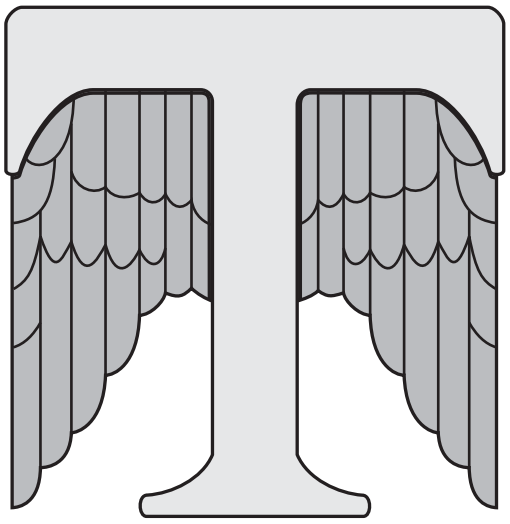
THETA DIGITAL



Casablanca IV

Owner's Manual

V 4.03.b

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 Casablanca IV 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 Casablanca IV 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 Casablanca IV, 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:

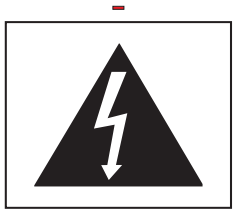
* Reorient or relocate the receiving antenna.
* Increase the separation between equipment and receiver.
* Connect the receiver into an outlet on a circuit different from that which the Casablanca IV is connected to.

Acknowledgments

Casablanca IV is manufactured under license from Dolby Laboratories. “Dolby”, “Pro Logic”, “Dolby TrueHD” and the double-D symbol are registered trademarks of Dolby Laboratories.

Casablanca IV is manufactured under license from Digital Theater Systems, Inc. U.S. Pat. No's. 5,451,942; 5,956,674; 5,974,380; 5,978,762; 6,226,616; 6,487,535 and other U.S. and world-wide patents issued and pending. "DTS", "DTS-ES", "DTS-ES", "Neo:6", "DTS 96/24" and “DTS Master Audio” are trademarks of Digital Theater Systems, Inc. Copyright 1996, 2003 Digital Theater Systems, Inc. All Rights Reserved.

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.

Casablanca IV Identification Record

This information is for your records and for future identification of the Casablanca IV. 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)

_____
(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)

_____
(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 CASABLANCA IV, FIRST TURN OFF THE POWER AND THEN DISCONNECT THE AC POWER CORD.

WHEN INSTALLING THE CASABLANCA IV IN YOUR SYSTEM, MAKE CERTAIN TO ALLOW A MINIMUM OF 3 INCHS OF VENTILATION ON EACH SIDE OF THE UNIT. ALSO ALLOW AT LEAST 4 INCHS 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 CASABLANCA IV 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 CASABLANCA IV.

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 aftermarket 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 Casablanca IV 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.

Contents

INTRODUCTION

Welcome to a new world of possibilities. Casablanca IV 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 Casablanca IV

Despite Casablanca IV'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 Casablanca IV works. Rather than offer a frustrating bewilderment of little used functions in constant view vying for your attention, Casablanca IV 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 Casablanca IV 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 Casablanca IV.
- The tested assembled circuit boards are installed in a new Casablanca IV 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 Casablanca IV is tested on an audio analyzer for all pertinent parameters.
- The Casablanca IV 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 Casablanca IVs 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 2 weeks 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 Casablanca IV be connected to a ground via its three wire AC power cord. It is important that the AC power outlet which the Casablanca IV is plugged into, is actually grounded. Failure to do so will severely compromise the performance, reliability and safety of use of the Casablanca IV.

II. It is important to prevent contact with static electricity when connecting other components and cables to the Casablanca IV. When connecting cables, simply place one hand on top of the Casablanca IV 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 Casablanca IV.

III. The Casablanca IV, 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, and then turn it on again.

IV. Ventilation is an important issue when placing the Casablanca IV in a system. Make certain that the Casablanca IV 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 Casablanca IV 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 Casablanca IV, as there are no user serviceable components inside. Refer servicing and updating to qualified service personnel only.

VII. Should the Casablanca IV 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.

VIII. The Casablanca IV can be susceptible to excessive RF. End caps on 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, LEDs and display parameters will be shown in **BOLD CAPITOL** letters.

All functions to be performed from, and in reference to, the front panel of the Casablanca IV will be found in the front section 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 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 (AES/EBU), 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.
Dirac Live®	Digital room correction and optimization software developed by Dirac SE in Sweden. Dirac uses mixed-phase IIR and FIR digital filters to correct frequency and phase errors in music reproduction systems.
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.
Jitter Jail II™	A technology proprietary to Theta Digital that corrects errors in signal timing that would otherwise cause signal distortion.
LFE	Low Frequency Effect. Commonly a discrete audio track designated for a subwoofer.
mS	Millisecond, or 1\1000 of a second.
Oversampling	The process of creating more sample points in order to more accurately reconstruct a digitized signal for playback in the analog domain.
Phantom Center Mode	Redirects the center channel signal equally to the front left and right outputs, thus creating the illusion of a center speaker. This mode is intended for use when no center speaker is present.
Phantom Surround Mode	Intended for use when no surround speakers are present in the system. The surround information is added to the front channels. If the current mode is Dolby Pro Logic, the Casablanca IV 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

Casablanca IV Block Diagram - Input Processing Sections

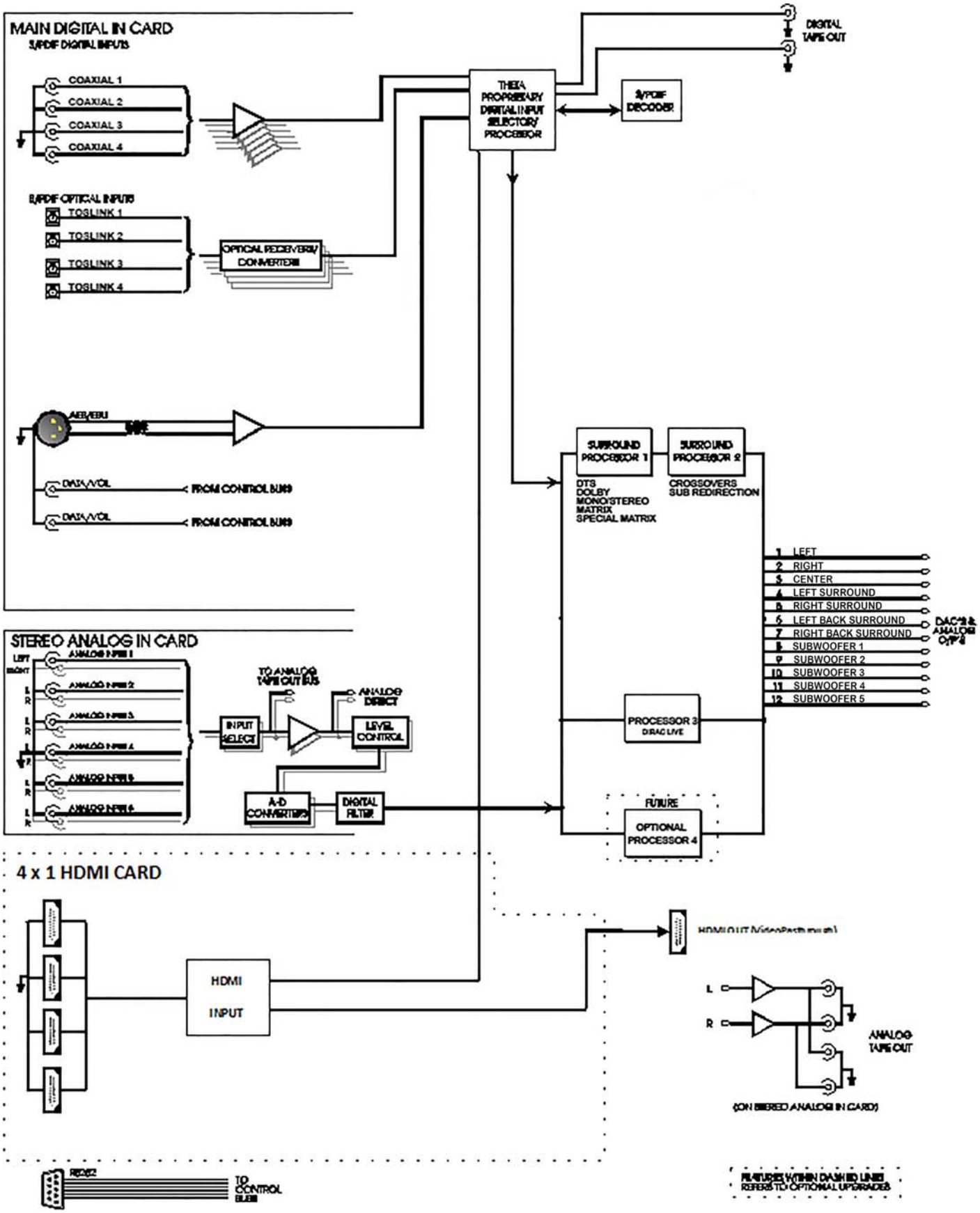


Figure 1—Input processing block diagram

Casablanca IV Block Diagram – DAC, Analog and Digital Out Sections – Con't

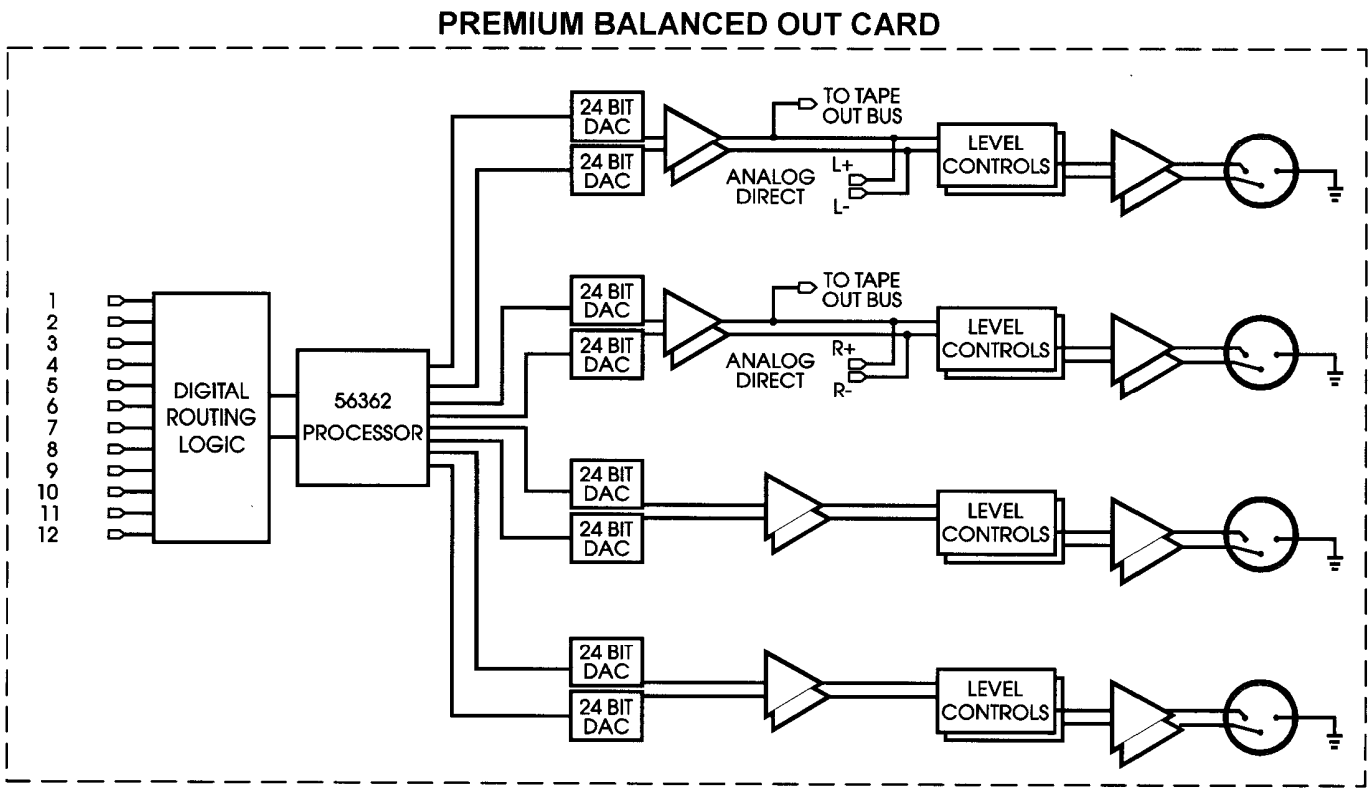


Figure 2 - Block Diagram of Premium DAC board

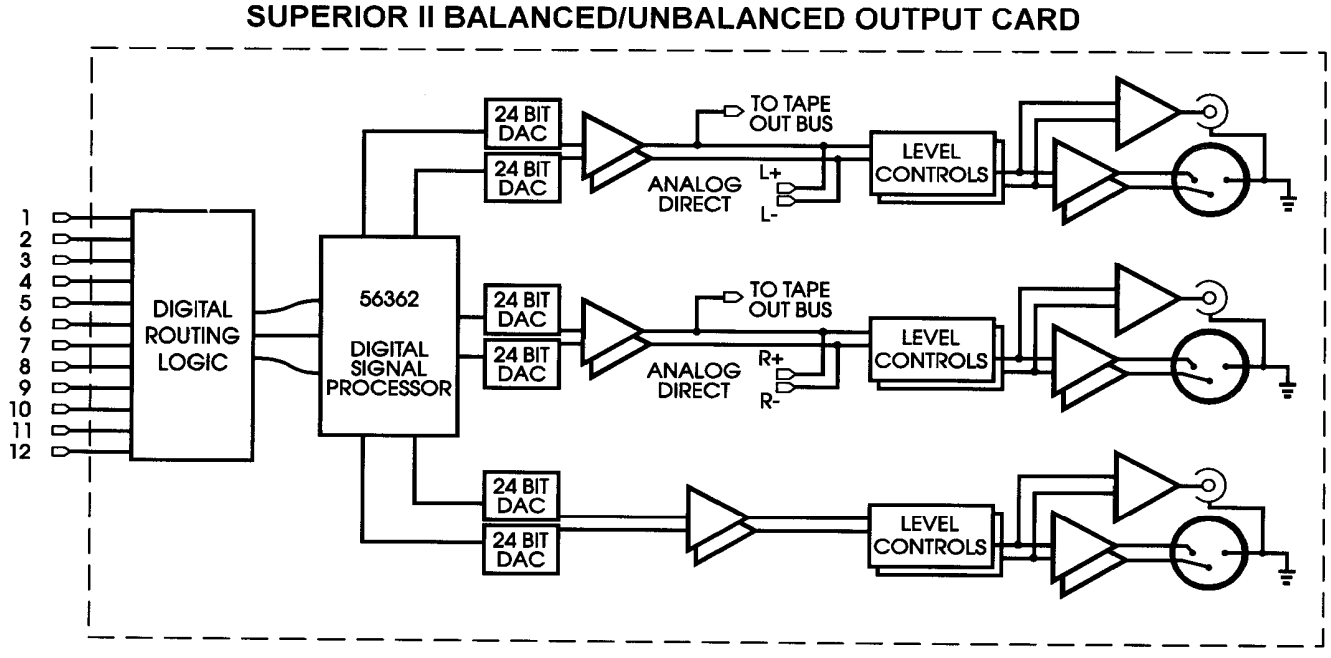


Figure 3 - Block Diagram of Superior II DAC board

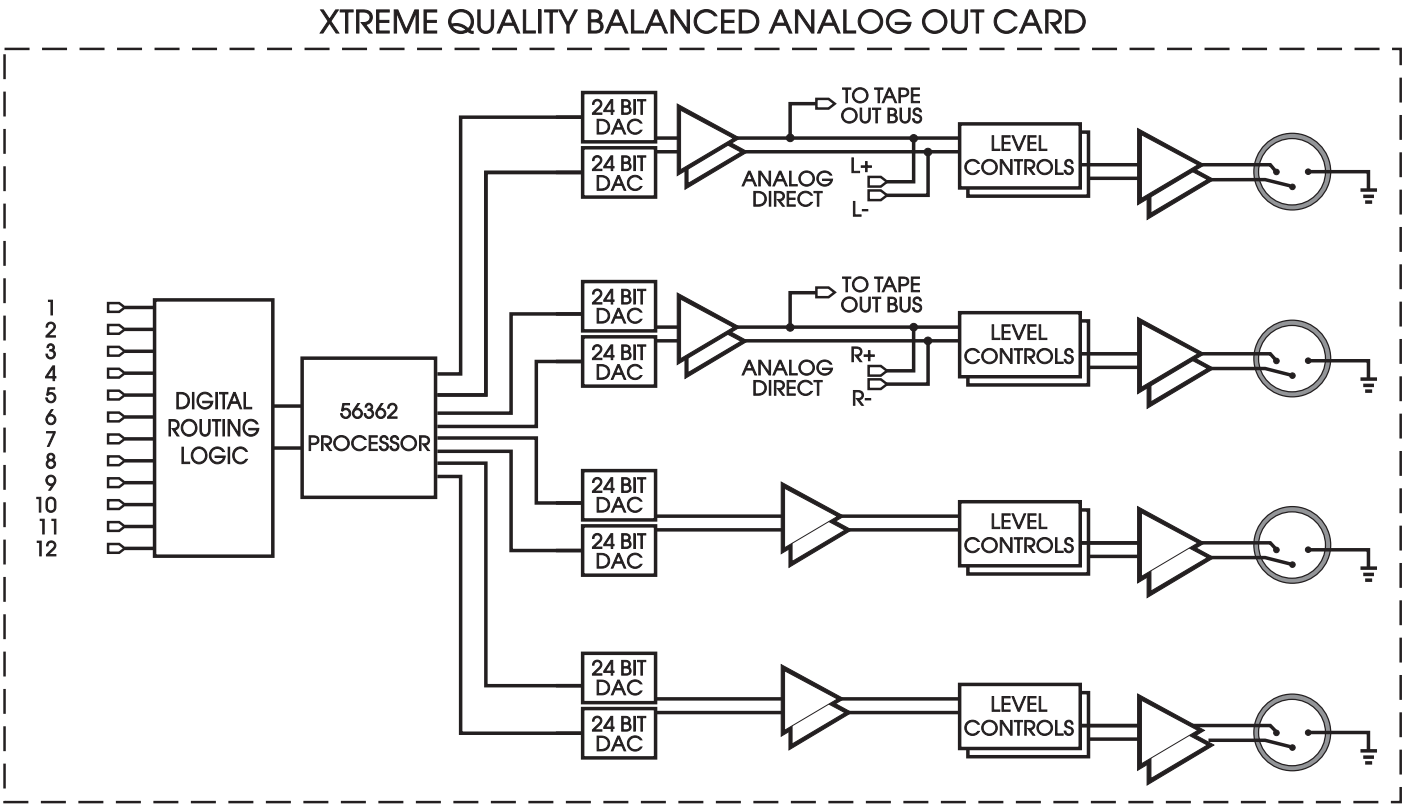


Figure 4 - Block Diagram of Xtreme D-2 4-Channel DAC board

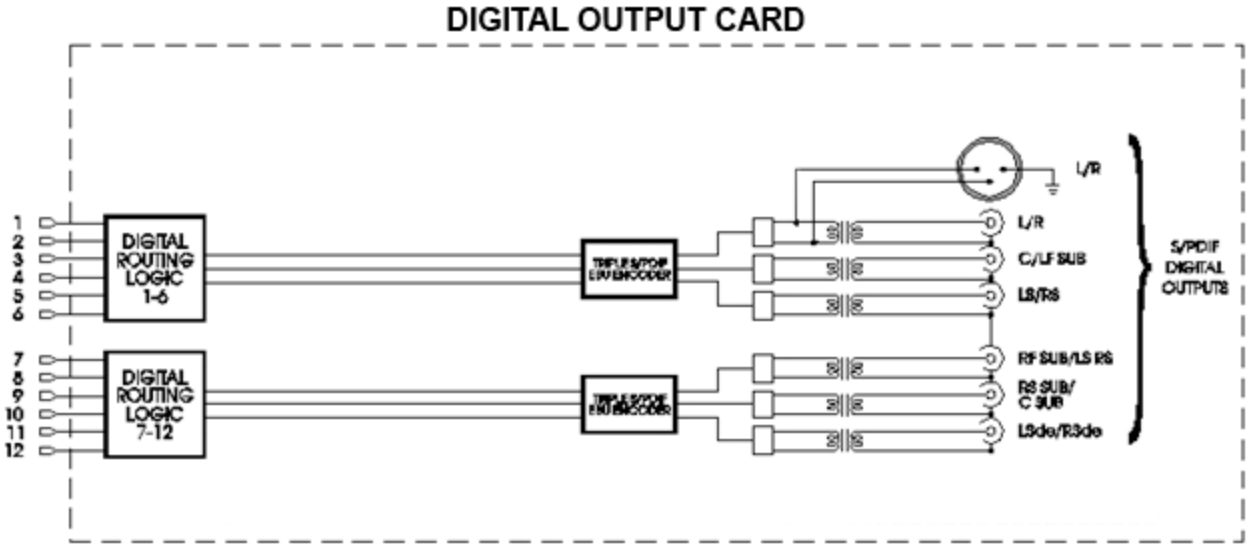


Figure 5 - Block Diagram of Digital Output board, showing all options

Note: Digital Output Card is normally supplied with 6 XLR outputs. 6 S/PDIF outputs are available by special order.

Front Panel Layout

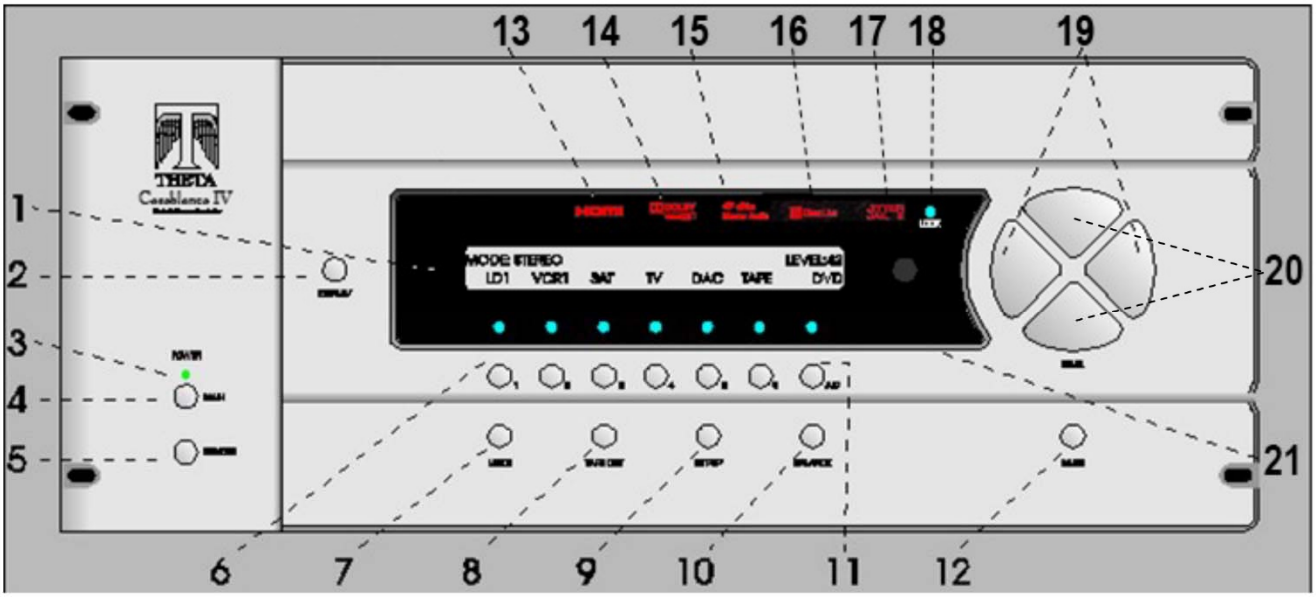


Figure 6 - Front Panel Layout

1. 40 character by 2 row blue vacuum florescent display **(VFD).**
2. **DISPLAY** button. Temporarily overrides the VFD brightness display setting in the **SETUP**/**INP** page 1 submenu.
3. **POWER** LED. Lights when the Casablanca IV is in standby mode.
4. **MAIN POWER** button. After the rear panel **MAIN POWER** switch is turned on, press the front panel **POWER** button to exit standby mode. The VFD will display the last selected **INPUT SELECT** menu. Pressing this button again will place the Casablanca IV into standby mode and the LED above the front panel **POWER** button will light.
5. **REMOTE POWER** button. Activates/deactivates the **REMOTE POWER** jack on the rear panel.
6. Buttons **1** through **6.** Used to select a desired input on **INPUT SELECT** pages, or parameter to change when in a submenu. The LED above the button lights when the button is pressed. These buttons are referred to as the **INPUT SELECT** buttons.
7. **MODE** button. Activates the **MODE** select menus for the currently selected input.
8. **TAPE OUT** button. Used for routing audio **INPUT** signals to the **TAPE OUT** jacks.
9. **SET-UP** button. Used for setting speaker configurations/levels/delays, analog input levels, naming inputs, setting the display & remote power jack time-out delays, and accessing additional surround parameters, and all other **SETUP** functions.
10. **BALANCE** button. Sets temporary speaker balance configurations and analog input levels to compensate for different program characteristics.
11. **A-D** button. Sequences through input jacks mapped (assigned) to the active **INPUT SELECT** button.
12. **MUTE** button. Mutes/unmutes all audio outputs with the exception of the **TAPE OUT** jacks.
13. **HDMI** indicator. Lights when the unit is turned on. It is one indicator that the unit accepts HDMI
14. **DOLBY TRUEHD** indicator**.** Lights when the unit is turned on. Shows that the unit processes Dolby's lossless codec.
15. **DTS-HD MASTER AUDIO** indicator. Lights when the unit is turned on. Shows that the unit processes DTS lossless codec.
16. **DIRAC LIVE®** indicator. Illuminates when Dirac Live® digital room correction and optimization filters are in use.
17. **JITTER JAIL II™** indicator. Illuminates when Jitter Jail II jitter reduction circuitry is engaged.
18. **LOCK** light. Lights when a valid digital signal is detected on the selected input.
19. **LEVEL LEFT** and **RIGHT** buttons. Shifts audio balance to the left and right when the **BALANCE** function is selected, adjusts the master volume within submenus when the **LEVEL UP**/**DOWN** buttons are to be used for parameter value editing, used to toggle between the 2 input select pages, shifts to the next character when editing names.
20. **LEVEL UP** and **DOWN** buttons. Increases/decreases master volume. Also used to increment/decrement values in most edit modes, and shifts **FRONT**/**REAR** audio balance in **BALANCE** submenu.
21. **1** through **6** LED indicators. Light when buttons **1** through **6** are selected.

Rear Panel Layout

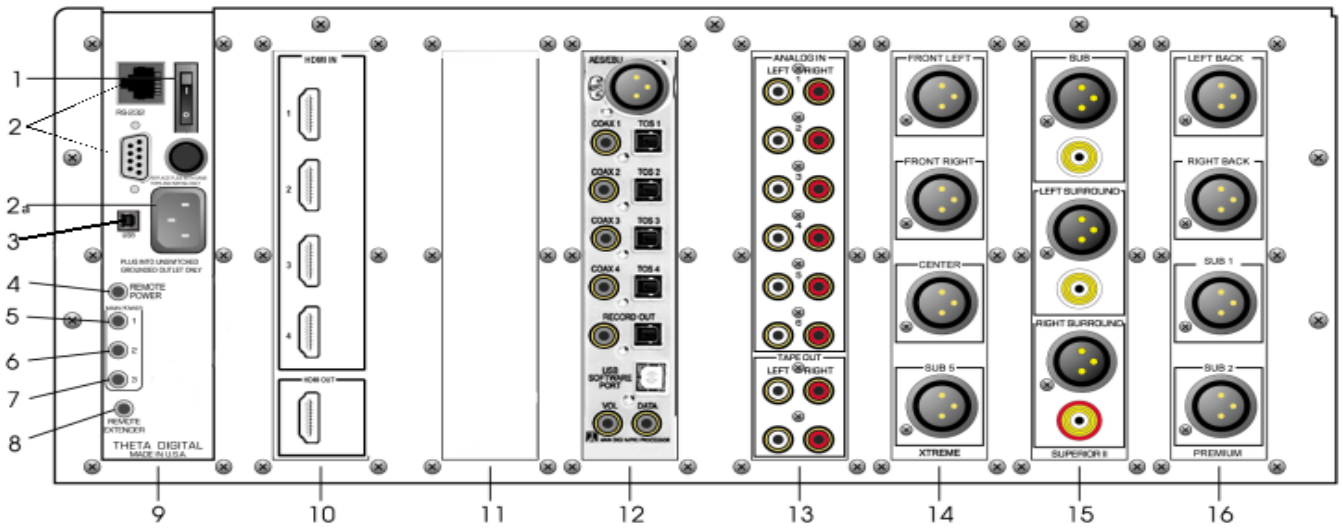


Figure 7 - Rear Panel Layout

1. **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, except when cables are connected/disconnected or when the unit will not be used for an extended period of time.
2. **RS232** DB9, and RJ45 connectors. The DB9 is the preferred connector for external RS-232 control.

2a. **AC Power Connector**: 3 wire, IEC 320 connector with an EMI filter.

3. **USB Connector:** Preferred connector for firmware updates.
4. **Remote Power** jack. Activated/deactivated when associated front panel or remote button is pressed/pressed again.
5. **Main Power 1** jack. Activated/deactivated when front panel **POWER** button is pressed/pressed again. All Main Power jacks can output a 12V pulse (variable duration) or continuous 12VDC.
6. **Main Power 2** jack. Activated when front panel **POWER** button is pressed once, plus x seconds. *X* represents the time value that is stored in the **SET-UP/GLOBAL/REM PWR/MTIM** parameter. This jack is deactivated when the front panel **POWER** button is pressed again (putting the Casablanca IV in Standby mode).
7. **Main Power 3** jack. Activated when front panel **POWER** button is pressed once, plus two times *x* seconds. *X* represents the time value that is stored in the **SET-UP/GLOBAL/REM PWR/MTIM** parameter. This jack is deactivated when the front panel **POWER** button is pressed again (putting the Casablanca IV in Standby mode).
8. **Remote Extender** jack. An externally mounted (remote) Infrared (IR) receiver plugs into this miniature stereo phone jack. (Its signal must be demodulated). Please refer to Appendix C on page 89 for additional information.
9. **Power Supply Module**.
10. **HDMI Input/output card.** Accepts up to 4 HDMI 1.4 inputs (compatible with HDMI 1.1, 1.2, 1.3, etc.) Provides one HDMI 1.4 output. Audio is processed within the Casablanca IV. Video is passed through untouched.
11. **Reserved for future use.**
12. **Digital Input** card. This card provides one AES/EBU (balanced XLR) input, 4 each coaxial digital and Toslink inputs, one each coaxial and TosLink outputs, one USB (Dirac/Software) connection There are two Volume Data Out ports.
13. **Analog Input** card. Six stereo RCA inputs are provided for line level analog output devices such as VCR, laserdisc, CD and DAT players, phono preamplifiers, external D/A converters, tape decks, AM/FM tuners, etc. There are two pairs of analog tape outs for recording purposes, whose source can be selected in the **TAPE OUT** menu.
14. First **Analog Output** card. This slot could contain one of the following: A four-channel Xtreme D-2 quality DAC (pictured), a four-channel Premium quality DAC card, or a 3-channel Superior II quality DAC card. The 3-channel Superior II balanced cards also has single-ended outputs. The Xtreme D-2 card and the Premium card do not have single-ended outputs. The channel sets that can be routed to a Superior II, Premium or Xtreme D-2 card (in any DAC slot) are listed on pages 16 and 17 respectively, as well as in the specifications section of this manual.
15. Second **Analog Output** card. This slot could contain one of the following options: A four-channel Xtreme D-2

quality DAC, a four-channel Premium quality DAC card, or a 3-channel Superior II quality DAC card (pictured). If only two 3-channel balanced analog output cards are installed, this slot would typically contain outputs for sub, left surround and right surround channels.

16. Third **Analog Output** card. This slot could contain one of the following options: A four-channel Xtreme D-2 quality DAC, a four-channel Premium quality DAC card (pictured), or a 3-channel Superior II quality DAC card.

* * *

A Digital Output card can be installed in any available output slot. This card has 12 digital output channels.

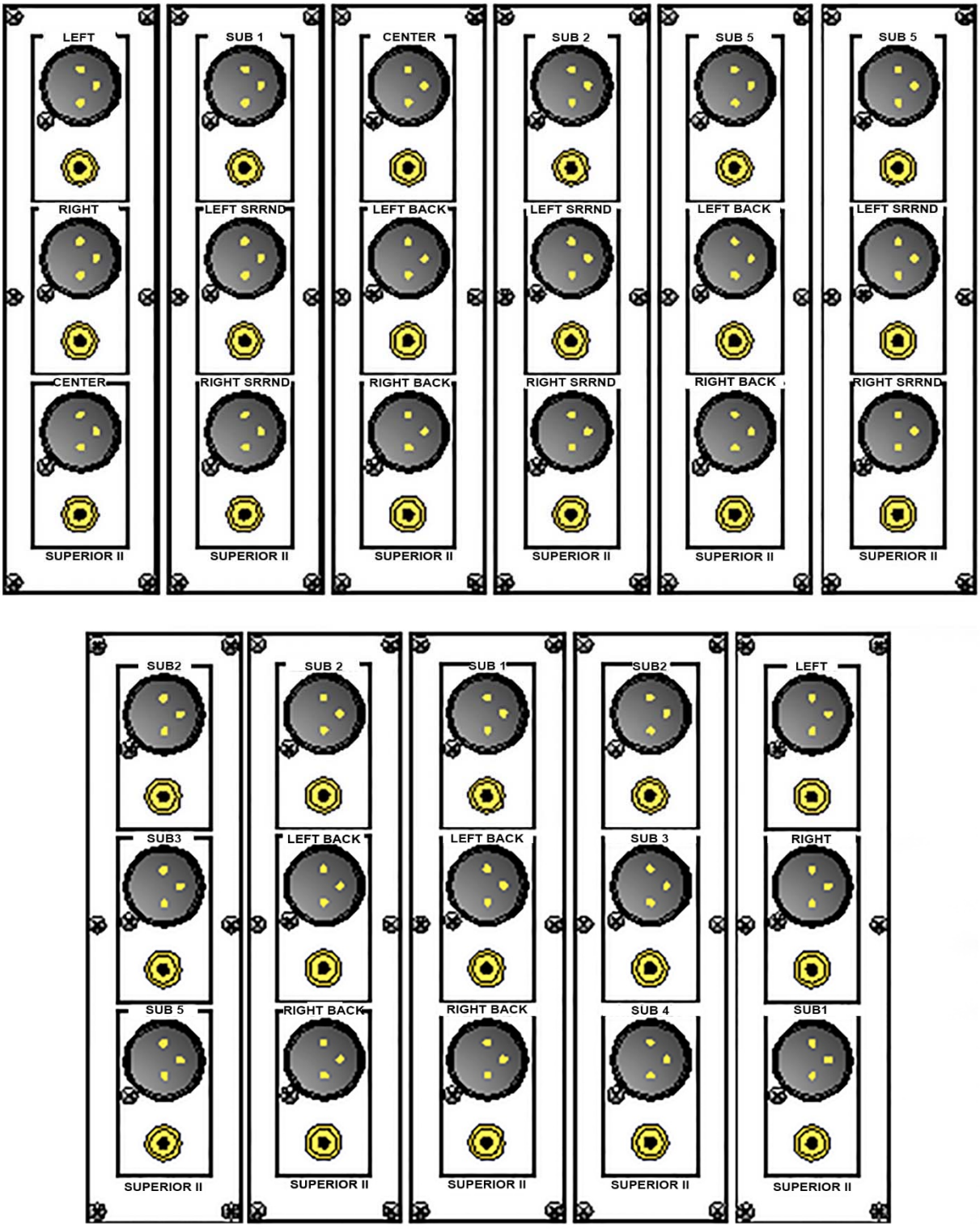


Figure 8 - All Superior II D/A Card Options

Each Premium and Xtreme D-2 DAC card can have one of the following speaker sets (channels) assigned to them, regardless of which DAC slot it (they) are installed to:

Front Left, Right, Center,or Sub 5
Front Left, Right, Surround Left, Right
Sub 1, Sub 2, Sub 3, Sub 4
Surround Left, Right, Sub 3, Sub 4
Front Left, Right, Sub 1, Sub 2
Surround Back Left, Right, Sub 1, Sub 2
Surround Back Left, Right, Sub 2, Sub 3
Center, Sub 1, Sub 2, Sub 3
Center, Sub 1, Surround Back Left, Right
Front Left, Right, Surround Back Left, Right
Surround Back Left, Right, Surround Left, Right
Front Left, Right, Center, Sub 1
Sub 1, Sub 2, Sub 3,or Sub 5
Surround Back Left, Right, Sub 5, Sub 1
Surround Back Left, Right, or Sub 5, Sub 2
Center, or Sub 5, Surround Back Left, Right
Center, or Sub 5, Surround Left, Right
Sub 2, Sub 3, Sub 4, or Sub 5
Front Left, Right, Center, Sub 2
Front Left, Right, Center, Sub 3
Front Left, Right, Center, Sub 4
Sub 2, Sub 3, Surround Left, Right
Sub 2, or Sub 5, Surround Left, Right
Center, Surround Back Left, Right, Sub 2
Center, Surround Left, Right, Sub 2

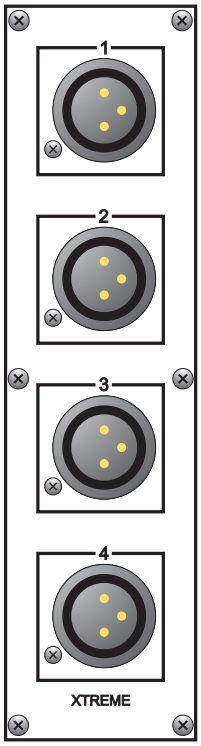
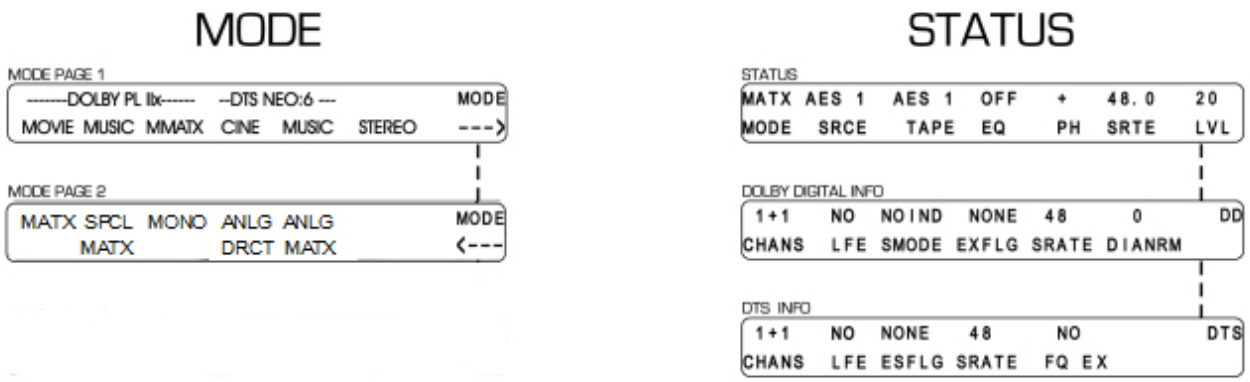


Figure 9 - Xtreme DAC

Note: In figure 9, each output is shown with a number 1-4. Channel labels are available to better identify each output.

