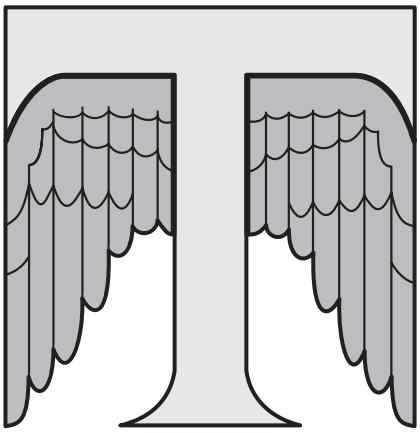
THETA DIGITAL

C O R P O R A T I O N



Casa Nova

Owner's Manual

Digital Done Right ™

PREFACE

CONGRATULATIONS

You have just acquired the most advanced component for the control and processing of audio and video ever to have been developed.

IMPORTANT

Save all packaging in a dry place away from fire hazards. Your Casa Nova is a precision electronic instrument and should be properly packaged any time shipment is made. In the unlikely event that you have to return your Casa Nova to the factory for service, or if you send it to us for updating, the original packaging will best protect the unit from shipping damage.

In order to achieve the fullest flexibility and enjoyment from your Casa Nova, we at Theta recommend that you read this manual in full before connecting the unit to your audio/video system.

WARNING

United Stated law prohibits disposition of these commodities to Libya, Laos, North Korea, Cambodia or Cuba unless otherwise authorized by the United States.

NOTE:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio and television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

* Reorient or relocate the receiving antenna.
* Increase the separation between equipment and receiver.
* Connect the receiver into an outlet on a circuit different from that which the Casa Nova is connected to.

Acknowledgments

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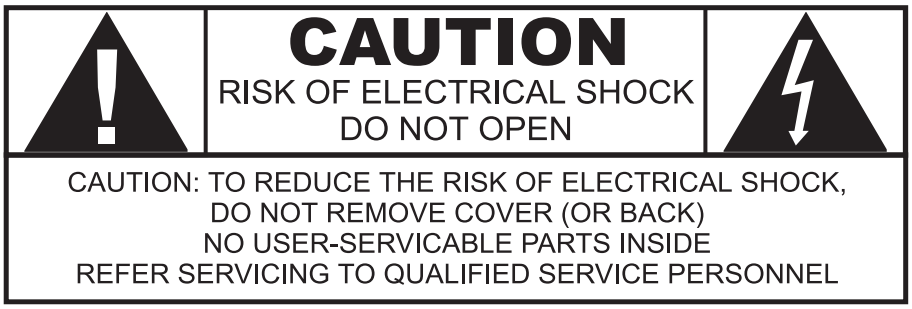
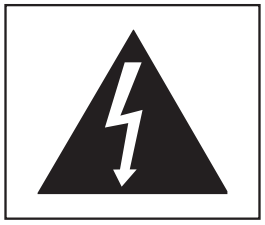
Portions of this product manufactured under a license from Desper Products, Inc. Spatializer®, N-2-2®, and the circle-in-square device are trademarks owned by Desper Products, Inc.

This manual is also available for download as a PDF file at Theta Digital’s website. http://www.thetadigital.com





The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of significant magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

WARNING

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK,
DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE

CAUTION: TO PREVENT ELECTRIC SHOCK, DO NOT USE THE (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

Casa Nova Identification Record

This information is for your records and for future identification of the Casa Nova. Please take a moment to fill out all pertinent data now, and as upgrades and/or options are installed. **Whenever upgrades, inquiries and/or changes are requested, the serial number will be required.**

SERIAL NUMBER _____

DATE PURCHASED _____

DEALER'S NAME _____

DEALER'S ADDRESS/PHONE _____

INSTALLED CARDS/OPTIONS _____
(Date of installation)

_____
(Date of installation)

_____
(Date of installation)

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(Date of installation)

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(Date of installation)

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(Date of installation)

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(Date of installation)

SAFETY PRECAUTIONS

Please carefully read each item of the operating instructions and safety precautions before using this product. Use extra care to follow the warnings written on the product itself and/or in the operating instructions. Keep the operating instructions and safety precautions for future reference.

CAUTION: TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REMOVE ANY OF THE COVER PANELS.

NO USER-SERVICEABLE PARTS INSIDE. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL ONLY.

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT ALLOW LIQUIDS TO SPILL OR OBJECTS TO FALL INTO ANY OPENINGS OF THE PRODUCT.

THIS UNIT IS SUPPLIED WITH A 3 PIN GROUNDED AC PLUG. ALWAYS INSERT THE AC PLUG INTO A GROUNDED OUTLET. DO NOT REMOVE THE GROUND PIN OR DISABLE THE GROUND FOR ANY PURPOSE.

BEFORE MAKING ANY CONNECTIONS TO THE CASA NOVA, FIRST TURN OFF THE POWER AND THEN DISCONNECT THE AC POWER CORD.

WHEN INSTALLING THE CASA NOVA IN YOUR SYSTEM, MAKE CERTAIN TO ALLOW A MINIMUM OF ½ INCH OF VENTILATION ON EACH SIDE OF THE UNIT. ALSO ALLOW AT LEAST 1½ INCH OF VENTILATION SPACE ABOVE THE UNIT. IMPROPER VENTILATION OF THE UNIT MAY CAUSE OVERHEATING, WHICH MAY DAMAGE THE UNIT AND CAUSE A FIRE. PLACE THE UNIT ON A SOLID SURFACE ONLY. I.E. NOT ON CARPET, ETC.

DO NOT PLACE THE CASA NOVA NEAR HEAT SOURCES SUCH AS DIRECT SUNLIGHT, STOVES, HEAT REGISTERS, RADIATORS OR OTHER HEAT PRODUCING EQUIPMENT.

TO PREVENT DAMAGE TO THE ANALOG OUTPUT CIRCUITRY, BE CERTAIN NOT TO SHORT THE OUTPUT SIGNAL PIN(S) TO GROUND. ENSURE THAT YOUR AUDIO OUTPUT CABLES DO NOT HAVE ANY INTERNAL SHORTS BEFORE CONNECTING THEM TO THE CASA NOVA.

IF REPLACEMENT OF THE AC LINE FUSE BECOMES NECESSARY, REPLACE ONLY WITH SAME VALUE AND TYPE OF FUSE. NEVER BYPASS THE FUSE.

IF THE AC CORD BECOMES DAMAGED, DO NOT USE IT. IMMEDIATELY REPLACE IT WITH A NEW ONE OF THE SAME OR BETTER RATING.

AFTER MARKET and THIRD PARTY MODIFICATIONS

Please note that any after market and/or third party modifications will void the warranty. In the case of changing the feet on a unit, in order to prevent any damage (which will also not be covered under warranty), please verify that the screws being used to secure non Theta feet do not screw any deeper into the chassis than the original ones. The original screw is 10-32 by 3/8 and goes into the chassis 1/5 inch.

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INTRODUCTION

Welcome to a new world of possibilities. Casa Nova is by far the most advanced surround sound processor/home theater controller available today. It offers the advantages of Theta's legendary mastery in digital signal processing and sound quality unapproachable by any other equipment.

Getting to know your Casa Nova

Despite Casa Nova's great technical sophistication, we believe in making it as easy as possible for you to use. We think you'll enjoy the intuitive way the Casa Nova works. Rather than offer a frustrating bewilderment of little used functions in constant view, vying for your attention, Casa Nova is structured systematically by function.

The "user interface" is based on simple logic. For example, when a function button is pressed, you can make changes within its menu(s) and press the same function button again to exit that function. (The same button that got you in gets you back out).

This Casa Nova has been put through a rigorous and unique testing procedure that insures that it will last for many years with minimal service requirements. This procedure includes the following:

- All assembled circuit boards are given a thorough visual inspection and are then tested in a bench-reference Casa Nova.
- The tested assembled circuit boards are then installed in a new Casa Nova and the whole unit is tested for every function and parameter.
- The unit is put on a burn-in torture rack for 100 hours to test for any possible component failures.
- The Casa Nova is tested on an audio analyzer for all pertinent parameters.
- The Casa Nova is put through a final bench test wherein every possible feature, mode and parameter is checked.
- The unit has all remaining chassis components installed and then undergoes a complete visual inspection, which assures that all Casa Nova's meet visual specifications.
- The unit is then put through a critical listening test.

Burn In Time

This unit has a break in period of about 1 week during which continuous improvement in sound quality will be observed. It is recommended that music be played continuously through the unit during this time to expedite the break in period.

IMPORTANT NOTICE

I. Due to the computer-based circuitry used in Theta products, it is imperative that the Casa Nova be connected to a ground via its three wire AC power cord. It is important that the AC power outlet, which the Casa Nova is plugged into, is actually grounded. Failure to do so will severely compromise the performance, reliability and safety of use of the Casa Nova.

II. It is also important to prevent contact with static electricity when connecting other components and cables to the Casa Nova. When connecting cables, simply place one hand on top of the Casa Nova and then grasp the metal "barrel" of the cable with the other hand and plug (unplug) the cable into (from) the appropriate jack on the Casa Nova.

III. The Casa Nova, as with all electronic equipment, is susceptible to static discharges. Resetting the unit may be required if anomalies occur after receiving a static discharge. In this case, put the unit in standby and turn off the rear panel power switch for 2 minutes, then turn it on again.

IV. Ventilation is an important issue when placing the Casa Nova in a system. Make certain that the Casa Nova is placed in a well-ventilated area or rack unit.

V. Please take note that some powerline conditioners defeat the AC power ground on their outlets. If the intention is to plug the Casa Nova into a line conditioner, check with your dealer to make certain that the particular conditioner that is intended for use DOES NOT DEFEAT THE AC GROUND on its AC outlets.

VI. DO NOT remove any cover panels from the Casa Nova, as there are no user serviceable components inside. Refer servicing and updating to qualified service personnel only.

VII. Should the Casa Nova need to be reset, it must be put in standby first via the front panel power button. Then the rear panel power switch is to be turned off for at least 2 minutes to allow the video circuitry to reset.

VIII. The Casa Nova can be susceptible to excessive RF. Shorting plugs in all unused inputs will improve the sound quality and may reduce the susceptibility to RF induced anomalies.

Reference Manual Conventions

For clarity purposes, references to buttons, LED's and display parameters will be shown in bold capital letters.

All functions to be performed from, and in reference to the front panel of the Casa Nova will be found in the front section of this manual, whereas all functions to be performed using the hand held remote and/or viewed on a video monitor will be found in the back, or last part of this manual.

Glossary of Terms and Abbreviations

TERM	DEFINITION
AES/EBU (Audio Engineering Society) / (European Broadcasters Union)	A three wire balanced digital audio standard. This interface uses a 3-pin XLR type connector and allows for data communication between digital audio equipment.
Analog-to-Digital Converter	A device that converts analog signals into a digital format. Once encoded, all audio is stored or processed as a series of numbers rather than as the audio itself.
Balanced Audio Signals	Signals that are carried on three-conductor cables, with two of the conductors carrying the same signal 180° out of phase and the third as ground. Balanced connections usually cost more than unbalanced connections, but are less susceptible to picking up hum and prevent interference with low-level signals.
dB	Decibel, a relative unit of loudness.
Dolby 3 Stereo	The Dolby 3 Stereo mode reproduces sound using only the 3 front channels, and is intended to be used either before surround speakers are installed, or for programs that might benefit from deriving a center channel output, but where the quality of the surround output is unsatisfactory.
Digital-to-Analog Converter	A device that converts digital signals into an analog format.
Hz (Hertz)	A unit of frequency.
IR	Infrared. A method of wireless transmission of data.
LFE	Low Frequency Effect. Commonly a discrete audio track designated for a sub woofer.
mS	milliSecond, or 1\1000 of a second.
Oversampling	The process of taking more samples than is required in order to more accurately reconstruct a digitized signal for playback in the analog domain.
Phantom Center Mode	The Phantom setting for the center speaker redirects the center channel signal equally to the front left and right outputs, thus creating an illusion of a center speaker. This mode is intended to be used when no center speaker is present.
Phantom Surround Mode	The Phantom setting for the surround speakers is intended to be used when no surround speakers are present in the system. With this setting active, the surround information is added to the front channels. If the current mode is Dolby Pro Logic, the Casa Nova will automatically decode in Dolby 3 Stereo.
Sampling Rate	The rate at which an analog (real world) signal is converted into digital numeric values.
S/PDIF Interface (Sony/Phillips Digital Interface format)	A digital audio interconnection standard, developed jointly by Sony and Phillips.
TRS	Tip, Ring, Sleeve. Names of the 3 connecting elements of a stereo phono jack or plug.
Unbalanced Audio Signals (AKA single-ended)	Signals that are carried on two-conductor cables, one “hot”, or signal, and one ground.
Xover	Abbreviation for the word ‘Crossover’.

Table 1 - Glossary of Terms and Abbreviations

Casa Nova Block Diagram - Input Processing Sections

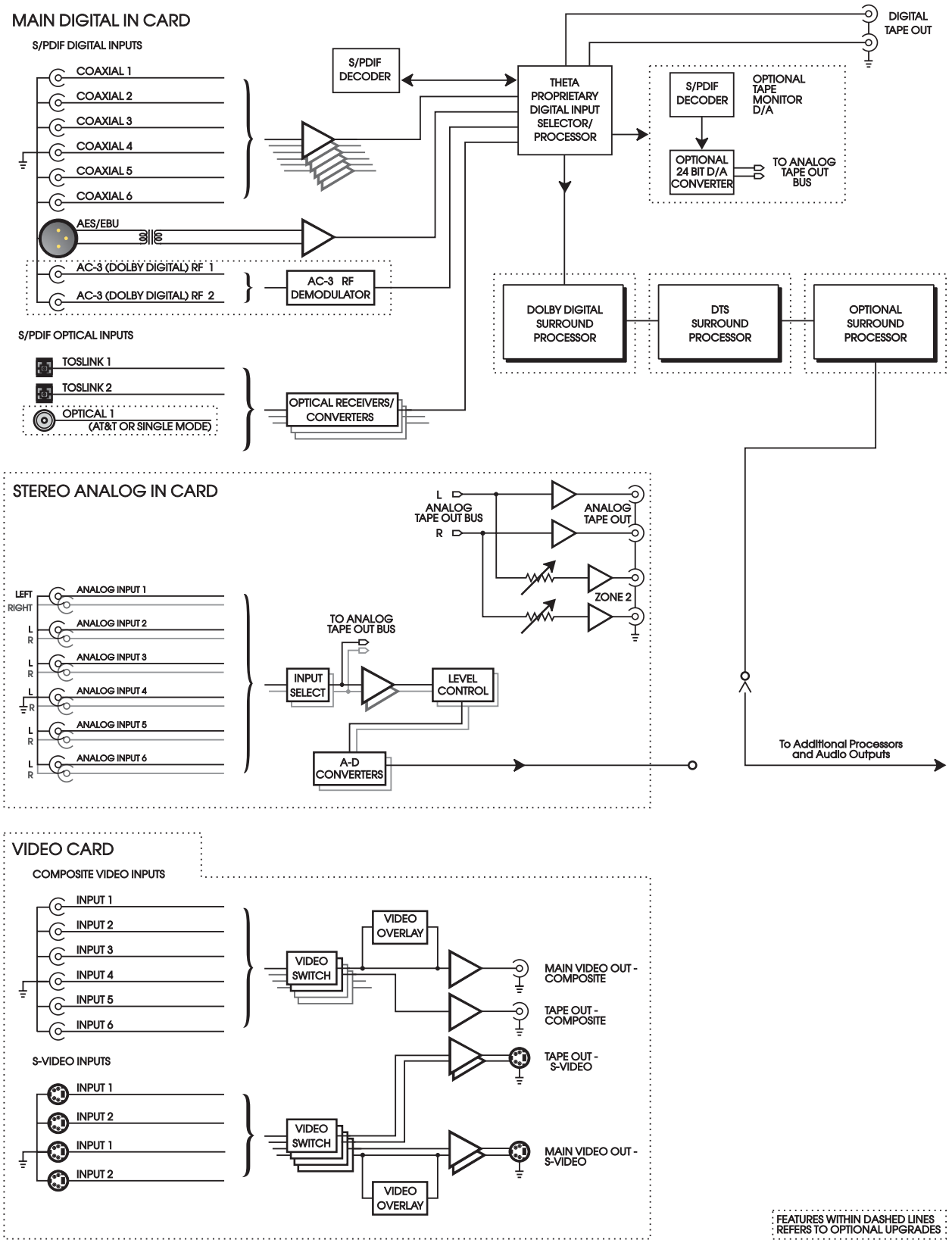
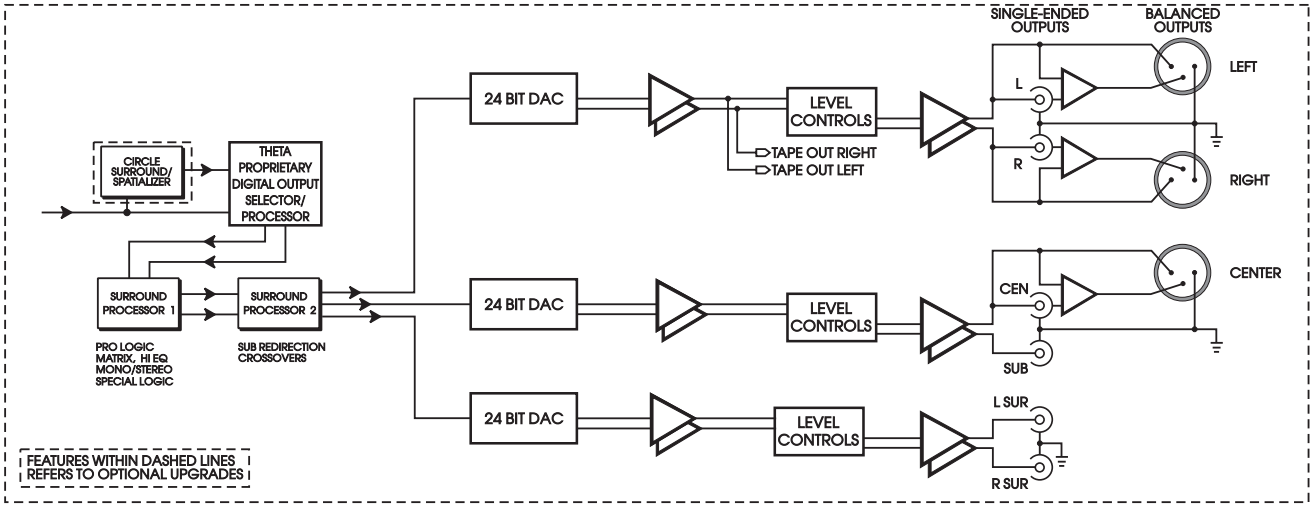


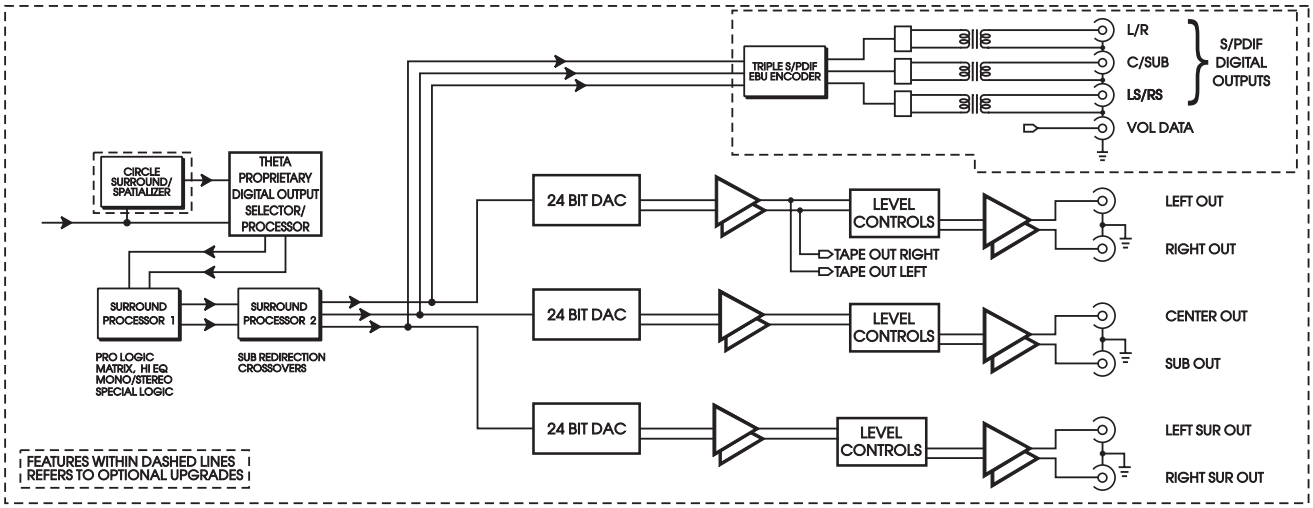
Figure 1 - Block Diagram of Input Processing Sections

Casa Nova Block Diagram - DAC and Analog Out Sections

6 Channel Single-Ended/3 Channel Balanced D/A Board



6 Channel Single-Ended D/A Board w/ Optional Digital Outputs



6 Channel Digital Output Board

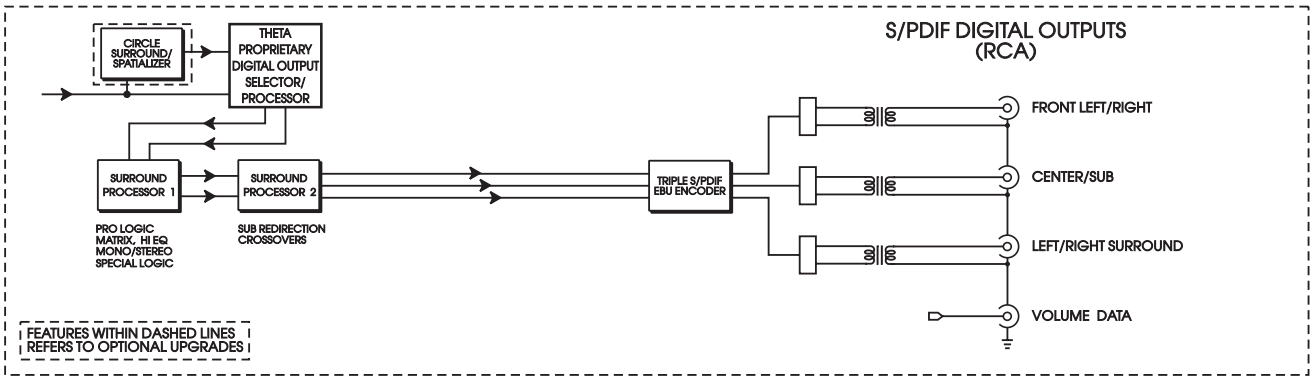


Figure 2 - Block Diagram of DAC and Analog Outputs

Front Panel Layout

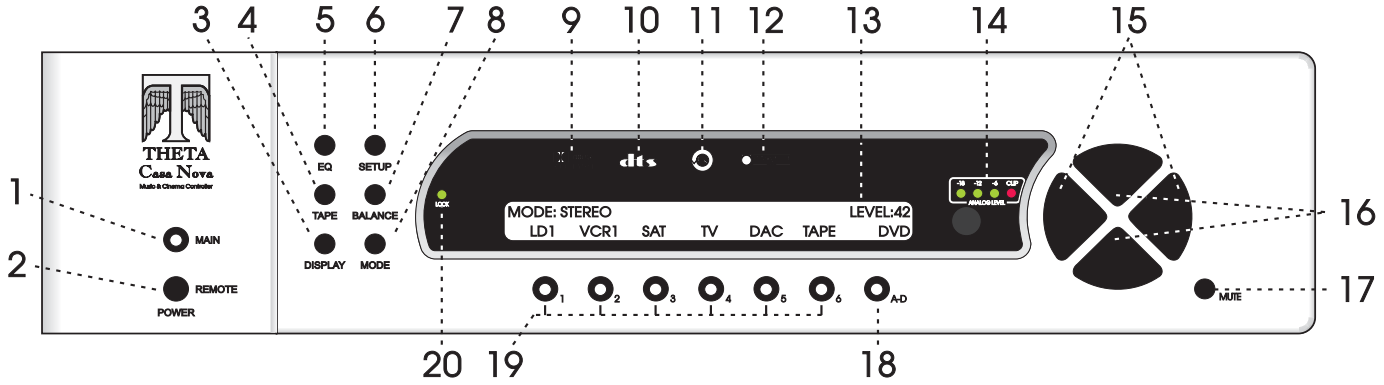


Figure 3 - Front Panel Layout

1. **MAIN** button. After the rear panel **MAIN POWER** switch is turned on press the front panel **MAIN** button to exit the standby mode. The LCD will display the last accessed **INPUT SELECT** page. Pressing this button again will place the Casa Nova into standby mode and the LED in the front panel **MAIN** button will light. Remote Power Jacks assigned to this button will activate.
2. **REMOTE** button. Activates/deactivates the **REMOTE POWER** jack(s) on the rear panel that are assigned to it.
3. **DISPLAY** button. Temporarily overrides the LCD brightness display setting in the **SETUP/INPUT** ***page 3*****/MISC** sub menu
4. **TAPE** button. Used for routing audio and video **INPUT** signals to the **TAPE OUT** and **ZONE 2** jacks.
5. **EQ** button. Accesses the optional EQ setup menu.
6. **SETUP** button. Used for setting speaker configurations/levels/delays, analog input levels, naming inputs, setting the display & remote power jack time-out delays, selecting between NTSC and PAL video sources, accessing additional surround parameters, and all other **SETUP** functions.
7. **BALANCE** button. Sets temporary balance and level configurations, shelf **EQ**, and analog input levels to compensate for different program characteristics.
8. **MODE** button. Activates the **MODE** select menus for the currently selected input.
9. **Dolby Digital** indicator. Lights when Dolby Digital is installed. It will go out when the display is turned off.
10. **DTS** indicator. Lights when the DTS feature is installed. It will go out when the display is turned off.
11. **Circle Surround** indicator. Lights when the Circle Surround feature is installed. It will go out when the display is turned off.
12. **Spatializer** indicator. Lights when the Spatializer feature is installed. It will go out when the display is turned off.
13. 40 character by 2 row amber back lit liquid crystal display (**LCD)**.
14. **ANALOG LEVEL** display. Shows input level, in **dB**, of currently selected analog input.
15. **LEVEL LEFT** and **RIGHT** buttons. Shifts audio balance to the left and right when the **BALANCE** function is selected, adjusts master volume within sub menus when **LEVEL UP/DOWN** are not available, used to toggle between the 2 Input Select pages, shifts to next character when naming input jacks and input select buttons.
16. **LEVEL UP** and **DOWN** buttons. Increases/decreases master volume. Also used to increment/decrement values in most edit modes.
17. **MUTE** button. Mutes/unmutes all audio outputs with the exception of the **TAPE OUT** and **ZONE 2** jacks.
18. **A-D** button. Sequences through input jacks mapped (assigned) to the active **INPUT SELECT** button.
19. Buttons **1** through **6.** Used to select the desired input on **INPUT SELECT** pages, or parameter to change when in a sub menu. The LED in the button lights when the button is pressed. These buttons are referred to as the **INPUT SELECT** buttons.
20. **LOCK** light. Lights when a digital source is detected on a selected input.

Rear Panel Layout

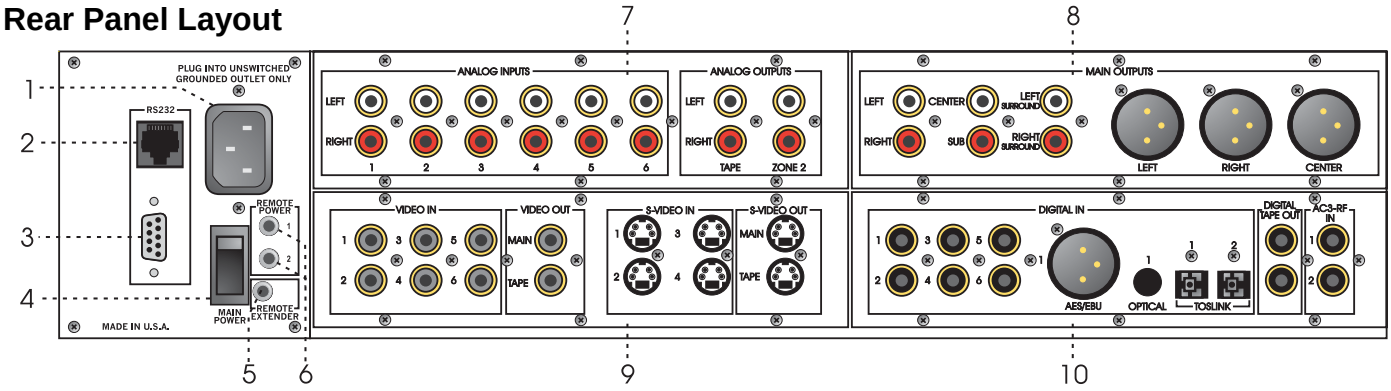


Figure 4 - Rear Panel Layout

1. **AC Power** connector: 3 wire, IEC 320 connector with an EMI filter.

2. RJ45 RS232 connector.

3. DB9 RS232 connector.

4. **Main Power Switch.** Master power switch. Disconnects AC to all circuits. It is recommended that this be left ON at all times during regular use with the exception of whenever cables are connected/disconnected or when the unit is not going to be used for an extended period of time.

5. **Remote Extender** jack. An externally mounted (remote) Infrared (IR) receiver plugs into this miniature stereo phone jack. Please refer to Appendix C for technical details.

6. **Remote Power 1** and **2** jacks. Programmable to be individually activated/deactivated when the **MAIN** and/or **REMOTE** buttons on the front panel or remote are pressed/pressed again. They can output a 12V pulse (variable duration) or 12VDC. The output trigger can be delayed up to 255 seconds.

7. **Analog Input** card. Six stereo RCA inputs are provided for any line level analog output device such as VCR's, laserdisc, CD and DAT players, phono preamplifiers, external D/A converters, tape decks, AM/FM tuners, etc. There is one pair of analog tape outs for recording purposes and one pair to route to another area (**Zone 2**). The **Zone 2** output level is controlled separately from the main analog output levels.

8. **Output** card (Balanced and single-ended). This configuration (Balanced analog outputs for Front Left/Right and Center, single-ended (RCA) analog output jacks for Front Left/Right, Center, Sub, Left & Right Surrounds) is the standard option for the output card. (Shown in figure 4, above). The optional Circle Surround, or Circle Surround/Spatializer card mounts on this board.

   As a different option for this board, it can be configured to have 6 single-ended (RCA) analog outputs (Front Left/Right, Center, Sub, Left & Right Surrounds) and 6 channels (3 digital pairs) of S/PDIF digital outputs along with a digital volume data output (RCA) to control the output levels of a Theta external volume control unit.

   Lastly, this card can be configured as a digital out board only, with S/PDIF digital outputs, for use with external D/A converters. A 2, 4 or 6 channel External Volume Control unit can be used to allow the Casa Nova to control the output volume of the external DACs.

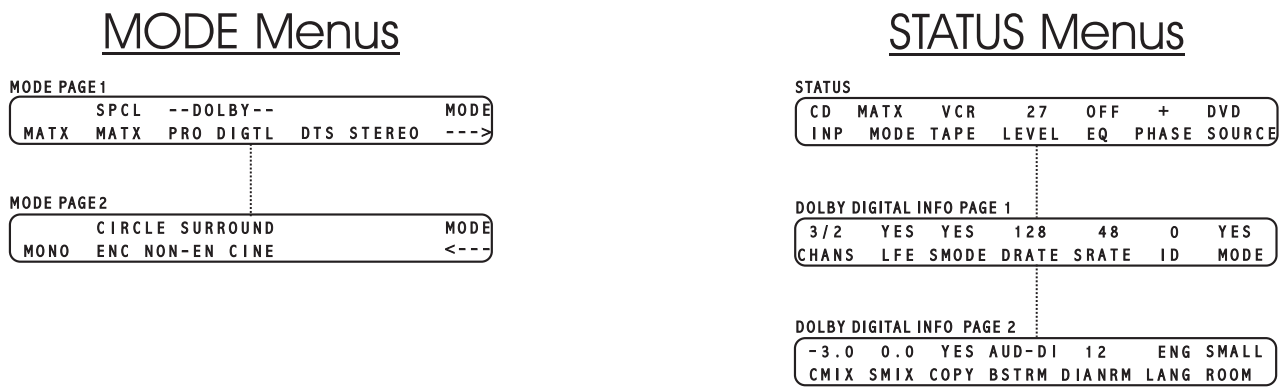
9. **Video** card. This optional card, necessary for on-screen display, provides six composite RCA inputs that can be switched with any audio inputs and fed to the main video output. Four S-Video inputs, also mappable, provide the same functionality as the composite inputs, except in the S-Video format. Video inputs are routed to the video tape output jack through the **TAPE OUT** button. Only S-Video input signals can be present at the S-Video **Main** and/or **Tape** outputs.

10. **Digital Input** card. Six Coaxial (RCA), 1 AES/EBU (balanced XLR) and two TosLink inputs are provided for digital audio signals in the S/PDIF format at 32K, 44.1K, 48K, 88.2K and 96KHz sampling rates. Optionally, two Dolby Digital (AC3-RF) jacks and the AC-3 RF demodulator card mount on this card. There is one open space provided for an optional AT&T or Theta Single Mode Laserlinque optical input module. There are two RCA digital Tape Out connectors on this card, the source of which can be selected in the **TAPE OUT** menu.

Note: The 4 rear panel cards shown in the picture above can be in any position.

Menu Maps

Function Menus and Pages



Input Select Pages

Figure 5 - Mode, Status, Tape Out Menus and Input Select Menus and Pages

Casa Nova Set-Up Menus

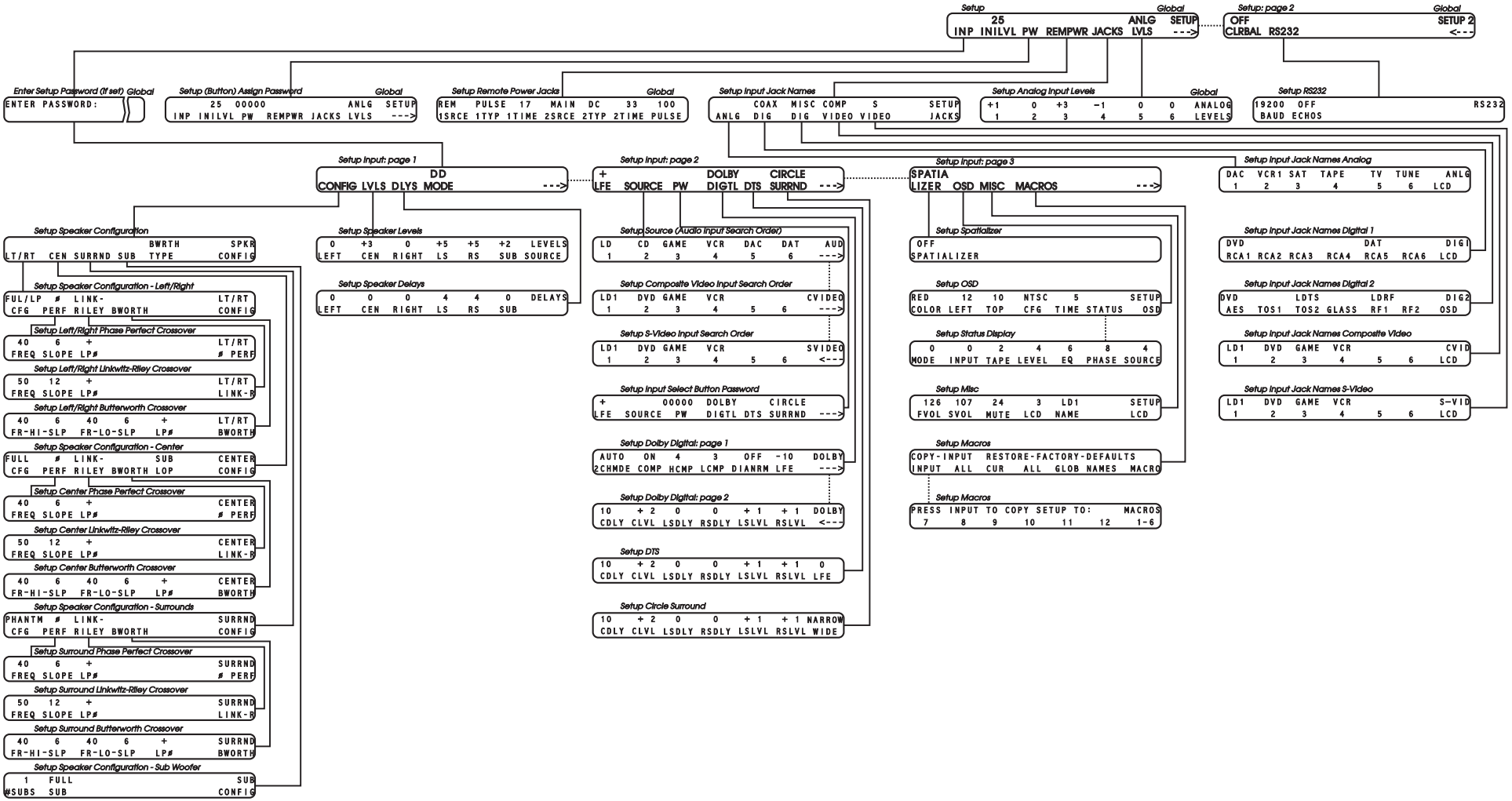


Figure 6 - Setup Menus and Pages

Introduction to the User interface

WARNING !! : PLEASE READ FIRST!

