

Instruction Manual for upgraded unit



Thank you for using our products.

The upgraded unit now supports the newest decoders and sound formats below as well as conventional sound formats including Dolby Digital, DTS, and THX Surround EX.

With your new AV amplifier, you can enjoy movies and music to their absolute fullest.

Contents

Features	2
Speaker configuration and placement/Connecting speakers	
Speaker placement	3
Speaker Setup	
1-1. Speaker Config sub-menu	4
1-4. THX Audio Setup sub-menu (<i>new function</i>)	5
1-5. LFE Level Setup sub-menu	5
Input Setup	
2-1. Digital Setup sub-menu	6
2-4. Listening Mode Preset sub-menu	6
2-5. Delay sub-menu	16
Listening Mode Setup	
3. Listening Mode Setup menu	10
Other upgraded function	
Selecting audio input signal using the AUDIO button on the remote controller (<i>new function</i>)	16

< How to Use the Instruction Manual for upgraded unit >

The section headings given in this manual correspond to those given in the original instruction manual. Substitute the information given under a heading in this manual for that given under the same heading in the original instruction manual.

Features

■ THX Ultra2

The new THX Ultra2 standard from Lucasfilm ensures the highest sound and picture quality and the most reliable operation. The THX Ultra2 adds the THX Ultra2 Cinema mode and THX MusicMode to the conventional THX Cinema mode to create the optimum sound space for both music and movies.

THX Ultra2 Cinema: When performing 7.1 ch playback of Dolby Digital, DTS, or other 5.1 ch movie sources, THX Ultra2 Cinema analyzes the surround components to create surround back channels for the optimum ambient and directional surround sound. This new THX Ultra2 mode provides a wider sound space to the sides and rear and a heightened feeling of the sound positioning.

THX MusicMode: This is a new mode provided with THX Ultra2 and meant for the playback of music software sources. THX MusicMode converts 5.1 ch multi-channel music sources to 7.1 ch playback with a virtual rear sound from the surround speakers and surround back speakers. The rear sound space is created with the consistency and spaciousness optimum for music playback.

■ DTS 96/24

The upgraded unit is equipped with the newest audio format DTS 96/24 decoder developed by DTS. It is the world's first 96-kHz/24-bit-compatible compression audio format standard for 96-kHz/24-bit, 5.1 ch, high-quality multi-channel playback.

■ DTS-ES Extended Surround Decoder

• DTS-ES Discrete 6.1

This is a new format that all 6.1 ch including added surround back channels are recorded discretely in digital. Because all channels are recorded separately, you can enjoy surround sound with higher separation.

• DTS-ES Matrix 6.1

In this format, sound for added surround back channels is inserted respectively into left and right surround channels with matrix-encoded, and when playing the high precision matrix decoder decodes the inserted sound for surround back channels.

■ DTS Neo:6

This mode uses a high precision matrix decoder to play 2ch sound as 6.1ch sound. Full-band (frequency response: 20 Hz to 20 kHz) playback is available for all 6 channels and you can feel the channel separation of digital discrete level. In addition, you can choose a playback mode from Cinema (for movies) and Music (for music) depending on the source you want to play.

■ Dolby* Digital EX

Dolby Digital Surround EX takes a Dolby Digital 5.1 ch movie surround track and adds a third surround channel for output through a speaker placed behind the viewers. Even though it is hard to create the sound space behind those sitting at the ends of rows in movie theaters, by creating this independent surround channel behind the viewer and adding it to the existing left and right surround channels, the heightened feeling of presence essentially draws you into the scene. The information for the added rear channel is encoded into the left and right surround channels of normal 5.1 Dolby Digital surround tracks. Movie theaters equipped with the Dolby Digital Surround EX decoder can extract the information for the third surround channel. When movies shown using Dolby Digital Surround EX are released on DVDs or 5.1 ch digital television broadcasts as well, the information for the third surround channel is encoded within. With the Dolby Digital EX decoder in your home theater, you can extract the third surround channel and experience the movie with the surround back channel for the sound space that the producer of the movie desired. Just as it is at movie theaters, there is no loss of audio quality or data with the normal 5.1 ch Dolby Digital playback.

■ Dolby* Pro Logic II decoder

This is a surround decoding method which the Dolby Laboratories Inc. suggests. This method uses feedback logic circuits to restore the signal that is matrix-encoded to 2 channel, enabling 5.1 ch playback with maintaining separation as high as Dolby Digital. In this mode, either analog or digital signal can be decoded. There are two modes for Dolby Pro Logic II : Movie and Music. The Movie mode is optimized for playing movies. You can play the dubbed speech recorded in Dolby surround and enjoy the videos with 2 ch sound like old movies in 5.1 ch playback full of live presence. The Music mode will provide more sound space and clearer 3D sound image localization.

Since the new playback formats above are added, the former listening modes such as DTS Film, MPEG Film, Action and Musical are organized into new listening modes. After this, some setup parameters are also updated.

In addition, the following functions are upgraded.

■ Crossover Adjustment

The crossover adjustment enables you to adjust the bass range for the subwoofer according to the sizes of your other speakers.

■ 96 kHz/24 bit upsampling for analog sound

Analog sound signals from VCRs and other sources can now be treated as digital signals and processed with 96 kHz upsampling and 24 bit quantization. This enables more accurate sound playback.

■ Extension of A/V Sync function

You can set the A/V Sync function parameters in the range of 0 to 120 ms.

* Manufactured under license from Dolby Laboratories.

"Dolby," "Surround EX," "Pro Logic" and the double-D symbol are trademarks of Dolby Laboratories.

• Lucasfilm and THX are trademarks or registered trademarks of Lucasfilm, Ltd. Copyright Lucasfilm Ltd. &TM. Surround EX is a jointly developed technology of THX and Dolby Laboratories, Inc. All rights reserved. Used under authorization.

• Manufactured under license from Digital Theater Systems, Inc. US Pat. No.5,451,942 and other worldwide patents issues and pending. "DTS," "DTS-ES Extended Surround," and "Neo:6" are trademarks of Digital Theater Systems, Inc. © 1996 Digital Theater Systems, Inc. All rights reserved.

• "Theater-Dimensional" is a trademark of Onkyo Corporation.

Speaker configuration and placement/ Connecting speakers

Speaker placement

Ideal speaker placement varies depending on the size of your room and the wall coverings. Here, only typical example of speaker placement and recommendations are shown.

Important points regarding speaker placement

Front left and right speakers and center speaker

- Place these three speakers at the same height from the floor.
- Place each speaker so that sound is aimed at the location of the listener's ears when at the listening position.
- Place the front left and right speakers the same distance from the listening position.