Menu Maps

Function Menus and Pages



Input Select Pages

Figure 10-Mode, Status, Tape Out Menus and Input Select Pages

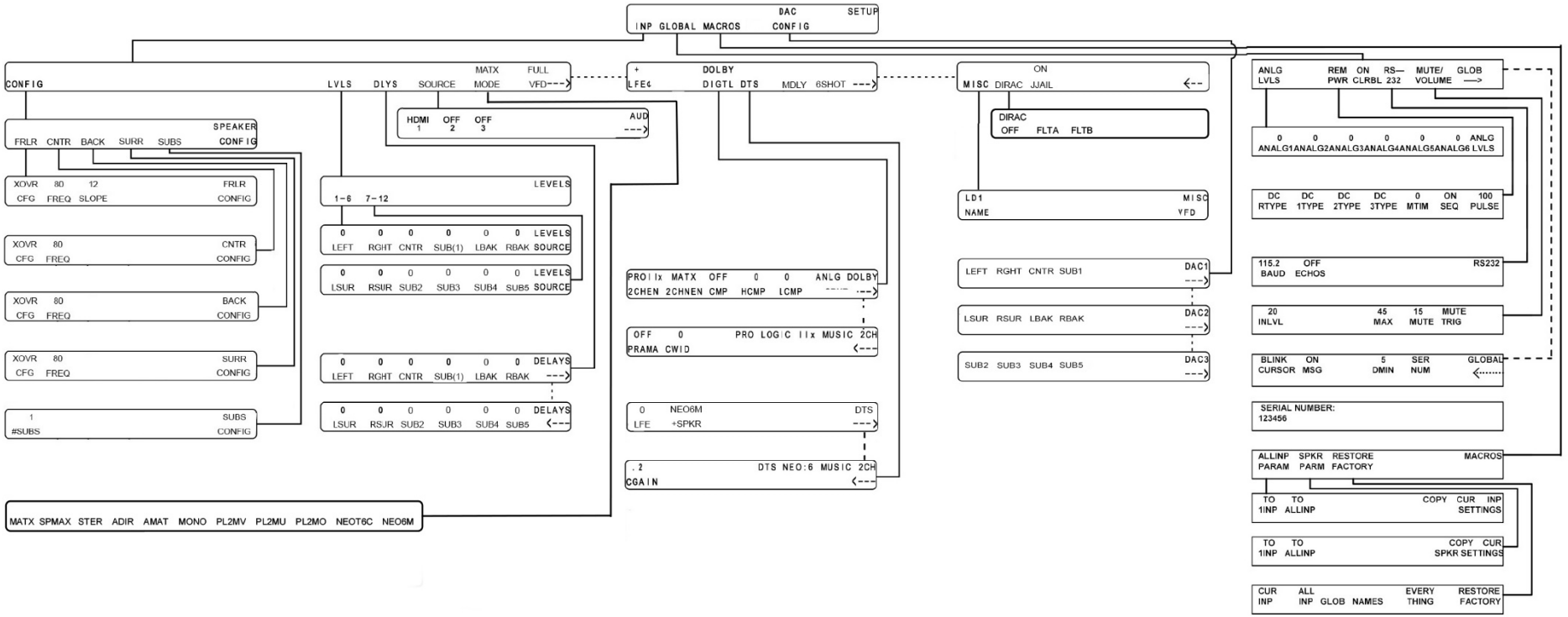

DAC SETUP
INP GLOBAL MACROS CONFIG
CONFIG LVLS DLYS SOURCE MATX MODE FULL VFD
+ DOLBY
LFE DIGTL DTS MDLY 6SHOT
ON
MISC DIRAC JJAIL
ANLG LVLS
REM ON RS— MUTE/ GLOB
PWR CLRBL 232 VOLUME
SPEAKER
FRLR CNTR BACK SURR SUBS CONFIG
HDMI OFF OFF AUD
1 2 3
DIRAC
OFF FLTA FLTB
0 0 0 0 0 0 ANLG
ANALG1ANALG2ANALG3ANALG4ANALG5ANALG6 LVLS
XOVR 80 12 FRLR
CFG FREQ SLOPE CONFIG
LEVELS
1-6 7-12
DC DC DC DC 0 ON 100
RTYPE 1TYPE 2TYPE 3TYPE MTIM SEQ PULSE
LD1 MISC
NAME VFD
0 0 0 0 0 0 LEVELS
LEFT RGHT CNTR SUB(1) LBAK RBAK SOURCE
XOVR 80 CNTR
CFG FREQ CONFIG
0 0 0 0 0 0 LEVELS
LSUR RSUR SUB2 SUB3 SUB4 SUB5 SOURCE
PROlIx MATX OFF 0 0 ANLG DOLBY
2CHEN 2CHNEN CMP HCMP LCMP
LEFT RGHT CNTR SUB1 DAC1
115.2 OFF RS232
BAUD ECHOS
XOVR 80 BACK
CFG FREQ CONFIG
OFF 0 PRO LOGIC IIx MUSIC 2CH
PRAMA CWID
LSUR RSUR LBAK RBAK DAC2
20 45 15 MUTE
INLVL MAX MUTE TRIG
XOVR 80 SURR
CFG FREQ CONFIG
0 0 0 0 0 0 DELAYS
LEFT RGHT CNTR SUB(1) LBAK RBAK
SUB2 SUB3 SUB4 SUB5 DAC3
BLINK ON 5 SER GLOBAL
CURSOR MSG DMIN NUM
1 SUBS
#SUBS CONFIG
0 NEO6M DTS
LFE +SPKR
0 0 0 0 0 0 DELAYS
LSUR RSJR SUB2 SUB3 SUB4 SUB5
SERIAL NUMBER:
123456
.2 DTS NEO:6 MUSIC 2CH
CGAIN
ALLINP SPKR RESTORE MACROS
PARAM PARM FACTORY
TO TO COPY CUR INP
1INP ALLINP SETTINGS
TO TO COPY CUR
1INP ALLINP SPKR SETTINGS
CUR ALL EVERY RESTORE
INP INP GLOB NAMES THING FACTORY
MATX SPMAX STER ADIR AMAT MONO PL2MV PL2MU PL2MO NEO6C NEO6M

Figure 11

Introduction to the User interface

The menu system within the Casablanca IV consists of 1 to 3 layers, with the exception of the **SET-UP** menu. Some menus have multiple pages, which can be accessed by pressing the **A/D** button, with the exception of the **INPUT SELECT** menu, which uses the **LEFT**/**RIGHT** buttons and the **MATX** MODE that uses the **LEVEL UP/DOWN** 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 VFD. Please refer to figures 18 and 19 for an overall view of all menus, submenus and menu pages.

The **SETUP** menu contains a number of submenus, organized by setup function. All configuration parameters which can be stored for each **INPUT SELECT** button (by input). They are accessed in one of the 3 **SETUP**/**INPUT** submenus. Setup parameters that are not stored individually for each **INPUT SELECT** button are accessed in the two **SETUP**/**GLOBAL** submenus. All macros can be executed via the **SETUP**/**MACROS** submenu.

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. An exception to this is the first **BALANCE** page and the pages where input select buttons and input jacks are named. In a few cases simply pressing the **1**-**6** buttons makes a selection.

The function buttons are defined as the **MODE**, **TAPE OUT**, **SET-UP**, and **BALANCE** 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

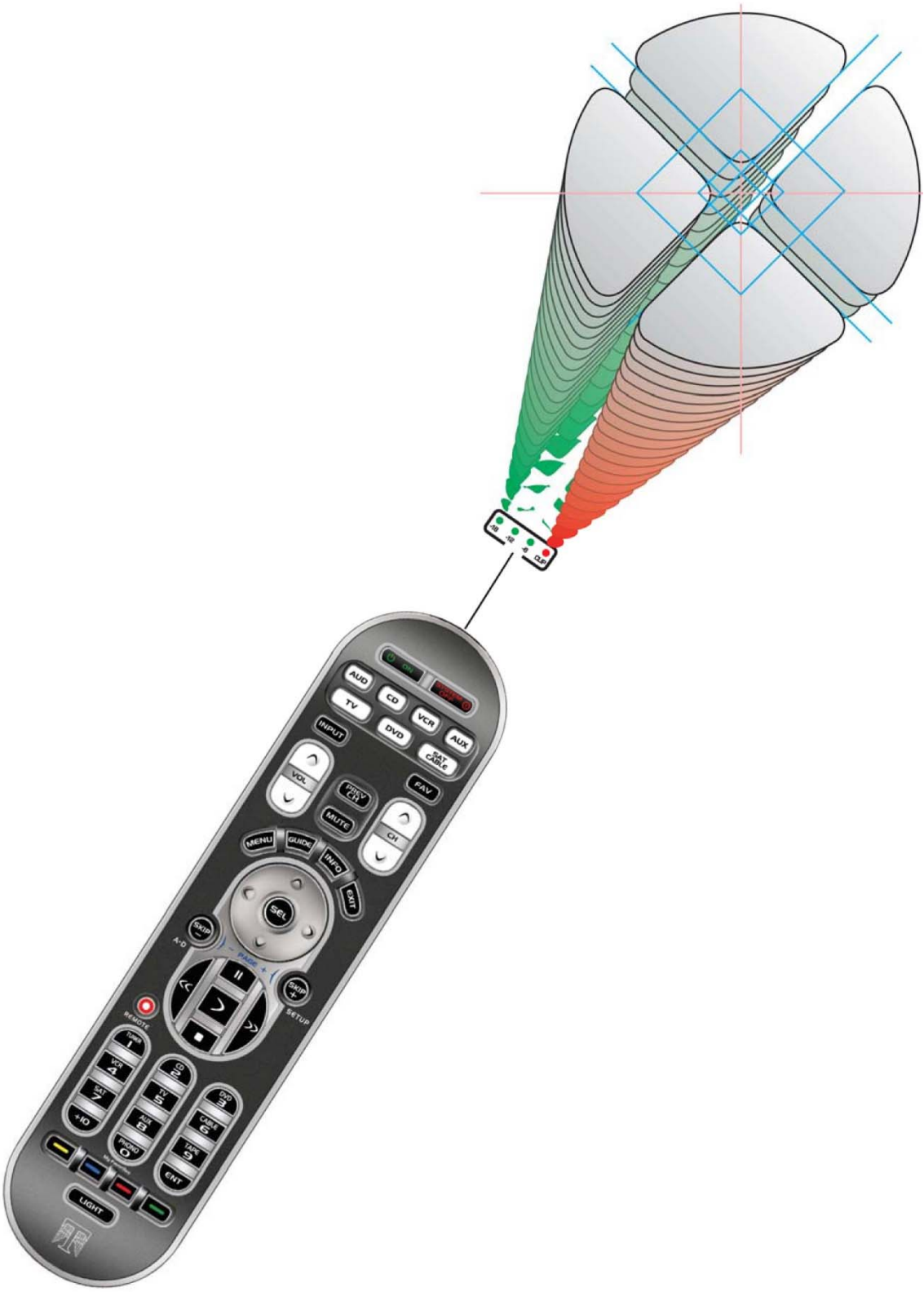
With all input options installed in a Casablanca IV, there are up to 19 input jacks: 6 pairs of stereo analog audio, 9 digital audio and 4 HDMI. **Each jack can be named for the piece of equipment plugged into it. It is** recommended that this step be done first. (**SETUP**/**GLOBAL/JACK NAMES**).

Each **INPUT SELECT** button can have up to 3 audio jacks mapped, or assigned. The **INPUT SELECT** button should be named for the function it will serve. 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.

The procedure for setting up each INPUT SELECT is outlined in the *Step-By-Step Setup* section.

Note: The order in which input jacks are assigned to an **INPUT SELECT** button determines the search order. Please refer to page 44 for additional information on source assignment (search order). When more than one input jack is assigned to a single **INPUT SELECT** button, toggling the **A-D** button [when the **INPUT SELECT** page is active in the front panel display] will select the next assigned input jack – both audio and video.

STEP-BY-STEP SETUP GUIDE



Casablanca IV Default Settings

These are the default settings as the unit is received from the factory. Also, should it be necessary to re-set the unit, these values will be restored. Of course, all inputs can be renamed and the assigned sources can be changed.

Inputs

	Source Name	Source
#1	BLU	HDMI1
#2	CD	AES1
#3	HDTV	HDMI2
#4	SERV	COAX1
#5	GAME	HDMI3
#6	DVDA	HDMI4
#7	SACD	TOS2
#8	TUNR	COAX2
#9	SAT	COAX3
#10	CABL	TOS1
#11	VID	ANALOG1
#12	CAM	ANALOG2

Available Channel Outputs
As ordered. The typical configuration is 7.1 analog output. 5.1 through 7.5 analog and 12-channel digital outputs are available.

Speaker Configurations
All speakers crossed over at 80 Hz; 24 dB per octave low-pass filter; 12 dB per octave high-pass filters

Speaker Levels and Delays
Both set to zero (0)

Master (Lip-Synch) Delay
Set to 0

Dolby and DTS
Setup for 7-channel audio.

Dirac Live® 96 kHz
Off

Jitter Jail™ II
Off

Mode
Matrix

Overall Setup Procedure Flowchart

This flowchart shows all steps required to set up the Casablanca IV in order to achieve the best possible sonic performance and to provide the simplest operation for all users. Follow solid and dotted lines to include Dirac Live® 96 kHz Room Correction and Optimization. Follow solid lines, only, to set-up without including Dirac Live® 96 kHz. Instructions and detailed flowcharts for each step are contained on the following pages.

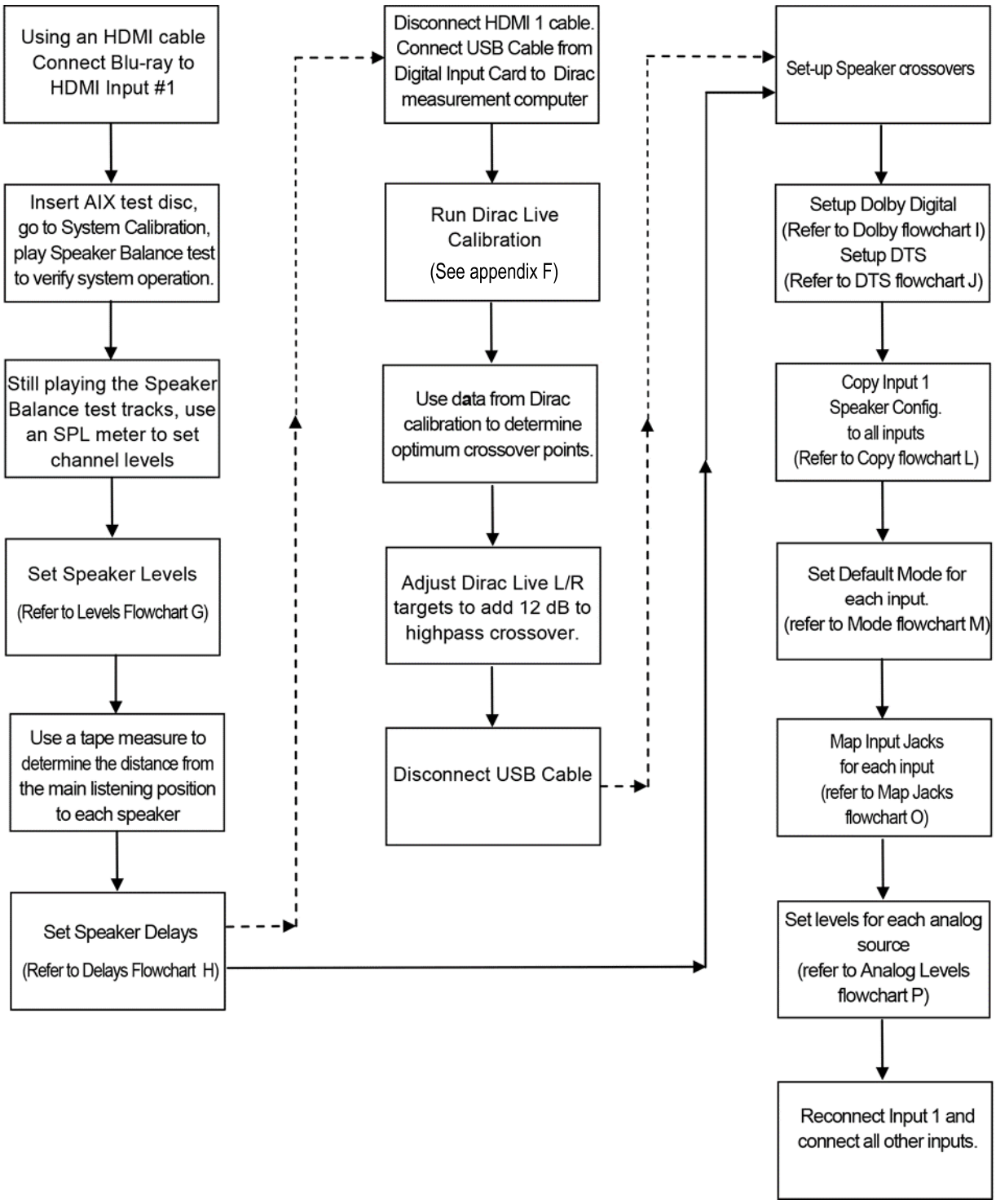


Figure 12: Casablanca IV Basic Set-up Flow Chart

Step by Step Speaker Configuration

Casablanca IV provides a comprehensive set of speaker configuration settings. With the inclusion of Dirac Live® 96 kHz, these settings should allow any speaker to perform optimally regardless of speaker type. The following procedure is merely a guideline: room acoustics, speaker design/quality, music/film type, and personal preferences all have a part in these settings.

Using the Setup menu map diagram [Figure 11] on page 18 in this manual is recommended.

There are four major steps to setting up your Casablanca IV. In recommended sequence, they are:

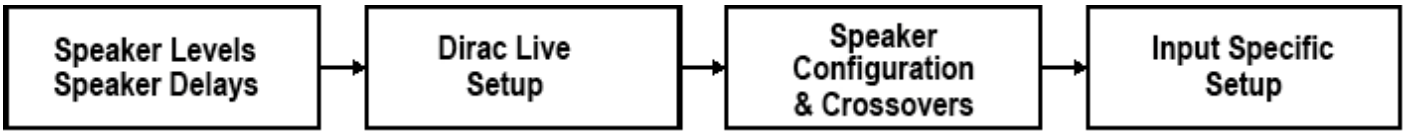
Individual speaker levels: compensates for different speaker and amplifier efficiencies.

Delays: compensates for different speaker distances from the listening position.

Dirac Live®: Measures the exact performance of each loudspeaker in the system and applies mixed phase IIR and FIR filters to correct for non-optimum frequency and phase response and provides a guide for selecting crossover points.

Speaker Configuration & Crossovers: permits proper signal routing in the Casablanca IV and proper blending of main and subwoofer signals. Enables all speakers present in the system.

Input Specific Setup: All parameters that are specific to an individual input select button.



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

Speaker Levels

Setting up the speaker levels is best accomplished by playing the supplied AIX test disc and an SPL meter. If the meter has 'weighting' options, "C" is preferable.

1) With Input # 1 selected and your Blu ray player connected via HDMI, begin playing the Speaker Balance test tracks. Go to the speaker levels submenu.
    a) With the SPL meter placed in the main seating position pointing at the ceiling, play the track for the front left speaker and bring up the master volume (using the **LEVEL LEFT** button) until the SPL meter reads 70 dB.
    b) Repeat this procedure for the center speaker using the **CNTR** level control.
    c) Play the track for the front right speaker and, with the SPL meter in the same position, adjust the **RGHT** speaker level up/down until the SPL meter reads 70 dB.
    d) Play the track for the left surround speaker and adjust the level until the SPL meter reads 70 dB.
    e) Play the track for the right surround speaker and adjust the level until the SPL meter reads 70 dB.
    f) Play the track for the left back speaker and adjust the level until the SPL meter reads 70 dB.
    g) Play the track for the right back speaker and adjust the level until the SPL meter reads 70 dB.
    h) Play the track for subwoofer adjustment. With the subwoofer level trim on the Casablanca IV set to "0", use the volume control on the powered subwoofer to adjust the SUBWOFFER output until the SPL meter reads 76 dB.
    i) If the system has more than a single subwoofer, using each subwoofer individually, repeat step "h" above to set the level for each subwoofer in the system to an indicated 76 dB on the SPL meter.
    j) If the system has more than a single subwoofer, you must adjust the SUBWOOFER output level on the Casablanca IV to compensate for the additional subwoofer output. If you are using Dirac Live®, make these level adjustments ***after*** Dirac Live® calibration.
    k) With two subs set the SUBWOOFER output level for each subwoofer to -3 dB
    l) With 3 subwoofers, set the SUBWOOFER output level for each subwoofer to -4 dB
    k) With 4 subwoofers, set the SUBWOOFER output level for each subwoofer to -5 dB.
    l) With 5 subwoofers, set the SUBWOOFER output level for each subwoofer to -6 dB.

Speaker Delays

2) With Input # 1 selected, go to the **DELAYS** submenu.
    a) Using a tape measure, measure the distance between the principal listening position and the center of each speaker. Write down the distances.

    b) Enter the measured distances to the nearest foot from the primary listening position to each speaker. Your Casablanca IV will automatically adjust the delays to assure simultaneous arrival of sound from each channel at the primary listening position.

Dirac Live® 96 kHz Setup

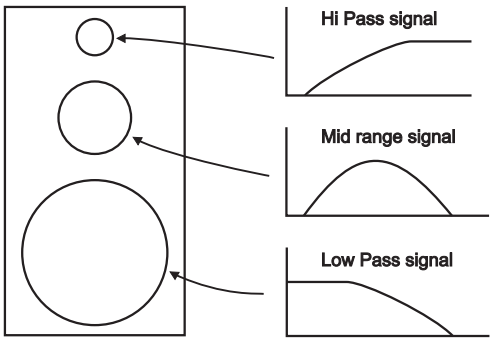
> In a 2002 article in *The Audio Critic*, Dr. Floyd Toole, then Vice President, Engineering for Harman Industries wrote: "The room is the final audio component. Rooms audibly modify many aspects of sound quality. All rooms are different." Dr. Toole went on to say*, "Accurate high-resolution in-room measurements along with acoustical corrections and equalization are necessary to deliver truly good sound to listener's ears in homes and in studios."*

Dirac Live® is a state-of-the-art measurement and room optimization suite that finally allows users to follow Dr. Toole's admonition. We recommend that initial setup of your Casablanca IV be done without using Dirac Live®. After proper operation of your basic system has been verified, please see Appendix F for details on Dirac Live® set-up.

Once Dirac Live® data acquisition is complete, please use the actual in-room performance data and revise crossover points and slopes where necessary.

Dirac Live® set-up is covered in Appendix F

Speaker Configuration & Crossovers



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 crossovers 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 Casablanca IV's internal crossovers for optimal sound as well as enable all speakers in the system.

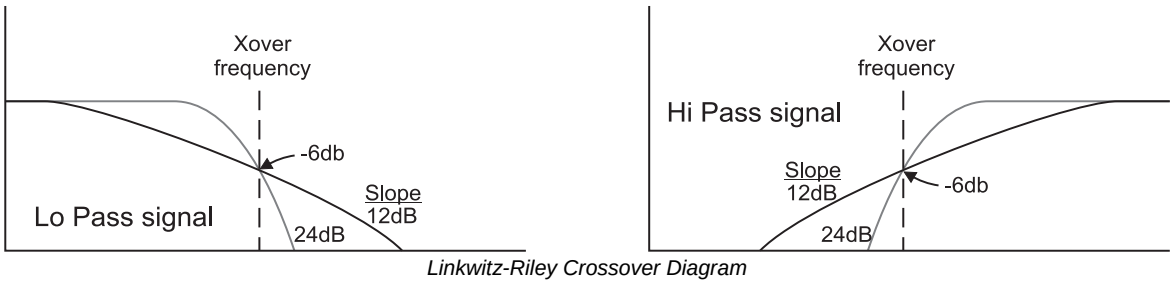
In this manual, a Speaker Set is defined as one or more speakers that are manipulated via a common parameter. For example, the crossover parameters for both the front left and right speakers are manipulated in the front left/right configuration submenu since the desired effect for the left speaker is also appropriate for the right. The other speaker 'sets' in the Casablanca IV are the [surround left and right], the Back [bacl surround left and right], and the [center]. The speaker sets will be delimited by [ ].

Full speaker configurations are 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.

In the Speaker configuration submenu, buttons **1**-**5** will access additional menus to setup a particular speaker or set of speakers. Button **6** will turn on the back speakers, if configured in the system

Linkwitz-Riley

While previous versions of the Casablanca allowed for several types of crossovers, with the Casablanca IV only Linkwitz-Riley crossovers are available. The significant advantage of Linkwitz-Riley filters over all other filter types is that Linkwitz-Riley filters exhibit zero phase difference between the high-pass and low-pass filters at all frequencies. *They always match.*



Linkwitz-Riley Crossover Diagram

A note on crossovers

Selecting crossover options can at first appear daunting. Traditionally, crossovers have been set by reading the specification sheet for one's loudspeakers, noting the reported cut-off frequency and using that information to choose the crossover frequency. The Casablanca IV is rare: the inclusion of Dirac Live® 96 kHz gives the calibrator the exact in-room response of every speaker in the system and allows improved selection of crossover frequencies.

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 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) often contain an equal amount of bass. 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 of minor importance. Again, this is false. The center channel contains the lion's share of important information (particularly dialog) in the cinematic experience. It is critical that the center speaker be of the highest quality possible and special attention be given to its mounting and positioning.

Speaker Configuration & Crossovers – Con't.

Speaker configuration will have been set to the owner's specifications at the factory when the Casablanca IV was built or upgraded. If the as-received configuration is wrong or has changed, please follow the steps below. Otherwise, go to

1) Select Input # 1.

Connect a digital source to HDMI Input 1 jack. If no sound is heard, press the **A-D** button until **HDMI 1** appears in the VFD above the **A-D** button.

2) With Input button # 1 selected:
   a) Go to the **SUB CONFIG** submenu.
   b) Set **#SUBS** to the number of subwoofers that are to be configured into the system.
   c) If no subwoofer is present, set **#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 were present. There are some general rules that the Casablanca IV follows in the special case of no subwoofers:

Case 1 - The front left/right speaker configuration is set to **FULL**:

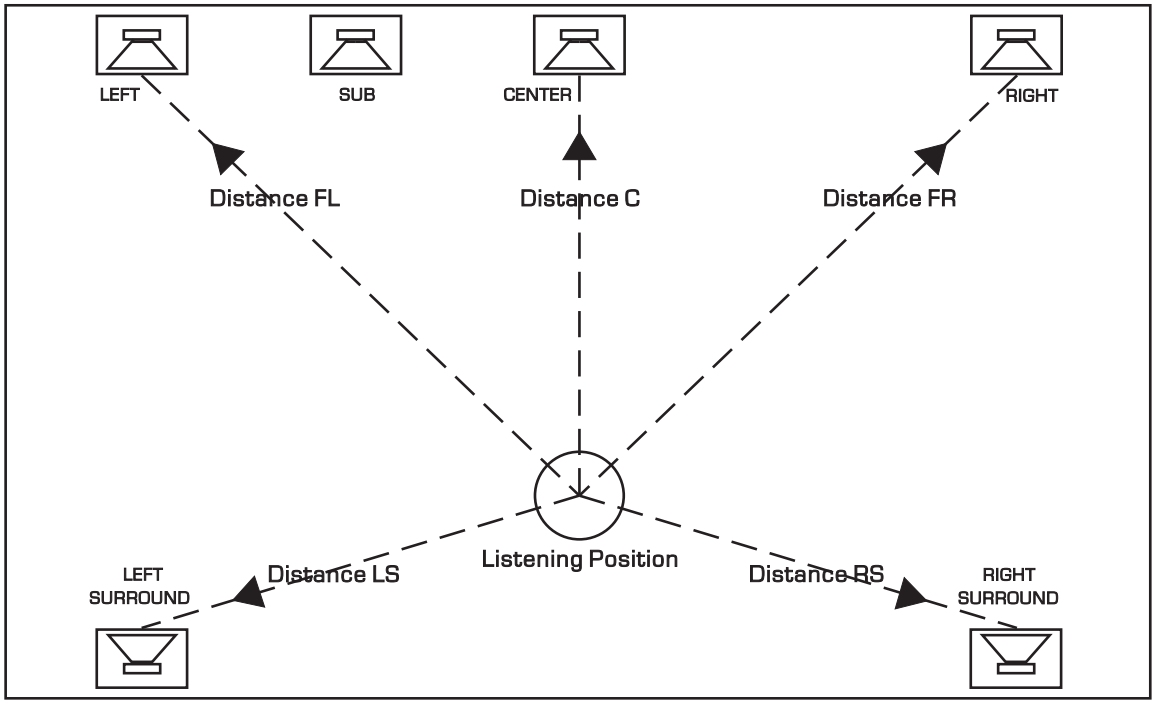
If the center speaker is set to "crossover", its low pass signal will be sent to the left/right channels.

If the surround left/right and/or the back surround speaker configuration is set to "crossover" its low pass signal will be sent to the front left/right speakers.

3) Determine which speaker sets ([Front left/right], [Center], [left/right Surrounds], [back Surrounds]) need crossovers.
   a) If no speaker set is present, the **CFG** setting should be **OFF**. If there are no surround speakers, the surrounds should be set to **OFF**.
   b) When a speaker set is set to **OFF**, its signal is not lost. If the Center speaker is set to **OFF**, the center channel signal will be routed equally to the front left/right speakers; if the back surround speakers are set to **OFF** and the program material contains back surround material, back surround channel signals will be rerouted to the surround left/right speakers

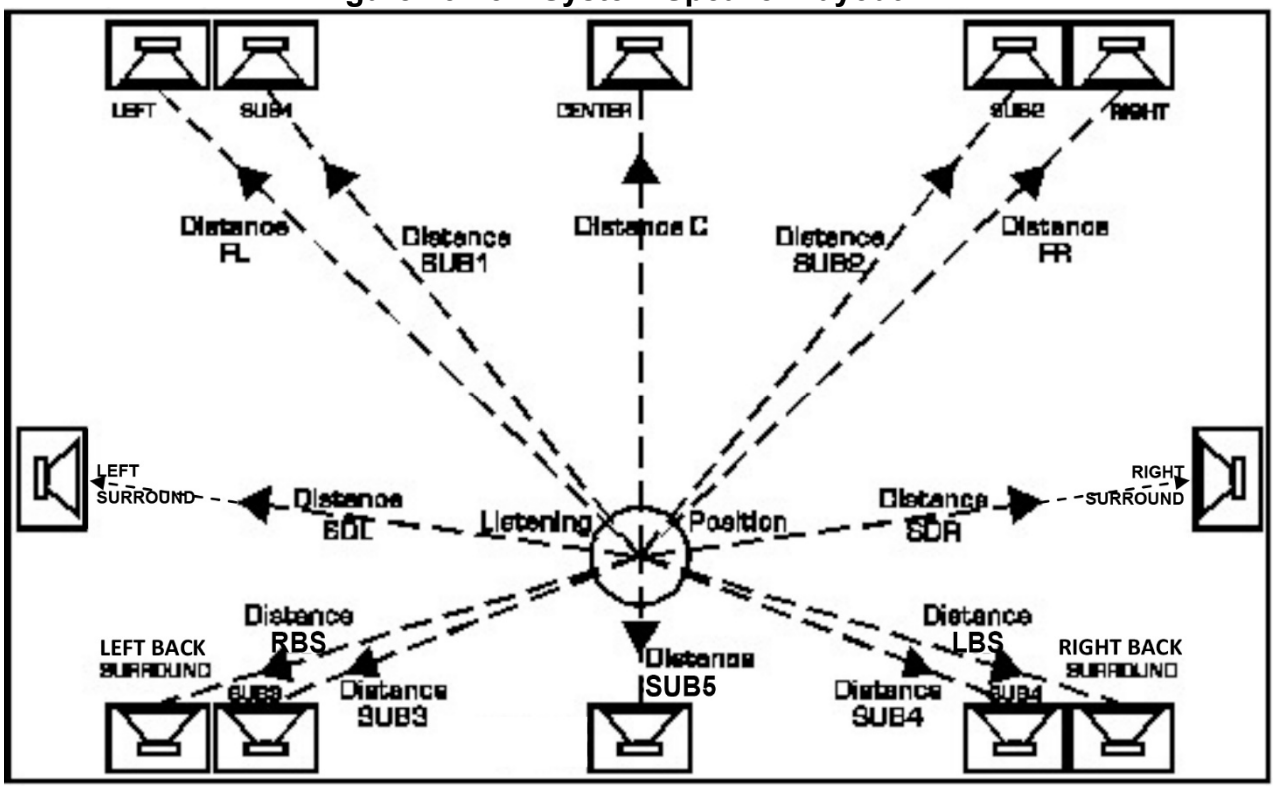
It is preferable that none of the speakers need a crossover, but is rarely practical. Keep in mind that with a 5.1 signal (Dolby Digital or DTS), any speaker can be confronted with a full amplitude signal at any frequency. Generally speaking, the smaller the speaker, the more limited its bass capabilities. If a speaker set doesn't need to be crossed over, that speaker sets' configuration (**CFG**) setting should be **FULL.** If all speaker sets are set to "**FULL RANGE**", the following section (Steps 5-9) on setting crossovers may be skipped.

4) Do the following for each of the four speaker sets (**LT/RT**, **CEN**, **SURRND, BK SRND**):
   a) Go to that speaker sets' configuration menu.
   b) Review the frequency response as measured using Dirac Live® 96 kHz.
   c) Using the Dirac Live® data, determine the low frequency capability of each speaker
   d) If the speaker's measured response does not extend below 30 Hz, set the **CFG** to **XOVER**.
   e) If the speaker's measured response extends below 30 Hz, set the **CFG** setting to **FULL**.



