

XDA-1

EMOTIVA[®]
AUDIO CORPORATION

XDA-1
Differential Reference[™] DAC
OPERATION MANUAL

TABLE OF CONTENTS

Safety Precautions	5
NEC (National Electrical Code) Standards	7
A Note for the Cable Television (CATV) Installer	7
Antenna Grounding Outside the House	
Thank You for Your XDA-1 Purchase	8
Emotiva XDA-1 Differential Reference DAC	8
High Quality 192khz DAC with USB Audio Interface	
Unpacking the XDA-1	9
Inventory	9
XDA-1 Front Panel Layout	10
XDA-1 Rear Panel Layout	11
XDA-1 Remote	12
Changing the Battery	12
Connecting To Audio Source Units	13
Trigger Connections	13
Troubleshooting Guide	14
No Sound (from one or more full range speakers)	14
No Sound from the AES/EBU Input	14
No Sound from the USB Input	14
No Sound from the Optical Input	14
No Audio from the Coax input	14
Remote Not Working	14
Remotely Connected External Amplifier(s) Do Not Turn Off with USP-1	15
"Hum" Noises	15

Other Probable Cause of Noise	15
XDA-1 Technical Specifications	16
Emotiva Disclosure	17
Limited Warranty	18
Front Panel Diagram (Full Page)	19
Back Panel Diagram (Full Page)	20

SAFETY PRECAUTIONS

Read this User's Guide thoroughly before attempting to install and configure the XDA-1 DAC. All the safety and operation instructions should be read before any operation of the component(s) begin. After successful installation and configuration of the XDA-1 DAC, be sure to retain this manual in a safe place for any future reference needs.

All warnings on the XDA-1 DAC preamplifier and in these operating instructions should be followed. Safety is a key component to a long lasting and trouble free installation. The vast majority of the subsequent safety precautions involve simple common sense. If you are not comfortable with the installation of audio/video entertainment equipment, it will be to your benefit to seek the services of a qualified installation professional.

The Emotiva XDA-1 DAC preamplifier should NEVER be used near water such as a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement or near a swimming pool etc.

The Emotiva XDA-1 DAC preamplifier should be situated so that its location or installation position does not interfere with proper ventilation.

The Emotiva XDA-1 DAC preamplifier should not be situated on a bed, sofa, rug or similar surface that may block any ventilation openings; or placed in a built-in installation such as a bookcase, cabinet, or closed equipment rack that may impeded the flow of air through ventilation openings. If installed in a closed equipment rack for custom installations, be sure to add forced air ventilation so that it has adequate air circulation.

The Emotiva XDA-1 DAC preamplifier should be situated away from heat sources such as radiators, or any other devices which produce heat.

The Emotiva XDA-1 DAC preamplifier should be connected to a power supply only of the type described in this User's Guide and what is labeled on the Emotiva XDA-1 DAC Preamplifier component. Power supply cords should be routed to that they are not in high foot traffic areas or pinched by item placed upon or against them, paying particular attention to cords at the wall plugs, convenience receptacles, and the point where they connect into the Emotiva XDA-1 DAC. The power cord for the Emotiva XDA-1 DAC preamplifier should be unplugged from the outlet when unused for a long period of time.

When it's time for cleaning the Emotiva XDA-1 DAC preamplifier, it should be cleaned only as recommended in this User's Guide. Never spray liquids directly into the component's vent openings. Care should be taken so that small objects do not fall into the inside of the Emotiva XDA-1 DAC preamplifier.

The following situations require that your Emotiva XDA-1 DAC Preamplifier be serviced only by qualified service personnel:

- 1. The power-supply cord or the plug has been damaged; or*
- 2. Objects have fallen, or liquid has spilled into the component; or*
- 3. The XDA-1 DAC preamplifier has been exposed to rain; or*
- 4. The XDA-1 DAC preamplifier does not appear to operate normally or exhibits a marked change in performance; or*
- 5. The XDA-1 DAC preamplifier has been dropped, or its enclosure or chassis is damaged.*

The user should not attempt to service the XDA-1 DAC preamplifier beyond the means described in this User's Guide. All other servicing should be referred to Emotiva.