Surround left and right speakers

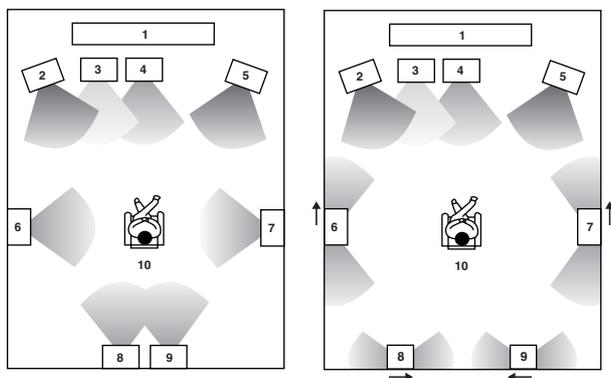
- Place these speakers so that their height is 1 meter (3 feet) higher than that of the listener's ears.

Surround back left and right speakers

- For maximum effect of the new THX Ultra2 feature, place these two speakers as close together as possible. Dipolar speakers, however, should be placed apart the required amount (below right).
- Place these speakers so that their height is 1 meter (3 feet) higher than that of the listener's ears.

Subwoofer

A subwoofer is recommended for the highest bass effect.



- 1 TV or screen
- 2 Front left speaker
- 3 Subwoofer
- 4 Center speaker
- 5 Front right speaker

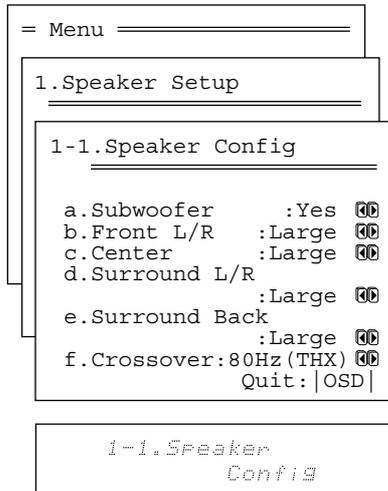
- 6 Surround left speaker
- 7 Surround right speaker
- 8 Surround back left speaker
- 9 Surround back right speaker
- 10 Listening position

Most dipoles have an arrow on them to indicate their orientation towards the screen. So for the side dipoles, the arrows point forward. For the back dipoles, the arrows should point towards each other to achieve the correct acoustical phasing in the room.

Speaker Setup

1-1. Speaker Config sub-menu

Here you will enter which speakers are connected and the size of each speaker.



a. Subwoofer

Yes: Select when a subwoofer is connected.

No: Select when a subwoofer is not connected.

b. Front L/R

Large: Select if the front speakers are large sized.

Small: Select if the front speakers are small sized.

- If "No" is selected for the Subwoofer setting, then this setting is fixed to "Large."

c. Center

None: Select if no center speaker is connected.

Large: Select if the center speaker is large sized.

Small: Select if the center speaker is small sized.

- If "Small" is selected for the Front setting, then "Large" cannot be selected for this setting.

d. Surround L/R

None: Select if no surround left and right speakers are connected.

Large: Select if the surround left and right speakers are large sized.

Small: Select if the surround left and right speakers are small sized.

- If "Small" is selected for the Front setting, then "Large" cannot be selected for this setting.

e. Surround Back

None: Select if no surround back left and right speakers are connected.

Large: Select if the surround back left and right speakers are large sized.

Small: Select if the surround back left and right speakers are small sized.

- If "None" is selected for the Surround L/R setting, then this setting is fixed to "None."
- If "Small" is selected for the Surround L/R setting, then "Large" cannot be selected for this setting.

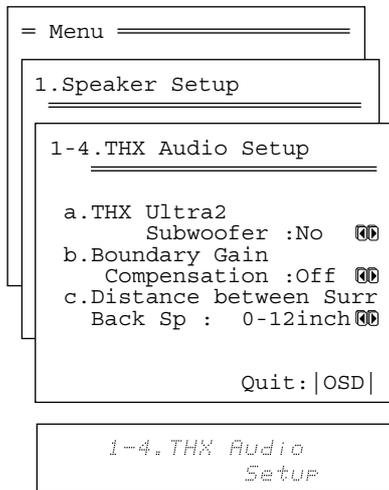
f. Crossover

This setting allows you to set the crossover frequency for your speaker system. The crossover frequency is the minimum frequency delivered to a speaker and can be set to 40 Hz, 60 Hz, 80 Hz (THX), 100 Hz, or 120 Hz. This setting is valid when "Subwoofer" is set to "Yes," or for speakers that are set to "Small," at the "Speaker Config" menu. Frequencies below this are cut from speakers set to "Small" and sent to the subwoofer (or to speakers set to "Large").

Speaker Setup

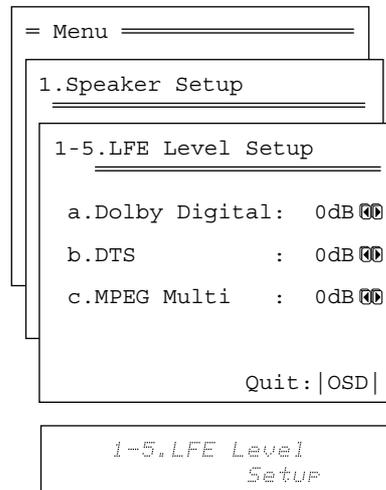
1-4. THX Audio Setup sub-menu (new function)

The Bass Peak Level sub-menu has been replaced by the THX Audio Setup sub-menu. Use this sub-menu to configure the THX Audio settings such as Boundary Gain Compensation™ and Advanced Speaker Array™.



1-5. LFE Level Setup sub-menu

This sub-menu is for setting the LFE (Low Frequency Effect) levels included in Dolby Digital, DTS, and MPEG Multi software. The default setting is 0 decibels.



Advanced Speaker Array: When you set up your home theater system using all eight speaker outputs (Left, Center, Right, Surround Right, Surround Back Right, Surround Back Left, Surround Left and Subwoofer) and the two Surround Back speakers are placed close together as shown in the speaker placement diagrams on page 3, you can take advantage of THX's Advanced Speaker Array (ASA) technology. ASA optimizes the surround sound experience using two new modes; THX Ultra2 Cinema and THX MusicMode.

a. THX Ultra2 Subwoofer

Set "Yes" if your subwoofer conforms to the THX Ultra2 standard or if the playback capability of its bass range extends down to 20 Hz. Otherwise, set "No."

b. Boundary Gain Compensation

Room boundaries (walls) or other characteristics (such as wall construction) may increase the perceived acoustics levels at low frequencies. Depending on the listener's and the subwoofer's position, the listener may experience an excessive bass effect.

