

EMOTIVA®



XDA-3

Differential Reference™ DAC

User Manual

Important Safety Precautions and Explanation of Symbols



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important installation, operation, and service instructions in this manual.



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated dangerous voltages within the enclosure that may be of sufficient magnitude to constitute a risk of electrical shock to the user.

Please read this manual thoroughly before attempting to install, configure, or operate the XDA-3 Differential Reference DAC. After successful installation and configuration of the XDA-3, be sure to retain this manual in a safe place for future reference.

Safety is a key component to a long lasting and trouble free installation. Please read and follow all instructions and heed all warnings on the XDA-3 and in this manual. The vast majority of the subsequent safety precautions are common sense. If you are not comfortable with the installation of audio/video entertainment equipment, you should seek the services of a qualified installation professional or call us for help.



WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT USE THE XDA-3 NEAR WATER OR IN WET LOCATIONS, DO NOT EXPOSE IT TO RAIN OR MOISTURE, DO NOT EXPOSE IT TO DRIPPING OR SPLASHING FROM OTHER SOURCES, AND ENSURE THAT NO OBJECTS FILLED WITH LIQUIDS (SUCH AS VASES) ARE PLACED ON IT. DOING SO MAY RESULT IN DAMAGE TO THE UNIT AND THE RISK OF ELECTRIC SHOCK, WHICH MAY RESULT IN BODILY INJURY OR DEATH.



WARNING: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE THE COVER FROM THE XDA-3. THERE ARE NO USER-SERVICEABLE PARTS INSIDE THE UNIT. REFER ALL SERVICE TO QUALIFIED SERVICE PERSONNEL.

Do not install the XDA-3 near or above any heat sources such as radiators, heating vents, or other apparatus that produces heat. Do not block any ventilation openings or heat sinks. Avoid installing the unit directly above other heat-producing equipment unless sufficient ventilation or forced-air cooling is provided.

Do not install the XDA-3 in locations without proper ventilation. The XDA-3 itself produces very little heat, but the top panel will still get warm and requires some clearance for air flow. The unit should not be installed in an enclosed location such as a bookcase, cabinet, or closed equipment rack with other equipment that will produce excessive heat unless sufficient forced-air ventilation is provided.

Always install your XDA-3 according to the manufacturer's instructions and only use attachments or accessories specified by the manufacturer.

Do not install the XDA-3 on any stand, shelf, or other piece of furniture that is unable to support its weight. If a cart is used to move the unit, use caution to avoid injury from tip-over.

Connect the XDA-3 only to power sources of the correct voltage (as shown in this manual and on the XDA-3 unit).

Protect power supply cables from being pinched, walked on, or otherwise damaged. Be especially careful where the power cable enters the power outlet and the unit.

Only connect the XDA-3 to an electrical outlet or extension cord of appropriate type and rating.

DO NOT defeat the safety purpose of a grounding or polarized plug by removing ground pins or using unsafe adapters. A polarized plug has two blades - one wider than the other. A grounding plug has a third ground prong in addition to the two main conductors. The wide blade or third grounding prong is provided for your safety. If the provided plug does not fit your outlet, consult an electrician to replace your obsolete outlet. If you replace the power cord, only use one of similar type and equal or greater current rating.

The power cable for the XDA-3 should be unplugged from the outlet during severe electrical storms, or when unused for a long period of time.

Only replace the fuse(s) in the XDA-3 with fuse(s) of proper value and voltage rating.

The XDA-3 should only be cleaned as directed in the manual. Avoid spraying liquids directly onto the unit. Do not insert or allow small parts or hardware to fall into the connectors on the unit.

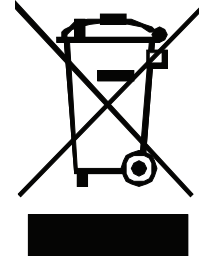


You should seek service for your XDA-3 by qualified service personnel if any of the following occur:

1. The power-supply cord or the plug has been damaged.
2. Objects or liquid have fallen or spilled into the unit.
3. The unit has been exposed to rain.
4. The unit exhibits a marked change in performance.
5. The unit has been dropped, or its enclosure or chassis is damaged.

NOTE: TO COMPLETELY DISCONNECT THE XDA-3 FROM THE AC POWER MAINS, DISCONNECT THE AC POWER CORD FROM THE AC RECEPTACLE.

NOTE: THE POWER CORD ON THE XDA-3 MUST REMAIN READILY ACCESSIBLE AT ALL TIMES.



FCC Interference Statement

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 the interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or 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 the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that of the receiver.

Consult the dealer or an experienced radio/TV technician for help.

Emotiva Audio Corporation
Attn: Repair Department
139 Southeast Parkway Court
Franklin, TN 37064

Tel 1-877-366-8324
www.emotiva.com



XDA-3 Differential Reference™ DAC

Contents

Important Safety Precautions and Explanation of Symbols	
FCC Interference Statement	
XDA-3 Differential Reference™ DAC	1
Introduction	3
About This Manual.....	4
Features	5
Unpacking.....	6
XDA-3 Front Panel.....	7
XDA-3 Remote Control	9
XDA-3 Rear Panel.....	11
Quick Start	14
Using The USB Input.....	15
Using The HDMI-ARC Input.....	17
Care and Maintenance	18
Inputs and Outputs	19
Specifications.....	20
Emotiva Audio Corporation Five-Year Limited Warranty	23
Notes.....	26

Introduction

Thank you for purchasing the new Emotiva XDA-3 Differential Reference DAC.

The XDA-3 Differential Reference DAC is a lot more than just a superb audiophile quality digital-to-analog converter. The XDA-3 is also a fully capable audiophile preamp and control center, with both digital and analog inputs, an HDMI ARC input that can accept a digital audio signal directly from your TV, a real analog ladder network volume control, and a high-performance super-low-distortion headphone amplifier.

The XDA-3 has a variety of standard digital audio inputs, including two optical (Toslink) S/PDIF inputs, two electrical (Coax) S/PDIF inputs, and one high performance USB digital audio input. The USB input on the XDA-3 accepts stereo PCM digital audio at bit depths and sample rates up to 32/768k, DSD digital audio in the DoP format up to DSD256, and DSD digital audio in the native DSD format up to DSD512. The HDMI-ARC input accepts a digital audio signal directly from your TV, which enables the XDA-3 to play audio from TV apps, and from other HDMI sources connected to your TV. The XDA-3 also includes two pairs of stereo line level analog inputs, one balanced and one unbalanced, which you can use to connect analog source devices like a phono preamp or portable music player.