In the **SETUP** ***page 1*** menu, the **PW** button allows the user to password protect the entire **SETUP** function. In the **SETUP/INPUT** ***page 2*** sub menu, the **PW** button allows the user to password protect the currently selected input. When either **PW** button is selected, a prompt will be displayed asking the user if they are sure they want to change the current password (**YES** or **NO**). If **YES** is selected, the current password will be displayed above the **PW** button, prompting the end-user to change the current password. The password does not have to be changed at this point, the same numbers that are currently displayed can be entered, using buttons **1**-**6** and/or **A-D**. Pressing **A-D** enters a zero. A password containing at least one zero is null, meaning no password. Therefore, to remove a password, press **A-D** at least once.

Please note that there are no passwords programmed into the Casa Nova when it is initially shipped.

PLEASE REMEMBER and/or WRITE DOWN YOUR PASSWORD! If it is forgotten, all access to password protected areas will be denied! There is no other over ride to this feature.

The menu system within the Casa Nova consists of 1 to 3 layers, with the exception of the **SETUP** menu. Some menus have multiple pages, which can be accessed simply by pressing the **A/D** button, with the exception of the **INPUT SELECT** menu which uses the **LEFT**/**RIGHT** buttons. When a menu has additional pages associated with it, a right or left arrow will be displayed in the bottom right corner of the LCD. Please refer to figures 5 and 6 for an overall view of all menus, sub menus and menu pages.

The **SETUP** menu contains a number of sub menus, organized by setup function. Since many configuration parameters can be stored for each **INPUT SELECT** button (by input), they are accessed in one of the 3 **SETUP**/**INPUT** sub menus.

Once a parameter is selected for editing, pressing the **LEVEL UP**/**DOWN** buttons edits the parameter value, storing it at the same time. On any page, if the **LEVEL UP**/**DOWN** buttons are not used for editing a parameter value, they will adjust the master volume. Where the **LEVEL UP**/**DOWN** buttons are used for editing a parameter value, the **LEVEL LEFT**/**RIGHT** buttons will adjust the master volume, with the exception of the **TAPE OUT** menu page, the first **BALANCE** page and the pages where input select buttons and input jacks are named.

The function buttons are defined as the **EQ**, **SETUP**, **TAPE**, **BALANCE**, and **MODE** buttons. To exit a function the same function button can be pressed multiple times to exit, or another function button can be pressed at any time.

Before you begin

With all input options installed in a Casa Nova, there are 28 input jacks: 6 stereo analog audio, 12 digital audio, 6 composite video and 4 S-video. Each jack can be named. It is recommended to first name each input jack that is to be used. (**SETUP**/**JACKS**)

Each **INPUT SELECT** button can have up to 6 audio, 6 composite and 6 S-video jacks mapped, or assigned to it. Input jacks should be mapped to **INPUT SELECT** buttons after the applicable jacks are named. The **INPUT SELECT** button should also be named. There are a total of 12 **INPUT SELECT**s on two pages. Pressing the **LEVEL LEFT**/**RIGHT** buttons will toggle between these two pages of 6 inputs each.

When editing parameters for a given **INPUT**, the user must press the applicable **INPUT** button in the input select page, then press **SETUP** and **INPUT**, then navigate to the menu containing the desired parameter to change.

Note: The order in which input jacks are assigned to an **INPUT SELECT** button determines the search order. Please refer to page 12 for additional information on source assignment (search order). When more than one input jack is assigned to a single **INPUT** button, toggling the **A-D** button [when the **INPUT SELECT** page is active in the LCD] will select the next assigned input jack.

FRONT PANEL OPERATIONS

This section describes the functionality of each button on the Casa Nova's front panel only. For remote functionality descriptions, please refer to the section entitled *REMOTE CONTROL OPERATIONS* later in this manual. Descriptions for front panel buttons/functionality not covered in this section can be found in the preceding *FRONT PANEL LAYOUT* section.

Input Select Menus

When the Casa Nova is first powered up via the **MAIN POWER** switch on the back panel, it will be in the default standby mode. Pressing the **MAIN** button on the front panel will result in the LCD displaying the start-up routine and then the current **INPUT SELECT** page, shown in figure 7 below. As this menu appears, the **MAIN** LED turns off. This display will be on all of the time during normal operation and will change only when one of the function buttons is pressed.

Changing Inputs and Input Select Pages

The **INPUT NAMES** shown in this figure are for example only and will most likely differ from the user's set up. There are two **INPUT SELECT** pages, giving the user a total of 12 inputs. Buttons **1** through **6** are used to select a desired input, or audio/video source. The selected button will illuminate when pressed. When the Casa Nova exits standby mode, the **INPUT SELECT** page with the last selected input is displayed. Pressing the **LEVEL LEFT** or **RIGHT** buttons toggles between the two **INPUT SELECT** pages.

* * *

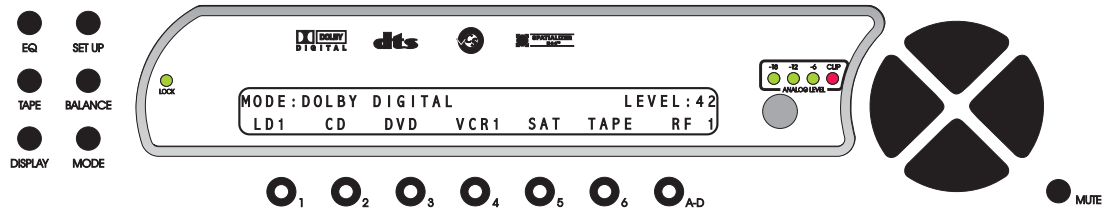


Figure 7 - Front Panel Display of the current INPUT SELECT page

Pressing the **LEVEL UP/DOWN** buttons will adjust the master volume for all speakers. A temporary bar graph appears on the LCD and OSD as the master volume is being adjusted. This value ranges from **0** to **73**, relative maximum.

Selecting Mapped Input Jacks for the Currently Selected Input

Pressing the **A-D** button will toggle between the input jacks that are mapped to this **INPUT SELECT** button. Please refer to page 12 (*Search Order*) for important, detailed information regarding using the **A-D** button.

* * *

The **MUTE** button will toggle the audio between the master volume level and **MUTE** level* in all speakers each time it is pressed. When the mute feature is enabled, the word **LEVEL** in the LCD will be replaced with the word **MUTED**, which will remain displayed until the **MUTE** button is pressed again. The **MUTE** feature is active in all menus.

*__Note__: The factory default value for **MUTE** is **0**, which is to say that when the **MUTE** button is pressed, the output level of all 6 channels will be completely muted (master volume = **0**). The Casa Nova offers a feature in the **SETUP**/**INPUT** ***Page 3***/**MISC** sub menu whereby when the **MUTE** button is pressed, the Casa Nova will mute to a user defined master volume level. Please refer to page 36 for additional information regarding this feature.

Search Order

The Casa Nova's inputs can support virtually every digital audio data format used in today's technology. Up to 6 audio input jacks can be mapped to one **INPUT SELECT** button. These 6 input jacks can be all digital, all analog or any combination of both. In the **SETUP**/**INP** ***Page 2***/**SOURCE**/**AUD** page, the order in which they are mapped to a given input determines the order each is displayed when the **A-D** button is pressed. This is called *Input Search Order*. Figure 8 below shows **INPUT SELECT 1** having the CD and DVD input jacks mapped to it, with the CD jack having the highest priority (being in the first position). In this example, there are no other physical input jacks required to be mapped to **INPUT SELECT 1**, therefore the jack names of 3-6 are blank. Pressing the **A-D** button while in the **INPUT SELECT** page, selects either the CD input jack, or the DVD input jack. Pressing the **A-D** button in the **SETUP**/**INP** ***Page 2***/**SOURCE**/**AUD** sub menu will access the composite video search order page. In this page, pressing buttons **1**-**6** will allow the user to assign a composite video input jack (1-6) to correspond to the respective audio search order. In the above example, one would not assign a composite video jack to search order # 1 since the audio search order # 1 is assigned to CD, which is not a video source. If one wanted an unrelated video source to be viewable when listening to CD's, simply map a video source to composite video search order # 1. Also in the above example, one would normally assign the DVD composite video input to composite video search order # 2. This will select the correct video jack to correspond to the desired audio jack. In this example, if the video signal were to be carried via an S-video cable, pressing the **A-D** button once while in the **SETUP**/**INP** ***Page 2***/**SOURCE**/**COMP** page would reveal the **SETUP**/**INP** ***Page 2***/**SOURCE**/**SVID** page and the same procedure would apply as with a composite video source.

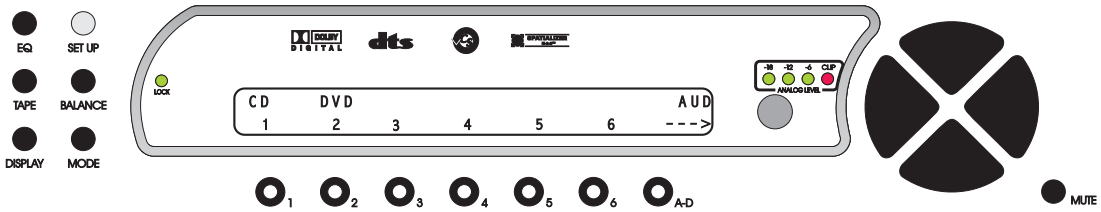


Figure 8 - Front Panel Display of the SETUP/INP/SOURCE/AUD page

Caution: Please take special care to insert only a digital signal into a digital input jack and an analog signal only into an analog input jack. Damage, not covered under warranty, can occur if an analog signal is applied to a digital input. Additionally, please ensure that a video plug is not inadvertently inserted into a digital audio jack and visa versa, otherwise, the Casa Nova will cease to respond.

MODE Function

Pressing the **MODE** button (shaded in figures 9 and 10) once displays the first page of the **MODE** menu. This page consists of 6 different signal 'processing' modes, one of which can be selected and temporarily applied to the currently selected input. A *right* arrow is displayed in the lower right corner of the LCD indicating that there is another **MODE** page. Pressing the **A-D** button once will reveal this second page, consisting of additional modes. In this second page, a *left* arrow is displayed in the LCD, above the **A-D** button. This indicates that pressing the **A-D** button once more will return the user to the first **MODE** page. Figure 9 shows the first **MODE** page and figure 10 shows the second.

Note: This entire menu allows the user to audition different modes when possible. It does not store the changed mode. Therefore when a different **INPUT SELECT** button is pressed, or the Casa Nova is powered down, a **MODE** that is changed using this function will revert to its default. Since each **INPUT SELECT** button can have its own **MODE**, the default mode for that **INPUT SELECT** is stored/edited in the **SETUP/ INPUT** menu. Please refer to page 28 (Default Mode) for information on changing and storing the **MODE** for a given **INPUT SELECT** button.

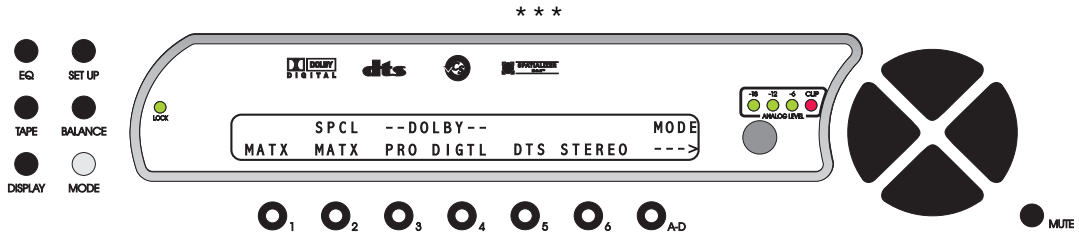


Figure 9 - Front Panel Display of the MODE *Page 1* Menu

Press button **1** - **6** to select the desired mode. The corresponding LED within buttons **1** through **6** will illuminate.

Note: If a specific feature such as Dolby Digital or DTS is not installed in the Casa Nova, selecting either in the **MODE** menu will result in the LCD displaying the following message: **OPTION NOT INSTALLED**.

The first 6 modes shown in figure 9 are described below.

Simple Matrix (**MATX**): The signal routed to the center speaker is equal to the left plus right input signals and the signal routed to the surround speakers is equal to left minus right signals. Crossing over any speaker(s) produces a sub channel.

Special Matrix (**SPCL MATX**): A mode similar to Dolby Pro Logic with more ambience retrieval in the surround speakers.

Dolby Pro Logic (**PRO**): When **PRO** is selected, Dolby Pro Logic decoding is implemented.

Dolby Digital (**DIGTL**): (Optional). When this mode is selected, Dolby Digital decoding is implemented. Please refer to page 31 for additional Dolby Digital setup options, selectable in the second page of the **SETUP/INPUT** submenu.

If the Casa Nova detects a Dolby Digital signal on the selected input jack, and the **MODE** is *not* set to **DOLBY DIGITAL**, the Casa Nova will display the following message on both the LCD and video monitor:

****RECEIVING DOLBY DIGITAL SIGNAL****
CHANGING MODE TO DOLBY DIGITAL

and display **DOLBY DIGITAL** as the current mode. However, this is not stored and therefore approximately 15 seconds after the Casa Nova ceases to receive this signal, the **MODE** will revert back to the previous mode before detecting the Dolby Digital signal.

DTS: (Optional) Selecting **DTS** will decode a Digital Theater Systems encoded signal according to the **DTS** specification which consists of up to 5 plus 1 discrete channels of digital data for a total of 6 separate audio channels.

If the Casa Nova detects a DTS signal on the selected input jack, and the **MODE** is *not* set to **DTS**, the Casa Nova will display the following message on both the LCD and video monitor:

****RECEIVING DTS SIGNAL****
CHANGING MODE TO DTS

and display **DTS** as the current mode. However, this is not stored and therefore approximately 15 seconds after the Casa Nova ceases to receive this signal, the **MODE** will revert back to the previous mode before detecting the DTS signal. Please refer to page 33 for additional DTS setup options, selectable in the second page of the **SETUP/INPUT** submenu.

STEREO: Left and Right input signals are sent to the Left and Right front speakers, which if crossed over, will produce a **SUB** channel.

When the Casa Nova receives a 96K input signal, the following message will appear in the display:

****RECEIVING 96K SIGNAL****
CHANGING MODE TO STEREO

And the **MODE** will be changed to **STEREO**. A few seconds after the 96K signal is no longer received, the Casa Nova will return back to the stored **MODE**.

* * *

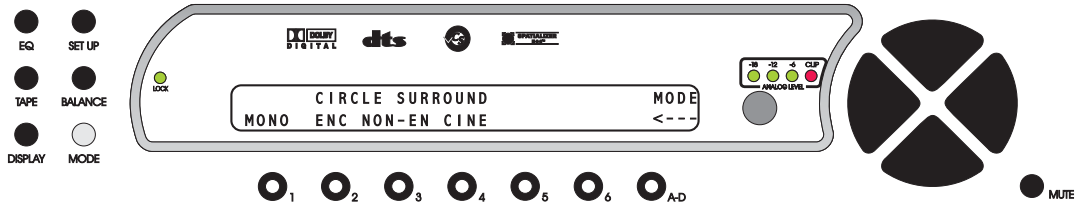


Figure 10 - Front Panel Display of the MODE *Page 2* Menu

Each of the 4 modes shown in figure 10 are described below.

MONO: This mode routes the input signal to the center channel only, however, if the center channel is crossed over, a sub channel will be produced. If the center channel is set to **OFF** or **PHANTM** in the **SETUP/ INPUT/CONFIG** sub menu, the input signal will be routed to the front left and right speakers.

CIRCLE SURROUND: The **ENC** (Encoded) and **NON-EN** (Non Encoded) Circle Surround modes are intended for music playback, whereas the **CINE** mode is intended for Cinematic use. In all 3 Circle Surround modes, the center channel operates dynamically in order to avoid collapsing any stereo imaging that may be present toward the center channel. This works to maintain a wide left/right soundfield in the front channels. All Circle Surround modes provide multi-band left/right steering in the surround channels.

When the source music is Circle encoded, the intended mode is Circle **ENC**, leaving the **NON-EN** mode for non Circle encoded music. **CINE** is a non-encoded mode that is intended to be used for mono, stereo or matrixed film sources.

Circle Surround operates effectively with both encoded and non-encoded material, and allows the processing of the front left/right and center channels as well as full bandwidth of the left and right surrounds. Please refer to page 33 for additional Circle Surround setup options, selectable in the second page of the **SETUP/INPUT** submenu.

* * *

After selecting a mode for the current input channel, pressing the **MODE** button once more returns the Casa Nova to the **INPUT SELECT** menu. While in the MODE menu, the **MASTER VOLUME** can be controlled using the **LEVEL UP/DOWN** buttons.

TAPE OUT Function

This feature individually routes input signals to the video, analog, zone 2 and digital audio tape out jacks as well as the **ZONE 2** outputs.

Pressing the **TAPE OUT** button once changes the LCD display to the **TAPE OUT** menu shown in figure 11. Note: The **INPUT NAMES** shown in this figure are for example only and will most likely differ from the user's set up.

* * *

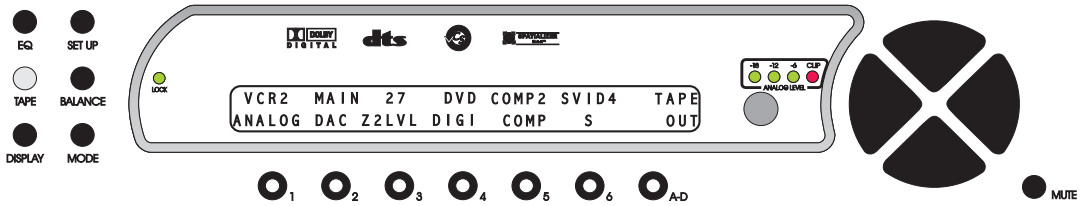


Figure 11 - Front Panel Display of the TAPE OUT Menu

In this menu, pressing button # **1** allows the user to route any audio input jack, analog or digital, to the analog **TAPE OUT** jacks. The same input jack is also routed to the **ZONE 2** output jacks.

Button # **2** allows the user to select whether the signal at the analog **TAPE OUT** and **ZONE 2** jacks will be derived from the main output DACs or the optional tape out DAC, by displaying **MAIN** or **TAPE** in the display. If the optional tape out DAC has not been installed, changing this value will result in the following message: **OPTION NOT INSTALLED**. This setting is only relevant if the analog tape out source is set to a digital input jack. All analog inputs are routed directly to the **TAPE OUT** jacks, without A/D to D/A conversion.

The **ZONE 2** output level can be adjusted independently of the Casa Nova's master volume via button # **3**. The maximum level is **55** and each increment is 1dB. Both the **LEVEL UP**/**DOWN** and **LEFT**/**RIGHT** buttons adjust this parameter value and in this case, button # **3** does not need to be pressed first.

Button # **4** allows the user to route any digital audio input jack to the digital **TAPE OUT** jacks.

Button #'s **5** and **6** route composite and S-video inputs to the composite and S-Video **TAPE OUT** jacks, respectively.

Standard Tape Out Configuration

The following guidelines apply when the tape out circuitry is in its standard configuration, i.e. the optional tape out D/A converter has not been installed.

A source to be recorded (via the analog **TAPE OUT** jacks) can be selected independently of the source currently being viewed or listened to provided that the input for the source to be recorded is **ANALOG**.

It is possible to record a digital source in analog only if the source is the same as the input being watched or listened to. If the desired source is 5.1 (DTS/AC-3), it is recommended that both the surrounds and center speakers be set to phantom (**PHTM**). This mixes those channel's information into the front left/right channels, thus eliminating lost information from an analog copy.

Optional Upgrade Tape Out Configuration

When the optional D/A converter has been installed onto the Digital Input board, a digital source can be recorded, i.e. sent to the analog **TAPE OUT** jacks, (and routed to the **ZONE 2** outputs) at the same time as a different digital source is being watched or listened to.

* * *

To route a signal to the appropriate **TAPE OUT** jack(s), press the **TAPE OUT** button and then select a source for the appropriate **TAPE OUT** (analog/zone 2, digital, composite and/or S-video) by first selecting buttons **1**, **4**, **5**, and/or **6**, respectively and using the **LEVEL UP/DOWN** buttons. A composite video source will only be routed to the composite video **TAPE OUT** jack and an S-video source can only be routed to the S-video **TAPE OUT** jack.

Now the routing is completed. Press **TAPE OUT** again to return the Casa Nova to the current **INPUT SELECT** page.

CAUTION: It is not advisable to route a 5.1 source (DTS/AC-3) to the optional tape out DAC as this section does not contain Dolby Digital or DTS decoding capabilities. Full scale and potentially damaging noise will be output!

SETUP Function

This function provides access to a series of sub menus that will allow the configuration of the entire system. In this section, each feature of the **SETUP** menu is discussed in detail along with a diagram of each LCD display.

Note: A complete step-by-step speaker configuration setup guide is located in Appendix D.

Pressing the **SETUP** button once changes the front panel display to the first page of the **SETUP** menu, shown in figure 12.

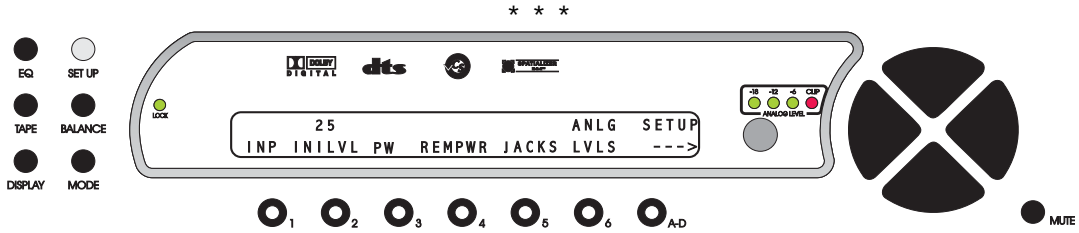


Figure 12 - Front Panel Display of the SETUP *Page 1* Menu

The menu title "**SETUP"** is displayed in the upper right corner. A *right* arrow is displayed in the lower right corner of the LCD indicating that there are more setup options to select from on the next page. Pressing the **A-D** button once will reveal this second page. On the second page the menu title "**SETUP"** is also displayed in the upper right corner with a *left* arrow displayed below it. This indicates that pressing the **A-D** button once more will return the user to the first **SETUP** page. Figure 12 shows the first **SETUP** page and figure 17 shows the second.

As indicated in figure 12, button **1** is assigned to features that are stored by input and leads to a series of categorized sub menus via 3 pages. Most pages, menus and all features are detailed further in this section.

Initial Power-On Master Volume

Button **2** allows the user to store an initial master volume setting that the Casa Nova will default to when it comes out of standby.

Setup Button Password

It is possible to password protect the entire **SETUP** function, or have no password at all. Setting a password for the **SETUP** button is accessed by pressing button # **3**, where the user will be asked "**ARE YOU SURE?**" Answering "**YES**" by pressing button # **2** will display the following page:

```
    25  00000              120 SET-UP
INP INILVL PW  REMPWR JACKS PULSE  --->
```

Figure 13 - Front Panel Display of the SETUP/Assign Password Display

Use buttons **1**-**6** to assign a password. After each digit is entered, the cursor (flashing in the Onscreen Display (OSD) only, not the LCD) moves one character to the right. If no password is to be used (factory default), press the **A-D** button five times, which enters all zeros. All zeros, or a zero anywhere in the password translates to no password.

CAUTION: It is imperative that your new password be written down. If it is forgotten, ALL access to the **SETUP** menu will be permanently denied. Please see the **WARNING** on page 10.

Remote Power Jacks

The two **REMOTE POWER** jacks on the rear panel can be programmed to output 12V, either straight DC or as a pulse and each can be activated by either the **MAIN** or **REMOTE** power button on the front panel. Press button # **4** to access the **REMPWR** sub menu shown in figure 14.

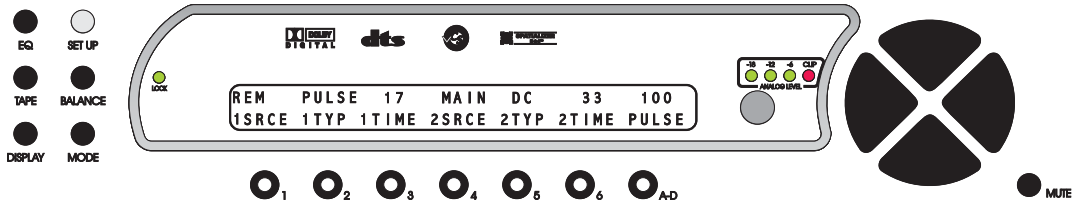


Figure 14 - Front Panel Display of the SETUP/REMPWR Sub Menu

Button # **1** (**1SRCE**, or remote power jack 1 source) allows the user to map which front panel button will activate the remote power 1 jack on the rear panel. The options are either the **MAIN** or **REMOTE** front panel buttons.

Use button # **2** to indicate whether the output of the remote power jack 1 should be 12VDC (**DC**) or a 12V pulse (**PULSE**). The specification sheet for the device connected to the remote power 1 jack should contain information as to which type of signal it requires, and if it is a pulse, the minimum pulse duration.

The output signal of the remote power jack can be delayed after its activating button is pressed. This is useful for sequencing high power components such as amplifiers. Button # **3** allows the user to set this delay time, in seconds.

Buttons **4**, **5** and **6** have exactly the same functionality as buttons **1**, **2** and **3**, except that they apply for the remote power 2 jack on the rear panel.

If the type of output for one or both of the remote power jacks is a 12V pulse, the duration (in milliseconds) of this pulse can be set by the user, using the **A-D** button.

Press **SETUP** once to return to the first page of the **SETUP** menu.

Jack Names

Button # **5** accesses a series of sub menus, which allow the user to name all of the Casa Nova's input jacks, both audio and video. The **JACKS** sub menu is shown in figure 15.

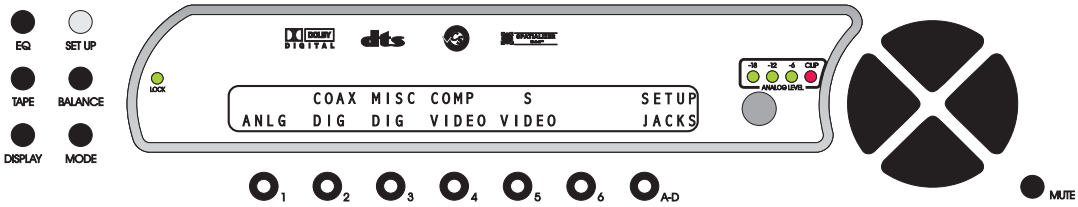


Figure 15 - Front Panel Display of the SETUP/JACKS Sub Menu

Pressing button # **1** accesses a sub menu that allows the analog audio input jacks to be named. Button # **2** does the same for the coaxial digital audio input jacks, whereas button # **3** allows the user to name all non-coaxial digital audio input jacks. Buttons # **4** and # **5** lead to sub menus that allow the naming of the composite and S-video jacks, respectively.

Example of editing a jack name:

To edit the name of analog input jack 1, press button # **1** from the menu shown above. This displays the **NAME ANALOG** sub menu. Then press button # **1** (first analog input jack name). Press the **LEVEL UP/DOWN** buttons to select the desired LCD character and the **LEVEL LEFT/RIGHT** to change character positions. Once selected, pressing the **DISPLAY** button once will clear the current jack name. There is not a blinking cursor in the LCD. The LCD name for all audio input jacks can be up to 6 characters and the video jack names up to 5. Press the **A-D** button to edit the OSD name. **OSD** will be displayed above the **A-D** button in the LCD. ALL OSD names can be up to 15 characters and the current character to be edited will blink.

Analog Input Levels

Lastly on this page, button # **6** accesses the **ANALOG INPUT LEVELS** submenu, shown in figure 16.

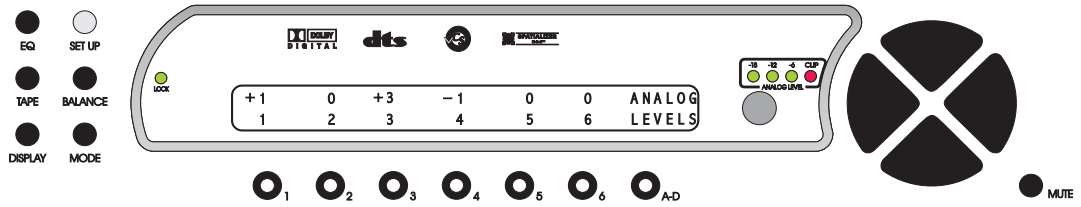


Figure 16 - Front Panel Display of the SETUP/ANLG LVLS Sub Menu

This function allows the user to adjust the relative **ANALOG** input **LEVEL** for each input source for those modes which require analog to digital conversion. This function does not affect source levels when a digital audio input is selected. The allowable relative range is -23 dB to +14 dB, in 1dB increments.

Note: To obtain the best performance from the analog to digital conversion process, levels should be set so that the loudest passages from the source material cause the **-18**, **-12** and **-6** dB **ANALOG** input **LEVEL** LEDs on the front panel to light. Setting the input level too high will cause all four LEDs to light, thus clipping the input signal and causing distortion.

Analog output levels may vary considerably for different input sources. Program material from a given input source should not vary as greatly. Therefore the **ANALOG** input **LEVEL** for a given source should not have to be adjusted very often. If, however, the input **ANALOG LEVEL** LEDs are not lit during the loudest passages from an analog source, the user should increase the **ANALOG** input **LEVEL** for that source in order to ensure a good signal to noise ratio.

Select the analog input to be adjusted by pressing buttons **1**-**6** once. Adjust the relative input level using the **LEVEL UP**/**DOWN** buttons, then press the **SETUP** button twice to return to the current **INPUT SELECT** page.

* * *

Pressing the **A-D** button shifts to the second page of the **SETUP** menu, shown in figure 17.

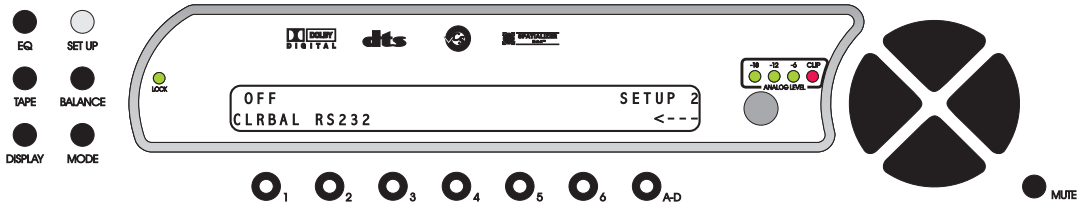


Figure 17 - Front Panel Display of the SETUP *Page 2* Menu

Temporary Settings Control

Any changes in the **BALANCE** menus are, by default, temporary. That is to say that when an **INPUT SELECT** button is pressed or the Casa Nova is powered down/put into standby, any changes will be reset to zero. This feature has an override, which is set by pressing button # **1** and set to **OFF**. When this parameter is set to **OFF**, changing inputs powering down/going into standby will maintain all **BALANCE** menu settings.

RS232

Press button # **2** to access the **RS232** sub menu, if the optional RS232 feature has been installed.

Pressing the **A-D** button shifts back to the first page of the **SETUP** menu.

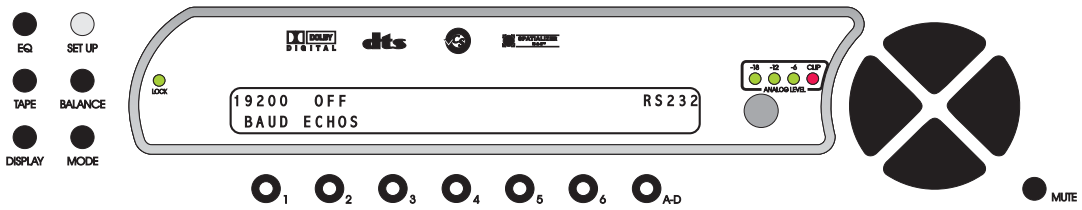


Figure 18 - Front Panel Display of the SETUP *Page 2*/RS232 Sub Menu

Press button # **1** (**BAUD**) and use the **LEVEL UP**/**DOWN** buttons to select the Baud rate that matches that of the RS232 controller.

The RS232 can be set to automatically send changes to the RS232 port. This can be done by selecting a "Status Level", which means if any Casa Nova parameter changes, that level's bytes will be sent to the port. This is useful for monitoring master level, input and the like when the user has access to both the Casa Nova and the touch-panel controller, to keep them synchronized.

Button # **2** (**ECHOS**) [Status] allows the user to enable or disable the output of data to the RS232 port and, if enabled, determine which level, or pre-determined group of bytes it outputs. Setting this value to **OFF** disables any parameter change information from being output to the RS232 port. If RS232 is installed in a Casa Nova, an addendum will be included with this manual which describes all pertinent RS232 information, including values contained within each Status Level.

If the RS232 option is installed but not being used, ensure that the Echo Status (**ECHOS**) parameter is set to **OFF**. Other settings can slow the operation of the Casa Nova.

Pressing the **SETUP** button twice (if in the RS232 sub menu, once if in **SETUP** *page 2*) returns the LCD to the current **INPUT SELECT** page.

SETUP INPUT (Setting up each of the 12 Input Select Buttons)

Setup Input Page 1

All parameters accessed within the **SETUP/INP** menu are programmable for each of the 12 **INPUT SELECT** buttons. The first of 3 pages of the **SETUP/INP** sub menu is shown below, in figure 19.

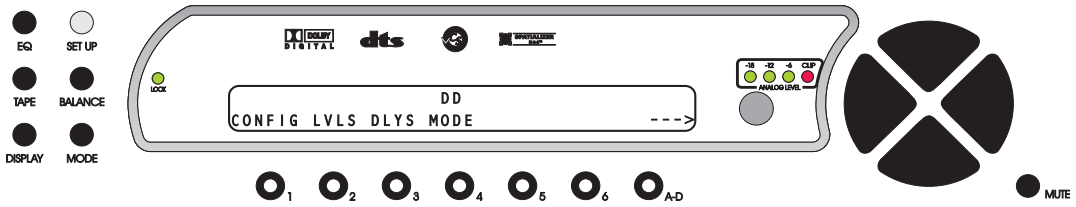


Figure 19 - Front Panel Display of the SETUP/INP *Page 1* Sub Menu

Speaker Configuration

The Speaker Configuration section utilizes the menus shown in figure 20.

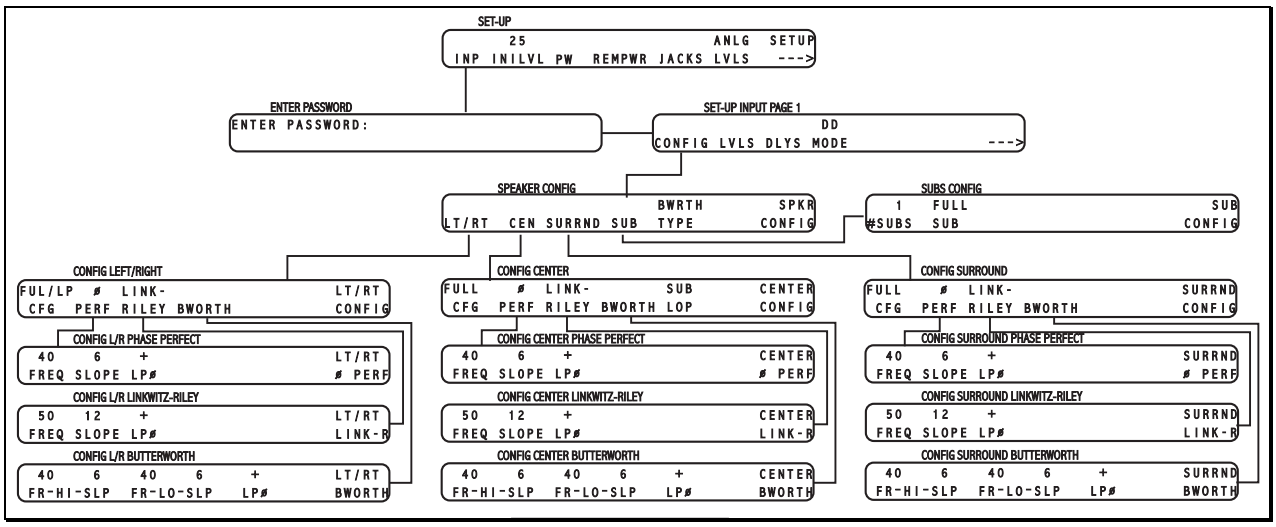


Figure 20 - Menu Map of SETUP/INP *Page 1*/CONFIG

This sub menu (**CONFIG)** allows the user to configure speakers to reflect the audio system configuration or the listener's preference, for the available speakers and their respective frequency responses.