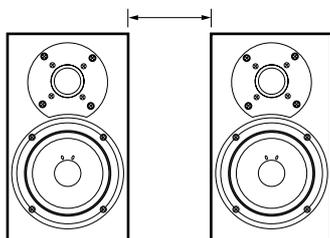
The purpose of this feature is to compensate for excessive bass resulting from a boundary gain effect.

ON: Boundary Gain Compensation is applied.

OFF: Boundary Gain Compensation is not applied.

c. Distance between Surr Back Sp

Measure the distance between your two surround back speakers and then choose the setting that corresponds to your measurement: "0-30 cm (0-12 inch)," ">30-122 cm (>12-48 inch)," or ">122 cm (>48 inch)". For optimum ASA effect, the surround back speakers should be placed as close together as possible.



a. Dolby Digital

The level can be adjusted to either $-\infty$ or between -10 and 0 decibels in 1-decibel increments. For Dolby Digital input source signals, the LFE level becomes that set here. A setting of 0 decibels is recommended for optimum performance; however, if the low frequency range is too strong, lower this setting as necessary.

b. DTS

The level can be adjusted to either $-\infty$ or between -10 and 0 decibels in 1-decibel increments. For DTS input source signals, the LFE level becomes that set here. A setting of 0 decibels is recommended for optimum performance; however, if the low frequency range is too strong, lower this setting as necessary.

c. MPEG Multi

The level can be adjusted to either $-\infty$ or between -10 and 0 decibels in 1-decibel increments. For MPEG input source signals, the LFE level becomes that set here. A setting of 0 decibels is recommended for optimum performance; however, if the low frequency range is too strong, lower this setting as necessary.

Input Setup

2-1. Digital Setup sub-menu

b. Digital Format

The default setting is "All." If "----" is selected for this input source at the Digital Input setting, then this setting will not appear. Although you can use this default setting as is, you may change it as desired depending on the input signal format (e.g., if you know that you will always be listening to a certain input signal format from a particular input source).

All: Detects input signal format automatically. The Dolby Digital, DTS, MPEG Multi, and PCM signals are automatically detected and decoded appropriately. If there are no digital input signal, the input signal coming into analog input jack will be played.

AC-3RF: Select this option when you play only AC-3RF signal which comes from AC-3RF output jack on a LD player to the AC-3RF input jack on you unit. When using this option, signals from other input jack will not be played. This option can be selected when you select the VIDEO 4 for input source.

DTS: Select this option when you only decode DTS signal. Other format signals will not be played.

PCM: Select this option when you only decode PCM signal. Other format signals will not be played.

Note:

If "All" is selected and a compact disc or LD is fast-forwarded during playback, decoded PCM signals may produce a skipping sound. In such cases, change the setting to "PCM."

Notes on DTS:

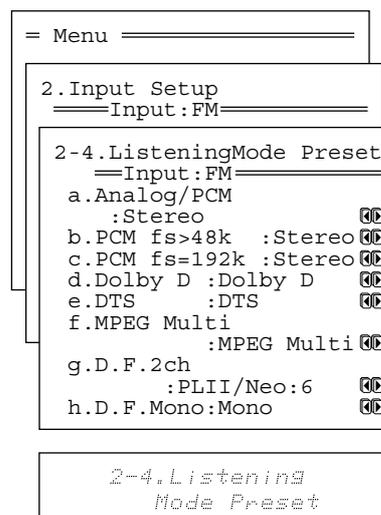
- If you play a CD or LD that supports DTS when the "PCM" setting is selected on the this unit, the DTS encoded signal will not be decoded and noise will be output. This noise could damage the amplifier and speakers. Therefore, be sure to selected "All" or "DTS" and use the digital input jacks (OPTICAL or COAXIAL) to connect the DTS source.
- If you play a CD or LD that supports DTS when the "All" setting is selected, you may hear a noise for a short while until the DTS decoder recognizes the DTS-encoded signal and starts operating. This is not a malfunction.
- If you press the "pause" or "skip" button on the player while playing a DTS source, a short noise may be heard. This is not a malfunction. In such cases, try playing the source in the "DTS" selected.
- The DTS indicator on this unit lights while a DTS source is played. When playback finishes and the DTS signal transmission stops, this unit remains in DTS mode and the DTS indicator remains lit. This prevents noise when you operate the "pause" or "skip" button on the player. Therefore, if the source is immediately switched from DTS to PCM, the PCM signal may not be played. In this case, stop the playback of the source on the player for about three seconds and then resume playback.
- You may not be able to play some DTS source signals from certain CD players and LD players even if you connect the player to this unit digitally. This is because the digital signal has been processed (such as the output level, sampling frequency, or frequency response) and this unit cannot recognize the signal as DTS data. Therefore you may hear noise when you play a DTS source while processing the signal.
- The outputs for the VIDEO 1 OUT, VIDEO 2 OUT, TAPE 1 OUT, and TAPE 2 OUT output analog audio signals. Do not record from CDs or LDs that support DTS using these outputs. If you do, the DTS-encoded signal will be recorded as noise.

2-4. Listening Mode Preset sub-menu

With the this unit, you can set a different listening mode for each different signal format that comes from each input source and also set the parameters for the listening mode itself. For example, if your DVD player also plays compact discs and the DVD video signal is DTS and the compact disc signal is PCM, then you can set a different listening mode for each.

This is especially convenient if you frequently play the same types of movies or music.

Note that some listening modes cannot be set for some input sources. In addition, if "multi channel" is set for the input source selected, then the listening mode cannot be set. Also, if the "----" is set for the Digital Input setting in the Digital Setup sub-menu, then you can only select "Analog/PCM."



5.1-channel digital surround format

The 5.1-channel digital surround format has a variety of versions including Dolby Digital, DTS, and MPEG Multichannel. The 5.1-channel digital surround format enables you to individually record and play five full-range (20Hz-20kHz) channels (left and right front, center, two surround channels) plus an LFE channel (Low Frequency Effect) for the low-range effect sound. It will create a realistic sound that could be heard in the theaters and concert halls.

Input Setup

Relationship between input source and listening mode

Listening modes marked with the "●" can be selected. For columns that list a number of listening modes, the display will correspond to the format of the signal from the source media.