Digital audio received by the XDA-3 is converted into analog by an audiophile quality ESS ES9038Q2M SABRE³² Reference DAC chip and its associated precision power supply and reference circuitry. The fully balanced fully differential analog output from the DAC is then routed to the digitally controlled analog ladder network volume control, and then to the balanced outputs, via OPA1656 low-distortion ultra-low-noise op amps. A separate balanced-to-unbalanced converter stage derives the unbalanced output signal for the RCA outputs directly from the fully differential output signal. The XDA-3 offers a choice of seven user selectable oversampling filters, each of which offers a subtly different listening experience, and which can be accessed directly from the remote control. Analog inputs to the XDA-3 are routed directly to the output, via precision buffer circuitry, and the analog ladder network volume control, and always remain in the analog domain.

The XDA-3 also includes a high-quality current feedback headphone amplifier which offers superb performance and incredibly low distortion. An attractive, fully dimmable, blue OLED display shows the current Volume setting and Input choice, as well as the sample rate and format of the incoming audio signal. The display switches momentarily to show additional information when the format of the incoming audio signal changes or you change the selected oversampling filter. In addition to the display, the front panel of the XDA-3 includes separate buttons for changing Inputs, adjusting the Volume, and toggling Standby mode, and a convenient full-sized 1/4" stereo headphone output.

The full function machined aluminum remote control offers separate buttons for selecting each input individually, controlling volume and muting, adjusting the display brightness, and displaying or changing the selected oversampling filter.

We designed the XDA-3 from the ground up to deliver the same superb listening experience with both digital and analog sources... either as a source component or as a fully capable digital and analog preamp and control center. We hope you enjoy using your XDA-3 as much as we enjoyed designing and perfecting it.

Happy Listening!

The Emotiva Team

About This Manual

This manual will provide you with all the information you need to get great sound, and many years of reliable service, from your XDA-3. The manual also includes a brief summary of the features offered by the XDA-3 and describes how the controls work and how to perform common operations.

We suggest that you read through the entire manual; we kept things as short and direct as possible. Even if you're an expert user, you will probably find some interesting information and useful suggestions.

You may wish to keep a copy of this manual with your records, and record serial numbers or other purchase information on the Notes page at the back.

Features

The XDA-3 is an audiophile quality two-channel digital-to-analog converter (DAC), with both digital and analog inputs, which can be used as both a DAC and a control center or preamp. The digital audio inputs on the XDA-3 support most standard sample rates and stereo digital audio formats, the HDMI-ARC input accepts digital audio directly from your TV, and the analog inputs enable you to connect analog sources like a phono preamp or portable audio player. Unlike many less sophisticated DACs, the XDA-3 uses a digitally controlled analog ladder network volume control, which doesn't reduce the resolution at low listening levels, for both its digital and analog inputs. The XDA-3 also includes a high quality internal headphone amp, with a full-sized 1/4" front panel headphone jack. An informative front panel display shows the current Volume and Input selections, and changes to show the sample rate and format when you select a new Input or the signal changes. We've also included a solid metal full function infrared remote control, which enables you to control all major functions, including the seven user-selectable oversampling filters provided by the XDA-3's audiophile quality ESS ES9038Q2M SABRE³² Reference DAC chip.

Features offered by the XDA-3 include:

- The XDA-3 is both an audiophile quality DAC and a preamp, with both digital and analog inputs, an analog ladder network volume control, and a high quality headphone amplifier.
- Four digital inputs (2 Coax and 2 Optical) which support up to 24/192k stereo PCM audio.
- One high-performance USB digital input that supports stereo PCM digital audio up to 32/768k, DoP DSD audio up to DSD256, and native DSD audio up to DSD512.
- One HDMI-ARC input which accepts digital audio directly from your TV.
- Audiophile quality ESS ES9038Q2M SABRE³² Reference DAC chip.
- ESS Hyperstream® II DAC architecture and Time Domain Jitter Eliminator for exceptional digital performance and superb sound quality.
- Seven user-selectable oversampling filters to customize your listening experience.
- Differential Reference™ balanced design with OPA1656 low-distortion ultra-low-noise op amps used throughout the analog stages.
- TPA6120A2 monolithic Class A/B current feedback headphone amplifier that delivers plenty of power with exceptionally low noise and distortion.
- True fully balanced fully differential operation from the DAC chip to the balanced outputs.
- Separate balanced-to-unbalanced converter stage for the unbalanced outputs.
- Fully analog signal path for both balanced and unbalanced analog inputs.
- Trigger Input and Trigger Output enable the XDA-3 to both control and be controlled by other trigger-enabled equipment.
- All features can be accessed and controlled directly from the machined aluminum full function remote control (no complex menu system).
- Informative front panel display (with configurable brightness) for input and sample rate.
- Independent control and retention of main output level and headphone volume.
- Universal AC voltage—automatic 115VAC/230VAC operation.
- Transferrable 5-year warranty, 30-day in-home trial.

You can find more information about the Emotiva XDA-3 on our website at www.emotiva.com.

Unpacking

Your XDA-3 was carefully packed and should reach you in perfect condition. If you notice any shipping damage or other issues when you unpack it, please contact Emotiva immediately.

Gently remove your XDA-3 from the packing carton and remove all wrappings and shipping material.

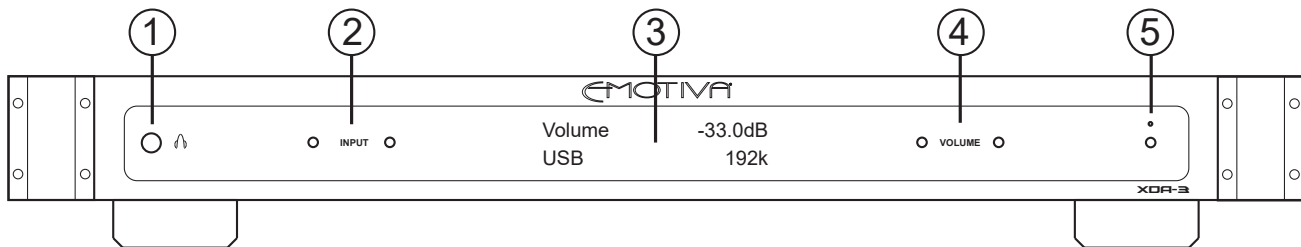
It is important to save the box and all packing materials in case your XDA-3 ever needs to be moved or shipped back to the factory for service.

We truly value customer feedback and would like to hear from you.

Included in the box you will find:

- Your XDA-3 Differential Reference DAC.
- Machined Aluminum Remote Control.
- Detachable IEC Power Cable.