Speakers in a typical 5.1 system

Figure 13: 5.1 System Speaker Layout



Speakers in a typical 12-channel system

Figure 14: 12 Channel System Speaker Layout

Dolby Digital, DTS Setup

5)

a) If the incoming signal is Dolby Digital 5.1 and the Surround Back channels are being used, set the **+SPKR** value to the process which will be used to create the additional channels. This decision will be made solely by listening to which sounds best to the user.

Remember that these values will be in effect only when the **MODE** is Dolby Digital and specific flags are present. See pages 61 – 64 for additional details.

6) a) Play a DTS encoded CD or movie.

b) Set the **LFE** level at **0** for DTS movies, or **-10** for some early DTS CD's. (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).

c) If the incoming signal is 5.1 and the Surround Back channels are being used, set the **+SPKR** value to the process which will be used to create the additional channels. This decision will be made solely by listening to which sounds best to the user.

These parameter values apply only when the **MODE** is **DTS**. See pages 65 – 66 for more details.

Remaining Setup

7) 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.

8) Each input select button has a default mode assigned to it. (To see the Default Modes, please see page 22.) 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.

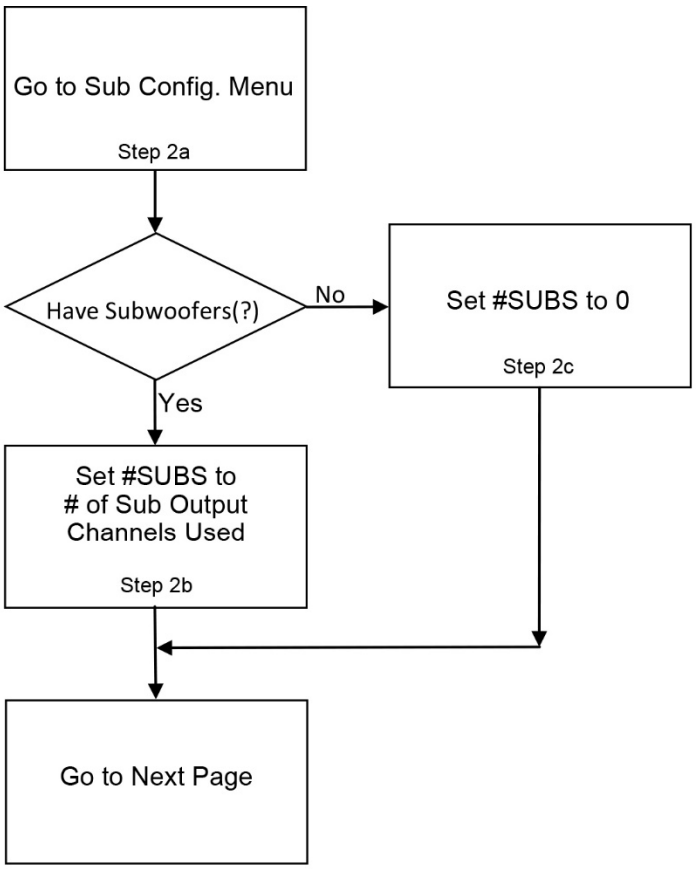
9) An input signal is "processed" a certain way depending on which **MODE** is currently selected

10) The audio **SOURCE** pages allow the user to map up to three audio sources 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 the *Mapping Jacks* and *Search Order* sections of this manual for additional details about mapping input jacks to a given Input Select button.

    Verify that the desired rear panel audio 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 Select input # 2.
    e) Repeat steps a through e for all used input select buttons.

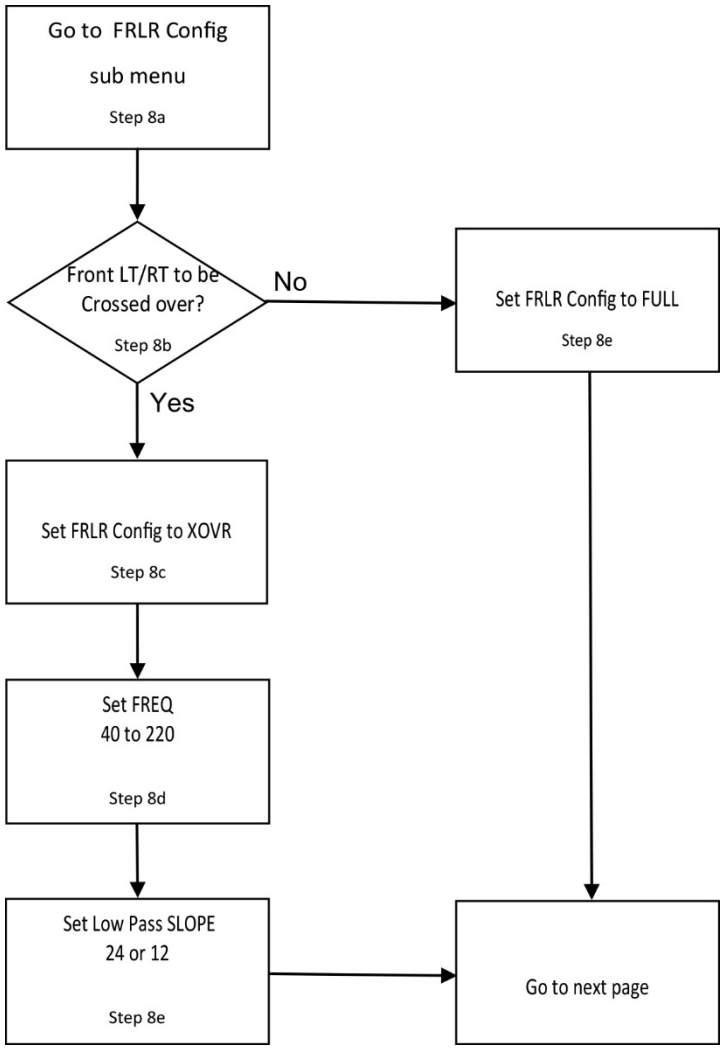
11) All analog sources must have their input levels set in order to obtain the best signal to noise ratio as well as to ensure that no clipping occurs.
    a) Go to the **ANALOG LEVELS** submenu.
    b) Select the first set of jacks with an analog input jack assigned to it.
    c) Adjust the analog input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

Flowchart A – Setup Subwoofer(s)

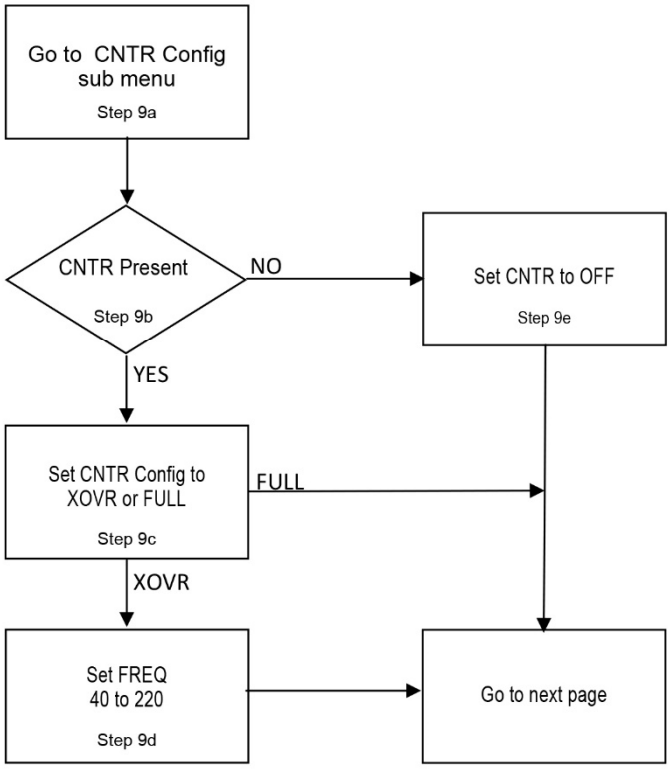


Note: Speaker crossover frequencies and subwoofer lowpass crossover slope are both set during Front Left/Right speaker configuration. See Flowchart B for details.

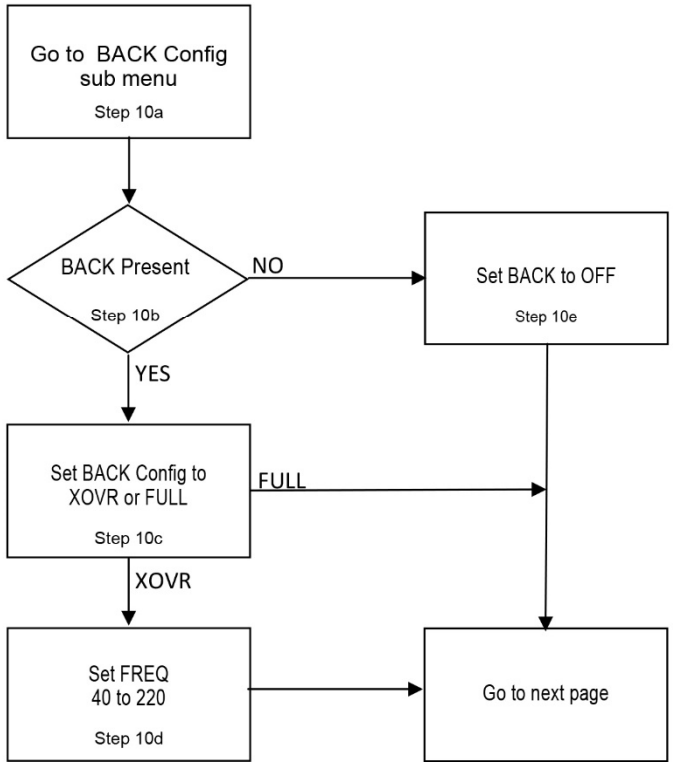
Flowchart B – Front Left/Right Configuration



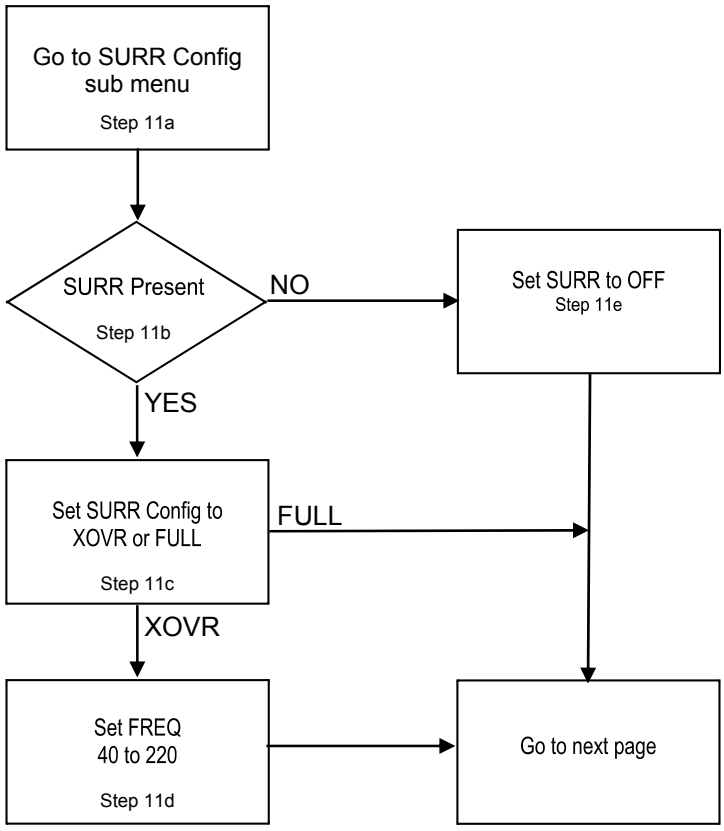
Flowchart C—Center Channel Configuration



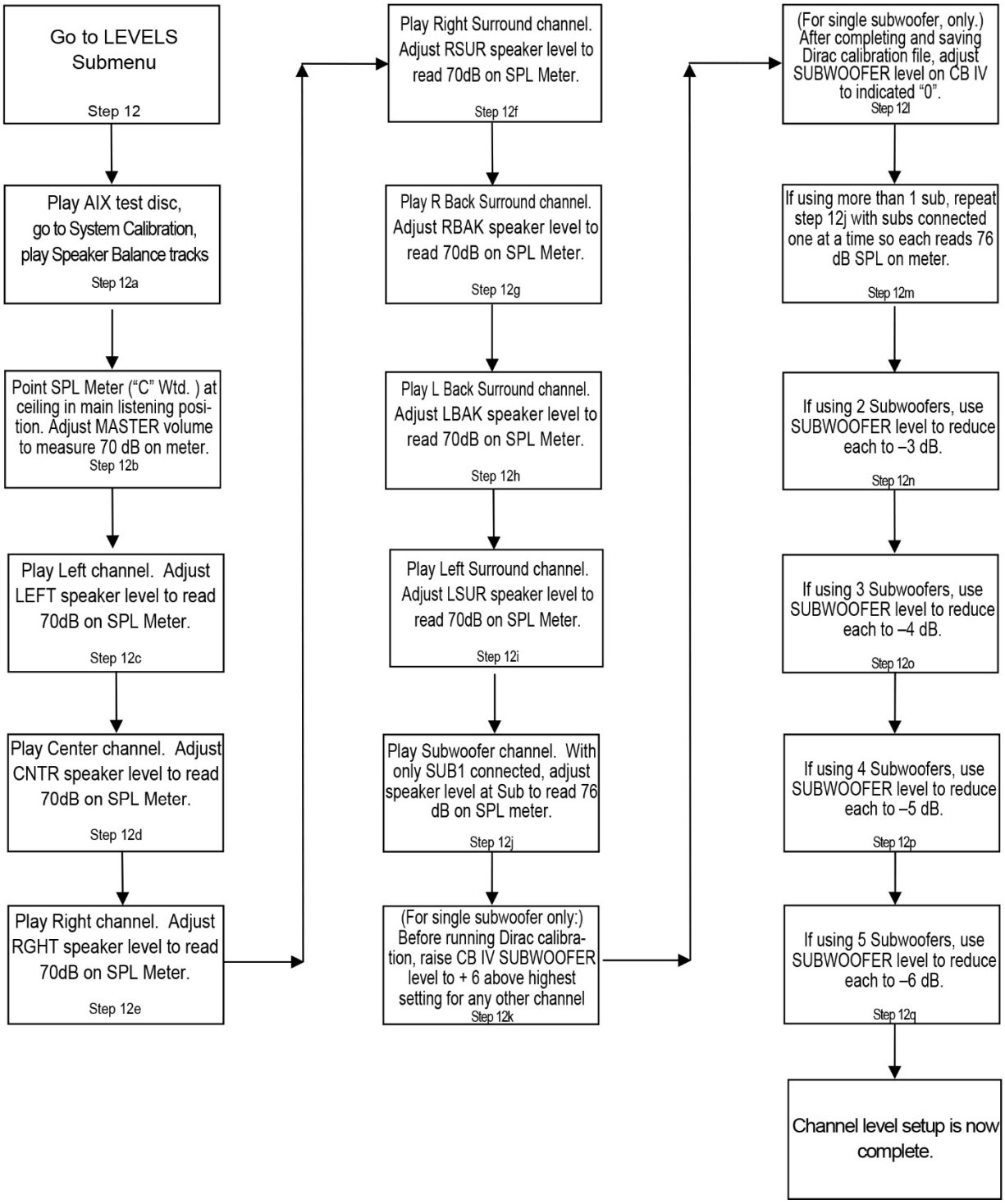
Flowchart D—Surround Back Configuration



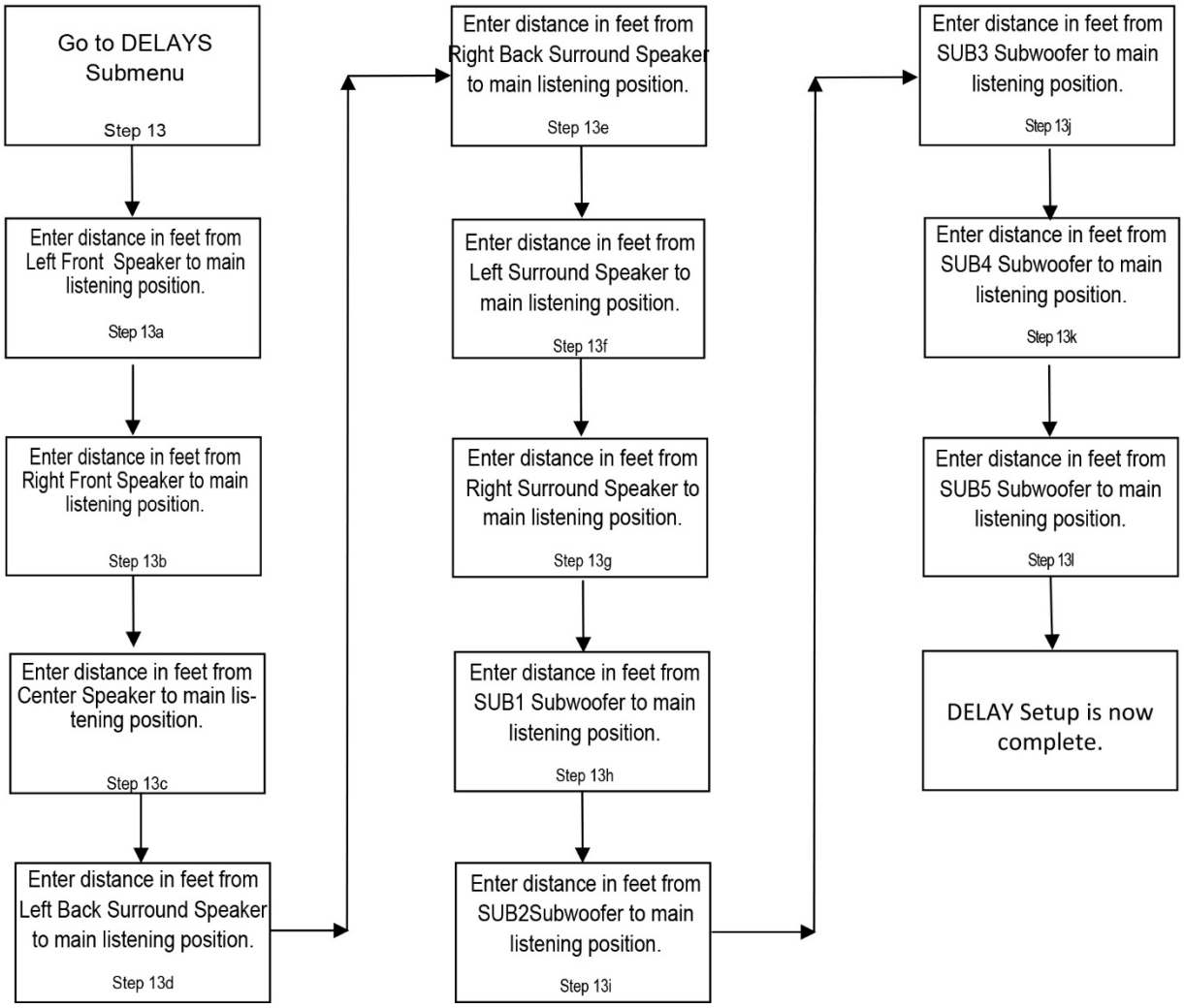
Flowchart E – Left/Right Surround Configuration.



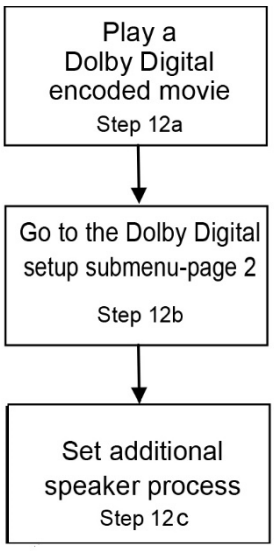
Flowchart F – Setup Speaker Levels



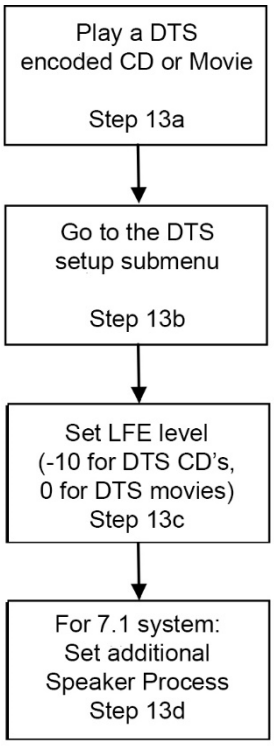
Flowchart H – Setup Speaker Delays



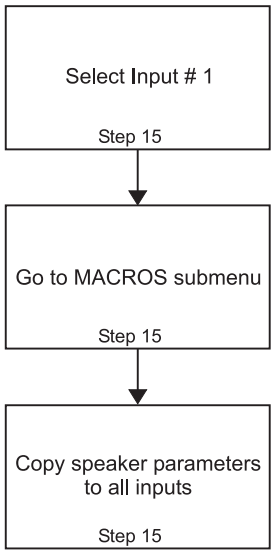
Flowchart I – Setup Dolby Digital



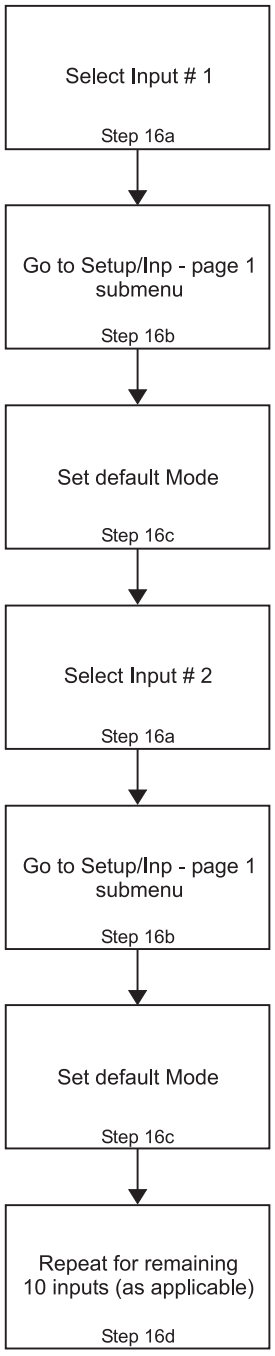
Flowchart J – Setup DTS



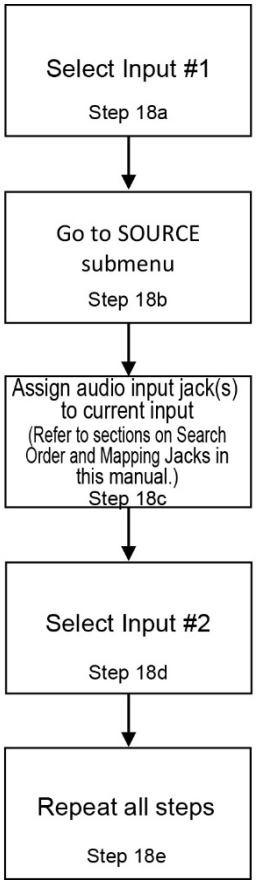
Flowchart K – Copy Input/Speaker Parameters



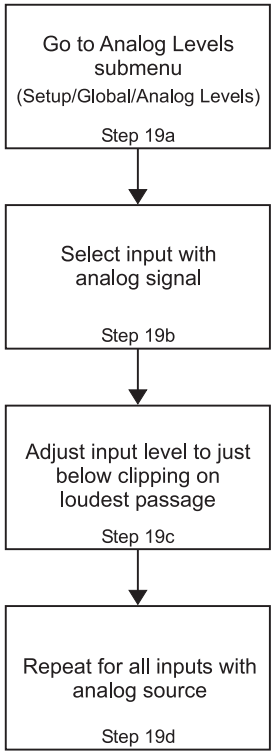
Flowchart L – Setup Default Mode



Flowchart M – Map Input Jacks



Flowchart N – Setup Analog Input Levels



FRONT PANEL OPERATIONS

This section describes the functionality of each button on the Casablanca IV'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 Casablanca IV is first powered up via the **MAIN POWER** switch on the back panel, it will check all software and hardware. It is in the default standby mode as soon as the front panel **MAIN POWER** LED is lit. After pressing the **MAIN** button on the front panel, the front panel display will show the start-up routine and then the current **INPUT SELECT** page, shown in figure 15 below. As this menu appears, the **MAIN** LED turns off. This display will be on during normal operation and will change only when one of the function buttons (or the **STATUS** button) is pressed.

When the Casablanca IV is put into standby, the front panel display will read **CHECKING DISPLAY** and then all pixels will be illuminated for approximately 10 seconds. This check prolongs the life of the display.

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 LED above the selected button will illuminate when pressed. When the Casablanca IV exits standby mode, the last active **INPUT SELECT** will be selected. Pressing the **LEVEL LEFT** or **RIGHT** buttons switches between the two **INPUT SELECT** pages.

* * *

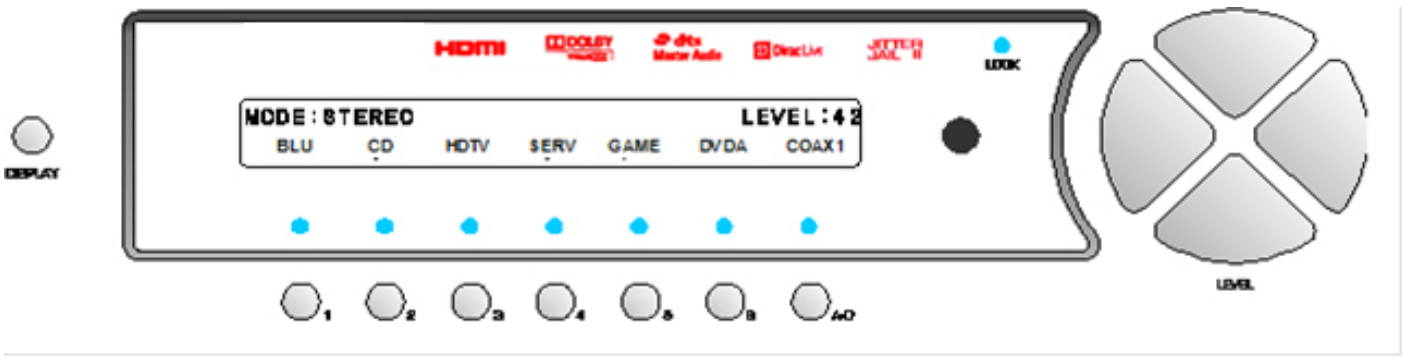


Figure 15 - Front Panel Display of the current INPUT SELECT page

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

The current **MODE** is displayed in the upper left corner. The displayed mode can vary slightly, depending on what the input signal is and which speakers are active. For example, if Surround Back speakers are present and activated when a Dolby Digital EX signal is playing, the mode may be displayed as "Dolby Digital EX" however if the Surround Back speakers in this example were not present or turned on, then the mode would be reflected as "Dolby Digital". This is because EX is not applicable when the speakers are reflective of a 5.1 (or less) system.

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 44 (*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 VFD will be replaced with the word **MUTED**, which will remain displayed until the mute is disabled. The **MUTE** feature is active in all menus, at all times.

*__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 channels will be completely muted (master volume = **0**). The Casablanca IV offers a feature in the **SETUP**/**GLOBAL/MUTE-VOLUME** submenu whereby when the **MUTE** button is pressed, the Casablanca IV will mute to a user defined master volume level. Please refer to page 72 for additional information regarding this feature.

The Casablanca IV can be un-muted in two ways: pressing either the **MUTE** button or the **LEVEL UP/DOWN** buttons. Please refer to page 72 for additional information regarding this feature.

The **DISPLAY** button will toggle the front panel VFD brightness between off, ¼, ½, ¾ and full brightness. When the VFD is turned off, the red logo LEDs also turn off.

This change will be temporary and will hold only until another action is taken. To permanently set the VFD brightness, by INPUT SELECT button, go to **SET-UP/INP/VFD**.

Search Order

The Casablanca IV's inputs can support virtually every analog and digital format used in today's technology. Up to 3 audio input jacks can be mapped to each **INPUT SELECT** button. These 3 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 SELECT** button determines the order each is displayed when the **A-D** button is pressed when in the **INPUT SELECT** menu. This is called *Input Search Order*. Figure 13 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 name for position 3 is blank. Pressing the **A-D** button while in the **INPUT SELECT** page, will toggle between the CD input jack and the DVD input jack

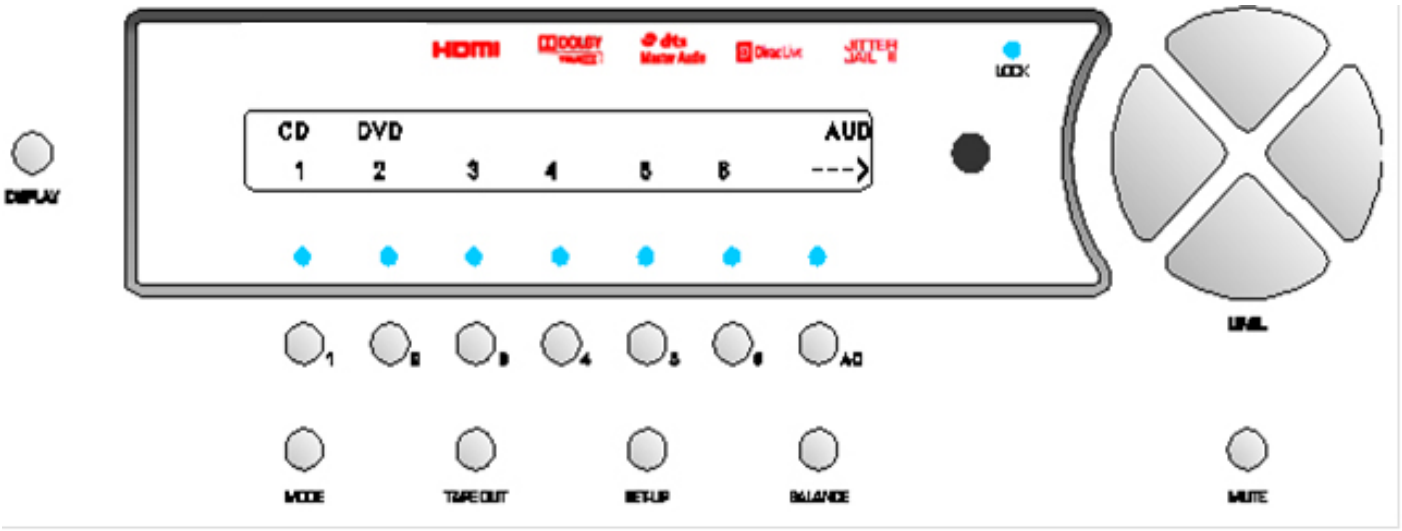


Figure 16 - Front Panel Display of the SETUP/INP *page 2*/SOURCE/AUD page

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 vice versa, otherwise, the Casablanca IV will cease to respond.

MODE Function

Pressing the **MODE** button (shaded in figures 17 and 18) once displays the first page of the **MODE** menu. This first page consists of 6 different signal 'processing' modes, one of which can be selected and temporarily applied to the currently selected input signal, when applicable. *Note: Dolby Digital and DTS cannot be changed*. A *right* arrow is displayed in the lower right corner of the VFD indicating that there is an additional **MODE** page. Pressing the **A-D** button once will reveal the second page all consisting of additional modes. Figure 15 shows the first **MODE** page, and figure 16 shows the second.

Note: This menu allows the user to audition different modes when possible. It does not store the changed mode. When a different **INPUT SELECT** button is pressed, or the Casablanca IV is powered down, the **MODE** will revert to its default for that **INPUT SELECT** button. Each **INPUT SELECT** button can have its own default **MODE**, the default mode for each **INPUT SELECT** is set in the **SETUP**/ **INPUT** menu. Please refer to page 60 (Default Mode) for information on setting the **MODE** for an **INPUT SELECT** button.

* * *

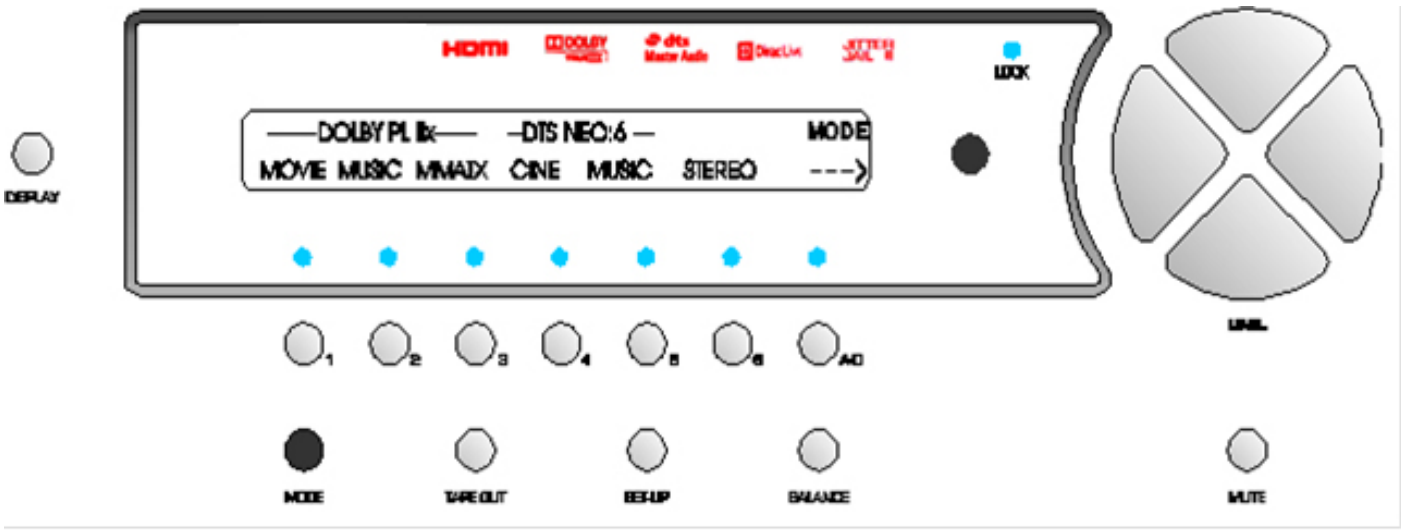


Figure 17 - Front Panel Display of the MODE *Page 1* Menu

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

Each of the 6 modes shown in figure 14 are described below:

Pro Logic IIx outputs 5.1, 6.1 or 7.1 channels from 2-channel or 5.1 channel sources, incorporating the best elements of Dolby Digital, Dolby Digital EX and Dolby Pro Logic II.

Dolby Pro Logic IIx Movie (**MOVIE**). Intended to be used with 2-channel TV sources and will create 5.1, 6.1 or 7.1 output channels. Movie mode is the reference decoder mode for any such surround-encoded program.

Dolby Pro Logic IIx Music (**MUSIC**). The Music mode is for use with stereo recordings and provides a wide and deep sound space. The Music mode balances the multi-channel surround sound field to content that was not specifically encoded for surround playback. The Music Mode includes controls that allow additional sound tailoring. These include Center Width and Panorama Mode, which are both discussed in the Setup Dolby Digital section of this manual.

Dolby Pro Logic IIx Matrix (**MMATX**). This mode is intended to enhance an incoming mono signal or make a poor incoming FM signal more listenable by forcing it into mono.

DTS Neo:6 was designed to provide a richer and more natural surround sound experience from 2-channel sources. It outputs 5.1, 6.1 or 7.1 channels. An incoming Neo:6 signal can be encoded as either Matrix or Discrete.

DTS Neo:6 Cinema (**CINE**). This is intended to be used with a 5.1 or 6.1 channel source and will output 5.1, 6.1 or 7.1 channels.

DTS Neo:6 Music (**MUSIC**). This mode will take an incoming 2-channel source and output 5.1 or 7.1 channels or take in incoming 5.1 source and output 7.1. It is intended to be used with any 2-channel or 5-channel source. It preserves

the integrity of a stereo mix while augmenting it with a center to anchor the image, and derive enough sound content to yield a spacious, three dimensional listening experience. Music Mode includes a user adjustable variable called **CGAIN**, or Center Gain. This is discussed in the **SETUP\DTS** section of this manual.

STEREO: Left and Right input signals are sent to the Left and Right front speakers. If crossed over in the **SETUP\SPKR\CONFIG** menu, **SUB** channel(s) will be produced.

Press the **A-D** button to navigate to the second page of the **MODE** menu.