Input source signal (display)	a. Analog/PCM	b. PCM fs > 48k	c. PCM fs = 192k	d. Dolby D (Dolby Digital)	e. DTS
Type software	Tape, CD Record, Tuner	Audio DVD Video DVD	Audio DVD	Video DVD, LD	CD, LD Video DVD
Listening mode					
Mono	●				
Direct	●	●	●		
Stereo	●	●	●	●	●*
T-D (Theater-Dimensional)	●			●	●
Dolby Digital				●	
Dolby EX				Dolby Digital EX	
DTS					DTS DTS-ES Matrix 6.1 DTS-ES Discrete 6.1 DTS 96/24
MPEG (MPEG Multichannel)					
Dolby Pro Logic II DTS Neo:6	PL II Movie PL II Music DTS Neo:6 Cinema DTS Neo:6 Music	PL II Movie PL II Music			
THX (THX Cinema)	THX (THX Cinema)			THX (THX Cinema) THX Surround EX THX Ultra2 Cinema THX MusicMode	THX (THX Cinema) THX Ultra2 Cinema THX MusicMode
Mono Movie	●				
Enhanced 7	●			●	●
Orchestra	●			●	●
Unplugged	●			●	●
Studio-Mix	●			●	●
TV Logic	●			●	●
All Ch Stereo	●				

Input source signal (display)	f. MPEG Multi	g. D.F.2ch (Digital Format 2ch)	h. D.F.Mono (Digital Format Mono)
Type software	Video DVD	Video DVD LD	Video DVD LD
Listening mode			
Mono		●	●
Direct			
Stereo	●	●*	
T-D (Theater-Dimensional)	●	●	
Dolby Digital			
Dolby EX	Dolby EX		
DTS			
MPEG (MPEG Multichannel)	●		
Dolby Pro Logic II DTS Neo:6		●	
THX (THX Cinema)	THX (THX Cinema) THX Surround EX THX Ultra2 Cinema THX MusicMode	THX (THX Cinema)	
Mono Movie		●	●
Enhanced 7	●	●	
Orchestra	●	●	
Unplugged	●	●	
Studio-Mix	●	●	
TV Logic	●	●	
All Ch Stereo		●	

* When playing sources recorded in DTS 96/24 format, "DTS 96/24 Stereo" is displayed.

Input Setup

Input source signals

a. Analog/PCM

Analog sources consist of LP records, FM and AM broadcasts, cassette tapes, and the such. PCM (Pulse Code Modulation) is one form of digital audio signals and is recorded directly onto compact discs and DVDs without compression.

b. PCM fs > 48 k

Digital PCM sources that are recorded at a sampling rate of greater than 48 kilohertz. This includes DVDs that are recorded with high quality audio.

c. PCM fs = 192 k

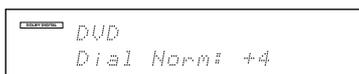
Digital PCM sources that are recorded at a sampling rate of 192 kilohertz. This includes DVDs that are recorded with extremely high quality audio.

d. Dolby D (Dolby Digital)

Digital data with AC-3 compression and a maximum of 5.1-channel surround sound. This source signal comes from DVDs and LDs that have the  mark and therefore recorded for 5.1-channel output.

Dial norm

Dialogue Normalization (Dial Norm) is feature of Dolby Digital. When playing back software that has been encoded in Dolby Digital, sometimes you may see a brief message in the front panel display that read Dial Norm xdB ("x" being a numeric value). Dialogue Normalization serves to let you know if the source material has been recorded at a higher or lower level than usual. For example, if you see the message "Dial Norm: +4" in the front panel display, to keep the overall output level constant just turn down the volume control by 4 dB. In other words, the source material that you are listening to has been recorded 4 dB louder than usual. If you do not see a message, then no adjustment of the volume control is necessary.



e. DTS

DTS (Digital Theater System) is compressed digital data with a maximum 6.1-channel surround output that allows for an extremely high-quality sound. This source signal requires a DVD player that supports DTS output and comes from DVDs, compact discs, and LDs that have the  mark.

f. MPEG Multi

Digital data with a maximum of 5.1-channel surround audio with MPEG compression. This source signal comes from DVDs that have the  mark.

g. D.F. 2 ch (Digital Format 2 channel)

2 channel digital signal (except for PCM) such as Dolby Digital. DVD or LD in which the 2 channel sound are recorded may be this type of input signal.

h. D.F. Mono (Digital Format Monaural)

Monaural digital signal (except for PCM) such as Dolby Digital. DVD or LD in which the monaural sound are recorded may be this type of input signal.

Listening Modes

Mono

This mode is for playing old movies whose sound is recorded in monaural or playing left and right channels separately in the movies which contains the different language signals recorded into individual channels. This mode also allows you to listen to the multiplexed soundtracks on DVDs, and other media that have them.

Direct

This mode delivers pure sound with minimum sound quality adjustment and filtration. The sound recorded for the right and left front channels is output to the right and left front speakers only and not output to the subwoofer.

Stereo

This mode has all input sound is output from the left and right front speakers. Subwoofer also can be used for playback.

T-D (Theater-Dimensional)

For the best enjoyment of your home theater, it is recommended that you have at least front left and right speakers, a center speaker, and surround left and right speakers. However, if you only have front left and right speakers, you can enjoy multichannel audio by using this mode.

This mode controls the characteristics of the sound that reaches each ear to reproduce a multi-speaker setup. To receive the full effect, there is an optimum listening position (sweet spot). Refer to the explanation of the listening angle. In addition, if the reflective sound components are large, it may be difficult to achieve the desired result, so be sure to set up your system and listening position to minimize reflective sound.

Dolby D (Dolby Digital)

The Dolby D mode is used to play Dolby Digital sources.

- **Dolby Digital EX**
Enabled when playing back sources with surround tracks that were encoded using the Surround EX technology.
- **Dolby EX**
Select to achieve the same effects as Dolby Digital EX encoded sources with non-Dolby Digital sources.

DTS

The DTS mode is used to play DTS sources.

- **DTS 96/24**
Automatically changes to this mode when playing back sources with surround tracks that were encoded using the DTS 96/24 technology.
- **DTS-ES Discrete 6.1**
With the addition of the surround back channel, this new format has all 6.1 channels recorded independently for a completely digital format. Since all channels are recorded independently, high-fidelity surround playback with the increased feeling of a separated sound space is achieved.
- **DTS-ES Matrix 6.1**
This format has the surround back channel matrix encoded and inserted into the left and right surround channels so that at playback the output for the left, right, and back surround channels are decoded using a high-precision matrix decoder.

MPEG Multi (MPEG Multichannel)

Used for playing MPEG multi channel source.

Input Setup

THX

This mode is for playing back sources using THX. For excellent fidelity when playing back THX sounds, it is recommended to use a THX-certified speaker system.

- **THX Cinema**

This is the conventional 5.1-channel THX format. This mode should be used only when playing back sources that were mixed for playback in large movie theater environments.

- **THX Surround EX**

"THX Surround EX - Dolby Digital Surround EX" is a joint development of Dolby Laboratories and the THX division of Lucasfilm Ltd.

In a movie theater, film soundtracks that have been encoded with Dolby Digital Surround EX technology are able to reproduce an extra channel which has been added during the mixing of the program. This channel, called Surround Back, places sounds behind the listener in addition to the currently available front left, front center, front right, surround right, surround left, and subwoofer channels.

This additional channel provides the opportunity for more detailed imaging behind the listener and brings more depth, spacious ambience, and sound localization than ever before.