XDA-3 Front Panel



1. Headphone Jack (1/4")

The XDA-3 includes a monolithic high performance current feedback headphone amplifier with wide dynamic range and exceptionally low noise and distortion. When there are headphones plugged into this jack, the main outputs are muted, and the Volume buttons on the front panel (and on the remote control) adjust the headphone output level.

2. Input Selector Buttons

Press either of the Input Selector buttons to cycle the XDA-3 through its available inputs. Each Input is momentarily displayed full-screen on the front panel OLED display as it is selected. (The Input buttons on the remote control switch directly to each input.)

3. Front Panel Display (Alphanumeric OLED Display)

The easy to read alphanumeric OLED display on the front panel of the XDA-3 normally displays the Volume setting, the selected Input, and the sample rate of the incoming audio signal. It switches to a more focused single-mode display when relevant information is available. For example, when you change Volume, a full screen Volume bar is displayed and, when you select an Input, the name of that Input is displayed full screen. The brightness of this display can be adjusted by using the Dim button on the remote control.

4. Volume Up and Volume Down Buttons

Press the Volume Up and Volume Down buttons to raise and lower the Volume on the XDA-3. A single press moves the Volume one step, holding the button causes the Volume to continuously move smoothly up or down. When there are headphones plugged in, the Volume buttons on the front panel (and on the remote control) adjust the headphone output level. When no headphones are plugged in, the Volume buttons adjust the main output level. Both settings are stored independently.

Volume control for both digital and analog audio inputs is via a precision digitally controlled analog resistor ladder network, which moves in precise 0.5 dB steps, and ensures absolute repeatability and near-perfect channel matching at all Volume settings. Unlike digital volume controls, the XDA-3's analog volume control doesn't reduce bit depth, nor introduce grain or distortion, at low volume settings.

5. Standby Button and Standby Indicator

When the rear panel AC Power switch is On, press this button to switch the XDA-3 On; press it again to return to Standby. You may also switch the XDA-3 On and Off using the On and Standby buttons on the remote control.

Note: When the XDA-3 is in Standby Mode the Standby Indicator will be illuminated AMBER. When the XDA-3 is On the Standby Indicator will NOT be lit.

Note: The rear panel AC Power switch must be on for the XDA-3 to operate. If the rear panel AC Power switch is Off, the XDA-3 will not respond to either the front panel controls or the remote control.

XDA-3 Remote Control

The solid aluminum full-function remote control for the XDA-3 includes several functions that are not included in the front panel controls, including the Mute, Dim, and Filter buttons, as well as buttons that enable you to directly select Inputs.

Standby & On Buttons

Press the On button to turn the XDA-3 On from Standby Mode. Press the Standby button to return the XDA-3 to Standby Mode.

Note: The rear panel AC Power switch must be On for the XDA-3 to operate. If the rear panel AC power switch is Off, the XDA-3 will not respond to either the front panel controls or the remote control.

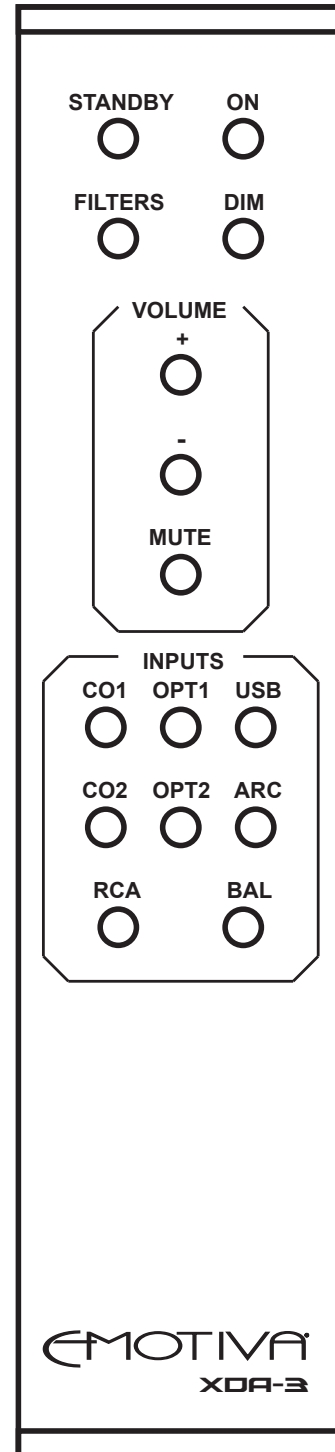
Filters Button

The Sabre ES9038Q2M DAC includes a choice of seven user-selectable oversampling filters, each of which delivers a subtly different user listening experience. The first time you press the Filters button it will display the number of the currently selected Filter. Pressing the Filters button repeatedly while the Filter Number is displayed will cycle through the available filters. To select a Filter simply stop pressing the button when the desired Filter Number is displayed and wait a few seconds.

Dim Button

Press the Dim button once to see the current Brightness setting. Pressing the Dim button repeatedly will cycle through the available Brightness settings. To select a Brightness setting simply stop pressing the button when the desired setting is displayed and wait a few seconds.

Note: The front panel display and LEDs will be fully off with the Brightness set to 0. The maximum Brightness setting is 10.



Volume (+) & Volume (-) Button

Press the Volume (+) and Volume (-) buttons to raise and lower the Volume. A single press moves the Volume one step, holding the button causes the Volume to continuously move smoothly up or down. When there are headphones plugged in, the Volume buttons on the front panel (and on the remote control) adjust the headphone output level. When no headphones are plugged in, the Volume buttons adjust the main output level. Both settings are stored independently.

Volume control for both digital and analog audio inputs is via a precision digitally controlled analog resistor ladder network, which moves in precise 0.5 dB steps, and ensures absolute repeatability and near-perfect channel matching at all Volume settings. Unlike digital volume controls, the XDA-3's analog volume control doesn't reduce bit depth, nor introduce grain or distortion, at low volume settings.

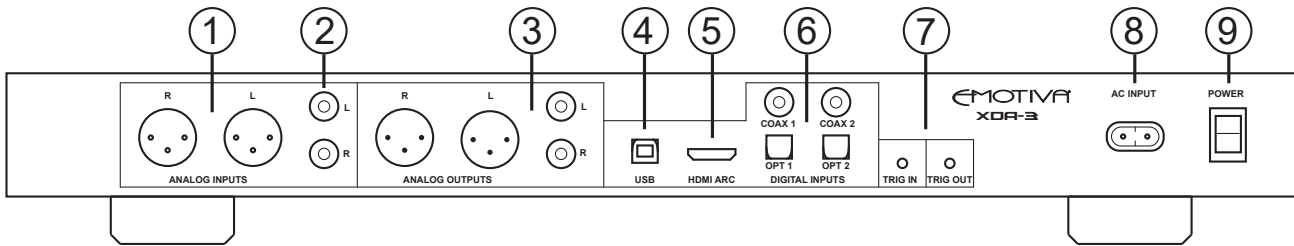
Note: If the XDA-3 is in Mute Mode pressing the Volume (+) button will toggle Mute Off.