All of the speaker configuration parameters are accessed by pressing button # **1** (**CONFIG**). This leads to a series of sub menus shown that are described next. The first sub menu, **SPEAKER CONFIG** is shown below, in figure 21.

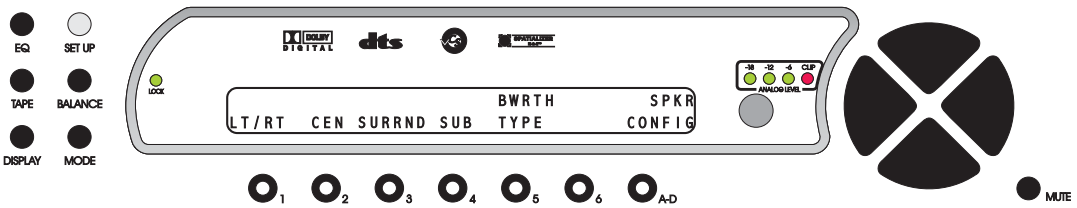


Figure 21 - Front Panel Display of the SETUP/INP/CONFIG Sub Menu

As indicated in figure 21 above, the front left/right speaker configuration is accessed by pressing button # **1**, the center via button # **2**, the surrounds with button # **3** and # **4** is for the sub woofer. There are 3 types of crossovers to choose from, which can be selected via button # **5**. Before configuring any speakers in the system, it is important to configure the sub woofer, then the crossovers for each speaker. First, determine

whether or not a sub is required or desired. Press button # **4** to go to the **SUB CONFIG** sub menu, shown in figure 22, and set up the sub. If no sub is present, or is not desired, set the number of subs (**#SUBS**) to **0**, disregard the crossover type (button # **5**) at this time, in figure 21. Lastly, configure the other speakers in the system via buttons **1**-**3**.

SUB Configuration

Note: If the source does not contain a discrete sub woofer or LFE channel, no signal will be routed to the **SUB** output unless one or more speakers are crossed over. If the source contains a discrete LFE channel and the **#SUBS** is turned off (set to **0**), the LFE signal will be routed to all other channels whose **CFG** is set to **FULL**.

If the number of **SUBS** is set to **1**, all of the low-pass portion of all crossed over speakers and the full LFE are routed to the **SUB** output jack.

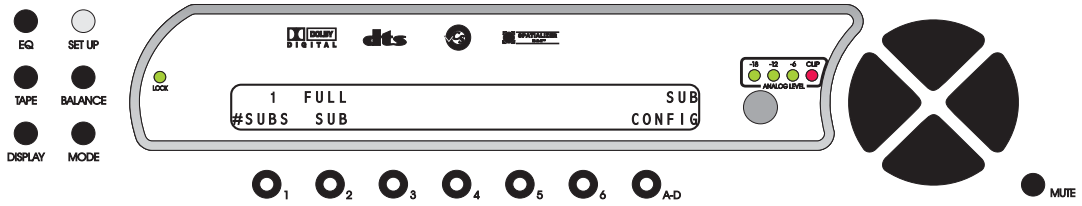


Figure 22 - Front Panel Display of the SETUP/INP/CONFIG/SUB CONFIG Sub Menu

If a sub is present in the system, verify that the number of subs is set to **1** (button # **1** in figure 22), and then determine if it needs to be sent a crossed over signal or a full range signal. (**FULL** or **XOVER** in the LCD, **FULL RANGE** or **CROSSOVER** on the OSD). The only situation that would require a full range signal is if the subwoofer contains its own crossover that cannot be defeated. If it appears that this is the case, it is recommended that the subwoofer manufacturer be contacted to see if there is a possible modification to the subwoofer to defeat its crossover. The crossovers in the Casa Nova have been engineered to be superior to any analog crossover, regardless of quality.

It is important to better understand the 3 types of crossovers in order to select the most appropriate one and the respective speaker crossover points and slopes. A discussion about crossovers follows.

Crossovers

The Casa Nova contains a comprehensive set of speaker configuration settings. These settings are believed to be the most complete ever offered in a home theater component and should allow any speaker to perform optimally regardless of speaker type. It is important to bear in mind that the below procedure is merely a guideline and that room acoustics, speaker design / quality, music / movie type, and personal preference all play a part in these settings.

Each full speaker configuration is stored separately for each input. In **SETUP/INP** *Page 1*, press button # **1** (labeled **CONFIG** on the LCD, **SPEAKER CONFIGURATION** on the OSD) to access the speaker configuration menu.

Pressing buttons **1**-**4** of this menu will access additional menus to setup a particular speaker or set of speakers. Pressing button # **5** will allow a change to the crossover type. There are three settings for the crossover type. They are "Phase Perfect", "Butterworth", and "Linkwitz-Riley". A brief description of each will follow:

Phase Perfect

This is a term coined for a type of crossover wherein the low pass portion is derived from the high pass. First, a high pass Butterworth crossover is performed. This gives two resulting signals: the high pass and the original, unaltered signal. Then, the high pass signal is subtracted from the original input signal, resulting in the low pass signal, which is usually routed to the subwoofer. A positive attribute of this type of crossover is that if the high and low pass signals are added together, an exact replica of the original input signal results, thus the term "phase perfect". A potentially negative attribute of this type of crossover is that, due to

phase relationships and vector mathematics, higher order filters (12, 18, 24 dB/octave) always produce 6dB/octave low pass slopes, in terms of electrical energy sent to the subwoofer. The high pass portion will have the expected 6, 12, 18 or 24 dB /octave slope. Due to this phenomenon, this type of crossover is best suited for subwoofers that can operate linearly up to the 500 Hz range. Please consult your dealer or subwoofer manufacturer to determine if this is suitable for your particular subwoofer. If the subwoofer is capable of handling this range, this is potentially the best sounding of Casa Nova's crossover types.

Butterworth

This is the most common type of crossover used in home theater, speakers and outboard electronic crossovers. Separate high and low pass slopes and crossover frequencies may be set for speaker sets [Left/Right], [Center] and [Surround Left / Surround Right]. As with Phase Perfect and Linkwitz-Riley crossovers, it is possible to invert the phase of the low pass for each of these speaker sets. This allows precise tailoring of the subwoofer response to the main speaker's response. A negative attribute of this crossover type is that the high and low pass signals have different phase shifts from each other.

Linkwitz-Riley

This type of crossover, developed in 1976 by Siegfried Linkwitz and Russ Riley, eliminates some of the inherent problems of Butterworth filters. Specifically, a Butterworth filter of 12, 18 or 24 dB/octave (or higher) slope exhibits different phase shifts between the high and low pass outputs. A Linkwitz-Riley alignment solves this problem, as it exhibits zero phase difference between outputs at all frequencies. Acoustically, this means that if the sound sources are in proper time-alignment, a smoother frequency response will be realized at the listening position. The Linkwitz-Riley crossover is only applicable to slopes of 12 and 24 dB/octave. A proper Linkwitz-Riley crossover with a 12dB slope should have the low pass portion inverted. This is done internally in the Casa Nova.

A note on crossovers

Casa Nova's complement of crossover options can at first appear daunting. Most surround sound processors offer a simple selection to set their crossovers: Speaker Small or Speaker Large. When set to small, normally a 12dB/octave Butterworth crossover is performed at 80Hz. Occasionally, it is a 24 dB/octave slope. This simple setting does not take into account the huge variations in speaker design and room acoustics and more often than not results in non-optimum performance. We have endeavored to offer this rich set of options with the aim of superior performance. With this in mind, following are a few simple suggestions to make this process easier.

A note on home theater

There are a few common misconceptions about home theater and bass reproduction. Chief among them is that the ".1" or "LFE" channel normally contains most or all of the bass information. This is unequivocally false. The LFE channel contains sound effects such as explosions, rumbling and the like. All other channels (left, center, right, left surround, right surround) may contain an equal amount of bass, and often do. Their bass, however, tends to be more related to the soundtrack, vocal material or localized sources such as a drum beating behind the listener. This is important information to understand when setting up crossovers in the coming section.

Another misconception is that the center channel is "fill" and is minor in importance. Again, this is false. The center channel contains the lion's share of important information (particularly dialog) in the cinematic experience. It is therefore critical that the center speaker be of the highest quality possible and special attention be given to its mounting and positioning.

* * *

Left/Right Speaker Configuration

The left/right configuration section contains the sub menus shown in figure 23.

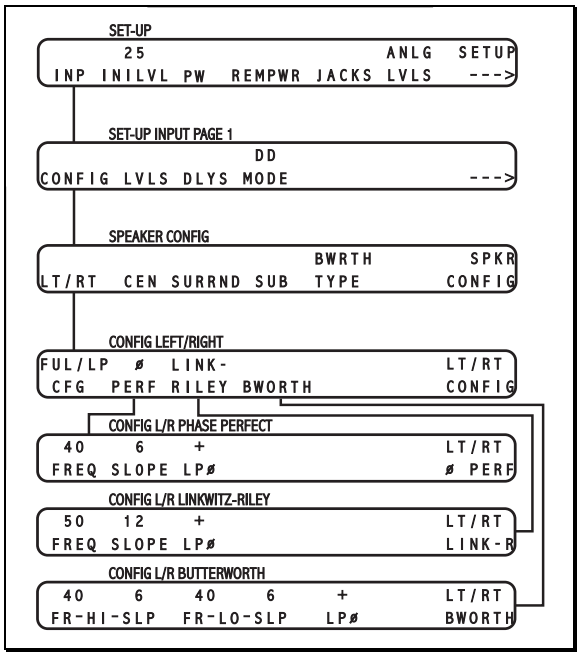


Figure 23 - Menu Map of SETUP/INP *Page 1*/CONFIG/LT/RT

In the **SETUP/INP/CONFIG** submenu (figure 21), press button # **5** and select the desired crossover type.

Then press button # **1** to set up the front left/right speakers. This configuration sub menu is shown in figure 24.

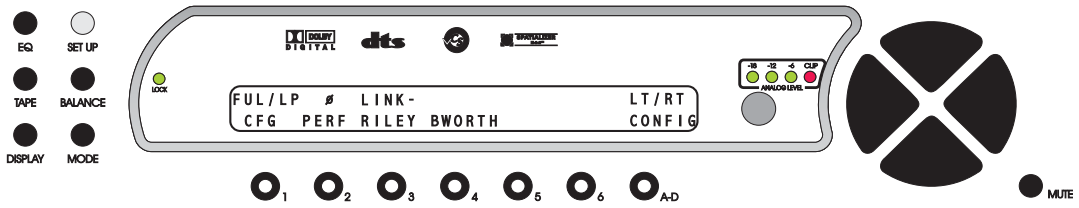


Figure 24 - Front Panel Display of the SETUP/INP/CONFIG/LT/RT Sub Menu

Pressing button # **1** allows the configuration of the front left/right speakers. If these speakers are not to be crossed over, nor any of their signal sent to the **SUB** output, then this should be set to **FULL**. There is an option where the full range signal can be routed to the left/right speakers and a low pass part of it routed to the sub. If this is desired, the setting should be **FUL/LP**. (A crossover type must be selected, and the appropriate crossover frequencies and slopes set up.) The front left/right speakers can also be set to **OFF**.

Note: If the crossover type is Phase Perfect (**ϕPERF**) and the **CFG** type is set to **FUL/LP**, no low pass signal will be created.

Should it be desired to fully crossover the front left/right speakers, the **CFG** setting (button # **1**) should be set to **XOVER** and the crossover frequencies and slopes in either the Phase Perfect (**ϕPERF**), Linkwitz-Riley (**LINK-RILEY**) or Butterworth (**BWORTH**) sub menus be set using buttons **2**, **3** and/or **4** respectively.

Note: It is advisable to select crossover frequencies and slopes in all 3 crossover type sub menus (buttons **2**-**4**), and then go back to the **SPEAKER CONFIG** sub menu (figure 17), select the crossover **TYPE** (button # **5**) and audition each crossover.

Set up the crossovers as follows. Press button # **2** (**ϕPERF**). This submenu is shown in figure 25.

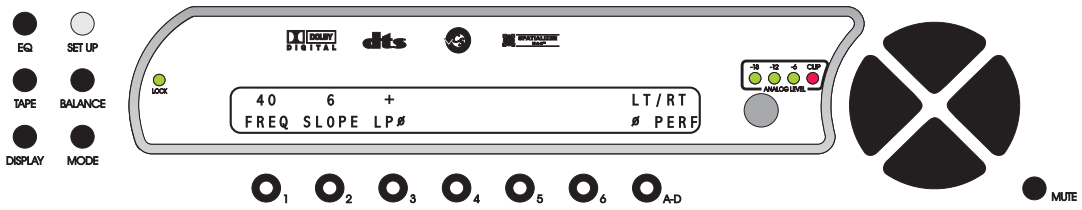


Figure 25 - Front Panel Display of the SETUP/INP/CONFIG/LT/RT/ϕPERF Sub Menu

Press button # **1** and select a Phase Perfect crossover frequency for the front left/right speakers, then button # **2** to set the high pass slope.

Button # **3** allows the user to invert the low pass phase from 0 (**+**) to 180 degrees out of phase .

		AVAILABLE SETTINGS						
BUTTON	**PARAMETER**							
1	FREQ	40	50	60	80	100	120	160
2	SLOPE	6	12	18	24	-	-	-
3	LPϕ	-	+					

Table 2 - Available configuration settings for front L/R speaker Phase Perfect crossover.

Press **SETUP** once to return to the front left/right configuration sub menu, then press button # **3** (**LINK-RILEY**) to set up the Linkwitz-Riley crossovers. This submenu is shown in figure 26.

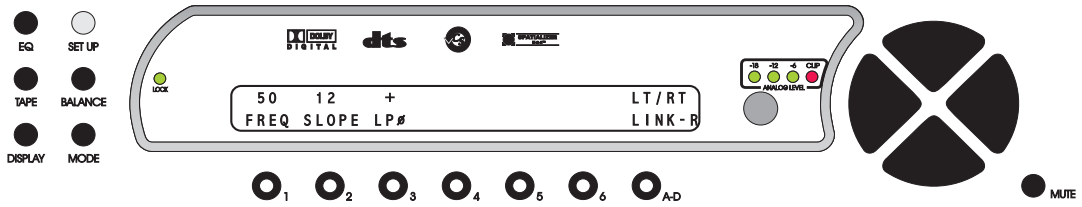


Figure 26 - Front Panel Display of the SETUP/INP/CONFIG/LT/RT/Link-R Sub Menu

Press button # **1** and select a Linkwitz-riley crossover frequency for the front left/right speakers, then button # **2** to set the high and low pass slope. Button # **3** allows the user to invert the low pass phase from 0 (**+**) to 180 degrees out of phase.

		AVAILABLE SETTINGS						
BUTTON	**PARAMETER**							
1	FREQ	40	50	60	80	100	120	160
2	SLOPE	12	24					
3	LPϕ	-	+					

Table 3 - Available configuration settings for front L/R speaker Linkwitz-Riley crossover.

Press **SETUP** once to return to the front left/right configuration sub menu, then press button # **4** (**BWORTH**) to set up the Butterworth crossovers. This submenu is shown in figure 27.

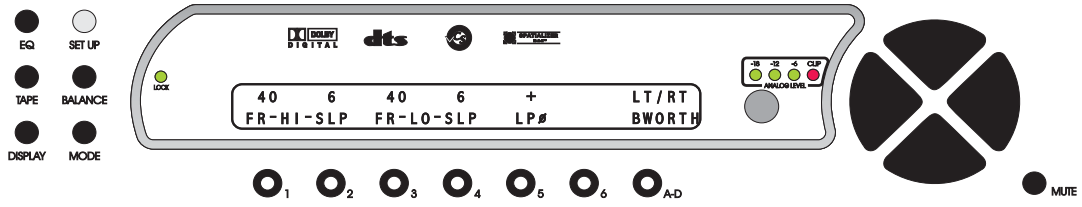


Figure 27 - Front Panel Display of the SETUP/INP/CONFIG/LT/RT/BWORTH Sub Menu

Press button # **1** and select a Butterworth high pass crossover frequency, then button # **2** to set the high pass slope. Press button # **3** to set the low pass crossover frequency, then button # **4** to set the low pass slope. Generally speaking, the high and low pass crossover frequencies should be the same unless compensating for unique room or speaker characteristics. Button # **5** allows the user to invert the low pass phase from 0 (**+**) to 180 (**-**) degrees out of phase.

		AVAILABLE SETTINGS						
BUTTON	**PARAMETER**							
1	FR-HI	40	50	60	80	100	120	160
2	FR-HI-SLP	6	12	18	24			
3	FR-LO	40	50	60	80	100	120	160
4	FR-LO-SLP	6	12	18	24			
5	LPϕ	-	+					

Table 4 - Available configuration settings for front L/R speaker Butterworth crossover.

Press **SETUP** twice to return to the speaker configuration sub menu, then press button # **2** (**CEN**) to set up the center speaker. This submenu is shown in figure 28.

Center Speaker Configuration

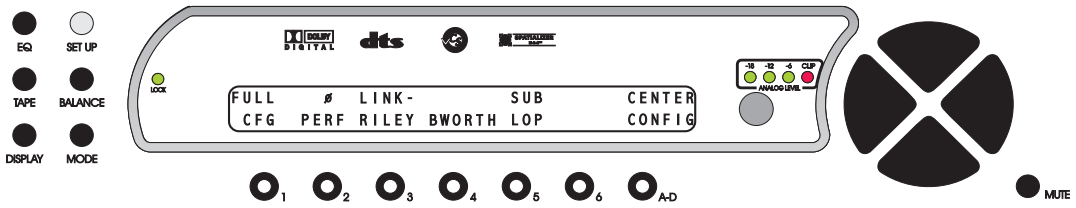


Figure 28 - Front Panel Display of the SETUP/INP/CONFIG/CENTER Sub Menu

This submenu of settings is virtually the same as the one for the front left/right speakers, but applies only for the center speaker. All of the same guidelines and procedures apply except for the case where no center speaker is present and the destination to where the low pass signal (if the center speaker is crossed over) can be routed. If no center speaker is present in the system, the **CFG** parameter should be set to **PHANTM** (phantom). With this setting, the signal for the center channel is routed to the front left/right speakers.

Note: The phantom (**PHTM**) setting for the center speaker creates the illusion of having a center speaker when the listener is positioned equidistant from the front left and right speakers. There is, however, no substitute for a real center speaker as it creates a solid center image even when the listener is positioned off-axis. The phantom setting is most useful on video sources where a more prominent center image is desirable and no center speaker is present. On music sources, **OFF** may be the preferred setting as it maintains the original source's imaging properties.

Pressing button # **1** allows the configuration of the center speaker. If this speaker is not to be crossed over, or any of its signal sent to the **SUB** output, then this should be set to **FULL**. There is an option where the full range signal can be routed to the center speaker and a low pass part of it routed to the sub or to the front left/right speakers as discussed above. If this is desired, the **CFG** setting should be **FUL/LP**. (A crossover type must be selected, and the appropriate crossover frequencies and slopes set up.)

The center speaker can also be set to **XOVER** or **OFF**.

Press button # **2**, **3** and **4** to set up the crossover settings for the center speaker in the same manner as with the front left/right. The crossover sub menus are the same with the exception of the speaker name in the upper right corner of the LCD.

Pressing button # **5** allows the user to route the low pass center signal, if any, to either the **SUB** or front left/right (**LT/RT**) speakers. Routing the low pass to the front left/right speakers can be useful with center speakers that have a very limited bass response (-3dB @ 100Hz). In this case, the recommended crossover frequency should be set to 160Hz.

Press **SETUP** twice to return to the speaker configuration sub menu, then press button # **3** (**SURRND**) to set up the surround speakers. This submenu is shown in figure 29.

Surround Speaker Configuration

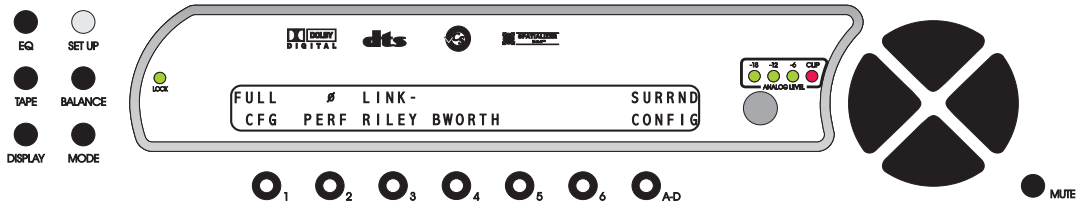


Figure 29 - Front Panel Display of the SETUP/INP/CONFIG/SURRND Sub Menu

Set the speaker configuration and crossovers, if necessary, in the same manner as the center speaker.

Note: The phantom (**PHTM**) setting for the surround speakers should be utilized when no surround speakers are present in the system. In this case, with 5.1 sources, the surround information is added to the front channels. In Dolby Pro Logic mode, the Casa Nova will automatically decode in Dolby 3 stereo.

Speaker Levels

This sub menu allows the user to set the relative level of each speaker in order to reflect the audio system speaker configuration, room characteristics, or the listener's preference. The allowable relative range is -15dB to +15dB. The **BALANCE** function (discussed later) allows the user to temporarily adjust the Left/Right and Front/Rear balances, and the Center & Sub channel levels to compensate for differences in program material or source.

Press **SETUP**, input (**INP**) then levels (**LVLS**) to access the speaker levels setup sub menu shown in figure 30. Press button(s) **1**-**6** to select a speaker to edit.

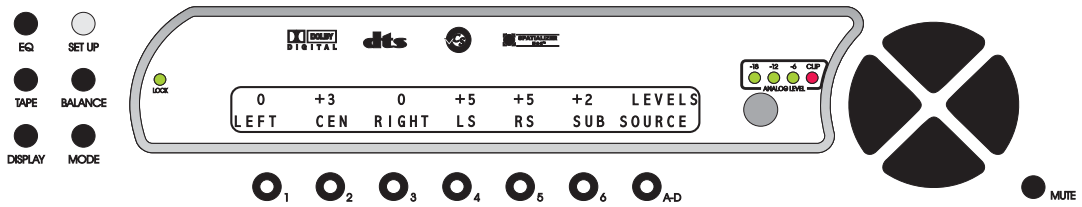


Figure 30 - Front Panel Display of the SETUP/INP/LVLS Sub Menu

Internal Noise Generator

To aid in establishing a desired system speaker level balance, the Casa Nova provides the user with the option of either routing the currently selected audio signal to the outputs, or routing an internally generated noise signal to either the currently selected speaker or to all speakers simultaneously.

This function is accessed via the **A-D** button in the **SETUP/INP/LVLS** sub menu. Press buttons **1**-**6** to select a speaker. Pressing the **A-D** button repeatedly toggles through these sources. Table 5 shows the 3 possible routings. When the **A-D** button is pressed, the source name or noise type will appear in the LCD below the sub menu title.

Press A-D Button	***MODE***	***SOURCE USED***
Once	Selected Input	AUDIO INPUT
Twice	Noise - all speakers	NOISE A
Three times	Noise - one (selected) speaker	NOISE 1

Table 5 - Source to Output Routing for Speaker Level Configuration.

When use of the noise generator is complete, press **A-D** to once again re-route the **SOURCE** to the outputs.

Note: It is recommended that levels be set relative to the front Left and Right speakers. The first step would be to adjust the front Left and Right level value(s) to zero dB. The remaining speakers can be adjusted accordingly by pressing buttons **2** and **4**-**6** one at a time, then pressing **LEVEL UP** or **LEVEL DOWN** to increase or decrease each speaker's relative level using an SPL meter, until the desired system balance is established.

Speaker Delays

This sub menu allows the user to set a time delay for each speaker to reflect the audio system configuration, room characteristics, or the listener's preference. The allowable range for the front left/right, center and sub speakers is **0** to **10** milliseconds (mS) and **15** to **31** mS for the surround speakers. Since discrete sources are often recorded with surround delays, it is recommended that the delay setting for 5.1 sources be 15 mS less than non 5.1 sources.

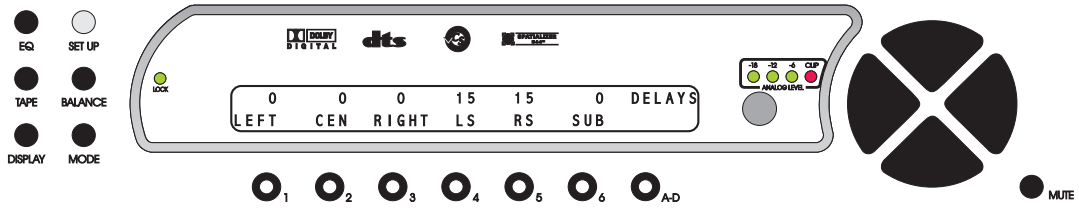


Figure 31 - Front Panel Display of the SETUP/INP/DLYS Sub Menu

Press **SETUP**, input (**INP**) then delays (**DLYS**) to access the speaker delays setup sub menu shown in figure 31. The current delay settings will be displayed on the top row of the LCD. Additionally, the sub menu title "**DELAYS**" will be displayed in the upper right corner. All delay settings in this page apply when the **MODE** is Matrix, Special Matrix, Dolby Pro Logic, Stereo and Mono. **Note:** Dolby Digital, DTS and Circle Surround delays are set in their respective Setup sub menus, and are independent of any delays set in this sub menu.

Select each speaker one at a time and adjust the individual delay according to the graph in figure 29. This graph is an example for setting up the rear speaker delays. The Front left/right speaker delay times should remain at **0**mS as a reference to all other speakers.

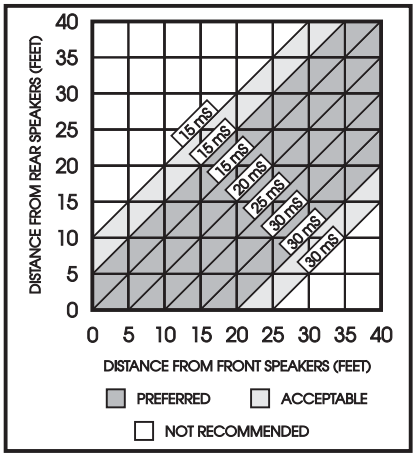


Figure 32 - Rear Delay Settings

The first time a multi channel audio system is set up in a room, calibration of time delay [and speaker levels] is required in order to have the sound from the rear surround speakers reach the listener at the correct time. To determine a delay time for the rear speakers, measure the distance from the listening position to the front speakers as well as the distance from the listening position to the rear speakers. With these 2 measurements, refer to figure 32 to determine the delay time and enter this value into the Casa Nova as described above.

Center speaker delay is required if the center speaker is closer to the listening position than the front left and right. When this is the case, the center delay time should be 1mS for each foot closer.

Default Mode

Each **INPUT SELECT** button can have a different default **MODE** assigned to it. To assign a default **MODE** for a given **INPUT SELECT** button, first press the applicable **INPUT SELECT** button, **SETUP**/**INP** (input) then button # **4** (**MODE**). Edit this parameter to select the desired default **MODE**, then press **SETUP** twice to exit. Repeat this procedure for each **INPUT SELECT** button. Note: **SKIP** appears twice in the list of modes.

Note: Pressing the front panel **MODE** function button allows the user to audition different modes for a given source, when applicable, however changing modes via the **MODE** button does not store a mode selection.

Setup Input Page 2

The **SETUP/INP** ***Page 2*** section contains the sub menus shown in figure 33.

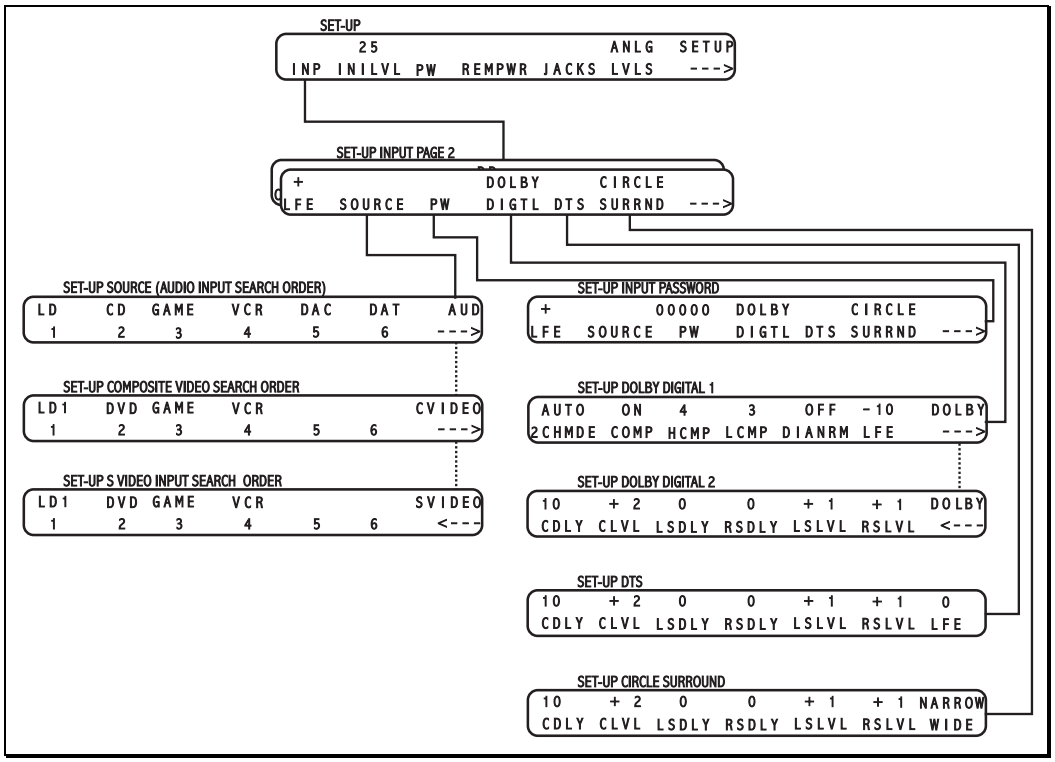


Figure 33 - Menu Map of SETUP/INP *Page 2*

To access this page, from either **INPUT SELECT** page or any other function menu, press **SETUP** then **INP** (input), then the **A-D** button once. Page 2 of the **SETUP/INP** menu is shown in figure 34.

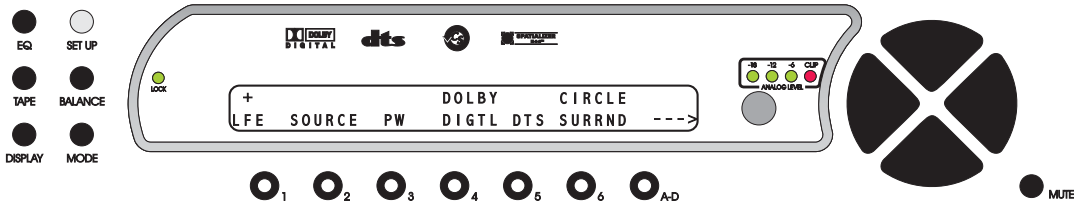


Figure 34 - Front Panel Display of the SETUP/INP *Page 2* Sub Menu

LFE Phase

The **LFE** phase can be changed from **+** (in phase) to **–** (180 degrees out of phase). This can be edited via button # **1**.

Mapping an Audio and Video Source (Input Jack to INPUT SELECT button)

Pressing button # **2** accesses 3 sub menus that allow the user to assign which input jacks will be mapped to any given **INPUT SELECT** button, both audio and video. There is one page for audio jack mapping, one for composite video, and one for S-video. Up to six jacks can be mapped to any one **INPUT SELECT** button, and the order that they are mapped determines the search order when pressing the **A-D** button.

Press the **SOURCE** button (button # **2**) once and the 'setup audio source' submenu, shown in figure 35, will be displayed.

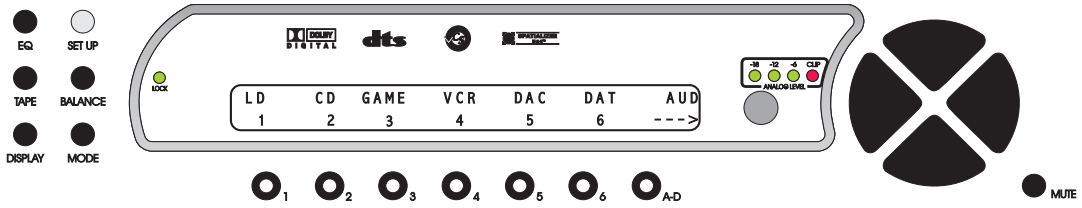


Figure 35 - Front Panel Display of the SETUP/INP *Page 2*/SOURCE/AUD Sub Menu

The default jack names are descriptive of the rear panel input jacks themselves. It is advisable to name all applicable audio and video input jacks before mapping them to a given **INPUT SELECT** button.

The **INPUT SELECT** buttons can be set up with 2 theories in mind. The first, and most commonly used is that each **INPUT SELECT** button will be assigned to one source device. Figure 7 depicts this setup. The other is that each person in a household can use one or two **INPUT SELECT** button(s) for himself or herself, and have up to 6 source devices mapped to "their" **INPUT SELECT** button(s). Figure 35 depicts this setup. This manual is written with the first theory in mind since that is the most commonly practiced.

To map input jacks, first press the **INPUT SELECT** button that the input jacks are to be mapped to. Then press **SETUP**, **INP**, **A-D**, then **SOURCE**. To map the first input jack, press button # **1** and use the **LEVEL UP/DOWN** buttons to select the appropriate jack. If another input jack is to be assigned to the same **INPUT SELECT** button, press button # **2** and select the desired rear panel input jack. Continue with this method for up to 6 input jacks.

An example of this use is for a Laserdisc/DVD/CD transport where the first jack to be assigned could be the **RF-1** jack, the second could be the **COAXIAL 1** input jack. In this example, when an LD is being played, the user would press the **INPUT SELECT** button that is 'assigned' to this transport. If **RF-1** (or the name assigned to this input jack) is not displayed in the lower right hand corner of the LCD, press the **A-D** button once. When a CD is to be played in this transport, press the **A-D** button once to display **COAXIAL 1** (or the name assigned to this input jack) in the lower right hand corner of the LCD. The default **MODE** for this **INPUT SELECT** jack should be that which is desired for the playback of CD's, as when the Casa Nova detects either a Dolby Digital AC-3 RF or 5.1 data stream, it will detect this signal and automatically change the **MODE** to Dolby Digital or DTS.

It is important to note that when the Casa Nova auto detects a Dolby Digital or DTS signal and auto switched the mode, this mode is temporary and not stored. If the Casa Nova ceases to detect this signal, it will revert back to the previous mode for the currently selected **INPUT SELECT** button, in approximately 15 seconds.

Press **SETUP** 3 times then repeatedly press the **A-D** button to toggle between the input jacks for the currently selected **INPUT SELECT** button. It is advisable to only map input jacks that will be used, to the currently selected **INPUT SELECT** button. This will eliminate needless pressing of the **A-D** button to cycle through unused jacks.

Note: When input jacks are re-assigned and the user exits **SETUP**, the new input jack mappings will not be active until either the **A-D** button is pressed or another **INPUT SELECT** button is pressed.

Next, map the appropriate video input jacks, if applicable, to the same **INPUT SELECT** button. In the case of the above example where the **RF-1** jack is the first audio jack mapped to the currently selected **INPUT SELECT** button, either the composite or S-video (whichever type is being used to connect the video signal from the transport to the Casa Nova) input jack must be mapped first in the video search order. Since the LD's audio jack is second in the audio search order, it must also be mapped second in the video search order.

Continuing this example, if a source device has both an audio and a video signal associated with it, and the audio signal is third in the audio search order, then its video signal must be third in the video search order.

To map a video signal to an **INPUT SELECT** button, first press the desired **INPUT SELECT** button, then press **SETUP**, **INP**, **A-D**, **SOURCE** and **A-D** once for a composite video signal, or **A-D** twice for an S-video signal. Press the appropriate button (**1**-**6**) which corresponds to the same position in the audio search order menu for this source device and press the **LEVEL UP**/**DOWN** button to select the desired video input jack.

Press the **SETUP** button once to return to the **SETUP**/**INP** ***Page 2*** submenu.

Password for Each INPUT SELECT Button

Button # **3** (**PW**) allows the user to assign a password to the currently selected **INPUT SELECT** button. Press **PW** once and the "**ARE YOU SURE?**" message appears on the LCD. Pressing **NO** (button # **2**) reverts back to the **SETUP**/**INP** ***Page 2*** submenu. Pressing **YES** (button # **1**) will display the current submenu, however the password for this **INPUT SELECT** button will appear above **PW** (button # **3**). The user can use buttons **1**-**6** to enter a password, or elect to have no password for this **INPUT SELECT** button by pressing the **A-D** button 5 times, which will display all zeros, indicating no password.

