

CRYSTAL
AUDIO

SmArt

Home Theater System

Instructions Manual



Designed to
be used with

THX

SELECT™

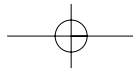
Subwoofers

This is not a THX certified product

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Precautions

\$Before connecting the subwoofer unit to a power outlet, make sure that the operating voltage of the local power supply is identical to that specified for the subwoofer.

\$Ensure that your amplifier is switched off, before connecting the speakers.

\$Turn off the subwoofer before connecting the input signal cable on its internal amplifier.

\$Make sure that you have connected the plus (+) and minus (-) terminals of each speaker to the corresponding plus (+) and minus (-) terminals on the amplifier.

\$Make sure that all screws on the binding posts are tight enough, especially if you are using bare speaker wires. A contact between bare speaker wires may cause short-circuit and potentially damage your equipment.

\$Avoid the use of your amplifier in its power limits. Especially, in the case that your amplifier is of low power, the continuous use in high power levels can cause distortion of the signal, amplifier clipping and may cause severe damage to your speakers

\$Therefore, high power amplifiers are more preferable.

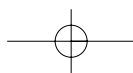
\$Do not drive speaker units with a continuous wattage exceeding the maximum power indicated in this instruction manual for each speaker model.

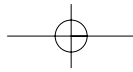
\$Use the best speaker and interconnect cables you can afford.

\$Do not place loudspeakers in dusty or humid environments.

\$Avoid exposure to direct sunlight.

Caution: *Your SmArt speakers come with electronically protected tweeter in order to avoid problems of overheating that can cause their destruction. However for even greater protection, avoid extremely high volumes in your amplifier that can distort your sound signal or cause severe damage to your amplifier and your speakers.*





1. Introduction

Congratulations!!!

Your Crystal Audiovideo speakers are built to the highest specifications standards meeting any technological requirements for Hi-End sound reproduction at any price.

You will experience state of the art multichannel sound performance as the director of the movie or the creator of the music tune intended. Crystal Audiovideo speakers provide every music note of enjoyment that you expect from high performance speakers, and that you paid for.

1.1 SmArt Systems with THX-SUB Speaker System

SmArt Speakers are designed to be used perfectly with the THX select certified Subwoofers offering that way supreme THX quality in affordable prices. SmArt speakers are not THX certified because of their small shape and the set of the amplifier's crossover at 120 Hz instead of 80 which is the requirement for the THX certification.

SmArt speakers have the extra ability to change their side panels making them able to change colour whenever you change decor without having to change the entire speaker system! Just remove the side panels as you remove the grille from the speaker, replace them with new ones of different colour and your speaker will transform to a new one according to your aesthetics!

The sound integration is excellent with your THX-SUB subwoofer supporting flat anechoic response from 35Hz to 200Hz and accurate in room response from 19Hz to 350Hz. So they reproduce either the sound of music or movies with the authority of larger and more expensive speakers.

Your SmArt & THX-SUB System not only use THX technology for the low frequencies but also the best Hi-End 'Small' Towers for the mid and high frequencies supporting:

\$Electronic protection for the tweeter and the woofer.

\$Magnetic shielding.

\$Absolutely flat frequency response.

\$Wide horizontal dispersion to hear full and flat frequency response across the room.

\$Controlled vertical dispersion to diminish the ceiling and floor reflections and provide superior imaging.

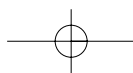
\$High power handling **200WRmsMax/200Hz** for safe operation with powerful AV Receivers.

\$High Sensitivity very important for low power AV Receivers.

\$Removable side panels in 4 different (silver, dark cherry, maple, black) for easy change of colour and style whenever you change decor.

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SmArt is not a THX certified Product



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1.1.1 SmArt Speakers

Your SmArt system is available in 2 different versions that include the following speakers:

1. **SmArt 8 System**
 \$SmArt Tower Speakers with 8 woofers for the front and surround channel.
 \$SmArt-4 Speakers for the center channel.
2. **SmArt 4 System**
 \$SmArt Tower Speakers with 4 woofers the front and surround channel.
 \$SmArt-4 Speakers for the center channel.

