Owner's Manual

DSPre

Stereo Preamplifier DAC

audio research
HIGH DEFINITION®

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Model DSPre Stereo Amplifier

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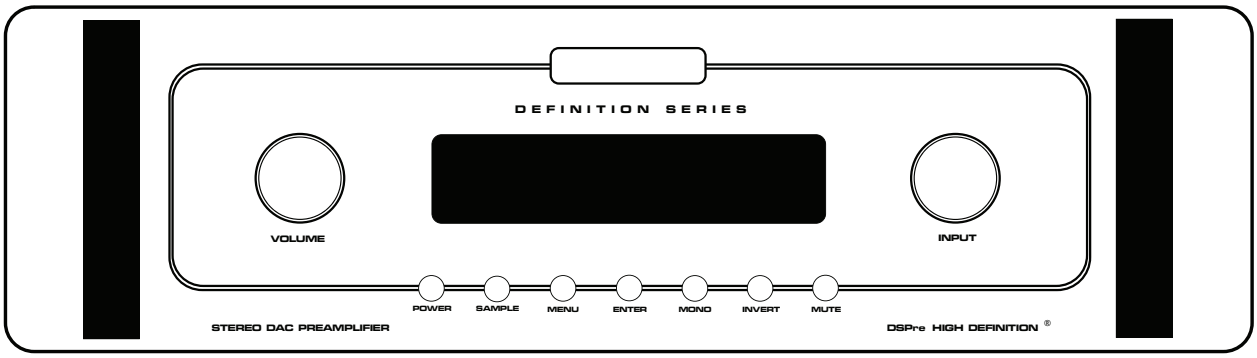
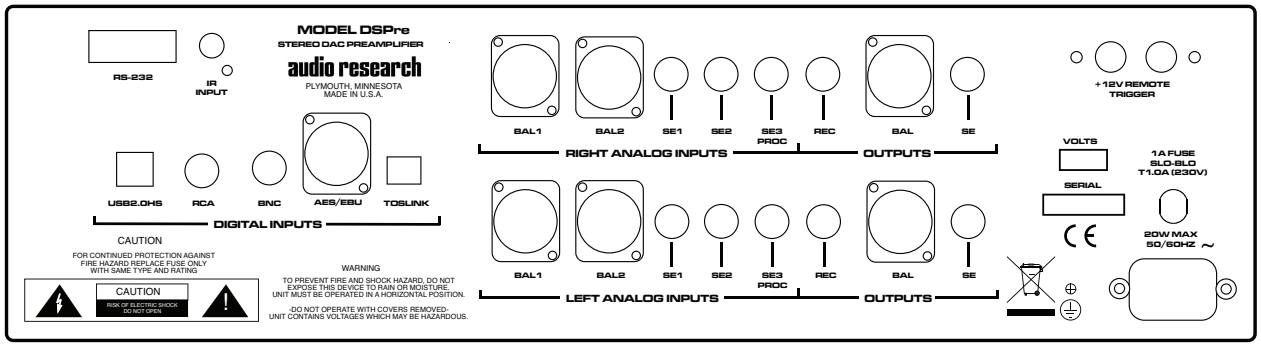
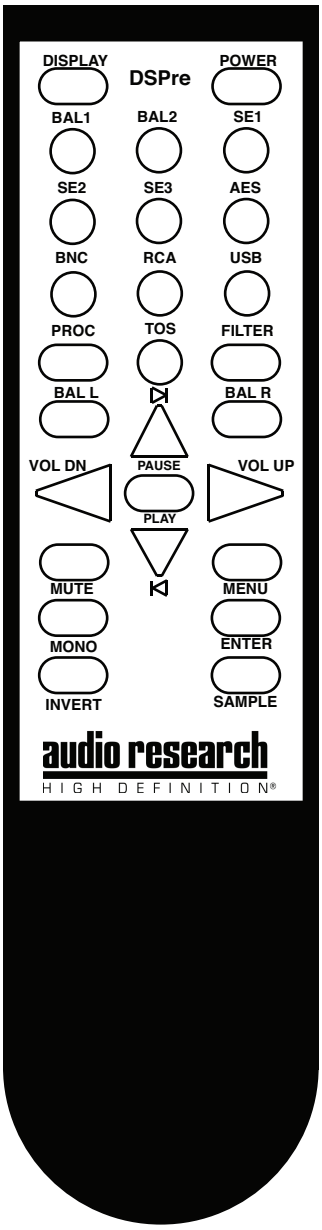

DEFINITION SERIES
VOLUME
INPUT
POWER
SAMPLE
MENU
ENTER
MONO
INVERT
MUTE
STEREO DAC PREAMPLIFIER
DSPre HIGH DEFINITION ®


RS-232
IR INPUT
MODEL DSPre
STEREO DAC PREAMPLIFIER
audio research
PLYMOUTH, MINNESOTA
MADE IN U.S.A.
USB2.0HS
RCA
BNC
AES/EBU
TOSLINK
DIGITAL INPUTS
CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD REPLACE FUSE ONLY WITH SAME TYPE AND RATING
CAUTION
RISK OF ELECTRIC SHOCK DO NOT OPEN
WARNING
TO PREVENT FIRE AND SHOCK HAZARD, DO NOT EXPOSE THIS DEVICE TO RAIN OR MOISTURE.
UNIT MUST BE OPERATED IN A HORIZONTAL POSITION.
-DO NOT OPERATE WITH COVERS REMOVED-
UNIT CONTAINS VOLTAGES WHICH MAY BE HAZARDOUS.
BAL1
BAL2
SE1
SE2
SE3 PROC
REC
BAL
SE
RIGHT ANALOG INPUTS
OUTPUTS
LEFT ANALOG INPUTS
+12V REMOTE TRIGGER
VOLTS
SERIAL
1A FUSE SLO-BLO T1.0A (230V)
20W MAX 50/60HZ ~



Note: All DSPre functions are available on the DSPre hand held remote controller. All functions are indicated in the display window as they are selected. See 'Description of Controls' in this manual for more information.