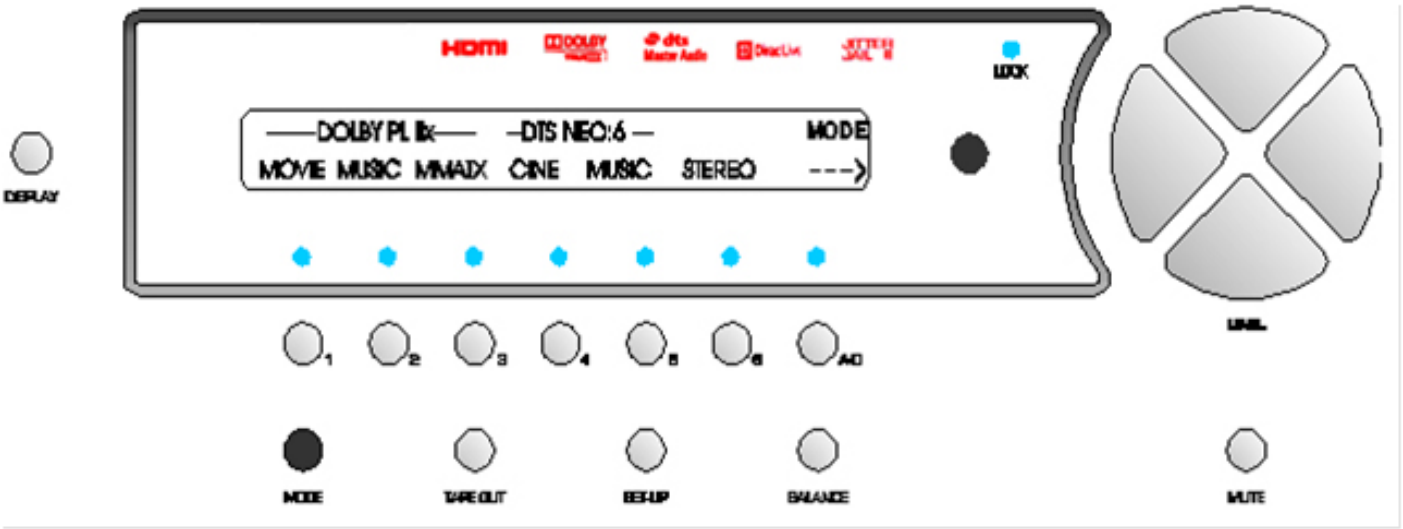


Figure 18 - Front Panel Display of the MODE *Page 2* Menu

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

Special Matrix (**SPCL MATX**): A mode similar to Dolby Pro Logic with more ambience retrieval in the surround speakers. Crossing over any speaker(s) produces a sub channel.

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** in the **SETUP**/ **INPUT**/**CONFIG** submenu, the input signal will be routed to the front left and right speakers.

Analog Direct (**ANLG DRCT**): This mode takes the selected analog input and routes it directly to the main Left/Right output volume controls. Since there is no surround processing in Analog Direct, the subwoofer, EQ, and crossover effects are not available. Note: If these effects are desired, use the **STEREO** mode. The Analog Direct mode will route only an analog signal to the outputs.

Analog Matrix (**ANLG MATX**): When selected this mode give L/R stereo signals to the front main and L/R surround channels from either analog or digital inputs.

* * *

The current Mode is always shown on the top left of the main Input Select menu. If the incoming signal contains an identifying flag, a bit of information contained in the incoming digital data stream, the Casablanca will automatically switch to that mode. An example of this would be Dolby TrueHD, DTS-HD Master Audio, DTS Discrete, Dolby EX, DTS Matrix, DTS ES, DTS 96/24, etc.

These modes are not selectable by the user since they are intended for use only when that signal type is detected.

* * *

If the Casablanca IV detects a flagged Dolby Digital signal on the selected digital input jack, and the **MODE** is *not* set to **DOLBY DIGITAL**, the Casablanca IV will display the following message on both the VFD:

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

and display one of the **DOLBY DIGITAL** modes as the current mode. Approximately 2 seconds after the Casablanca IV ceases to receive this signal (no lock), the **MODE** will revert back to the default mode for that Input Select button. If the detected signal's format is Dolby Digital 2.0, the same auto detecting message will appear for a few seconds and the display will show **DOLBY DIGITAL+ PRO LOGIC** as the mode. Please refer to page 77 to turn on or off the Mode Change message.

If the Casablanca IV detects a flagged DTS signal on the selected digital input jack, and the **MODE** is *not* set to **DTS**, the Casablanca IV will display the following message on both the VFD:

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

and display one of the **DTS** modes as the current mode. Approximately 2 seconds after the Casablanca IV ceases to receive this signal (no lock), the **MODE** will revert back to the default mode. Please refer to page 68 for additional DTS setup options, selectable in the second page of the **SETUP**/**INPUT** submenu.

Note: The "auto-detecting" messages for Dolby Digital and DTS will not show, by default. There is a parameter in the **SETUP**/**GLOBAL** ***page 2*** submenu (page 72) that turns this feature on and off.

* * *

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

Note: If the default **MODE** is **DOLBY DIGITAL** or **DTS** and a non-flagged 96K signal is received, the Casablanca IV will momentarily display a message (if the **MSG** parameter is set to **ON**) indicating that it is receiving a 96K signal and [temporarily] changing the current mode to **STEREO**. The user can change this mode, after it has been changed to **STEREO**, by using the front panel **MODE** button and selecting a different and applicable **MODE**. The user cannot change which **MODE** the Casablanca IV initially changes to when receiving a 96K signal if the default **MODE** for the currently selected input is either **DOLBY DIGITAL** or **DTS**.

TAPE OUT Function

Audio from the main input is always routed to the tape output jacks. Audio from any source, digital or analog, is sent to the digital tape out jacks. Audio from a selected analog source is also available at the analog tape output jacks.

Pressing the **TAPE OUT** button once changes the VFD display to the **TAPE OUT** menu shown in figure 19.

Note: The jack names shown in this figure are for example only and will most likely differ from the user's set up.

* * *

Figure 19 - Front Panel Display of the TAPE OUT Menu

Pressing the **TAPE OUT** button again returns the VFD display to the **selected input.** .

SETUP Function

This function provides access to a series of submenus 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 VFD display.

Note: A complete step-by-step speaker configuration setup guide is located on page 24.

Pressing the **SET-UP** button once changes the front panel display to the first page of the **SETUP** menu, shown in figure 17.

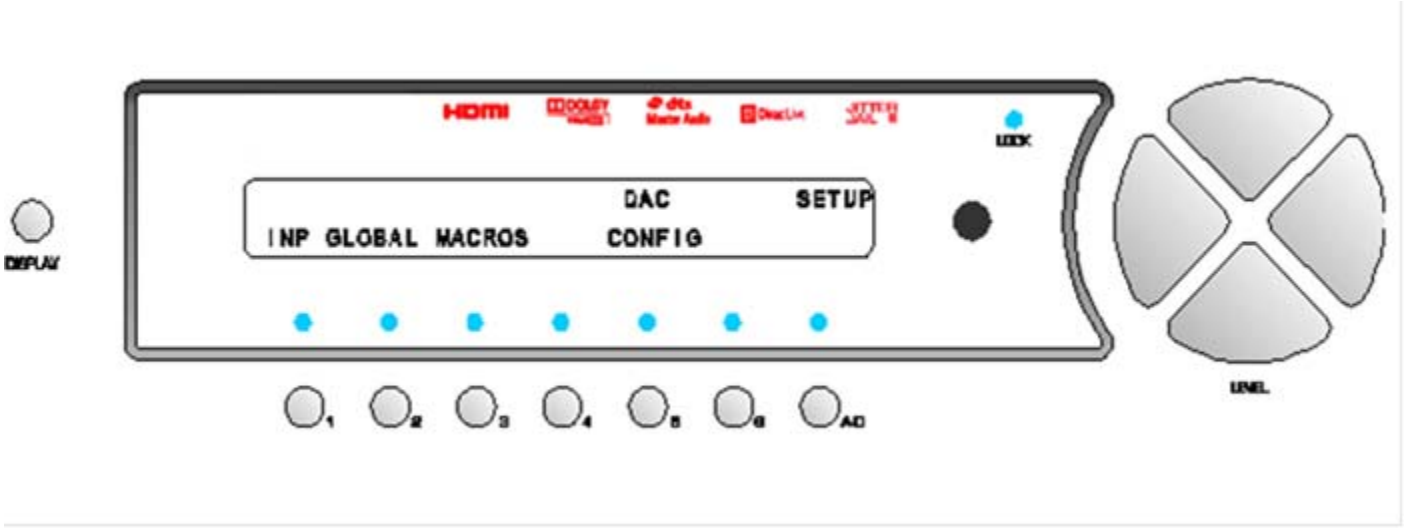


Figure 20 - Front Panel Display of the SETUP Menu

As indicated in figure 20, button **1** is assigned to features that are stored by input and leads to submenus on 3 screens. Button **# 2** accesses all submenus and parameters that are global (not programmable to each **INPUT SELECT**). Button **# 3** accesses the **MACROS** submenu and button **# 5** displays the configuration of the installed DAC cards.

DAC Configuration

Pressing button **# 5** allows the user to view the channels assigned to each DAC card. This is an information page only and may not be edited. As an example, the first page will say "**LEFT RGHT CNTR**" if a three-channel Standard or Superior balanced DAC card is in DAC slot # 1. Press the **A-D** button to view the channels assigned to the second DAC card. Press the **A-D** once more for the third DAC card, if installed. Press **SET-UP** once to exit this menu.

The following section will discuss all menus and parameters under the **INPUT** button.

SETUP INPUT (Settings specific to each of the 12 Input Select Buttons)

Setup Input Page 1

All parameters accessed within the **SETUP/INP** menu are separately programmable for each of the 12 **INPUT SELECT** buttons.

From the **SETUP** menu press button **# 1** (**INP**). The first of three pages of the **SETUP/INPUT** submenus will appear, as shown in figure 22.

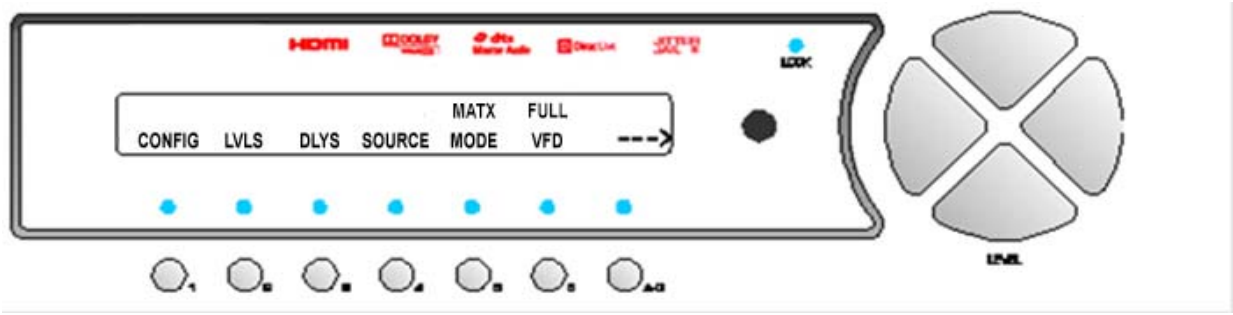


Figure 22 - Front Panel Display of the SETUP/INPUT page 1 Submenu

Pressing button **# 1** takes the user into a series of submenus that allow the configuration of all speakers. Button **# 2** allows the user to set the speaker levels and button **# 3** allows the user to set speaker delays.

Press button **# 4** and use the **LEVEL UP/DOWN** buttons to set the default **MODE** for the currently selected **INPUT SELECT** button.

Button **# 6** provides a means of setting the VFD brightness for the currently selected **INPUT SELECT** button.

Pressing the **A-D** button takes the user to page 2 of **SETUP/INP**.

Setup Speaker Configuration

The Speaker Configuration section utilizes the menus shown in figure 23.

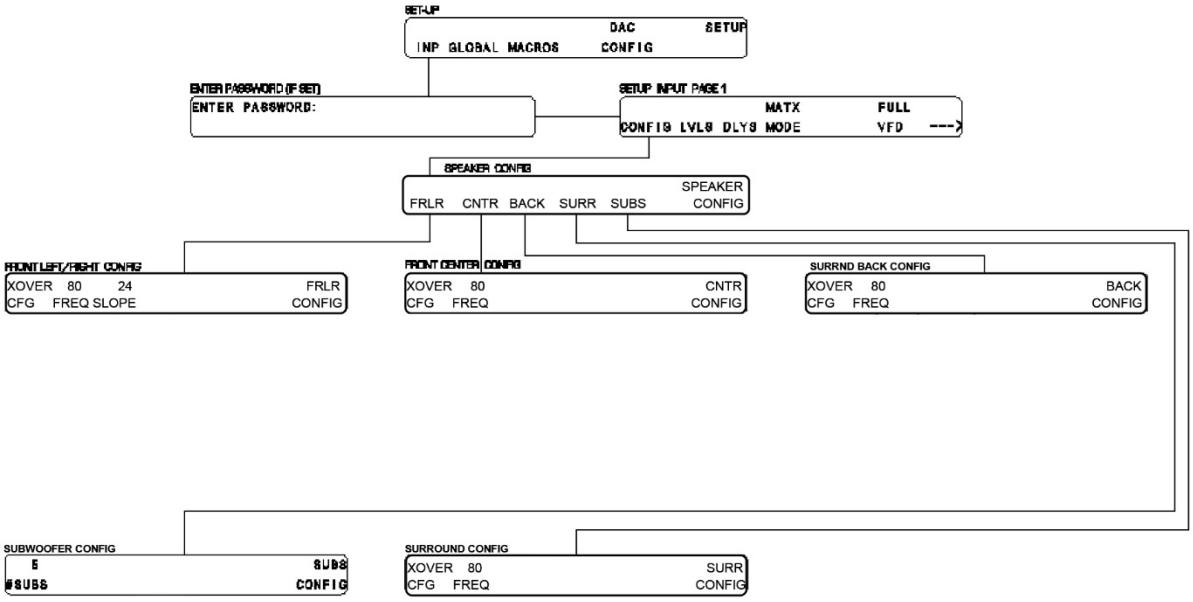


Figure 23 - Menu Map of SETUP/INP *Page 1*/CONFIG

The configuration submenus (**CONFIG)** allow the user to configure the Casablanca IV to reflect the audio system configuration or the listener's preference for the available speakers and their respective frequency responses.

All speaker configuration parameters are accessed by pressing button # **1** (**CONFIG**). This leads to a series of submenus. The first submenu, **SPEAKER CONFIG** is shown below, in figure 24.

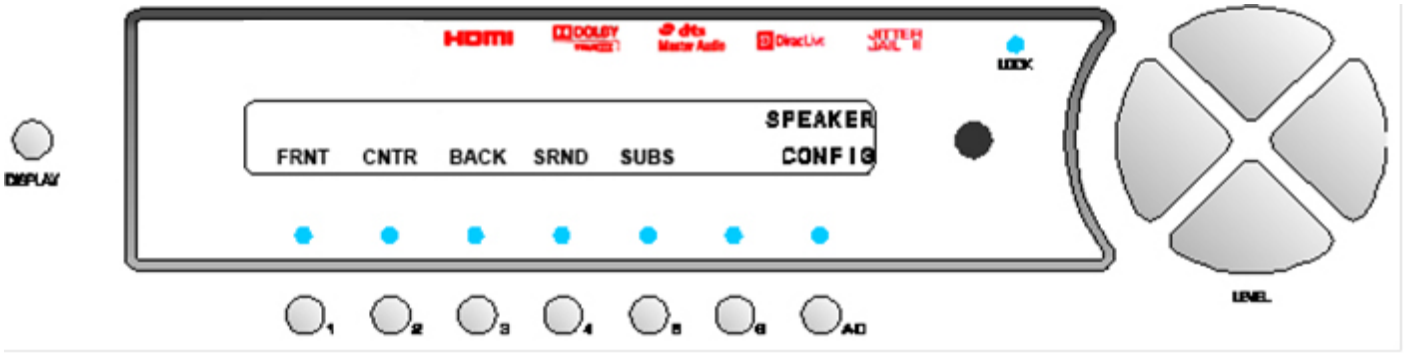


Figure 24 - Front Panel Display of the Speaker Configuration Submenu

As indicated in figure 24 above, the front left/right speaker configuration is accessed by pressing button # **1**, the center via button # **2**, the left/right BACK surrounds with button # **3,** # **4** is for the surround speakers, and #5 for the subwoofer(s). Before configuring any speakers in the system, it is important to configure the subwoofer. First, determine whether or not a sub or subs are required or desired. Press button # **4** to go to the **SUB CONFIG** submenu, shown in figure 22, and set up the sub(s). If no sub(s) is present, or is not desired, set the number of subs (**#SUBS**) to **0** and disregard any crossover types at this time. Lastly, configure the other speakers in the system via buttons **1**-**4.**

SUB Configuration

Note: If the source does not contain a discrete LFE channel, no signal will be routed to the **SUB** output(s) unless one or more speakers are crossed over. If the source contains a discrete LFE channel and the **#SUBS** is set to **0**, the LFE signal will be routed equally to all speakers whose **CFG** is set to **FULL**. ***EXCEPTION: IF MATRIX OR SPECIAL MATRIX ARE SELECTED, A SUBWOOFER SIGNAL WILL BE CREATED EVEN IF ALL SPEAKERS ARE SET TO FULL***

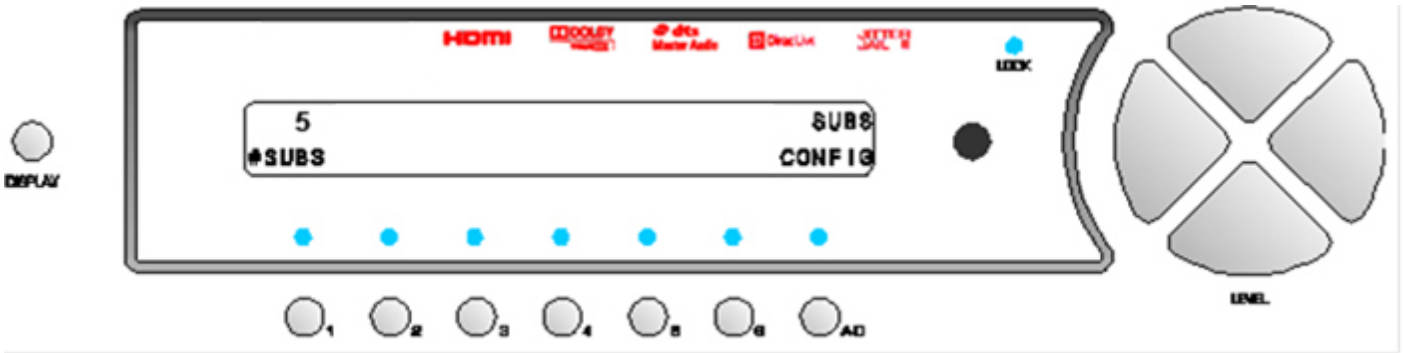


Figure 25 - Front Panel Display of the Subs Configuration Submenu

Unlike most configuration submenus in the Casablanca IV, this one is not dynamic. In other words, if there are 1-5 DAC channels installed that are configured as subwoofers, this submenu will show, and allow configuration editing for all 5, except for the **#SUBS** parameter. In this case, should a Casablanca IV be installed with only one sub channel, this value will allow only one or zero, etc.

If the number of Subs (**#SUBS**) is set to **1**, the low-pass portion of all crossed over speakers and the full **LFE** are routed to the **SUB 1** output. (Labeled **SUB** if there is only one sub output, **SUB1** if there is more than one sub output). If the number of **SUBS** is set to more than 1, any low pass signals and LFE will be routed as follows:

If the **#SUBS** is set to 2 they will be **L-R**. Any **LFE** and the low pass portion of any front speakers that are crossed over will be routed to the front left/right subwoofers. (The **LFE** is divided by 2, added to any low pass information and distributed evenly between them).

If the **#SUBS** is **3**, the low pass portion of the front speakers that are crossed over will be routed to the 2 front subs and the low pass from the surround speakers that are crossed over will be routed to the rear sub. **LFE** will be divided by 3 and routed equally between the 3 subs, added to any low pass signal

If the **#SUBS 4**, they will be assigned to Front L/R and Rear L/R. Each sub will get ¼ of the **LFE**. Additionally, the low pass signal from any front speakers that are crossed over will be routed to the front subs (**SUB 1** and **SUB 2**) and the low pass signal from any surround speakers that are crossed over will be routed to the surround subs (**SUB 3** and **SUB 4**). In this case, **SUB1** = Left Front Sub, **Sub2** = Right Front Sub, **Sub3** = Left Surround sub and **Sub4** = Right Surround Sub.

If the **#SUBS** is **5**, each sub will get 1/5 of the **LFE**. The low pass signal from the front left/right speakers, if crossed over, will be routed to the front left and right subs. If the center speaker is crossed over, its low pass signal will be routed to the **SUB5** output. The low pass signal from any surround speakers that are crossed over will be routed to the left/right surround subs.

Left/Right Speaker Configuration

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

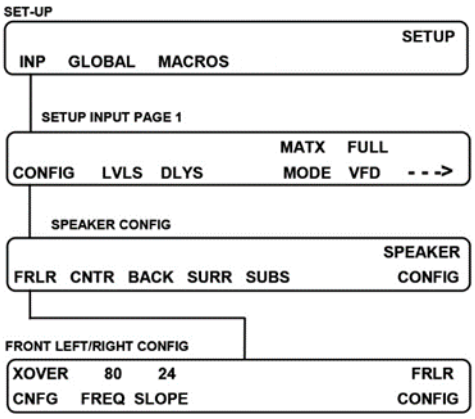


Figure 26 - Menu Map of SETUP/INP *Page 1*/CONFIG/LT/RT

A discussion of crossovers commences on page 25.

Crossovers

The Casablanca IV contains Linkwitz-Riley crossover filters. Combined with knowledge of the actual in-room frequency response of each speaker in the system as measured by Theta Digital's Dirac Live® 96 kHz module, the end results can offer state-of-the-art performance..

* * *

Press button **# 1** to set up the front left/right speakers. This configuration submenu is shown in figure 27.

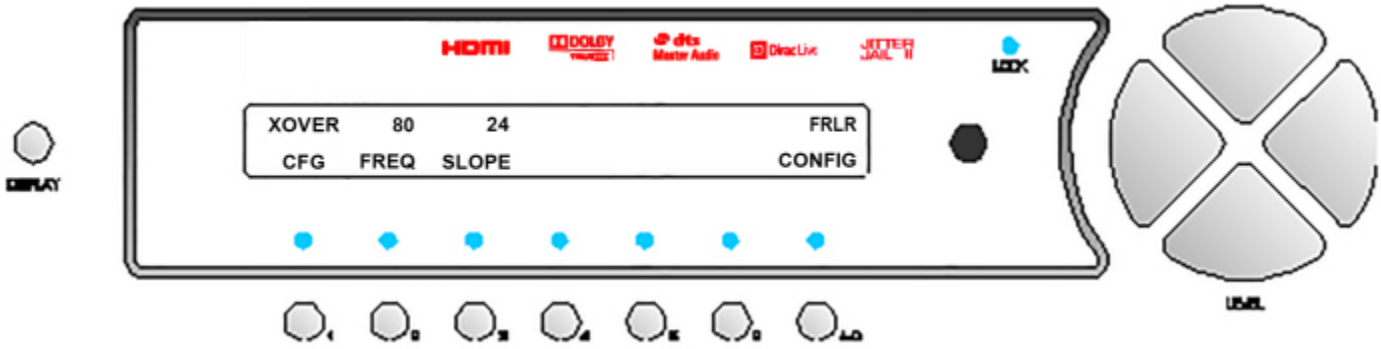


Figure 27 - Front Panel Display of the Front Left/Right Speaker Configuration Submenu

Pressing button **# 1** allows the configuration of the front left/right speakers. If these speakers are not to be crossed over (a portion of their signal sent to the **SUB** output(s)), then the setting should be **FULL**.

Should it be desired to crossover the front left/right speakers, the **CFG** setting (button **# 1**) should be set to **XOVER. FREQ** can be configured for any frequency from 40 Hz to 220 Hz in 10 Hz increments. 80 Hz is the default. Consult the specification sheet for the loudspeakers being used or, preferably, the in-room frequency response measured during Dirac Live® to determine the appropriate crossover frequency.

SLOPE refers to the subwoofer channel's low pass filter. The choices are 12 or 24. The default setting is 24 and is usually the appropriate selection.

Center Speaker Configuration

Press button #2 (Figure 24) to access the Center Channel crossover options.

The center channel configuration section contains the submenus shown in figure 25.

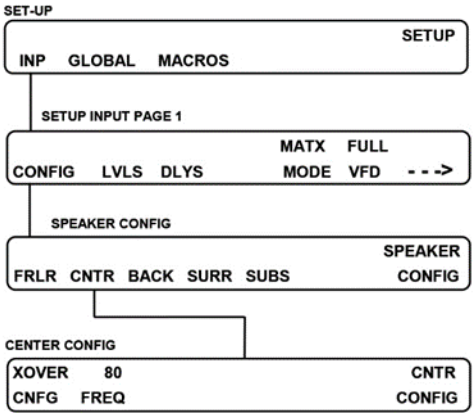


Figure 28 - Menu Map of SETUP/INP *Page 1*/CONFIG/CNTR

This submenu of settings for the Center speaker is virtually the same as the one for the front left/right speakers, except there is no option for selecting SLOPE.

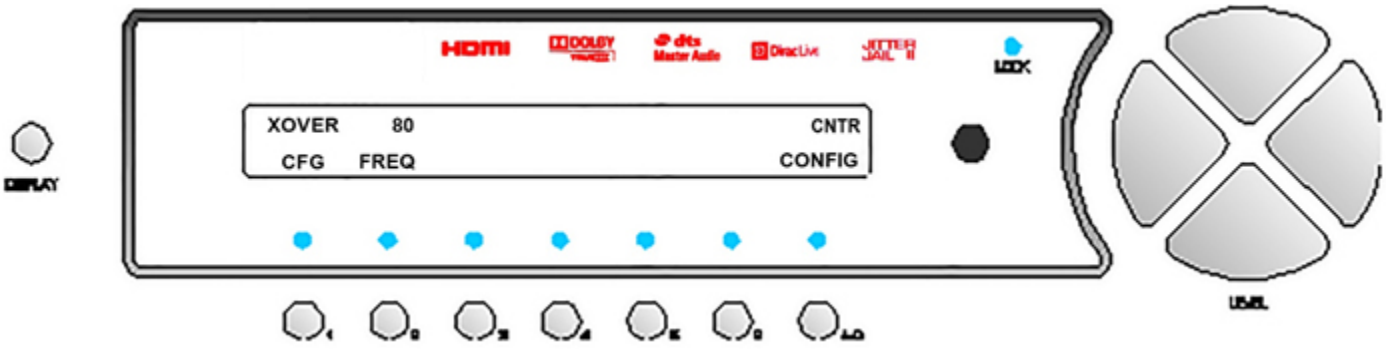


Figure 29 - Front Panel Display of the Center Speaker Configuration Submenu

Pressing button # **1** allows the configuration of the center speaker. If this speaker is not to be crossed over, then the **CFG** should be set to **FULL**. When set to FULL, the full range center channel signal is sent to the center channel speaker.

The center speaker can also be set to **XOVER** or **OFF**. When set to **XOVR**, bass below the requested cutoff frequency will be sent to the front L/R speakers and/or the Subwoofer(s) depending upon their selected capability. The cutoff frequency may be set from 40 Hz to 220 Hz in 10 Hz increments. When set to **OFF**, the center channel signal is not lost. It is sent equally to the Left and Right speakers.

Note: By re-routing center channel information equally to the left/right speakers when the center channel is set to OFF 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.

Press button # **2** to adjust the crossover frequency.

If there are 5 subwoofers in the system, low pass signal from the center speaker will be routed only to the #5 sub. In other words, Sub5 is dedicated to the Center speaker.

Back Surround Speaker Configuration

Press **SETUP** to return to the speaker configuration submenu, then press button **# 3** (**BACK**) to set up the surround back speakers for a 7.x system. If the Casablanca IV is configured for 5.1, please skip this step. This submenu is shown in figure 30.

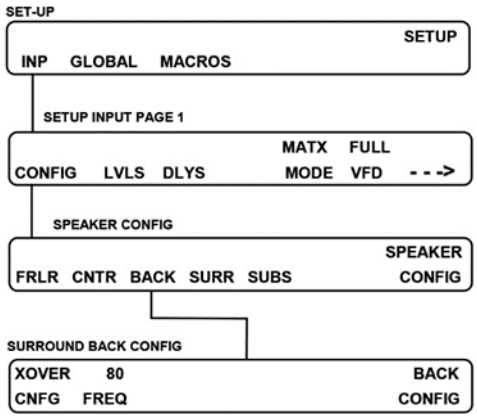


Figure 30 - Menu Map of SETUP/INP *Page 1*/CONFIG/BACK

This submenu of settings for the back surround speakers is virtually the same as the one for the center speaker.

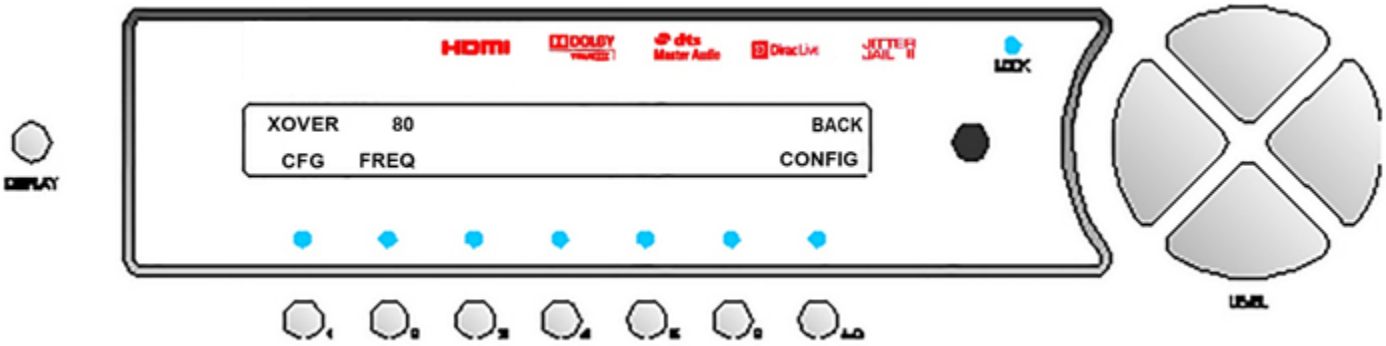


Figure 31 - Front Panel Display of the Back Surround Speaker Configuration Submenu

Pressing button **# 1** allows the configuration of the back surround speakers. If these speakers are not to be crossed over, then the **CFG** should be set to **FULL**. When set to FULL, the full range back surround channel signal is sent to the back surround speakers.

The back surround speakers can also be set to **XOVER** or **OFF**. When set to **XOVR**, bass below the requested cutoff frequency will be sent to the other speakers capable of reproducing those frequencies including the surround speakers, the front L/R speakers and/or the Subwoofer(s) depending upon their selected capabilities. When set to **OFF**, of if the speakers are not present in the Casablanca IV configuration menu, the channel signal is not lost. It is sent equally to the Left and Right surround speakers.

Press button **# 2** to adjust the crossover frequency. The choices are 40 Hz to 220 Hz in 10 Hz increments.

Surround Speaker Configuration

Press **SETUP** to return to the speaker configuration submenu, then press button **# 4** (**SURR**) to set up the surround speakers. This submenu is shown in figure 32.

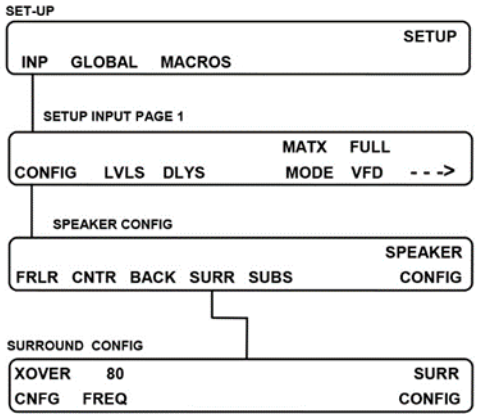


Figure 32 - Menu Map of SETUP/INP *Page 1*/CONFIG/SURR

This submenu of settings for the back surround speakers is virtually the same as the one for the center speaker.

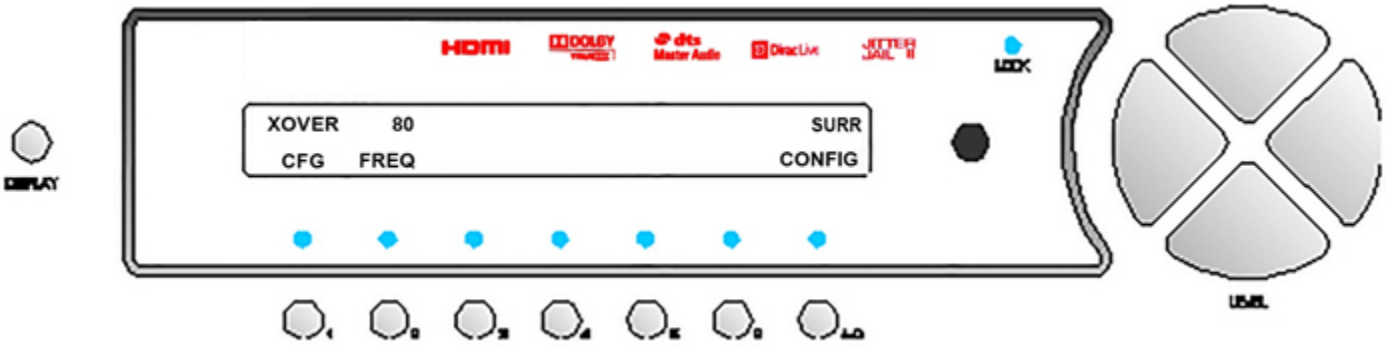


Figure 33 - Front Panel Display of the Surround Speaker Configuration Submenu

Pressing button **# 1** allows the configuration of the surround speakers. If these speakers are not to be crossed over, then the **CFG** should be set to **FULL**. When set to FULL, the full range surround channel signal is sent to the surround speakers.

The surround speakers can also be set to **XOVER** or **OFF**. When set to **XOVR**, bass below the requested cutoff frequency will be sent to the other speakers capable of reproducing those frequencies including the surround speakers, the front L/R speakers and/or the Subwoofer(s) depending upon their selected capabilities. The cutoff frequency may be set from 40 Hz to 220 Hz in 10 Hz increments. When set to **OFF**, of if the speakers are not present in the Casablanca IV configuration menu, the channel signal is not lost. It is sent equally to the Left and Right front speakers.

Press button **# 2** to adjust the crossover frequency. The choices are 40 Hz to 220 Hz in 10 Hz increments.

Speaker Levels

This submenu 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 -15 dB to +15 dB.

Like the speaker configuration menus, the level submenu(s) will reflect the DAC channels that are installed in the Casablanca IV. If there are 6 DAC channels installed, the names of these channels will be displayed on one page of the levels submenu. If more than 6 DAC channels are installed, a menu will appear asking the user which set of speakers are to have their levels adjusted: **1-6** or **7-12**, as shown in figure 34. In these submenus, the installed DAC channels, or speaker names, will be displayed.

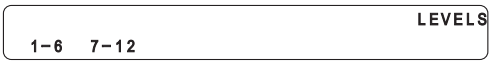


Figure 34 - Front Panel Display of the SETUP/INP/LVLS/Channel Choice Submenu

From the Input Select menu, press **SETUP**, input (**INP**) then levels (**LVLS**) to access the speaker levels setup submenu shown in figure 31. If more than 6 DAC channels are installed, the user must press either button **# 1** (**1-6**) or **# 2** (**7-12**).

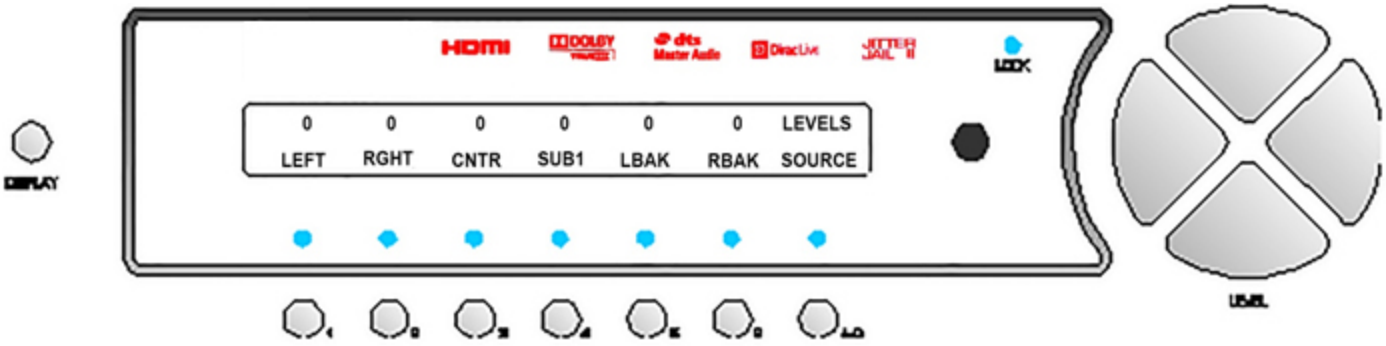


Figure 35 - Front Panel Display of the SETUP/INP/LVLS 1-6 Submenu

If there are more than 6 DAC channels installed, pressing button **# 2** on the Levels Channel Choice submenu will produce a second levels submenu similar to the one shown in figure 35. The speaker names in this submenu will reflect the channels present in the user's Casablanca IV.

