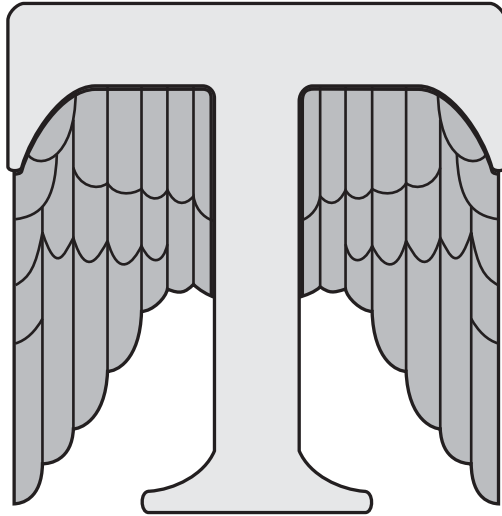# THETA DIGITAL

Casablanca IV A

Quick Start Guide

V 4.A1

Digital Done Right ™

PREFACE

CONGRATULATIONS

You have just acquired the first Immersive Audio processor by Theta Digital.

IMPORTANT

Save all packaging in a dry place away from fire hazards. Your Casablanca 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 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, 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 is connected to.
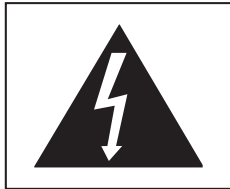
Acknowledgments

Casablanca is manufactured under license from Dolby Laboratories. "Dolby Surround", "Atmos", "Dolby TrueHD" and the double-D symbol are registered trademarks of Dolby Laboratories.

Casablanca 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 X", "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

⚠	**CAUTION** RISK OF ELECTRICAL SHOCK DO NOT OPEN	⚡
CAUTION: TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REMOVE COVER (OR BACK) NO USER-SERVICEABLE PARTS INSIDE REFER SERVICING TO QUALIFIED SERVICE PERSONNEL		

⚡ 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 Identification Record

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

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(Date of installation)

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(Date of installation)

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(Date of installation)

SAFETY PRECAUTIONS

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

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

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

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

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

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

WHEN INSTALLING THE CASABLANCA IN YOUR SYSTEM, MAKE CERTAIN TO ALLOW A MINIMUM OF 3 INCHS OF VENTILATION ON EACH SIDE OF THE UNIT. ALSO ALLOW AT LEAST 6 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 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.

IF REPLACEMENT OF THE AC LINE FUSE BECOMES NECESSARY, REPLACE ONLY WITH THE 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 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.

INTRODUCTION

Welcome to a new world of possibilities. The Casablanca IV A is an Immersive Audio surround sound processor/home theater controller. It offers the advantages of Theta's legendary mastery in digital signal processing for outstanding sound quality.

Getting to know your Casablanca IV A

Despite the Casablanca'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 works. Rather than offer a frustrating bewilderment of little used functions in constant view vying for your attention, Casablanca 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 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.

- The tested assembled circuit boards are installed in a new Casablanca 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 is tested on an audio analyzer for all pertinent parameters.

- The Casablanca 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 meet visual specifications.

- The unit is then put through a critical listening test.

IMPORTANT NOTICE

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

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

III.   The Casablanca, 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 in a system. Make certain that the Casablanca 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 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, as there are no user serviceable components inside. Refer servicing and updating to qualified service personnel only.