In order to enjoy the full effects of the THX Surround EX technology at home, you must be using a receiver or controller with the appropriate certification logo and the receiver must be set to the THX Surround EX mode. This unit can play the 5.1 ch program in THX surround EX mode, even if the program is not encoded in Dolby Digital Surround EX format. For this kind of program, the sound from surround back channels depends on a program and may not fit to your taste.

- **THX Ultra2 Cinema**

When performing 7.1 ch playback of Dolby Digital, DTS, or other 5.1 ch movie sources, the surround components are analyzed and used to create surround back channels for the optimum ambient and directional surround sound. This provides a wider sound space to the sides and rear and a heightened feeling of the sound positioning.

- **THX MusicMode**

This is a new mode provided with THX Ultra2 and meant for the playback of music software sources. 5.1 ch multi-channel music sources are converted to 7.1 ch playback with a virtual rear sound from the surround speakers and surround back speakers. The rear sound space is created with the consistency and spaciousness optimum for music playback.

Pro Logic II

Previous Dolby Pro Logic records the 4 channel signals (left and right front, center, monaural surround) into 2 channels using matrix encoding and, in playback, decodes the 2 channel signal into 4 channels. However, Dolby Pro Logic II use the feedback logic circuits to decode matrix-encoded 2 channel signal (e.g. Dolby Surround) more precisely into original channels for 5.1 ch playback.

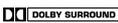
In Pro Logic II, you can choose the Movie mode for playing movies and the Music mode for playing music.

- **Pro Logic II Movie**

In this mode, conventional narrow band monaural surround channel is played as stereo with a realistic feel of movement.

- **Pro Logic II Music**

In this mode, surround channels will produce natural sound space from 2 channel music.

The Movie mode can be used for playing the VHS or DVD video with  mark or certain TV programs. The Music mode can be used for playing music in stereo from CD and other sources.

DTS Neo:6

This mode is for 6.1 channel playback of 2 channel sources such as PCM or analog sources. All 6 channel outputs are wide frequency range with a great separation between the different channels.

This mode can be set to the Cinema mode designed for playing movies and the Music mode designed for listening to music.

- **DTS Neo:6 Cinema**

This mode is good for movies. Reproduced surround sound makes realistic feel of movement as 6.1 channel sources. This mode can be used with VHS and television programs with stereo sound.

- **DTS Neo:6 Music**

This mode uses the surround channels to provide a natural sound space that cannot be provided with normal stereo output. This mode can be used with music compact discs and other stereo sources.

Mono Movie

This mode is suitable for playing back monaural recording such as old movie soundtracks. The center channel delivers the unprocessed original sound, whereas the other channels deliver the center-channel sound processed with the appropriate reverberation. This allows you to enjoy monaural sound with the atmosphere of a movie theater.

Enhanced 7

Enhanced 7 intends to reproduce a natural surround environment by using 7-channel speakers. The sound effects moving smoothly toward the surround back. This mode is good for music and TV sports programs.

Orchestra

This mode is appropriate for classical and opera music. The center channel is cut and the surround channels are emphasized to widen the stereo image. It will simulate the natural reverberation that is created in large halls.

Unplugged

This mode is suitable for acoustical instrumental sounds, vocals, and jazz music. By emphasizing the front stereo image, it will simulate the acoustics that you would experience in front of the stage.

Studio-Mix

This mode is for rock and popular music. The lively sounds are enhanced for a powerful acoustic image that simulates the feeling of being in a club or rock concert.

TV Logic

This mode gives realistic acoustics to TV programs that are aired from TV studios. It enhances the entire surround sound and clarity of the conversation.

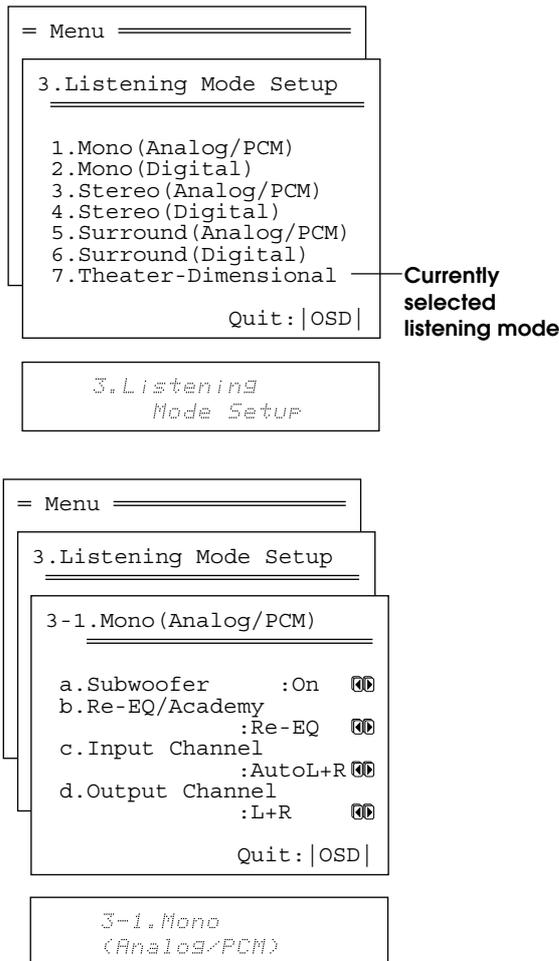
All Ch Stereo

This mode is designed for playing background music. The front, surround, and surround back channels create a stereo image that encompasses the entire area.

Listening Mode Setup

3. Listening Mode Setup menu

This menu allows you to make fine adjustments to the listening modes you have set for each input source with the Listening Mode Preset sub-menu. These adjustments are in the form of parameters and each one is explained below. Note that some parameters cannot be set for some listening modes and that no sub-menu will have all parameters. Also, for some input signal formats, changes in the listening mode parameters may actually result in no change to the resulting output signal.



3-1. Mono (Analog/PCM) Setup

Select this to modify the Mono listening mode when the current source is analog or PCM. The parameters that can be set are shown in the table below.

	Parameter	Setting Initial value
a	Subwoofer	Off, On
b	Re-EQ/Academy	Off, Re-EQ, Academy
c	Input Channel	Auto L+R, Left, Right
d	Output Channel	L+R, Center

3-2. Mono (Digital) Setup

Select this to modify the Mono listening mode when the current source is digital. The parameters that can be set are shown in the table below.

	Parameter	Setting Initial value
a	Subwoofer	Off, On
b	Re-EQ/Academy	Off, Re-EQ, Academy
c	Input Channel	Auto L+R, Left, Right
d	Output Channel	L+R, Center

3-3. Stereo (Analog/PCM) Setup

Select this to modify the Stereo listening mode when the current source is analog or PCM. The parameters that can be set are shown in the table below.