Preface

Please take time to carefully read and understand the following instructions before you install or attempt to operate your Audio Research DSPre preamplifier.

Becoming familiar with the product and its correct operating procedures will help assure you of maximum musical enjoyment and reliable operation. The effort you invest now will be well rewarded in the years ahead.

Warnings

1. To prevent fire or shock hazard, do not expose this product to rain or moisture.
2. This unit operates on voltages which can cause serious injury or death. Do not operate with covers removed. Any necessary servicing should be carried out by your authorized Audio Research dealer or other qualified electronics technician.
3. The power cord supplied with this unit is safety tested and is equipped with a proper grounding plug. If used normally, it will provide a safe earth ground connection of the chassis. Defeat of the grounding plug or use of a power cord without a grounding plug, or any unauthorized modification of the active circuitry or controls of this unit, automatically voids warranty coverage, and could cause injury or death.
4. For safe operation and protection against fire hazard, replace fuses only with those of the same type and rating as those supplied with this unit.

Packaging

Save all packaging accompanying this product. You have purchased a precision electronic instrument, and it should be properly cartoned any time shipment becomes necessary. It is very possible that this unit could be damaged during shipment if repackaged in cartoning other than that designed for it. The original packaging materials help protect your investment from unnecessary damage, delay and added expense whenever shipment of this unit is required.

Description of Controls

Front Panel Rotary Controls

The DSPre has two microprocessor-driven rotary controls.

The rotary control on the left adjusts Volume (output level) up or down for both R and L channels. Volume control is also selectable via Vol DN and Vol UP buttons on the remote control. Volume adjustment is indicated in the display window by numeric digits on 0–103 scale.

Do not turn volume up beyond normal listening levels when "mute" is engaged to avoid unexpected or possibly damaging sound levels. Reduce volume level whenever changing input sources, even when muted.

The rotary control on the right selects any of five analog inputs sources (BAL1, BAL2, SE1, SE2 and SE3) and five digital input sources (USB 2.0HS, RCA, BNC, AES/EBU and Toslink). Each of these sources may also be selected via direct access buttons on the remote control. The selected source is indicated in the display window.

Front Panel and DSPre Remote Control Buttons

Power On/Off: Supplies power from A.C. wall outlet to preamp; indicated by active display window. Function also on remote control.

For approximately 90 seconds after start up, 'Mute' appears in the display window and flashes until the automatic muting cycle is completed. This also occurs in the event of power interruption. Upon completing the cycle, "Mute" will cease flashing. The preamp will remain muted until normal operation is selected by pressing the "Mute" button.

Mute: When activated, electrically mutes all output of the preamplifier; indicated by "Mute" in display window. This control should be activated before switching inputs, changing connections or shutting down your audio system to help protect your amplifier and speakers from unexpected signal pulses. When deactivated, "Mute" disappears from the display window allowing normal operation. Function also on remote control.

The DSPre also has automatic muting to help protect system components during A.C. power interruptions or low line voltage. When sensing these conditions, the preamp automatically goes into 'Mute' and disables all outputs. The 90-second warm-up timer will restart and 'Mute' will flash in the display window when normal power conditions have been restored.

Note that automatic muting is only designed to protect against power line interruptions or severe voltage drop. It will not mute in the event of subsonic transmissions from a faulty input source, amplifier failure or speaker malfunction.

Mono: Sums L and R input for mono output from any source selected. Remembers setting for each input.

Sample: Selects the sample rate for a digital input.

Invert: Inverts absolute phase of the output signal.

Menu: Enters the DSPre into Input Name program mode.

Enter: Used in conjunction with the Menu button and Input Name program mode.

DSPre Remote Only

Volume Up/Down: Increases/decreases overall volume level of both channels equally for

whichever input has been selected. Caution: do not turn up volume beyond normal listening levels when "Mute" is engaged to avoid unexpected or possibly damaging sound levels. It is a good idea to reduce volume whenever changing program sources, even when muted. Function available on remote control buttons and front panel rotary control on left.

Processor (PROC): May be selected by button on front panel or on remote control. Selects external A-V (home theater) processor as input source and controller of volume level for R and L channels when processor is connected through the SE3/PROC input only. DSPre provides Unity Gain when this input is selected.

When engaged, 'PROC' and 'UNITY GAIN' will appear in the display, and the volume control is not adjustable because gain is fixed. The preamp will also mute the input after 'PROC' is engaged. To disengage processor unity gain operation, press the SE3 button on the remote. The SE3 input returns to normal volume control operation and is muted at zero volume level.

Warning

Before unmuting the 'PROC' input, be sure to turn the volume down on the home theater processor. Never connect a source with a fixed level output (DVD player, tuner, CD, etc.) to the PROC input or the amplifier(s) and speaker system could be damaged when the DSPre is unmuted.

Display: Selects one of seven display illumination levels, including off. When off, the display can be reactivated for 10 seconds at a low level by pressing any button (except Power) on remote or control on front panel.

Bal L/Bal R: Adjusts balance left or right. Adjustment appears in display window as movable marker on bar graph. Useful for compensating for uneven speaker placement or imbalanced output from a phono cartridge.