VII.   Should the Casablanca 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 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 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.
Channel	Audio tied to a speaker location.
Codec	An algorithm used to reduce the storage space and/or bandwidth of digital audio data, either via lossless packing or lossy compression of uncompressed PCM.
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 Digital	Legacy lossy compression codec.
Dolby Digital Plus	High-resolution lossy compression codec.
Dolby TrueHD	Lossless packing codec.
Dolby Atmos	An Immersive audio format that uses a combination of traditional channels and audio objects to render sounds in three dimensions using speakers around and above the listeners.
Dolby Surround	Upmixer (matrix surround processing) that takes legacy stereo and surround recordings and scales them to an immersive audio speaker layout.
DTS	Legacy lossy compression codec.
DTS-HD High Resolution Audio	High resolution lossy compession codec.
DTS-HD Master Audio	Lossless packing codec.
DTS:X	An Immersive audio format like Dolby Atmos, which uses a combination of traditional channels and audio objects to render sounds in three dimensions using speakers around and above the listener.
DTS Neural:X	Upmixer (matrix surround processing) that takes legacy stereo and surround recordings and scales them to an immersive audio speaker layout
Format	Structure of a soundtrack or recording (stereo, surround sound, immersive audio).
Hz (Hertz)	A unit of frequency.
Immersive Audio	A 3-Dimensional sound format using surround and overhead speakers to create a three dimensional bubble of sound about the listener.
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. The .1 channel on multichannel recordings.
mS	Millisecond, or 1\1000 of a second.
Object	Audio tied to a location in 3D space
Oversampling	The process of creating more sample points in order to more accurately reconstruct a digital signal for playback in the analog domain
PCM or LPCM	Uncompressed digital audio.
Sampling Rate	The rate at which an analog (real world) signal is converted into digital numeric values.
S/PDIF Interface	A digital audio interconnection standard.
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.
Up Mixer	The process of creating addition channels from a two channel, six channel or eight channel recording.

Table 1 - Glossary of Terms and Abbreviations
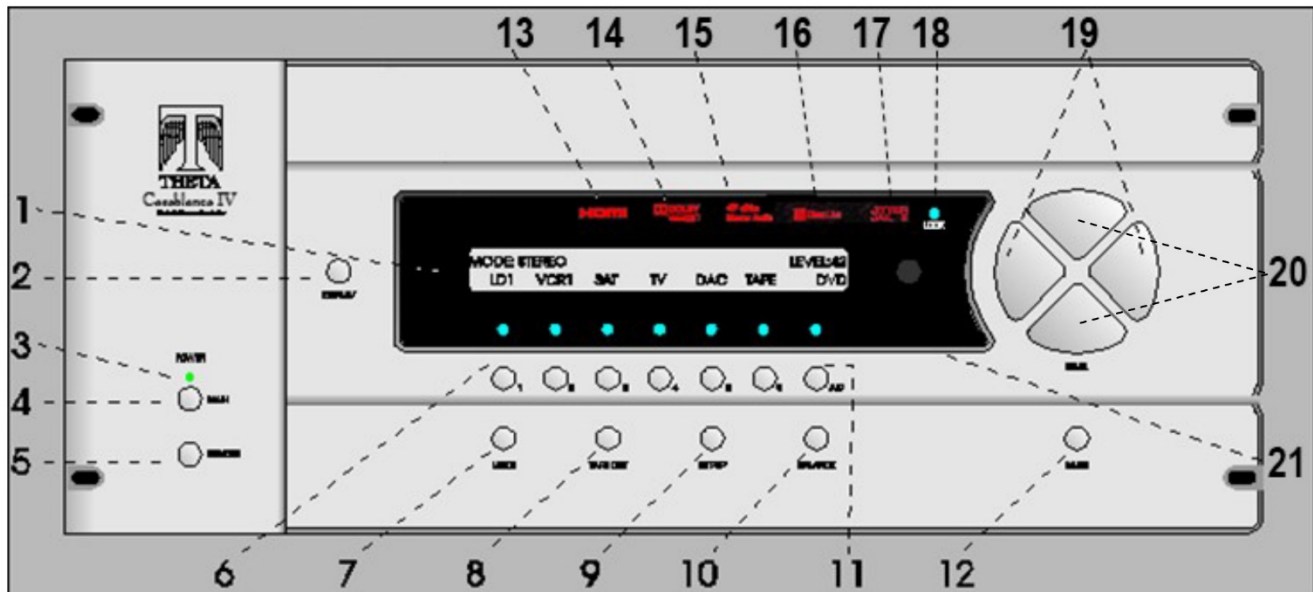
Front Panel Layout

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 A 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 A 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 ATMOS** indicator**.** Lights when the unit is turned on. Shows that the unit processes Dolby's lossless codec.