Inputs (Direct Select)

Press any of these buttons to directly select the Input of your choice.

- CO1 - Coax (electrical S/PDIF) Digital Audio Input (#1)
- CO2 - Coax (electrical S/PDIF) Digital Audio Input (#2)
- OPT1 - Toslink (optical S/PDIF) Digital Audio Input (#1)
- OPT2 - Toslink (optical S/PDIF) Digital Audio Input (#2)
- USB - USB Digital Audio Input
- ARC - ARC (TV audio return channel) Digital Audio Input
- RCA - Unbalanced Analog Audio Input
- BAL - Balanced (XLR) Analog Audio Input

XDA-3 Rear Panel



1. Balanced (Analog) Inputs

Connect any stereo balanced analog audio source to these Inputs.

2. Unbalanced (Analog) Inputs

Connect any stereo unbalanced analog audio source to these Inputs.

3. Balanced & Unbalanced (Analog) Outputs

Connect these outputs to a set of balanced or unbalanced inputs on your preamp if you want to use the XDA-3 as a DAC or source component. Connect them directly to your power amplifier if you want to use the XDA-3 as a high performance DAC and preamplifier / control center.

Note: Both Balanced and Unbalanced outputs are active at the same time. The level of both sets of outputs is controlled by the Volume and Mute controls.

Note: The main outputs are muted when headphones are plugged into the front panel. When there are headphones plugged in, the Volume buttons on the front panel (and on the remote control) adjust the headphone output level. When no headphones are plugged in, the Volume buttons adjust the main output level. The XDA-3 stores both settings independently. When you unplug the headphones, the main output level will return to its previous setting; when you plug the headphones back in, they will return to their previous setting.

4. USB (Digital) Input

Connect your computer or other similar digital audio source to this input. Your computer or source device will recognize the XDA-3 as a USB Audio Class 2 (UAC2) compliant "USB audio output device" or "external USB DAC". (Some source devices may identify the XDA-3 as "Emotiva XDA-3". Others may report it as "SXW CTUAD768 PRM-A", which is the name of the high performance audio interface chip we use. And, if you've installed special drivers, it may be identified by the driver or drivers you've chosen to use.)

See the section entitled Using The USB Input for more details.

5. HDMI ARC (Digital) Input

Use this input to connect the XDA-3 to the ARC (Audio Return Channel) output of a TV set or projector. The XDA-3 is a STEREO DAC and so will only accept a stereo audio input.

See the section entitled *Using The HDMI ARC Input for more details.*

Note: The HDMI-ARC connection on your TV is intended to deliver a digital audio OUTPUT to an AVR or preamp/processor when the audio source is either an App running on your TV or a device connected directly to one of the other inputs on your TV. HOWEVER, EVEN THOUGH YOU WILL BE USING THE HDMI-ARC CONNECTION ON YOUR TV TO OUTPUT A DIGITAL AUDIO SIGNAL, BECAUSE THAT CONNECTION IS ALSO NORMALLY USED TO INPUT A VIDEO SIGNAL TO THE TV, IT WILL BE LABELED ON YOUR TV AS AN "HDMI-CEC INPUT" or "HDMI/ARC INPUT".

Note: The HDMI-ARC connection between your TV and the XDA-3 uses an ordinary HDMI cable. This connection does not require a high speed HDMI cable. HOWEVER, BE SURE TO USE AN HDMI CABLE THAT INCLUDES AN ARC CONNECTION, WHICH VIRTUALLY ALL MODERN HDMI CABLES INCLUDE. IF YOU PLAN TO USE A SPECIAL POWERED HDMI CABLE OR OTHER TYPE OF HDMI EXTENDER, BE SURE THAT IT ALSO SUPPORTS ARC. ALSO NOTE THAT, WHILE WE EXPECT HDMI-ARC ON THE XDA-3 TO WORK WITH MOST POWERED CABLES AND EXTENDERS THAT SUPPORT ARC, WE CANNOT PROMISE THAT IT WILL, AND CANNOT PROVIDE SUPPORT IF YOU ARE UNABLE TO GET IT TO WORK.

6. Optical 1 & Optical 2 Toslink Optical S/PDIF (Digital) Inputs Coaxial 1 & Coaxial 2 Electrical S/PDIF (Digital) Inputs

These inputs accept optical S/PDIF (Toslink) and electrical S/PDIF (Coax) digital audio signals, in stereo PCM format, at sample rates up to 192k and bit depths up to 24 bits.

Note: The XDA-3 is a stereo PCM DAC and only accepts STEREO PCM digital audio signals. The XDA-3 CANNOT decode DTS, Dolby Digital, or other surround sound audio formats.

Note: For computer-based sources, or other source devices that support either higher sample rates, or other formats like DSD, use the USB Digital Audio input.

Note: If you attempt to play DTS-encoded audio files on some equipment that doesn't recognize DTS encoding, the undecoded DTS audio files may be sent to the XDA-3, which may result in an unpleasant digital screeching noise. (This will not harm anything, but suggests that your source equipment either cannot properly process DTS-encoded files, or is not configured correctly to do so.)

6. Trigger Input & Trigger Output

The Trigger Input will enable the XDA-3 to be turned on by a trigger signal from another piece of trigger-enabled gear. The Trigger Output on the XDA-3 will enable the XDA-3 to turn on other trigger-enabled gear. The Trigger Output on the XDA-3 is active when the XDA-3 is On.

Note: The XDA-3 can only be turned on by a trigger signal if it is in Standby Mode. The XDA-3 will NOT respond to a trigger signal if the rear panel AC Power Switch is Off.

8. IEC Power Cord Receptacle

Accepts a standard IEC power cable. A high quality commercial power cord is provided with the XDA-3.

9. AC Power Switch

Switches the main AC power to the XDA-3 On and Off. When this switch is Off, no controls operate, and the XDA-3 cannot be turned On by the remote control or a trigger signal.

Quick Start

To get the most from your XDA-3, we urge you to read the entire manual. If you just can't wait to listen to it, this section will cover the basics you need to get started.