2. Positioning your SmArt Speakers

The sound fields generated by a multichannel audio system surround the audience and create a three dimension audio image. In order to get the maximum accuracy and fidelity that you have paid for, you should follow a careful set-up procedure. You will always be rewarded.

\$Ideally the five speakers are equidistant from the listener and generate identical sound levels when fed an identical signal.

\$In real life the speakers may not be equidistant; time delays must be employed, ensuring that sound from all speakers arrives to the listener's ears at the same time. The sound field must be homogeneous and controlled.

SmArt & THX-SUB speakers will provide Hi-End performance multichannel sound in small to medium size rooms.

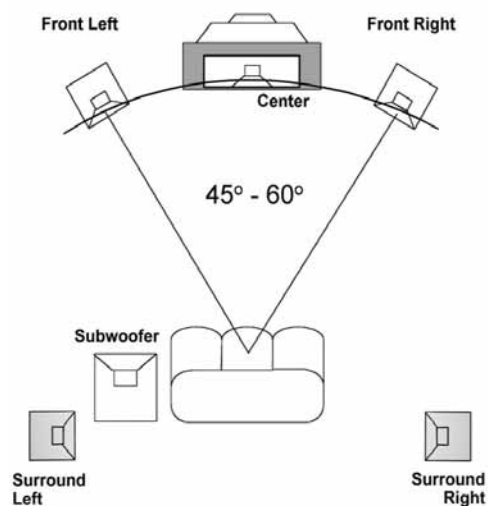
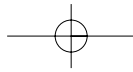


Figure 1: Speaker placement



2.1 Placement of SmArt-Tower for Front Right and Left Channels

Always follow the rule of thumb as is shown in figure 1 (page 5)

1. Place your SmArt speakers equidistant from the TV/Projector screen.
2. Measure the distance between your Left and Right speakers (LR).
3. Measure the distance between your listening position and the middle point between your Left and Right speakers (PM).
4. The difference in length of the above distances should be no more than 15%.
5. Angle your speakers inwards and towards the listeners. Find the optimum angle that produces the best sound.
6. Adjust your speakers so that the tweeters are at about the same height as your ears when sitting at the listening position - if possible.
7. To reinforce lower frequencies move the speakers towards the room boundaries. To reduce lower frequencies do the opposite
8. Do not spread your speakers too far apart otherwise you get a hole in the center image.
9. Do not place your speakers too close together otherwise the sound stage collapses into a fuzzy mono sound.

2.2 Placement of SmArt-4 for center channel

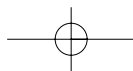
\$TV screen: Place your SmArt-4 speaker directly above or below the screen wherever is closest to ear level.

\$Projector screen: Place your SmArt-4 behind or in front of the centre of your screen whether the screen is acoustically transparent or not.

2.3 Placement of SmArt Speakers for Surround Right and Left Channels

Your SmArt speakers are also used for the surround channels and are optimized to offer an enveloping surround field.

1. Place the speakers slightly behind the primary listening position.
2. Adjust the speakers to fire towards each other behind the seating area.



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2.4 Placement of SmArt-4 on the wall

Because of their smart design the SmArt-4 speakers can also be placed on the wall as a center (horizontal placement) or a surround speaker (vertical placement). Additionally, by removing the side panels it can be enwalled making its appearance even more diacritic.