15. **DTS-X** 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 filter 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.
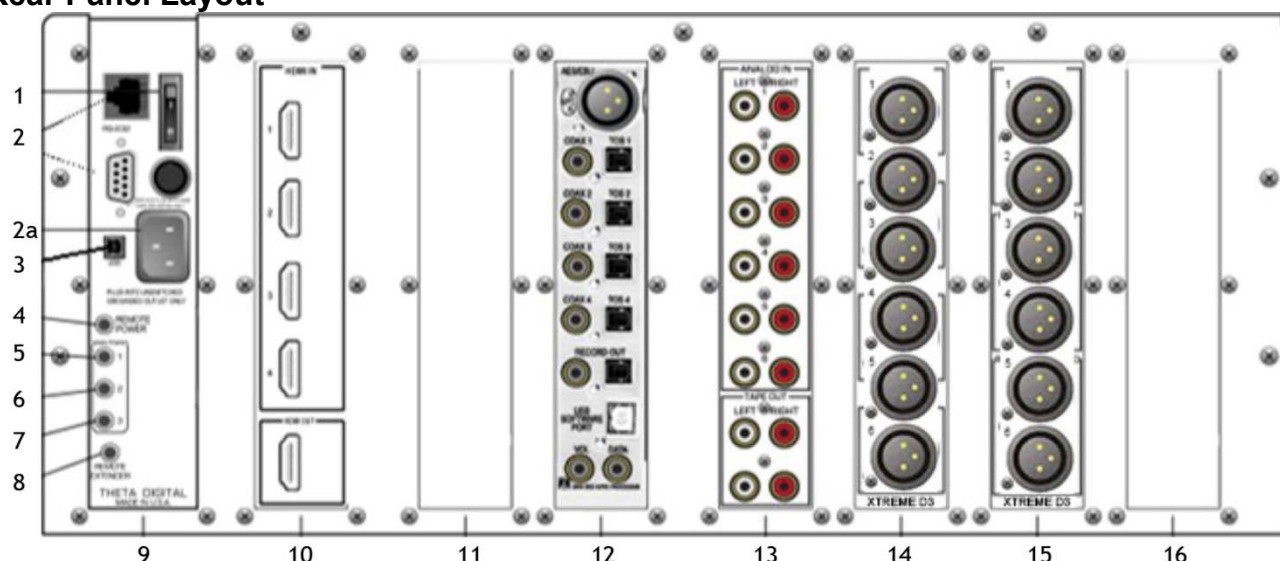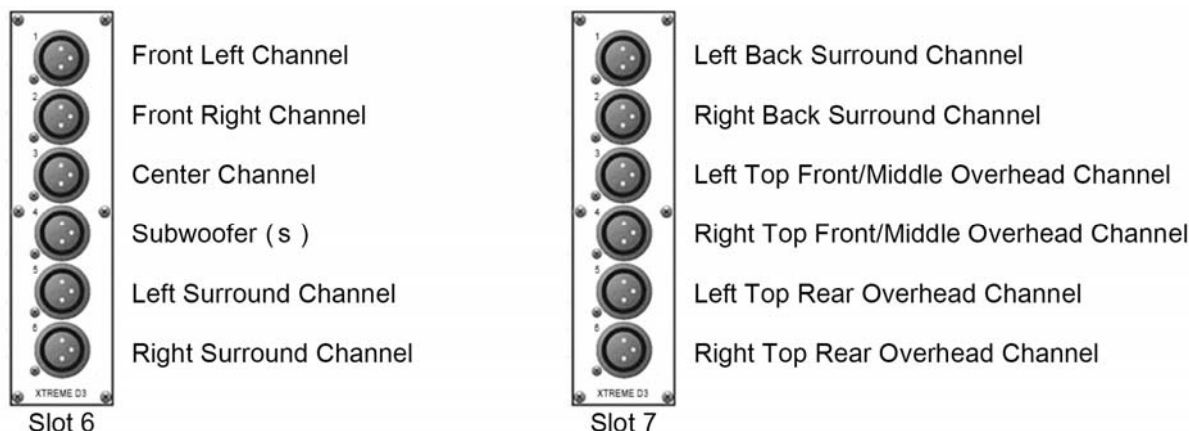
Rear Panel Layout

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 A 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 unit 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 57 for additional information.

9. **Power Supply Module**.