- Find a secure location for your XDA-3.
- Connect your XDA-3 to one or more digital audio sources.
- Connect the analog output of your XDA-3 to a line level input on your preamp, or directly to your power amp.
- Find some music you *really* like to listen to.
- Turn on the AC Power switch and turn up the volume a bit!
- Enjoy!

Note: The USB input on the XDA-3 will work, without additional drivers, on both current Windows and Apple computers, as well as many smart phones and other source devices. However, you will probably have to configure your source device to support anything beyond its default sample rate, or to support audio formats other than PCM.

Using The USB Input

The USB Input on the XDA-3 is intended for connecting a computer or other computer-based digital audio source. The USB input on the XDA-3 will be recognized by the computer or source device as a standard USB Audio Class 2 external DAC or sound card, and supports PCM playback at bit depths and sample rates up to 32/768k, without the need to install any additional drivers. The XDA-3 will show up on your list of output devices as either Emotiva XDA-3 or SXW CTUAD768 (the high performance USB hardware in the XDA-3).

The XDA-3 also supports playback of DSD audio files via USB. The XDA-3 supports DoP-via-USB at rates up to DoP256 and native-DSD at rates up to DSD512. Additional ASIO drivers, which we provide, must be installed in order to support playback of DSD files on Microsoft Windows. Some player programs for Apple computers reportedly include internal support for one or both of these options as well.

Note: The USB input on the XDA-3 will work, without additional drivers, on both current Windows and Apple computers, as well as many smart phones and other source devices, and supports PCM at sample rates up to and including 32/768k. However, by default, both Windows and Apple computers resample any digital audio they play to a preset default sample rate. Many higher quality player programs offer ways to bypass this resampling but each has specific settings and configuration options to do so.

Note: The XDA-3 supports true DSD playback via USB using two different methods: "DoP" and "native DSD". Both of these methods are ways in which a DSD digital audio stream can be encapsulated and sent to the DAC via a PCM audio stream over USB. Both deliver an identical bit-perfect copy of the original DSD digital audio stream. (Native DSD uses packet bandwidth somewhat more efficiently and so permits a slightly higher DSD sample rate to be supported over a given connection.)

DoP, which is the more standard method, is supported by many high quality player programs. In order to use DoP on Windows computers, you must install the ASIO drivers, which we provide. Some Apple player programs also support DoP, with the necessary driver support being provided internally by the computer.

Native DSD, which is really a variant of DoP, is more complex, and may require additional settings or additional software. (For example, in FooBar2000, a separate proxy converter program must be installed and configured in addition to the ASIO driver and support required to support the standard DoP format.)

Note: By default both Microsoft Windows and Apple computers use PCM as their preferred format for sending audio data to a DAC. In addition to this, some programs, when specifically configured to do so, can send DSD directly to the DAC. However, when you play other types of encoded or compressed audio files, like FLAC, or ALAC, or MP3, or AAC, the file is first decoded by the player program, then sent to the DAC as PCM (or DSD). Therefore, you have no need to worry about whether your DAC supports a specific file format, as long as your player program supports it.

XDA-3 DIFFERENTIAL REFERENCE DAC

Note: The USB Input on the XDA-3 will appear to your computer or other source component as an external DAC or sound card. The XDA-3 CANNOT play audio files directly from a USB stick.

Note: If you play MQA files, or MQA encoded audio from streaming sources like Tidal, the important “first unfold” is usually performed by your player program. The XDA-3 is neither “an MQA renderer” nor “an MQA decoder”. However you will find that MQA files that are unfolded by the player client, for example tracks that you play on Tidal using the Tidal client, will still sound excellent when played through the XDA-3.

WHILE WE CANNOT OFFER DETAILED SUPPORT FOR EVERY SOURCE DEVICE OR COMPUTER YOU MAY CHOOSE TO USE WITH THE XDA-3, WE WILL BE HAPPY TO OFFER YOU SUPPORT FOR CONFIGURING AND ENJOYING YOUR XDA-3, AND AS MUCH SUPPORT AS WE CAN REGARDING HOW TO CONFIGURE VARIOUS PLAYER PROGRAMS TO WORK WITH IT. WE HAVE ALLOCATED ROOM ON OUR SERVERS FOR A COLLECTION OF RESOURCES ABOUT HOW TO USE YOUR XDA-3 WITH VARIOUS SOURCES, PLAYER PROGRAMS, AND OTHER DEVICES. THIS LOCATION WILL ALSO BE A REPOSITORY FOR THE CURRENT ASIO DRIVERS FOR THE XDA-3.

We also expect to start a section on our forum, The Emotiva Lounge, dedicated to both the XDA-3, and to various resources and sources for high quality music.

You can access the XDA-3 Resource Collection from the following link:

<https://www.dropbox.com/scl/fo/snikkaww2oa299merjabz/h?dl=0&rlkey=0b3xnjhyardkatoldfw5d9mkr>

You will also find a link to it on the bottom of the XDA-3 product page on our website.

Or you can access it by clicking on the QR code below.



Using The HDMI-ARC Input

The Audio Return Channel (HDMI-ARC) is a feature that is available on virtually all modern TV sets. ARC is also currently available on one or two projectors and will probably be available on more projectors in the near future. It is important that you understand how HDMI-ARC works before using it to connect your XDA-3 to your television set.

Before smart TVs became popular, when a system included a TV or projector and an AVR or preamp/processor, the various sources were connected to the AVR or processor, and the output of the AVR or processor was then connected to an input on the TV. The AVR or processor then intercepted the incoming audio/video signal, extracted the audio portion of the signal, which it then processed and played, and passed the remaining video signal to the display.

However, with modern smart TVs, we often encounter situations where the audio portion of the signal originates in the TV itself. This is the case when you are watching programming that originates with a streaming App running on the TV, or if you have a source device like a gaming console connected directly to the TV, rather than to the AVR or processor. This may be done to minimize latency for gaming or because the source and TV support a resolution or frame rate not supported by the AVR or processor. In these situations HDMI-ARC may be used to route audio from the TV to the AVR or processor.

This connection may also be used to enable you to play high quality digital audio from your TV through your main audio system via the HDMI-ARC input on the XDA-3.

When you use HDMI-ARC, the audio signal travels “backwards” through the HDMI cable that normally carries the video signal from the AVR or processor to the input on the TV. The HDMI-ARC audio signal travels FROM the input on the TV TO the output of the AVR or processor. Therefore, when you use the HDMI-ARC Input on the XDA-3, you will be connecting an HDMI cable from the HDMI-ARC Input on the XDA-3, TO THE HDMI-ARC *INPUT* ON THE TV.