	Parameter	Setting Initial value
a	Subwoofer	Off, On
b	Re-EQ/Academy	Off, Re-EQ, Academy
c	Upsampling	Off, On

3-4. Stereo (Digital) Setup

Select this to modify the Stereo listening mode when the current source is digital. The parameters that can be set are shown in the table below.

	Parameter	Setting Initial value
a	Subwoofer	Off, On
b	Re-EQ/Academy	Off, Re-EQ, Academy

3-5. Surround (Analog/PCM) Setup

Select this to modify the Pro Logic II or DTS Neo:6 mode when the current source is analog or PCM. The parameters that can be set are shown in the table below.

	Parameter	Setting Initial value
a	Subwoofer	Off, On
b	Re-EQ	On, Off
c	Surround Speakers	Surround L/R, Surround Back, Surround L/R+Back
d	Upsampling*	Off, On
e	Surround Mode	PL II Movie, PL II Music, DTS Neo:6 Cinema, DTS Neo:6 Music
f	PL II Music Panorama	Off, On
g	PL II Music Dimension	0, 1, 2, 3, 4, 5
h	PL II Music Center Width	0, 1, 2, 3, 4, 5
i	Neo:6 Music Center Image	0, 1, 2, 3, 4, 5

* When Upsampling is set to "On," DTS Neo:6 cannot be selected.

Listening Mode Setup

3-6. Surround (Digital) Setup

Select this to modify the Dolby D, DTS, MPEG Multi and Pro Logic II listening modes when the current source is digital. The parameters that can be set are shown in the table below.

	Parameter	Setting Initial value
a Subwoofer	Off, On	On
b Re-EQ	Off, On	Off
c Surround Speakers	Surround L/R, Surround Back, Surround L/R+Back	Surround L/R
d Dolby Digital EX (Dolby D)	Auto, On, Off	Auto
e Dolby EX (Others)	Off, On	Off
f DTS-ES	Auto, On, Off	Auto
g Surround Mode (2ch)	PL II Movie, PL II Music	PL II Movie
h PL II Music Panorama	Off, On	Off
i PL II Music Dimension	0, 1, 2, 3, 4, 5, 6	3
j PL II Music Center Width	0, 1, 2, 3, 4, 5	3

3-7. THX Setup

Select this to modify the THX listening modes; the one that is currently set is the one that is modified. The parameters that can be set are shown in the table below.

	Parameter	Setting Initial value
a Subwoofer	Off, On	On
b Re-EQ	Off, On	On*
c Surround Speakers	Surround L/R, Surround Back, Surround L/R+Back	Surround L/R
d THX Surround EX	Auto, Manual	Auto
e THX Mode	Ultra2 Cinema, Music Mode, Surround EX (DTS-ES Mtrx6.1+THX), Cinema	Ultra2 Cinema
f Decoder (Analog/PCM)	PL II Movie, DTS Neo:6 Cinema	PL II Movie

* When the unit is turned on, the parameter returns to "On."

3-7. Theater-Dimensional Setup

Select this to modify the Theater-Dimensional (T-D) listening modes. The parameters that can be set are shown in the table below.

	Parameter	Setting Initial value
a Subwoofer	Off, On	On
b Listening Angle	20deg, 40deg	20deg
c Center	Off, On	Off
d Front Expander	Off, On	On
e Virtual Surr Level	-3dB to +3dB	0dB
f Dialog Enhance	Off, On	Off

3-7. Enhanced 7 Setup

Select this to modify the Enhanced 7 listening mode. The parameters that can be set are shown in the table below.

	Parameter	Setting Initial value
a Subwoofer	Off, On	On
b Re-EQ	Off, On	Off
c Front Effect	Off, On	On
d Reflect Level	-5dB to +5dB	0dB
e Reverb Level	-5dB to +5dB	0dB
f Room Size	Small, Mid-small, Middle, Mid-large, Large	Middle

3-7. Orchestra Setup, Unplugged Setup, Studio-Mix Setup, TV Logic Setup

Select this to modify the Orchestra, Unplugged, Studio-Mix, and TV Logic listening modes; the one that is currently set is the one that is modified. The parameters that can be set are shown in the table below.

	Parameter	Setting Initial value
a Subwoofer	Off, On	On
b Re-EQ	Off, On	Off
c Surround Speakers	Surround L/R, Surround Back, Surround L/R+Back	Surround L/R
d Front Effect	Off, On	On
e Reflect Level	-5dB to +5dB	0dB
f Reverb Level	-5dB to +5dB	0dB
g Room Size	Small, Mid-small, Middle, Mid-large, Large	Middle

3-7. All Ch Stereo Setup

Select this to modify the All Ch Stereo listening mode. The parameters that can be set are shown in the table below.

	Parameter	Setting Initial value
a Subwoofer	Off, On	On
b Re-EQ	Off, On	Off

3-7. Mono Movie Setup

Select this to modify the Mono Movie listening mode. The parameters that can be set are shown in the table below.

	Parameter	Setting Initial value
a Subwoofer	Off, On	On
b Re-EQ/Academy	Off, Re-EQ, Academy	Off
c Surround Speakers	Surround L/R, Surround Back, Surround L/R+Back	Surround L/R
d Front Effect	Off, On	On
e Reflect Level	-5dB to +5dB	0dB
f Reverb Level	-5dB to +5dB	0dB
g Room Size	Small, Mid-small, Middle, Mid-large, Large	Middle

Listening Mode Setup

Description listening mode parameters

Subwoofer

Set this to "Off" if you are not using a subwoofer (even if one is connected). If "No" is selected for the Subwoofer setting in the Speaker Config sub-menu, then this setting will not appear.

Re-EQ/Academy

Depending on the listening mode, you can either turn Re-EQ on or off, or you can select "Re-EQ," "Academy," or "Off."

Re-EQ: Re-EQ (re-equalization) takes the edginess or "brightness" out of your home cinema sound to compensate for the fact that sound mixed for theaters may sound too bright when played back through speakers in the home environment.

Academy: Older monaural film mixes relied on high-frequency rolloff in presentation to sound properly balanced, so that excessive hiss from the grain structure of the film would not be heard. The high-frequency loss was typically due to a combination of optical slit loss, electrical filters, loudspeaker response, and screen loss. Some films have been transferred to video without such a high-frequency rolloff, and thus sound overly bright and hissy. This unit includes this "Academy filter," which is based on contemporary playback practices for such films over wide-range systems.

On: Select to turn on the Re-EQ.

Off: Select to turn off both the Re-EQ and Academy filters.

Input Channel

This allows you to set which input channel to use for monaural sound.

Auto L+R: Select this under normal circumstances.