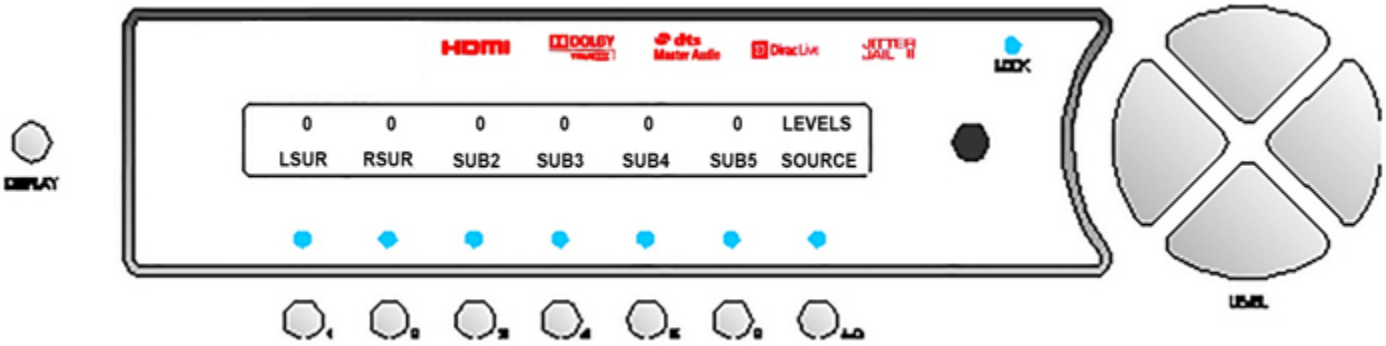


Figure 36 - Front Panel Display of the SETUP/INP/LVLS 7-12 Submenu

In these submenus, press button(s) **1**-**6** to select a speaker to edit. Use the **LEVEL UP/DOWN** buttons to adjust each speaker's output level. Use the **LEVEL LEFT/RIGHT** buttons to adjust the master volume. If there is a level control on the sub itself, adjust that first and then fine-tune with the Casablanca IV.

Internal Noise Generator

To aid in channel identification, the Casablanca IV provides the user with the option of routing the currently selected audio signal or an internally generated noise signal to a selected speaker.

This function is accessed via the **A-D** button in the **SETUP**/**INP**/**LVLS** submenu(s). Press buttons **1**-**6** to select a speaker. Pressing the **A-D** button repeatedly toggles through these sources. Table 5 shows the 2 possible routings. When the **A-D** button is pressed, the source name or noise type will appear in the VFD below the submenu title.

Press A-D Button	***MODE***	***SOURCE USED***
-	Selected Input	AUDIO INPUT
Once	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. Using the AIX Test Disc (and not the built-in signal generator), first adjust the Front Left and Right level value(s) to zero dB. With the unit playing the Left Front Channel from the test disc, adjust the master volume. The remaining speakers can be adjusted accordingly by pressing buttons **2-6** (the buttons located beneath the channel indicators) 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. Please refer to the detailed *Step-by-Step Setup Guide* on page 23.

Note: Please do not use the internal noise generator to set channel levels. We strongly recommend using a solution that includes the complete playback chain including the blu-ray player and AIX test disc to set levels. Please refer to the detailed Step-by-Step Setup Guide on page 24.

Speaker Delays

Like the Levels submenu(s), the Delays submenu(s) are interactive. Only installed DAC channels will appear in the Delays submenu. If there are two Delays submenus, the **A-D** button will toggle between them.

The Delays submenu 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 sound from all speakers should reach the listening position at the same time, and this submenu provides a means for achieving just that. The allowable range for the all speakers and subwoofers is 0 to 50 mS.

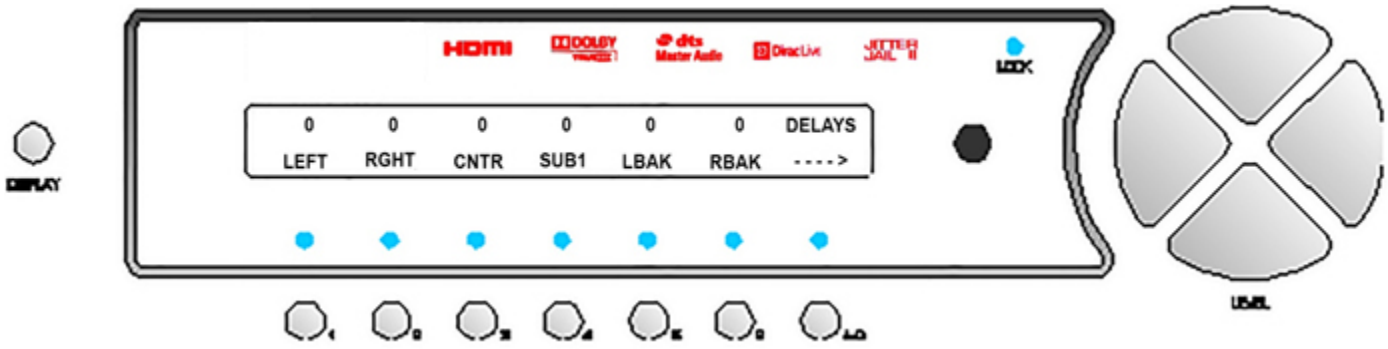


Figure 37 - Front Panel Display of the SETUP/INP/DELAYS 1 Submenu

Press **SETUP**, input (**INP**) then delays (**DLYS**) to access the speaker delays setup submenu shown in figure 37. The current delay settings will be displayed on the top row of the VFD. The submenu title "**DELAYS**" will be displayed in the upper right corner. Delay settings apply to all **MODES**, however, they can be further manipulated when the **MODE** is Dolby Digital or DTS, via additional Setup submenus for these **MODES**. These additional Setup features and respective submenus are discussed further in this section.

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 each individual speaker reach the listener at the correct time.

If more than six DAC channels are installed in the Casablanca IV, there will be a right arrow above the **A-D** button. Press this button, and the second Delay page will be presented as shown in figure 38.

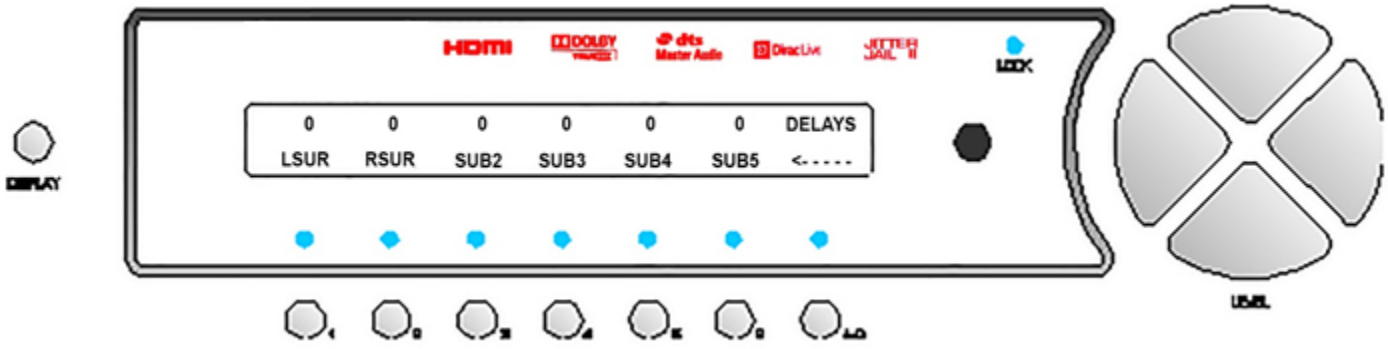


Figure 38 - Front Panel Display of the SETUP/INP/DELAYS 2 Submenu

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

Begin by measuring the distance (in feet) from each speaker to the listening position. Write down all of these values. Enter the difference in feet from the primary listening position to each speaker and subwoofer.

Note: It is no longer necessary to subtract one speaker distance from another to determine the closest speaker. This is now done automatically inside the Casablanca IV's DSP section.

Mapping Sources (Input Jack to INPUT SELECT button)

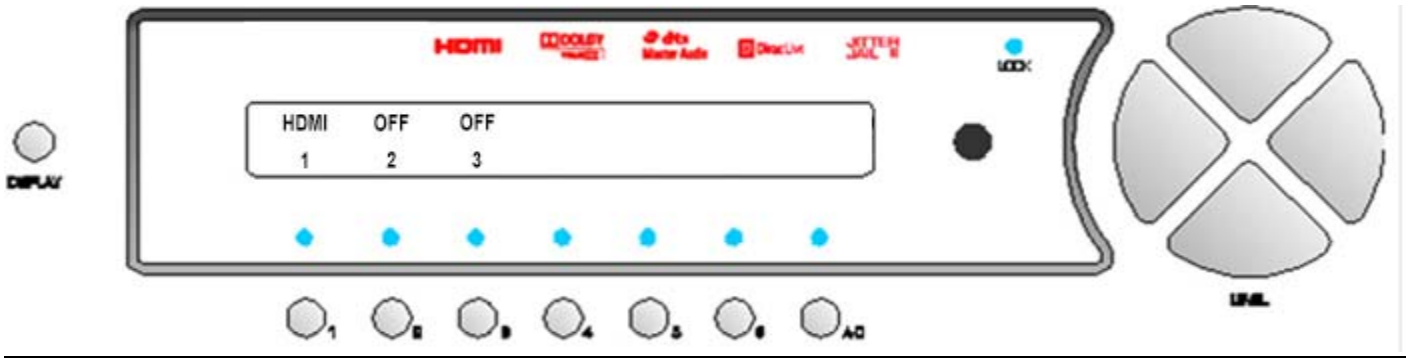


Figure 39 - Front Panel Display of the INPUT SELECT Submenu

Up to three audio input jacks can be mapped to each INPUT SELECT button. The order in which they are mapped determines the search order when pressing the A-D button from the INPUT SELECT menu.

The default jack names reflect the type of jack on the rear panel. (Please see page 22 for a list of the Default Settings.) It is recommended that all the active audio input jacks be named before mapping them to a given INPUT SELECT button.

To map input jacks, first press the INPUT SELECT button. Press SETUP, INP, A-D, then SOURCE. To map the first audio 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 using the LEVEL UP/DOWN buttons. If only one mapped source is desired, select OFF in this position. Continue to select up to 3 input jacks for each Input Select button.

An example of this use could be for a Blu-ray/DVD/CD transport where the first assigned jack could be HDMI 1 with the second, intended to be used exclusively for CD could be TOS1 or even ANALOG3. In this example, when a BD disc is to be played, the user would press the INPUT SELECT button that is 'assigned' to this transport. If HDMI1 (or the name assigned to this input jack) is not displayed in the lower right hand corner of the VFD display, press the A-D button until it is displayed. When a CD is to be played in this transport, press the A-D button once or twice until the appropriate name, in this case TOS1 or ANALOG3 is indicated in the lower right corner of the VFD.

Press SETUP 3 times then repeatedly press the A-D button to toggle between the input jacks for the currently selected INPUT SELECET button. Map only the 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 the 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.

Press the SETUP button 3 time to return to the INPUT SELECT page.

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, press the applicable **INPUT SELECT** button, **SETUP**/**INP** (input) then button **# 4** (**MODE**). See figure 16 on page 50. 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. Changing modes via the **MODE** button does not store a mode selection.

VFD Brightness

Each **INPUT SELECT** button can have a different VFD brightness assigned to it. Pressing button **# 6** in figure 22 (page 50) allows the user to change the default brightness to **OFF, ¼, ½, ¾** or **FULL** brightness. Changes to this parameter are reflected the next time that **INPUT SELECT** button is pressed. If this value is set to **OFF**, pressing any button except **DISPLAY** will automatically brighten the VFD to the maximum level. If the button pressed is not another **INPUT SELECT** or function button, then the VFD will revert back to its default brightness in *X* seconds. *X* represents the **TIME** parameter value in the **SETUP**/**INP** ***Page 1***/ submenu. If the VFD is on but not set to **FULL**, it will remain at the default brightness until a different **INPUT SELECT** button is selected. The **DISPLAY** button will override the default VFD brightness setting. The **Display Time** feature takes precedent over the VFD brightness parameter. See details regarding the **Display Time** parameter on page 85.

The **SETUP/INP** ***Page 2*** section contains the submenus shown in figure 39.

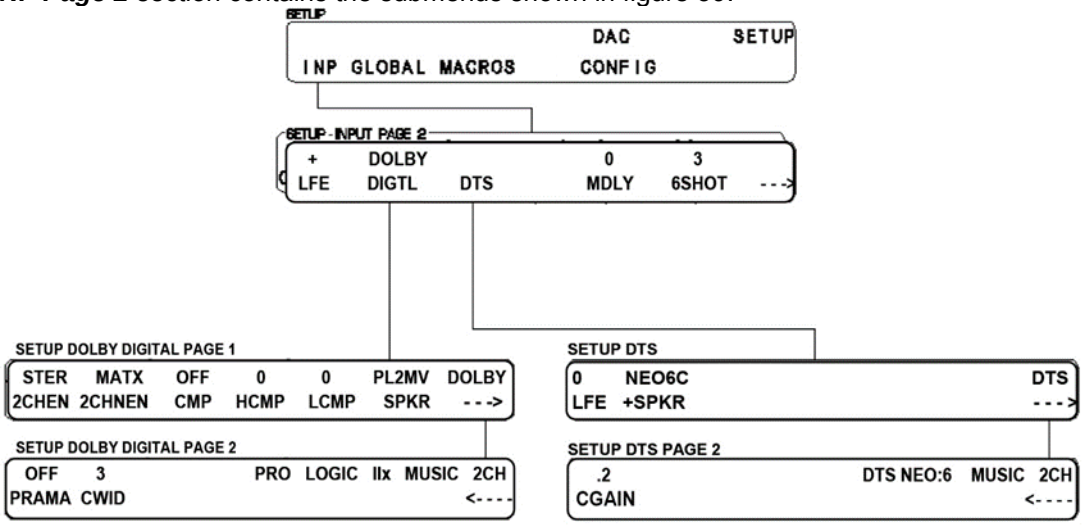


Figure 40 - Menu Map of SETUP/INP *Page 2*

To access this page press **SETUP**, **INP** (input), then the **A-D** button once. Page 2 of the **SETUP/INP** menu is shown in figure 40.

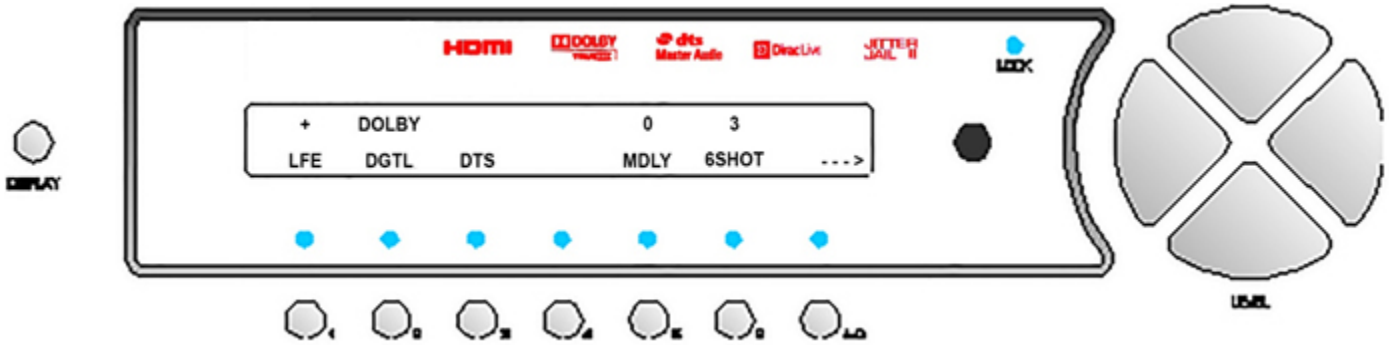


Figure 41 - Front Panel Display of the SETUP/INP *Page 2* Submenu

LFE Phase

The **LFE** phase can be **+** (in phase) or **–** (180 degrees out of phase). This can be edited via button **# 1** and is applicable to the currently selected input.

Setup Dolby Digital

In figure 40, button **# 2** provides a two-page submenu which allows the user to set up preferences pertaining to Dolby Digital and Dolby Pro Logic IIx, by **INPUT SELECT** button. The first page of this submenu is shown in figure 41. These settings apply only when the **MODE** is one of the Dolby Digital processes.

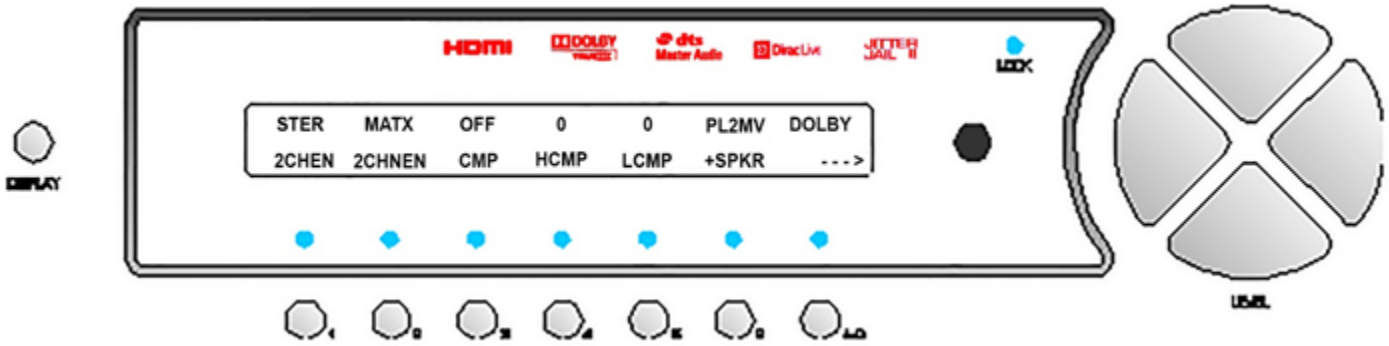


Figure 42 - Front Panel Display of the SETUP/INP *Page 2*/DOLBY DIGITAL *Page 1* Submenu

2-Channel Mode

Some Dolby Digital sources contain only two of the possible five to seven main channels. This is usually noted on the material's cover, in the form of "Dolby Digital 2.0" or "Dolby Surround" as opposed to "Dolby Digital 5.1, 6.1 or 7.1".

Embedded in most two-channel Dolby Digital data streams 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; or No Indication.

Regardless of the indication, the user can instruct the Casablanca IV to process this decoded signal in virtually any **MODE**. For Dolby Surround encoded signals, press button **# 1** (**2CHEN** – or two-channel encoded) and use the LEVEL UP/DOWN buttons to select the **MODE** to be applied to Encoded 2 channel Dolby Digital signals. For a non-encoded signal, press button **# 2** (**2CHNEN** – or 2-channel non-encoded) to select the **MODE** for further processing. When a mode is applied to a two-channel Dolby Digital signal, the signal Is first Dolby Digital decoded, then the decoded signal is further manipulated by applying the mode set in the **2CHEN** or **2CHNEN** parameters. If this is the case, and the additional selected mode is **MATRIX**, the **MODE** displayed in the VFD when in the **INPUT SELECT MENU** will read "**DOLBY DIGITAL + MATX**". If the additional selected mode is **STEREO**, the **MODE** displayed in the VFD when in the **INPUT SELECT MENU** will read "**DOLBY DIGITAL + STEREO**".

If the indication is that the signal is not Dolby Surround encoded, or there is no indication, and the **2CHNEN MODE** is set to Dolby Digital, no additional surround processing will occur, resulting in a two-channel (stereo) output.

Compression (Night Mode)

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.

Casablanca IV contains three parameters to control Dolby Digital compression. Button **# 3** (**CMP**) turns the compression **ON** or **OFF**. Button **# 4** (**HCMP**, or High Compression) controls the degree to which loud passages will be reduced. Button **# 5** (**LCMP**, or Low Compression) controls the degree to which quiet passages will be increased.

Note: Some Dolby Digital sources do not allow for compression, in which case altering these settings will have no effect.

Press button #6 to select the processing for additional speakers when the **MODE** is Dolby Digital.

If the incoming signal is Dolby Digital 5.1, and the user desires to create Surround Back channel, use the **+SPKR** (or Additional Speakers) parameter to indicate which **MODE** will be used to create them. There are a limited number of

modes that can do this. They are displayed in Table 6.

VFD	DEFINITION
OFF	No additional speaker signals will be created.
DTSES	DTS ES
NEO6M	DTS NEO:6 Music
NEO6C	DTS NEO:6 Cinema
PL2MU	Dolby Pro Logic IIx Music
PL2MV	Dolby Pro Logic IIx Movie

Table 6 – Additional Speaker Modes for Dolby Digital Source.

Press the A-D **button to access Page 2 of the Dolby Set Up submenu. This page contains parameters used when the mode is Dolby Digital EX. This menu is shown in figure 42.**

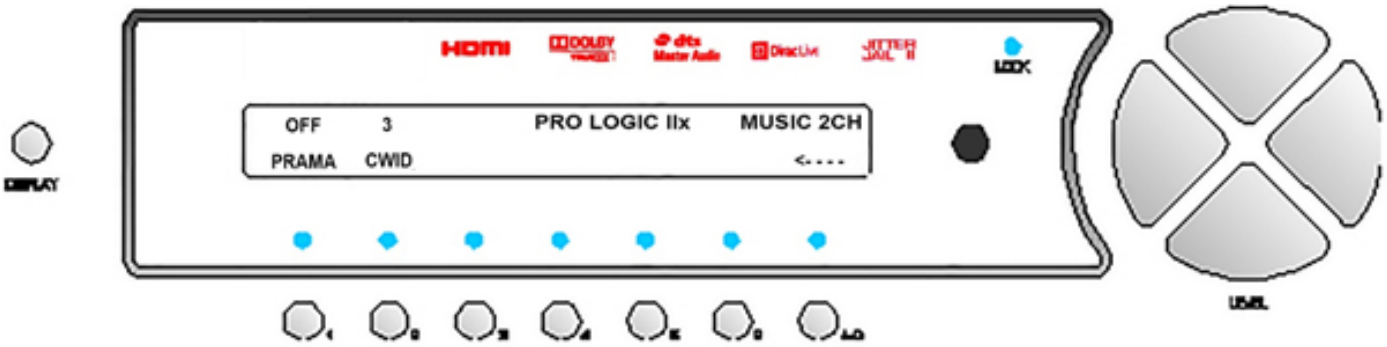


Figure 43- Front Panel Display of the SETUP/INP *Page 2*/DOLBY PLIIx Submenu

The Panorama (**PRAMA**) feature, when **ON** (button # **1** in figure 38a), extends the front stereo image to include the side or surround speakers. This gives a "wraparound" effect with sidewall imaging. It is particularly effective for recordings which have strong left - or right- channel elements in the mix, as these are detected and accentuated by the Panorama process. The Panorama feature is typically intended for use with Music Mode. See figure 41c

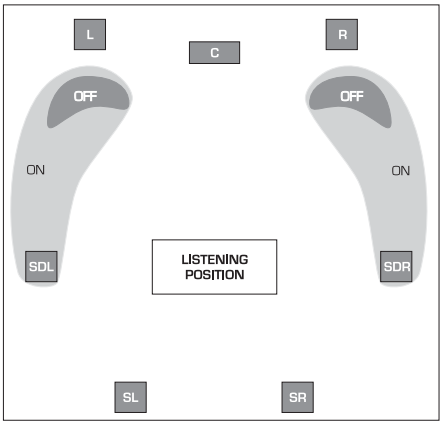


Figure 43a – Diagram of Panorama Effect

With Pro Logic IIx decoding, dominant center signals can come only from the center speaker. The Center Width (**CWID**) control allows variable adjustment of the center image so that it may be heard only from the center speaker; only from the left/right speakers as a phantom image; or from all three front speakers to varying degrees. The range is from 0 to 7. See figure 42b.

When all settings are made, pressing the **SETUP** button 2 times returns the user to the **INPUT SELECT** menu.

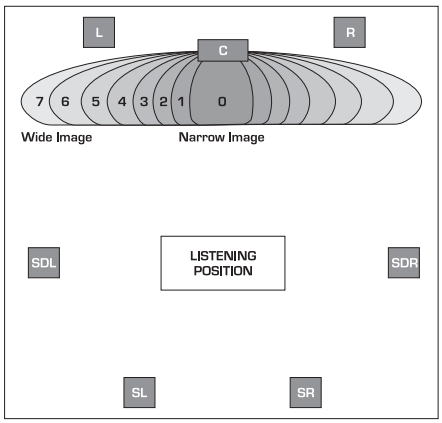


Figure 43b – Diagram of Center Width Values

Setup DTS

To access the DTS Setup submenu shown in figure 42, press **SETUP**/**INP**/**A-D**/**DTS**.

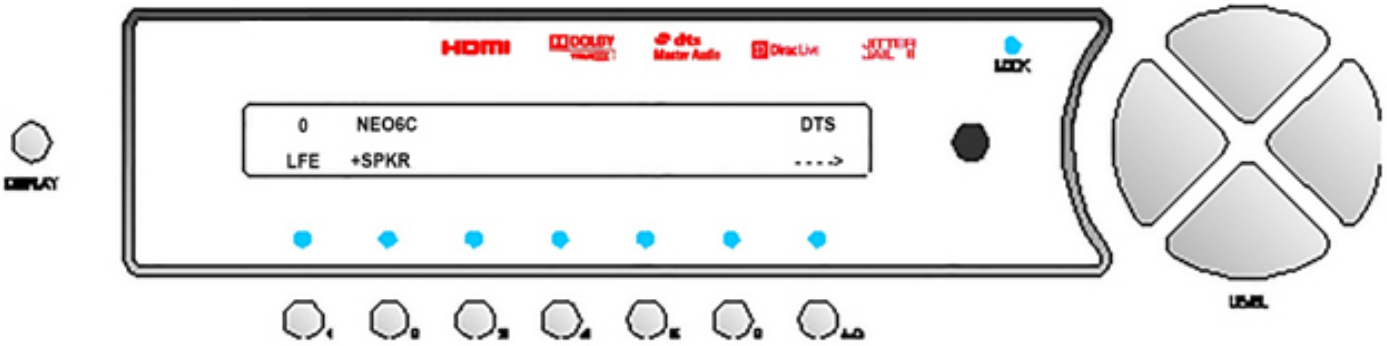


Figure 44 - Front Panel Display of the SETUP/INP *Page 2*/DTS 1 Submenu

This submenu allows the user to adjust the **LFE** level and additional speaker source, when the **MODE** is DTS, for the currently selected input. When the Mode is not DTS, settings in this submenu will have no effect. As with the settings in the Dolby Digital Setup submenus, these DTS settings are interactive with those in the **SETUP/INPUT/LEVELS** and **SETUP**/**INPUT**/**DELAYS** submenus.

Button **# 1** controls the **LFE** gain setting for DTS sources containing an **LFE** (low frequency effects) channel. i.e. 5.1, 6.1 or 7.1 signals. This channel commonly contains sound effects such as explosions, but may also contain soundtrack information. Casablanca IV offers the user an **LFE** range of between **OFF** and **-30** for this setting. *The primary use for this setting is to correct LFE level in some early DTS CD's that did not include the -10 dB offset typically used for recorded media. If a DTS CD is extremely bass heavy, change this setting to -10*. Also, **OFF** 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, the preferred setting, maintains the **LFE** setting in proper proportion to the remaining five discrete channels. Any other setting lowers the normal **LFE** level, in dB, by the value set.

If the incoming signal is DTS 5.1, and the user desires to create Surround Back, use the **+SPKR** (Additional Speakers) parameter to indicate which **MODE** will be used in their creation. The modes available are:

VFD	DEFINITION
OFF	No additional speaker signals will be created.
DTSES	DTS ES
NEO6M	DTS NEO:6 Music
NEO6C	DTS NEO:6 Cinema
PL2MU	Dolby Pro Logic IIx Music
PL2MV	Dolby Pro Logic IIx Movie

Table 7 – Additional Speaker Modes for DTS Source.

Note: The **+SPKR** setting has no effect (is bypassed) if the mode is DTS 96/24, DTS ES Matrix or Discrete.

Pressing the **A-D** button once will take the user to the second DTS Setup page, shown in figure 45.

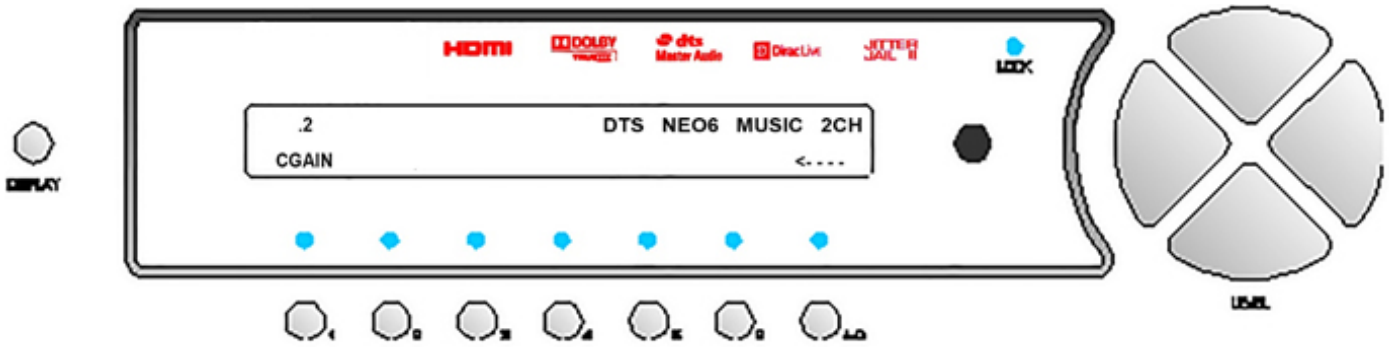


Figure 45 - Front Panel Display of the SETUP/INP *Page 2*/DTS 2 Submenu

In Cinema Mode, for Left/Right film soundtracks, sounds steered to the Center is subtracted from the Left/Right channels. (In Music Mode, the Center is never fully subtracted from the Left/Right channels).

CGAIN is the parameter which controls the amount of subtraction. It varies between **0** and **0.5** in steps of 0.1 and the default value is **0.2**.

When **CGAIN** is set at **0**, nothing is subtracted from the Left and Right channels. When **CGAIN = 0.5**, the Center channel is subtracted from the Left and Right channels at -6dB for each channel. The signal level sent to the Center channel is not affected by **CGAIN**. The **CGAIN** parameter will have an effect only when the mode is NEO:6 Music.

When all settings are made, press **SETUP** 3 times to return to the **INPUT SELECT** menu.

Master Delay

With video processing, there can be a delay in the output of the video signal, causing the audio and video to be out of sync. The Casablanca IV allows the user to set an overall, or master, audio delay in order to re-sync the audio and the video signals. In the **SETUP**/**INP** ***page 3*** submenu, press button **# 2** and use the **LEVEL UP**/**DOWN** buttons to adjust the audio delay time until the video appears to be in sync with the audio. The range is **0** to **320** mS. Each digit in the display represents 10 mS. The default setting is 0.

When complete, press **SETUP** twice to return to the **INPUT SELECT** menu.

Six Shooter

The Six Shooter is an external preamp/analog switcher that allows the 6 analog output channels of an SACD or DVDA player to integrate with the Casablanca IV. There are 3 inputs and one output on the Six Shooter. The first two inputs are designed to receive 6 channels of analog SACD or DVDA signal. The third input receives the first 6 output channels from the Casablanca IV (L/R/C/LS/RS/S1). The output of the Six Shooter is connected to the amplifier inputs.

The first two inputs of the Six Shooter contain high-quality analog volume controls. The volume for these two inputs is controlled by the Casablanca IV. Volume for the third input (first 6 channels of the Casablanca IV) is done in the Casablanca.

To install the Six Shooter, select the appropriate **INPUT SELECT** button on the Casablanca IV, then press **SETUP\INP\A-D\6**. Using the **LEVEL UP\DOWN** buttons, select the correct Six Shooter input for this INPUT SELECT button. When the Six Shooter is installed, each **INPUT SELECT** button must have a value of either **1** (Input #1 of the Six Shooter), **2** (Input #2 of the Six Shooter), or **3** (Casablanca IV pass-through for all signals processed by the Casablanca IV).

1 will route the Six Shooter's # 1 source to the amplifiers.
2 will route the Six Shooter's # 2 source to the amplifiers.
3 will route the Casablanca IV directly to the amplifiers.

Next, for each Input Select button set to either **1** or **2**, go to the Audio Source menu (**SET-UP/INP/SOURCE**) and set all 3 jacks to **OFF**.

Press **SET-UP** 3 times to return to the **INPUT SELECT** menu.

Two Six Shooters may be used with the Casablanca IV to reproduce up to 12 channels.

Please refer to Appendix B for a Six Shooter wiring diagram.

Setup Miscellaneous

Press **Button #7, (Figure 40**) to enter the **MISC** submenu, shown in figure 45.

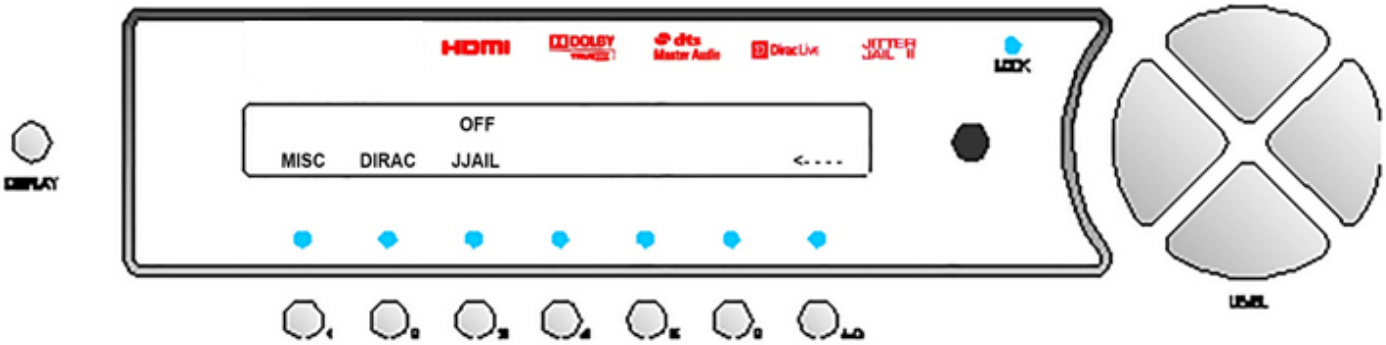


Figure 46 - Front Panel Display of the SETUP/INP *page 3*/MISC Submenu

Naming the Current Input Select button

This parameter sets the name (VFD) for the currently selected input. Select the input to rename. The letters **VFD** will be displayed in the lower right above the **A-D** button, indicating that the name in the VFD is to be edited. VFD 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. Press **SETUP** once to return to the **SETUP/INP *page 3*** submenu.

Turning Dirac Live® 96 kHz On and Off
This parameter turns Dirac Live 96® kHz Room Correction and Optimization on or off and selects which of the two filter banks. A or B, should be used for Dirac playback. *Currently only Filter A is enabled on the Casablanca IV.*

Turning Jitter Jail™ II On and Off
This parameter turns on Theta Digital's proprietary Jitter Jail II time correction circuitry. Jitter and its attendant distortion is caused by timing errors in the digital data stream. Jitter Jail II engages a precision playback clock to reduce any such distortion to below audible levels.

Setup Global

This function provides access to a series of submenus that will allow the configuration of the entire system (not by input).

Press **SETUP**, then **GLOBAL** (button **# 2**). The first page of the Global submenu is displayed, as shown in figure 46.