To prevent electric shock, do not use this polarized plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.

Grounding or Polarization - Precautions should be taken so that the grounding or polarization means of the component is not defeated.

For questions regarding service, please contact:

Emotiva Audio Corporation
135 SE Parkway Court
Franklin, TN 37064
Tel - (615) 790-6754 | (877) EMO-TECH | Fax - (615) 791-6287
www.emotiva.com

WARNING - TO REDUCE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION - TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

NEC (National Electrical Code) Standards

A Note for the Cable Television (CATV) Installer

This reminder is to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and in particular, specifies that the cable ground shall be connected to the grounding system of the building as close to the point of cable entry as practical.

Antenna Grounding Outside the House

If an outside antenna is connected to the receiver, be sure the antenna system is grounded so as to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the lead-in wire to an antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

Cable TV Coaxial Cable, Satellite Dish Cables and Television Antennas should be grounded BEFORE the point of entry into the house.

Always observe proper antenna or satellite dish grounding techniques. When lightning strikes there is always the possibility that your antenna or dish (mounted high on the roof) can become a conduit for lightning and electrically damage any equipment to which it is connected. Additionally, proper grounding offers safety to the people using the audio/video system in the event of an electrical problem.

Thank you for your XDA-1 purchase!



Dear Music Enthusiast,

Thank you for purchasing the Emotiva XDA-1 DAC preamplifier. We sincerely believe that it offers you stunning achievement in sonic performance. Designed around the acclaimed Analog Devices AD1955 DAC operating in a fully differential mode, its differential output is then coupled to a digitally controlled volume control stage. The output of this stage then drives our fully discrete, cross coupled, Differential Reference™ balanced line amp stage. The result is breathtaking.

In addition to being a state of the art 24Bit/192kHz DAC, the XDA-1 DAC preamplifier can operate as a digital preamplifier and source selector in a digitally based reference level audio system. Inputs for up to six digital sources including AES/EBU, USB, Coax, and Toslink are available. The XDA-1 DAC preamplifier incorporates a VFD display for volume, input select, and system status messages. In addition, it is supplied with a milled aluminum remote control for convenient operation.

Emotiva XDA-1 DIFFERENTIAL REFERENCE DAC

Audiophile 24 bit/192 kHz DAC preamplifier with USB Audio interface Features

- *Two coaxial inputs*
- *Two optical inputs*
- *One USB Audio interface input*
- *One AES/EBU input*
- *Full remote control operation*
- *Gold plated discrete RCA connectors for unbalanced stereo audio output*
- *XLR connectors for Balanced Analog stereo Audio output*
- *Illuminated input indicators (Halo Backlit)*
- *5-12V trigger input*
- *12V trigger output*
- *IEC power inlet, 120/230 VAC auto configurable*

UNPACKING THE XDA-1

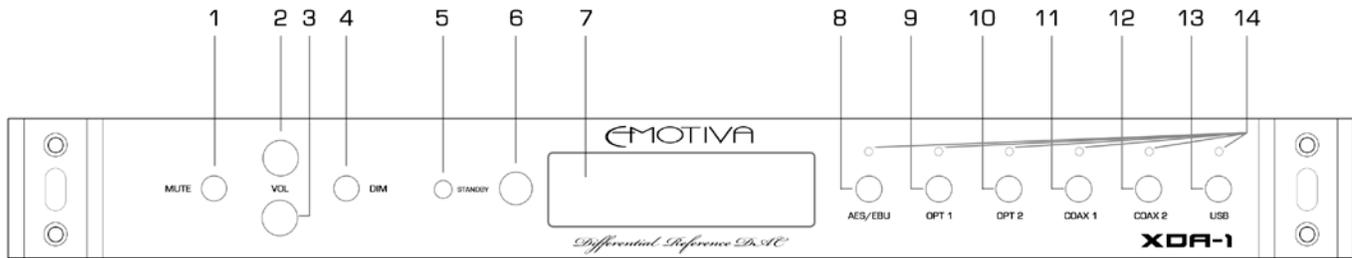
The Emotiva XDA-1 DAC preamplifier should reach you in flawless condition. If you notice any shipping damage or other issues upon unpacking the unit, please contact Emotiva immediately.