When the input source is center channel only, this channel is used for monaural sound input channel. Otherwise, left and right channels are mixed and the mixed signal is used for monaural sound input channel.

Left/Right: You will need to select either left or right when playing a video source that contains bilingual data. In such a case, the left and right channels will contain different language. Select the channel with the language you desire.

Output Channel

This allows you to set which output channel to use for monaural sound. If "None" is selected for the Center Speaker setting in the Speaker Config sub-menu, then this setting will not appear.

Auto L+R: The monaural sound is split between the left and right channels.

Center: The monaural sound is output from the front center channel.

Surround Speakers

This setting allows you to decide through which speakers to output the sound meant for the surround speakers during 5.1-channel output when seven speakers are connected to this unit.

Note:

If you have two surround back speakers placed very close together and you select "Surround Back" or "Surr L/R+Back," then you may not achieve the desired left-right separation of the sound space. In this case, "Surround L+R" is recommended.

Surround L/R: This outputs the sound to the surround left and right speakers as normal and outputs nothing to the surround back left and right speakers.

Surround Back: This outputs the sound to the surround back left and right speakers and outputs nothing to the surround left and right speakers.

Sur L/R+Back: This outputs the sound to both the surround left and right speakers and the surround back left and right speakers.

Upsampling

Upsampling processes the input digital signal or the converted digital signal from analog input source and converts their digital sampling frequency to twice the current frequency for an even further detailed sound reproduction. This can be set to either "On" or "Off."

Surround Mode

Selects the Surround Mode for analog or PCM source. Available options are PL II Movie (Pro Logic II Movie), PL II Music (Pro Logic II Music), DTS Neo:6 Cinema, and DTS Neo:6 Music.

You can change the Surround Mode settings easily using the remote controller. When you set the listening mode to Pro Logic II or DTS Neo:6, each press of the SURROUND button on the remote controller cyclically changes the Surround mode in the order of PL II Movie, PL II Music, DTS Neo:6 Cinema, and DTS Neo:6 Music.

Surround Mode (2ch)

Selects the Surround Mode for 2 ch digital source (except for PCM). Available options are PL II Movie and PL II Music. You cannot select Neo:6 Cinema and Neo:6 Music.

Pro Logic II Music Panorama

Use this listening mode to expand sound space in front of a listener to both side of the listener.

On: Turns on the PL II Music Panorama mode.

Off: Turns off the PL II Music Panorama mode.

Pro Logic II Music Dimension

Use this listening mode to modify the sound space location forward or backward.

The setting of "3" is the normal position and setting to "2" or lower moves the sound space forward and setting to "4" or higher move the sound space backward.

If the stereo recording has excessive broadness or too strong surroundness, move the sound space forward to get the appropriate sound balance. In contrast, if the stereo recording is somewhat felt like monaural or has narrowness, move the sound space backward to get more surroundness.

Pro Logic II Music Center Width

In Pro Logic II decoding, outstanding center signal will be output only from center speaker. When the center speaker is not used, the decoder divide the center signal equally to each front left and right speakers to create "phantom" center sound image.

The Pro Logic II Music Center Width mode allows you to adjust where the center sound image is heard from. Depending on your setting, the center sound image will be heard from center speaker only, front left and right speakers (as phantom center sound image), or all three speakers (center, front left and right) in various level combinations. For home use, applying some "width" to center signal will improve the level balance for center and main speakers, and effect the width of the center sound image, or "mass" of the sound. Many of sound recordings processed for stereo playback will be reproduced better by controlling the parameter for this listening mode. The recommended setting for Pro Logic II Music mode is "3." This allows you to easily distinguish the Pro Logic II Music mode from the Pro Logic II Movie mode whose setting is automatically set to "0."

Listening Mode Setup

Neo:6 Music Center Image

DTS Neo:6 derives a center channel from two-channel PCM and analog sources.

In cinema mode, for Lt/Rt film soundtracks, sounds steered to the center are subtracted from the left and right channels.

In music mode, the intent in the front channels is less one of steering and more one of stabilizing the front image by augmenting it with a center channel, while preserving the original perspective of the stereo mix. Therefore the derived center is never fully subtracted from the left and right channels.

Center Image is the factor controlling the amount of subtraction. It varies between 0 and 5 in steps of 1 and the default value is 3.

When Center Image=5, the factor is zero and nothing is subtracted from the left and right channels. When Center Image=0, the center channel is subtracted from the left and right channels at half level (-6 dB) for each channel. The signal level sent to the center channel output is not affected by Center Image.

This control should be set based on room layout and personal preferences. A setting of 5 allows the left and right channels to pass through unaltered from the stereo mix. A setting of 0 gives more center channel dominance, which is particularly desirable if listeners are located well off-center. At any setting, the center speaker anchors the image.

Center Image is only enabled when the listening mode is DTS Neo:6 Music.

Dolby Digital EX (Dolby D)

If you have surround back speakers connected, use this setting to select whether or not you will use Dolby EX playback.

Auto: When the source has an EX flag (ID signal for Surround EX), the playback is automatically changed to Dolby Digital EX. If the source has no EX flag, the playback is changed to Dolby Digital.

On: The playback is set to Dolby Digital EX.

Off: The playback is set to normal Dolby Digital.

If your surround channel is monaural or you do not have a surround channel, then the playback will be normal Dolby Digital regardless of the above setting.

You can change the Dolby Digital EX mode settings easily using the remote controller. While playing a Dolby Digital source, after selecting Dolby D for listening mode, each press of the SURROUND button on the remote controller cyclically changes the Dolby Digital EX mode in the order of "Auto," "On," and "Off."

Dolby EX (Others)

If you have surround back speakers connected, use this setting to select whether or not you will use Dolby EX playback for MPEG multi-channel sources.

On: For playback of MPEG multi-channel sources with Dolby EX effects added.

Off: For normal playback of MPEG multi-channel sources.

You can change the Dolby EX mode settings easily using the remote controller. While playing a MPEG Multichannel source, after selecting Dolby EX for listening mode, each press of the SURROUND button on the remote controller cyclically changes the Dolby EX mode in the order of "On," or "Off."

DTS-ES

Selects DTS-ES mode.

Auto: When the DTS source has the DTS-ES flag (ID signal for DTS-ES), the listening mode is automatically changed to DTS-ES Discrete 6.1 or DTS-ES Matrix 6.1. If the DTS source has no DTS-ES flag, the mode is changed to DTS 5.1.

On: When the DTS source has the DTS-ES flag, the listening mode is automatically changed to DTS-ES Discrete 6.1 or DTS-ES Matrix 6.1. If the DTS source has no DTS-ES flag, the mode is forced to be DTS-ES Matrix 6.1.

Off: Even when the DTS source has the DTS-ES flag, the DTS-ES listening modes are not used. The DTS sources are always played in DTS 5.1 mode.