10. **HDMI Input/output card.** Accepts up to 4 HDMI inputs and provides one HDMI output. Audio is processed within the Casablanca. 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. 6 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 pair of analog tape outs whose source can be selected in the **TAPE OUT** menu.

14. First **Analog Output** card. This slot contains a 6-channel Xtreme D3 output card configured for Left, Center, Right, Left Surround, Right Surround and Subwoofer.

15. Second **Analog Output** card. This slot contains a 6-channel Xtreme D3 output card configured for Left Back Surround, Right Back Surround, Left Front Top, Right Front Top, Left Rear Top and Right Rear Top.

16. Third **Analog Output** card. This slot is empty for this use as the two 6 channel Extreme D-3 DAC cards fulfill the Casablanca's capability.

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

Quick Start Guide for the Casablanca IV A

Your Casablanca IV A is a very sophisticated audio control center capable of world-class performance for audio signals received via analog, digital (including SPDIF optical and coaxial) and HDMI. With the ability to customize all 12 inputs and to remember the unique operating parameters for each, it is a tinkerer's delight. However, operation, and especially setup can be simplified if the user takes advantage of the default settings already installed in the Casablanca. Consequently, for ease of setup, we recommend initial hook-up for your equipment as follows:

Amplifier Outputs

Front Left Channel

Front Right Channel

Center Channel

Subwoofer (s)

Left Surround Channel

Right Surround Channel

XTREME D3

Slot 6

Left Back Surround Channel

Right Back Surround Channel

Left Top Front/Middle Overhead Channel

Right Top Front/Middle Overhead Channel

Left Top Rear Overhead Channel

Right Top Rear Overhead Channel

XTREME D3

Slot 7

Component	Default Input	Input label
1. UHD (4K) Bluray Player	HDMI1	4VID
2. Bluray Player (1080p)	HDMI2	BLU
3. HDTV including Cable Box and Satellite Tuner	HDMI3	HDTV
4. Video Game Console	HDMI4	GAME
5. Audio Server	TOS1	SERV
6. CD Player	COAX1	CD
7. Second Video Source	TOS2	VID1
8. Third Video Source	TOS3	VID2
9. Additional Audio Source	COAX2	AUX1
10. Still another Audio Source	COAX3	AUX2
11. AM/FM (Etc.) Tuner	ANALOG1	TUNR
12. External Phono Preamp	ANALOG2	PHON

Modes
Modes for all inputs are set to DIRECT

VFD Front Panel Brightness
All Inputs are set to FULL

PCM UPMIX
All Inputs are set to use DOLBY SURROUND

DOLBY OPTIONS
The NIGHT MODE is set to OFF for all inputs.

DTS OPTIONS
LFE OFFSET is set to 0 dB for all inputs

SIX SHOOTER OPTIONS
All inputs are set to OFF/0

JITTER JAIL
Jitter Jail is set to ON for all inputs.

SPEAKER DELAY ADJUSTMENTS
Based on our MODEL ROOM, Speaker delays are set as follows:

Front Left Speaker	12 mS	Left Back Surround Speaker	6 mS
Front Right Speaker	12 mS	Right Back Surround Speaker	6 mS
Center Speaker	12 mS	Left Top Overhead Speaker	7 mS
Subwoofer	12 mS	Right Top Overhead Speaker	7 mS
Left Surround Speaker	6 mS	Left Top Rear Overhead Speaker	7 mS
Right Surround Speaker	6 mS	Right Top Rear Overhead Speaker	7 mS

SUBWOOFER CROSSOVER FILTERS
High pass filters for Left, Center, Right and Surround Channels are set to 80 Hz
High pass filters for all Back Surround and all Top Channels are set to 80 Hz
Low pass filter for the subwoofer is set to 80 Hz with a slope of 24 dB per octave

SPEAKER LEVEL (TRIM) ADJUSTMENTS
Speaker levels are set to 0 dB for all channels

LFE CHANNEL PHASE SETTINGS
The LFE Channel Phase Settings are set to 0 for all channels

MASTER DELAY ADJUSTMENTS
The Master Delay adjustment is set to 0 mS for all inputs

DIRAC LIVE© ROOM CORRECTION AND OPTIMIZATION
Dirac Live© is set to OFF for all inputs.