Filter: Choose between sharp and soft digital roll-off filters for the S/PDIF inputs only.

Navigation Pad: The up/down/left right arrow buttons allow navigation of the setup menu for the DSPre. The remote control also features USB interface controls. When the DSPre is connected to a USB source component (Apple or PC, for example) which is configured with appropriate software or programs (iTunes®, Windows Media Player, etc.) the remote control should be able to control the USB source component to PLAY/PAUSE, TRACK ADVANCE and TRACK BACK.

Because of the wide variety of operating systems and software programs, Audio Research cannot guarantee that the USB interface will control your particular USB source product.

Programming Input Names

1. Push the MENU button once to enter input naming function.
2. Press the button on the remote which corresponds to the input to be named; or from the front panel, use the input select knob to select the input you want to name.
3. Use the volume arrows on the remote or the volume control on the front panel to scroll through the name options.
4. Push the ENTER button to select one of the name options for that input.
5. Use the input select knob or remote control to select another DSPre input to be named.
6. If you wish to create your own name, scroll to A-Z and 0-9 and use the up-down arrows on the remote to choose each letter/number in the name. The naming option automatically advances to the next letter/number until you press enter twice to end the selection for that name (six characters max).
7. Repeat steps 3-6 until you have completed selecting input names.
8. Press MENU again to end the input naming option.

Connections

Input Connectors: The DSPre provides five L/R sets of analog input connectors: BAL1, BAL2, SE1, SE2, and SE3/PROC, and five sets of digital input source connectors: USB 2.0HS, RCA, BNC, AES/EBU and Toslink.

Output Connectors: One pair of balanced and one pair of single ended main outputs are provided.

REC Output: The BAL/SE REC outputs should be connected to your recorder's "Record" or "Line" inputs. These outputs provide a fixed-level two channel signal (R, L) to your recorder from whichever input is selected. The non-variable output level will be the same as the output of the selected source.

It is possible to dub or copy from one recorder to another by connecting the output of the source recorder to an unused set of stereo inputs (BAL1, BAL2, etc.). The signal will then be routed to the Record Out connectors when that input source is selected.

12V In/Out Remote Power Jacks: The +12V DC input/output jacks provide the ability to remotely turn on and off other linked components such as power amplifiers having similar capabilities.

RS-232 Connection: The RS-232 connection allows for control via systems such as Creston or other automation systems.

IR Input: The IR input allows a wired IR connection to the DSPre. This connection will defeat the front panel IR receiver.

Installation Instructions

While the DSPre does not dissipate an unusual amount of heat, it is important that it be provided with reasonable airflow to assure long, trouble-free operation. In addition, the following installation guidelines will help insure maximum sonic performance as well as reliable service:

1. Operate unit in upright and horizontal position, preferably on solid, non-metal shelving.
2. Do not stack the preamp on top of a power amplifier: not only could this cause overheating, but hum may be introduced into the preamp from the proximity of the amplifier's power transformer. Do not stack components or other objects directly on top of the DSPre.
3. Do not place or operate your preamp on a soft or irregular surface such as a rug. This will prevent proper ventilation.
4. Do not operate your preamp without the top and bottom covers installed. These are required both for safety as well as shielding from interference (except in service operations by qualified personnel).

For instructions pertaining to the installation of the DSPre software for USB operation, please refer to page 10.

Operating Procedure

Start Up

1. Secure all rear-panel connections between DSPre, power amplifier(s) and input sources.
2. Plug three-prong power cord from rear of chassis into grounded AC wall outlet. The Power switch defaults to 'off' when the unit is plugged into a power receptacle.
3. Press power switch (either remote or front panel). 'Mute' will will flash in the display window for approximately 90 seconds, then cease flashing and remain in the display. Press 'Mute' to initiate operation.
4. Select input source.

Shut Down

1. Activate 'Mute' function.
2. Set Volume level to '0'.
3. Turn off power amplifier(s).
4. Press Power switch to 'off '.
5. Turn off input sources.

Tape Recording Procedure

When using the DSPre as a control center for recording, the program source to be recorded must be connected to one of the five analog inputs controlled by the Input selector switch or to the Processor input. This routes the selected program to the Record output.

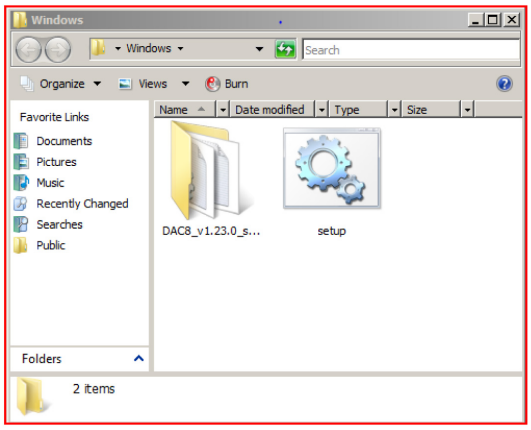
Note: If the Processor input is activated by selecting the 'Processor' switch position, all other inputs will be deactivated. When recording from the Processor input to the Record out of the DSPre, the level of the recording will be dependent on the level setting of the processor.

If you own a three-head tape deck, and wish to monitor the actual tape while making a recording (for a true 'A-B' comparison of signals before and after recording), connect the tape deck output to the Monitor input.

It is also possible to dub from one tape deck to another. Simply connect the output from one tape deck to an unused set of inputs controlled by the Input selector (BAL1, BAL2, SE1, etc.) on the DSPre. This signal will then be routed to the second tape deck through the REC output when the appropriate input is selected on the Input selector.