INVENTORY

Contained in the box is the Emotiva XDA-1 DAC preamplifier, the remote control and an IEC standard power cord.

Gently lift out the unit and remove all the packaging material and accessories. The XDA-1 DAC preamplifier is a delicate instrument so please unpack it carefully to avoid unnecessary damage to the unit. It is important to save all the packing materials and the boxes in case your XDA-1 ever needs to be moved or shipped back to the factory for service.

XDA-1 Front Panel Layout



(for larger image, see page 21)

1. MUTE Button

The MUTE button mutes the sound. Press it down once to mute the sound, and the display window will display "MUTE." Press it down again and the sound will return to its previous volume.

2. Volume UP Button: Raises the volume of your XDA-1

3. Volume DOWN Button: Lowers the volume of your XDA-1

4. PANEL DIM Button

The DIM button dims the display lights on your XDA-1. It has 5 settings that allow you to adjust the brightness to your liking or turn the display lights off completely.

5. Soft Touch Power switch

This turns the XDA-1 on or off. It is a non-latching momentary button. When pushed EMOTIVA will appear next with XDA-1 then the volume level in the display window. The unit will then return to the previously set input and volume levels before it was powered off.

6. IR receiver

Point the remote at this window for operation of the XDA-1 by remote.

7. Display Window

This multi-purpose window will display all necessary information such as volume, selected input etc.

8. AES/EBU Source Selection Button

Selects the AES/EBU input source.

9. OPT1 Source Selection Button

Selects the optical input connected to OPT.1.

10. OPT2 Source Selection Button

Selects the optical input source connected to OPT.2.

11. COAX 1 (CO. 1) Source Selection button

Selects the coax input source connected to CO.1.

12. COAX 2 (CO. 2) Source Selection Button

Selects the input source connected to CO.2.

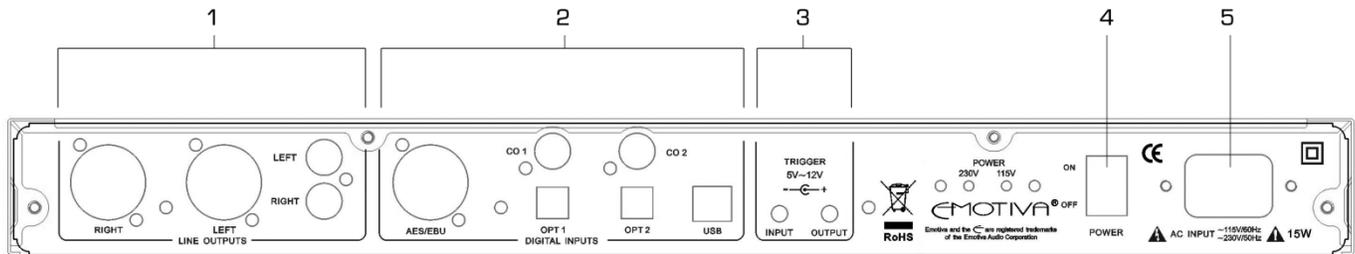
13. USB Source Selection Button

Selects the USB source connected to the USB input.

14. Input Indicator LEDs

LEDs above each selectable button illuminate when the labeled function is engaged. When receiving commands, the COM/RECV LED illuminates as well.

XDA-1 Rear Panel Layout



(for larger image, see page 22)

1. LINE AUDIO OUTPUTS Section (from left to right)

- XLR RIGHT OUTPUT
- XLR LEFT OUTPUT
- RCA LEFT OUTPUT
- RCA RIGHT OUTPUT

2. DIGITAL AUDIO INPUTS Section (from left to right)

- AES/EBU
- CO.1
- CO.2
- OPT.1
- OPT.2
- USB

3. TRIGGER IN/OUT

3.1 TRIGGER INPUT

Allows a mono to mono 3.5mm cable to remotely trigger the XDA-1 on and off. Current is limited to 500ma

3.2 TRIGGER OUTPUT

Allows a mono to mono 3.5mm cable to remotely trigger another device on and off, along with the XDA-1. Current is limited to 500mA, which is sufficient to trigger two devices. For triggering more devices, you may want to use a separate triggering device, like the Emotiva ET-3.