Note: EVEN THOUGH YOU WILL BE USING THE HDMI-ARC CONNECTION ON YOUR TV TO OUTPUT A DIGITAL AUDIO SIGNAL, THAT CONNECTION IS NORMALLY USED AS A VIDEO INPUT ON THE TV, SO IT WILL BE LABELLED ON THE TV AS AN HDMI-CEC/ARC INPUT.

Note: The HDMI-ARC connection between your TV and the XDA-3 uses an ordinary HDMI cable. This connection does not require a high speed HDMI cable. HOWEVER, BE SURE TO USE AN HDMI CABLE THAT INCLUDES AN ARC CONNECTION, WHICH VIRTUALLY ALL MODERN HDMI CABLES INCLUDE. IF YOU PLAN TO USE A SPECIAL POWERED HDMI CABLE OR OTHER TYPE OF HDMI EXTENDER, BE SURE THAT IT ALSO SUPPORTS ARC. ALSO NOTE THAT, WHILE WE EXPECT HDMI-ARC ON THE XDA-3 TO WORK WITH MOST POWERED CABLES AND EXTENDERS THAT SUPPORT ARC, WE CANNOT PROMISE THAT IT WILL, AND CANNOT PROVIDE SUPPORT IF YOU ARE UNABLE TO GET IT TO WORK.

Note: Once you connect the HDMI-ARC Input on the XDA-3 to your TV it should appear on the list of output devices on your TV. Your TV should automatically detect and use ARC rather than eARC. Your TV should also automatically detect that the XDA-3 is a stereo device and automatically send audio to it in the correct audio format.

Care and Maintenance

Periodic Maintenance

Your XDA-3 requires no periodic maintenance or calibration.

Cleaning Your XDA-3

- If necessary, the XDA-3 should be cleaned gently with a soft rag.
- If something sticky gets on the front panel or case of the XDA-3, it should be cleaned with a mild cleaning solution applied to a soft rag, followed by wiping with a clean rag dampened with plain water and drying with a soft dry rag or cloth.

Note: DO NOT spray water or cleaning solution directly onto the XDA-3 or into the display or connectors.

Replacing The Batteries in Your XDA-3 Remote Control

Emotiva recommends using high quality Alkaline AAA batteries in the XDA-3 remote control.

- Remove the back plate of the remote control.

The back plate of the XDA-3 remote control is attached magnetically. To remove the back plate, insert a small screwdriver into the small slot on the back plate at the bottom edge and pry it *gently* upwards. As soon as the back plate is free of the magnets holding it, you will be able to lift it entirely free of the body of the remote control.

- Locate the battery holder.
- Note the direction in which the batteries are installed in the holder.
- Remove the depleted batteries and dispose of them in accordance with the manufacturer's recommendations.
- Insert new batteries, taking care to insert them in the same orientation (facing the same way) as the original batteries.
- Replace the back plate (the slot should be toward the bottom end of the remote control and the small metal loop next to the slot should be on the inside when the back is in place.)

Your remote control is now ready to use.

Note: Your XDA-3 may arrive with the batteries packaged separately, or the remote control may arrive with batteries already installed, but with a small insulator installed between one battery and the battery contact to prevent the batteries from discharging in shipping. If so, then simply follow the instructions for opening the remote control, and pull out the small insulator strip that is inserted between the end of the battery and the battery contact, before using your remote control.

Inputs and Outputs

Topology:

The XDA-3 is a high performance two channel PCM audio DAC, with a variety of digital inputs, including a very high performance USB input, an HDMI-ARC input, and two stereo analog inputs. The XDA-3 features a fully balanced differential analog signal path, and a true analog ladder network Volume control, for superb performance, as both a DAC and a preamp.

Inputs:

- Coax electrical S/PDIF digital audio inputs (2).
- Toslink optical S/PDIF digital audio inputs (2).
- HDMI-ARC digital audio input (1).
- High performance USB digital audio input (1).
- Stereo Balanced analog audio input (1).
- Stereo Unbalanced analog audio input (1).

Outputs:

- Main Outputs (balanced / XLR), variable level (1 stereo pair).
- Main Outputs (unbalanced / RCA), variable level (1 stereo pair).
- Headphone output, 1/4" stereo, front panel (1).

Audio Formats and Bit Rates Supported:

- Stereo PCM digital audio via USB at all standard sample rates and bit depths up to 32/768k (no drivers required for Windows, Apple, and most Linux computers).
- Stereo DoP (DSD-over-PCM-over-USB) via USB at DoP64, DoP128, and DoP256 (ASIO driver or support required).
- Native DSD via USB at DSD64, DSD128, DSD256, and DSD512 (ASIO driver and additional software support required).
- Stereo digital audio via S/PDIF (optical and electrical) at all standard sample rates and bit depths up to 24/192k.
- Stereo digital audio via HDMI-ARC (sample rates and bit depths determined by source).
- Analog audio via one pair of stereo Balanced (XLR) Inputs and one pair of stereo Unbalanced (RCA) Inputs.

Trigger:

Trigger Input; Trigger Output (output +12V DC; input 5-12 V AC/DC).

Power Requirements:

115 VAC or 230 VAC +/- 10% @ 50 / 60 Hz (automatically detected and switched).

Dimensions:

17" wide x 2.25" high x 13.5" deep (includes feet and connectors).

Weight:

8-1/2 pounds (unboxed).

Specifications

Circuit Highlights:

Digital to Analog Conversion: ESS ES9038Q2M SABRE³² Reference DAC

(32 bit Stereo DAC with Hyperstream® II DAC architecture and Time Domain Jitter Eliminator).

Headphone Amplifier: Texas Instruments TPA6120A2

(high-power, very high fidelity, current-feedback monolithic Class A/B headphone amplifier).

Volume Control: NJW1195A

(digitally controlled analog ladder network volume control).

Analog Signal Path Active Electronics: OPA1656

(ultra-low-noise, low-distortion, FET-input, audio operational amplifiers).

USB Interface: Comtrue CT7601 32 bit 768 kHz USB Audio Bridge

(supports PCM up to 32/768k; DoP up to DoP256; native-DSD up to DSD512).

Rated Output:

2.0 VRMS .

Analog Signal Path

Frequency Response: 10 Hz to 55 kHz +0 /- 0.2 dB .

Signal to Noise (S/N) Ratio: > 110 dB.

Crosstalk: < 91 dB.

THD: < 0.001% at 1 kHz.

THD: < 0.0015% 20 Hz to 20 kHz.

IMD: < 0.0005%.

Digital Signal Path

Frequency Response: 20 Hz to 20 kHz +/-0.1 dB (44.1k and above sample rates).

Signal to Noise (S/N Ratio: > 95 dB (44.1 kHz sample rate).