CUSTOMIZING YOUR CASABLANCA IV A

Introduction to the User interface

The menu system within the Casablanca 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 DIRCT 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, 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.

NAMING INPUTS
The Casablanca IV A can show up to four letters for input names on the fron panel VFD (Vacuum Fluorescent Display).

1. From the main/input page, push the **SET-UP** button once.

2. Push the 1 button to select **INP** (Input).

3. Push the **A-D** button twice

4. Push the 1 button to select **MISC**.

5. Push the 1 button to select **NAME**.

6. Push the **A-D** button once to highlight the first letter of the input name to be used for the front panel VFD (Vacuum Fluorescent Display).

7. Push "**LEVEL UP**" or "**LEVEL DOWN**" buttons to select te frist letter of the input name.

8. Push the "**LEVEL RIGHT**" button to proceed to the next letter, then repeat step #7 as necessary for the remaining letters.

9. Push the **SET-UP** button three times to return to the main / input page.

Mapping HDMI & Audio Jacks by Input

1. From the main / input page, push the **SET-UP** button once**.**

2. Push the **1** button to select **INP** (IInput).

3. Push the **4** button to select **SOURCE**.

4. Push the **1** button to begin prioritizing audio jacks and routing them to this input.

5. Push the "**LEVEL UP**" button to select the desired audio jack (i.e.) **COAX 1**) to receive signal from the audio source (i.e. Digital Audio Output from the DVD player).

6. Push button **2** then push the "**LEVEL UP**" button to select the desired audio jack.

7. Push button **3** then pust the "**LEVEL UP**" button to select the desired audio jask.

8. **Press SETUP** to exit.

Configuring Dolby Digital and DTS

1. From the main / input page, push the **SET-UP** button once.

2. Push the **1** button to select **INP** (Input).

3. Push the **A-D** button once.

4. Push the **2** button to select **DOLBDIGTL** (Dolby Digital Settings).

5. Push the **6** button to select **+SPKR** (Additional surround speakear settings).

6. Pus the "**LEVEL UP**" or "**LEVEL DOWN**" buttons to select a speaker mode (i.e. **THETA**). This setting will be used to send sound to additional surround speakers (if present) when playing a 5.1 channel signal.

7. Push the **SETUP** button once.

8. Push the **3** button to again select **DTS**.

9. Repeat steps **6** and **7**.

10. Push the **SET-UP** button to return to the main / input page.

Making Level Adjustments (with example)

Use of an SPL meter in the "C Weighted" position is required to properly calibrate levels. If possible mount the meter at ear-level in the primary listening position pointing the microphone straight-up at the ceiling

1. From the main / input page push the **SET-UP** button once.

2. Push button **1** once for **INP** (Input).

3. Push button **2** once for **LVLS** (Levels).

4. If **1-6** and **7-12** appear in the display, push button **1** for 1-6 to adjust the first six channel levels. If not, skip to step #5.

5. Push the **A-D** button twice so the front panel display reads **LEVELS NOISE1** above the **A-D** button.*

6. Push button **1** so select the left front channel.

7. While listening to the left channel's output, push the "**LEVEL LEFT**" or "**LEVEL RIGHT**" buttons to adjust the master volume level to 75 dB output at the listening position to ensure adequate output for calibrating the remaining channel levels.

8. Push buttons **2** through **6** to select the other speaker channels.

9. Push the "**LEVEL UP**" or "**LEVEL DOWN**" buttons to adjust the channel levels.

10. Push the **A-D** button so that the display **reads LEVELS SOURCE** above the A-D button.

11. Push the **SET-UP** button once. If **1-6** and **7-12** appears, push button **2** for **7-12** and use steps 5 through 10 above to adjust the remaining channel levels. If **1-6** and **7-12** do not appear, push the **SET-UP** button two more times to return to the main / input page.

12. Push the "**LEVEL UP**" button to select the desired crossover frequency (i.e. 80 Hz).

It is essential that there is adequate volume from the speakers to hear these adjustments. In particular, without adequate subwoofer volume, it may seem that the subwoofer is not operating.