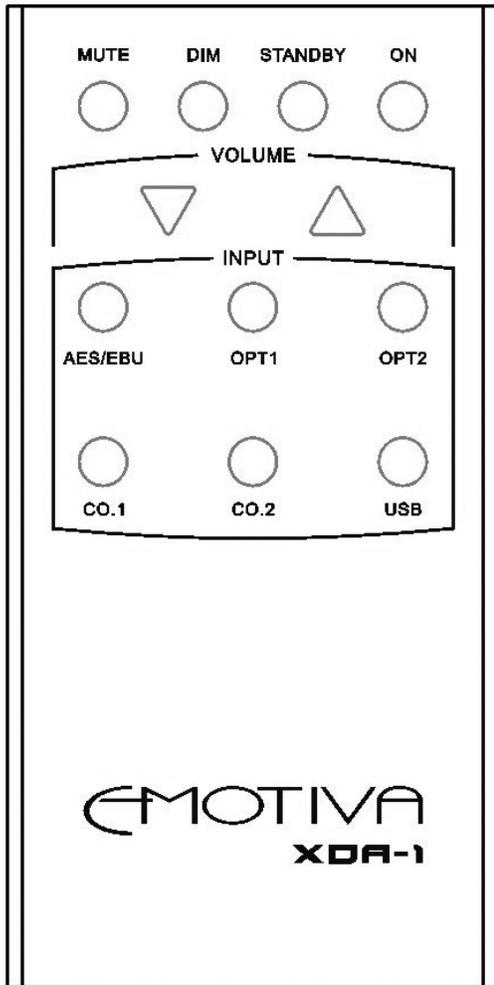
4. Main Power Switch

This rocker switch provides the master power for the XDA-1. After it is in the ON position, the XDA-1 can be turned on manually from the front panel switch, remote control, or automatically with the trigger input via a 3.5mm input jack.

5. Power Receptacle

Uses standard IEC power cord.

XDA-1 Remote



The XDA-1 DAC preamplifier has a dedicated remote control that offers discrete buttons for most of the critical XDA-1 controls.

Power Buttons

ON Button

Discrete button to turn the XDA-1 on as indicated

STANDBY Button

Discrete button to put the XDA-1 in standby mode

Volume Controls

Applies continuous increase (**UP**) or decrease (**DOWN**) in volume levels while buttons are held down.

Input Selection Buttons

These discrete buttons select the various source inputs of the XDA-1. LED's on the front panel of the XDA-1 will illuminate with the selected input

- **AES/EBU** - selects AES/EBU input as source
- **OPT1** - selects OPT1 input as source
- **OPT2** - selects OPT2 input as source
- **CO.1** - selects CO.1 input as source
- **CO.2** - selects CO.2 input as source
- **USB** - selects USB input as source

Dim Button

Varies the display intensity in 5 steps.

Mute Button

Mutes the sound when pressed. Press again to un-mute. The display window will show mute status

Changing the Battery

The XDA-1 remote is powered by 2 AAA batteries. To add fresh batteries, you must remove the 6 screws (use a no. 2 flat tip Phillips screwdriver), remove the aluminum back cover, exchange the batteries and orient the negative and positive ends as indicated by the images in the battery compartment. Emotiva recommends using alkaline batteries.

Note: In order to minimize the potential for damage to the screws holding the back cover, use only a number 2 Phillips screwdriver!

Connecting Audio Source Units

The XDA-1 DAC preamplifier can connect to up to six different audio devices, using standard XLR connector for the AES/EBU input, standard RCA analog connectors for coaxial inputs, Toslink connectors for optical inputs and USB type B to A connector for USB input .

AES/EBU

Connects to an AES/EBU source using XLR cables.