WINDOWS PC SOFTWARE INSTALLATION INSTRUCTIONS:

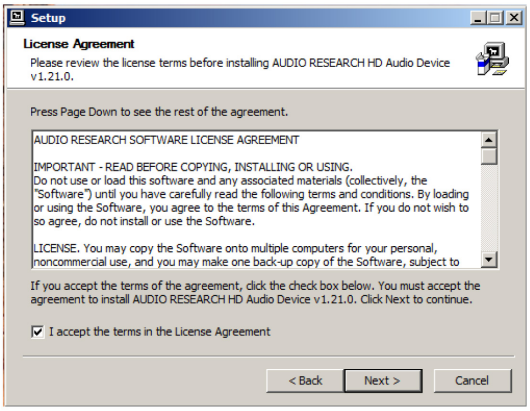
Installation of the DSPre HD Audio Device drivers is only necessary if you intend to use the USB 2.0 HS input on your DSPRE. Software installation is not necessary if you only intend to use the S/PDIF or AES/EBU inputs.



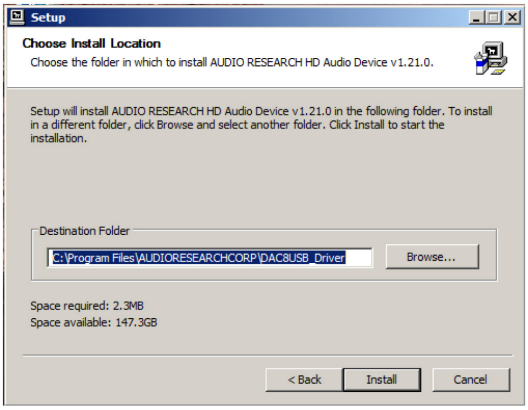
Place the installation disk you received with your DSPre into your computer and double click the SETUP icon. The disk should auto load and start the install function; follow the on screen prompts as you install the DSPre HD Audio device drivers.

Press NEXT when the WELCOME window appears.

When asked to accept or decline the License Agreement; check the ACCEPT box and press NEXT.

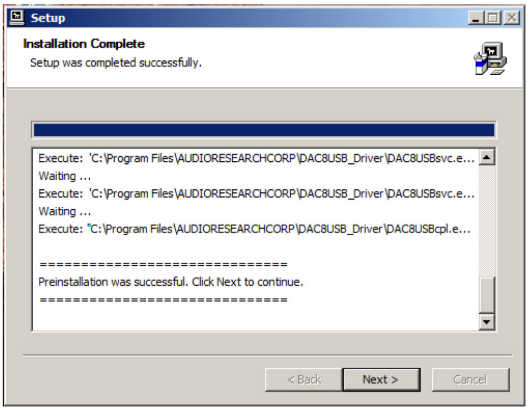


The installer will automatically place the HD Audio Device Drivers in your Program files. Press the INSTALL button to continue.



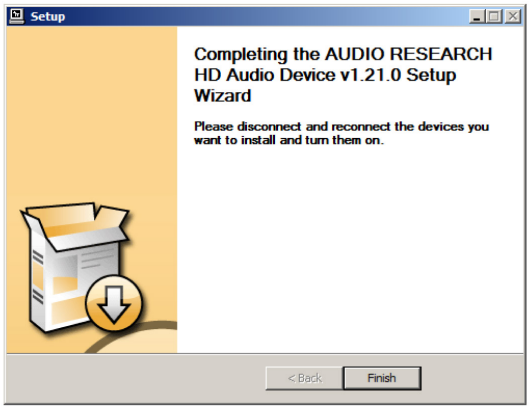
In several spots the computer may prompt you to "Install, Continue or Don't Install" the HD Audio Drivers. Select "allow, continue or Install this driver software anyway" each time you are prompted.

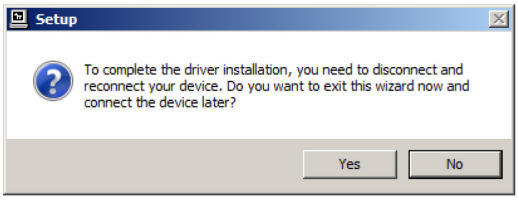
You will be informed when the installation has completed successfully; press NEXT to continue.



At the end of the installation the install program will ask you to disconnect and reconnect your DSPre to the computer via the USB port and turn it on. On Vista and Windows 7, Windows will detect the new DSPre hardware and load on the new drivers automatically; on XP, Windows will pop-up with a NEW HARDWARE FOUND panel; follow the Windows prompt instructions and your new DSPre HD audio device drivers will install. The install prompts will occur twice before the install is complete. Now you can press FINISH and the installation will be complete. Normally restarting your PC at this point is not required but If you do not see the "DSPre OUT 1/2" listed in the SOUND panel after installation you should do a restart of your PC; see page 14 for details.

The DAC8 USB drivers are used in the DSPre. All of the software during the installation process will be labeled DAC8.