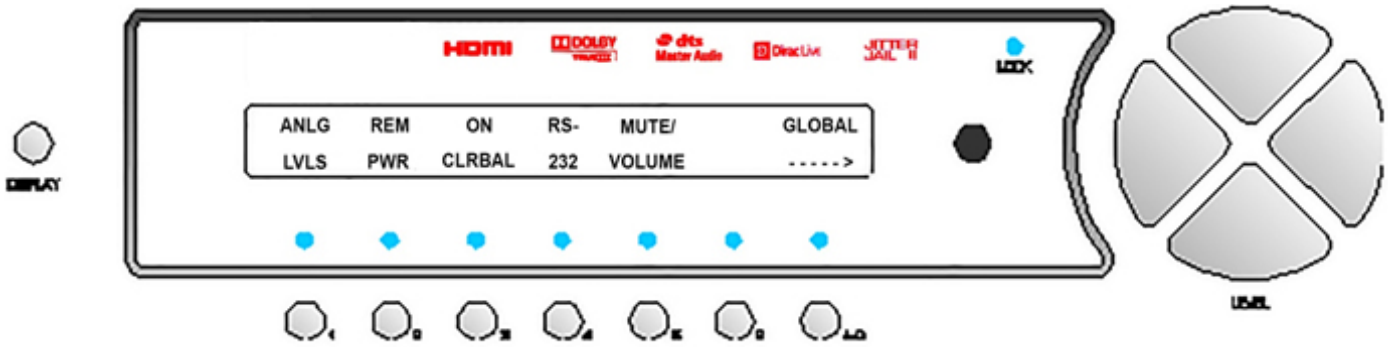


Figure 47 - Front Panel Display of the SETUP/GLOBAL *page 1*/ Submenu

Analog Input Levels

From the **SETUP/GLOBAL *page* 1** menu, press button **# 1** to bring up a submenu that allows adjustment of the analog input levels. This submenu is shown in figure 47.

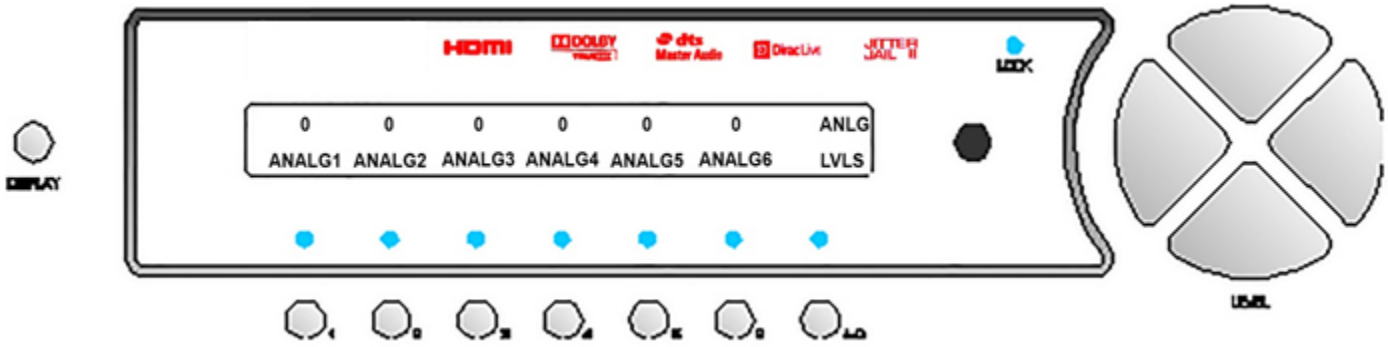


Figure 48 - Front Panel Display of the SETUP/GLOBAL/ANLG LVLS Submenu

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. The allowable relative range is +19 to -14dB in 1dB increments, then steps to -16, -18 and -22dB.

Analog output levels may vary considerably for different input sources, but program material from a given input source should be more relatively consistent. Therefore the **ANALOG** input **LEVEL** for a given source should not have to be adjusted very often. If the **ANALOG LEVEL** LEDs are not lit during the loudest passages from an analog source, the user could increase the **ANALOG** input **LEVEL** for that source in order to ensure a good signal to noise ratio. Another way to do this is in the 2nd Balance menu, however it is temporary. If that particular source were recorded at a particularly high or low level, the analog input level can be temporarily adjusted in the 2nd **BALANCE** menu

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

Remote Power Jacks

The **REMOTE POWER** jack and three **MAIN POWER** jacks on the rear panel output 12V jacks can be programmed to, output either continuous **DC** or a **PULSE**. This feature is used to automatically activate/deactivate other system components such as power amplifiers, etc, when the Casablanca IV is taken in/out of Standby. From the first **SETUP**/**GLOBAL** page, press button **# 2** to access the **REMPWR** submenu shown in figure 48.

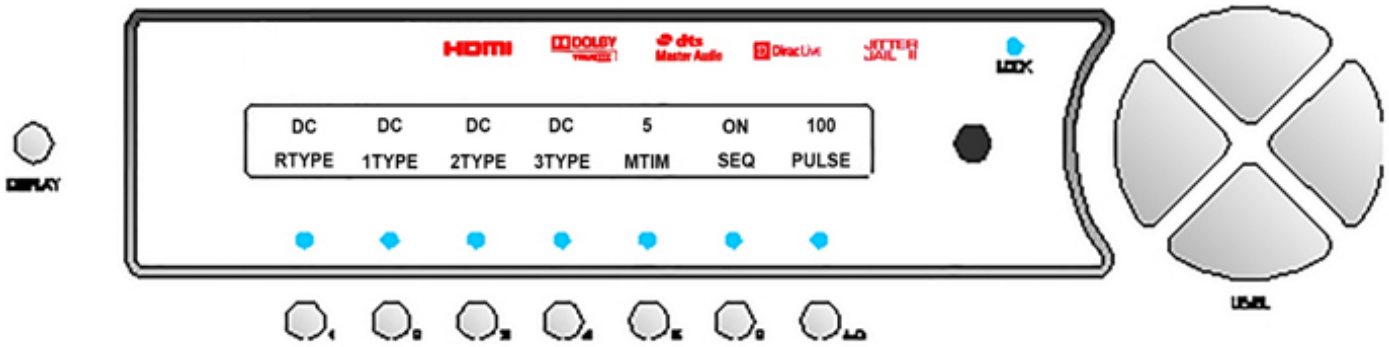


Figure 49 - Front Panel Display of the SETUP/GLOBAL/REMPWR Submenu

The first four 3.5 mm jacks on the rear panel (remote power and main power 1 through 3) are +12V pulse or DC current limiting* outputs (tip = hot, sleeve = ground) intended to be connected to devices which feature 12V control voltage inputs.

The first jack labeled "REMOTE", is controlled by pressing **REMOTE** on the hand held remote or front panel. It will turn off when the Casablanca IV is put into standby mode.

Use button **# 1** to indicate whether the output of the **REMOTE** power jack should be 12VDC (**DC**) or a 12V pulse (**PULSE**). The specification sheet for the device being triggered should contain information as to which type of signal it requires.

The output signal of the remote power jack does not need to be delayed since its activation is by the user via either the hand held remote or front panel **REMOTE** button.

Use buttons **2**, **3** and **4** to set the output (**DC** or **PULSE**) for each of the three **MAIN POWER** jacks on the rear panel.

The **MAIN POWER 1** jack is activated immediately upon exiting the standby mode (pressing the front panel or the hand held remote **POWER** button), the **MAIN POWER 2** jack is activated *X* seconds after exiting standby and the **MAIN POWER 3** jack is activated *X* times 2 seconds after exiting standby. *X* represents the time, in seconds, that is set by pressing button **# 5** – **MTIM**, or Main [Delay] Time. This is useful for sequencing the activation of high power components such as amplifiers. When the Casablanca IV is put into standby, it can be set to turn off the **MAIN POWER** jacks simultaneously or sequenced in the opposite order they were activated. Sequencing is accomplished by setting **SEQ** (button **# 6**) to **ON**. The default is **OFF**, which will turn off all triggers simultaneously when the Casablanca IV is put into standby.

If the **TYPE** for any rear panel power jack is set to **PULSE**, the duration (in milliseconds) of this pulse can be set by the user. Select the **A-D** button and use the **LEVEL UP**/**DOWN** buttons to change the pulse duration.

*The current limiting resistor is 33 ohms, 0. 5W. This means that the more current a triggered device draws, the more the output voltage will be 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 Casablanca IV's maximum output current is 100mA. Using the above formula, with a 100mA draw, the output voltage will be 8.7 volts. Most triggered circuits have virtually no current draw.

Clear Balance (Temporary Settings Control)

Any changes in the **BALANCE** menus are, by default, temporary. When a different **INPUT SELECT** button is pressed or the Casablanca IV is put into standby, all changes will be reset to zero. This feature can be overridden by pressing

button **# 3** in the first **SETUP**/**GLOBAL** page (figure 46 on page 69) and set to **OFF**. When this parameter is set to **OFF**, all **BALANCE** menu settings will remain as the user changes inputs or puts the Casablanca IV into standby.

RS232

In the first **SETUP**/**GLOBAL** page, press button **# 4** to access the **RS232** submenu shown in figure 49..

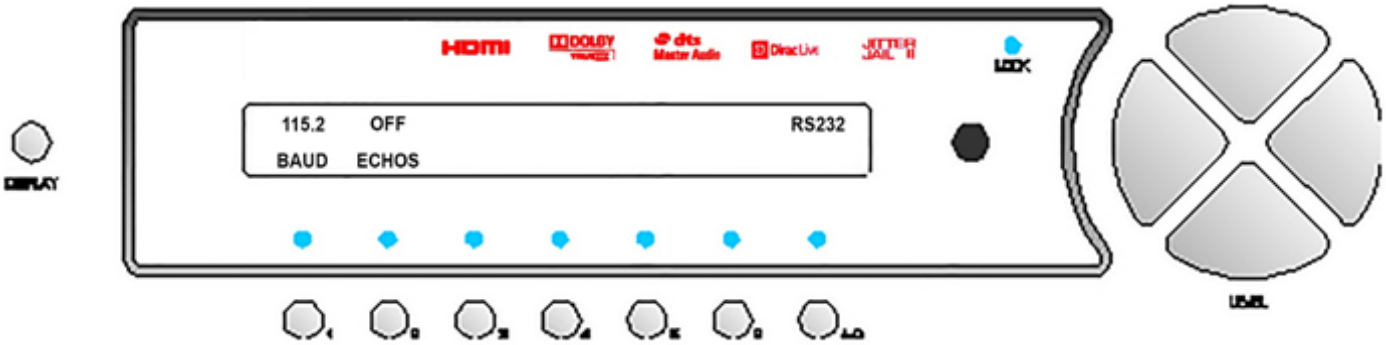


Figure 50 - Front Panel Display of the SETUP/GLOBAL/RS232 Submenu

Press button **# 1** (**BAUD**) and use the **LEVEL UP**/**DOWN** buttons to select the Baud rate that matches that of the RS232 controller. The factory default value is 115.2K. ***The recommended setting is 9600.***

The Casablanca IV can be set to automatically feedback to the RS232 port. Button **# 2** (**ECHOS**) [Echo 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. This can be done by selecting a "Status Level", which means if any Casablanca IV 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 Casablanca IV and the touch-panel controller, to keep them synchronized. If this value is **OFF**, no parameter change information will output to the RS232 port.

Status levels 1, 2, 3 and 4 permit increasing levels of data to be sent to the RS232 port. If RS232 is not being used, ensure that the Echo Status (**ECHOS**) parameter is set to **OFF**. Higher settings can slow the operation of the Casablanca IV.

An RS232 Protocol addendum which describes all pertinent RS232 information, including values contained within each Status Level is available for download from the Theta Digital website, in the "Library" section. (www.thetadigital.com)

The recommended settings are 9600 Baud with Echoes set to 2.

Mute/Volume

This submenu provides the user with a method of setting volume and mute control parameters. Press **SETUP**, **GLOBAL**, then button **# 5** (**MUTE/VOLUME**). This submenu is shown in figure 50.

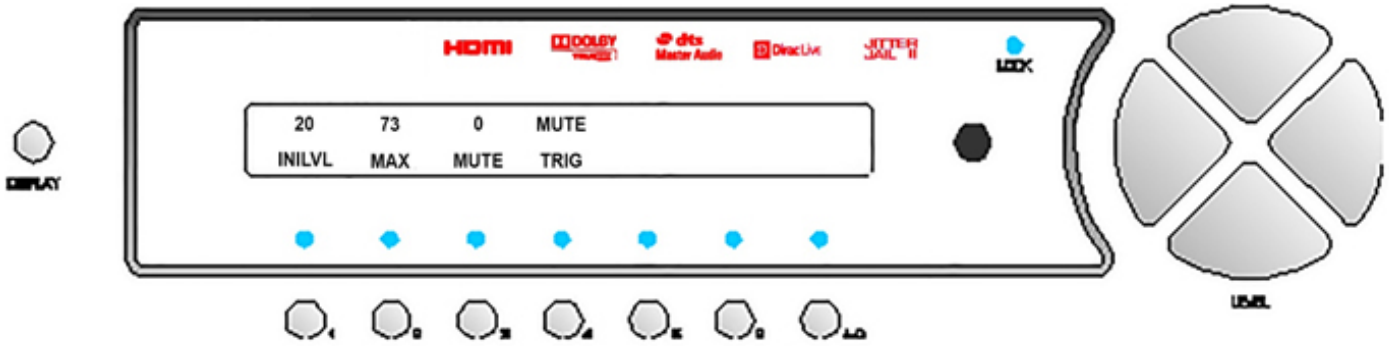


Figure 51 - Front Panel Display of the SETUP/GLOBAL/MUTE-VOLUME Submenu

Initial Power-On Master Volume

Button **# 1** (**INILVL**, or Initial Level) allows the user to store the initial master volume setting that the Casablanca IV defaults to out of standby.

Maximum Overall Level

Button **# 4** (**MAX**) allows the user to set a maximum master volume level. This is especially useful in a household where young relentless children and smart pets have access to the system or the speakers are very efficient.

Changing the Default MUTE Level

The user can set the master volume level that the Casablanca IV goes to when the front panel or hand-held remote **MUTE** button is pressed. Editing this parameter is accessed by pressing button **# 5**.

MUTE Off Trigger

The Casablanca IV can be un-muted in 2 ways. Setting the parameter (accessed via button **# 6**) to **MUTE** allows only the **MUTE** button to un-mute the Casablanca IV. Setting this parameter to **M+V** (**MUTE** and **VOLUME**) allows both the **MUTE** and **LEVEL UP**/**DOWN** buttons to un-mute.

Press the **SETUP** button once to return to the **SETUP**/**GLOBAL** *page 1* submenu. Press the **A-D** button once to go to the second **GLOBAL** page, shown in figure 51.

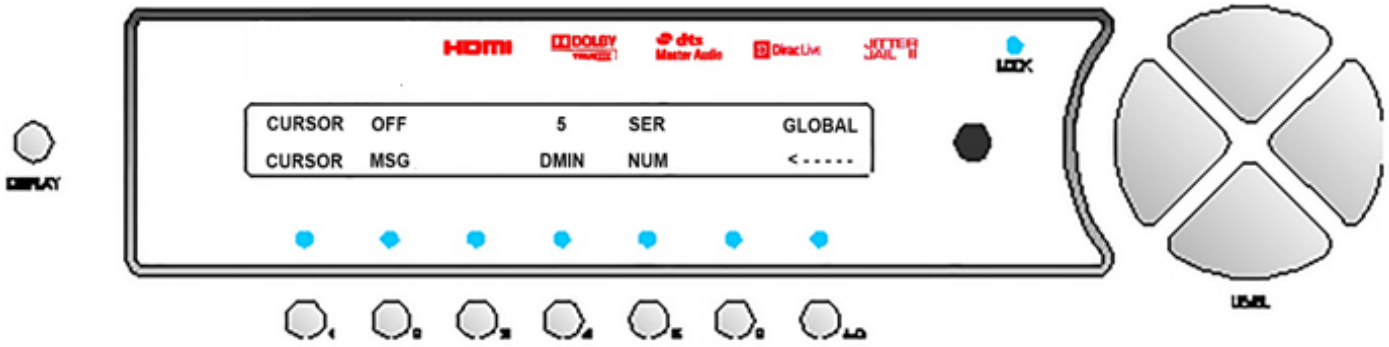


Figure 52 - Front Panel Display of the SETUP/GLOBAL *page 2* Submenu

Cursor Type

When editing jack or input select names, the VFD character being edited can be indicated by blinking, a flashing cursor below it, both, or no indication. This preference is set in the **SETUP**/**GLOBAL** *page 2* submenu, button **# 1**.

Displaying Mode Change Messages

When the Casablanca IV receives a Dolby Digital or DTS signal on the currently selected input and the **MODE** is not the one required to process these signal formats, a message will briefly appear on the VFD stating that the Casablanca IV has received a certain format and is temporarily changing the **MODE**. This message does NOT come up by default but can be turned on by pressing button **# 2** and changing the value to **ON**.

Note: If the default **MODE** is **DOLBY DIGITAL** or **DTS** and a 96K signal is received, the Casablanca IV will momentarily display a message (if the **MSG** parameter is set to **ON**) indicating that it is receiving a 96K signal and [temporarily] changing the current mode to **STEREO**. Neither Dolby Digital or DTS can process a standard 96K signal, therefore the **MODE** is changed to **STEREO** in order to have audio output. The user can change this mode, after it has been changed to **STEREO**, by using the **MODE** button to select a different and applicable **MODE**.

Display Time

The Casablanca IV's display brightness will automatically dim to ¼ if no button has been pressed for *X* time. *X* is the value, in minutes, from the **DTIM** (Display Time) parameter under button **# 4** of the 2nd Global menu page.

Serial Number

Press button **# 5** to display the serial number.

* * *

When all settings are complete in this submenu, press **SET-UP** twice to return to the **INPUT SELECT** menu.

Macros

The Casablanca IV contains several useful macros that allow the user to perform multiple tasks at the press of a button. To enter the Macros submenu, press **SETUP**, then **MACROS** (button **# 3**). The Macros submenu appears, as shown in figure 52.

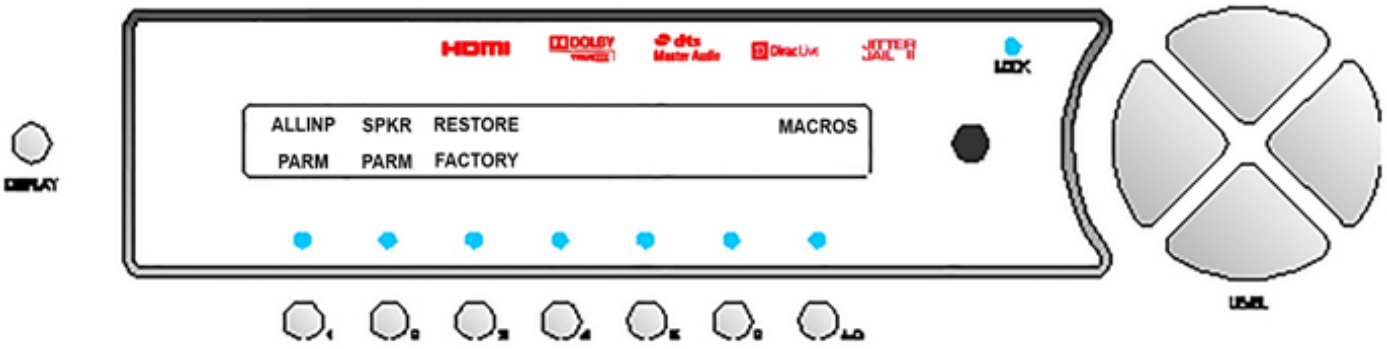


Figure 53 - Front Panel Display of the SETUP/MACROS Submenu

Copy Macros

Buttons **1** and **2** are "copy" macros. **ALLINP** (button **# 1**) allows the user to copy all **INPUT SELECT** parameters from the currently selected input to one or all input select buttons. To copy to a specific input select button, the Casablanca IV will prompt the user to select the **INPUT SELECT** button to copy to. If the currently selected **INPUT** parameters are to be copied to input select buttons **7**-**12**, press the **A-D** button when given the choice of the destination **INPUT SELECT** button to be copied to.

If a password protected **INPUT SELECT** is being copied to, the user will be prompted to enter that password.

Note: When copying all **INPUT** parameters to other **INPUT SELECT** buttons, the **SOURCE** (audio and video) settings will not be copied.

Typically when setting up the Casablanca IV in the system for the first time, speaker configuration settings established for the first **INPUT SELECT** button will be virtually the same for all other **INPUT SELECT** buttons. This macro allows only the speaker configuration, levels and delays to be copied to one or all **INPUT SELECT** buttons.

Restore Macros

Button **# 3** allows the user to restore the factory settings in a variety of ways. The Restore menu is shown in figure 53.

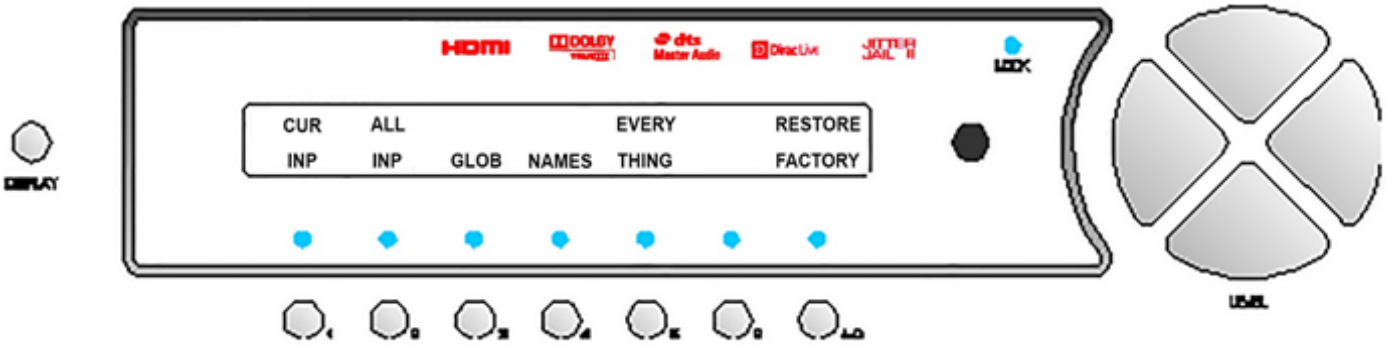


Figure 54 - Front Panel Display of the SETUP/MACROS/RESTORE FACTORY Submenu

In this submenu, button **# 1** allows the user to restore factory **INPUT** parameters to the currently selected input button. The input name will not be changed.

Button **# 2** will restore factory **INPUT** parameters to all 12 **INPUT SELECT** buttons. Input select names will not be

changed.

Button **# 3** will restore all factory **GLOBAL** menu settings.

Button **# 4** will restore all factory **NAMES**. This includes jack names and **INPUT SELECT** button names.

Button **# 5** will restore all factory settings, **INPUT**, **GLOBAL** and **NAMES** to the Casablanca IV.

Before any macro is executed the user will be asked “Are you sure you want to perform this macro?”. Press **YES** (**A-D** button) or **NO** button **# 6**). The Casablanca IV will prompt “Complete”. Press **OK** (**A-D** button) to return to the Macros menu.

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, the center and subwoofer speaker levels, the shelf **EQ**, and a relative adjustment of the analog input level, in order to compensate for distinct program material characteristics.

*The parameter values in the two **BALANCE** pages are, by default, temporary. When the user presses a different **INPUT SELECT** button or puts the Casablanca IV into standby, changes made will revert to **0**. This feature has an override, (**CLRBAL**), which is accessed via the **SETUP/GLOBAL** submenu, button **# 4**.

The first page of the balance menu is shown in figure 54 and the second in figure 55.

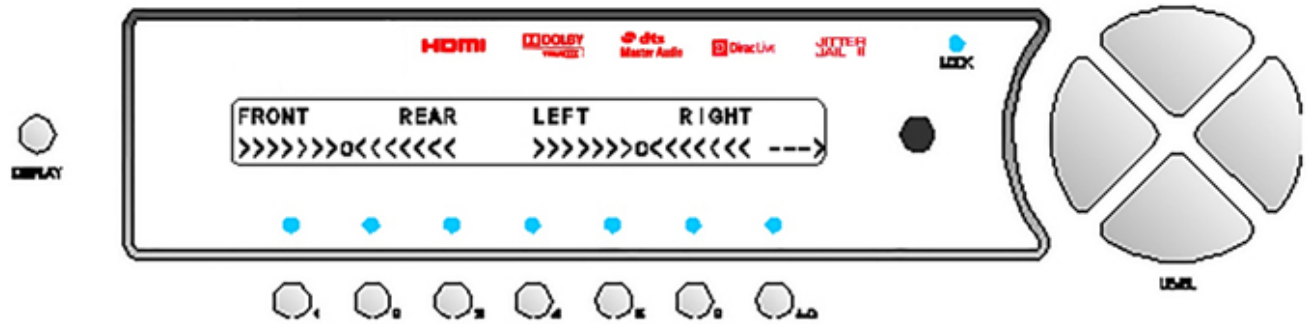


Figure 55 - Front Panel Display of the BALANCE *Page 1* Menu

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** submenu. **LEVEL LEFT**/**RIGHT** adjusts the Left/Right balance and **LEVEL UP**/**DOWN** adjusts the Front/Rear balance.

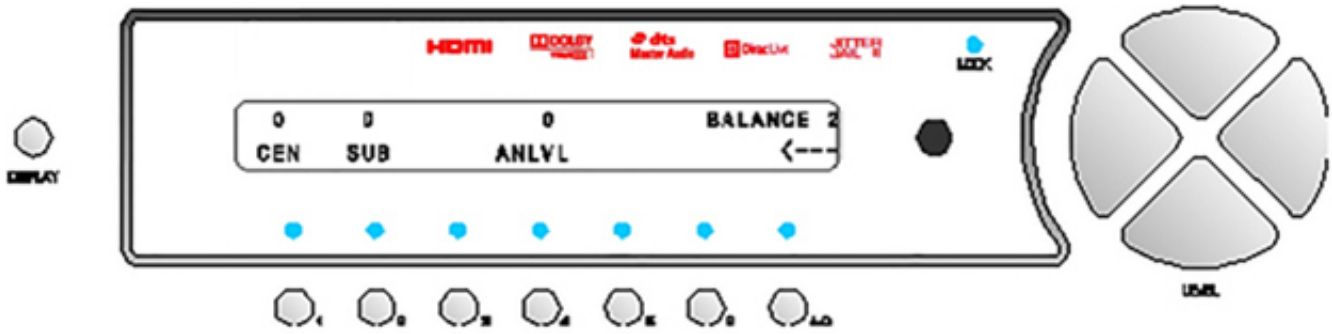


Figure 56 - Front Panel Display of the BALANCE *Page 2* Menu

Pressing the **A-D** button once will reveal the second **BALANCE** page, which will allow temporary level changes to the center (**CEN**) speaker, subwoofer (**SUB**), **EQ** and analog input level (**ANLVL**).

Center and Sub Balance

Press button **# 1** to adjust the center level and button **# 2** to adjust the subwoofer level.

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**/**GLOBAL**/**ANLG LVLS** (analog levels) menu.

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

STATUS Function

This feature, accessible from the hand held remote or RS232 control device, provides the user with a 'quick view' of the most pertinent current settings of the Casablanca IV. It is available from any menu or submenu by pressing the **STATUS** button. While viewing the Status pages, the **INPUT SELECT** buttons (**1** - **6**) are inactive. Pressing a function button will clear the **STATUS** display and show the current function menu.

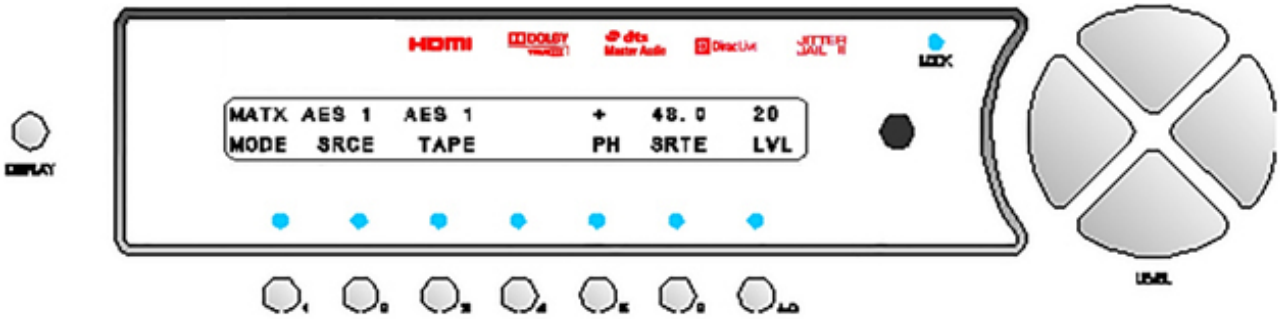


Figure 57- Front Panel Display of the STATUS Display

When the **STATUS** display is activated, the following will always appear in the VFD, as shown in figure 59.

- The current **MODE** (Default or temporary).
- The currently selected input jack name (**SRCE**, or Source).
- The analog **TAPE OUT** audio source to be recorded, by Input jack name.
- The **PHASE** parameter value of **+** (0°) or **-** (180°).
- The Sample Rate (**SRTE**) of the signal currently being received.
- The Master Volume (**LVL**) setting.

Press the **A-D** button once to display the Dolby Digital Status page, an example of which is shown in figure 60.

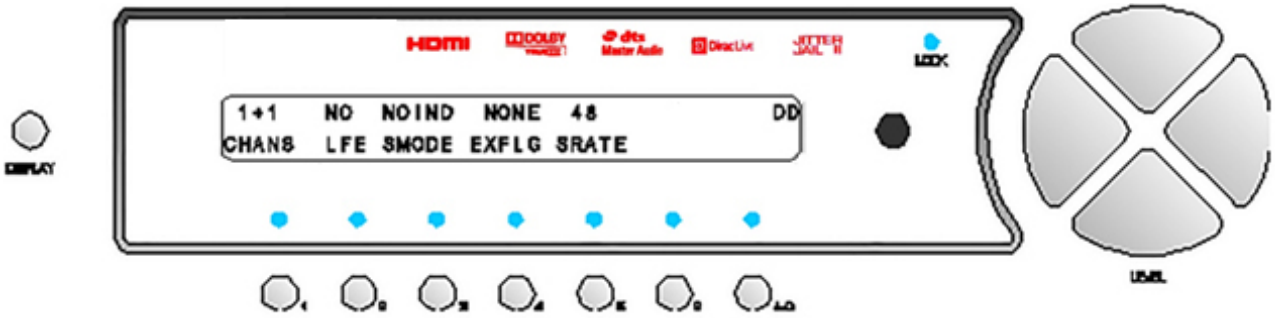


Figure 58 - Front Panel Display of the STATUS/Dolby Digital Display

The Dolby Digital status displays information that may be embedded in the Dolby Digital datastream. The information can be correct only if a Dolby Digital source is active. Each parameter on the first page is described below:

Channels (**CHANS**): Displays the number of main channels in the source signal.

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 **2CHEN** and **2CHNEN** for Casablanca IV's use of this parameter. This can be found on page 66.

Dolby Digital EX Flag (**EXFLG**): Displays whether or not there is a flag in the incoming Dolby Digital signal, indicating whether the signal is EX encoded or not.

Sample Rate (**SRATE**): Displays the sample rate.

Press the **A-D** button once more to display the DTS Status page, an example of which is shown in figure 65.

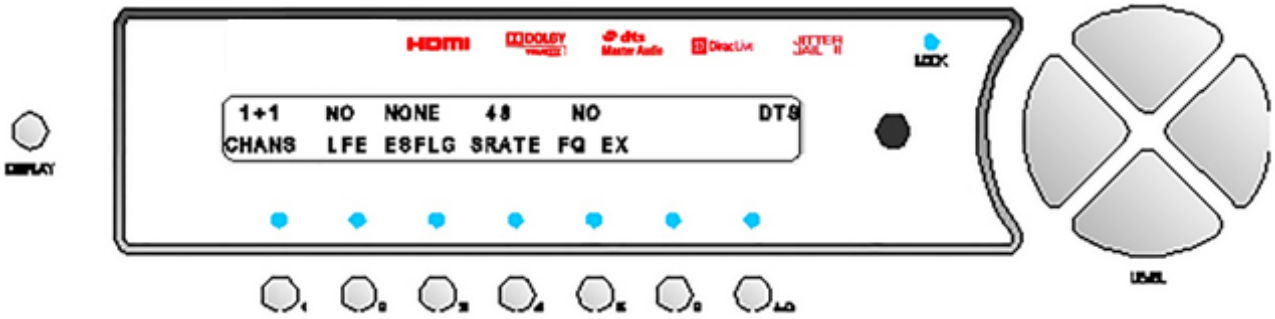


Figure 59 - Front Panel Display of the STATUS/DTS Display

Each parameter on the DTS Status page is described below:

Channels (**CHANS**): Displays the number of main channels in the source signal.

LFE: Displays whether an LFE track is present or not.

DTS ES Flag (**ESFLG**): Displays whether or not there is a flag in the incoming DTS signal, indicating whether the signal is ES encoded or not.

Sample Rate (**SRATE**): Displays the sample rate.

Frequency Extension (FQ EX): Indicates whether the 96K signal is native or doubled.

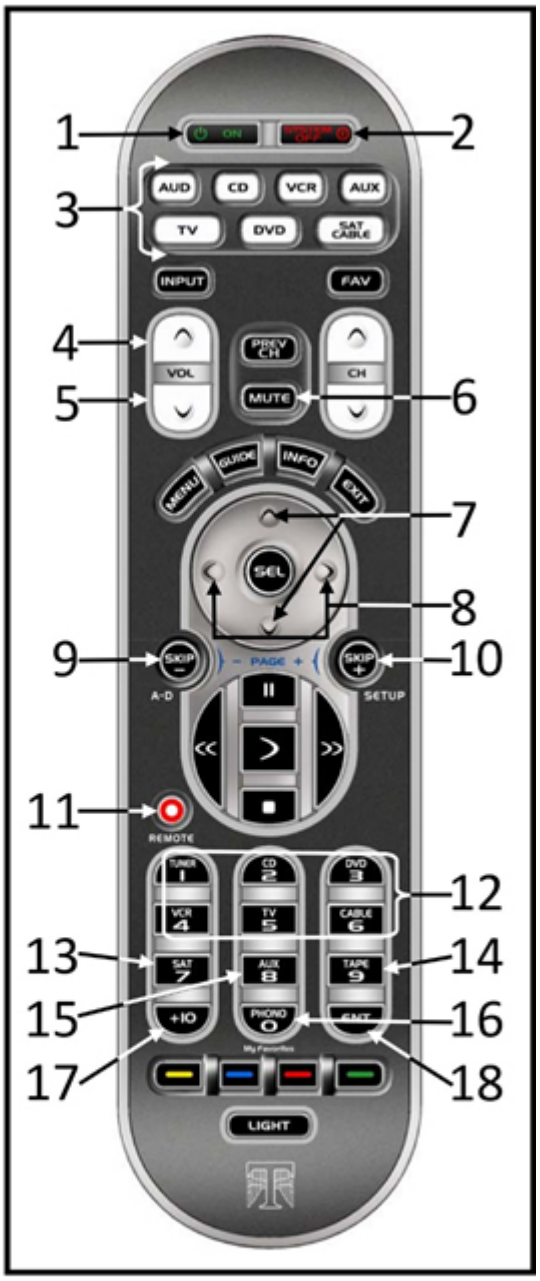
Continuously pressing the A-D button will cycle between the 3 Status pages.

Press the **STATUS** button once to exit the Status pages.

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 and to put the unit into operational mode.
2. **OFF.** Pressing this button will place the Casablanca III HD into standby mode, turning off the VFD and muting all audio outputs.
3. **PAGE SELECT.** Chooses the unit to be controlled by this remote.
4. **VOLUME UP.** Raises the master volume for all outputs. Also increments parameter values in most edit modes and shifts **FRONT/REAR** audio in the first **BALANCE** menu.
5. **VOLUME DOWN.** Lowers the master volume for all outputs. Also decrements parameter values in most edit modes and shifts **FRONT/REAR** audio in the first **BALANCE** menu.
6. **MUTE.** Mutes all analog audio outputs except the **TAPE OUT** jacks. Press again to disable muting.
7. **SELECT** + and –. Incrementally changes the active **INPUT SELECT BUTTON.**
8. **LEVELS LEFT** and **RIGHT.** Shifts the audio balance to the left or right in the first **BALANCE** page; used to adjust the **MASTER** volume level when in most submenus; used to change **INPUT SELECT** pages.
9. **A-D.** Sequences through input jacks assigned (mapped) to the active **INPUT SELECT** button. Also toggles between menu pages.
10. **SETUP.** Accesses submenus 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 much more.
11. **REMOTE.** Activates/deactivates the **REMOTE POWER** jack on the rear panel.
12. **INPUTS.** Individual buttons which select the desired input. Within a function's submenu page(s), these buttons select sub functions to edit. When pressed, the corresponding LED on the front panel is activated.
13. **DISPLAY.** Temporarily overrides the VFD display brightness level.
14. **TAPE OUT.** Used to route audio signals to the **TAPE OUT** jacks.
15. **PHASE.** Inverts the phase (0/180°) of all speaker outputs.
16. **STATUS.** Displays the current status of the Casablanca III HD on the VFD, and on the video monitor if optional video card is installed and video display is enabled.
17. **MODE.** Activates/deactivates the **MODE** select pages for currently selected input.
18. **BALANCE.** Activates the **BALANCE** menus allowing a temporary balance configuration to be set in order to adjust for different program characteristics.