*If an external source playing test tones is to be used for level calibration, select LEVELSOURCE in step #5, above.

Speaker Delay Setup (with example)

1. From the main / input page push the **SET-UP** button once.

2. Push button **1** once for **INP** (Input).

3. Push button **3** once for **DLYS** (Delays).

4. In the example, push button **5** for **SURLT** (Surround Left).

5. Push "**LEVEL UP**" or "**LEVEL DOWN**" buttons to adjust the amount of additional delay.

6. Continue using buttons **1** through **6** and the "**LEVEL UP**" or "**LEVEL DOWN**" buttons to adjust the delays for the other speakers as necessary.

7. If an arrow appears above the **A-D** button, push the **A-D** button once to set the delays for additional channels following the stops above. If not, skip to step #8.

8. Push the **SET-UP** buttons three times to return to the main / input page.

Setting a Default Mode

The Casablanca IV A provides for a choice of default mode (i.e. "Stereo") for each input. The factory default mode for each input is "DIRECT". If a mode other than "DIRECT" is desired, follow the steps below. It should be noted that when a specific signal such as Dolby Digital 5.1 or DTS-ES is received, the Casablanca IV A will automatically switch into the mode mandated by that signal.

1. From the main / input page, push the **SET-UP** button once.

2. Push button **1** once for I**NP** (Input).

3. Push button **5** once for **MODE** (Default mode).

4. Push the "**LEVEL UP**" or "**LEVEL DOWN**" buttons to select a default mode (i.e. "Stereo").

5. Push the **SET-UP** button twice to return to the main / input page.

6. Push the **A-D** button to change the default mode for additional inputs.

Using Macro's to Copy Speaker Settings

The Macro function is a time-saving set-up feature for the Casablanca IV A. The steps below provide a short-cut by allowing speaker parameters to be copied from one input to the remaining inputs. These speaker settings can then be modified as necessary to ensure proper calibration for each source with minimal additional efforts.

1.   From the main / input page, push the **SET-UP** button once.

2.   Push button **3** once for **MACROS**.

3.   Push button **2** once for **SPKR PARM** (Speaker Parameters).

4.   Push button **2** for **TO ALLINP** (To All Iniputs).

5.   Push the **A-D** button for **YES** at the prompt to copy Input 1 speaker settings to all of the other inputs.

6.   Push the **SET-UP** button three times after the display reads **MACRO COMPLETE OK** to return to the main / input page.

Retrieving the Serial Number

1.   From the main / input page, push the **SET-UP** button once.

2.   Push button 2 once under **GLOBAL**.

3.   Push the **A-D** button once

4.   Push button **5** under **SER NUM** (Serial Number).

5.   Push the **SET-UP** button three times to return to the main / input page.

Dirac Live® 96 kHz

Dirac Live® 96 kHz is an advanced room correction software suite licensed for Theta Digital Casablanca IV A 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 A with Dirac Live or upgrade an existing Casablanca to IVA 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 NOTt 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:

Dirac Serial Number Activation

New User

If you already have an account at Dirac online store and know your login credentials, sign in at Existing user page.

Serial Number	
Email	
Verify Email	
Password	
Verify password	
	Submit

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.

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

If your computer is "seeing" the USB connection to the Casablanca IV A (you hear the "pinging" sound from your computer when you connect or disconnect the USB to the Casablanca IV A), but the Dirac program is still not showing the "Casablanca IV A", 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 A 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 A from the rear power switch and take it out of Standby.

6) Now open the Dirac program and Casablanca IV A 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 A and Dirac Live® 96 kHz: A Primer for Bass Management

There are significant changes in the bass management options between the Casablanca IV A 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 A 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 A.

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 A 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 A'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 A 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.