OPTICAL (OPT1 & OPT2)

Connects to an optical S/PDIF source using a Toslink optical cable.

COAXIAL (CO.1 & CO.2)

Connects to a S/PDIF source using a 75 ohm coaxial RCA cable.

USB

Connects to a USB audio interface using a standard USB type B to A cable. After the connection is made the operating system detects it as a new hardware device. Modern operation systems like Windows XP, Vista, Windows 7, Mac OS and Linux detect the hardware directly and install the correct USB audio automatically.

Note: Do not exceed 2 meters in cable length. Cable quality is critical to ensure reliable operation.

Audio Applications

Under Windows XP, Windows Vista and Windows 7 the XDA-1 can be selected as an audio output device under *Control Panel > Hardware and Sound> Sound*.

Under Mac OS X, you can select and configure the XDA-1 via the MIDI Setup application that can be found in your application folder.

The XDA-1DAC preamplifier is a playback device and can replace your on board soundcard fully for all stereo playback functions.

Connecting To Amplifiers and Speakers

When connecting to amplifiers and speakers, make sure to use the properly labeled left and right channel connections.

Check to make sure that you have connected the proper cables in the proper sequence.

DIFFERENTIAL (BALANCED) OUTPUTS

Left and right channel XDA-1 line balanced outputs into either the left and right balanced inputs of your amplifier or preamp.

UNBALANCED OUTPUTS

Left and right channel XDA-1 line RCA outputs into either the left and right balanced inputs of your amplifier or preamp.

Note: For highest performance and noise immunity, always use high quality, 100% shielded cables.

TRIGGER CONNECTIONS

5-12VDC trigger input and output are used to remotely trigger the XDA-1 or a connected device on and off. Please ensure that the total of the loads connected to this trigger do not exceed 500mA.

Troubleshooting Guide

The Emotiva XDA-1 DAC preamplifier is expertly designed and built to provide years of trouble-free service. Most problems that occur can usually be solved by checking your connections or making sure that the audio components connected to the XDA-1 are on and fully operational. The following information will help you deal with common problems you may experience during initial use of your unit. If problems persist, contact Emotiva's service department for assistance.

No Sound (from one or more full range speakers)

- Speaker cables may have come undone from the amplifier. Turn off your system and check the speaker cables, and tighten the binding posts.
- Audio output cables that connect XDA-1 to the amplifier(s) may not have a good connection. Turn off your system and check all audio cable connections.
- An audio cable may have an internal break. Switch cable with a different channel to see if the problem migrates to a different channel or stays in the affected channel(s).
- The correct input is not currently selected.
- The mute switch is on.
- Switch to a different source and see if audio is present

No Sound from the AES/EBU Input

- Make sure that the AES/EBU cable is not damaged.
- Make sure that the AES/EBU source is outputting sound properly
- Make sure that the XDA-1's AES/EBU input is selected.

No Sound from the USB Input

- Make sure that the USB cable is not damaged.
- Make sure that the XDA drivers are properly installed.
- Make sure that the XDA-1 is selected as the output device in your PC.

No Sound from the Optical Input

- Make sure that the OPTICAL cables are not damaged.
- Make sure that the source device is working properly and outputting audio properly
- Switch to a different Optical input to make sure there is audio present.

No Audio from the Coax input

- Make sure that the coax cable is not damaged.
- Make sure that the source device is working properly and outputting audio properly
- Switch to a different coax input to make sure there is audio present.

Remote Control Not Working

- Make sure the AAA batteries are not dead or installed incorrectly.
- Make sure that the XDA-1 front panel receiver window is not obstructed.
- Make sure to remove the cardboard insulator from in between the batteries.

Remotely Connected External Amplifier(s) Do Not Turn Off with XDA-1

Check the following:

- Make sure the 1/8" plug (3.5mm) is connected between the XDA-1 trigger output and the amplifier(s) trigger input(s).
- Make sure the total consumption of the connected devices do not exceed 500mA
- If you have spliced the plug to one or more amplifier turn on inputs, remember the center pin is positive and the outer shield is negative. This output is 5 to 12VDC.
- **IMPORTANT:** Make sure the trigger cable is a mono (2 conductor), not a stereo (3 conductor).