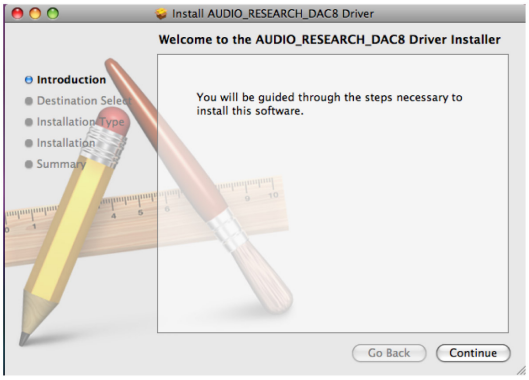


MAC SOFTWARE INSTALLATION INSTRUCTIONS:

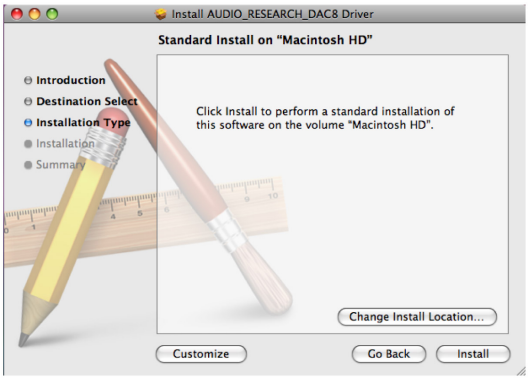
Installation of the DSPre HD Audio Device drivers is only necessary if you intend to use the USB 2.0 HS input on your DSPre. Software installation is not necessary if you only intend to use the S/PDIF or AES/EBU inputs.

Place the installation disk you received with the DSPRE into your Mac computer and open the install file on your desk top. Click on the "AUDIO_RESEARCH_DSPRE.mpkg" icon in the folder.

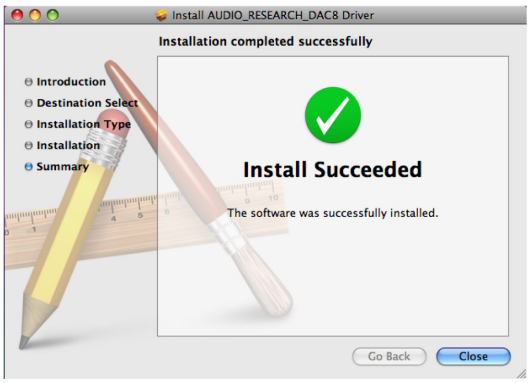
Follow the on screen prompts as you install the DAC8 HD Audio device drivers. Press the CONTINUE button when you see the Welcome panel.



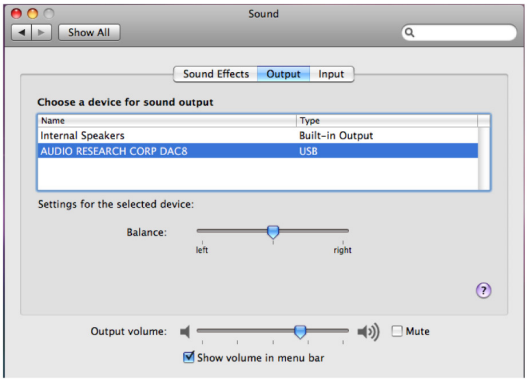
When the installer asks you if you want to do a Standard install, press the INSTALL button.



At the completion of the install you should see the INSTALL SUCCEEDED panel. Press the CLOSE button and the installation will be complete. Restart your Mac to complete the installation.



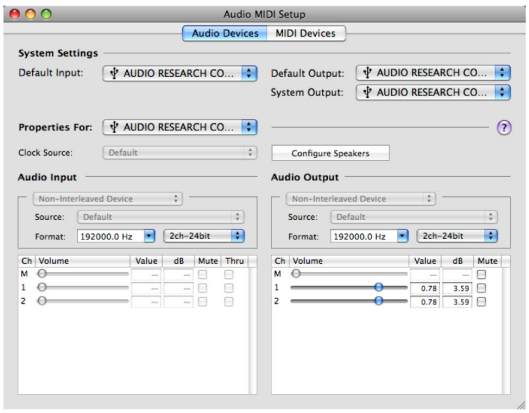
After installation, go to your DOCK and click on the SYSTEM PERFERENCES and click on SOUND. Make sure AUDIO RESEARCH CORP DAC8 has been selected. If not, go into the SOUND panel and click on the AUDIO RESEARCH CORP DAC8 name and close out the panel. Remember, to see the DAC8 name in the SOUND panel you must have the DSPre ON and connected to the USB port. You are now ready to call up iTunes or any other music management program and enjoy your NEW DSPre.



SETTING THE SAMPLE RATE ON MAC OS X:

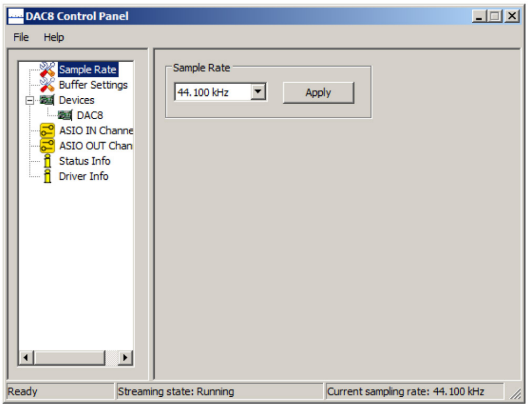
Now go into the FINDER then GO then UTILITIES and select AUDIO MIDI SETUP. Once in the Audio MIDI Setup panel click on the PROPERTIES FOR: selection box and select AUDIO RESEARCH CORP DAC8. Then do the same for the SYSTEM OUTPUT: and DEFAULT OUTPUT: selection boxes. Remember, to see the DSPre name in the Audio MIDI Setup panel you must have the DSPre ON and connected to the USB port.

Next go into the AUDIO OUTPUT section of the panel and select the desired FORMAT (SAMPLE RATE) from the list; 44100, 48000, 88200, 96000, 176400, 192000.0Hz. Also, 2ch-24bit should be showing in the window to the right. If you plan to play mostly 44.1 ripped CD's then select 44.1, 88.2 or 176.4kHz. This will select the correct Master Oscillator in the DSPre for CD's.