Theta Digital Casablanca IV—Dirac Live Advanced Bass Management
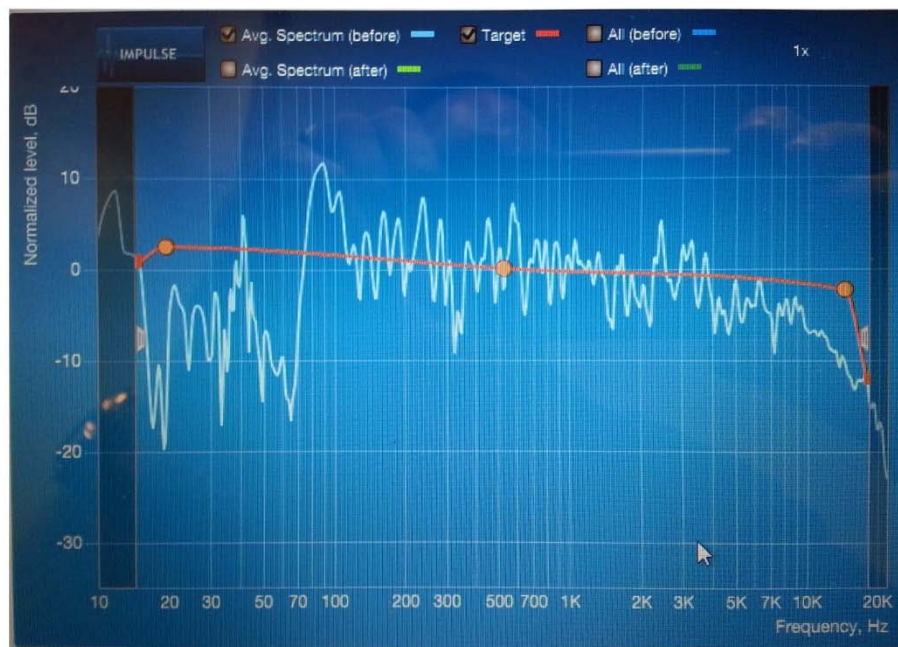
Center channel speaker total of 8 measurements. The suck-out at 70 Hz could be the result of speaker roll-off or room cancellation. Nevertheless, a decision was made to crossover at 90 Hz.
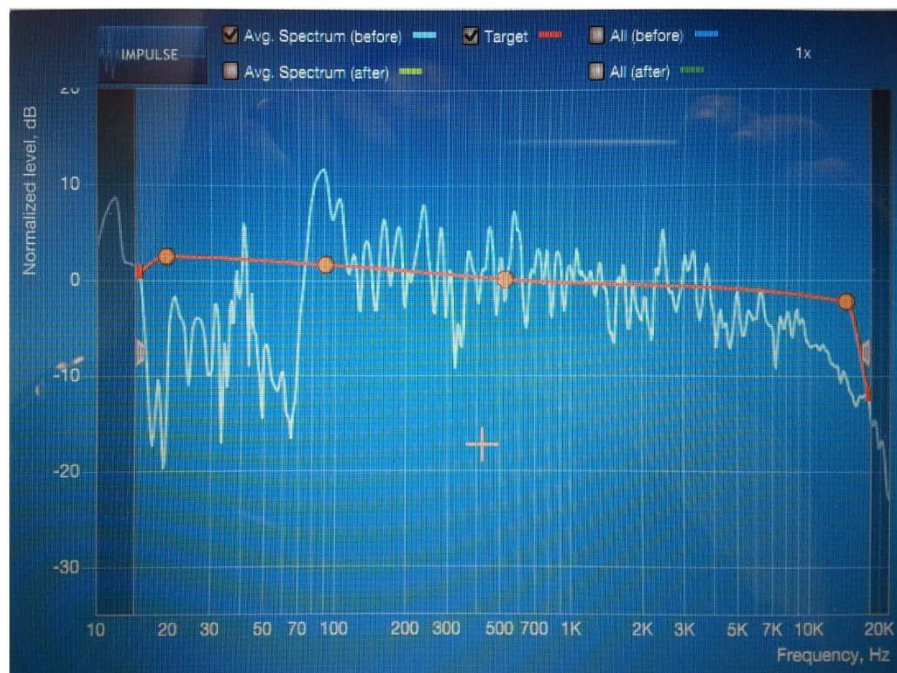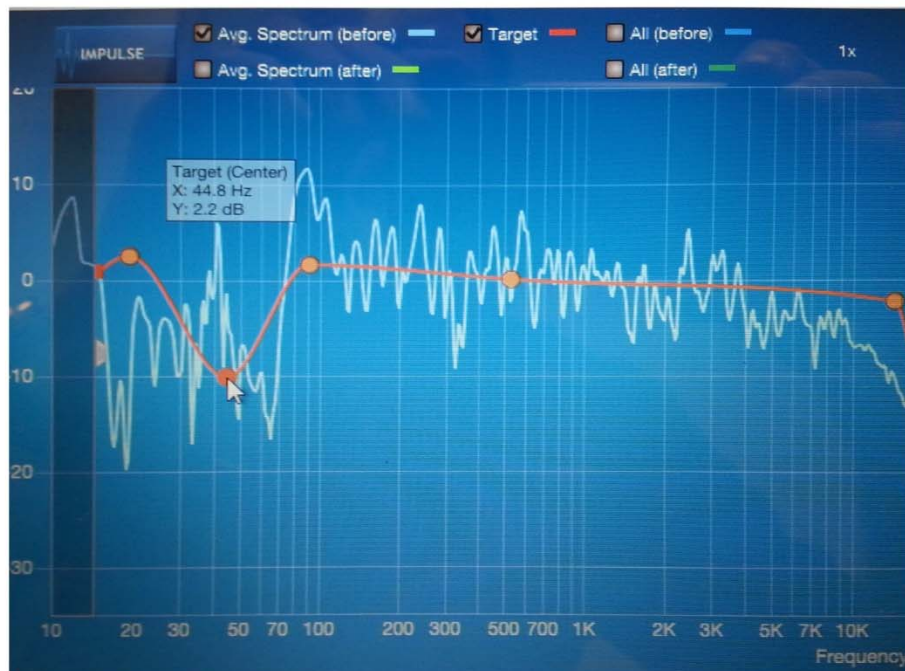

