the budget for this, check out some of the forums on the internet. There will be people who have built home cinemas themselves and are willing to share their experience. Their advice can be a big help and best of all, it doesn't cost you anything. You can even find images of the cinemas they have built.

Finally, a note of warning, installation of some home cinema products involves working with mains electricity and local legislation might require you to engage an electrician for either the installation itself or for signing off your work.

FAQs

Q: I'm not sure whether to go for a flatscreen TV based home cinema or a projection system. I love the idea of projection but it seems much more complicated. Can you help?

A: While there are many attractive qualities associated with plasma and LCD TVs, there is one area where they cannot currently compete with projection. Size is a big factor in the experience when watching a movie on a screen. Projection screens normally start where Plasma and LCD TVs stop, which is at around 60 inches diagonal (the average projection screen size is 92 inches). If you want the biggest size available, projection screens are your best option. And then there is the intensity of the experience. Projection is a true cinema experience. Everything else is just television.

Q: I think that it would be great to have a home cinema but I am nervous about having builders and electricians all over the house to install it. Is there any way that I can avoid this disruption?

A: Fortunately, there are two solutions to your problem. The first is to choose a system that can be installed without disturbing the fabric of your house. The Beamax Dellegno screen is literally plug-and-play. Place it in position, plug it in and you are ready to go. You can position your projector on a shelf or even a table top. Installing the surround sound system is no more difficult than setting up a stereo. Achieving a truly discreet home cinema may involve some electrical and building work and we suggest using the services of a qualified custom installer. These experienced professionals are used to working in peoples' home and so work in a clean and unobtrusive way. Look for members of the custom installers' trade association, CEDIA.

Q: I think that my children would love to watch movies and play computer games on a large screen in our family room, but I'm not sure that we have enough space. Are there compact systems available?

A: The great thing about projection based home cinemas is that they can be designed to take up much less space than a flatscreen TV system. The projector and the screen can be ceiling mounted, saving floor and wall space. Depending on the age of the children, you might want to keep them apart from your home cinema equipment anyway! The audio elements can also be very compact. Using a combination of small satellite speakers and a subwoofer you can create a powerful audio system without resorting to huge loudspeaker cabinets. Beamax can also offer you a flat panel loudspeaker solution concealed behind custom printed grills. How about concealing the loudspeakers behind some pictures of the children or their pets?

Glossary

These are words, terms and abbreviations that are commonly used in the world of home cinema. This is the plain-English guide to jargon that you might come across in literature or when speaking to suppliers.

1080P

This number indicates the number of 'lines' that are used to create the image on your screen. The higher the number, the sharper and more detailed the image. 1080p is the number of 'lines' in a Full High-Definition (or Full HD) image, which is the current standard for a quality home cinema.

720P

This number indicates the number of 'lines' that are used to create the image on your screen. The higher the number, the sharper and more detailed the image. 720 is the number of 'lines' that a High-Definition Ready screen can display and is the standard adopted by some satellite and cable broadcasters. This specification is becoming outdated and is is gradually being replaced by Full HD.

Aspect ratio

The shape of your screen is expressed as an 'aspect ratio' - the relationship between the width and the height of the image you see. For business, 4:3 is common. For home cinema 16:9 (or widescreen) is used most frequently. For true Hollywood movie format, as seen in a commercial cinema, you would need 21:9.

Black borders

These are the black strips that surround the white section of your projection screen. They give the image more punch because the contrast between the black and the image makes the image pop out.

Blu-Ray

The follow up technology for 'regular' DVDs. It allows more information to be put onto the disc, so you can have more extras as well as higher quality movies. To get the best out of a high-definition home cinema you need a Blu-Ray Disk (BD) player as your source.

Composite Video

This format of video is largely used for analogue displays. The composite video is usually a yellow connector which is then coupled with red and white audio connectors for stereo sound. It is usually found in standard formats such as PAL, NTSC and SECAM in televisions and other consumer devices. For a good home cinema you should really only consider sources connected with digital connections like HDMI.