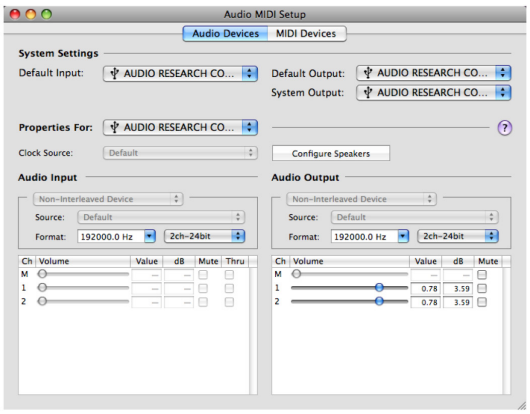


USING THE DSPre CONTROL PANEL:

In Windows when you installed the DSPre software an icon for the DAC8 HD Audio Device control panel was placed in your computer's input tray. Double click the icon and select one of the 6 sample rates listed, 44.1, 48, 88.2, 96, 176.4 or 192kHz; then press Apply and then close the window by clicking the X in the upper right corner of the window. The only time you need to go back to this window is when you want to change the sample rate mode. Also, as long as the DSPre is connected to your computer when you turn it on, the last sample rate you selected will be resent to the DSPre. Remember, whenever you want to change the Sample Rate you must exit the music management program you are using, call up the DSPre control panel, make the Sample Rate change, and recall your music management program and start playing music.

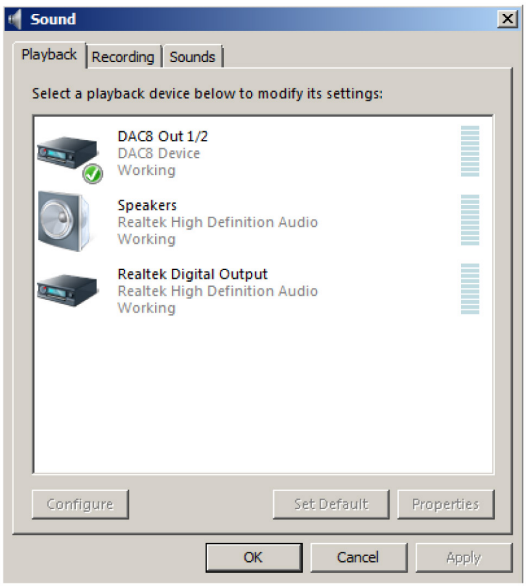


The Mac OS does not allow change of the Sample Rate by the hardware ASIO driver. With the Mac the AUDIO MIDI SETUP Utility has control over the sample rate sent to the DSPre. Remember, the DSPre defaults to Native mode so it will always lock on and indicate whatever sample rate is being sent by the computer. See the Mac installation instructions for details.

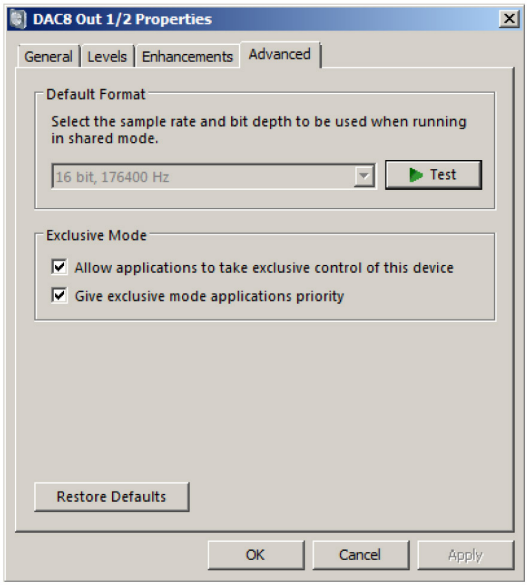


SETTING THE SAMPLE RATE OR NATIVE MODE IN WINDOWS:

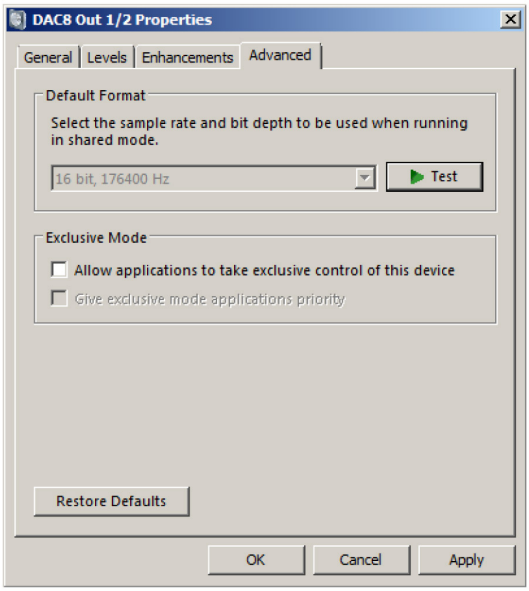
If your music server or music management software does not allow you to connect to the DSPre HD Audio Device drivers directly you can easily tell Windows Vista or Windows 7 operating systems to honor Native mode for your music file. While in Vista or Windows 7 call up the Windows control panel and select the Sound panel. You should see the DAC8 Device driver in the list of playback devices. Select the DAC8 driver and press the SET DEFAULT button near the bottom of the panel, then double click the DAC8 picture in the panel and go to the next figure. If you do not see the DAC8 OUT 1/2 listed in the sound panel after installation, first make sure your DSPre is connected to your PC via a high quality USB cable and plugged into an appropriate AC outlet. If that has been done and you still do not see the DAC8 listed in the SOUND panel, you should do a restart of the PC.