Note: when operating the hand-held remote control, point it at the remote sensor on the Casablanca's front panel. The remote control can be used 3 to 20 feet (1 to 6M) from the Casablanca within 30 degrees of each side of the sensor. Exposing the remote sensor to direct sunlight or strong light may interfere with proper operation.

Figure 60 – Remote Control Button Layout

REMOTE CONTROL OPERATIONS

This section describes the functionality of the Casablanca IV using the hand-held remote only. For front panel functional descriptions, please refer to *FRONT PANEL OPERATIONS* on page 42. *Introduction to the User Interface* section on page 20 will also be helpful. Descriptions for remote buttons/functionality not covered in this section can be found in *REMOTE CONTROL LAYOUT* on page **Error! Bookmark not defined.**7. Features and functional descriptions which are common to both front panel and remote operations are covered in the *FRONT PANEL* section and therefore not repeated in this section.

Input Select Menus

When the rear panel **MAIN POWER** switch is turned on, the Casablanca IV identifies internal hardware and software, then enters standby mode (the **POWER** LED turns on).

Changing Inputs and Input Select Pages

Press buttons **1** through **6** or **SELECT UP/DOWN** to choose a desired **INPUT SELECT** button. 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 INPUT SELECT BUTTONS** to choose from. Press the **LEVEL RIGHT** button to select the **INPUT SELECT 2** menu. Press the **LEVEL LEFT** button to select the **INPUT SELECT 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 mapped to this **INPUT SELECT** button. Please refer to page 44 (*Search Order*) for important, detailed information regarding input mapping options.

Mute

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 42 and 72 (Default mute level/mute off trigger) for additional information on the **MUTE** feature. The **MUTE** feature is active in all menus.

Display

The **DISPLAY** button will toggle the VFD brightness between **OFF** ¼, ½, ¾ and **FULL** brightness. This feature will have no effect on the video display. When the VFD is turned **OFF**, the red logo LEDs also turn off.

Global Phase

Repeatedly pressing the **PHASE** button toggles the main audio outputs' phase between **0** and **180** degrees, and displays this on the monitor for approximately 1 second after being released. The **PHASE** parameter is only accessible from the remote.

STATUS Display

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

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

- The current **INPUT SELECT BUTTON NAME**.
- The current mapped input jack.
- The **MODE**.
- The **TAPE OUT** audio source.
- The **PHASE** parameter value (**0**° or **180**°)
- The Sample rate (**S RATE**) of the currently selected source.
- The **MASTER VOLUME** level.

Press the **A-D** button once to display the status of the current Dolby Digital source. Press **A-D** once more to display the status of the current DTS source.

Note that a Dolby Digital or DTS source needs to be playing in order to display the correct values on these status pages.

Please refer to page 78 for additional information pertaining to Dolby Digital Status menu and page 79 for the DTS Status menu.

Pressing the **STATUS** button once will clear the status display. Pressing a function button will clear the status display and show that 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* submenu.

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.

Please refer to page 62 for additional information regarding Dolby Digital options, page 65 for additional information regarding DTS.

* * *

After selecting a temporary mode for the current input, press the **MODE** button once more to clear the video monitor. The **MASTER VOLUME** can be controlled using the **LEVEL UP**/**DOWN** buttons in these 3 menus.

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**). Use the **LEVEL UP/DOWN** buttons to edit this parameter and select the desired default **MODE**. 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.

Displaying Mode Change Messages

As discussed in the **MODE** section of this manual, when the Casablanca IV receives a Dolby Digital or DTS signal on the currently selected input and the **MODE** is different from the incoming signal, a message will briefly appear on the VFD stating that the Casablanca IV has received a certain format and is temporarily changing the **MODE**. This message is turned off by default but can be turned on. Pressing button **# 2** and changing the value to **ON** achieves this.

Note: If the default **MODE** is **DOLBY DIGITAL** or **DTS** and a 96K signal is received, the Casablanca IV will momentarily display a message (if the **MSG** parameter is set to **ON**) indicating that it is receiving a 96K signal and [temporarily] changing the mode to **STEREO**. The user can then change this mode by using the front panel **MODE** button and selecting a different and applicable **MODE**.

Display Time

The Casablanca IV's display brightness will automatically dim to ¼ if no button has been pressed for *X* minutes. The value set in the **DTIM** (Display Time) parameter under button **# 4** of the **SETUP/GLOBAL** *page 2* menu.

Serial Number

Press button **# 5** to display the serial number of this Casablanca IV.

Six Shooter

The Six Shooter is an external device that allows the 6 analog output channels of an SACD or DVDA player to integrate with the Casablanca IV. There are 3 inputs and one output on the Six Shooter. The first two inputs are designed to receive SACD or DVDA signals. The third input receives the first 6 output channels of the Casablanca IV. The outputs of the Six Shooter are connected to the amplifier inputs.

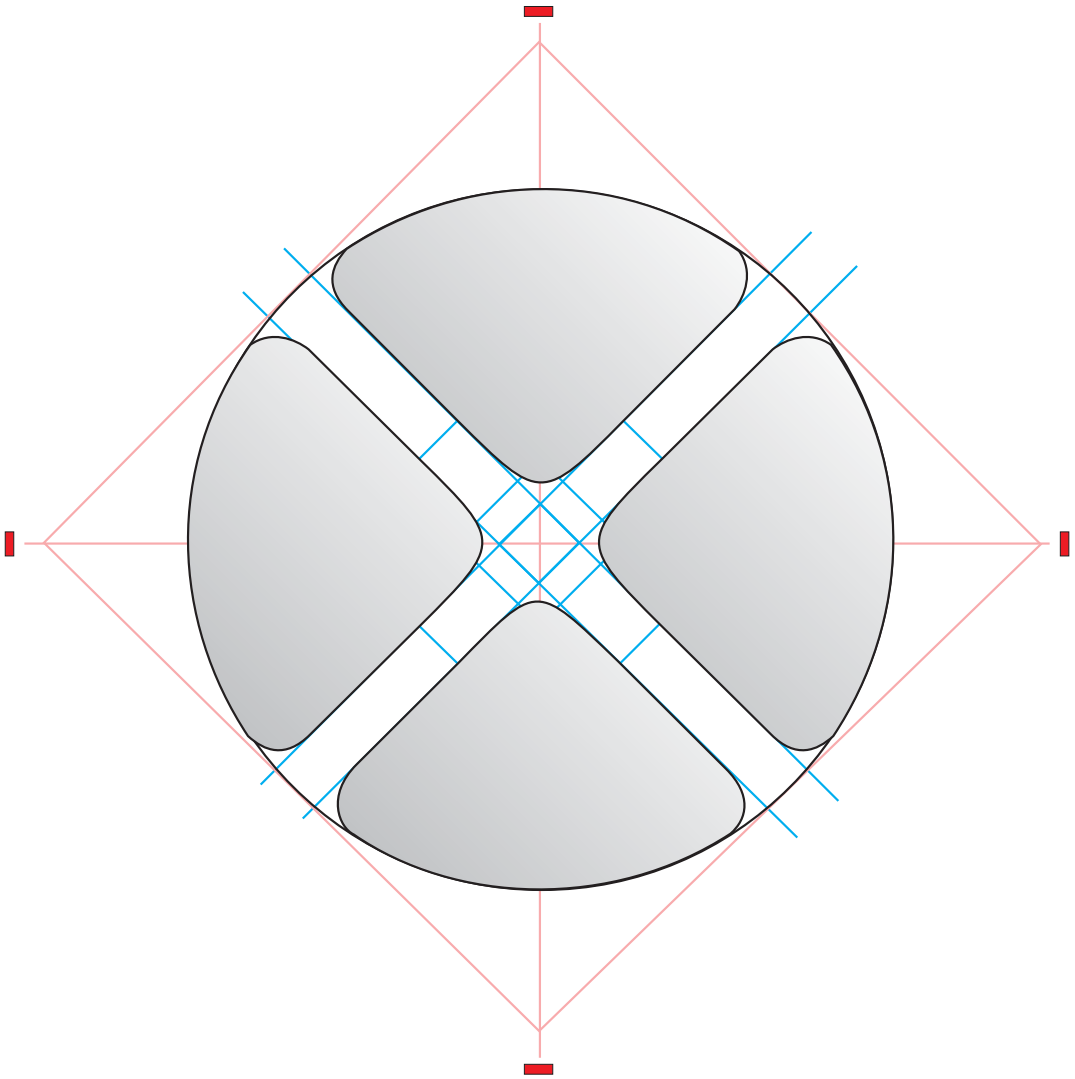
The first two-channels of the Six Shooter contain volume controls. The volume for these two inputs is controlled by the Casablanca IV.

When the Six shooter is used, the user first selects the appropriate **INPUT SELECT** button on the Casablanca IV, then press **SETUP\INP\A-D\A-D\6SHOT**. Using the **LEVEL UP\DOWN** buttons, select which Six Shooter input will be used. For all other **INPUT SELECT** buttons on the Casablanca IV, set this parameter to **3** so that the incoming signal is routed from the first 6 outputs of the Casablanca IV into Input **# 3** of the Six Shooter (which is a bypass) and then directed to the amplifiers.

Please refer to Appendix B for a Six Shooter wiring diagram.

* * *

APPENDIXES



Appendix A Troubleshooting Guide

If the Casablanca IV 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 securely connected.
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 Casablanca IV and that the wall outlet is active.
	Circuit breaker is open (AC outlet or Casablanca IV).	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** submenu, 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** submenu, 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 Subwoofer.	**SUB** is set to **0**.	Set the number of **SUB**s to reflect the current speaker configuration in the **SETUP**/**INPUT**/**CONFIG** submenu.
	The currently selected **MODE** does not support subwoofers.	Review the **MODE Function** section, detailed on pages 47 – 49 to select a **MODE** that functions for both the current input signal format as well as the desired speaker or system configuration.
	No speakers are crossed over.	Ensure that one or more speakers are crossed over in the **SETUP**/**INPUT**/**CONFIG** submenu.
	The current program material does not contain an LFE track.	N/A.

Appendix B Speaker Placement Guides

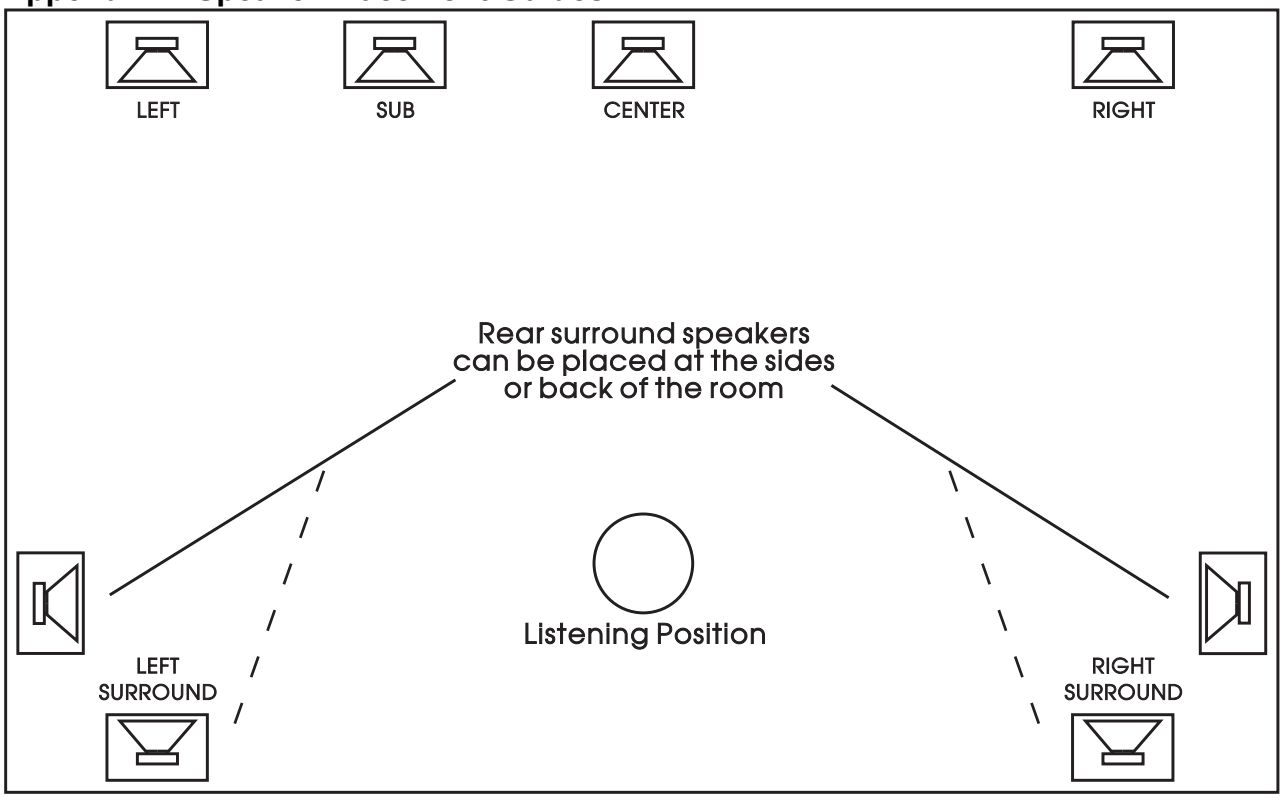


Figure 61 - Recommended Speaker Placement for Six-Channel Configuration

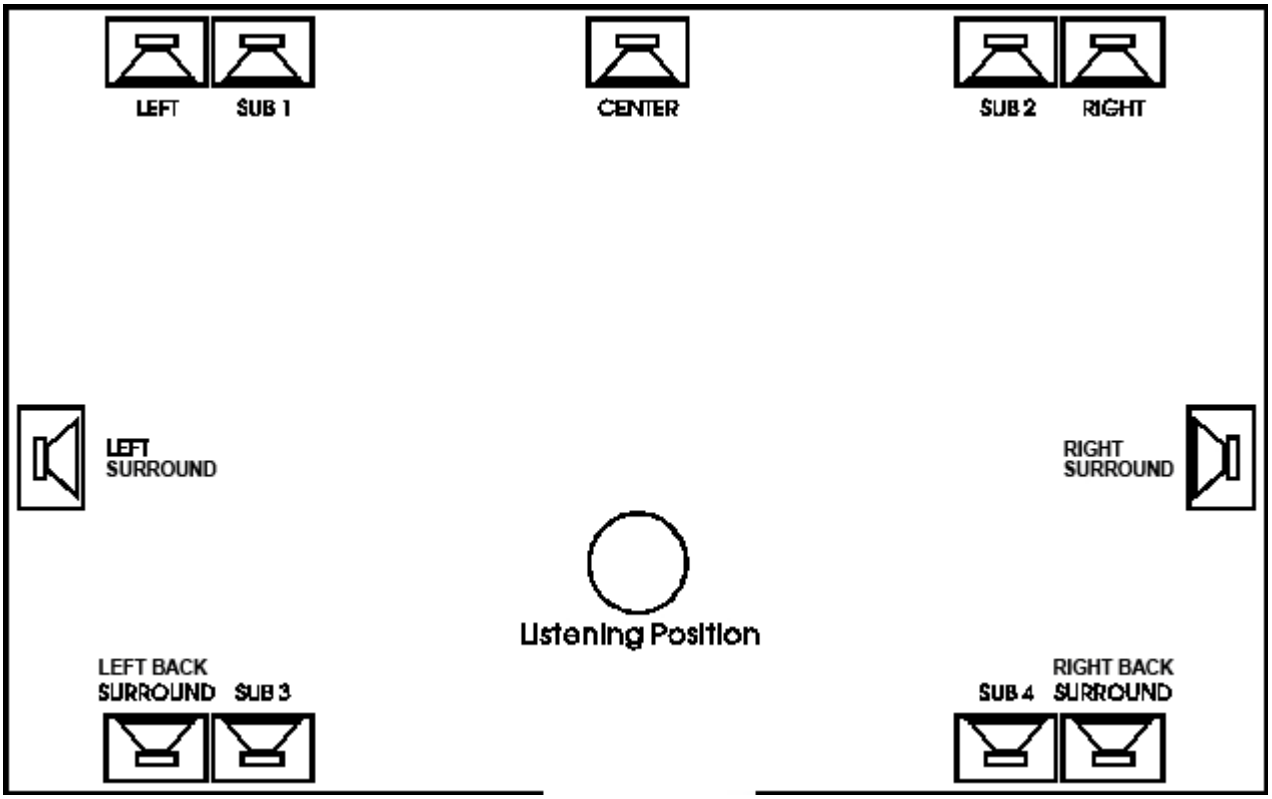


Figure 62 - Recommended Speaker Placement for Twelve-Channel Configuration

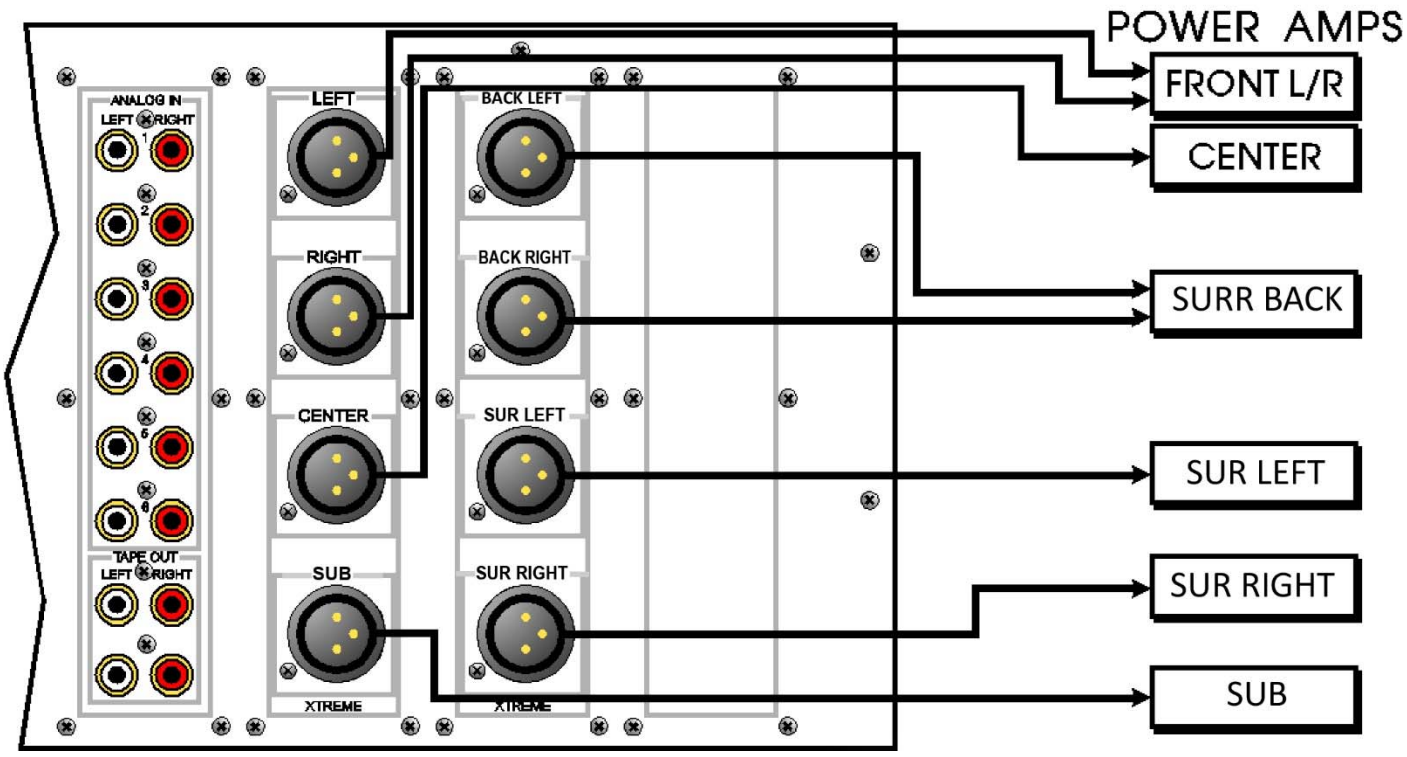


Figure 63 - Recommended Output Wiring Diagram Using 8 balanced Xtreme channels

Six Shooter Wiring Diagram

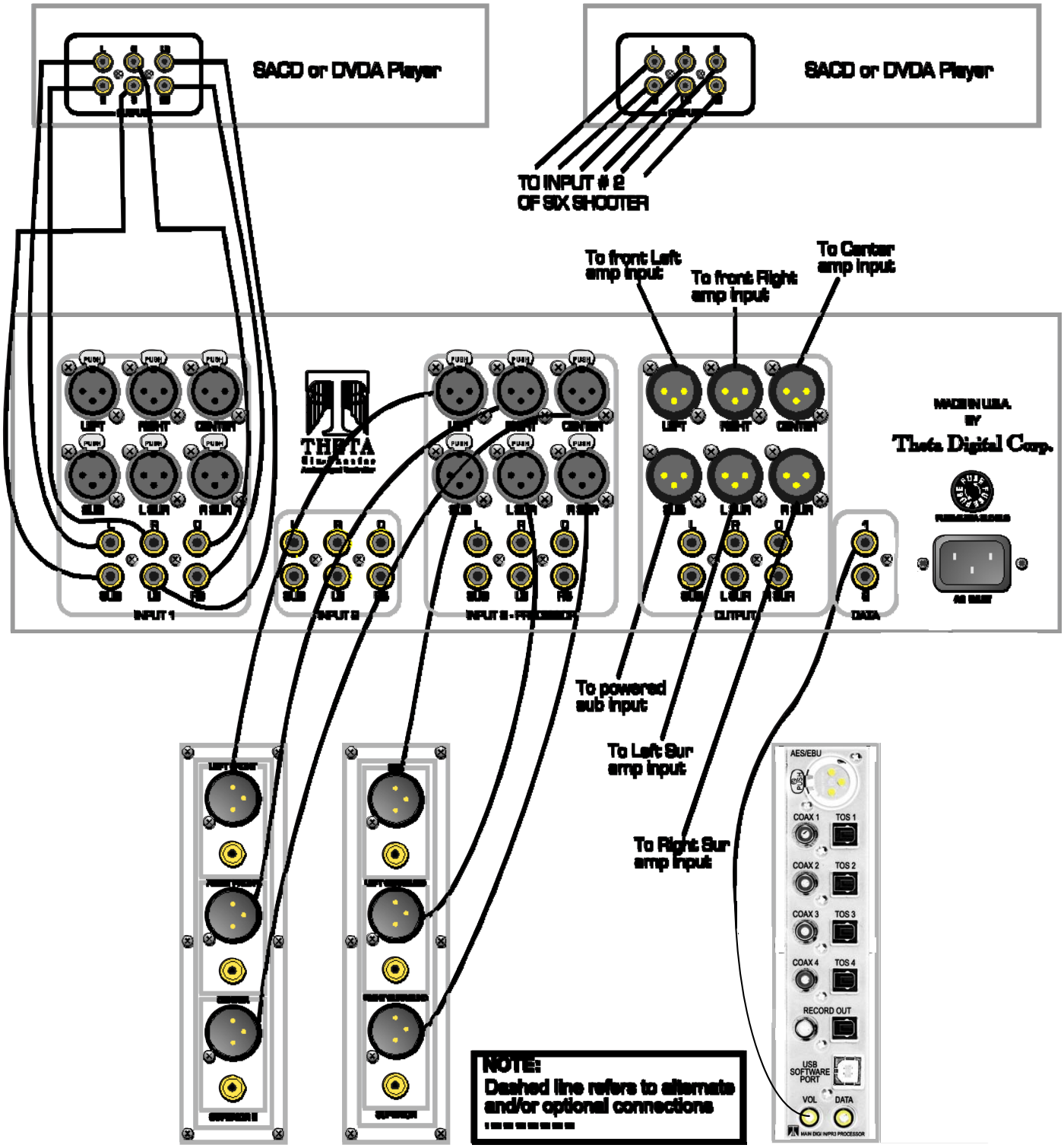


Figure 64 - Wiring diagram for the optional Six Shooter

Appendix C Remote Extender Jack Technical Description and Protocol

The remote extender jack on the Casablanca IV 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	00000001
2	02	00000010
3	03	00000011
4	04	00000100
5	05	00000101
6	06	00000110
A/D	07	00000111
MUTE	08	00001000
MODE	09	00001001
TAPE OUT	0A	00001010
SET-UP	0B	00001011
BALANCE	0C	00001100
DISP	0D	00001101
PWR	0E	00001110
UP	0F	00001111
DOWN	10	00010000
REM PWR	11	00010001
STAT	12	00010010
LEFT	13	00010011
RIGHT	14	00010100
PHASE	15	00010101
SEL UP	16	00010110
SEL DOWN	17	00010111
EQ	18	00011000
Discrete OFF	19	00011001
Discrete ON	1A	00011010

Electrical Requirements:

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

* * *

**There are companies who manufacture units that strip the IR carrier from a signal. One such company is Xantech, who makes the model 794-10. If this unit is used, a series of dipswitches need to be set on it. These settings are as follows:

(from switch 1 to 10)

1 0 1 1 0 0 0 1 0 1

where 1 = ON and 0 = OFF

Appendix D Upgrading/Re-installing Casablanca IV Software

The most dynamic parts of Casablanca IV's internal operating system and supporting files are stored in flash memory and are therefore easily updateable via an IBM compatible PC.

To install new software into the Casablanca IV, first the "Downloader" software must be installed on a local PC.

Instructions for this installation are included with the CD ROM. This software is referred to as Theta Digital Downloader (TDD) x.xx, where x.xx is the version number. The latest version of TDD as well as the latest CB3 Flash files themselves are available from Theta Digital, through a Theta Digital authorized dealer or on the Theta website (www.thetadigital.com) in the Library/Downloads section.

When TDD "connects", it will take over control of the Casablanca IV. When updating it will read and store the internal hardware configuration and user settings and then update and/or overwrite the flash files on every board. It will then restore the hardware configuration parameters that were set at the factory as well as the user settings.

TDD can also save all user settings to the hard drive of a PC. This is a highly recommended procedure to do, immediately after setting up the Casablanca IV for the first time, prior to updating the software, or when making changes to the user settings.

When TDD is installed onto the PC, a PDF file entitled "Guide to Using TDD" is copied to the hard drive. This document covers the detailed information required to use TDD in all of its modes. It is recommended that this document be read through in its entirety before using TDD.

Appendix E Re-installing Casablanca III Settings

Do not attempt to restore settings from a previous generation of the Theta Casablanca to the Casablanca IV using Crystal or any other program.

The operating system of the Casablanca IV is not compatible with this program. Attempts to restore old settings will result in severe software corruption that will disable the Casablanca IV and may require reinstallation of the operating system at the factory.

Such reinstallation is **not** covered under Theta's warranty.

Individual settings from a Casablanca III should be copied manually to a notepad or other document and then restored manually using the setup instructions in this manual.

Appendix F Dirac Live® 96 kHz

Dirac Live® 96 kHz is an advanced room correction software suite licensed for Theta Digital Casablanca IV owners from Dirac Research, Fålhagsleden 57, 753 23 Uppsala, Sweden.

Dirac Live® 96 kHz uses mixed-phase IIR and FIR digital filters to correct frequency and time-domain response for up to 12 channels.

When you purchase a Theta Digital Casablanca IV with Dirac Live or upgrade an existing Casablanca to IV status, you will be issued a Dirac serial number. This is *NOT* your Casablanca serial number. To activate your Dirac license, you will need this Dirac serial number, a valid email address and a new Dirac password which you will create.

You will also need a personal computer to perform acoustic measurements, set target curves and to optimize filters. While Internet access is not necessary for the first two steps*, it is required for filter optimization.*

Computer Requirements

The computer must be a Windows PC and not a McIntosh running Windows compatible software with the following:

- Intel Pentium i3 or better, AMD Athlon XP or better, with 32-bit or 64-bit operating system (both are supported)

  Based on 100's of hours of factory calibration experience, we strongly recommend a processor speed of 2.5 GHz or higher. While a slower system may work, it is more apt to struggle with the complex computations required within Dirac Live. They may lead to stalling or freezing of the computer which may force a system reboot.

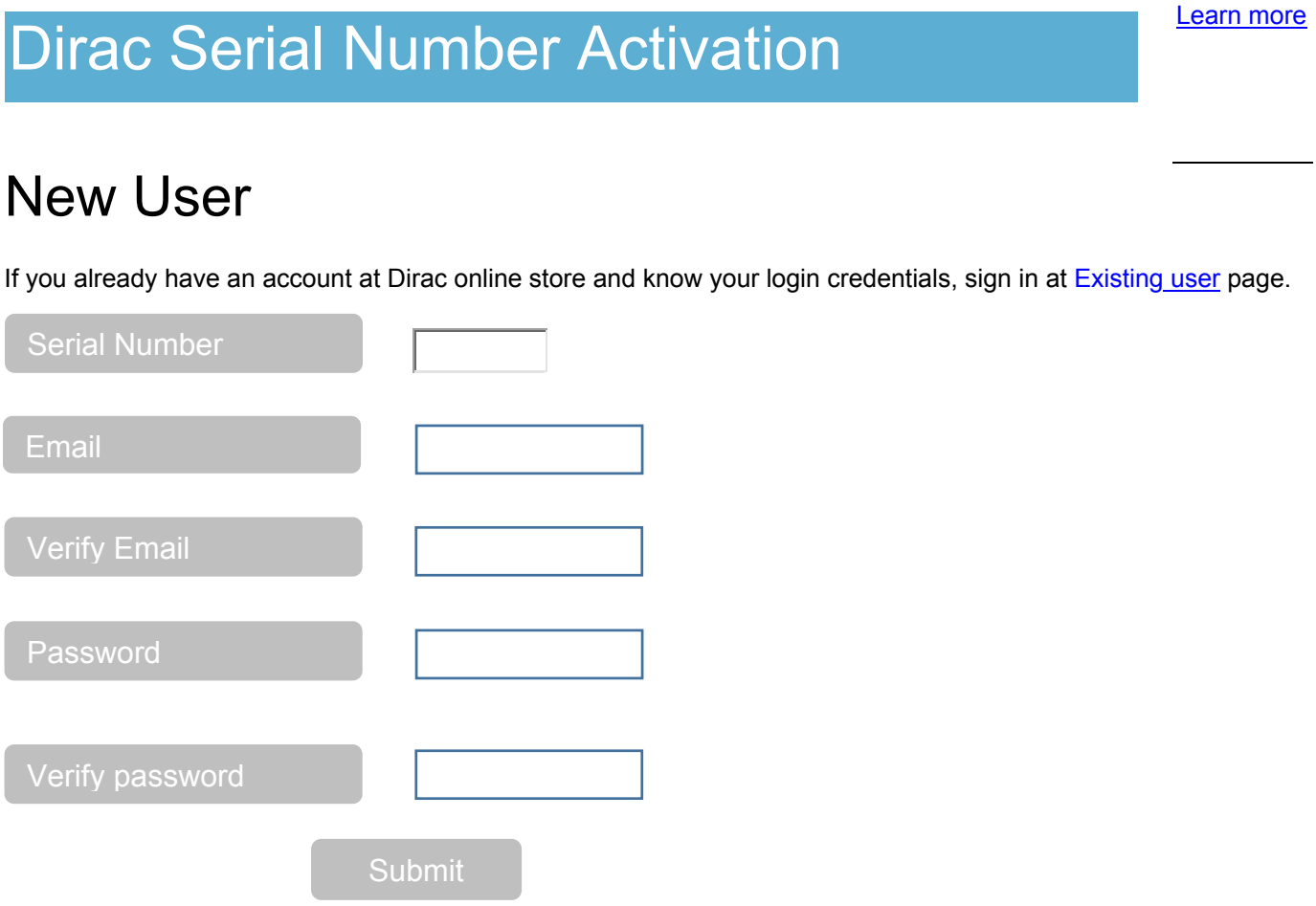
- 2 GB RAM or more
- Keyboard and mouse or compatible pointing device
- Microsoft® Windows Vista SP1/Win7 or Win8
- Microsoft® .NET framework v3.5 of later
- Two free USB 2.0 ports

Each Dirac license permits you to load the Dirac Live Calibration Tool (DLCT, i.e. the Dirac program) onto two (2) different computers. On each of these, if necessary, you may reload the DLCT program or download an updated version as often as you wish.

To activate your Dirac license, go to the following on the computer you will be using for your Dirac measurements:

http://services.dirac.se/activate_serial/

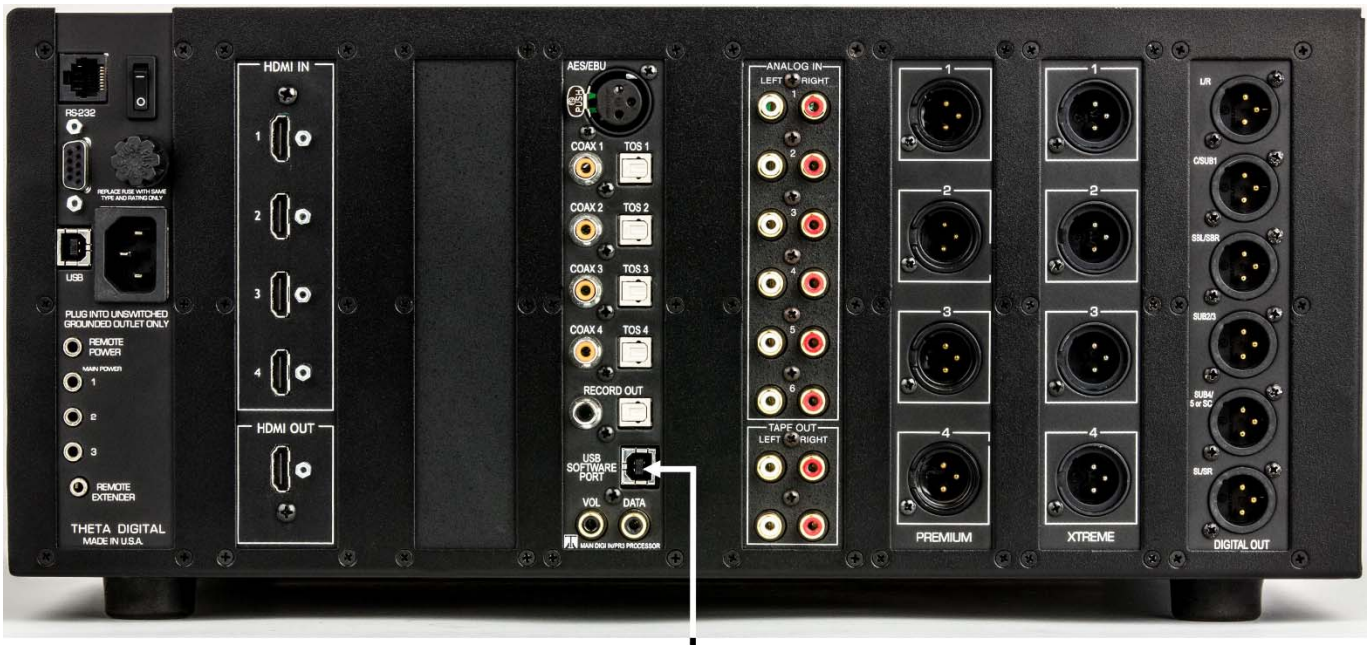
This will take you to a page that looks like this:



Fill in all of the above information and your account will be created. Then you will be automatically redirected and your Dirac download will begin. Check the bottom left-hand corner of your screen to confirm the download is progressing. The program is approximately 30 MB. Depending on your connection speed it may take a few minutes to complete.

When the download is complete, proceed to the DOWNLOAD folder on your computer. If desired, scan the Dirac download file with the anti-virus program of your choice to confirm its safety. When ready to install, double click on the Dirac download file and it will install.

Now, when opening the Dirac program for the first time only, you will be asked to validate your email address and the Dirac password you created. This process has a time limit. If the program times out, simply open it again and promptly enter the required information.



For Dirac Live calibration, you must run the USB cable (provided from this jack to a corresponding USB input on your Windows laptop computer. Please note that the length of the USB cables should not exceed 15' (4.5M). For more details, please contact John Baloff at Theta Digital: support@ati-amp.com or (323) 278-0001 x 112.