“Hum” Noises

- This problem is more than likely caused by a “ground loop” in your system, rather than a fault in the XDA-1. Follow these steps to isolate the main cause of the hum; there may even be more than one. Remember to turn off all components in your system (including the XDA-1) before disconnecting or connecting any cables.

Disconnect the following items in order, and check each time if the hum has gone away:

- Disconnect all cables which come from outside the room, such as cable TV, satellite TV, or roof top antennas. Make sure that they are disconnected where they first enter the room, so they are making no connection to the XDA-1, the TV, or any other component. If the hum is caused by the cable TV line, you will need a “ground loop isolator.” This is an inexpensive device fitted in-line with the coaxial cable feed. Contact your cable company or Emotiva for assistance.
- Disconnect any component which has a grounded power cord.
- If the hum persists, disconnect all the source components one at a time from the back of the XDA-1 until you identify the problem. (Ground loop isolators are available for audio lines and video. Ask Emotiva for assistance)
- Try moving the speaker cables away from any power cords. Try just one speaker, connecting it to different channels and see if an amplifier channel is bad.
- If you are still having a problem, remember that Emotiva’s technical support staff will assist you.

XDA-1 Technical Specifications

- **Signal-to-Noise Ratio:** > 105dB (A-Weighted)
- **Frequency Response:** 5Hz - 48kHz
- **THD+N:** 0.001%
- **Ground Floor Noise Level:** < 15uV
- **Nominal Output Voltage:** 1V RMS
- **Peak Output Voltage:** > 12VRMS (balanced)
- **Sample Rate:** All standard resolutions are supported up to 192kHz
- **Bit Depth:** Standard bit depths up to 24Bit are supported at clock frequencies up to 192kHz
- **Inputs:** 2 Optical TOSLINK, 2 COAX Digital, 1 AES/EBU, 1 USB
- **Outputs:** 2 RCA (Unbalanced), 2 XLR (Balanced)
- **Internal Volume Control:** Digitally controlled precision attenuator
- **Remote Control:** Milled aluminum full function remote control
- **I/V conversion:** Burr Brown OPA-2134
- **D/A conversion:** high performance, multibit Sigma-Delta AD1955
Data Directed Scrambling with high jitter immunity, and an 8x Oversampling Digital Filter
- Fully Discrete Differential Reference™ Output Stage with fully independent balanced and unbalanced drive stages
- **Dimensions:**
17" wide x 2.25" high (1.75" high without feet) x 14" deep

Licensing and Trademark Disclosures

Emotiva Disclosure

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All Rights Reserved. Emotiva reserves the right to make improvements to its products at any time. Therefore, the specifications of the product and the specific details of this manual are subject to change or modification.

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Limited Warranty

Emotiva is proud to design and manufacture quality products for the home audio and home theater enthusiast. Your XDA-1 Stereo Preamplifier has been built to perform flawlessly for many years. As a result of this quality and craftsmanship, Emotiva offers the following warranty to owners of the XDA-1.

Emotiva Audio warrants the XDA-1 to be free of defects in materials and workmanship for a period of FIVE YEARS from the original date of purchase. The following items are excluded from, or will void this warranty:

- 1) *Damage to the XDA-1 DAC preamplifier caused during shipment and handling.*
- 2) *Damage to the XDA-1 DAC preamplifier caused by accident, misuse, or abusive operation contrary to the instructions specified within this manual.*
- 3) *XDA-1 DAC preamplifier units that have had the serial numbers defaced, modified, or removed.*
- 4) *Damage to the XDA-1 DAC preamplifier resulting from a modification of, or attempted repair by any person or company not authorized by Emotiva.*
- 5) *Any XDA-1 DAC preamplifier unit purchased from a non-authorized dealer.*
- 6) *Emotiva does not assume liability for loss of use, or damage to, associated or connected equipment.*

Service Assistance for the USP-1

Please note that BEFORE sending your XDA-1 in for repair, you MUST call Emotiva and obtain a returned material authorization (RMA) number. Before contacting Emotiva to begin the return process, please have as detailed a description of the problem(s) you are experiencing and the conditions under which the problem(s) occur. Additionally, please be sure to check the troubleshooting guide in this manual to rule out the possibility of something simple you may have overlooked. Please remember, this is a complicated product and most instances of perceived product failure are the result of improper set up or operation. Emotiva and its dealers will help you ascertain whether you have an operational problem or product defect.