You can change the DTS-ES mode settings easily using the remote controller. While playing a DTS source, after selecting DTS for listening mode, each press of the SURROUND button on the remote controller cyclically changes the DTS-ES mode in the order of "Auto," "On," and "Off."

THX Surround EX

Selects THX Surround EX mode when the input signal is Dolby Digital.

Auto: When the Dolby Digital source has the EX flag (ID signal for Surround EX), the listening mode is automatically changed to THX Surround EX mode. When the Dolby Digital source has no flag, the mode for the THX Mode setting below is used. Also, if a DTS source with a DTS-ES flag (ID signal for DTS-ES) is being played, THX Cinema effects for that DTS-ES playback format will be added.

Manual: Even when the source has the EX flag, the mode for the THX Mode setting below is used.

THX Mode

Selects THX mode.

Ultra2 Cinema: Playback is set to THX Ultra2 Cinema.

MusicMode: Playback is set to THX MusicMode.

Surround EX or DTS-ES Mtrx6.1+THX: Playback is set to THX Surround EX. For DTS sources, the playback is DTS-ES Discrete 6.1 or DTS-ES Matrix 6.1 according to the EX flag.

Cinema: Playback is set to THX Cinema.

These settings can be changed easily using the remote controller (unless THX Surround EX setting is Auto and the playback source has an EX or ES flag). With THX mode set for the listening mode, press the THX button on the remote controller to cycle the mode from Ultra2 Cinema → MusicMode → Surround EX (for DTS sources: DTS-ES Mtrx 6.1+THX) → Cinema → and back.

Decoder (Analog/PCM)

Select the decoding mode before the THX processing.

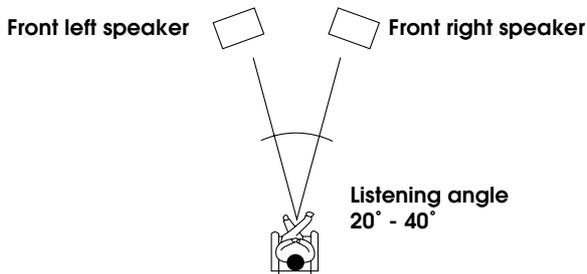
PL II Movie: Decodes Dolby Pro Logic II Movie.

DTS Neo:6 Cinema: Decodes DTS Neo:6 Cinema.

Listening Mode Setup

Listening angle

The listening angle is the angle subtended by the front left and right speakers as seen from the listener. The setting of 20 and 40 degrees are only for nominal purposes, so select the setting that is closest to your actual listening angle.



Reverb Lvl (Level)

This parameter allows you to adjust the depth of acoustic reverberation to match the playback source material, the acoustics of your room, and such other factors. This can be set between -5 and +5 decibels in 1-decibel increments.

Room Size

This parameter allows you to set virtual hall size to simulate for each surround mode. You can choose from "Large," "Mid-Large," "Middle," "Mid-Small," or "Small."

Center

For systems that have a center speaker, the center channel signal can be output from the center speaker. For instance, in systems where the front left and right speakers are small, use of the center speaker may provide a better sound space. (If your system uses a center speaker, be sure to perform the level calibration with the left and right speakers in the Speaker Setup menu beforehand.)

On: The center channel signal is output to the center speaker.

Off: The center channel signal is output from the front left and right speakers (Phantom Center).

Front Expander

The front expander function spreads out the sound from the front speakers for the feeling of a wide sound space.

On: Select to turn on the front expander function to simulate a wider sound space.

Off: Select to turn off the front expander function for a normal sound space.

Virtual Surr Lvl (Level)

This parameter adjusts the virtual surround level. This can be set from -3 to +3 decibels.

Dialog Enhance

This parameter allows you to adjust the dialog sound level from the center speaker if it is difficult to hear.

On: Enhances the vocal ranges for the center channel signal.

Off: Outputs the center channel signal at the regular level and frequency characteristics.

Front Effect

Some live recordings contain acoustic reverberation. When you play these sources, more reverberation will be applied by the DSP, creating too much reverb effects and the sound loses form or presence. In this case, set this setting to "Off." No reverberation from the DSP will be applied to the sound output from the three front channels, so the sound source is played as it is without any further reverberation.

Reflect Lvl (Level)

This parameter allows you to adjust the strength of direct sound reflections to match the playback source material, the acoustics of your room, and such other factors. This can be set between -5 and +5 decibels in 1-decibel increments.

Listening Mode Setup

Relationship between listening mode and parameter

Listening mode \ Parameter	Mono		Direct	Stereo		Theater Dimensional (T-D)	(Surround)	
	(Analog/PCM)	(Digital format monaural or 2ch)		(Analog/PCM)	(Digital) Dolby D DTS MPEG Multi		(Digital) Dolby D DTS MPEG Multi	(Analog/PCM) Pro Logic II DTS Neo:6
Subwoofer	●	●		●	●	●	●	●
Re-EQ (/Academy)	●	●		●	●		●	●
Input Channel	●	●						
Output Channel	●	●						
Surround Speakers							●	●
Upsampling				●				●
DTS-ES							●	
THX Surround EX (Dolby D)								
THX Surround EX (Others)								
Surround Mode								●
Surround Mode (2ch)							●	
PL II Music Panorama							●	●
PL II Music Dimention							●	●
PL II Music Center Width							●	●
Neo:6 Music Center Image								●
Front Effect								
Reflect Level								
Reverb Level								
Room Size								
Listening Angle						●		
Center						●		
Front Expander						●		
Virtual Surr Level						●		
Dialog Enhance						●		
Dolby Digital EX (Dolby D)							●	
Dolby Digital EX (Others)							●	
THX Movie								
Decoder (Analog/PCM)								

Listening mode \ Parameter	THX PL II THX	Mono Movie	Enhanced 7	Orchestra/ Unplugged/ Studio-Mix/ TV Logic/	All Ch Stereo
Subwoofer	●	●	●	●	●
Re-EQ (/Academy)	●	●	●	●	●
Input Channel					
Output Channel					
Surround Speakers	●	●		●	
Upsampling					
DTS-ES					
THX Surround EX (Dolby D)	●				
THX Surround EX (Others)	●				
Surround Mode					
Surround Mode (2ch)					
PL II Music Panorama					
PL II Music Dimention					
PL II Music Center Width					
Neo:6 Music Center Image					
Front Effect		●	●	●	
Reflect Level		●	●	●	
Reverb Level		●	●	●	
Room Size		●	●	●	
Listening Angle					
Center					
Front Expander					
Virtual Surr Level					
Dialog Enhance					
Dolby Digital EX (Dolby D)					
Dolby Digital EX (Others)					
THX Movie	●				
Decoder (Analog/PCM)	●				