Note: If a zero appears in any position of the password, it will be seen as all zeros, or no password. **PLEASE REMEMBER and/or WRITE DOWN YOUR PASSWORD!** If it is forgotten, all access to password protected areas will be denied! There is no other over ride to this feature.

Setup Dolby Digital

Button # **4** provides a two-page sub menu, which allows the user to set up preferences pertaining to Dolby Digital (AC-3), by **INPUT SELECT** button. The first page of this sub menu is shown in figure 36.

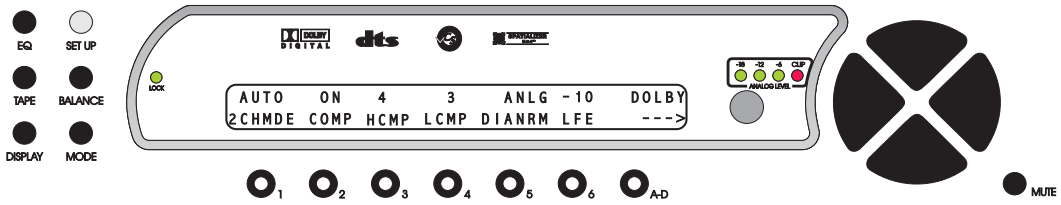


Figure 36 - Front Panel Display of the SETUP/INP *Page 2*/DOLBY DIGITAL *Page 1* Sub Menu

2 Channel Mode

Some Dolby Digital sources contain only two of the possible five main channels. This is usually noted on the material's cover, in the form of "2.0" as opposed to "5.1". In the event that the Dolby Digital source is two channel ("2.0" or "2.1"), Casa Nova provides the user with the ability to apply a surround sound process. There are three options for this setting: "Pro Logic" (**PRO**), "none" (**STER**) or "auto" (**AUTO**).

Press button # **1** (**2CHMDE**, or two channel mode).

Pro Logic (**PRO**): Any two-channel Dolby Digital source will automatically have Dolby Pro Logic surround mode applied to it, thus producing a Dolby Surround output.

None (**STER**): Any two-channel Dolby Digital source will have no additional surround processing applied to it, thus producing a two-channel (stereo) output.

AUTO: Embedded in every two-channel Dolby Digital datastream is an indication of whether or not the material is Dolby Surround encoded. There are three possibilities for this indication: Dolby Surround encoded; Not Dolby Surround Encoded; No Indication. If the indication is that the material is Dolby Surround Encoded, Dolby Pro Logic processing will be performed thus producing a Dolby Surround output. If the indication is that the material is not Dolby Surround encoded, or there is no indication, no additional surround processing will occur thus producing a two-channel (stereo) output.

Compression

Dolby Digital contains provisions for reducing the dynamic range of a Dolby Digital source. This means reducing the loudness of the loud passages and increasing the loudness of the quiet passages. Possible reasons for reducing the dynamic range of a source include late night listening wherein loud moments may disturb others, and making tapes for automotive / portable use wherein quiet passages may not be heard.

Casa Nova contains three parameters to control Dolby Digital compression. Button # **2** (**COMP**) simply turns the compression **ON** or **OFF**. Button # **3** (**HCMP**, or High Compression) controls the amount that loud passages will be reduced. Button # 4 (**LCMP**, or Low Compression) controls the amount that quiet passages will be increased. A larger number indicates a greater amount of increase or decrease.

Note: Some Dolby Digital sources do not allow for compression, in which case altering these settings will not result in an audible change.

Dialog Normalization

Press button # **5** to set the dialog normalization value. Dolby Digital contains the useful provision for making all Dolby Digital sources have the same perceived loudness even though they may have been recorded or mixed at very different levels. This is done by embedding in the datastream a value that the program material will need to be adjusted by to conform to an average dialog level established by Dolby Laboratories. It should be noted that all channels are adjusted, not just the center channel. Casa Nova contains two options for this setting: **ANLG** (analog) or **DIGI** (digital).

> **ANLG**: Dialog normalization will be applied in the analog domain. This means that the level adjustment number is read into Casa Nova's main computer and the Casa Nova's analog volume controls are properly adjusted. This is the best-sounding and preferred setting.
>
> **DIGI**: Dialog normalization will be performed in the digital domain. Digital reduction of volume results in a loss of resolution i.e. a 16 bit source can effectively be reduced to 15 bits or worse.

Button # **6** controls the **LFE** gain setting for Dolby Digital sources. Dolby Digital sources usually contain an LFE (low frequency effects) channel. This channel commonly contains sound effects such as explosions, but may also contain soundtrack information. Casa Nova contains three options for this setting:

> **OFF**: Turns off the LFE track. May be useful for late night viewing or if there isn't a subwoofer / speaker capable of handling the low frequencies contained in the LFE channel.
>
> **0** dB (preferred setting): Turns on the LFE and sets its level in proper proportion to the remaining five channels.
>
> **-10** dB: Turns on the LFE and sets its level 10 decibels lower than normal. Useful for late night viewing or if there isn't a subwoofer / speaker capable of handling the full volume contained in the LFE channel.

Press the **A-D** button to access Page 2 of the Dolby Digital set up submenu, which is shown in figure 37.

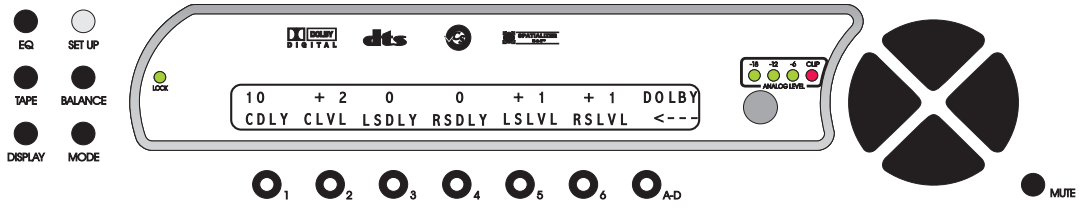


Figure 37 - Front Panel Display of the SETUP/INP *Page 2*/DOLBY DIGITAL *Page 2* Sub Menu

This submenu allows the user to adjust the center and individual surround speaker delays and levels when the **MODE** is Dolby Digital only. When the Mode is anything other than Dolby Digital, the delay settings in this sub menu will have no effect.

The center and surround levels are relative to the level values set in the **SETUP/INP/LVLS** sub menu. As an example, if the center level in the **SETUP/INP/LVLS** sub menu is set to **+5**, and in this sub menu it is set to **+3**, then the total center level when the **MODE** for the currently selected input is Dolby Digital, will be +8.

The center and individual surround delays do not interact with the delays in the **SETUP/INP/DLYS** sub menu. Here the Casa Nova's center and individual surround delays will be exactly how they are set in this sub menu, when the **MODE** for the currently selected input is Dolby Digital.

Press the **SETUP** button once, then press button # 5 (**DTS**) to access the DTS set up sub menu, which is shown in figure 38.

Setup DTS

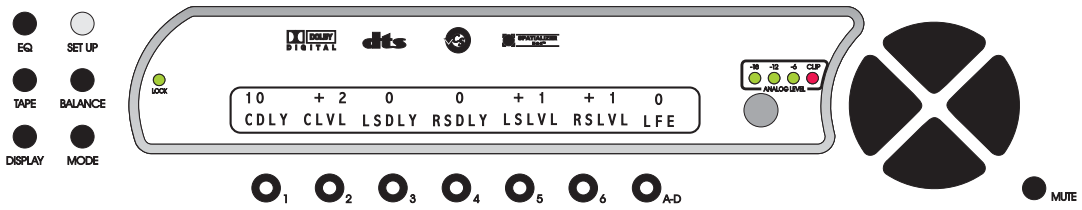


Figure 38 - Front Panel Display of the SETUP/INP *Page 2*/DTS Sub Menu

This submenu allows the user to adjust the center and individual surround speaker delays and levels when the **MODE** is DTS only. When the Mode is anything other than DTS, the delay settings in this sub menu will have no effect. The level settings are interactive with those in the **SETUP/INPUT/LEVELS** sub menu.

The center and surround levels and delays function exactly the same as the Dolby Digital ones above and on the previous page of this manual, as does the LFE gain setting (**A-D** button) for DTS sources only.

Press **SETUP** once, then button # **6** to set up Circle Surround. This sub menu is shown in figure 39.

Setup Circle Surround

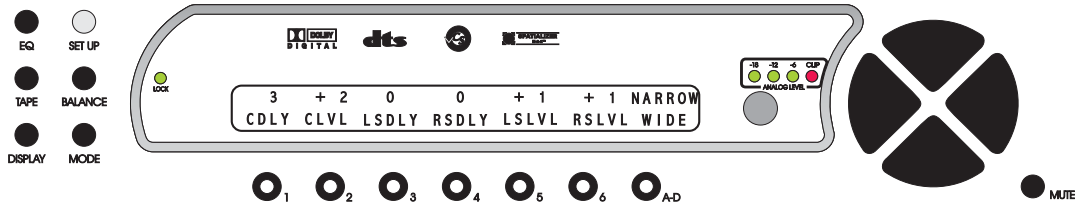


Figure 39 - Front Panel Display of the SETUP/INP *Page 2*/CIRCLE SURRND Sub Menu

This submenu allows the user to adjust the center and individual surround speaker delays and levels when the **MODE** is Circle Encoded, Non-encoded or Cinema, only. When the Mode is anything other than one of these three, the delay settings in this sub menu will have no effect. The level settings are interactive with those in the **SETUP/INPUT/LEVELS** sub menu.

The center and surround levels and delays function exactly the same as the Dolby Digital ones above and on the previous page of this manual, for Circle Surround Modes only. With Circle Surround, the user also has the option to make the imaging narrow or wide. This is accessed via the **A-D** button.

Press **SETUP** once, then the **A-D** button to go to the **SETUP/INP/***Page 3* sub menu, shown in figure 41.

Setup Input Page 3

The **SETUP/INP *Page 3*** section contains the sub menus shown in figure 40.

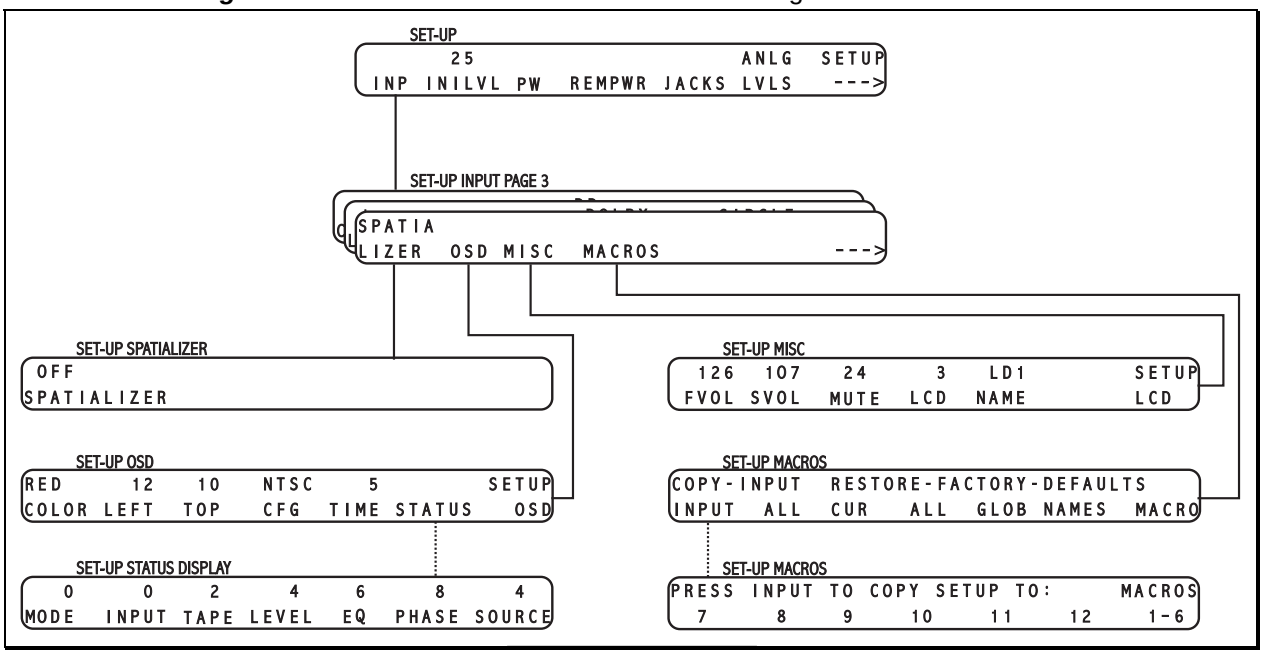


Figure 40 - Menu Map of SETUP/INP *Page 3*

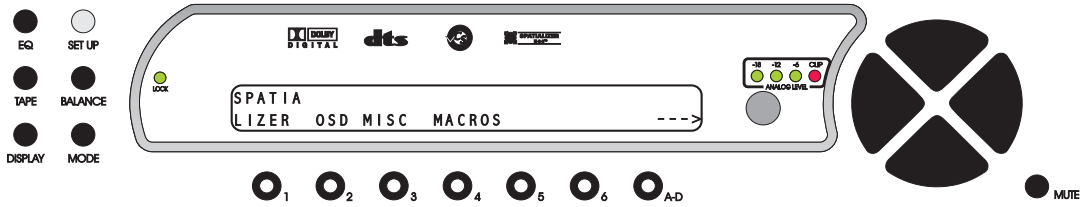


Figure 41 - Front Panel Display of the SETUP/INP *Page 3* Sub Menu

Setup Spatializer

Button # **1** allows the user to either activate or deactivate Spatializer. If it is not installed, pressing this button will result in a message saying "**OPTION NOT INSTALLED**".

Spatializer is a process in which information from the surround channels is incorporated into the front Left/Right channels in a manner that simulates the aural appearance that surround speakers are present in the system.

Onscreen Display (OSD) Setup

Pressing button # **2** activates the OSD set up menu, shown in figure 42.

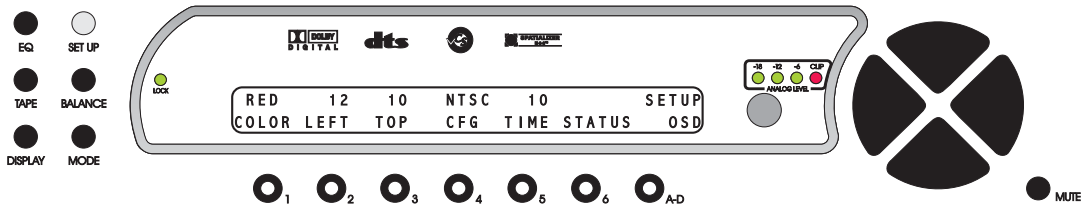


Figure 42 - Front Panel Display of the SETUP/INP *Page 3*/OSD Sub Menu

Button # **1** (**COLOR**) allows the user to select up to 7 different OSD background colors.

The entire OSD can be offset from the left and top edges of the screen (button #s **2** and **3** respectively) to accommodate differences in monitors.

The configuration (**CFG**) feature can switch the Casa Nova's OSD to accommodate either an **NTSC** or **PAL** monitor.

When a function button is pressed, its OSD will remain on the screen until the user is no longer in any function menu. The display **TIME** (in seconds) setting allows the user to set the amount of time (delay) that the video monitor displays the **INPUT SELECT** menu, when changing inputs. If the LCD is turned off (in the **SETUP/INP *Page 3*/MISC** sub menu) and any button is pressed, the LCD will revert to full brightness for the amount of seconds in the **TIME** parameter. Setting the **TIME** value to **0** turns off the OSD for the currently selected input.

Status Setup

STATUS (button # **6**) displays a sub menu, which allows the user to change the position of the Status screen text on the video monitor only. This sub menu is shown in figure 43.

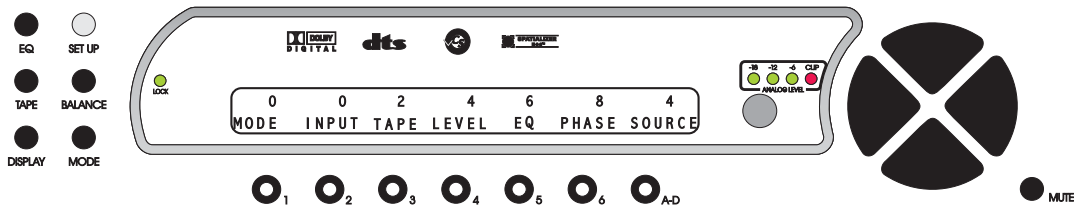


Figure 43 - Front Panel Display of the SETUP/INP *Page 3*/OSD/STATUS Sub Menu

The items in this sub menu are the only ones displayed in the OSD when the **STATUS** button on the hand held remote is pressed. Changing any value to **0** will disable that item from being displayed in the OSD. **MODE**, **INPUT**, **TAPE**, **LEVEL** and **SOURCE** have value ranges of between **0** and **9**, which means that they can be displayed vertically on the left side of the video monitor only. **1** is the highest position vertically and **9** is the lowest. **LEVEL, EQ**, and **PHASE** all have value ranges of between **0** and **17**. Any value of **10** and above will be displayed on the right hand column of the video monitor, **10** being the highest position vertically and **17** being the lowest.

Note: It is possible to have conflicting results if more than one item is displayed on the same line.

Setup Miscellaneous

Press the **SETUP** button once to return to the **SETUP/INP *Page 3*** sub menu, then press button # **3** once to enter the **MISC** sub menu, shown in figure 44.

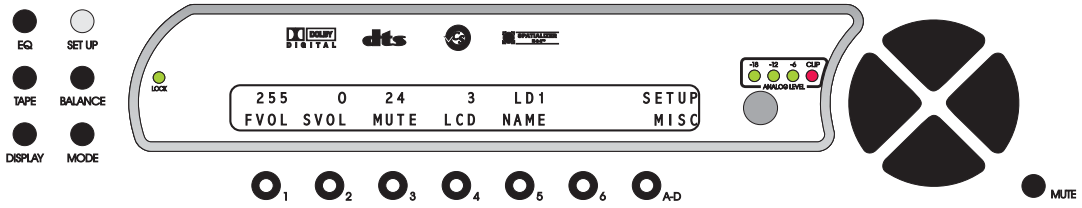


Figure 44 - Front Panel Display of the SETUP/INP *Page 3*/MISC Sub Menu

FVOL and SVOL

When certain parameters are edited or the master volume changed, holding the **LEVEL UP/DOWN** button for more than 5 steps will, by default, speed up the rate in which the value changes. This is referred to as *Fast Mode*. It is possible to delay the speed of the fast mode in order to slow it down to the users preference. In **FVOL** (Fast Volume) a delay of **0** will allow the Fast Mode to be its quickest, and a delay of **255** allows it to be its slowest.

The rate that the **LEVEL UP/DOWN** buttons respond during the first 5 steps is referred to as *Slow Mode*. **SVOL** allows the user to slow down the increment changes during these first 5 steps (a higher delay time) or increase their speed with a lower delay time setting. In **SVOL** (Slow Volume) a delay of **0** will allow the Slow Mode to be its quickest, and a delay of **255** allows it to be its slowest.

Changing the Default MUTE Level

When the front panel or hand held remote **MUTE** button is pressed, the user can set the master volume level to mute to a specific level. Editing this feature is accessed by pressing button # **3**.

LCD Brightness

Each **INPUT SELECT** button can have a different LCD brightness assigned to it. Pressing button # **4** allows the user to change the default brightness from **0** (off) to **3** (brightest). Any changes made to this parameter are reflected the next time that **INPUT SELECT** button is pressed. If this value is set to **0**, and the LCD is off, pressing any button except **LEVEL LEFT/RIGHT**, the currently selected input, **A-D**, or **DISPLAY** will automatically brighten the LCD to the maximum level. If the button pressed is not another **INPUT SELECT** or function button, then the LCD will revert back to its default brightness in *X* seconds. *X* represents the **TIME** parameter value in the **SETUP/INP *Page 3*/OSD** sub menu.

Naming the Current Input Select button

Press button # **5** to name the currently selected input. The LED inside of button # **5** will be lit and **LCD** will be displayed in the lower right above the **A-D** button, indicating that the name in the LCD is to be edited. LCD names are limited to 4 characters. Press the **LEVEL UP/DOWN** button to change characters and the **LEVEL LEFT/RIGHT** to change character positions. Pressing the **DISPLAY** button once will clear the current **INPUT SELECT** name. There is not a blinking cursor in the LCD. Press the **A-D** button to edit the OSD name. **OSD** will appear in the lower right corner of the LCD. This name can be up to 15 characters and the current character to be edited will blink on screen.

Setup Macros

Press the **SETUP** button once to return to the **SETUP/INP *Page 3*** sub menu, then press button # **4** once to enter the **MACROS** sub menu, shown in figure 45.

Figure 45 - Front Panel Display of the SETUP/INP *Page 3*/MACROS Sub Menu

COPY-INPUT allows the user to either copy all input parameter values from the currently selected input to another (selectable) **INPUT** (button # **1**), or to **ALL** 11 other inputs (button # **2**). The only input parameter values that are not copied are the input **JACKS** names and **INPUT SELECT** button **NAMES**.

When button # **1** (**INPUT**) is pressed, the user will be prompted to select the input to which the **INP** parameters of the currently selected input are to be copied to. The LCD shows inputs **1**-**6** above the **1**-**6** buttons and above the **A-D** button is displayed **7-12**, indicating that by pressing **A-D**, the user has the option to copy the currently selected **INP** parameter values to INPUT **SELECT**s **7**-**12**. Once the destination is selected, the "**ARE YOU SURE?**" message appears in the display with a **YES** above button # **1** and **NO** above button # **2**. When button # **2** (**ALL**) is pressed, the "**ARE YOU SURE?**" message again appears in the display. When **YES** (button # **1**) is pressed, the LCD shows no change until all parameters are copied to 12 inputs. This may take up to 15 seconds.

The **RESTORE-FACTORY-DEFAULTS** section (buttons **3**-**6**) contains 4 options. Press button # **3** (**CUR**) to restore the factory **INPUT** parameters (except names) to the currently selected input. Button # **4** allows the user to restore the factory **INPUT** parameters (except names) to **ALL** 12 inputs. Pressing button # **5** (**GLOB**) will restore all global parameters (those that are not stored by input select button). i.e. Remote Power Jack, Tape Out parameter values, etc.). Lastly, button # **6** (**NAMES**) will restore all 12 Input Select Button names as well as all Input Jack names. The "**ARE YOU SURE?**" message appears in the display whenever buttons **3**-**6** are pressed.

Press **SETUP** twice to return to the first page of the **SETUP** menu.

BALANCE Function

This function allows the user to temporarily* set the **FRONT**/**REAR** and **LEFT**/**RIGHT** balances as well as the **CEN**ter and **SUB** woofer speaker levels, the shelf **EQ**, and a relative adjustment of the analog input level (**ANLVL**), in order to compensate for distinct program material characteristics.

The first page of the balance menu is shown in figure 46 and the second in figure 47.

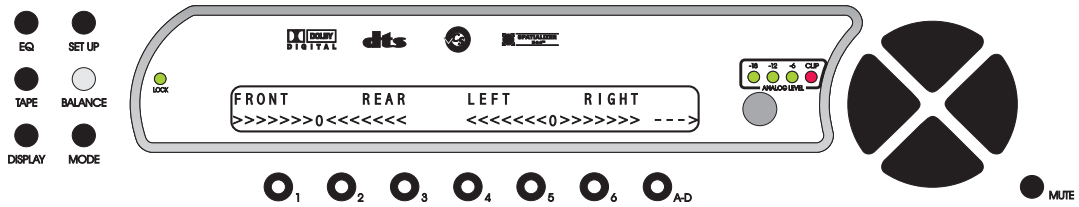


Figure 46 - Front Panel Display of the BALANCE *Page 1* Menu

Front/Rear and Left/Right Balance

The **BALANCE** adjustments are made with reference to the relative speaker trim levels that are stored in the **SETUP**/**INP**/**LVLS** sub menu. **LEVEL LEFT**/**RIGHT** adjusts the Left/Right balance and **LEVEL UP**/**DOWN** adjusts the Front/Rear balance.

*The parameter values in the two **BALANCE** pages are, by default, temporary. This is to say that under certain conditions such as pressing a different **INPUT SELECT** button, the changes made will revert to **0**. This feature has an override, (**CLRBAL**), which is accessed via the **SETUP *Page 2*** menu.

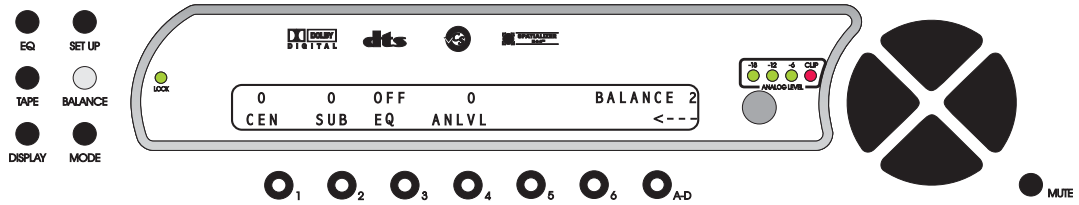


Figure 47 - Front Panel Display of the BALANCE *Page 2* Menu

Pressing the **A-D** button once will reveal the second page, consisting of temporary level settings for the center (**CEN**) speaker, sub woofer (**SUB**), **EQ** and analog input level (**ANLVL**) for the currently selected input.

Center and Sub Balance

Press button # **1** to adjust the **CEN**ter level and button # **2** to adjust the **SUB** woofer level.

Shelf EQ

Pressing button # **3** will allow the user to adjust the **EQ** setting between **OFF**, **1**, **2**, **3** and **4**. This is a low pass shelf EQ that, at 2KHz, drops by 1.5dB when the parameter value is set at **1**, 3dB when set at **2**, 6dB when set at **3**, and 9dB when set at **4**. Being a shelf EQ, the rolloff amplitude never drops significantly below the specified dB value. The **EQ** is active in all modes and is designed to roll off excess brightness in different program material.

Analog Input Level Override

Button # **4** lets the user adjust the analog input level of the currently selected input, relative to the stored value in the **SETUP**/**ANLG LVLS** (analog levels) menu.

Press the **BALANCE** button once more to return to the current **INPUT SELECT** menu.

STATUS Function

This feature, accessible from the hand held remote only, provides the user with a 'quick view' of the most pertinent current settings of the Casa Nova. It is available from any menu or sub menu simply by pressing the **STATUS** button.

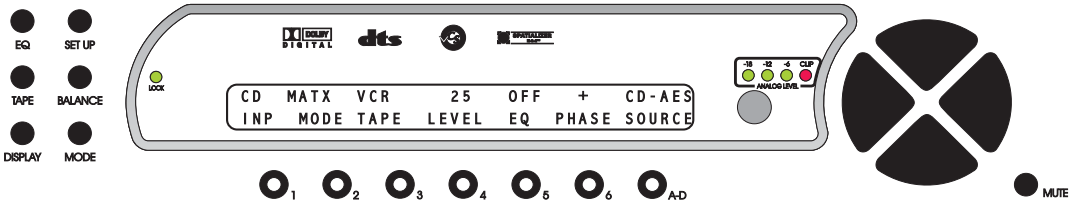


Figure 48 - Front Panel Display of the STATUS Display

When the **STATUS** display is activated, the following appears in the LCD, regardless of what settings are stored in the **SETUP/INPUT** ***page 3***: **STATUS** sub menu:

- The current **INPUT SELECT** button **NAME**.
- The current **MODE** (Stored or temporary).
- The analog **TAPE OUT** audio source to be recorded. (Input jack name).
- The **MASTER VOLUME** (level) setting.
- The **EQ** parameter value of **OFF**, **1**, **2**, **3**, or **4**. (Stored or temporary).
- The **PHASE** parameter value of **+** (0°) or **-** (180°).

Pressing a function button will clear the **STATUS** display and show the current function menu. The **INPUT SELECT** buttons (**1** - **6**) are inactive. Press the **A-D** button once to display the first page of the Dolby Digital Information page, an example of which is shown in figure 49.

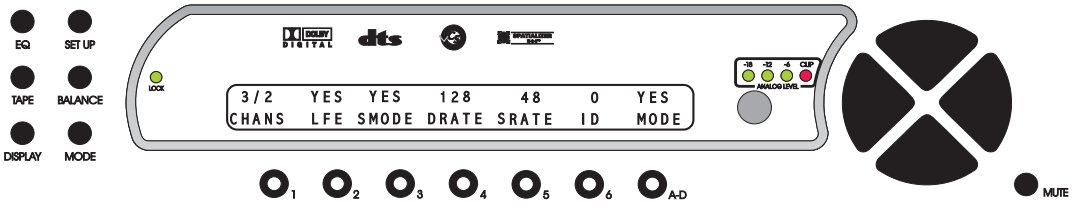


Figure 49 - Front Panel Display of the STATUS/Dolby Digital *Page 1* Display

The Dolby Digital status displays contain information embedded in the Dolby Digital datastream. Each parameter on the first page is described below:

Channels (**CHANS**): Displays the number of main channels.
LFE: Displays whether an LFE track is present or not.
Surround Mode (**SMODE**): Displays the surround mode. See **SETUP**/**INP** ***Page 2***/**DOLBY DIGTL** ***Page 1***, parameter value of **2CHMDE** for Casa Nova's use of this parameter. This can be found on page 31.
Datarate (**DRATE**): Displays the datarate of the source. This is a measure of the amount of compression used.
Sample Rate (**SRATE**): Displays the sample rate.
Bitstrm ID (**ID**): The bitstream identification number.
MODE: The intended use of this bitstream.

Press the **A-D** button once more to display the second page of the Dolby Digital Information page, an example of which is shown in figure 50.

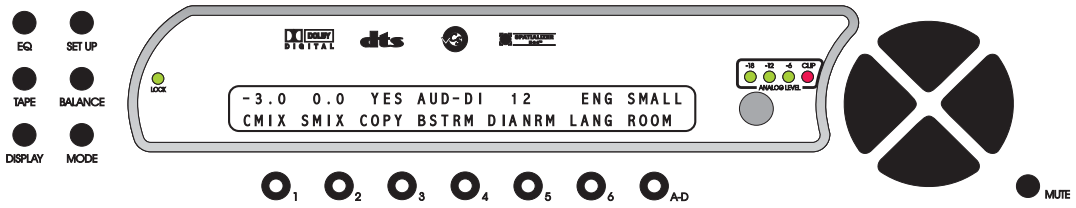
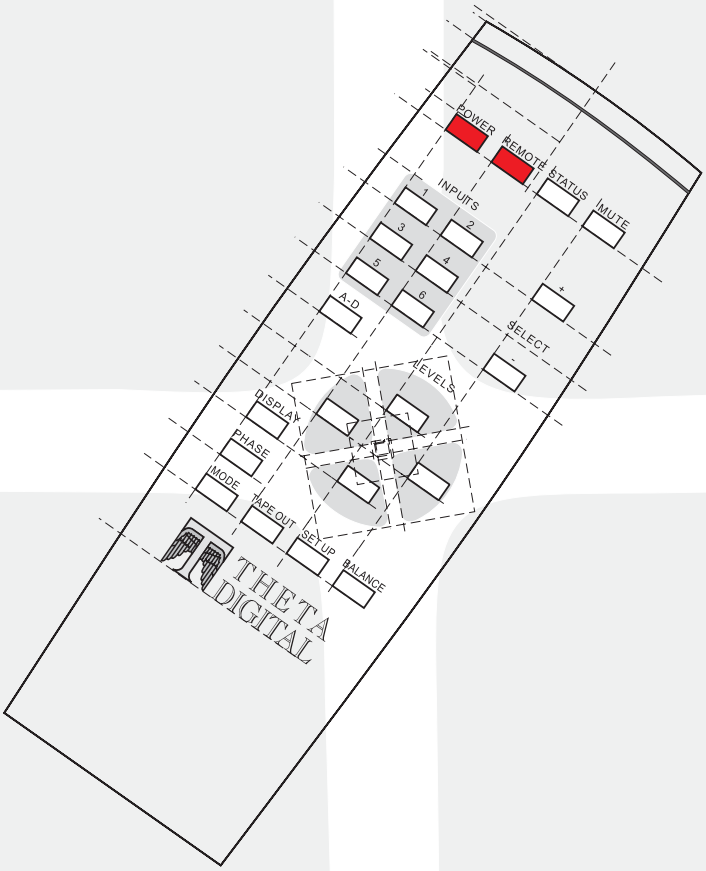


Figure 50 - Front Panel Display of the STATUS/Dolby Digital *Page 2* Display

Each parameter on the second Dolby Digital information page is described below:

Center Mix (**CMIX**): Center mix level.
Sur Mix (**SMIX**): Surround mix level.
Copyright (**COPY**): Copyright status (protected or not protected).
Bitstream (**BSTRM**): Copy or original bitstream.
Dialog Norm (**DIANRM**): Dialog normalization value. See Setup Dolby Digital Dialog Normalization on page 32 for Casa Nova's use of this parameter.
Language (**LANG**): The language code.
Room Type (**ROOM**): Type of room used for mixing.

REMOTE CONTROL



Remote Control Layout

1. **POWER.** After the rear panel **MAIN POWER** switch is turned on, press this button to exit the standby mode. Pressing **POWER** again will place the Casa Nova into standby mode, thereby turning off the LCD and muting all outputs.

2. **REMOTE.** Activates/deactivates the **REMOTE POWER** jack(s) on the rear panel that are assigned to this button.

3. **MUTE.** Mutes all analog audio outputs except the **TAPE OUT** and **ZONE 2** jacks. Press again to disable muting.

4. **STATUS.** Displays the current status of the Casa Nova on the video monitor if optional video card is installed and video display is enabled.

5. **INPUTS.** Individual buttons which select the desired input channel. Within a function's sub menu page(s), these buttons select sub functions to edit. When pressed, they activate a corresponding LED on the front panel and an arrow or sub menu on the video monitor.

6. **A-D.** Sequences through input jacks assigned (mapped) to the active **INPUT SELECT** button. Also toggles between menu pages.

7. **SELECT +** and **-.** Incrementally changes the **INPUT** channel, thereby taking the place of buttons **1** to **6**.

8. **LEVELS UP** and **DOWN.** Adjusts master volume for all speaker outputs. Also increments/decrements parameter values in most edit modes and shifts **FRONT**/**REAR** audio in the first **BALANCE** menu.

9. **LEVELS LEFT** and **RIGHT.** Shifts the audio balance to the left or right in the first **BALANCE** page. Also used to adjust the **MASTER** volume level when in most sub menus.

10. **DISPLAY.** Temporarily overrides the LCD brightness display setting in the **SETUP**/**INPUT** *page 3*/MISC submenu.

11. **PHASE.** Inverts the phase (180°) of all speaker outputs.

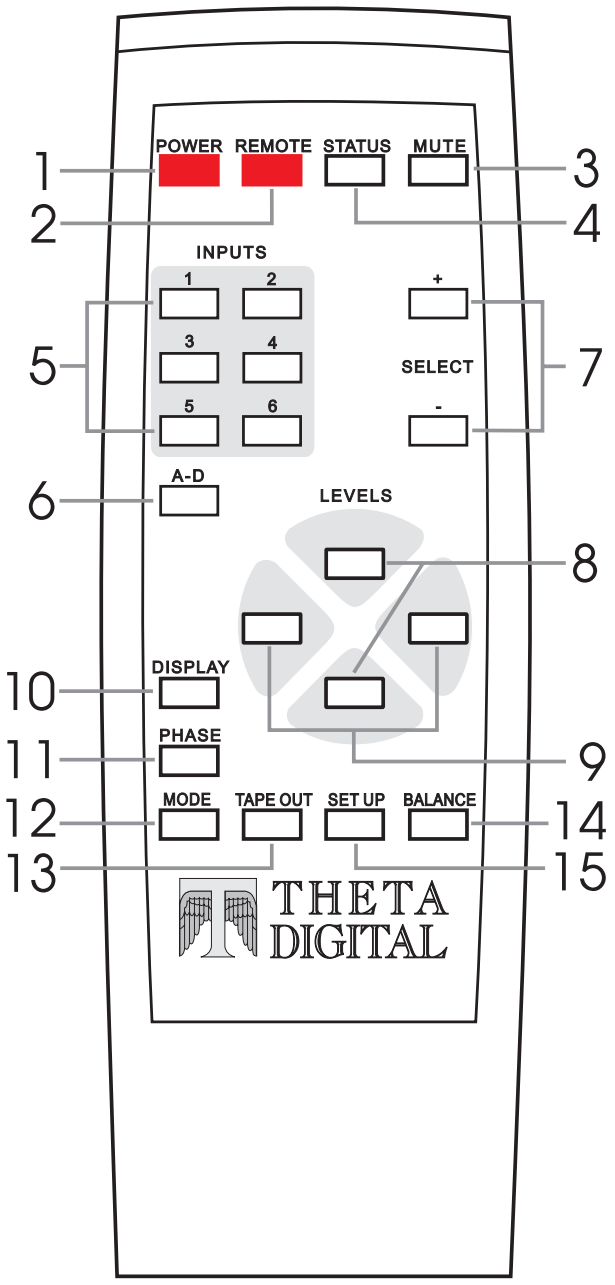


Figure 51 - Remote Control Layout

12. **MODE.** Activates/deactivates the **MODE** select pages for currently selected input.