Signal to Noise (S/N Ratio: > 110 dB (48 kHz and above sample rates).

Crosstalk: < 100 dB.

THD: < 0.0035% (16 bits).

THD: < 0.002% (24 bits).

IMD: < 0.0025% (44.1k sample rate).

IMD: < 0.0005% (48 kHz and above sample rates).

Note: The frequency response with digital input signals is determined by the sample rate of the incoming digital signal and the oversampling filter selected.

User-Selectable Oversampling Filters (DAC):

- Filter #1: Linear Phase Fast Roll-Off.
- Filter #2: Linear Phase Slow Roll-Off.
- Filter #3: Minimum Phase Fast Roll-Off.
- Filter #4: Minimum Phase Slow Roll-Off.
- Filter #5: Apodizing Fast Roll-Off.
- Filter #6: Hybrid Fast Roll-Off.
- Filter #7: Brick Wall.

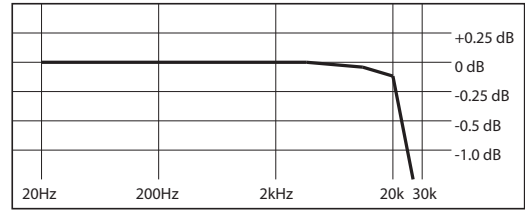
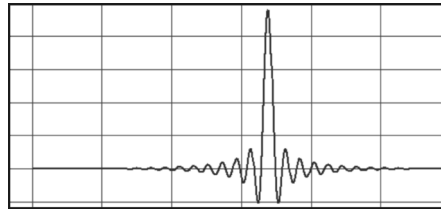
The graphs on the next page show the typical impulse response and frequency response of the various filter options. (The frequency response plots correspond to an input sample rate of 44.1k or 48k. The roll-off frequencies will be higher at higher sample rates.)

Note that most of the filters deliver a flat frequency response in the audible spectrum. The major differences between the frequency responses of the various filters occur outside the audible frequency range, and at extremely low signal levels, and contribute little to the audible differences between the filters. The audible differences between the filters are mainly due to the amount and type of pre-ringing and post-ringing that result as musical transients are processed by the different filters - and can be quite subtle. In many cases you will find that specific high quality recordings will sound "more natural" or "more real" when you select one particular filter option.

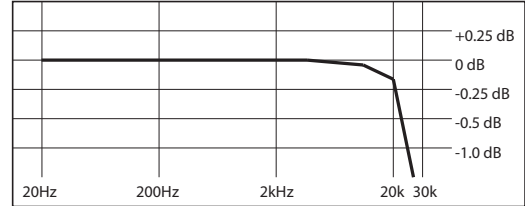
Since the ideal filter option is both a matter of personal preference, and of the specific content you are listening to, we have provided a button that allows you to cycle through the various options right on the remote control. Press the Filters Button once to display the current filter; and press it multiple times to cycle through the available filter options.

XDA-3 DIFFERENTIAL REFERENCE DAC

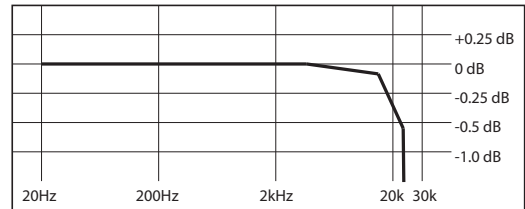
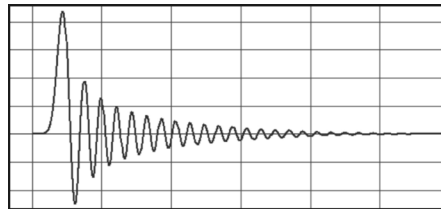
Filter #1
Linear Phase
Fast Roll-Off



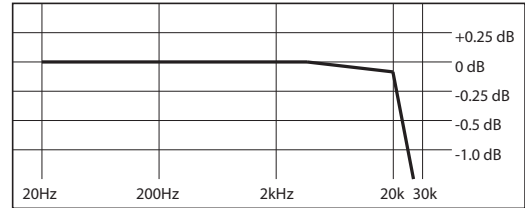
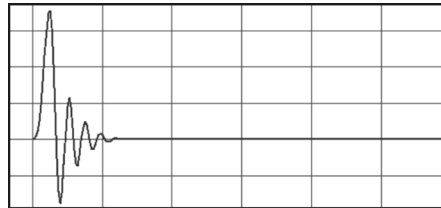
Filter #2
Linear Phase
Slow Roll-Off



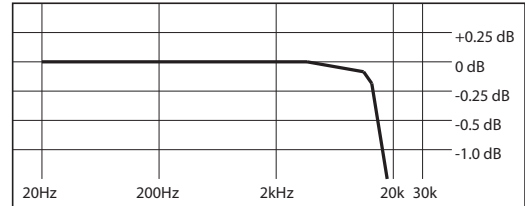
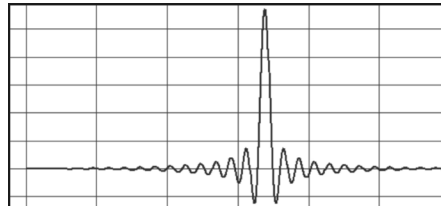
Filter #3
Minimum Phase
Fast Roll-Off



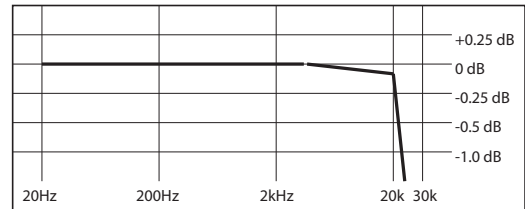
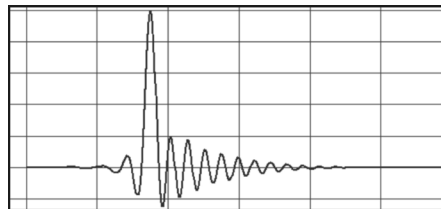
Filter #4
Minimum Phase
Slow Roll-Off



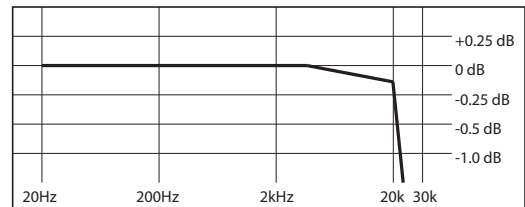
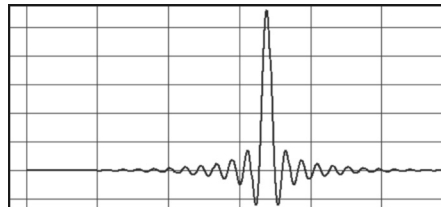
Filter #5
Apodizing
Fast Roll-Off



Filter #6
Hybrid
Fast Roll-Off



Filter #7
Brick Wall



Emotiva Audio Corporation Five-Year Limited Warranty

What does this warranty cover?