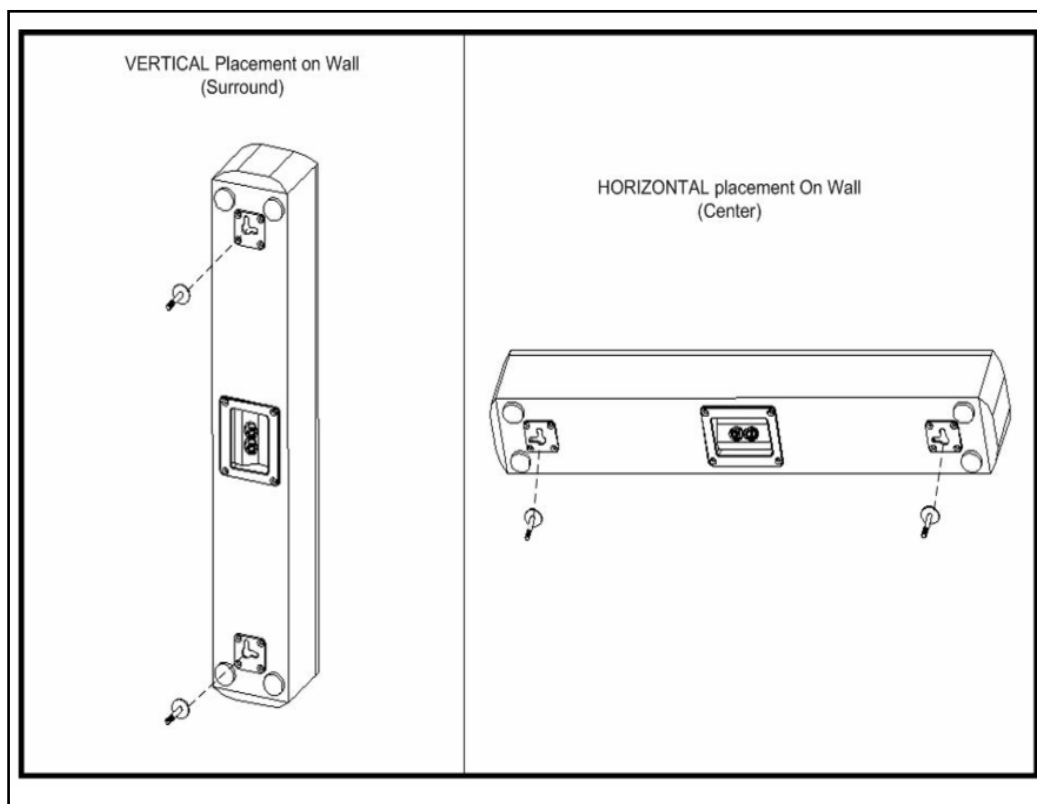
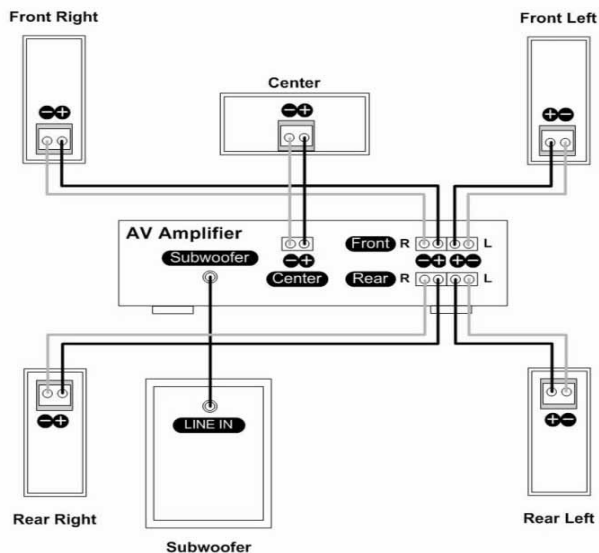


Figure 2: On-wall placement of SmArt-4 in vertical or horizontal position

3. Speakers Connections



IMPORTANT
All connections
should be made with
the equipment
switched off.

Figure3: Speakers Connections

Connections to the loudspeaker system are made at the terminals located at the rear panel of the enclosure. These terminals permit a variety of connection methods.

1. **Single - wire:** ensure that the positive terminal on the speaker (marked + and coloured red) is connected to the positive output terminal of the Receiver. Similarly, the negative speaker terminal (marked - and coloured black) should be connected to the negative Receiver terminal. Incorrect connection can result in poor imaging and reduced bass output.

2. **Bi - wire:** remove the links by loosening the speaker terminal caps and use a separate 2-core cable from the Receiver to each pair of terminals. This can improve the resolution of low-level detail. Always observe the correct polarity. When bi-wiring, incorrect connection can also impair the frequency response.

Make sure that you choose the correct output speaker terminals on your Receiver to connect your SmArt speakers.