13. **TAPE.** Used for routing both audio and video signals to their respective **TAPE OUT** jacks. Also routes an audio signal to the **ZONE 2** jacks.

14. **BALANCE.** Activates the **BALANCE** menus in order to set a temporary balance configuration to adjust for different program characteristics.

15. **SETUP.** Displays multiple pages of sub menus which provides access for setting speaker configurations/levels/delays, analog input levels, naming inputs, setting the display & remote features, selecting the video type, setting options for incoming Dolby Digital, DTS and Circle Surround signals and much more.

REMOTE CONTROL OPERATIONS

This section describes the functionality of the Casa Nova's hand held remote only. For front panel functionality descriptions, please refer to the section entitled *FRONT PANEL OPERATIONS* on page 11. Be sure to read the *Introduction to the User Interface* section on page 10. Descriptions for remote buttons/functionality not covered in this section can be found in the preceding *REMOTE CONTROL LAYOUT* section. Features and functional descriptions, which are common to both front panel and remote operations, are covered in the *FRONT PANEL* section only and therefore not repeated in this section.

Input Select Menus

When the rear panel **MAIN POWER** switch is turned on, the Casa Nova enters standby mode. Pressing the **POWER** button once will result in the video monitor displaying a start-up routine and then the last accessed **INPUT SELECT** menu for *x* seconds, where *x* represents the time parameter value that is stored in the **SETUP/INPUT** *page 3*/**OSD** sub menu, **TIME** parameter. Figure 52 shows an example of this menu.

Changing Inputs and Input Select Pages

Pressing buttons **1** through **6** or **SELECT UP/DOWN** will select a desired input, or audio source. An arrow will point to the currently selected input. The input names shown in this figure are for example only and will most likely differ from the user's set up. There are two **INPUT SELECT** pages, giving the user a total of 12 inputs to select from. Pressing the **LEVEL LEFT/RIGHT** buttons will toggle between the two **INPUT SELECT** menus.

```
INPUT SELECT PAGE 1

→1 DVD TRANSPORT
  2 VCR
  3 SATELLITE
  4 TV
  5 D/A CONVERTER
  6 TAPE

SOURCE: COAXIAL 1
MODE: DOLBY DIGITAL
```

Figure 52 - Video Display of the INPUT SELECT *Page 1* Menu

Pressing the **LEVEL UP/DOWN** buttons will adjust the master volume for all speakers. This value ranges from **0** to **73** (relative maximum) and will be shown as a horizontal bar graph on the video monitor for approximately 1 second after the button is released.

Selecting Mapped Input Jacks for the Currently Selected Input

Pressing the **A-D** button will toggle between the input jacks that are mapped to this **INPUT SELECT** button. Please refer to page 12 (*Search Order*) for important, detailed information regarding using the **A-D** button.

* * *

The **MUTE** button will toggle the audio between the master volume level and **MUTE** level in all speakers each time it is pressed. Please refer to pages 11 and 36 for additional information on the **MUTE** feature. The **MUTE** feature is active in all menus.

The **DISPLAY** button will toggle the front panel LCD brightness between off, low, medium and high. This feature will have no effect on the video display. When the LCD is turned off, the red LEDs also turn off.

Global Phase

Repeatedly pressing the **PHASE** button simultaneously toggles all of the main audio output's phase between **0** and **180** degrees, and displays this on the monitor for approximately 1 second after being released. The **PHASE** parameter is only adjustable from the remote since its effect can be best detected from the listening position.

STATUS Display

This display, accessible from the hand held remote and viewed on both the video monitor display and LCD, provides the user with a 'quick view' of the most pertinent current settings of the Casa Nova as well as information about a Dolby Digital source. The status page is available from any menu or sub menu simply by pressing the **STATUS** button.

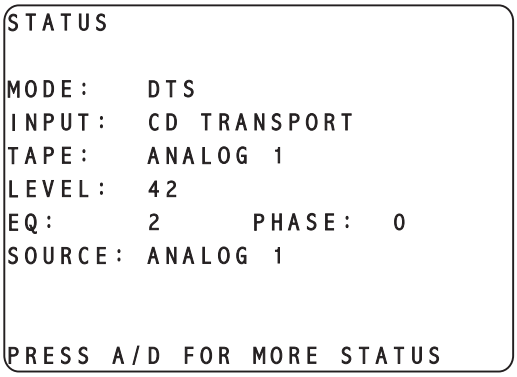


Figure 53 - Video Display of the STATUS Display

When the **STATUS** display is activated, its title is displayed in the upper left corner along with the following:

- The current **MODE**.
- The current **INPUT NAME**.
- The analog **TAPE OUT** source.
- The **MASTER VOLUME** level.
- The shelf **EQ** parameter value of **OFF**, **1**, **2**, **3**, or **4**.
- The **PHASE** parameter value of **0**° or **180**°
- The currently selected jack name (source).

Press the **A-D** button once to display the first of two pages of information (status) about the Dolby Digital source. Press **A-D** once more to display the second page. Both of these pages are shown in figures 54A and B.

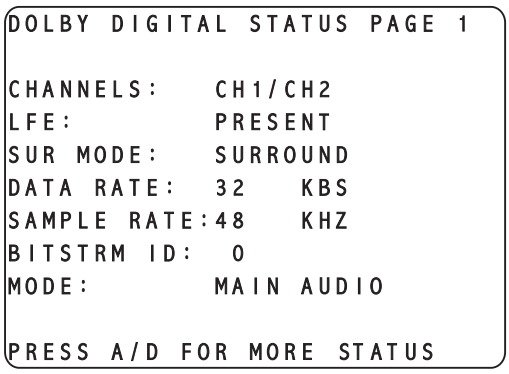


Figure 54A - Video Display of the First Dolby Digital Status Page

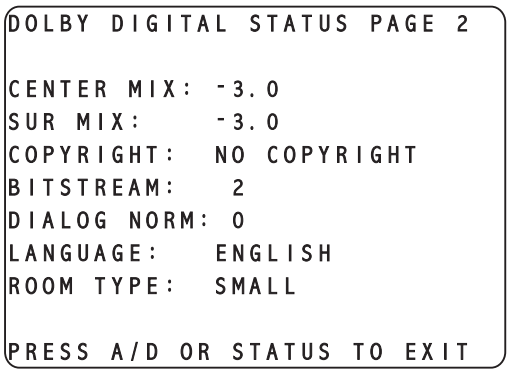


Figure 54B - Video Display of the Second Dolby Digital Status Page

Pressing the **STATUS** button once, will clear the status display. Pressing a function button will clear the status display and show the current function menu.

MODE Function

This function allows the user to audition **MODE**s for the currently selected input. Storing a default **MODE** is done in the **SETUP/INPUT** *page 1* sub menu.

Pressing the **MODE** button once displays the first "page" of the **MODE** menu. This page consists of 6 different signal 'processing' modes, one of which can be selected and temporarily applied to the current input.

An arrow will point to the currently active mode. As indicated by the on screen instructions at the bottom of the monitor, pressing the **A-D** button once will reveal a second page consisting of 4 additional modes.

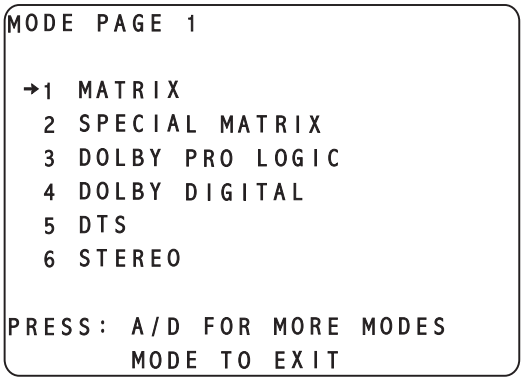


Figure 55A - Video Display of the MODE *Page 1* Menu

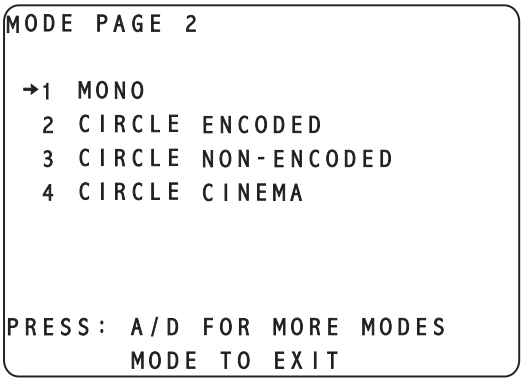


Figure 55B - Video Display of the MODE *Page 2* Menu

If necessary, press the **A-D** button to select the page with the desired **MODE**, then press button **1** - **6** or **SELECT UP/DOWN** to select the mode. An arrow will point to the mode selected. Additional information/instructions regarding this function and the modes shown in figures 55A and 55B are described on pages 13 and 14.

Please refer to page 31 for additional information regarding Dolby Digital options, and page 33 for additional information regarding DTS and Circle Surround options.

* * *

After selecting a temporary mode for the current input channel, press the **MODE** button once more to clear the video monitor of this menu. The **MASTER VOLUME** can be controlled using the **LEVEL UP/DOWN** buttons in these 2 menus.

TAPE OUT Function

This feature simultaneously controls the routing of signals to the video, analog and digital tape out jacks as well as the **ZONE 2** outputs.

Pressing the **TAPE OUT** button once displays the **TAPE OUT** menu, shown in figure 56, on the video monitor display. The menu title "**TAPE OUT/ZONE 2**" is displayed in the upper left. The **INPUT NAMES** shown in this figure are for example only and will most likely differ from the users set up.

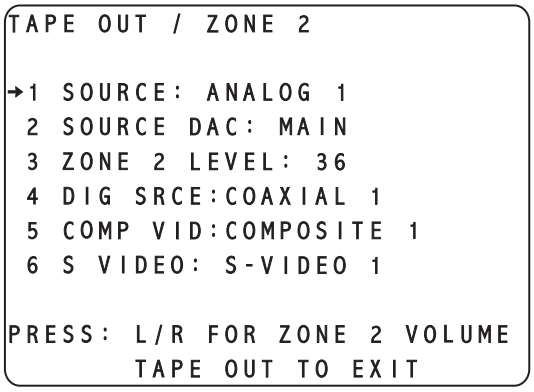


Figure 56 - Video Display of the TAPE OUT Menu

To route a signal to the appropriate **TAPE OUT** jack(s), press the **TAPE OUT** button and press button # **1** to assign an audio source to the analog **TAPE OUT** and **ZONE 2** jacks, button # **4** to assign a digital input jack to the digital **TAPE OUT** jacks, button # **5** to map a composite video input jack to the composite video **TAPE OUT** jack and finally button # **6** to map an S-video input jack to the S-video **TAPE OUT** jack.

Button # **2** allows the user to select whether the signal at the analog **TAPE OUT** and **ZONE 2** jacks will be derived from the main output DACs or the optional tape out DAC, by displaying **MAIN** or **TAPE** on the display. If the optional tape out DAC has not been installed, changing this value will result in the following message: **OPTION NOT INSTALLED**. This setting is only relevant if the analog tape out source is set to a digital input jack. All analog inputs are routed directly to the **TAPE OUT** jacks, without A/D to D/A conversion.

Button # **3** allows the **ZONE 2** volume to be controlled independently of the master volume.

Now the routing is completed, press **TAPE OUT** again to clear the video display. The **MASTER VOLUME** cannot be controlled in this menu.

Please refer to page 15 for additional **TAPE OUT** features and options information.

CAUTION: It is not advisable to route a 5.1 source (DTS/AC-3) to the optional tape out DAC as this section does not contain Dolby Digital or DTS decoding capabilities. Full scale noise will be output!

SETUP Function

This function provides access to a series of sub menus that will allow the configuration of the entire system.

In this section, all features of the **SETUP** menu are discussed along with a diagram of most video monitor displays.

Pressing the **SETUP** button once changes the video display to the first page of the **SETUP** menu shown in figure 57.

```
SETUP PAGE 1

 1 INPUT
 2 INITIAL LEVEL: 20
 3 PASSWORD:
 4 REMOTE POWER
 5 JACK NAMES
 6 ANALOG INPUT LEVELS

PRESS: A/D FOR MORE OPTIONS
       SETUP TO EXIT
```

The menu title is displayed in the upper left corner with the menu page number. As indicated by the on screen instructions, pressing the **A-D** button provides additional **SETUP** functions on the second page.

Pressing buttons **1** and **4**-**6** for the desired **SETUP** feature will in turn display a sub menu providing editable functions and additional information for that feature.

Figure 57 - Video Display of the SETUP Menu *Page 1*

As indicated in figure 57, button **1** is assigned to features that are stored by input and leads to a series of categorized sub menus via 3 pages. Most pages, menus and all features are discussed in minor detail in this section, and more in depth in their respective pages in the first section of this manual, *FRONT PANEL OPERATIONS*.

Initial Power-On Master Volume

Button **2** allows the user to store an initial master volume setting that the Casa Nova will default to when it comes out of standby.

Setup Button Password

It is possible to password protect the entire **SETUP** function, or have no password at all. Setting a password for the **SETUP** button is accessed by pressing button # **3**, where the user will be asked "**ARE YOU SURE?**" Answering "**YES**" by pressing button # **2** will display the following page:

```
SETUP PAGE 1

 1 INPUT
 2 INITIAL LEVEL: 20
 3 PASSWORD:   00000
 4 REMOTE POWER
 5 JACK NAMES
 6 ANALOG INPUT LEVELS

PRESS: A/D FOR MORE OPTIONS
       SETUP TO EXIT
```

Use buttons **1**-**6** to enter a password. After each digit is entered, the cursor (flashed in the Onscreen Display (OSD) only, not the LCD) moves one character to the right. If no password is to be used (factory default), press the **A-D** button five times, which enters all zeros. All zeros, or a zero anywhere in the password translates to no password.

CAUTION: It is imperative that your new password be written down. If it is forgotten, ALL access to the **SETUP** menu will be permanently denied. Please see the **WARNING** on page 10.

Figure 58 - Video Display of the SETUP/ PASSWORD Page

Remote Power Jacks

The two **REMOTE POWER** jacks on the rear panel can be programmed to output 12V, either straight DC or as a pulse and each can be activated by either the **MAIN** or **REMOTE** power button on the front panel. Press button # **4** to access the **REMOTE POWER** sub menu shown in figure 59.

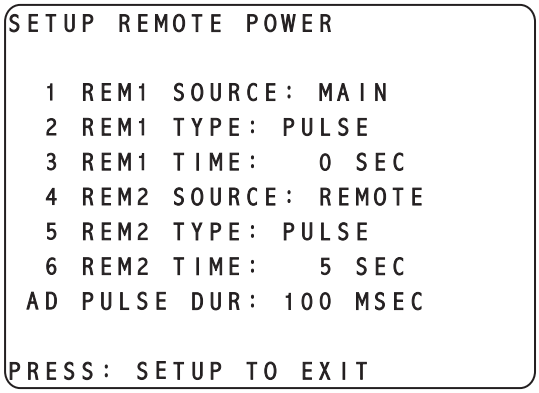


Figure 59 - Video Display of the SETUP/REMOTE POWER Sub Menu

Button # **1** (**REM1 SOURCE**, or remote power jack 1 source) allows the user to map which front panel button will activate the remote power 1 jack on the rear panel

Use button # **2** to indicate whether the output of the remote power jack 1 should be 12VDC (**DC**) or a 12V pulse (**PULSE**).

The output signal of the remote power jack can be delayed after its activating button is pressed. This is useful for sequencing high power components such as amplifiers. Button # **3** allows the user to set this delay time, in seconds.

Buttons **4**, **5** and **6** have exactly the same functionality as buttons **1**, **2** and **3**, except that they apply for the remote power 2 jack on the rear panel.

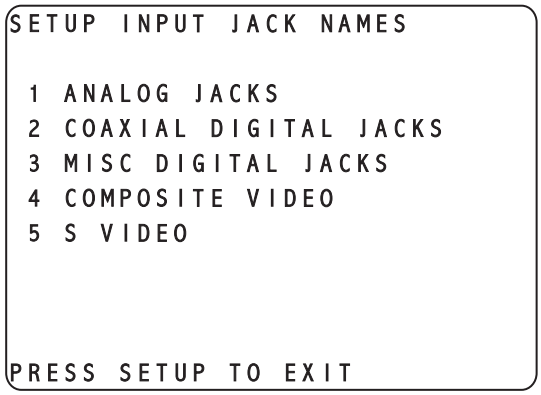
If the type of output for one or both of the remote power jacks is a 12V pulse, the duration of this pulse can be set by the user, using the **A-D** button.

Please refer to page 17 for more detailed descriptions/instructions.

Press **SETUP** once to return to the first page of the **SETUP** menu.

Jack Names

Button # **5** accesses a series of sub menus, which allow the user to name all of the Casa Nova's input jacks, both audio and video. The **JACK NAMES** sub menu is shown in figure 60.

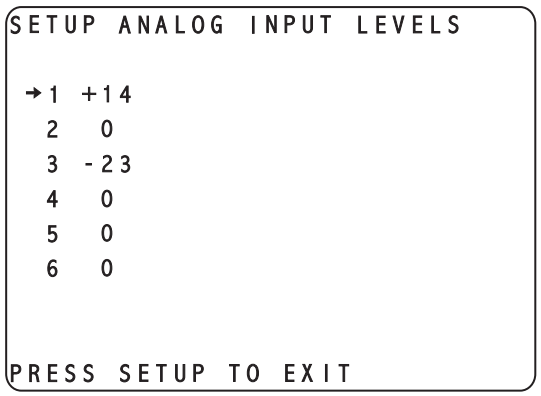


Pressing button # **1** accesses a sub menu that allows the analog audio input jacks to be named. Button # **2** does the same for the coaxial digital audio input jacks, whereas button # **3** allows the user to name all non-coaxial digital audio input jacks. Buttons # **4** and # **5** lead to sub menus that allow the naming of the composite and S-video jacks, respectively.

Please refer to page 18 for additional detail and an example of editing an input jack name.

Figure 60 - Video Display of the SETUP/ INPUT/JACK NAMES Sub Menu

Analog Input Levels



Lastly on this page, button # **6** accesses the **ANALOG INPUT LEVELS** submenu, shown in figure 61.

This function allows the user to adjust the relative **ANALOG** input **LEVEL** for each analog input. This function does not affect source levels when a digital audio input is selected. The allowable relative range is -23 dB to +14 dB, in 1dB increments.

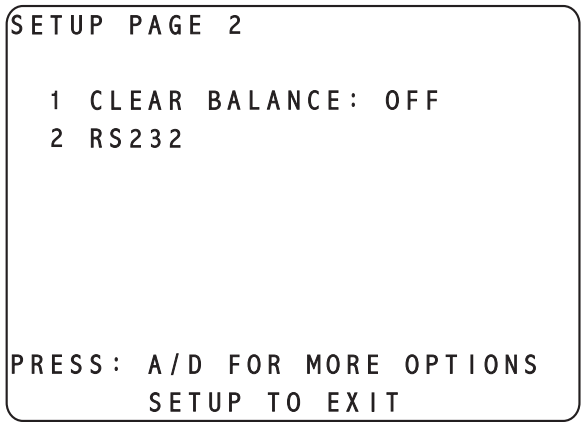
Select the analog input to be adjusted by pressing buttons **1**-**6** once. Adjust the relative input level using the **LEVEL UP**/**DOWN** buttons.

Figure 61 - Video Display of the SETUP/ANALOG INPUT LEVELS Sub Menu

Press the **SETUP** button twice to return to the current **INPUT SELECT** page.

Pressing the **A-D** button shifts to the second page of the **SETUP** menu, shown in figure 62.

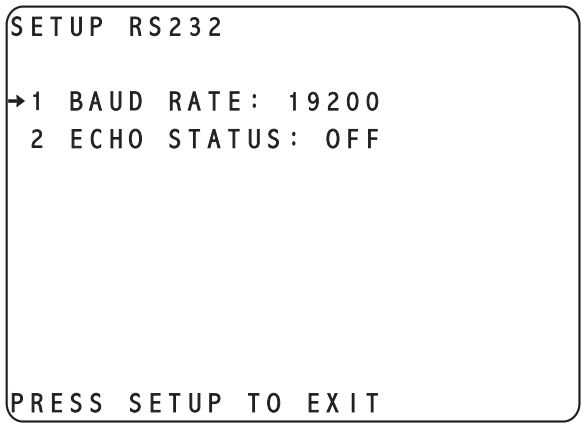
Any changes in the **BALANCE** menus are, by default, temporary. That is to say that when an **INPUT SELECT** button is pressed or the Casa Nova is powered down/put into standby, any changes will be reset to zero. This feature has an override, which is set by pressing button # **1** and set to **OFF**. When this parameter is set to **OFF**, changing inputs will maintain all **BALANCE** menu settings.



Press button # **2** to access the **RS232** sub menu, if the optional RS232 feature has been installed.

Pressing the **A-D** button shifts back to the first page of the **SETUP** menu. Pressing the **SETUP** button once more returns the OSD to the current **INPUT SELECT** page.

Figure 62 - Video Display of the SETUP *Page 2* Menu



RS232

In the RS232 sub menu, press button # **1** (**BAUD**) and use the **LEVEL UP**/**DOWN** buttons to select the Baud rate that matches that of the RS232 controller.

Button # **2** allows the user to enable/disable the status output of the RS232 port, and if enabled, the status level. Please refer to page 20 for additional information pertaining to this parameter.

Figure 63 - Video Display of the SETUP *Page 2*/RS232 Sub Menu

Pressing the **SETUP** button once more returns the LCD to the current **INPUT SELECT** page.

SETUP INPUT (Setting up each of the 12 Input Select Buttons)

Setup Input Page 1

```
SETUP INPUT PAGE 1

   1 SPEAKER CONFIG
   2 SPEAKER LEVELS
   3 SPEAKER DELAYS
   4 MODE: MATRIX



PRESS: A/D FOR MORE OPTIONS
       SETUP TO EXIT
```

All parameters accessed within the **SETUP/INPUT** menu are programmable for each **INPUT SELECT** button. The first of 3 pages of the **SETUP/INPUT** sub menu is shown below, in figure 64.

Figure 64 - Video Display of the SETUP/INPUT *Page 1* Sub Menu

Speaker Configuration

```
SETUP SPEAKER CONFIGURATION

 1 LEFT/RIGHT
 2 CENTER
 3 SURROUNDS
 4 SUBS
 5 XOVER TYPE:PHASE PERFECT



PRESS SETUP TO EXIT
```

This sub menu (**SPEAKER CONFIG**) allows the user to configure speakers to reflect the audio system configuration or the listener's preference, for the available speakers and their respective frequency responses.

All of the speaker configuration parameters are accessed by pressing button # **1** (**SPEAKER CONFIG**). This leads to a series of sub menus shown that are described next. The first sub menu, **SPEAKER CONFIG** is shown below, in figure 65.

Figure 65 - Video Display of the SETUP/INPUT *Page 1*/SPEAKER CONFIGURATION Sub Menu

Left/Right Speaker Configuration

Pressing button # **1** allows the user to configure the front left/right speakers via the left/right sub menu shown in figure 66.

```
LEFT/RIGHT CONFIGURATION


 1 CONFIG: FULL RANGE
 2 PHASE PERFECT
 3 LINKWITZ-RILEY
 4 BUTTERWORTH



PRESS SETUP TO EXIT
```

In this sub menu, button # **1** allows the user to set the configuration for the front left/right speakers. The options are: **FULL RANGE**, **CROSSOVER**, **FULL W/LOP** (low pass) and **OFF**.

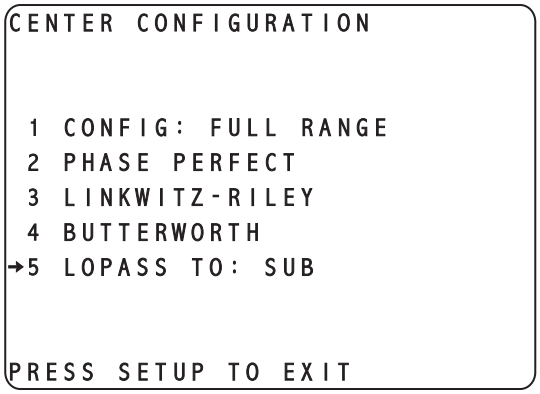
Please refer to page 21 for additional details/instructions on configuring speakers and page 22 for a discussion of crossovers.

Button #'s **2**, **3** and **4** give access to sub menus which allow the configuration for the three types of crossovers in the Casa Nova: **PHASE PERFECT**, **LINKWITZ-RILEY**, and **BUTTERWORTH**.

Figure 66 - Video Display of the SETUP/ INPUT *Page 1*/CONFIG/LEFT/RIGHT CONFIGURATION Sub Menu

After the front left/right speakers have been configured, press **SETUP** once to return to the **SETUP/INPUT/SPEAKER CONFIGURATION** sub menu, and press button # **2** to configure the center speaker. The **CENTER CONFIGURATION** sub menu is shown in figure 67.

Center Speaker Configuration



This submenu of settings is exactly the same as the one for the front left/right speakers, but applies only for the center speaker. All of the same guidelines and procedures apply except for the case where no center speaker is present, and where the low pass signal (if the center speaker is crossed over) can be routed to. If no center speaker is present in the system, the **CONFIG** parameter should be set to **PHANTOM**. With this setting, the signal for the center channel is routed to the front left/right speakers.

Figure 67 - Video Display of the SETUP/INPUT *Page 1*/CONFIG/ CENTER CONFIGURATION Sub Menu

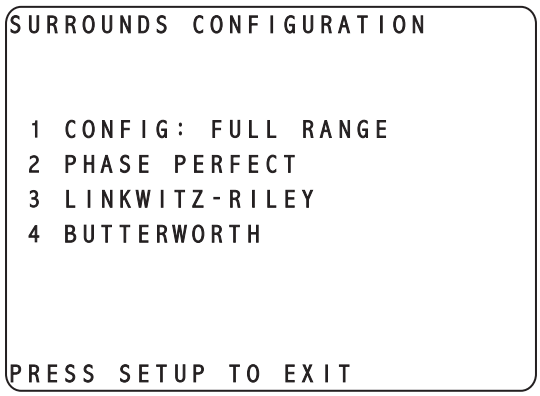
Pressing button # **1** allows the configuration of the center speaker. If this speaker is not to be crossed over, nor any of its signal sent to the **SUB** output, then this should be set to **FULL RANGE**. There is an option where the full range signal can be routed to the center speaker and a low pass part of it routed to the sub or to the front left/right speakers as discussed above. If this is desired, the **CONFIG** setting should be **FULL W/LOP**. (A crossover type must be selected, and the appropriate crossover frequencies and slopes set up). The center speaker can also be set to **OFF** or **CROSSOVER**.

Press button # **2**, **3** and **4** to set up the crossover settings for the center speaker in the same manner as with the front left/right. The crossover sub menus are the same with the exception of the speaker name in the upper right corner of the LCD.

Pressing button # **5** allows the user to route the low pass center signal, if any, to either the **SUB** or front **LEFT/RIGHT** speakers.

Press **SETUP** twice to return to the speaker configuration sub menu, then press button # **3** (**SURROUNDS**) to set up the surround speakers. This submenu is shown in figure 68.

Surround Speaker Configuration



Set the speaker configuration and crossovers, if necessary, in the same manner as the center speaker. The surrounds do not have an option of routing the low pass signal to the sub woofer or front left/right, as the center speaker does.

When the surround configuration and crossover setup are complete, press **SETUP** to return to the **SPEAKER CONFIGURATION** sub menu, then press button # **4** to set up the sub woofer.

Figure 68 - Video Display of the SETUP/INPUT *Page 1*/CONFIG/ SURROUND CONFIGURATION Sub Menu

Sub Woofer Configuration

The **SUB CONFIGURATION** sub menu is shown in figure 69. If no sub is present, or is not desired, set the **NUM OF SUBS** to **0**. If there is a subwoofer present, set the **NUM OF SUBS** to **1**. Next, set the **SUB CONFIG** to either **FULL RANGE** or **CROSSOVER**. For most sub woofers, it is recommended that this parameter be set to **CROSSOVER**. Please refer to page 22 for additional information regarding sub woofer configuration.

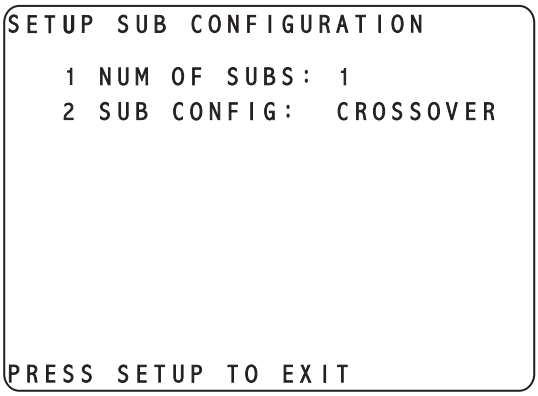


Figure 69 - Video Display of the SETUP/INPUT *Page 1*/CONFIG/SUB CONFIGURATION Sub Menu

Press **SETUP** once to return to the **SPEAKER CONFIG** sub menu, then press button # **5** to select the type of crossover to be used for the current **INPUT SELECT**. Additional information pertaining to crossovers can be found on page **22**.

Press **SETUP** once more to exit the **SPEAKER CONFIG** sub menu.

Speaker Levels

This sub menu allows the user to set the relative level of each speaker in order to reflect the audio system speaker configuration, room characteristics, or the listener's preference. The relative range is -15dB to +15dB. The **BALANCE** function (discussed later) allows the user to temporarily adjust the Left/Right and Front/Rear balances, and the Center & Sub channel levels to compensate for differences in program material or source.

Press **SETUP**, **INPUT** then **SPEAKER LEVELS** to access the levels setup sub menu shown in figure 70. Press button(s) **1**-**6** to select a speaker to edit.

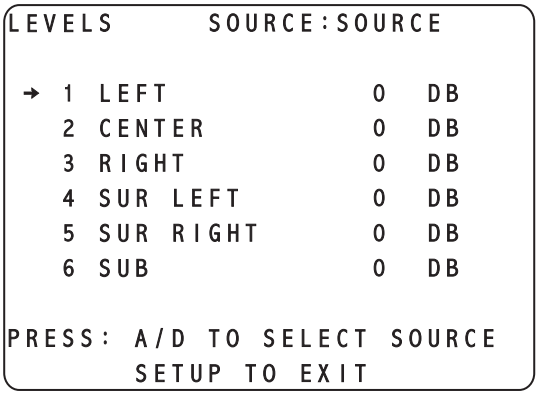
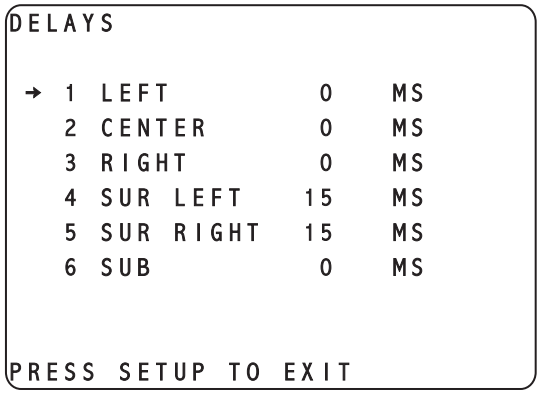


Figure 70 - Video Display of the SETUP/INPUT *Page 1*/LEVELS Sub Menu

To aid in establishing a desired system speaker level balance, the Casa Nova provides the user with the option of either routing the currently selected audio signal to the outputs, or routing an internally generated noise signal to either the currently selected speaker or to all speakers simultaneously. Please refer to page 27 for additional information regarding the noise generator

Speaker Delays

This sub menu allows the user to set a time delay for each speaker to reflect the audio system configuration, room characteristics or the listener's preference. The allowable range for the front left/right, center and sub speakers is **0** to **10** milliseconds (mS) and **15** to **31** mS for the surround speakers. Since discrete sources are often recorded with surround delays, it is recommended that the delay setting for 5.1 sources be 15 mS less than non 5.1 sources.



Press **SETUP**, **INPUT** then **SPEAKER DELAYS** to access the delays setup sub menu shown in figure 71. The current delay settings will be displayed on the video monitor. All delay settings in this page apply when the **MODE** is Matrix, Special Matrix, Dolby Pro Logic, Stereo and Mono. Select each speaker one at a time and adjust the individual delay according to the graph in figure 32, on page 28. This graph is an example for setting up the rear speaker delays. The Front left/right speaker delay times should remain at **0**mS as a reference to all other speakers.

Figure 71 - Video Display of the SETUP/INPUT *Page 1*/DELAYS Sub Menu

Default Mode

Each **INPUT SELECT** button can have a different default **MODE** assigned to it. To assign a default **MODE** for a given **INPUT SELECT** button, first press the applicable **INPUT SELECT** button, **SETUP**, **INPUT** then button # **4** (**MODE**). Edit this parameter to select the desired default **MODE**, then press **SETUP** twice to exit. Repeat this procedure for each **INPUT SELECT** button.

Note: Pressing the front panel **MODE** function button allows the user to audition different modes for a given source, when applicable, however changing modes via the **MODE** button does not store a mode selection.

Setup Input Page 2

To access this page, from either **INPUT SELECT** page or any other function menu, press **SETUP** then **INPUT**, then the **A-D** button once. Page 2 of the **SETUP/INPUT** menu is shown in figure 72.

```
SETUP INPUT PAGE 2

   1 LFE PHASE: 0
   2 SOURCE
   3 PASSWORD:
   4 DOLBY DIGITAL
   5 DTS
   6 CIRCLE SURROUND

PRESS: A/D FOR MORE OPTIONS
       SETUP TO EXIT
```

Figure 72 - Video Display of the SETUP/INPUT *Page 2* Sub Menu

LFE Phase

The LFE phase can be changed from **+** (in phase) to **–** (180 degrees out of phase). This can be edited via button # **1**.

Mapping a Source (Input Jack to INPUT SELECT button)

Pressing button # **2** accesses 3 sub menus that allow the user to assign which input jacks will be mapped to any given **INPUT SELECT** button, both audio and video. There is one page for audio jack mapping, one for composite video, and one for S-video. Up to six jacks can be mapped to any one **INPUT SELECT** button, and the order that they are mapped determines the search order when pressing the **A-D** button in either **INPUT SELECT** menu.

Please refer to page 29 for additional information and examples of mapping input jacks to **INPUT SELECT** buttons.

Password for Each INPUT SELECT Button

Button # **3** (**PASSWORD**) allows the user to assign a password to the currently selected **INPUT SELECT** button. Pressing **PASSWORD** once will display the message: “Are you sure” on the video monitor. Pressing **NO** (button # **2**) reverts back to the **SETUP/INPUT *Page 2*** submenu. Pressing **YES** (button # **1**) will display the current submenu, and the password for this **INPUT SELECT** button will appear on the video monitor. The user can use buttons **1**-**6** to enter a password, or elect to have no password for this **INPUT SELECT** button by pressing the **A-D** button 5 times, which will display all zeros, indicating no password.

Note: If a zero appears in any position of the password, it will be seen as all zeros, or no password. **PLEASE REMEMBER and/or WRITE DOWN YOUR PASSWORD!**. If it is forgotten, all access to password protected areas will be denied! There is no other over ride to this feature.

Setup Dolby Digital

Button # **4** provides a two page sub menu which allows the user to set up preferences pertaining to Dolby Digital (AC-3), by **INPUT SELECT** button. The first page of this sub menu is shown in figure 73.

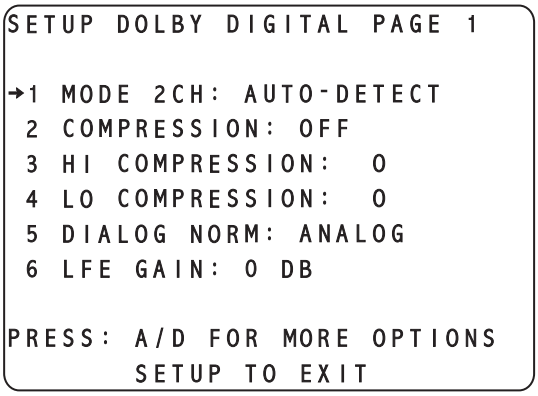


Figure 73 - Video Display of the SETUP/INPUT *Page 2*/DOLBY DIGITAL *Page 1* Sub Menu

2 Channel Mode (MODE 2CH)

Some Dolby Digital sources contain only two of the possible five main channels. This is usually noted on the material's cover, in the form of "2.0" as opposed to "5.1". In the event that the Dolby Digital source is two channel ("2.0" or "2.1"), Casa Nova provides the user with the ability to apply a surround sound process. There are three options for this setting: "Pro Logic" (**PRO**), "none" (**STER**) or "auto" (**AUTO**).

Please refer to page 31 for additional detail regarding the 2 channel Mode.