A "Dot" was added to the Target Response curve at the selected crossover frequency: 90 Hz.

Theta Digital Casablanca IV—Dirac Live Advanced Bass Management

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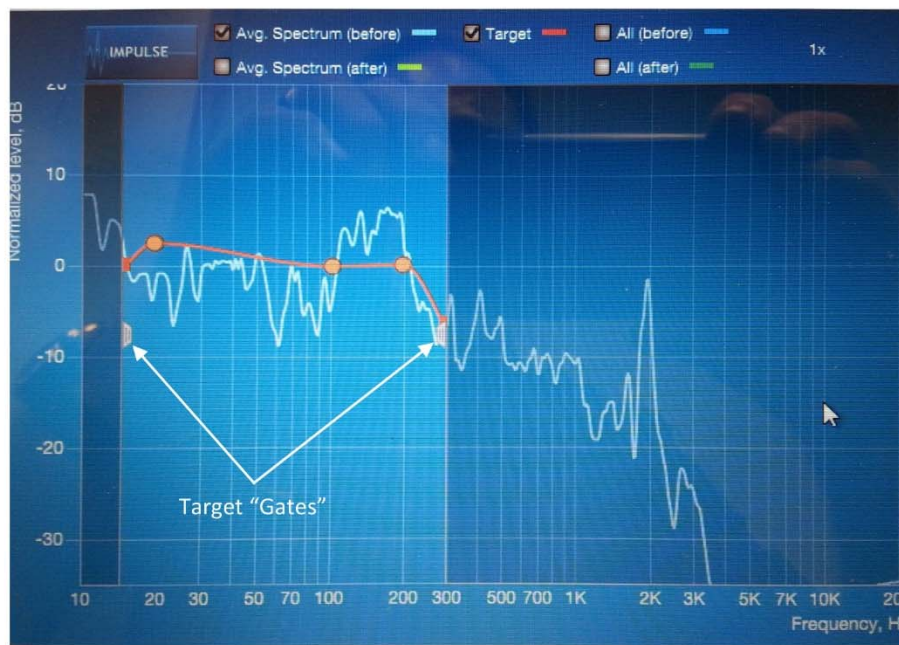
The measured subwoofer frequency response is shown in white. Due to adjusting the "Target Gate" to 300 Hz, (denoted by the changed background color), Dirac's target response terminates at that frequency.

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.