\$For the front left and right speakers: Use the front right and left speaker output terminals on your Receiver to connect two SmArt-Tower speakers.

\$For the center speaker: Use the "center" speaker output terminals on your Receiver to connect your SmArt-4 speaker.

\$For surround speakers: Use the two "surround" speaker output terminals on your Receiver to connect two SmArt-Tower or your SmArt-4 speakers.

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4. Operation between AV Receivers & your THX-SUB subwoofer

THX certified and not certified Dolby Digital/DTS Receivers also include Crossover Frequency Controls to set at different low frequencies the roll off point of the signal led to the subwoofer.

Set the **Operation Mode** on your THX-SUB subwoofer to **THX** position if you have a THX amplifier or to **VAR** position if not. The **VAR** position offers independent control of the subwoofer's volume through the rotating switch at the rear side of it.

Set the **Phase** switch of you THX-SUB to Normal position.

Proceed to the **Surround Setup** on your Receiver "Menu" to calibrate the **channel level, delay** and **size**. In many systems delay calibration is taking place in m (meters from the hearing position). For further details consult your amplifier's manual.

Adjust the crossover frequency between 120Hz and 150Hz on the **Crossover Frequency Control** of your Receiver. Setting the crossover frequency at 120Hz ensures better performance of the Subwoofer making it more flexible to place in different locations in your room. Setting the crossover frequency at 150Hz ensures bigger output power with the restriction that the subwoofer is placed near the speakers.

The adjustment of crossover frequency is taking place through a technique that is called bi-amplification, resulting in the improvement of the frequency response of a home cinema. Additionally bi-amplification lowers the signal distortion and increases the dynamic area. Through that technique, the lower frequencies are being amplified exclusively by the built-in subwoofer's amplifier.

Note: For further details according to the proper adjustments and placement of THX-SUB in space, please refer to the subwoofer's manual.

5. Side panels for SmArt 4 and SmArt 8 speakers

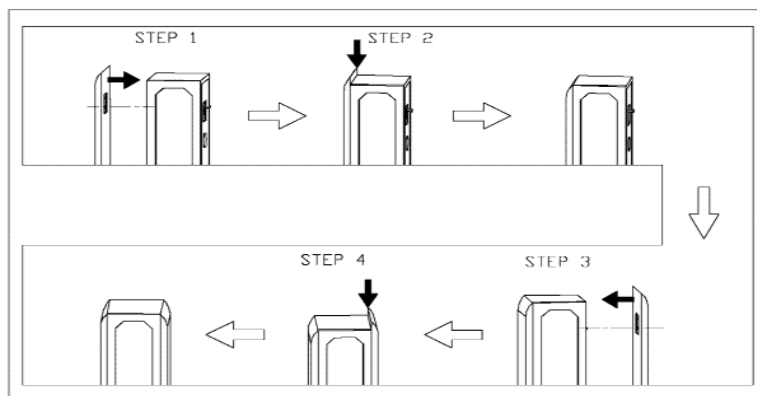
Crystal SmArt speakers offer you the additional ability to change their color and finishing by changing their side panels into different colors, so that they match with your room and aesthetics.

The side panels have their own individual packaging. They can be easily removed and replaced through the catchers in the side of the speakers as is being displayed in the here below figure.

In order to adjust the side panels on the cabinet:

\$Follow steps 1 to 4

\$Make sure the panels are thoroughly attached on to the speaker cabinet to avoid unwanted vibrations.



Specifications

TYPE	SmArt-4	SmArt TOWER-4	SmArt TOWER-8
MAGNETICALLY SHIELDED	2,5-Way	2,5-Way	3,5-Way
ELECTRONIC PROTECTION	✓	✓	✓
WOOFER 3" ALUMINUM	✓	✓	✓
TWEETER 1" ALUMINUM DOME	4	4	8
INPUT POWER (WRMS)	150WRms / 120 Hz	150WRms / 150Hz	200WRms / 120Hz
MAXIMUM POWER (Watt)	300WRms / 150Hz	300WRms / 200Hz	400WRms / 150Hz
SENSITIVITY (dB/W/m)	90	91	92
IMPEDANCE (Ohm)	8	8	8
MIN. IMPEDANCE (Ohm)	4	4	4
FREQUENCY RESPONSE (Hz)	120-22k	120 - 22k	120 - 22k
ENCLOSURE TYPE: BASS REFLEX	✓	✓	✓
DIMENSIONS DxHxW (cm)	8x10x60	10x120x10	10x180x10

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6. Room Acoustics Designer® (Loudspeaker Placement Interactive Software)



Room Acoustics Designer® is a unique interactive software developed by Crystal Audiovideo.