Compression

Dolby Digital contains provisions for reducing the dynamic range of a Dolby Digital source. This means reducing the loudness of the loud passages and increasing the loudness of the quiet passages. Possible reasons for reducing the dynamic range of a source include late night listening wherein loud moments may disturb others, and making tapes for automotive / portable use wherein quiet passages may not be heard.

Casa Nova contains three parameters to control Dolby Digital compression. Button # **2** (**COMP**) simply turns the compression **ON** or **OFF**. Button # **3** (**HCMP**, or High Compression) controls the amount of volume that loud passages will be reduced. Button # 4 (**LCMP**, or Low Compression) controls the amount of loudness that quiet passages will be increased. A larger number indicates a greater amount of increase or decrease.

Note: Some Dolby Digital sources do not allow for compression, in which case altering these settings will not result in an audible change.

Dialog Normalization

Press button # **5** to set the dialog normalization value. Dolby Digital contains the useful provision for making all Dolby Digital sources have the same perceived loudness even though they may have been recorded or mixed at very different levels. This is done by embedding in the datastream a value that the program material will need to be adjusted by to conform to an average dialog level established by Dolby Laboratories. It should be noted that all channels are adjusted, not just the center channel. Casa Nova contains two options for this setting: **ANLG** (analog) or **DIGI** (digital). Please refer to page 32 for additional information pertaining to Dialog Normalization.

Button # **6** controls the **LFE** gain setting for Dolby Digital sources. Dolby Digital sources usually contain an LFE (low frequency effects) channel. This channel commonly contains sound effects such as explosions but may also contain soundtrack information. Casa Nova contains three options for this setting which are detailed further on page 32.

From the **SETUP/INPUT *Page 2*/DOLBY DIGITAL** sub menu, press the **A-D** button once to access page 2 of the Dolby Digital set up submenu, which is shown in figure 72.

```
SETUP DOLBY DIGITAL PAGE 2

→1 CEN DELAY:   0 MS
  2 CEN LEVEL:   0 DB
  3 LS DELAY:    0 MS
  4 RS DELAY:    0 MS
  5 LS LEVEL:    0 DB
  6 RS LEVEL:    0 DB

PRESS: A/D FOR MORE OPTIONS
       SETUP TO EXIT
```

This submenu allows the user to adjust the center and individual surround speaker delays and levels when in Dolby Digital mode.

The center and surround levels are relative to the level values set in the **SETUP/INPUT/LEVELS** sub menu. As an example, if the center speaker level in the **SETUP/INPUT/LEVELS** sub menu is set to **+5**, and in this sub menu it is set to **+3**, then the total center level when the **MODE** for the currently selected input is Dolby Digital, will be +8.

Figure 74 - Video Display of the SETUP/INPUT *Page 2*/DOLBY DIGITAL *Page 2* Sub Menu

The center and individual surround delays do not interact with the delays in the **SETUP/INPUT/DELAYS** sub menu. Here the Casa Nova's center and individual surround delays will be exactly how they are set in this sub menu, when the **MODE** for the currently selected input is Dolby Digital.

Press the **SETUP** button once, then press button # 5 (**DTS**) to access the DTS set up sub menu, which is shown in figure 75.

Setup DTS

```
SETUP DTS

→1 CEN DELAY:   0 MS
  2 CEN LEVEL:   0 DB
  3 LS DELAY:    0 MS
  4 RS DELAY:    0 MS
  5 LS LEVEL:    0 DB
  6 RS LEVEL:    0 DB
 AD LFE GAIN: 0 DB

PRESS SETUP TO EXIT
```

Figure 75 - Video Display of the SETUP/INPUT *Page 2*/DTS Sub Menu

The center and surround delays function exactly the same as the Dolby Digital ones above, as does the LFE gain setting (**A-D** button) for DTS sources only.

Press **SETUP** once, then button # **6** to set up Circle Surround. This sub menu is shown in figure 76.

Setup Circle Surround

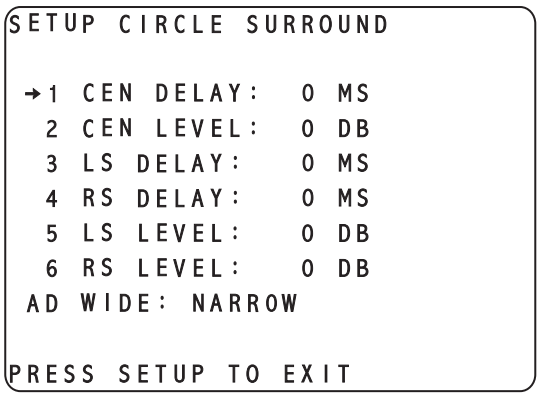


Figure 76 - Video Display of the SETUP/INPUT *Page 2*/CIRCLE SURROUND Sub Menu

The center and surround delays function exactly the same as the Dolby Digital ones above, when the **MODE** is set to Circle Surround. With Circle Surround, the user also has the option to make the front left/right imaging narrow or wide. This is accessed via the **A-D** button.

Press **SETUP** once, then the **A-D** button to go to the **SETUP/INPUT/***Page 3* sub menu, shown in figure 77.

Setup Input Page 3

Setup Spatializer

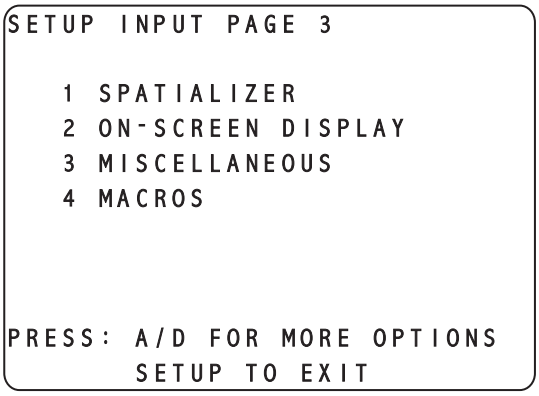


Figure 77 - Video Display of the SETUP/INPUT *Page 3* Sub Menu

Button # **1** allows the user to either activate or deactivate Spatializer. If it is not installed, pressing this button will result in the following message: **"OPTION NOT INSTALLED**".

Spatializer is a process in which information from the surround channels is incorporated into the front Left/Right channels in a manner that simulates the aural effect that surround speakers are present in the system.

Onscreen Display (OSD) Setup

Pressing button # **2** activates the On-Screen (OSD) set up menu, shown in figure 78.

In this display, button # **1** (**BACK COLOR**) allows the user to select up to 7 different OSD background colors. The entire OSD can be offset from the left and top edges of the screen (button #'s **2** and **3** respectively) to accommodate differences in monitors.

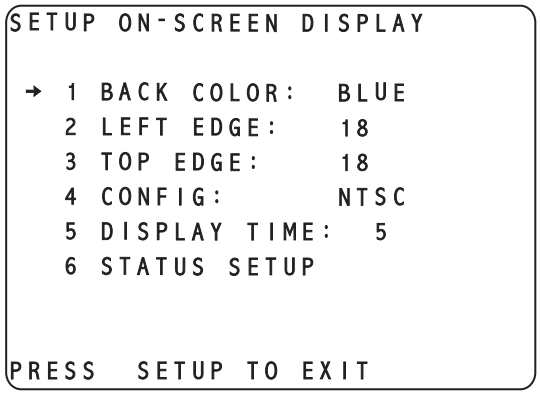


Figure 78 - Video Display of the SETUP/INPUT *Page 3*/ON-SCREEN DISPLAY Sub Menu

The configuration (**CONFIG**) feature (button # **4**)can switch the Casa Nova's OSD to accommodate either an **NTSC** or **PAL** monitor.

When a function button is pressed, its OSD will remain on the screen until the user is no longer in any function menu. The **DISPLAY TIME** (in seconds) setting (button # **5**) allows the user to set the amount of time (delay) that the video monitor displays the **INPUT SELECT** menu, when changing inputs.

Status Setup

STATUS SETUP (button # **6**) displays a sub menu, which allows the user to change the position of the Status screen text on the video monitor only. This sub menu is shown in figure 79.

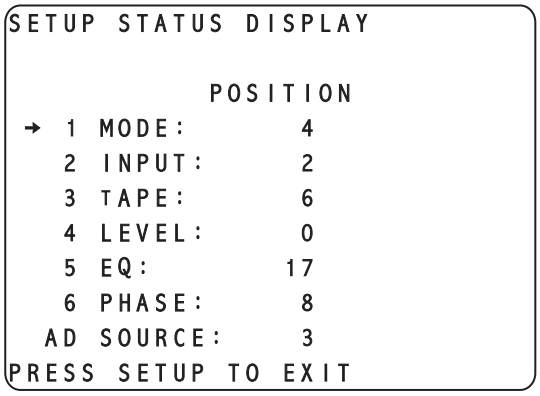


Figure 79 - Video Display of the SETUP/INPUT *Page 3*/OSD/STATUS SETUP Sub Menu

The items in this sub menu are the only ones displayed in the OSD when the **STATUS** button on the hand held remote is pressed. Changing any value to **0** will disable that item from being displayed in the OSD. **MODE**, **INPUT**, **TAPE**, **LEVEL** and **SOURCE** have value ranges of between **0** and **9**, which means that they can be displayed vertically on the left side of the video monitor only. **1** is the highest position vertically and **9** is the lowest. **LEVEL, EQ**, and **PHASE** all have value ranges of between **0** and **17**. Any value of **10** and above will be displayed on the right hand column of the video monitor, **10** being the highest position vertically and **17** being the lowest.

Note: It is possible to have conflicting results if more than one item is displayed on the same line.

Press the **SETUP** button once to return to the **SETUP/INPUT *page 3*** sub menu.

Setup Miscellaneous

From the **SETUP/INPUT** ***page 3*** sub menu, press button # **3** once to enter the **MISCELLANEOUS** sub menu, shown in figure 80.

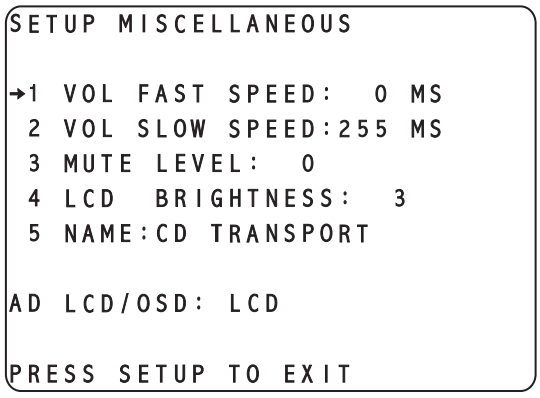


Figure 80 - Video Display of the SETUP/INPUT *Page 3*/MISCELLANEOUS Sub Menu

Fast and Slow Volume Button Control

When certain parameters are edited or the master volume changed, holding the **LEVEL UP/DOWN** button for more than 5 steps will, by default, speed up the rate in which the value changes. This is referred to as Fast Mode. It is possible to delay the speed of the fast mode in order to slow it down to the user's preference. In **VOL FAST SPEED** (Fast Volume), button # **1**, a delay of **0** will allow the Fast Mode to be its quickest, and a delay of **255** allows it to be its slowest.

The rate that the **LEVEL UP/DOWN** buttons respond during the first 5 steps is referred to as Slow Mode. **VOL SLOW SPEED**, (button # **2**, allows the user to slow down the increment changes during these first 5 steps (a higher delay time) or increase their speed with a lower delay time setting. In **SVOL** (Slow Volume) a delay of **0** will allow the Slow Mode to be its quickest, and a delay of **255** allows it to be its slowest.

Changing the Default Mute Level

When the front panel or hand held remote **MUTE** button is pressed, the user can set the master volume level to mute to a specific level. Editing this feature is accessed by pressing button # **3** (**MUTE LEVEL**).

LCD Brightness

Each **INPUT SELECT** button can have a different LCD brightness assigned to it. Pressing button # **4** (**LCD BRIGHTNESS**) allows the user to change the default brightness from **0** (off) to **3** (brightest). Any changes made to this parameter are reflected the next time that **INPUT SELECT** button is pressed. If this value is set to **0**, and the LCD is off, pressing any button except **LEVEL LEFT/RIGHT**, the currently selected input, **A-D**, or **DISPLAY** will automatically brighten the LCD to the maximum level. If the button pressed is not another **INPUT SELECT** or function button, then the LCD will revert back to its default brightness in *X* seconds. *X* represents the **TIME** parameter value in the **SETUP/INPUT** *page 3*/**OSD** sub menu.

Naming the Current Input Select Button

Press button # **5** to name the currently selected input. The LED inside of button # **5** will be lit and **LCD** will be displayed on the OSD at the end of the second to last line, indicating that the name in the LCD is to be edited. LCD names are limited to 4 characters. Editing the LCD name will have no effect in the OSD. Press the **A-D** button to edit the OSD name. **OSD** will be displayed on the video monitor display, at the end of the second to last line, indicating that the name on the OSD is to be edited. Pressing the **DISPLAY** button once will clear the current **INPUT SELECT** name. This name can be up to 15 characters and the current character to be edited will blink on screen.

Press **SETUP** once to exit to the **SETUP/INPUT** ***Page 3*** sub menu.

Setup Macros

From the **SETUP/INPUT *Page 3*** sub menu, press button # **4** once to enter the **MACROS** sub menu, shown in figure 81.

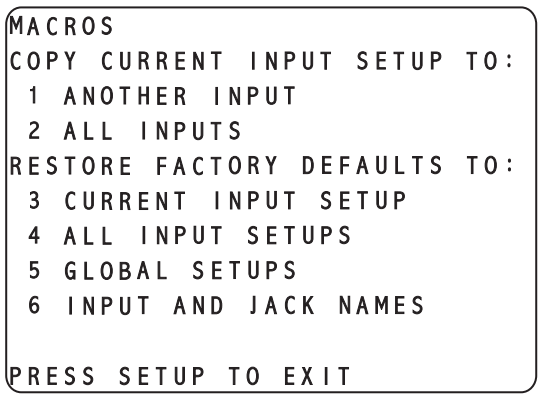


Figure 81 - Video Display of the SETUP/INPUT *Page 3*/MACROS Sub Menu

COPY CURRENT INPUT TO: allows the user to either copy all input parameter values from the currently selected input to another (selectable) **ANOTHER INPUT** (button # **1**), or to **ALL INPUTS** which is the other 11 inputs (button # **2**). The only input parameter values that are not copied are the input **JACKS** names and **INPUT SELECT** button **NAMES**.

When button # **1** (**ANOTHER INPUT**) is pressed, the user will be prompted to select the input to which the **INPUT** parameters of the currently selected input are to be copied to. The OSD shows inputs **1**-**6** on the first menu and indicates that by pressing the **A-D** button, destination inputs **7-12** will be displayed. Once the destination is selected, the "**ARE YOU SURE?**" message appears on the display with a **YES** or **NO** prompt. When button # **2** (**ALL INPUTS**) is pressed, the "**ARE YOU SURE?**" message again appears in the display. When **YES** (button # **1**) is pressed, the OSD shows no change until all parameters are copied to 12 inputs. This may take up to 15 seconds.

The **RESTORE-FACTORY-DEFAULTS:** section (buttons **3**-**6**) contains 4 options. Press button # **3** (**CURRENT INPUT SETUP**) to restore the factory **INPUT** parameters (except names) to the currently selected input. Button # **4** (**ALL INPUT SETUPS**) allows the user to restore the factory **INPUT** parameters (except names) to all 12 inputs. Pressing button # **5** (**GLOBAL SETTINGS**) will restore all global parameters (those that are not stored by input select button). i.e. Remote Power Jack, Tape Out parameter values, etc.). Lastly, button # **6** (**INPUT AND JACK NAMES**) will restore all 12 Input Select Button names as well as all Input Jack names. The "**ARE YOU SURE?**" message appears in the display whenever buttons **3**-**6** are pressed.

Press **SETUP** twice to return to the first page of the **SETUP** menu.

BALANCE Function

This function allows the user to temporarily* set the **FRONT**/**REAR** and **LEFT**/**RIGHT** balances as well as the **CEN**ter and **SUB** woofer speaker levels, the shelf **EQ**, and a relative adjustment of the analog input level, in order to compensate for distinct program material characteristics.

The first page of the balance menu is shown in figure 82A and the second in figure 82B.

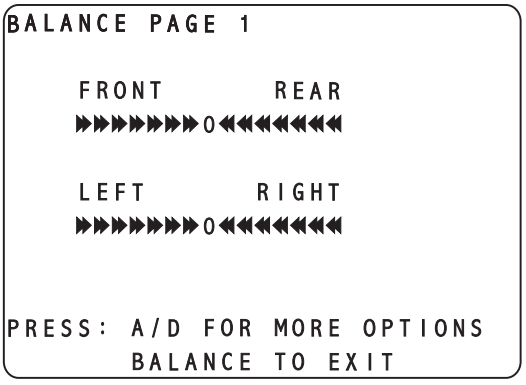


Figure 82A - Video Display of the BALANCE *Page 1* Menu

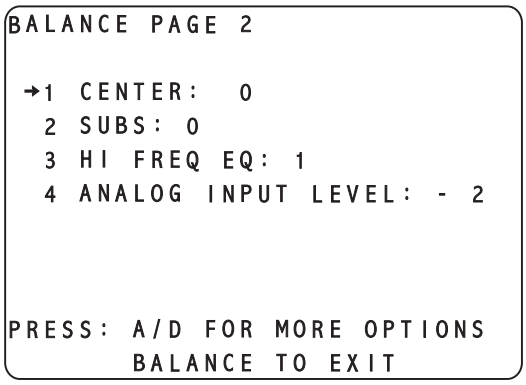


Figure 82B - Video Display of the BALANCE *Page 2* Menu

Front/Rear and Left/Right Balance

The speaker **BALANCE** adjustments are made with reference to the relative speaker trim levels that are stored in the **SETUP/INPUT/LVLS** sub menu. **LEVEL LEFT/RIGHT** adjusts the Left/Right balance and **LEVEL UP/DOWN** adjusts the Front/Rear balance.

*The parameter values in the two **BALANCE** pages are, by default, temporary. This is to say that under certain conditions such as pressing a different **INPUT SELECT** button, the changes made will revert to **0**. This feature has an override, which is accessed via the **SETUP *page 2*** menu.

Center and Sub Balance

Pressing the **A-D** button once will reveal the second page, consisting of temporary* level settings for the **CENTER** speaker, sub woofer (**SUB**), **EQ** and **ANALOG INPUT LEVEL** for the currently selected input.

Shelf EQ

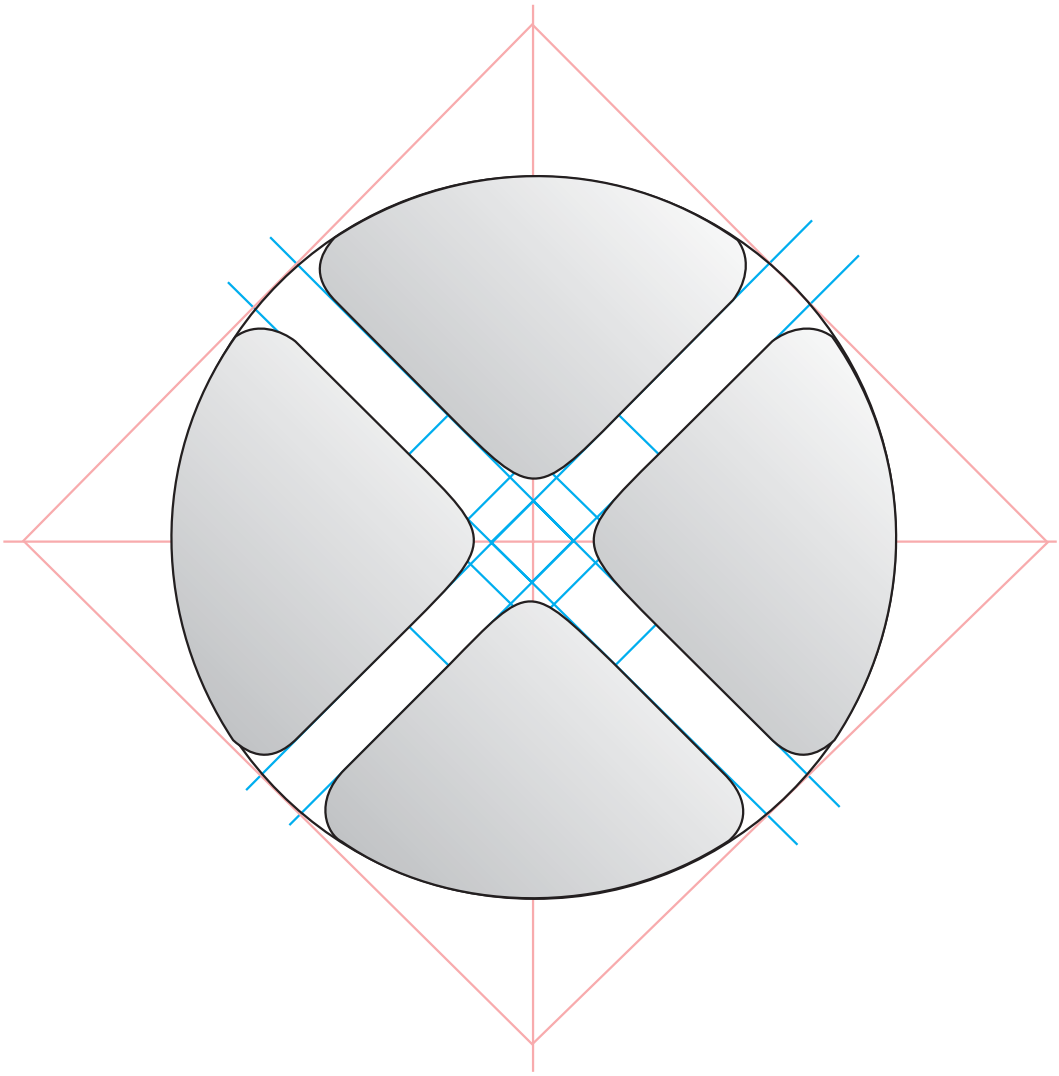
Pressing button # **3** will allow the user to adjust the **EQ** setting between **OFF**, **1**, **2**, **3** and **4**. This is a low pass shelf EQ that, at 2KHz, drops by 1.5dB when the parameter value is set at **1**, 3dB when set at **2**, 6dB when set at **3**, and 9dB when set at **4**. Being a shelf EQ, the rolloff amplitude never drops significantly below the specified dB value. The **EQ** is active in all modes and is designed to roll of excess brightness in different program material.

Analog Input Level Override

Button # **4** lets the user adjust the analog input level of the currently selected input, relative to the stored value in the **SETUP**/**ANALOG LEVELS** sub menu.

Press the **BALANCE** button once more to return to the current **INPUT SELECT** menu.

APPENDIXES



Appendix A Troubleshooting Guide

If the Casa Nova should function abnormally during operation, please review the items in the following checklist. Please be sure to thoroughly check all other connected components such as speakers, amplifiers, input devices (CD/LD transport, VCR, TV, etc.) as well as cables.

Symptom	Possible Cause(s)	Remedy
Mute on permanently.	No Lock LED.	Verify valid data at selected digital input.
	No digital source connected.	Verify that source is connected to current channel input.
No power or front panel lights and no sound.	Power cable is not inserted 100% into IEC connector.	Ensure that the AC cord is inserted all the way into the Casa Nova and that the wall outlet is active.
	Circuit breaker is open (AC outlet or Casa Nova).	Check the AC outlet circuit breaker and reset, if necessary or contact your dealer.
No "LOCK" light.	Defective or intermittent cable.	Verify that the digital cable is not defective by checking the continuity, that both ends are firmly connected. If possible, try a different cable.
	Digital source is not selected in the search order.	Toggle the A-D button until the jack name for the desired source is displayed.
	Defective source component.	Verify that the source component is functioning correctly and outputting valid digital data.
	Source component improperly connected.	Ensure that the output cable from the source component is connected to its active digital output.
No audio output.	No Lock LED.	Verify valid data at selected input.
	NOISE SEL activated with no speakers selected.	In the **SETUP**/**INPUT**/**LEVELS** sub menu, verify that the **SOURCE** parameter is set to **SOURCE** (**A-D** button).
Distortion from analog input.	Clipping.	Adjust analog input level until the red clip LED goes off.
No output from a speaker.	Speaker set to **OFF** or **PHTM** (Phantom).	In the **SETUP**/**INPUT**/**CONFIG** sub menu, set the speaker to an appropriate parameter for your system.
Low output from an analog source.	Analog input level set too low.	Increase analog input level as high as possible without clipping.
No Sub Woofer.	**SUB** is set to **0**.	Set the number of **SUB**s to reflect the current speaker configuration in the **SETUP**/**INPUT**/ **CONFIG** sub menu.
	The currently selected **MODE** does not support sub woofers.	Review the **MODE Function** section, detailed on pages 13 & 14, to select a **MODE** that functions for both the current input signal format as well as the desired configuration effects.
	No speakers are crossed over.	Ensure that one or more speakers are crossed over in the **SETUP**/**INPUT**/**CONFIG** sub menu.
	The current program material does not contain an LFE track.	N/A.

Appendix B Wiring Diagrams and Speaker Placement Guides

This section provides example illustrations of various input and output wiring schemes as well as examples of speaker placement in a typical room. Before making any connections, please turn off ALL audio and video devices. Unplug those that do not have a main power switch. To avoid audible distortion and/or overall signal degradation, do not use standard audio cables for digital audio or video signals. It is recommended that all cables, including speaker cables be kept as short as possible for best sound quality.

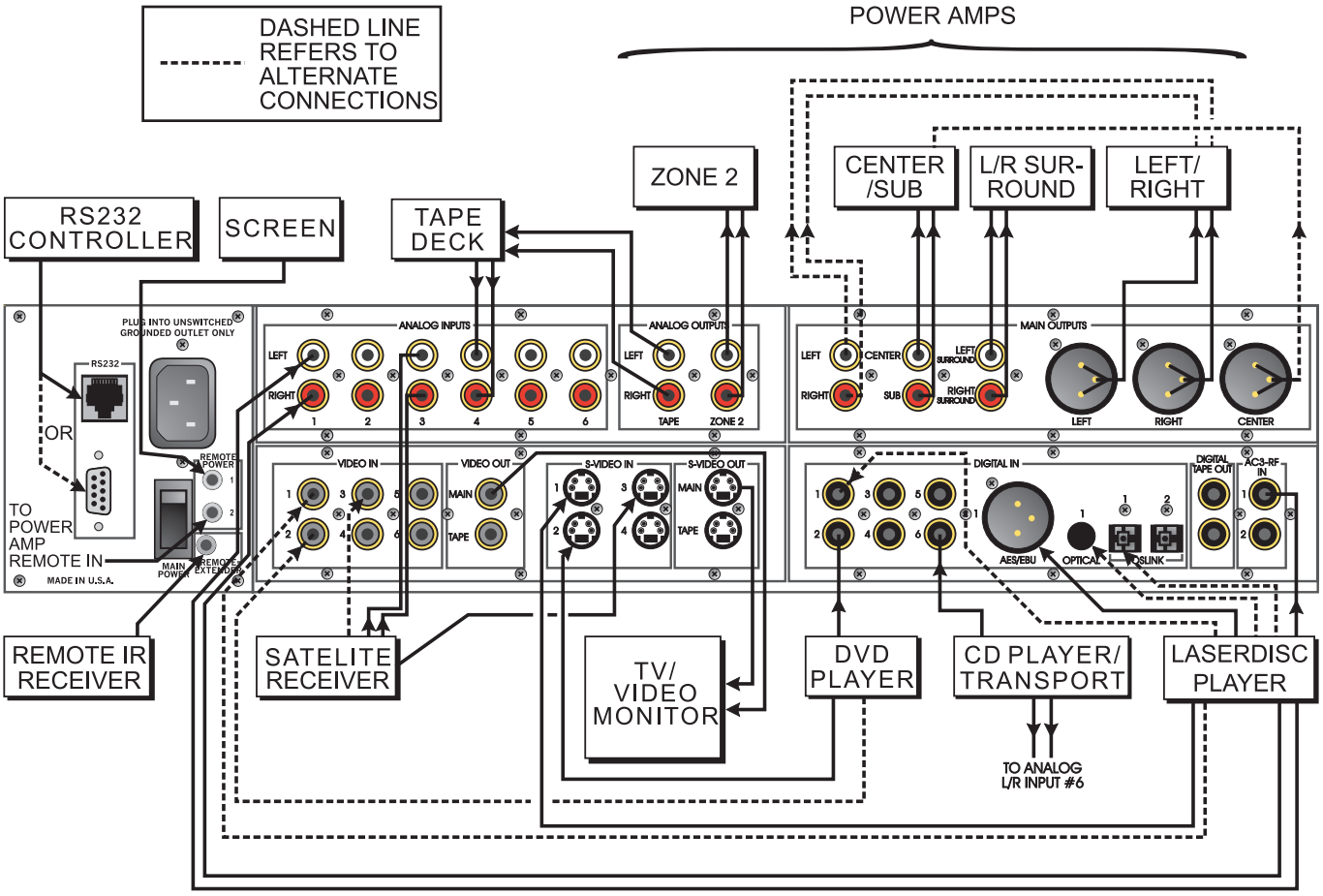


Figure 83 - Examples of Typical Input and Output Connections

Rear Panel Remote and Main Power Jacks

The first two 3.5 mm jacks on the rear panel (**REMOTE POWER 1** and **2**) are +12V DC current limiting* outputs (tip = hot, sleeve = ground) and are intended to be connected to devices which feature either continuous or pulse control voltage inputs. The remote control extender jack is a TRS jack which accepts an IR input signal on the ring while simultaneously providing +12V DC on the tip as a power source for the remote IR receiver. This leaves the sleeve as the ground. Both **REMOTE POWER** jacks are fully programmable. They can be activated together or independently via the front panel MAIN and/or REMOTE buttons and can have independent activation delays of up to 255 seconds. Either or both can output a +12V pulse with a programmable pulse duration or a continuous +12VDC.

*Current limiting resistor is 33Ω 0. 5W. This means that the more current a device to be triggered draws, the more the output voltage gets reduced. The formula is: Output voltage =12 – (I x 33), where I = the current draw from the triggered device, in Amperes. Refer to the device's manual for this information. The Casa Nova's maximum output current is 100mA, which, by using the above formula, means that with a 100mA draw, the output voltage will be 8.7 volts, although most triggered circuits have virtually no current draw.

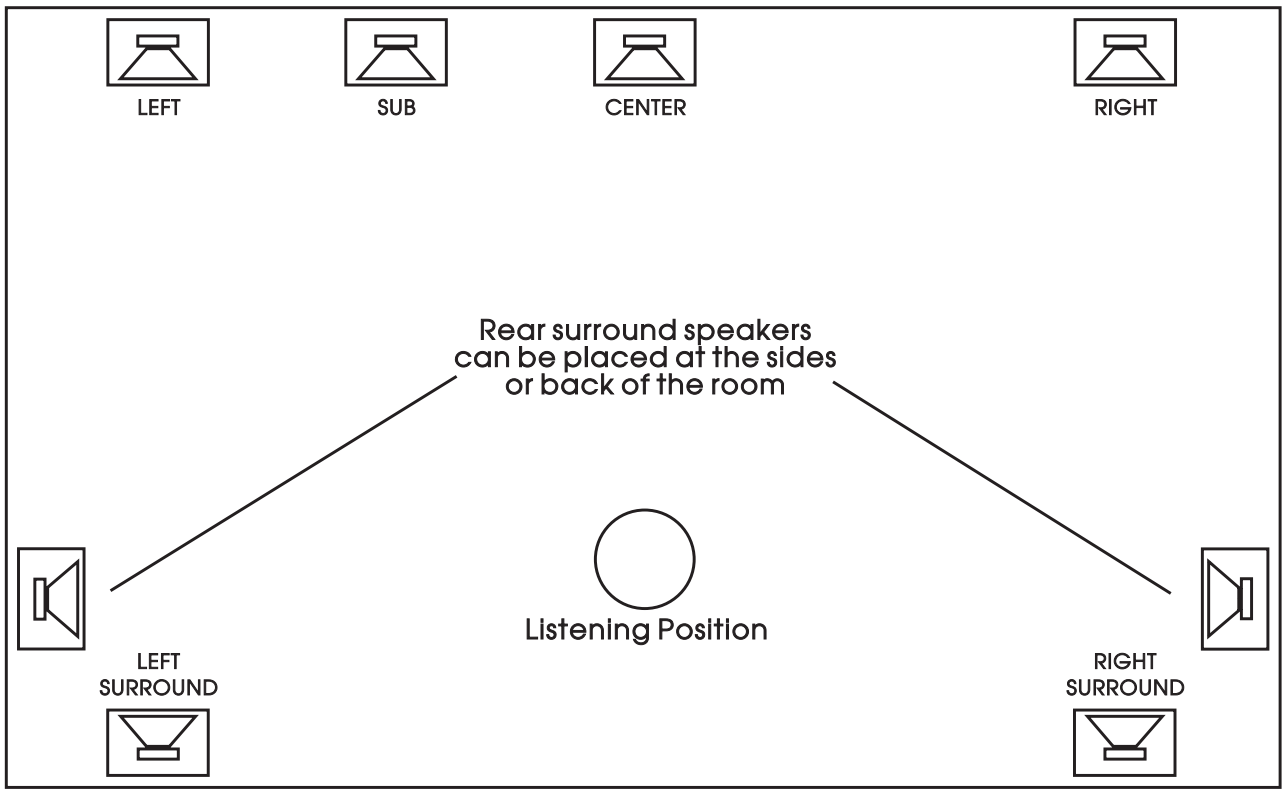


Figure 84 - Recommended Speaker Placement for Six Channel Configuration

Example Wiring Diagram Wiring Diagram (Analog & Dig Out Board)

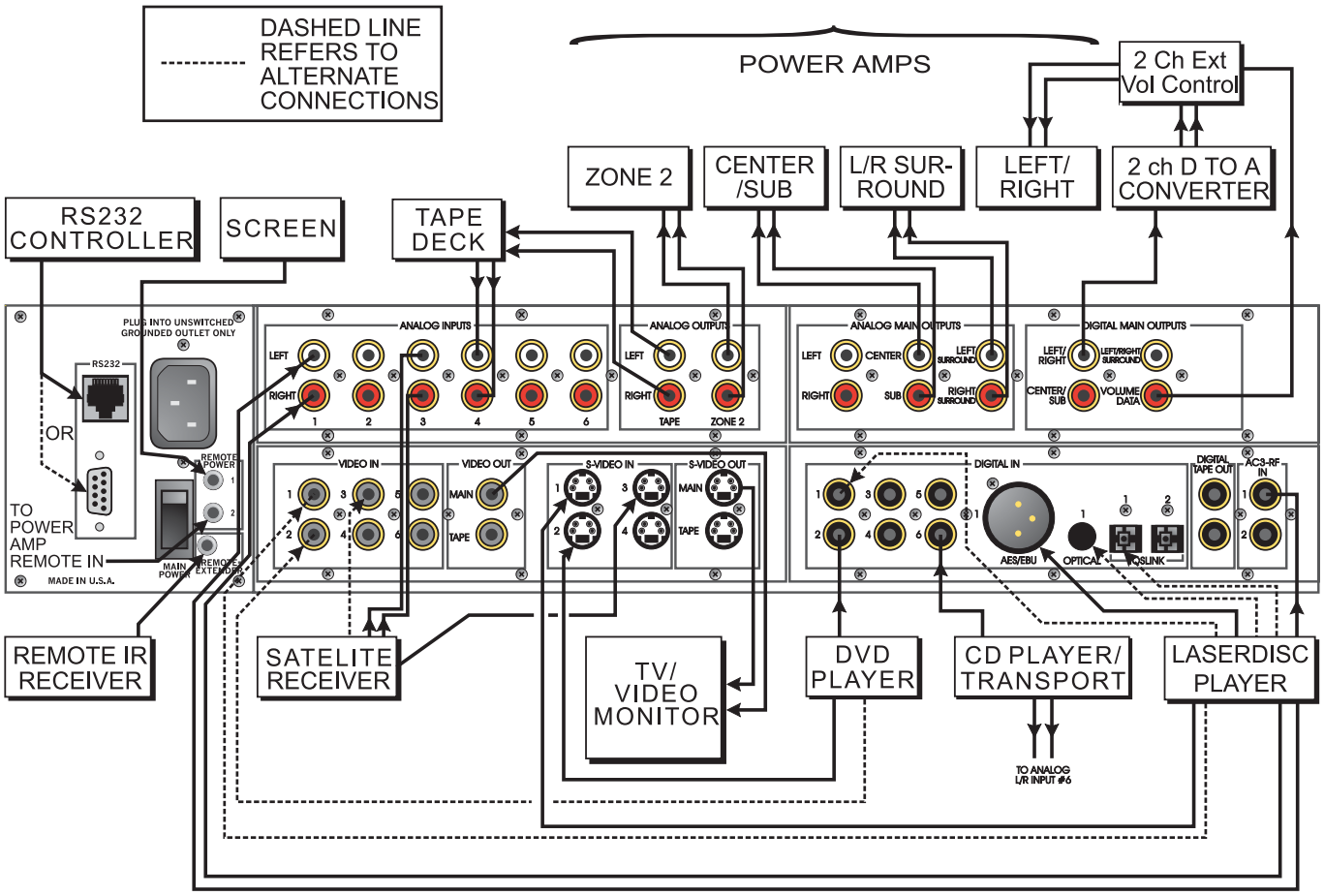


Figure 85 - Examples of Typical Input and Output Connections Using Analog and Digital out Board

(Digital Out used for front Left/Right only)

Appendix C Remote Extender Jack Technical Description and Protocol

The remote extender jack on the Casa Nova rear panel serves as a direct electrical pathway to the input section of the main microcontroller. Using this jack eliminates the need to attach an IR transmitting device to the front panel IR receiver. This input requires a demodulated signal.