Once you have double clicked the DAC8 driver and pressed the ADVANCED button you will see the Exclusive Mode properties. If the "Allow application to take exclusive control of the device" is selected then the "DAC8 Control Panel" will select the sample rate.



Otherwise, for NATIVE MODE, "uncheck" the "Allow application to take exclusive control of this device", press APPLY, then close the window. Now whatever sample rate your music was stored at will be sent to the DSPre. If this step does not allow your music management software to take control of the sample rate being sent to the DSPre you should simply use the DAC8 control panel to set the DSPre sample rate to that of the music you are playing.



SETTING NATIVE MODE IN MAC OS X:

Mac OS X does not allow the music manager, such as iTunes or SongBird to change the Sample Rate on a song by song basis. For example, if you set the sample rate of the DAC8 driver in the AUDIO MIDI SETUP panel to 176400.0Hz then iTunes will up-sample a 44.1 CD to 176.4kHz and send it to the DSPre; the 176.4 LED will be lit. To play a 44.1 CD at 44.1kHz, simply set the sample rate in the Audio MIDI Setup Utility to 44100.0kHz. See section SETTING THE SAMPLE RATE ON MAC OS X: for details.

To play your music in bit perfect mode at its native Sample Rate you will need to purchase and install software from a third party such as Pure Music®, Pure Vinyl® or Amarra®. These software packages provide bit perfect music transfer to the DSPre and allow the native sample rate to be sent to the DSPre on a song by song basis.

GETTING THE MOST OUT OF YOUR DSPRE:

The DSPre has many new features that can be enhanced when used with some of the top MUSIC MANAGEMENT software packages and computer to S/PDIF conversion hardware. Please take a moment to read through this section and see if you're getting the most out of your DSPre setup.

S/PDIF, USB 2.0 HS and MUSIC MANAGEMENT:

The DSPRE was designed to provide your high-end audio system with bit perfect 24 bit audio at sample rates not possible from a CD or SACD player. Red Book CD's are recorded at 16 bits, 44.1kHz sample rates; your DSPRE is capable of playing back digital music recorded at 24bits and sample rates up to 192kHz. With your DSPre you can:

Take the S/PDIF output from your current CD or DVD player and enjoy the sonic benefits of the Quad DAC architecture, low jitter dual master oscillators and high bandwidth direct coupled differential amplifiers while playing your favorite CD's.

It is also possible to take the S/PDIF output from many of the multiroom home audio systems that are on the market. AppleTV®, Sonos® and many others provide wired/wireless multiroom music management systems that have S/PDIF outputs that work well with the DSPRE.

If you want to play back S/PDIF music at a higher resolution and sample rate, you can assemble a HD music server computer system. Your Audio Dealer or the HRx web site at http://www.referencerecordings.com/HRxSETUPS.asp can give you ideas on how to construct a high resolution music server that will provide an S/PDIF signal to the DSPRE.

If you desire to play high resolution music files via the USB 2.0 HS interface to the DSPre, all you do is connect your computer to the DSPre via a good quality high speed USB 2.0 (480Mbps) cable and install the DSPre HD Audio Device drivers. Once connected you are ready to sit back and enjoy your favorite tunes.

A large part of the digital music experience is managing and organizing your music for fast and accurate playback through the DSPre to your audio system. There are several software music managers available to enhance your music experience; on PC's, J Rivers Media Center®, Mediamonkey® and FooBar® are three that provide the ability to connect to the DSPre's HD Audio Device drivers for bit perfect music playback in its Native mode. Others such as iTunes®, SongBird® and Windows Media Player® are excellent media managers that will play your music through the "Windows Sound Control" interface. To assure bit perfect data transfer with these music managers follow the instructions in the "SETTING THE SAMPLE RATE OR NATIVE MODE" section. The resources at http://www.computeraudiophile.com/ and other digital music web sites can help you select a media manager and provide other information aimed at enhancing your music enjoyment.

Troubleshooting Guide

The USB input is not working?

- Make sure you SELECTED the USB as the input on the DAC8
- Make sure you installed the DAC8 driver software from the CD that came with your DAC8 and make sure the computer recognizes the DAC8 is connected.
- Make sure you are using a High Speed USB cable, one rated for 480Mbps.

I don't see the DAC8 in the SOUND panel on my Mac or Windows PC computer?

- After you install the DAC8 driver software you must make sure the DAC8 is connected to the computer via the USB cable and plugged into an AC outlet otherwise the computer will not show the DAC8's presence in the SOUND panel. In some cases it helps to RESTART your computer with the DAC8 still connected; this allows the computer to finish the installation and place the DAC8 into the SOUND panel for selection.

The volume is too loud or the audio is distorted using my Mac computer?

- Check the VOLUME control setting in the AUDIO MIDI Setup panel. The Volume should be set to about 0.0dB for both channels. (The Mac computer allows the customer to increase the digital volume of the music past 0.0dBm consequently, the Mac can overdrive the DAC8 and cause distortion. This is not an issue with the Windows PC where 0.0dBm is the maximum volume setting.)

The audio intermittently distorts when running with the USB input?

- Check to make sure you are using your computers USB 2.0 HS (480Mbps) port. A USB 2.0 FS (12Mbps) port will sometimes work but will distort. Most PC and Mac computers made after 2008 come stock with USB 2.0 HS ports.
- On your PC go into the Device Manager, then USB Controller, then USB Root Hub panel and click on Properties and then Advanced; there it will say the speed of that USB port.