Through it, the user can **choose different types of speakers**, according to his/her preferences and his/her room dimensions

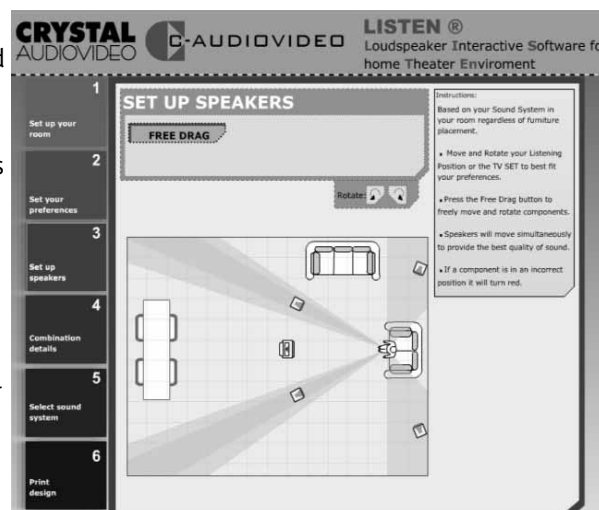
At the same time the user is properly consulted for the **correct placement of the speakers** in the room based on the room dimensions, furniture e.t.c.

Room Designer® is more than a simple program that selects loudspeakers based on the input of the user.

It takes into consideration **the furnishing of the room** and the dimensions of the video display or TV, to place the loudspeakers in optimal locations.

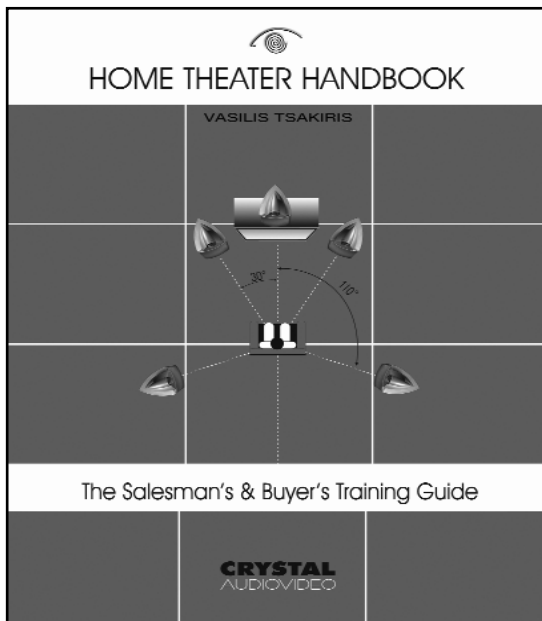
It offers the suggestions to the user in a **friendly graphical way**.

When the user changes the listening position, then simultaneously all the components of the system (display, speakers) are moved, so that the acoustic rules are observed.



Room Designer is patented software, accessible free of charge at Crystal Audiovideo's web site: <http://www.crystalaudiovideo.com>.

7. Home Theatre Handbook



If you are interested in setting up a **Home Cinema** for your entertainment, this book offers all the necessary information to make an educated selection of equipment and to avoid the pitfalls of purchasing outdated, or inappropriate for your needs components. The book provides all the background information and the latest developments to make you an **expert** on the HOME THEATRE subject.

You will be able to distinguish sales hype from facts and valuable features from marketing tricks.

This book includes:

- \$an **innovative training system**
- \$over **350 Questions and Answers**
- \$many Frequently Asked **Questions & Answers**
- \$over **100 colour drawings and photos**

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