Remote system: Phillips RC5
System address: 10 hex (00010000 binary) (5 bit system address)

6 bit button code:

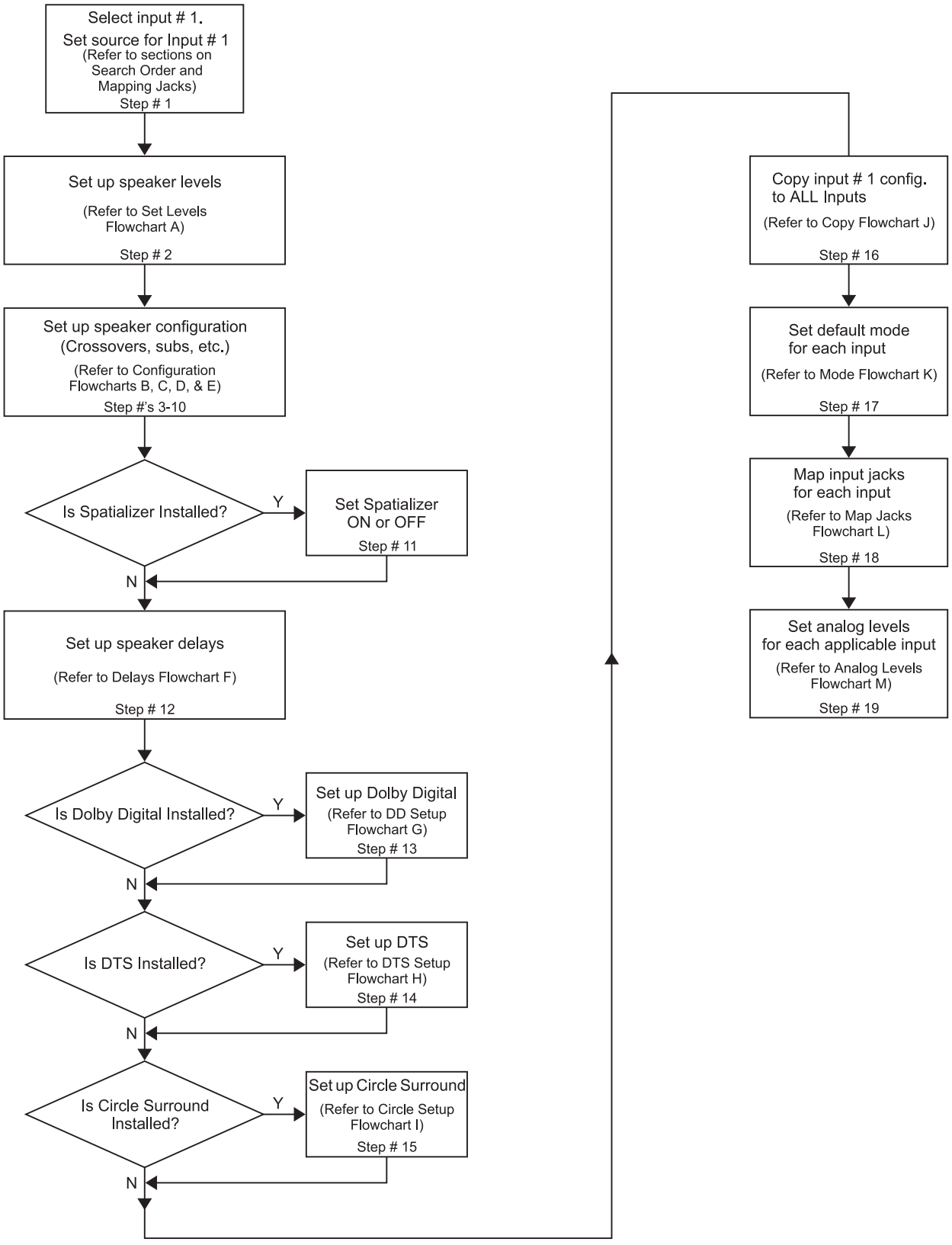
Button	Code (hex)	Code (binary)
1	01	0000 0001
2	02	0000 0010
3	03	0000 0011
4	04	0000 0100
5	05	0000 0101
6	06	0000 0110
A/D	07	0000 0111
MUTE	08	0000 1000
MODE	09	0000 1001
TAPE OUT	0A	0000 1010
SET UP	0B	0000 1011
BALANCE	0C	0000 1100
DISP	0D	0000 1101
PWR	0E	0000 1110
UP	0F	0000 1111
DOWN	10	0001 0000
REM PWR	11	0001 0001
STAT	12	0001 0010
LEFT	13	0001 0011
RIGHT	14	0001 0100
PHASE	15	0001 0101
SEL UP	16	0001 0110
SEL DOWN	17	0001 0111
EQ	None	None
Discrete Off	25	0010 0101
Discrete On	26	0010 0110

Electrical Requirements:

Jack: 3.5mm stereo mini-phone
Tip: 12v current limited dc supply from Casa Nova (for phantom power)
Ring: Signal, 0-5 v peak-to-peak. (Is pulled high in Casa Nova)
Sleeve: Ground

Appendix D Step-by-Step Setup Guide

Casa Nova Setup Procedure Flowchart



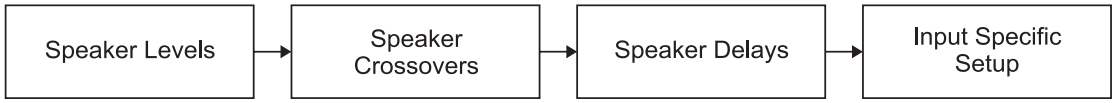
Step by Step Speaker Configuration

Casa Nova contains a comprehensive set of speaker configuration settings. These settings are believed to be the most complete ever offered in a home theater component and should allow any speaker to perform optimally regardless of speaker type. It is important to bear in mind that the following procedure is merely a guideline and that room acoustics, speaker design/quality, music/film type, and personal preference all have a part in these settings.

Please note that the menu and parameter names described herein are the ones shown on the front panel LCD and not the OSD (On Screen Display). Using the Setup menu map diagram on page 9 is recommended.

There are four major steps to be taken in setting up your Casa Nova. In recommended sequence, they are:

Individual speaker levels: compensate for different speaker and amplifier efficiencies.
Crossovers: permits proper signal routing internally in the Casa Nova and proper blending of main and subwoofer signals.
Delays: compensates for different speaker distances from the listening position.
Input Specific Setup: All parameters that are specific to an individual input select button are then programmed.



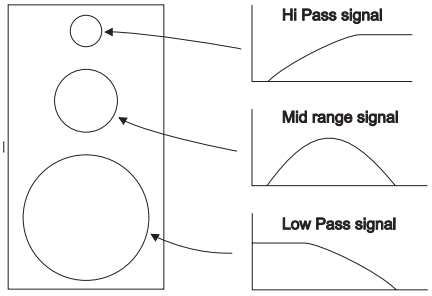
Each step plays a pivotal role in the overall sonic result and should receive equal attention and care in adjustment.

Speaker Levels

Setting up the speaker levels is best accomplished using the Casa Nova's internal noise generator and an SPL meter. If the meter has 'weighting' options, "C" is preferable.

1) Select Input # **1**
2) Go to the speaker levels submenu.
    a) Activate the noise in the front left speaker. All speaker levels should be referenced to the front left and right speaker levels, whose reference levels should start at **0**.
    b) Holding the SPL meter close in front of the user's face, bring up the master volume until the SPL meter reads 75dB. This is done using the **LEFT**/**RIGHT** buttons.
    c) Activate the noise in the front right speaker and, holding the SPL meter in the same position as for the front left speaker, adjust the speaker level until the SPL meter reads 75dB.
    d) Repeat this procedure for the center speaker.
    e) Activate noise in the left surround speaker. Hold the SPL meter close to the left ear, point it towards the left surround speaker, and adjust the level until the SPL meter reads 75dB.
    f) Activate noise in the right surround speaker. Holding the SPL meter close to the right ear, repeat this procedure for the right surround speaker.
    g) Activate noise in the sub woofer and point the SPL meter toward the sub woofer, if present in the system. Adjust the **SUB** level until the SPL meter reads 75dB. Note that there is greater margin for error due to the low frequency output of the sub woofer. Listening to a familiar passage and fine tuning the sub level by ear later in the final adjustments will be required.
    h) Deactivate the noise generator with the **A-D** button.

Speaker Configuration



Crossovers are most commonly located in a speaker cabinet. Their purpose is to keep energy at certain frequencies from reaching specific speaker elements (drivers), [e.g. keeping unwanted bass energy from the tweeters (see diagram at right).] Home theater applications use a crossover in the surround processor to send low pass information to a subwoofer and limit the low pass information sent to the main speakers. The purpose of this section, **SPEAKER CONFIGURATION**, is to properly set up the Casa Nova's internal crossovers for optimal sound.

In this manual, a Speaker Set is defined as one or more speakers that are manipulated via a common parameter. For example, the crossover parameters for both the front left and right speakers are manipulated in the front left/right configuration submenu since the desired effect for the left speaker

is also appropriate for the right. The other speaker 'sets' in the Casa Nova are the [surround left and right] and the [center]. The speaker sets will be delimited by [ ].

The full speaker configuration is stored separately for each of the 12 input select buttons. This procedure will guide the user to set all configuration parameters for input # 1, and then copy these parameters to all other input select buttons.

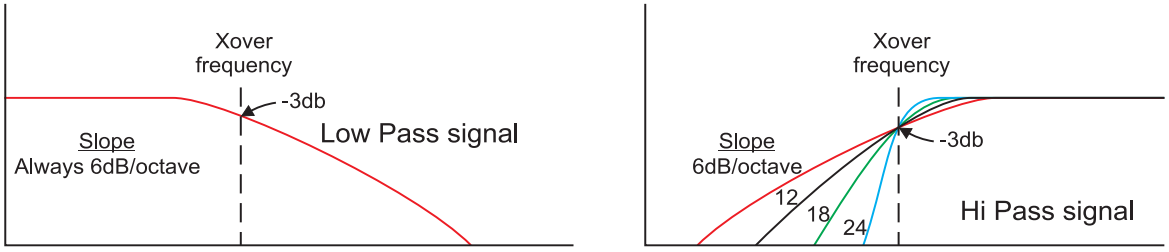
Connect a digital source to Input 1 and verify that the input jack mapping is correct, i.e if the digital source is connected to the coax input jack # **1**, press the **A-D** button until **COAX 1** appears in the LCD above it.

In the Speaker configuration submenu, buttons **1**-**4** will access additional menus to setup a particular speaker or set of speakers. Pressing button # **5** will allow a change of the crossover type. There are three settings for the crossover type. They are: "Phase Perfect"; "Butterworth"; and "Linkwitz-Riley". Each crossover type requires different settings that are applicable to that type only. The Front [Left/Right], [Center] and [Surround] speaker configuration submenus contain a separate setup submenu for each of the three crossover types. It is recommended that each of the three crossover submenus be set up for each speaker. The user can then audition each crossover type to determine which sounds best for their system.

The following crossover type descriptions will help the user to better understand the sonic consequences and advantages of each:

Phase Perfect

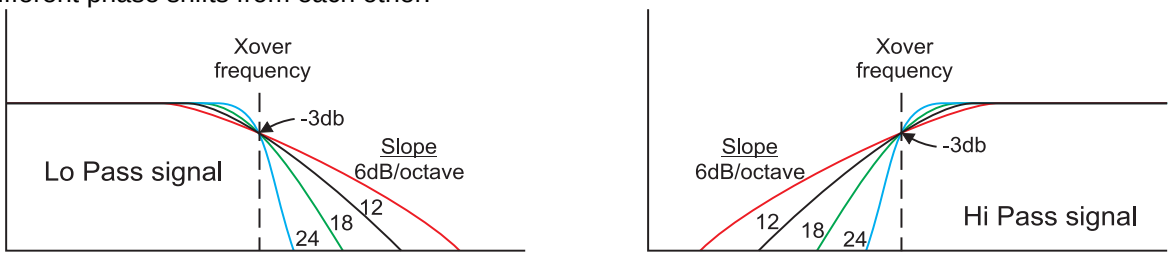
This is a term coined for a type of crossover wherein the low pass portion is derived from the high pass. First, a high pass Butterworth crossover is performed. This gives two resulting signals: the high pass and the original, unaltered signal. Then, the high pass signal is subtracted from the original input signal, resulting in the low pass signal, which is usually routed to the subwoofer. A positive attribute of this type of crossover is that if the high and low pass signals are added together, an exact replica of the original input signal results, thus the term "phase perfect". A potentially negative attribute of this type of crossover is that, due to phase relationships and vector mathematics, higher order filters (12, 18, 24 dB/octave) always produce 6dB/octave low pass slopes, in terms of electrical energy sent to the subwoofer. The high pass portion will have the expected 6, 12, 18 or 24 dB /octave slope. Due to this phenomenon, this type of crossover is best suited for subwoofers that can operate linearly up to the 500 Hz range. Please consult your dealer or subwoofer manufacturer to determine if this is suitable for your particular subwoofer. If the subwoofer is capable of handling this range, this is potentially the best sounding of Casa Nova's crossover types.



Phase Perfect Crossover Diagram

Butterworth

This is the most common type of crossover used in home theater, speakers and outboard electronic crossovers. Separate high and low pass slopes and crossover frequencies may be set for speaker sets [Left/Right], [Center] and [Surround Left / Surround Right]. As with Phase Perfect and Linkwitz-Riley crossovers, it is possible to invert the phase of the low pass for each of these speaker sets. This allows precise tailoring of the subwoofer response to the main speaker's response. A negative attribute of this crossover type is that the high and low pass signals have different phase shifts from each other.



Butterworth Crossover Diagram

Linkwitz-Riley

This type of crossover, developed in 1976 by Siegfried Linkwitz and Russ Riley, eliminates some of the inherent problems of Butterworth filters. Specifically, a Butterworth filter of 12, 18 or 24 dB/octave (or higher) slope exhibits different phase shifts between the high and low pass outputs. A Linkwitz-Riley alignment solves this problem, as it exhibits zero phase difference between outputs at all frequencies. Acoustically, this means that if the sound sources are in proper time-alignment, a smoother frequency response will be realized at the listening position. The Linkwitz-Riley crossover is only applicable to slopes of 12 and 24 dB/octave. A proper Linkwitz-Riley crossover with a 12dB slope should have the low pass portion inverted. This is done internally in the Casa Nova.

Linkwitz-Riley Crossover Diagram

A note on crossovers

Casa Nova's complement of crossover options can at first appear daunting. Most surround sound processors offer a simple selection to set their crossovers: Speaker Small or Speaker Large. When set to small, normally a 12dB/octave Butterworth crossover is performed at 80Hz. Occasionally, it is a 24 dB/octave slope. This simple setting does not take into account the huge variations in speaker design and room acoustics and more often than not results in non-optimum performance. We have endeavored to offer this rich set of options with the aim of superior performance. With this in mind, following are a few simple suggestions to make this process easier.

A note on home theater

There are a few common misconceptions about home theater and bass reproduction. Chief among them is that the ".1" or "LFE" channel normally contains most or all of the bass information. This is unequivocally false. The LFE channel contains sound effects such as explosions, rumbling and the like. All other channels (left, center, right, left surround, right surround) may contain an equal amount of bass, and often do. Their bass, however, tends to be more related to the soundtrack, vocal material or localized sources such as a drum beating behind the listener. This is important to understand when setting up crossovers in the coming section.

Another misconception is that the center channel is "fill" and is minor in importance. Again, this is false. The center channel contains the lion's share of important information (particularly dialog) in the cinematic experience. It is therefore critical that the center speaker be of the highest quality possible and special attention be given to its mounting and positioning.

* * *

Speaker Configuration – Con't.

3) With Input button # 1 selected:
   a) Go to the **SUB CONFIG** submenu.
   b) Set number of subs to "**1**".
   c) If no sub, set number of subs to 0. The subwoofer Full Range/Crossover setting has no effect in this case.

Note: You will now be directed to set up crossovers as if a sub is present. There are some general rules that the Casa Nova follows in the special case of no subwoofers:

Case 1 - The front left/right configuration setting is **FULL**:

Any speaker set that is set to "crossover" will have its low pass signal sent to the left/right channels.

Case 2 - The front left/right configuration setting is **XOVER** or **FUL/LP**:

Any speaker that is set to crossover will lose its low pass signal.

4) Determine if the subwoofer needs to be sent a crossed over signal or a full range signal:
    a) Defeat the subwoofer's internal crossover and set **SUB** to **XOVER**. The crossovers in the Casa Nova have been engineered to be superior to any analog crossover, regardless of quality.
    b) If the sub woofers internal crossover cannot be defeated set the **SUB** to **FULL**. Again, it is preferable that the subwoofer's crossover be defeated and that the Casa Nova control all crossovers. It is recommended that the subwoofer manufacturer be contacted to see if there is a possible modification to the subwoofer to defeat its crossover.
    c) If the sub woofer is to be sent a full range signal, set the crossover frequency on the sub's internal crossover to match that of the speaker set that is crossed over in the Casa Nova. Example:
        i) If the front left/right speaker set is crossed over to 60Hz, begin by setting the sub woofer's internal crossover frequency at 60Hz and in the Casa Nova, set the slope to match that of the sub woofer's slope when performing step # 9g. (Refer to the sub woofer's documentation to determine its slope).
        ii) If multiple speaker sets are crossed over at different frequencies some experimentation will be required with the crossover frequency of the sub woofer. The same applies if the slopes are set differently for each speaker set. Begin by setting the subwoofer's frequency and slope to match the front [left/right] values. Experiment with the subwoofer's crossover frequency by moving it towards the crossover frequency of the [center], if installed.

5) Determine which speaker sets (Front [left/right], [Center], and/or [Surrounds]) need crossovers.
    a) If no speaker set is present, the **CFG** setting should be "**PHANTOM**".

    It is preferable that none of the speakers need a crossover at all but is rarely practical. Keep in mind that, in a 5.1 system (Dolby Digital or DTS), any speaker can be confronted with a full amplitude signal at any frequency. Generally speaking, the smaller the speaker the more limited its bass capabilities. If a speaker set doesn't need a crossover, that speaker set's configuration (**CFG**) setting should be **FULL**. Another possible option is Full range with low pass (**FUL/LP**). With this setting, the speaker will be sent the full range signal and the subwoofer can be used to augment its low bass performance. If all speaker sets are set to "**FULL RANGE**" or "**PHANTOM**", the following section on setting crossovers may be skipped. (Steps 6-10).

6) Determine whether or not the subwoofer can handle frequencies as high as 500Hz. Most literature included with subwoofers does not state this specification, so a call to your dealer or subwoofer manufacturer may be in order. Commonly only top-of-the-line subwoofers meet this requirement.

7) If the subwoofer does meet the above requirement, first try the "**PHASE PERFECT**" crossover type.

8) If the subwoofer cannot handle frequencies as high as 500Hz, first try the "**LINKWITZ-RILEY**" crossover type.

9) Using a 2 channel CD, do the following for each of the three speaker sets (**LT/RT**, **CEN**, **SURRND**):
    a) Go to that speaker set's configuration menu.
    b) Determine if this speaker set can handle a full range signal.
    c) If the speaker set's specification is -3dB at higher than 50 Hz, set the **CFG** to **XOVER**.
    d) If the speaker set's specification is -3dB at 35-50Hz, set the **CFG** setting to **FUL/LP**.
    e) If the speaker set's specification is -3dB at 20 Hz, set the **CFG** setting to **FULL**.
    f) Set the crossover frequency in the Phase Perfect submenu. If a suck-out appears (lack of bass energy), then try increasing the setting. If the transition to the sub becomes obvious, a lower frequency is recommended.
    g) Set the crossover slope in the Phase Perfect submenu. Generally, the smaller the bass driver or the fewer the bass drive units, the steeper the required slope. A gentler slope (6dB, 12 dB / octave) is normally less intrusive and provides better blending of the main speakers into the sub. Some sub woofers can sound "tubby" with too shallow of a slope. A steeper slope (18dB, 24dB / octave) can provide greater dynamic range and clearer dialog.
    h) Try both settings of low pass phase. The correct setting is the one that produces the clearest, most solid bass.
    i) Repeat steps f, g and h for the Linkwitz-Riley and Butterworth crossovers, for each speaker set. In the Butterworth crossover submenu, it is recommended that the high crossover frequency and slope be set to the same values as the low crossover frequency and slope.

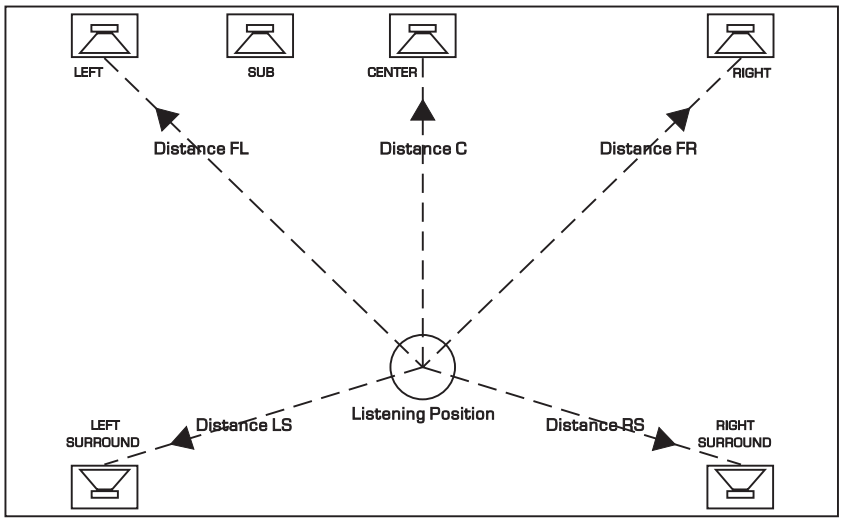
10) In the [Center] submenu, the center channel's low pass signal may be routed to the front [left/right] channels instead of the usual subwoofer routing. This is useful for center channels that have extremely limited low frequency response, i.e –3dB cutoff point around 120 Hz.

11) Spatializer is a process that is intended for those systems where no surround speakers exist. Activating Spatializer "phantoms" information in the surround channels and routes it to the front left and right speakers, giving the illusion that sound is emanating from behind the listening position. Therefore, if the source signal is multi-channel or the current mode is a matrix such as Dolby Pro Logic, no surround information will be lost as it will be 'Spatialized' and added to the existing front left and right channels. If Spatializer is installed, set it to **ON** if no surround speakers exist.

Note: When Spatializer is set to **ON**, the Casa Nova 'Spatializes' the surround information and automatically routes the surround channels to the front left/right speakers. In this case it is not necessary to change the surround speaker configuration parameter as it will have no effect. Changing the surround speaker levels and delays will also have no effect. This also applies to the surround levels and delays in the Dolby Digital, DTS and Circle Surround sub menus.

Speaker Delays

12) Go to the **DELAYS** submenu.
   a) If the center speaker is closer to the listening position than the front left and right speakers and cannot be brought to within the same distance of them, leave the front left and right delays at **0** and adjust the **CEN** (center) delay so that its sound arrives at the listener at the same time as the front left and right speakers. The delay value should be 1mS for each foot difference.
   b) If the center speaker is farther in distance from the listening position than the front left and right speaker, then set the **CEN** (center) delay to **0** and adjust the front left and right speaker delays so that their sound arrives at the listeners at the same time as the center speaker. The delay value should be 1mS for each foot difference. Please refer to page 28 for additional details regarding the speaker delay feature and methods of calculating required speaker delay times.
   c) If the center speaker is equal distance from the listening position as the front left and right speaker, set the front left and right speaker and center speaker delays at **0**.
   d) Using the chart and method on page 28, calculate the delay times for each surround speaker.



The center and surround delays in this submenu will affect the center and surround speakers only when the **MODE** is not Dolby Digital, DTS or Circle Surround. The center and surround delays must be set up separately if the **MODE** is either Dolby Digital, DTS or Circle Surround.

Dolby Digital, DTS and Circle Surround Setup

The center and surround speaker levels and delays will most likely differ for Dolby Digital and DTS sources, as well as when the Mode is Circle Surround. There are separate **SETUP** submenus designed just for these modes. When the mode is Dolby Digital, DTS, or Circle Surround, the center and surround delays will not be affected by changes made in the above **DLYS** submenu. However, the values of the levels set in the Dolby Digital, DTS and Circle Surround setup submenus will be added to the level values in the **SETUP**/**INP**/**LVLS** submenu.

13) a) Play a Dolby Digital movie.
   b) Go to the Dolby Digital setup submenu – page 1.
   c) The **LFE** setting should NOT be turned **OFF** if no sub woofer exists in the system. A setting of **0** turns on the **LFE** and sets its level in proper proportion to the remaining 5 channels. Setting the **LFE** at **–10** [dB] may be desired for late night viewing or if source material may overpower the sub woofer. Setting the **LFE** to **OFF** may be useful for late night viewing, however, please note that any information in the

.1 channel will be lost.

d) Go to the second page of the Dolby Digital setup submenu
e) Set the center speaker delay to the same value as in the **SETUP/INP/DLYS** submenu.
f) Set both surround delays 15mS less that those set in the **SETUP/INP/DLYS** submenu.
g) Set the center speaker level and each surround speaker level to 0. See page 31 for additional information regarding setting the Dolby Digital center and surround levels.

Remember that these values will be in effect only when the **MODE** is Dolby Digital.

14) a) Play a DTS encoded CD or movie.
b) Go to the DTS setup submenu.
c) Set the center speaker delay to the same value as in the **SETUP/INP/DLYS** submenu.
d) Set the surround delays 15mS less that those set in the **SETUP/INP/DLYS** submenu.
e) Set the center speaker level to **0**.
f) Set each surround speaker level to **0**.
g) Set the **LFE** level at **0** for DTS movies, or **-10** for DTS music. (The user can choose to use two separate input select buttons, one for DTS movies and one for DTS music, all parameter values being the same except for the LFE setting).

These parameter values apply only when the **MODE** is DTS.

15) a) Play a 2 channel CD.
b) Go to the Circle Surround setup submenu.
c) Set the center and surround speaker delays to the same value as in the **SETUP/INP/DLYS** submenu.
d) Set the center speaker level and each surround speaker level to 0.
e) Set the imaging to **NARROW** or **WIDE**, applicable only when the mode is Circle Non-Encoded. **WIDE** widens the speaker imaging in the front [left/right] speakers.

These parameter values apply only when the **MODE** is any one of the three Circle Surround modes.

16) Now that the speaker configuration, crossovers, levels and delays have been set up for input select button #1, they should be copied to all input select buttons as a good starting point. Do this in the **MACROS** submenu when input select # **1** is the current input.

17) Each input select button has a default mode assigned to it. The default mode for a given input select button is set and stored in the first **SETUP/INPUT** page. As the user scrolls through the list of modes, there are 2 positions in this list that are not currently used. In these positions, the word **SKIP** will be displayed.
a) Press input select button #1.
b) Go to the **SETUP/INP** – page 1 submenu.
c) Set the applicable default **MODE**.
d) Repeat steps b and c for each input select button.

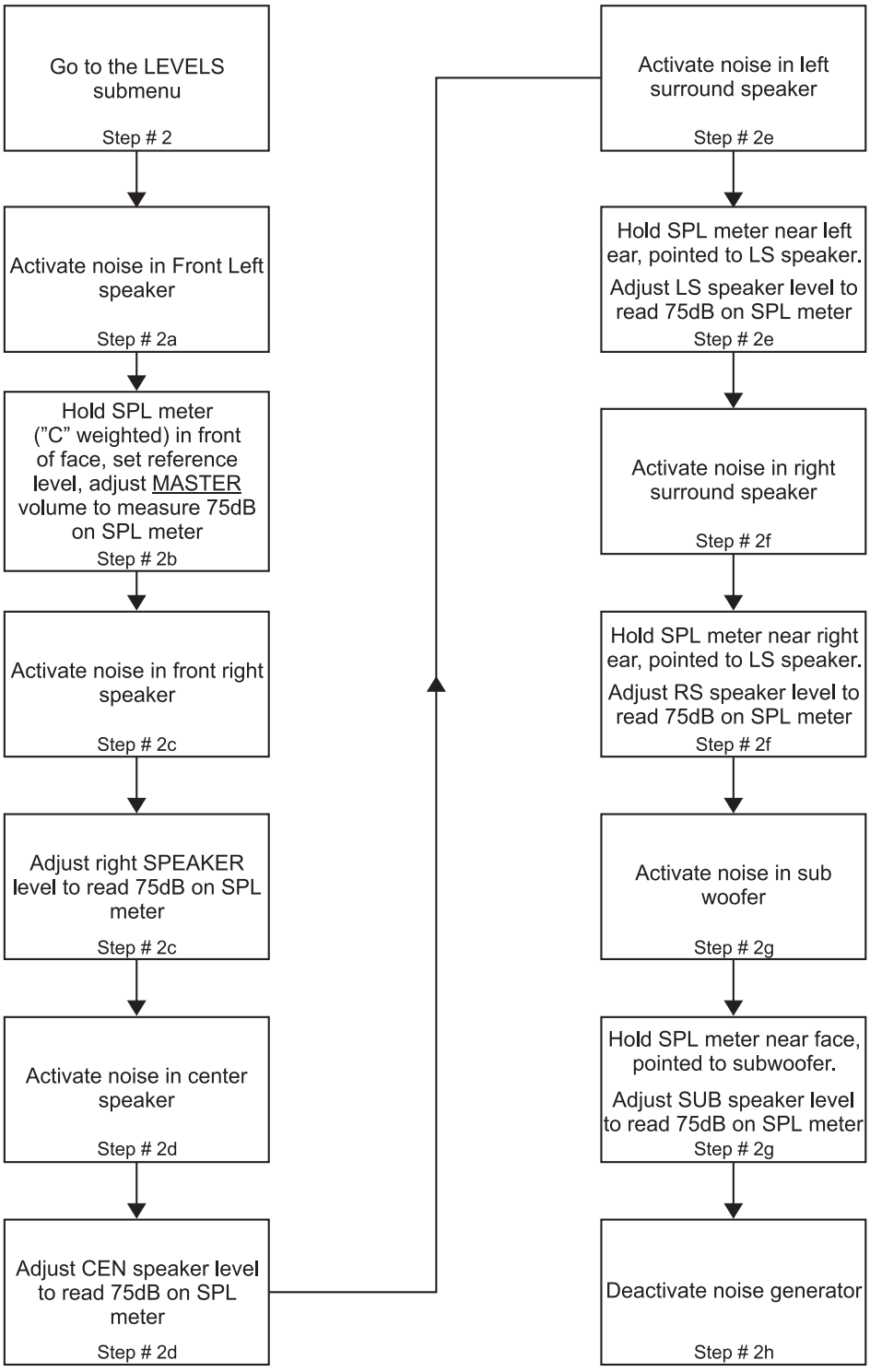
18) Verify that the desired rear panel audio and video input jacks are properly mapped to each Input Select button that is to be used.
a) Select input # 1.
b) Go to the AUDIO SOURCE submenu.
c) Map all appropriate rear panel audio input jacks.
d) Go to the COMPOSITE VIDEO SOURCE submenu.
e) Map all appropriate composite video input jacks.
f) Go to the S-VIDEO SOURCE submenu.
g) Map all appropriate s-video input jacks.
h) Select input # 2.
i) Repeat steps b through g for all used input select buttons.

The audio and both video pages allows the user to map up to six input jacks to the currently selected input. It is recommended that all other displayed jacks in this submenu be cleared if they are not to be used. Please refer to page 29 for additional details about mapping input jacks to a given Input Select button.

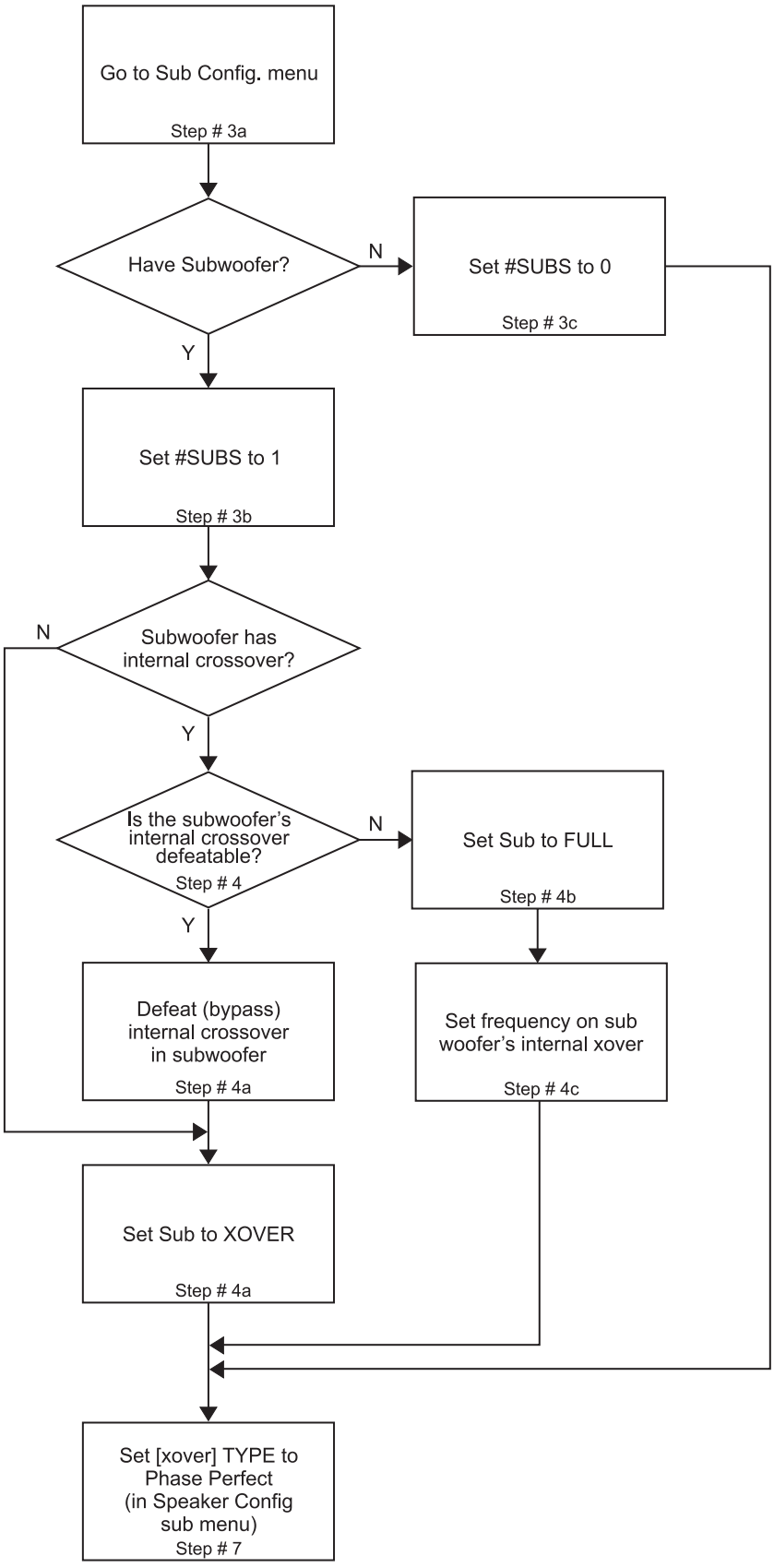
19) All analog sources must have their input levels set in order to obtain the best signal to noise ratio as well as to ensure that no clipping occurs.
a) Go to the **ANALOG LEVELS** submenu.
b) Select the first set of jacks with an analog input jack assigned to it.
c) Adjust the analog input level.
d) Repeat steps b and c for each analog source.

Make adjustments so that during the most aggressive passages, the red clip light never comes on, but the –6 or –12 lights are on.