Contrast

Contrast is the difference between full white and full black of a projected image. This difference is expressed in a ratio of 1: X. The higher X is, the better the performance. So 1:5000 is better than 1:1500

Control systems

These are devices that allow you to operate more than one machine from a single remote. This can go from a basic remote to a full-blown, whole-house system that controls everything from the lights to the air-conditioning or your TV.

Discreet cinema

Discreet cinema is a concept pioneered by Beamax and which describes

the idea of having your own movie theater that's invisible when not in use. At a press of the button, everything fires up and comes into view. It's ideal for rooms that you use for more than watching movies.

DLP

Digital Light Processing (DLP) is a technology developed by Texas Instruments and which is used in projectors. DLP projectors create the projected image using microscopically small mirrors on a semiconductor chip called a Digital Micromirror Device (DMD). Each mirror represents one pixel in the projected image. Rapid repositioning of the mirrors between 'on' and 'off' positions enables the DMD to vary the intensity of the light being reflected out through the lens, creating shades of grey in addition to white (when the mirror is in the 'on' position) and black (in the 'off' position).

HDMI

This stands for High Definition Multimedia Interface. It's a connection that allows high definition, digital signals to go from one device to another. To make this work, both devices need to have an HDMI connection (one device needs an output, the other an input) and you need a compatible cable to connect them.

HDTV

High-definition television (HDTV) is a digital television broadcasting standard that also serves to define levels of quality.

DVI

The Digital Visual Interface (DVI) is a video interface designed to sharpen the visual quality of numerous digital displays including projectors. The purpose of DVI technology is to allow uncompressed digital video data to be transferred to the display device.

Infrared

Infrared is one of the technologies used in remote controls to issue commands from a distance to the home cinema equipment. While the majority of remote controls communicate to their respective devices via infrared (IR) signals high-end devices use radio signals or even a wireless IP technology.

LCD

A liquid crystal display (commonly abbreviated to LCD) is a thin, flat display device made up of any number of color or monochrome pixels arrayed in front of a light source or reflector. LCD panels are used in projectors in groups of three (called 3LCD), with each of the panels handling part of the colour spectrum (RGB).

LED

A light-emitting diode (LED) is a semiconductor device that emits narrow-spectrum light when electrically activated. A few high-end home cinema projectors use this technology because it can achieve intense contrast and a useable life of 20,000 hours or more, compared to the 2,000 to 4,000 hours of traditional UHP lamps.

Lumen

The lumen (symbol: lm) is the SI unit of luminous flux, or perceived brightness. Luminous flux is adjusted to reflect the varying sensitivity of the human eye to different wavelengths of light.

Native format

The format your projector or screen is made to display is called its native format. This is expressed as the relationship between the width and the height of the image you see. For business, 4:3 is common. For home cinema 16:9 is used most frequently. This native format can be found in the technical specifications of your projector

PCM

PCM stands for Pulse-Code Modulation. It's a digital representation of an analog signal.

Pixel

A pixel (short for 'picture element') is a single point in a graphic image. Pixels in an image can be reproduced at any size without the appearance of visible dots or squares; but in many contexts, they are reproduced as dots or squares and can be visibly distinct when not fine enough. The intensity of each pixel is variable and each pixel has typically three or four dimensions of variability such as red, green and blue, or cyan, magenta, yellow and black

Progressive Scan

Progressive or non-interlaced scanning is any method for displaying, storing or transmitting moving images in which the lines of each frame are drawn in a sequence. This is in contrast to the interlacing used in traditional television systems.

RCA / Phono connector

An RCA jack or phono connector is a type of electrical connector commonly used in audio applications.

RJ-45 connector

An RJ-45 connector is an Ethernet jack for connection to a network or the internet. Some projectors have these for links to control or monitoring systems operating over a home network.

RS-232 connector

RS-232 is a standard that describes connections between equipment in your home cinema set-up and a high-end control system.

Source / source equipment

The machines you use to play movies and other content. Examples are DVD players, consoles (such as the Xbox or PlayStation) or your AV receiver.

S-Video

S-Video is a video standard in which the brightness (luminance) and the colour (chrominance) including hue and saturation are transmitted separately to get a better result than that available from a composite video connection.

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