Once you have obtained the RMA number, you must print this clearly on the outside of the box so it will be possible to determine from whom the XDA-1 came once it arrives at Emotiva. Parcels arriving without an RMA number will be refused and returned freight collect.

Please send your repairs with RMA number to:

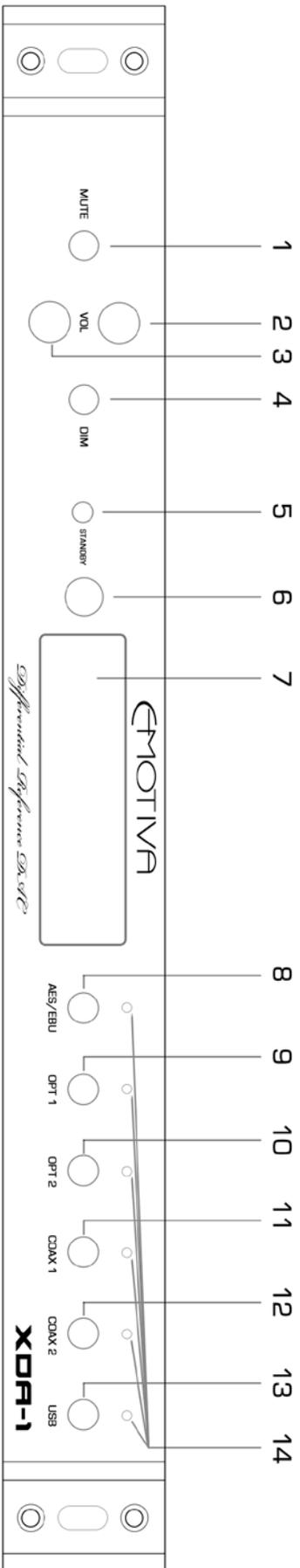
Emotiva Audio Corporation

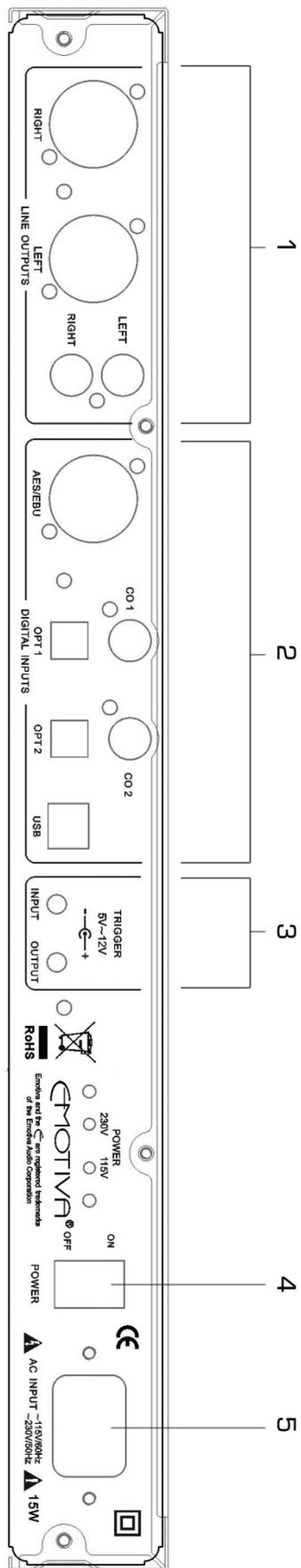
Attn: Customer Service

135 SE Parkway Court

Franklin, TN 37064

Reference - (Put your RMA number in this spot)





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