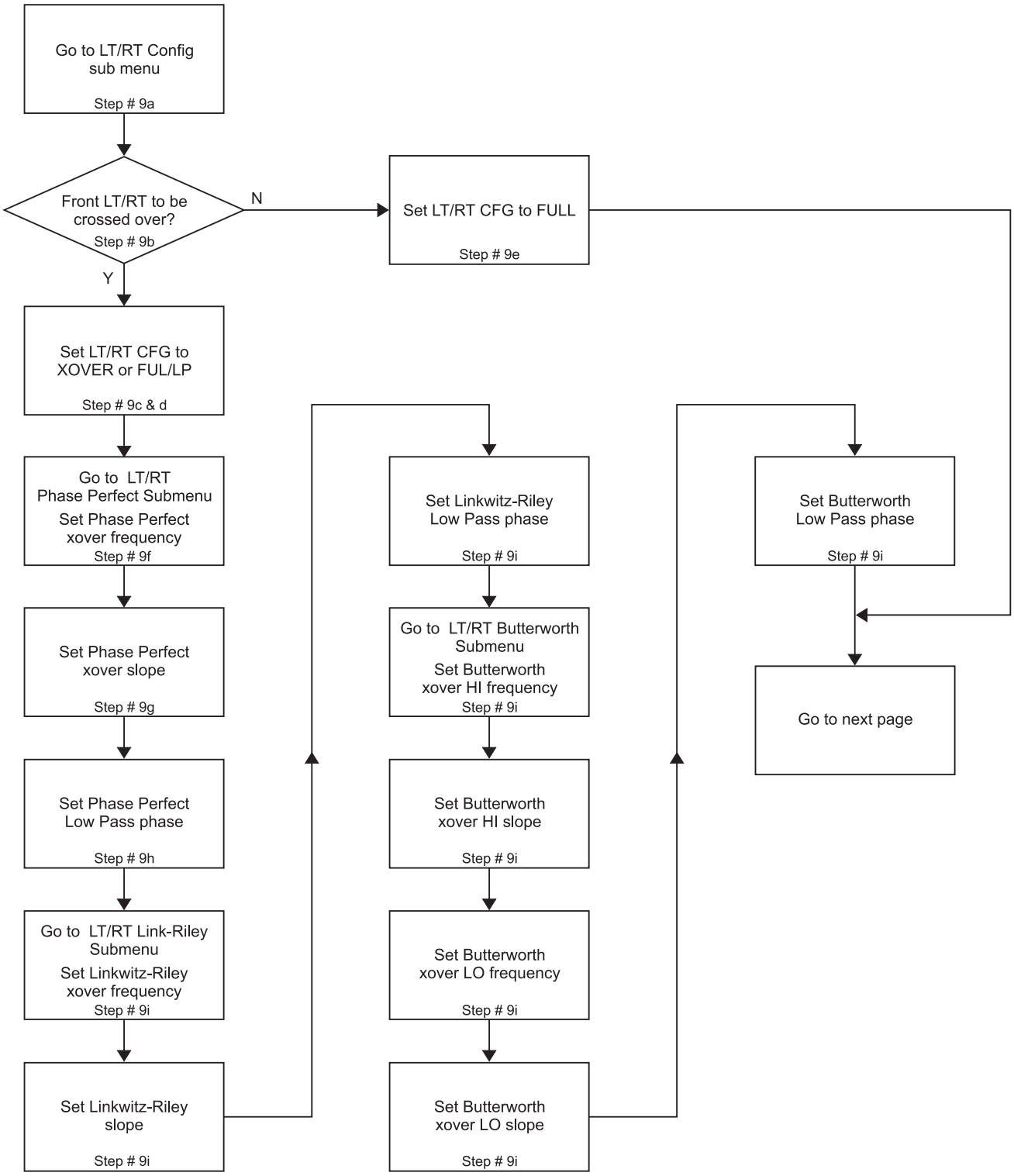
Flowchart A – Set Levels



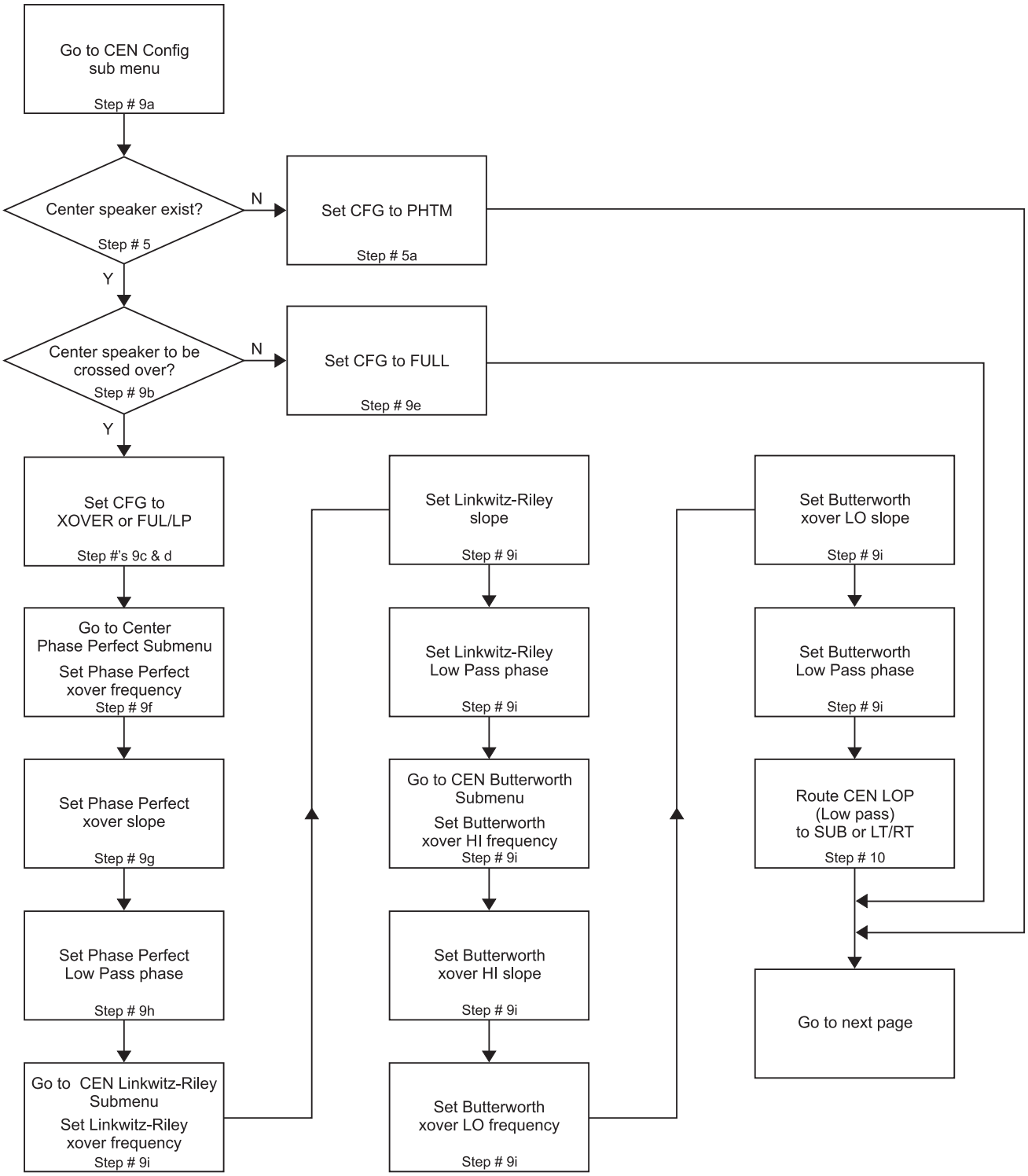
Flowchart B – Setup Sub & Crossover Type



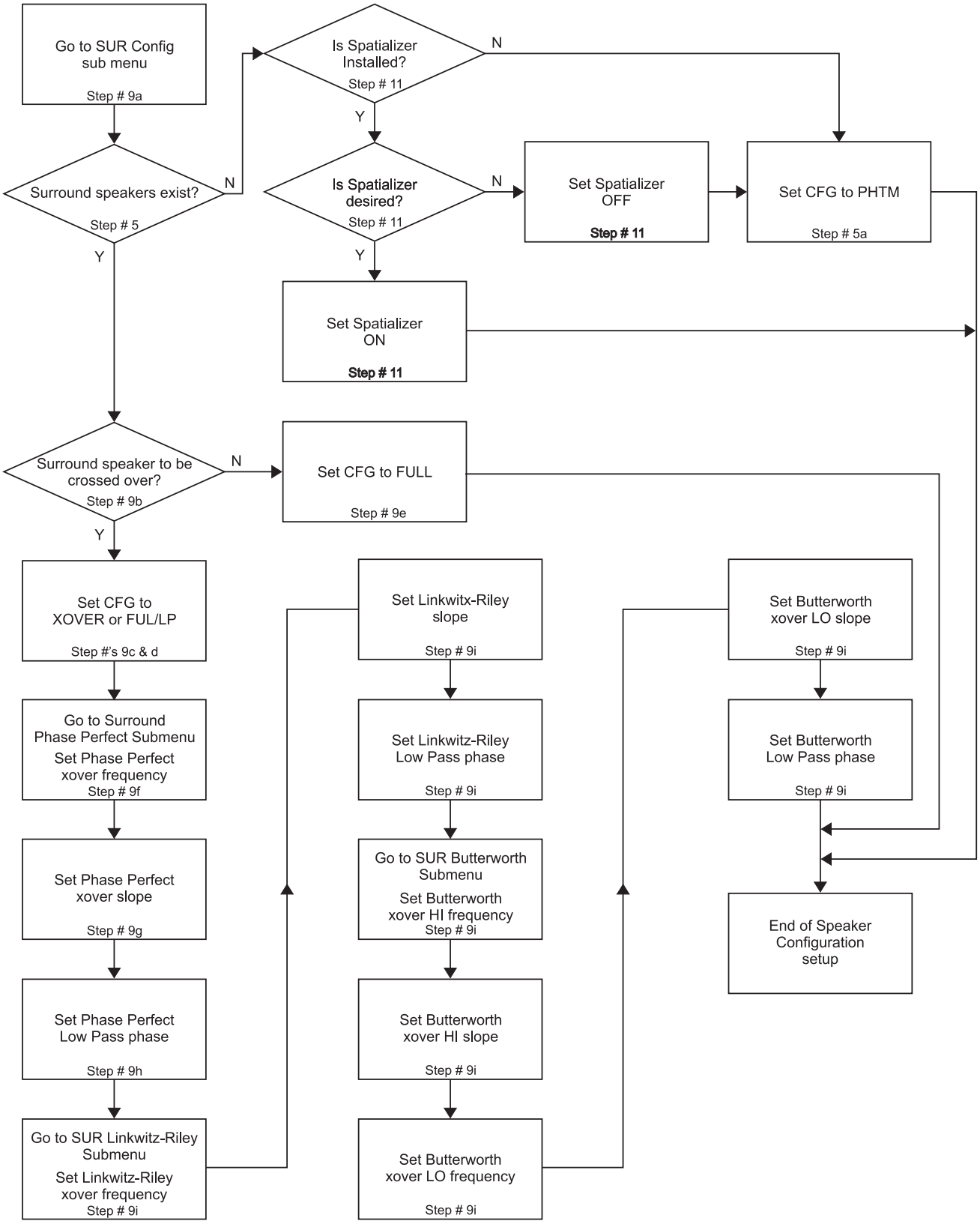
Flowchart C – Front Left/Right Config.



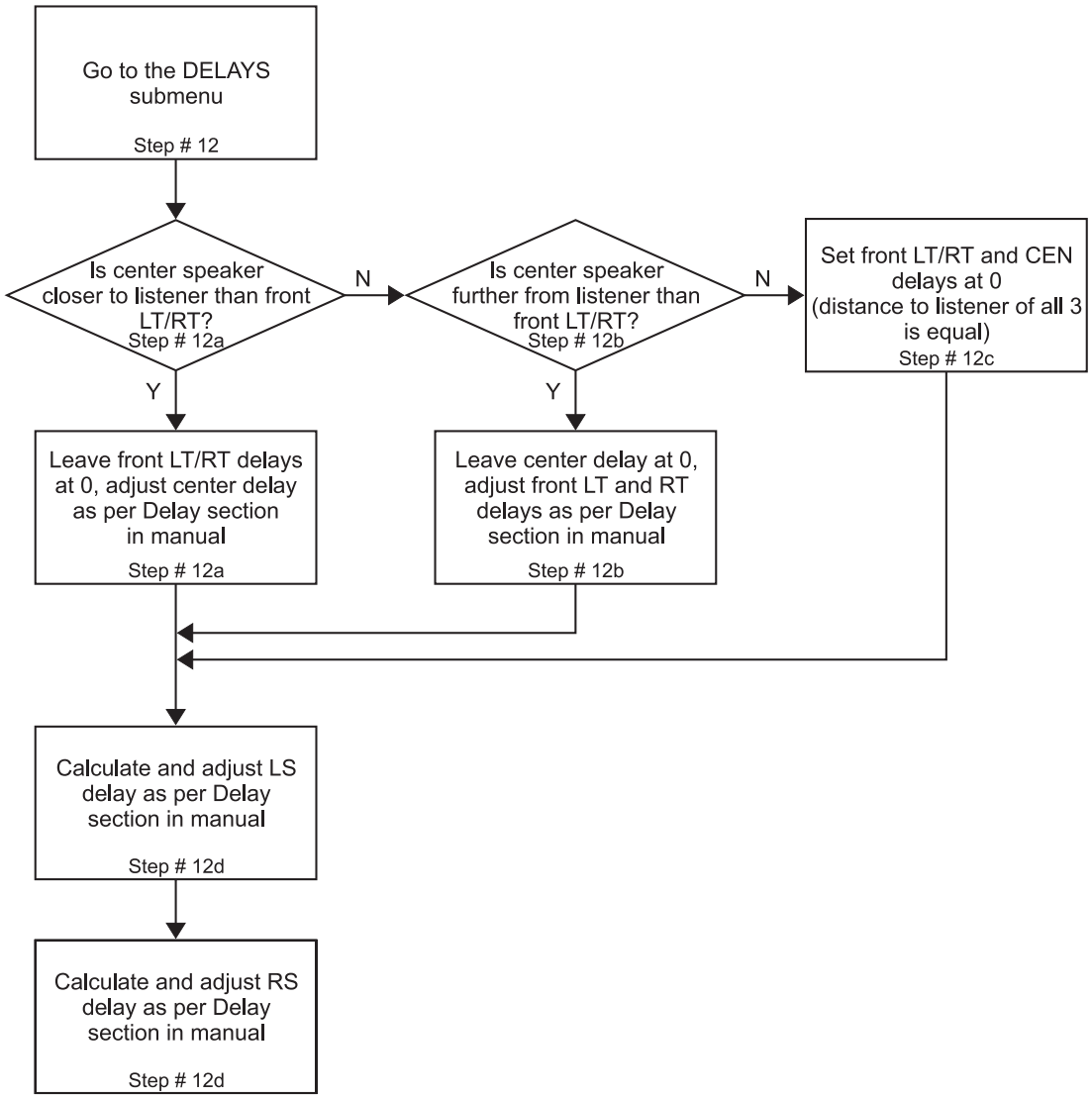
Flowchart D – Center Config.



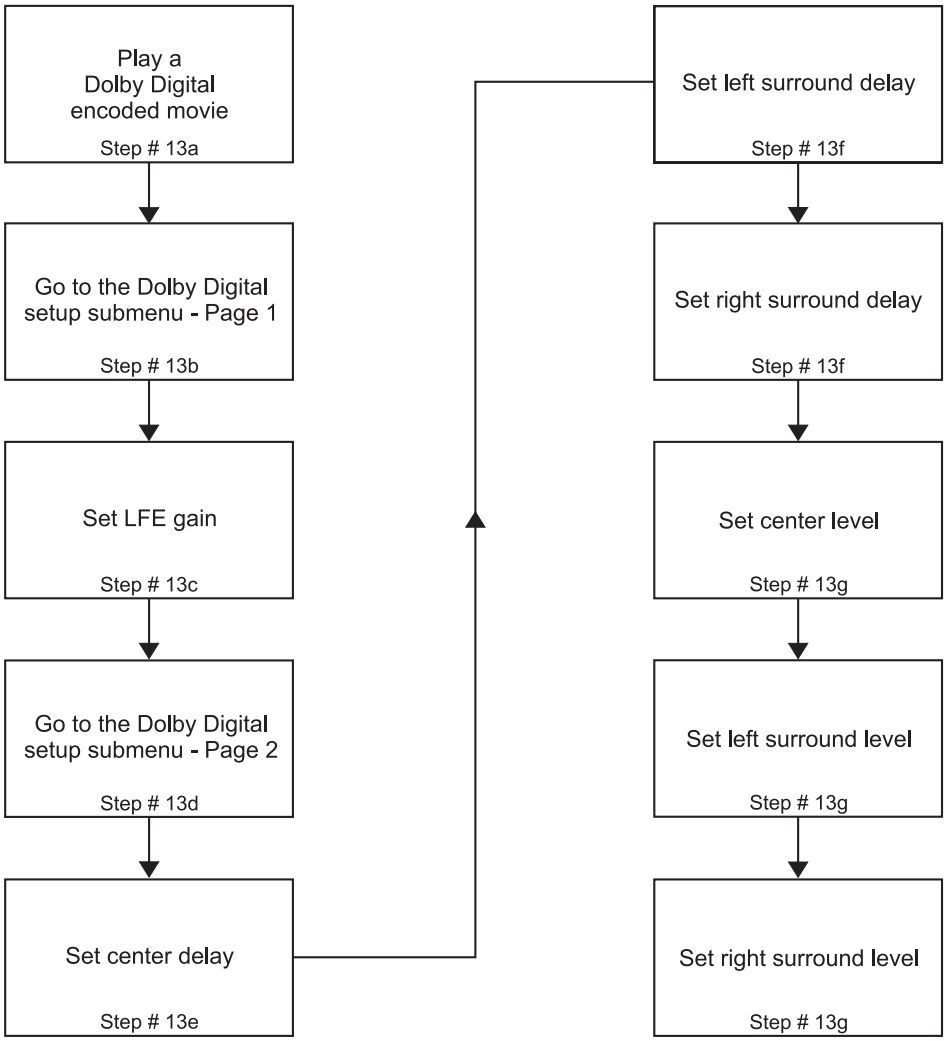
Flowchart E – Surround Config.



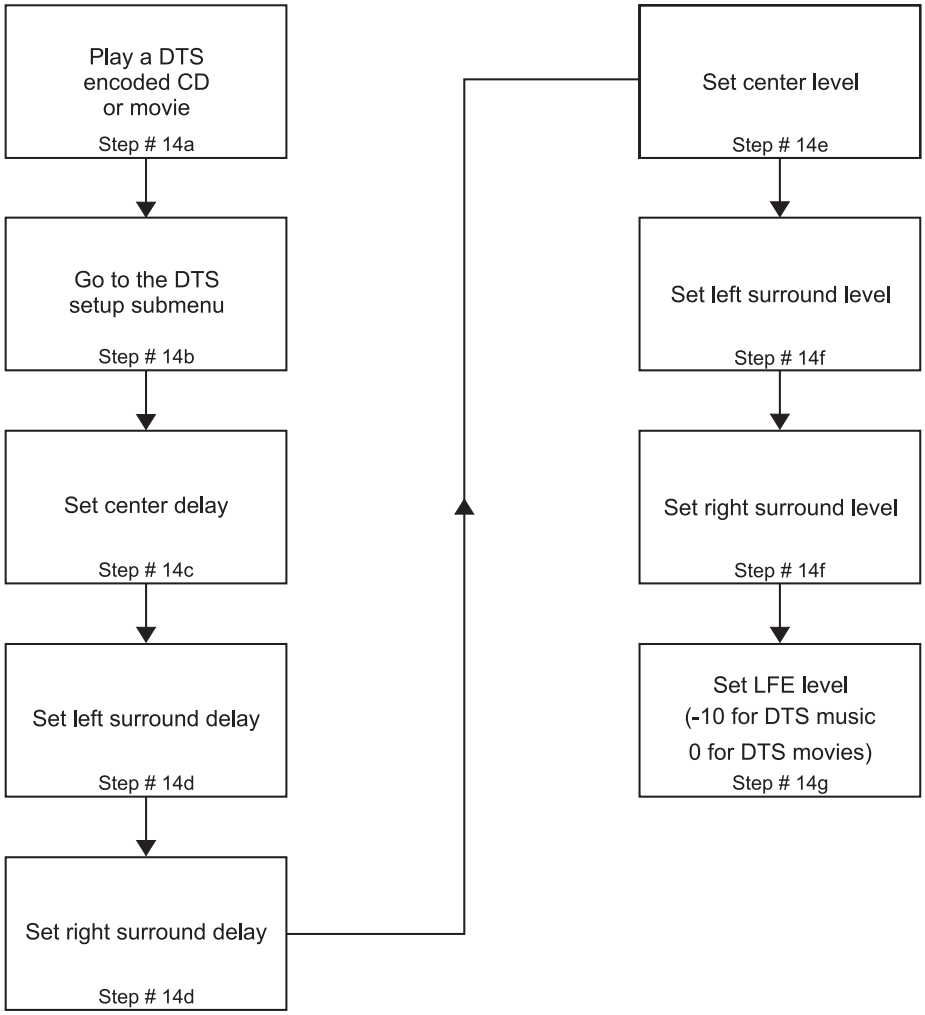
Flowchart F – Delays



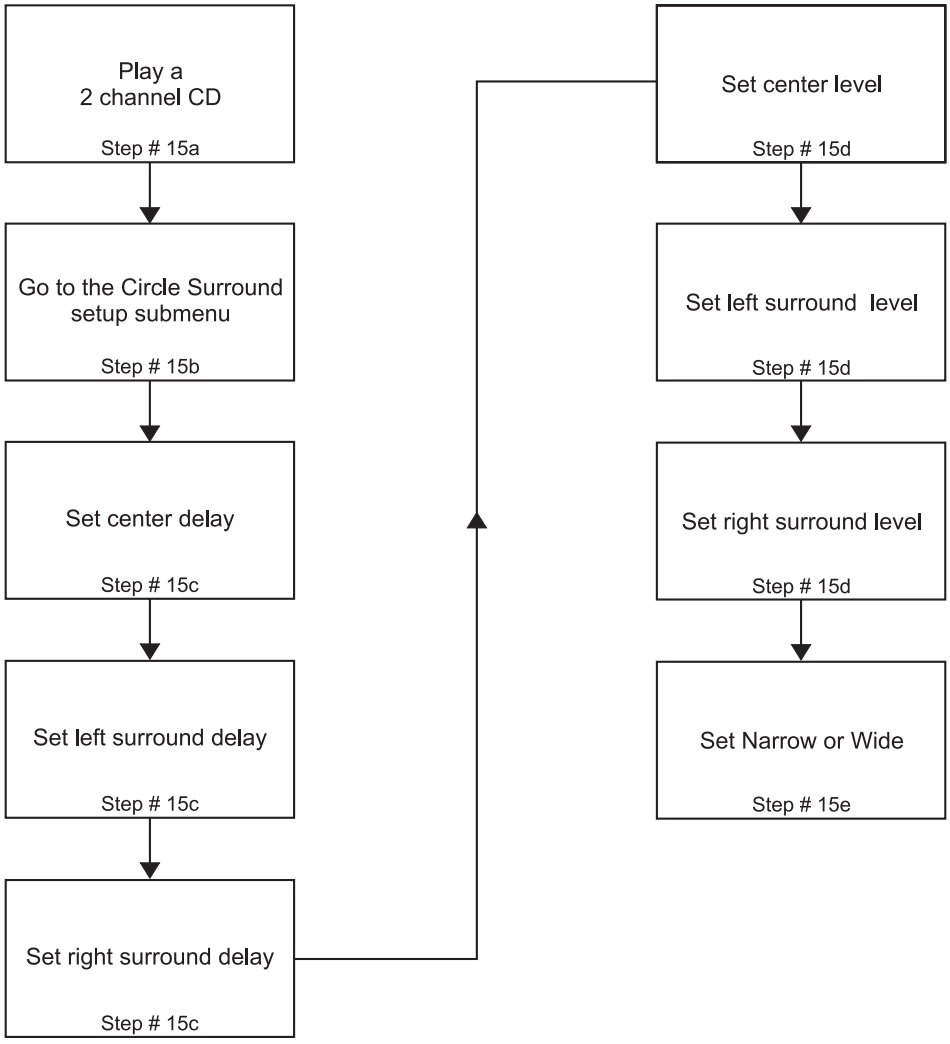
Flowchart G – Dolby Digital Setup



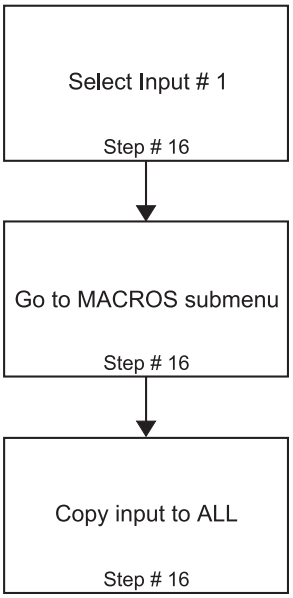
Flowchart H – DTS Setup



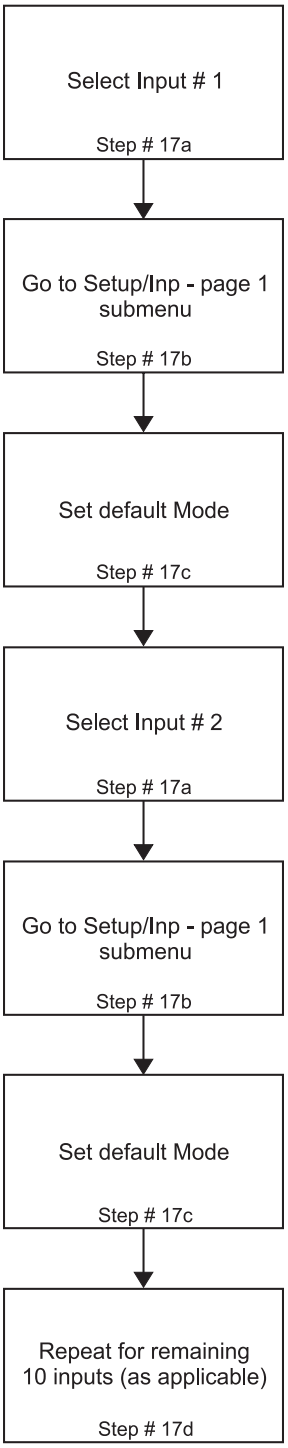
Flowchart I – Circle Surround Setup



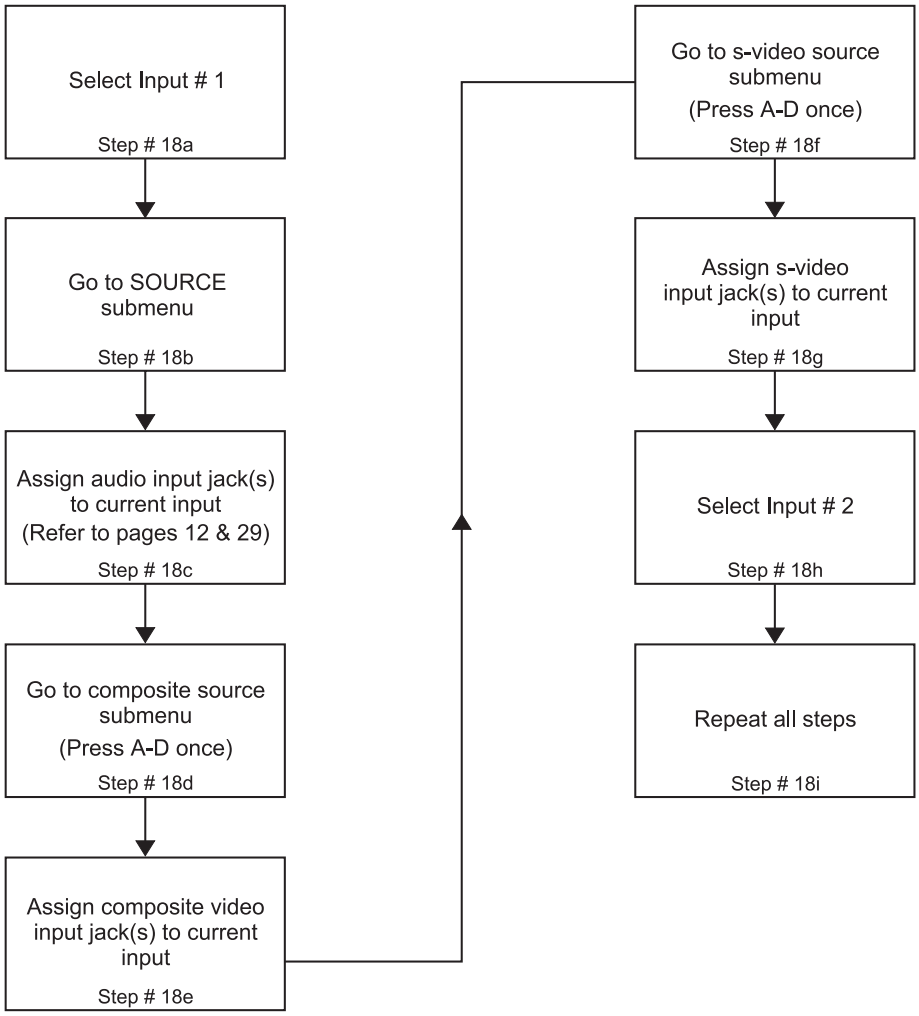
Flowchart J – Copy Input



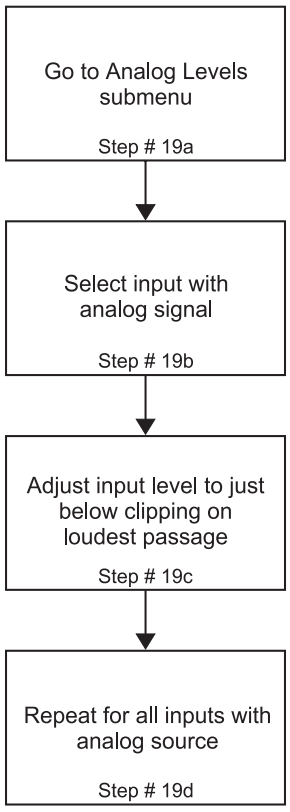
Flowchart K – Default Mode



Flowchart L – Map Jacks



Flowchart M – Analog Input Levels



Appendix E Specifications

Inputs:

Analog audio:
6 stereo pairs (RCA)
Minimum Input Level: 50 mVrms
Input Impedance: 10 KΩ

Digital Audio:
Digital In Card:
12: 6 coaxial (RCA); 1 AES/EBU (Balanced XLR); 3 optical (2 TosLink; 1 open for optional AT&T or Theta Digital proprietary Single Mode); 2 optional AC-3 RF.

Video: 10: 6 composite (RCA); 4 S-Video, NTSC and PAL compatible.
Input level & impedance: 1Vpp, 75Ω.

Remote IR Receiver: 3.5mm stereo phone jack (rear panel).

Outputs:

Audio:
Balanced/Single-Ended Card:
Analog Outputs: 6 channels: Left, Right, Center, Left Surround, Right Surround, Sub, (Front Left, Front Right and Center balanced XLR and single ended [RCA] outputs for each. Left Surround, Right Surround and Sub have single-ended outputs only).

Analog and Digital Card: (Optional)
Analog Outputs: 6 channels: Left, Right, Center, Left Surround, Right Surround and Sub (all Single-ended RCA jacks).
Digital Outputs: 6 S/PDIF channels on 3 RCA jacks: Left/Right, Left/Right Surround, Center/Sub.

Digital Card: (Optional)
6 S/PDIF channels on 3 RCA jacks: Left/Right, Left/Right Surround, Center/Sub.

* * *

Analog Output Impedance: 36.5 ohms on SE output, 70 Ohms on balanced output.

Maximum Analog Output Level: Balanced: 18.4 Vrms, Single Ended: 9.2 Vrms.

Video: (Optional)
4: 1 Main; 1 Tape Out (both composite [RCA]); 1 Main; 1 Tape Out (both S-Video), all on Video In card, NTSC and PAL compatible

Misc.: 1 stereo (RCA) analog pair (Tape Out) on Analog In card.

1 stereo (RCA) analog pair (Zone 2) on Analog in card. The Zone 2 audio signal is routed through separate output volume controls. Zone 2 Maximum output is 9.2 VRMS.

1 Volume Data (RCA) output on the optional Digital Out and Analog & Digital Out cards. (Digital volume control data for External Volume Control Unit).

2 coaxial (RCA) digital Tape Outputs on Digital In card.

RS232: DB9 and RJ45 connectors. (Optional)

Modes/Processes: Matrix, Special Matrix, Dolby Pro Logic, Dolby Digital (optional), DTS (optional), Stereo, Mono, Circle Surround (optional), Spatializer (optional).

Conversion: A/D Conversion: 20-bit Delta-Sigma, D/A Conversion: 24-bit Delta-Sigma, 96KHz compatible.

Frequency Response: 20 Hz-20 kHz, ± 0.2dB, Ref. 1KHz.

THD+Noise: -96dB @ 1KHz, maximum output level.

Dynamic Range: 106dB minimum, 20KHz bandwidth, Ref. 1KHZ.

Signal to Noise Ratio: 106dB minimum, 20KHz bandwidth, Ref. 1KHz at maximum output level.

Power Requirements: 117VAC, 50-60 Hz, 120 watts with all options installed.

Dimensions: 19”W x 14.5”D x 4.5”H (483 x 369 x 115 mm).

Weight: 25.5 Lbs (11.6 Kg) Stand alone, 31 Lbs (14 Kg) Boxed with accessories.

Environment:
Operating Temperature: 32 to 95 F (0 to 35 C)
Storage Temperature: -22 to 167 F (-30 to 75 C)
Relative Humidity: 95% maximum without condensation.

Remote Control: 1 hand-held, battery powered control unit uses 2 AAA batteries.

Specifications subject to change without notice.

90 DAY LIMITED WARRANTY TERMS AND CONDITIONS
(5 Year optional extended service contract)

1. Theta Digital Corporation, henceforth referred to as Theta, warrants the product designated herein to be free of manufacturing defects in material and workmanship, subject to the conditions set forth herein, for a period of 90 days from the date of purchase by the original purchaser, henceforth referred to as purchaser. If the purchaser registers the unit with Theta by mailing in the warranty card, together with a copy of the bill of sale, within 14 days of the date of purchase, said purchaser will be registered for an extended service contract. The extended service contract extends the 90 days to a period of 5 years from the date of purchase by the original purchaser or no later than 7 years from the date of shipment to the authorized Theta dealer, whichever comes first.

2. CONDITIONS
   This warranty is subject to the following conditions and limitations. The warranty is void and inapplicable if the product has been used or handled other than in accordance with the instructions in the owner's manual, abused or misused, damaged by accident or neglect or in being transported, or if the defect is due to the product being repaired or tampered with or modified by anyone other than Theta or an authorized Theta repair center. In the unlikely event that the unit requires service, contact Theta for an RA (Return Authorization) number. The product must be packed and returned to Theta or an authorized Theta repair center by the customer at his or her sole expense. Theta will pay return freight of its choice. A returned product must be accompanied by a written description of the defect, a photocopy of the original purchase receipt, and a daytime phone number where the owner can be reached. The unaltered receipt must clearly list model and serial number, the date of purchase, the name and address of the purchaser and authorized dealer and the purchase price. Theta reserves the right to modify the design of any product without obligation to purchasers of previously manufactured products and to change the prices or specifications of any product without notice or obligation to any person.

3. REMEDY
   In the event the above product fails to meet the warranty, and the above conditions have been met, the purchaser's sole remedy under the limited warranty shall be to obtain an RA number and return the product to Theta or an authorized Theta repair center where the defect will be rectified without charge for parts or labor.

4. LIMITED TO ORIGINAL PURCHASER
   This warranty is for the sole benefit of the original purchaser of the covered product and shall not be transferred to a subsequent purchaser of the product.

5. DURATION OF WARRANTY
   This warranty expires 90 days after the date of original purchase. If Theta receives the completed warranty registration card within 14 days of original purchase, this period is extended to the fifth anniversary of the original date of purchase or no later that the seventh anniversary of the shipment to the authorized Theta dealer, whichever comes first.

6. MISCELLANEOUS
   ANY IMPLIED WARRANTIES RELATING TO THE ABOVE PRODUCT SHALL BE LIMITED TO THE DURATION OF THIS WARRANTY. THE WARRANTY DOES NOT EXTEND TO ANY INCIDENTAL OR CONSEQUENTIAL COSTS OR DAMAGES TO THE PURCHASER. Some states do not allow limitations on how long an implied warranty lasts or an exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

7. WARRANTOR
   Inquiries regarding the above limited warranty may be sent to the following address:

   THETA DIGITAL CORPORATION
   5330 DERRY AVENUE, SUITE "R"
   AGOURA HILLS, CA 91301

   WARRANTY OUTSIDE THE USA
   Theta has formal distribution in many of the countries of the free world, in each country the Theta Importer has contractually accepted the responsibility for product warranty. Warranty service should normally be obtained from the importing dealer or distributor from whom you obtained your product.

WARNINGS

1. To prevent fire or shock hazard, do not expose your Theta product to rain or moisture.

2. This unit contains voltages which can cause serious injury or death. Do not operate with covers removed. Refer all servicing to your authorized Theta dealer.

3. For continued protection against fire hazard, replace fuses only with the same type and rating of fuses as specified.