Emotiva Audio Corporation (Emotiva) warrants its products against defects in materials and workmanship. This warranty, and all rights provided hereunder, is granted to the original owner, and may be transferred by the current owner to a new owner if the unit is gifted or sold. In the event the original owner transfers ownership of the Product prior to the expiration of the applicable term described below, this Warranty shall terminate at the end of the original term.

This Warranty only applies to Products purchased directly from Emotiva or any of its Authorized Dealers or International Distributors.

Emotiva warrants any replacement product or part furnished hereunder against defects in materials and workmanship for the longer of the following: (i) the amount of time remaining under the original warranty, or (ii) 120 days from your receipt of the repaired or replaced product. The duration described in this paragraph is hereinafter referred to as the "Term".

TO THE FULLEST EXTENT PERMITTED BY LAW, ALL IMPLIED WARRANTIES RELATED TO THE ORIGINAL PRODUCT AND ANY REPLACEMENT PRODUCT OR PARTS (INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE) ARE EXPRESSLY LIMITED TO THE TERM OF THIS LIMITED WARRANTY. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

The warrantee holder must make a claim within the Term of the Warranty. A claim shall not be valid (and Emotiva has no obligation related to the claim) if it is not made within the Term and if it is not made in strict compliance with the requirements of the "How do you get service?" section.

How long does this coverage last?

The warranty on the Emotiva XDA-3 commences on the date of retail purchase by the original retail purchaser and runs for a period of five years thereafter. This warranty may be transferred by the current owner to a new owner at any time during the original term. Emotiva warrants any replacement product or part furnished hereunder against defects in materials and workmanship for the longer of the following: (i) the amount of time remaining under the original warranty, or (ii) 120 days from your receipt of the repaired or replaced product. The duration described in this paragraph is hereinafter referred to as the "Term".

What will Emotiva do?

Emotiva will, at its option, either: (i) repair the product, or (ii) replace the product with a new consumer product which is identical or reasonably equivalent (in Warrantor's sole discretion) to the product. In the event Warrantor, in its sole discretion, is unable to replace or repair the Product or it is not commercially practicable to do so, then: (i) if the claim was submitted during the first 365 days of the Term, Warrantor shall refund to you the purchase price that you paid for the Product; and (ii) if the claim was submitted after the first 365 days of the Term, Emotiva shall issue you a credit equal to the purchase price that you paid for the product. The credit may only be used for the purchase of merchandise from Emotiva, and cannot be used for freight charges.

When a Product or part is repaired or replaced, any replacement item becomes your property and the replaced item becomes Emotiva's property. When a refund or credit is given, the Product for which the refund or credit is provided must be returned to Emotiva and becomes Emotiva's property.

What is not covered by this warranty?

This warranty does not apply: (i) to damage caused by use with products not manufactured by Emotiva, where the non-Emotiva product is the cause of the damage; (ii) to damage caused by service or maintenance performed by anyone who is not a representative of Emotiva; (iii) to damage caused by accident, abuse, misuse, flood, fire, earthquake or other external causes; (iv) to a product or part that has been modified after its retail purchase, where the modification caused or contributed to the damage; (v) to consumable parts, such as batteries or failure of or damage to the Product caused by batteries; (vi) if any Emotiva serial number has been removed or defaced on the product; (vii) glass or plastic panels, cabinetry, trim or other appearance items; (viii) cosmetic wear or damage to remote controls by user.

EMOTIVA SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING FROM OR RELATED TO ANY DEFECTS IN OR DAMAGES TO ITS PRODUCTS. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

How do you get service?

In order to make a claim under the Warranty, you must:

1. Call or e-mail a customer service representative at 1-615-790-6754 or support@emotiva.com . You must provide a description of your problem, the serial number of the Product for which the warranty claim is being made, and the original purchase date.
2. Then, you will be provided with a warranty service authorization number ("WS").
3. Next, you must ship the Product to the following address, with the WS written in large, bold numbers on the outside of the box, and with the letters "WS" written before the number, for example: WS1234. Parcels arriving without a WS number on the outside of the box will be refused. The customer pays for the shipping to Warrantor. Warrantor pays for the shipping back to the customer within the continental United States only. Customer is responsible for shipping charges on all other warranty claims.

**Emotiva Audio Corporation
Attn: Repair Department
139 Southeast Parkway Court
Franklin, TN 37064**

Units will be refused by Emotiva for the following:

- Product was sent without the WS#
- Product was sent with inadequate packaging.
- Product was damaged in transit.
- Product was shipped collect for shipping charges.

How does state law apply?

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

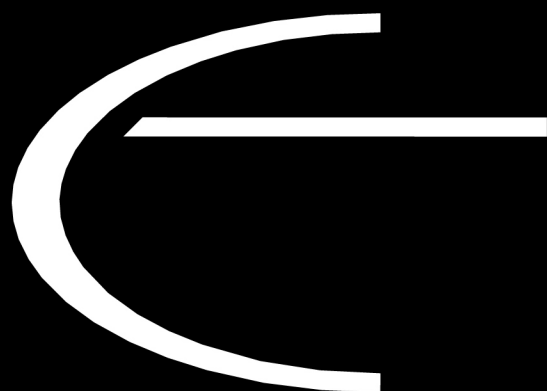
What if my product is damaged on the way to you?

Emotiva is not liable for damages that may incur while an item is in transport to us. Please purchase insurance when you ship your item. If your Product was not adequately packaged, we will refuse receipt and the damaged package will be returned to you at your cost. If you do not have the original Emotiva Audio packaging, please check with our sales department to purchase replacement-shipping cartons.

How does the Warranty and service apply to international orders?

The Product Warranty is only valid in the country where the Emotiva product was originally shipped via an authorized dealer, distributor, or direct from the Emotiva factory. The Warranty is subject to change at any time depending on the laws and regulations within your specific country. Please check with your distributor for a complete understanding of the warranty in your county.

If you purchased your Emotiva Product outside of the USA and wish to have it serviced at the factory, all freight charges are your responsibility. If you do not have an authorized distributor or repair center in your country, your Product must come back to the Emotiva USA factory for warranty service.



Emotiva Audio Corporation
135 Southeast Parkway Court
Franklin, TN 37064

www.emotiva.com