Device Manager – Changing Ports when DLCT (Dirac Live Calibration Tool) Program is *NOT* seeing the Casablanca IV

If your computer is "seeing" the USB connection to the Casablanca IV (you hear the "pinging" sound from your computer when you connect or disconnect the USB to the Casablanca IV), but the Dirac program is still not showing the "Casablanca IV", you may have a false port setting. To fix this do the following:

1) Find and enter "Device Manager" on your computer. This is usually located in the System, Control Panel, or similar section of Windows, depending upon your version of Windows. For example, in Windows 7, go to: Start, Control Panel, System, Device Manager (in left column).

2) Find the line that says "Ports (COM & LPT)". Click on the small triangular arrow to the left:

▷ Ports (COM & LPT)

This will reveal your connected COM ports:

▷ Ports (COM & LPT)
USB Serial Port(COM25)

The above number 25 is an example. It could be anything, but most likely it will be a high 2 digit number.

If there is more than one listed, disconnect and reconnect the USB connector coming from the Casablanca IV to identify the exact port.

3) Right-click on the port and select: Properties, Port Settings, Advanced.

4) Change the Port Setting to a low number below 10. Do this even the port you are choosing says "(in use)". Most laptop computers use very few COM ports, if any. Try a number like 7. If there is a Port conflict, try a slightly higher number. Say Okay and exit. Say Okay. Exit from Device Manager completely and restart the computer if it shows that.

5) Remove all HDMI inputs from the Casablanca, reboot the Casablanca IV from the rear power switch and take it out of Standby.

6) Now open the Dirac program and Casablanca IV should be displayed under "Test Signal Playback Device".

7) Set the number of channels above under "Choose System Configuration". Proceed to the next Dirac page, and continue from there.

The Theta Casablanca IV and Dirac Live® 96 kHz: A Primer for Bass Management

There are significant changes in the bass management options between the Casablanca IV and the Casablanca III HD. With the Casablanca III HD, Butterworth, Linkwitz-Riley and Phase Perfect crossovers were available with slopes ranging from1st to 4th order. Available crossover frequency options were centered at 1/3 octave spacing: 40 Hz, 50 Hz, 63 Hz, 80 Hz, 100 Hz, 125 Hz, 160 Hz. With no built-in mechanism available to measure the actual frequency response of the associated devices, installers and end-users either used the “by ear” method to set the crossover options or utilized 3rd party measurement systems to verify the “before and after” response of their crossover choices.

The Casablanca IV with Dirac Live® 96kHz built-in offers different choices and options. Linkwitz-Riley crossovers are supported with 4th order low-pass and 2nd order high-pass slopes. Crossover frequency options are increased to include the range 40 to 220 Hz in 10 Hz increments. Crossover frequencies may be selected independently by channel-pair. Thus the L/R channels could be crossed over at 40 Hz, with the center channel crossover set at 60 Hz, the surround channels at 120 Hz and the rear surrounds set at 200 Hz. (These frequency examples were chosen arbitrarily.) The key point is that channel-pair crossovers may be chosen independently on the Casablanca IV.

Available bass content that cannot be reproduced by one channel-pair due to the selected crossover frequency is automatically re-routed to channels that are capable. The current crossover slopes, 24 dB per octave low-pass and 12 dB per octave high pass, are only optimal when used with sealed (acoustic suspension) speaker systems that roll-off at or near the selected crossover point and thus present the optimum 4th order high-pass crossover slope by summing the 2nd order electrical high-pass filter in the Casablanca IV and their own built-in 2nd order acoustic high-pass behavior. Fortunately Dirac Live® 96kHz allows the installer the ability to accurately measure the acoustic performance of each speaker element in the system and to set a target response curve(s) that optimizes the crossover performance of each channel.

Optimizing Crossover Performance

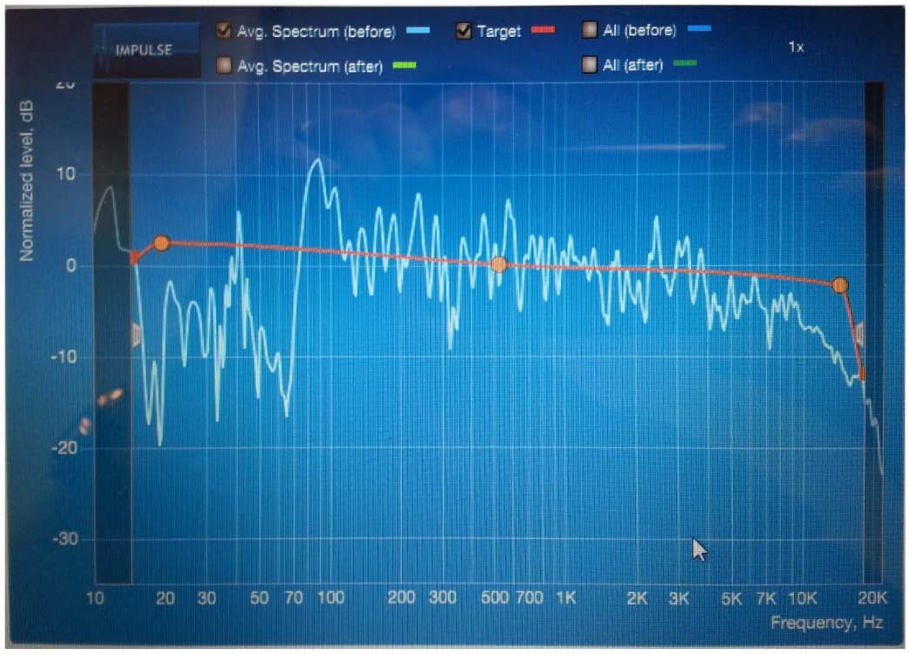
Optimized crossover performance begins with the normal Dirac Live® 96kHz measurement process. Follow the standard measurement instructions included with the Casablanca IV’s Dirac Live® 96kHz module until all measurements are completed.

With the frequency response of the individual channels displayed, select the desired crossover point for each channel-pair. (Channel pairs are: left and right front, center channel, left and right surround, left and right back surround). To determine the initial crossover point between the subwoofer and the main L/R channels, visually examine the low-end measured frequency response of the L/R channel pair to determine their inherent frequency response limits and do the same with the high end roll-off the subwoofer or subwoofers. Subwoofers typically have relatively flat response extending to 125 to 200 Hz or above. Depending on their design and capabilities, the response of the L/R speakers may extend to below 40 Hz or begin to roll off at 100 Hz or even higher. Pick an initial crossover frequency that does not extend below the normal roll-off of the L/R speakers. Let’s imagine for this exercise, that the L/R channels begin to roll-off at 100 Hz and that their response is down approximately 12 dB at 50 Hz. While choosing a crossover point of 80 Hz (the standard THX recommended crossover) could be possible, this would require using Dirac Live® 96kHz correction filters to boost the response in an area in which the speaker is already showing diminished capability and would not, in all likelihood, yield optimum results. Instead, the preferred crossover point would be 100 Hz.

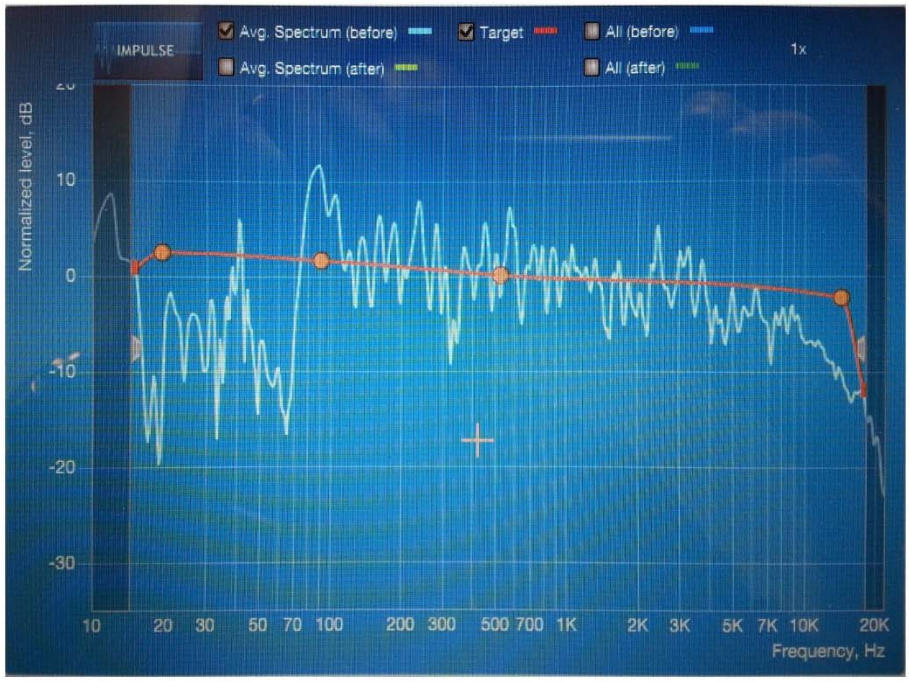
The filter requirements for Linkwitz-Riley crossovers are that the response of the individual speakers (in this case the subwoofer and the L/R channel pair) should be down 6 dB at the crossover frequency (100 Hz)) with a 24 dB per octave roll-off above that point (for the subwoofer) and 24 dB per octave roll-off below that point for the L/R channel pair. As the low pass filer built into the Casablanca IV is already Linkwitz-Riley and 24 dB per octave, we do not need to make any adjustments to the subwoofer target curve. The Dirac Live® 96 kHz filters combined with the Casablanca’s subwoofer filter circuits will optimize the subwoofers response.

However, adjustments must be made to the target response for the L/R channel pair (and to any other high-passed channels) to bring their response roll-off to the required 24 dB per octave. Observing the measured response of the L/R channels, add a frequency point (dot) to their respective target curves at the required crossover point and another point (dot) one octave below the required crossover point. In this example one would need to add a dot at 100 Hz (the crossover point) and another at 50 Hz (1/2 of the 100 Hz crossover point). Then pull the lower dot down so its level is 12 dB below the higher dot. This sets the Dirac Live® 96kHz target curve so the ultimate response satisfies the requirements for an optimal Linkwitz-Riley crossover.

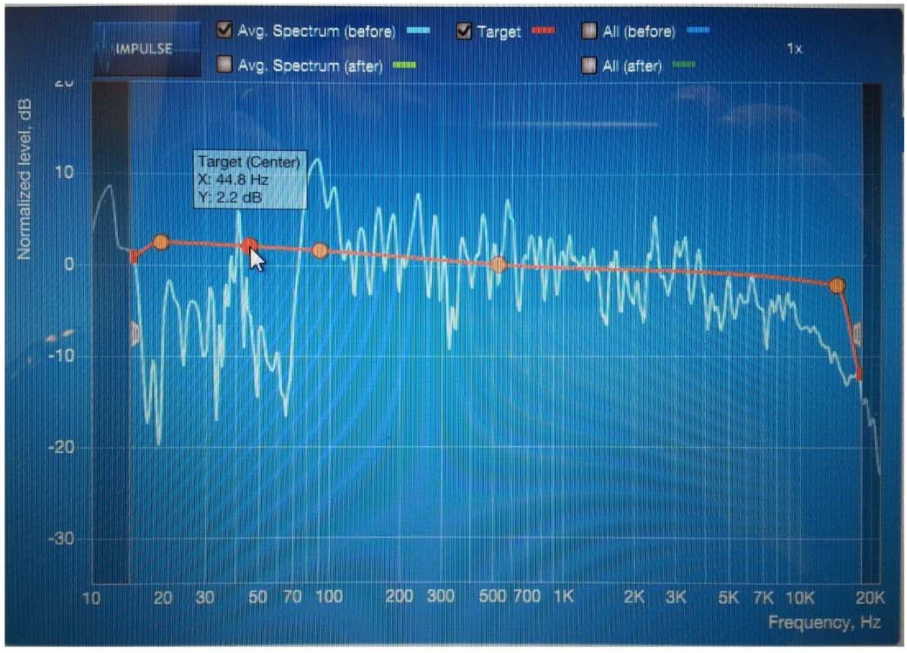
Repeat the above for the center channel speaker (if used) and any other channel pairs.



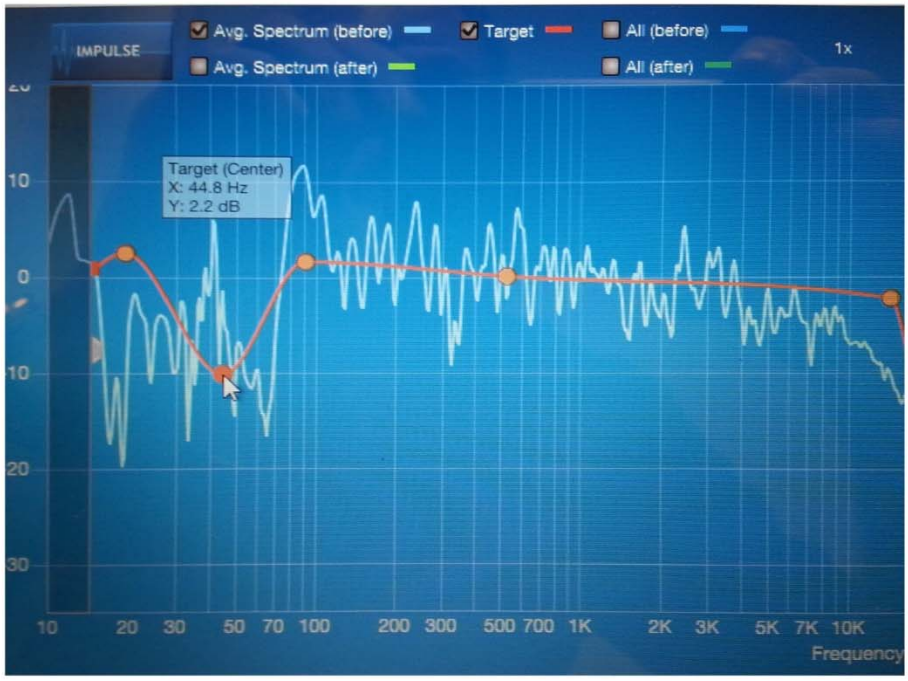
Center channel speaker total of 8 measurements. The suck-out at 70 Hz could be the result of speaker roll-off or room cancellation. Nevertheless, a decision was made to crossover at 90 Hz.



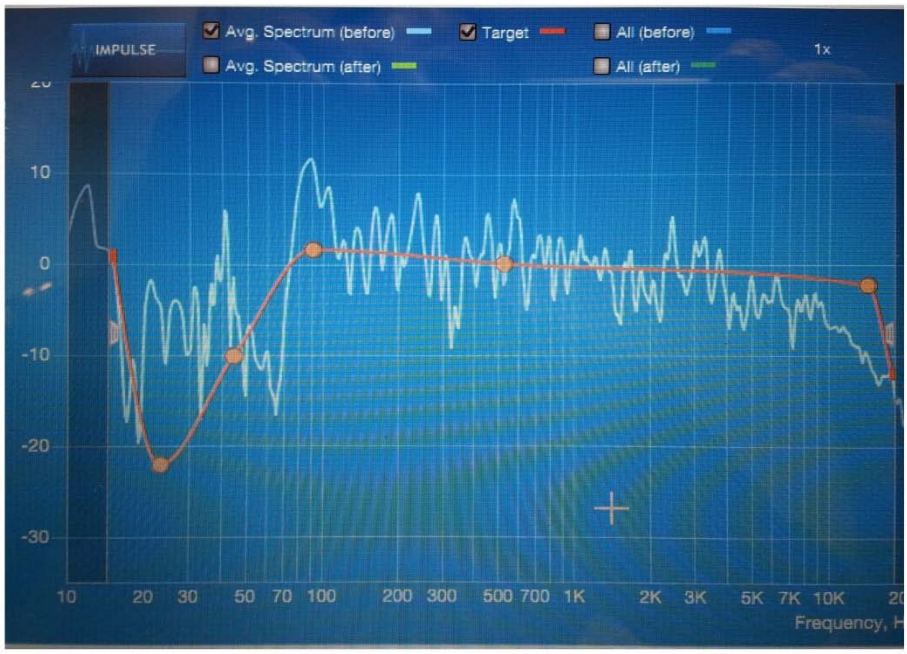
A “Dot” was added to the Target Response curve at the selected crossover frequency: 90 Hz.



Added a second “Dot” to the Target Response Curve at 45 Hz (1/2 of the selected crossover frequency). This is the point that will be 12 Db down from the crossover frequency.



Pull the “Dot” down so its new location is 12 dB below the selected crossover frequency.



The lowest "Dot" was inserted automatically by the Dirac Live software. Pull it down until it is in-line with the two previous crossover dots. It should be 24 dB below the crossover frequency at a point that is 1/4 the crossover frequency.

Optimize the frequency response. The curve in green is the estimated final frequency response for this channel. (Do not be concerned about the rising response below 22.5 Hz. This will be attenuated by the Casablanca IV's crossover filters.)

The measured subwoofer frequency response is shown in white. Due to adjusting the "Target Gate" to 300 Hz, (denoted by the changed background color), Dirac's target response terminates at that frequency.

Optimize the frequency response. The curve in green is the estimated final frequency response for this channel. Note: there is no reason to further adjust the roll-off slope. This is done automatically be the crossover filter.

Appendix G Specifications

Digital Input Section (32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz, 192 kHz compatible):

Main digital input board:

Inputs:	8:4 coaxial (RCA), 4 optical (4 TosLink,); 1 AES/EBU
	1 USB for Dirac Live® 96 kHz Connection
Outputs:	2 digital tape out: 1 coaxial; 1 Toslink
	2 Volume Data

HDMI Section

Four HDMI 1.4 inputs
One HDMI 1.4 output
HDCP Compliant

Analog Input Section:

Inputs:	6 stereo pair on RCA jacks.
Input Level:	200 mV RMS minimum, 22V RMS maximum.
Input Impedance:	10 KΩ.
Outputs:	2 stereo pair on RCA jacks for analog tape out.
Tape Output Impedance:	36.5 ohms
A/D Conversion:	20-bit Delta-Sigma at 48 kHz; separate delta-sigma modulator and high performance decimating digital filter.
Frequency response:	±.2dB 20 Hz – 20 kHz
THD+Noise:	0.0025%
Dynamic Range:	104 dB
Signal to Noise Ratio:	104 dB
Input volume control:	Theta proprietary switched resistor network in the analog domain.

Automatic DC canceling circuit.

Processing (DSP) Section:

DSP processing: 32 bit and 24bit with 56 bit accumulator.

Channels Supported: Left, Right, Center, Left Surround, Right Surround, Left Back Surround, Right Back Surround Subwoofer, Left Front Sub, Right Front Sub, Left Surround Sub, Right surround Sub, Center Sub,.

Modes: Matrix, Special Matrix, Dolby Pro Logic, Dolby Digital, DTS, Stereo, Mono, Analog Direct, Analog Matrix.

EQ: Dirac Live® 96 kHz Room Correction and Optimization

Crossovers: Separate Linkwitz-Riley crossovers for each of the following: Front Left/Right, Center, Surround Left/Right, Surround Back Left/Right and up to 5 Subwoofers. Crossover frequencies: 40 Hz, 50 Hz, 60 Hz, 70 Hz, 80 Hz, 90 Hz, 100 Hz, 110 Hz, 120 Hz, 130 Hz, 140 Hz, 150 Hz, 160 Hz, 170 Hz, 180 Hz, 190 Hz, 200 Hz, 210 Hz, 220 Hz. Crossover slopes: 12 dB or 24 dB Low Pass; 12 dB high pass. Additional roll-off may be added by adjusting Dirac Live® optimization targets.

Subwoofers: Up to five subwoofers supported. 1- single subwoofer, 2- left/right subwoofers, 3- left/right/surround subwoofers, 4- left/right/surround left/surround right subwoofers, 5- left/center/right/surround left/surround right subwoofers

LFE: Phase adjustment (0, 180 degrees), level adjustment (0dB to -30dB, off)

Delays: Master: 0 t0 320 mS (applies to all channels) delay for syncing with video processors, 0-50 mS comprehensive separate delay settings for all speakers including subwoofers.

Analog Audio Outputs: See additional pages.

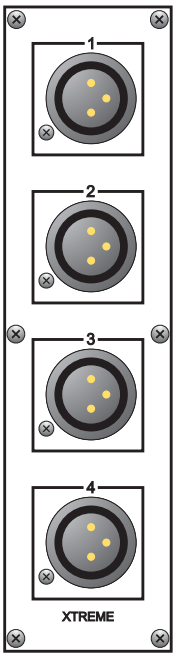
Control Section:

RS232: Complete ability to control and read status of every operational parameter of unit.
IR Receiver: 3.5mm stereo phone jack (rear panel), unmodulated.
IR Receiver: Front panel IR window for hand-held remote control.
Remote Power: 4 rear panel 3.5mm mono phone jacks: +12VDC triggered (Can be set to Pulse or Continuous DC), pulse time variable from 0 to 255 mSec. Up to 100mA each. See page 77 for more detail.

* * *

Power Requirements:	117 VAC, 50-60 Hz, 120 watts with all options installed.	
Dimensions:	19”W x 16”D x 7.5”H (483 x 406 x 191 mm)	
Weight:	43 Lbs (19.5 Kg) Stand alone, 50 Lbs (22.7 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 AA batteries	

Xtreme D-2 Quality Balanced D/A Output Card



Output Options:

Slot 1-3: (One of the following, each):

Left, Right, Center, Sub 1
Left, Right, Center, Sub 5
Center, Sub 1, Left Surround, Right Surround
Center, Left Surround, Right Surround, Sub 2
Center, Left Back, Right Back, Sub 2
Sub 2, Sub 3, Left Surround, Right Surround
Left, Right, Center, Sub 4
Left, Right, Center, Sub 3
Left, Right, Center, Sub 2
Sub 2, Sub 5, Left Surround, Right Surround
Sub 1, Sub 2, Sub 3, Sub 5
Left Back, Right back, Sub 5, Sub 1
Left surround, Right Surround, Sub 3, Sub 4
Left, Right, Sub 1, Sub 2
Left Back, Right Back, Sub 1, Sub 2
Left Back, Right Back, Sub 2, Sub 3
Center, Sub 1, Sub 2, Sub 3
Center, Sub 1, Left Back, Right Back
Center, Sub 5, Left Back, Right Back
Left, Right, Left Surround, Right Surround
Sub 1, Sub 2, Sub 3, Sub 4
Center, Sub 5, Left Surround, Right Surround
Left Back, Right Back, Left, Right
Sub 2, Sub 3, Sub 4, Sub 5
Left Back, Right Back, Left Srrnd, Right Srrnd

Each output channel has a balanced (XLR) output connector only.

D/A Conversion: 24-bit Ladder (8x oversampling – 4x @96K). Two DACs per channel (8 per board) for true differential operation.

Volume Control: Theta proprietary switched resistor network in the analog domain.

Digital Filter: 8x oversampling (4x @ 96K) Theta proprietary FIR filter running on Motorola 56362 DSP.

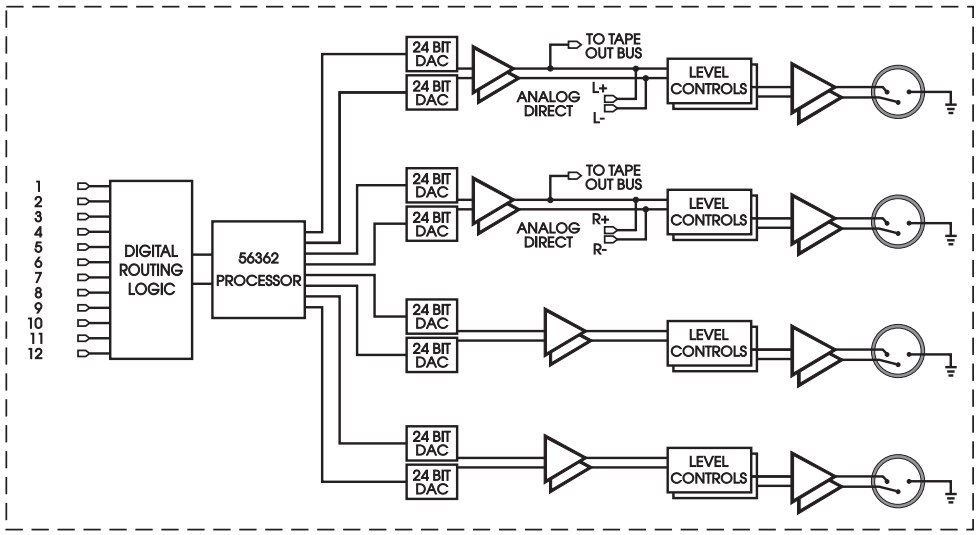
Single-Ended Output: None

Sample Rates Supported: 32KHz, 44.1 KHz, 48 KHz, 88.1 KHz, 96 KHz.

Balanced Output Specifications:

Output Impedance: 20 Ohms.
Maximum Output Level: 20 V RMS balanced.
Frequency Response: 20 Hz-20 kHz, ± 0.025 dB, Ref. 1KHz.
THD+Noise: Less than 0.0015% @ 1KHz, maximum output level.
Dynamic Range: 105dB minimum, 20KHz bandwidth, Ref. 1KHZ, A-weighted.
Signal to Noise Ratio: 105dB typical, idle channel, A-weighted.
Crosstalk: -105dB Right - Left, >-120dB Center-Left @ 20KHz.

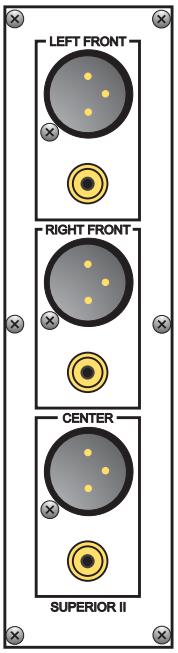
Block Diagram:



Superior II Balanced/Unbalanced D/A Output Card

Output Options:

Left, Right, Center.	Sub 1, Left Surround, Right Surround
Center, Left Back, Right Back	Sub 5, Left Back, Right Back
Sub 2, Left Surround, Right Surround	Sub 5, Left Surround, Right Surround
Sub 2, Sub 3, Sub 5	Sub 2, Left Back, Right Back
Sub 1, Left Back, Right Back	Sub 2, Sub 3, Sub 4
Left, Right, Sub 1	



Each output channel has a balanced (XLR) and a single-ended (RCA) output connector.

D/A Conversion: 24-bit Ladder (8X oversampling - 4x oversampling for 96KHz sources). Two DACs per channel (6 per board) for true differential operation.

Volume Control: Theta proprietary switched resistor network in the analog domain.

Digital Filter: Theta proprietary FIR filter running on Motorola 56362 DSP.

Single-Ended Output: Summed from balanced signals, retains many of the advantages of the balanced output.

Sample Rates Supported: 32KHz, 44.1 KHz, 48 KHz, 88.1 KHz, 96 KHz.

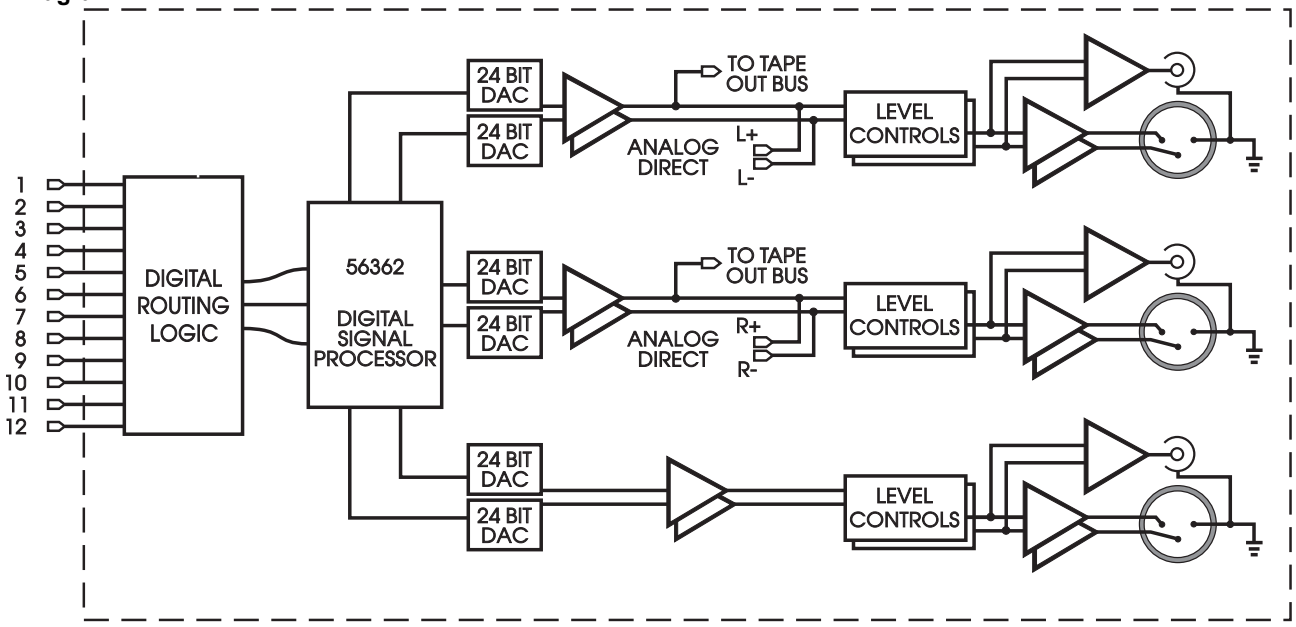
Balanced Output Specifications:

Output Impedance:	20 Ohms.
Maximum Output Level:	20 V RMS.
Frequency Response:	20 Hz-20 kHz, ± 0.01 dB, Ref. 1KHz.
THD+Noise:	Less than 0.0016% @ 1KHz, maximum output level.
Dynamic Range:	105dB minimum, 20KHz bandwidth, Ref. 1KHZ, A-weighted.
Signal to Noise Ratio:	105dB typical, idle channel, A-weighted.
Crosstalk:	-90dB Right - Left, -120dB Center-Left @ 20KHz.

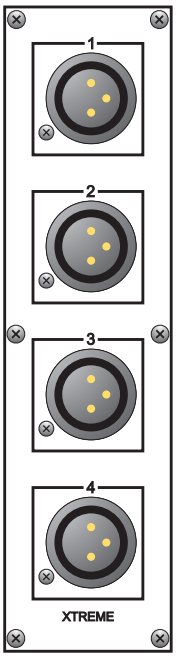
Single-Ended Output Specifications:

Output Impedance:	10 Ohms
Maximum Output Level:	10 V RMS
Frequency Response:	20 Hz-20 kHz, ± 0.01 dB, Ref. 1KHz.
THD+Noise:	Less than 0.0016% @ 1KHz, maximum output level.
Dynamic Range:	105dB minimum, 20KHz bandwidth, Ref. 1KHZ, A-weighted.
Signal to Noise Ratio:	105 typical, idle channel, A-weighted.
Crosstalk:	-90dB Right - Left, -120dB Center-Left @ 20KHz

Block Diagram:



Premium Quality Balanced D/A Output Card



Output Options:

Slot 1-3: (One of the following, each):

Left, Right, Center, Sub 1
Left, Right, Center, Sub 5
Center, Sub 1, Left Surround, Right Surround
Center, Left Surround, Right Surround, Sub 2
Center, Left Back, Right Back, Sub 2
Sub 2, Sub 3, Left Surround, Right Surround
Left, Right, Center, Sub 4
Left, Right, Center, Sub 3
Left, Right, Center, Sub 2
Sub 2, Sub 5, Left Surround, Right Surround
Sub 1, Sub 2, Sub 3, Sub 5
Left Back, Right back, Sub 5, Sub 1
Left surround, Right Surround, Sub 3, Sub 4
Left, Right, Sub 1, Sub 2
Left Back, Right Back, Sub 1, Sub 2
Left Back, Right Back, Sub 2, Sub 3
Center, Sub 1, Sub 2, Sub 3
Center, Sub 1, Left Back, Right Back
Center, Sub 5, Left Back, Right Back
Left, Right, Left Surround, Right Surround
Sub 1, Sub 2, Sub 3, Sub 4
Center, Sub 5, Left Surround, Right Surround
Left Back, Right Back, Left, Right
Sub 2, Sub 3, Sub 4, Sub 5
Left Back, Right Back, Left Srrnd, Right Srrnd

Each output channel has a balanced (XLR) output connector only.

D/A Conversion: 24-bit Ladder (8x oversampling – 4x @96K). Two DACs per channel (8 per board) for true differential operation.

Volume Control: Theta proprietary switched resistor network in the analog domain.

Digital Filter: 8x oversampling (4x @ 96K) Theta proprietary FIR filter running on Motorola 56362 DSP.

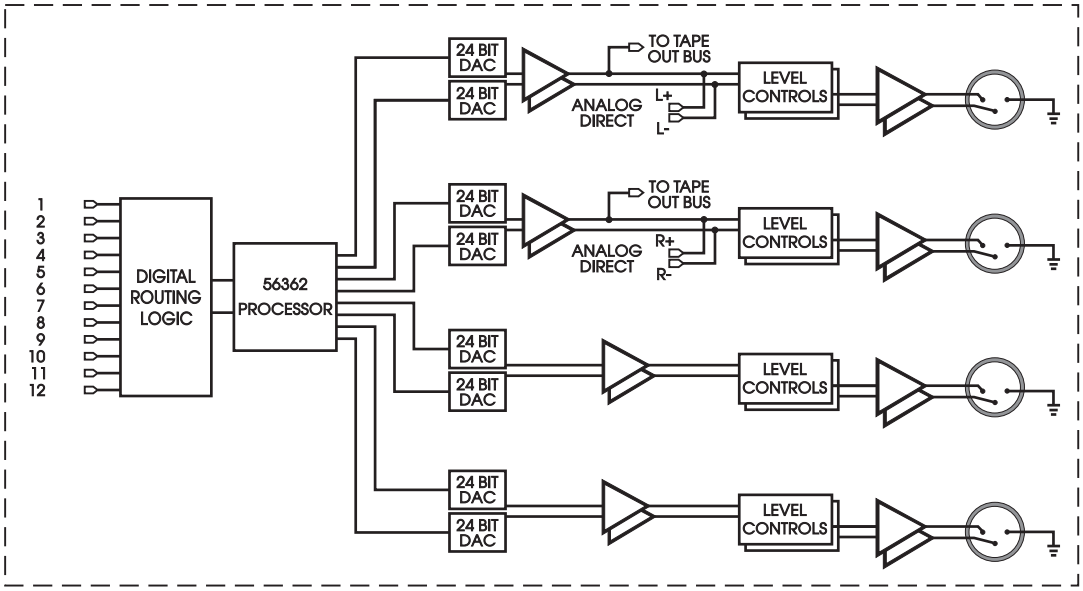
Single-Ended Output: None

Sample Rates Supported: 32KHz, 44.1 KHz, 48 KHz, 88.1 KHz, 96 KHz.

Balanced Output Specifications:

Output Impedance: 20 Ohms.
Maximum Output Level: 20 V RMS balanced.
Frequency Response: 20 Hz-20 kHz, ± 0.025 dB, Ref. 1KHz.
THD+Noise: Less than 0.0015% @ 1KHz, maximum output level.
Dynamic Range: 105dB minimum, 20KHz bandwidth, Ref. 1KHZ, A-weighted.
Signal to Noise Ratio: 105dB typical, idle channel, A-weighted.
Crosstalk: -105dB Right - Left, >-120dB Center-Left @ 20KHz.

Block Diagram:



NEW UNIT--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. The warranty is valid only in the country in which the unit was purchased.

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 than 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.

   Theta does not warrant that the operation of this product will be uninterrupted or error free. Theta is not responsible for damage that occurs as a result of user failure to follow the instructions intended for Theta products

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

   THETA DIGITAL
   1749 Chapin Road
   Montebello, CA. 90640 USA

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.

UPGRADED UNIT—2-YEAR LIMITED WARRANTY TERMS AND CONDITIONS

1. Theta Digital Corporation, henceforth referred to as Theta, may from time-to-time add new or additional features and capabilities to previously manufactured units. These **UPGRADES** may use new and/or previously owned parts to add new functions and/or improved performance to the unit to be upgraded. While an inspection of the unit is integral to the upgrade process, Theta warrants the added or upgraded parts, only, to be free of manufacturing defects in material and workmanship, subject to the conditions set forth herein, for a period of 2-years from the date of purchase by the original purchaser, henceforth referred to as purchaser

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 the upgrade was purchased, 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. The warranty is valid only in the country in which the unit was purchased.

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 2-years after the date of original purchase

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.

   Theta does not warrant that the operation of this product will be uninterrupted or error free. Theta is not responsible for damage that occurs as a result of user failure to follow the instructions intended for Theta products

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