It is possible for a static discharge to temporarily disable the microprocessor that allows the controls to function. If this should occur, depress the 'Mute' button, then turn off the preamp and unplug the preamp from the A.C. receptacle for 60 seconds. Reconnect the A.C. plug and turn the preamp back on, along with other components. The controls should resume normal operation. If the problem persists, contact your dealer or Audio Research Customer Service at 763.577.9700.

FCC and Safety Warnings

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 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:

Re-orient or relocate the receiving antenna.

Increase the separation between the equipment and the receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

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

To prevent fire or shock hazard, do not expose this product to rain or moisture.

Servicing

Because of its careful design and exacting standards of manufacture, your DSPre should require no routine maintenance. The remote control's batteries (AAA) should be replaced once a year.

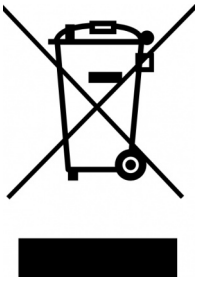
Caution

Your DSPre contains sufficient levels of voltage and current to be lethal. Do not tamper with a component or part inside the unit. Refer any needed service to your authorized Audio Research dealer or other qualified technician.

Should service be necessary, please contact your Audio Research dealer, or Audio Research Customer Service at 763.577.9700.

Cleaning

To maintain the new appearance of this unit, occasionally wipe the front panel and top cover with a soft, damp (not wet) cloth to remove dust. A mild, non-alkaline soap solution may be used to remove fingerprints or similar smudges. Cleaners containing abrasives should not be used as they will damage the anodized finish of the front panel. A small, soft paintbrush is effective in removing dust from bevels, the recessed nameplate and other features of the front panel.



Disposal and Recycling Guidelines

To dispose of this electronic product, do not place in landfill. In accordance with the European Union Waste Electrical and Electronic Equipment (WEEE) directive effective August 2005, this product may contain regulated materials which upon disposal require special reuse and recycling processing.

Please contact your dealer or importing distributor for instructions on proper disposal of this product in your country. Or, contact Audio Research Corporation (763.577.9700) for the name of your importing distributor and how to contact them.

Packing and shipping materials may be disposed of in a normal manner.

Limited Warranty

Audio Research Corporation products are covered by a 3-Year Limited Warranty, or a 90-Day Limited Warranty (vacuum tubes). This Limited Warranty initiates from the date of purchase, and is limited to the original purchaser, or in the case of demonstration equipment, limited to the balance of warranty remaining after original shipment to the retailer or importer.

In the United States, the specific terms, conditions and remedies for fulfillment of this Limited Warranty are listed on the warranty card accompanying the product in its shipping carton, or may be obtained from the authorized retailer or from the Audio Research Customer Service Department. Outside the United States, the authorized importing retailer or distributor has accepted the responsibility for warranty of Audio Research products sold by them. The specific terms and remedies for fulfillment of the Limited Warranty may vary from country to country. Warranty service should normally be obtained from the importing retailer or distributor from whom the product was purchased.

In the unlikely event that technical service beyond the ability of the importer is required, Audio Research will fulfill the terms and conditions of the Limited Warranty. Such product must be returned at the purchaser's expense to the Audio Research factory, along with a photocopy of the dated purchase receipt for the product, a written description of the problem(s) encountered, and any information necessary for return shipment. The cost of return shipment is the responsibility of the purchaser.

Specifications

Frequency Response: +0-3dB, 0.2Hz to 160kHz at rated output (Balanced, 200k ohms load)

Distortion: Less than .01% at 2V RMS BAL output.

Gain: Main output: Selectable for each input: 24dB, 18dB, 12dB Balanced output. (18dB, 12dB, 6dB SE output.) Record output: 0dB (Processor input: 0dB balanced).

Input Impedance: 120K ohms Balanced, 60K ohms SE. Inputs (8): Tuner, Phono, CD, Video, Aux 1, Aux 2, Monitor, Processor (XLR and RCA connectors).

Output Impedance: 700 ohms Balanced, 350 ohms SE Main (2), 20K ohms minimum load and 2000pF maximum capacitance. Outputs (3): 2 Main, 1 Record (XLR and RCA connectors).

Output Polarity: Non-inverting.

Maximum Input: Low Gain: 48V RMS BAL, 24V RMS SE, Medium Gain: 24V RMS BAL, 12V RMS SE, High Gain: 12V RMS BAL, 6V RMS SE.

Rated Outputs: 2V RMS 1Hz to 100kHz into 200K ohm balanced load (maximum balanced output capability is 15V RMS at less than 0.5% THD at 1kHz).

Controls: Rotary volume selector (104 steps) and rotary input selector.

Push buttons: Power, Mono, BAL/SE, Proc, Monitor, Mute. Also remote buttons: Display, Bal L, Bal R, Hours, Invert, Gain.

Power Supplies: Electronically regulated low and high voltage supplies. Automatic 50 sec. warm-up/brown-out mute. Line regulation better than .01%.

Noise: 1.3uV RMS residual IHF weighted balanced equivalent input noise with volume at 1 (100dB below 2V RMS output).

Tube Complement: 2-6H30P dual triode, (Hybrid JFET/ tube audio circuit, solid-state power supply).

Power Requirements: 105-130VAC 60Hz (210-260VAC 50/60Hz) 50 watts maximum.

Dimensions: 19" (48 cm) W x 5.25" (13.4 cm) H (standard rack panel) x 13.3" (33.8 cm) D. Handles extend 1.50" (3.8 cm) forward of the front panel.

Weight: 16.3 lbs. (7.4 kg) Net; 23 lbs. (10.5 kg) Shipping.

Specifications subject to change without notice.
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