audio research
HIGH DEFINITION®

DAC9

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Thank you for choosing the DAC9 as part of your high performance music system. Since 1970, Audio Research has been creating some of the world's finest audio equipment. Each piece is handcrafted in Minnesota, and has been designed to provide many years of listening enjoyment.

We understand you are eager to begin listening; however, please take a few minutes to read through this guide for useful information concerning the operation of your new digital-to-analog converter. Once installed, please allow an appropriate break-in period to fully appreciate the benefits this converter will provide to your system.

After reading the user guide, if you have any further questions regarding your DAC9, contact your dealer or Audio Research customer service - they will be happy to help you make the most of your new component.

Happy Listening!

Thank You.

Contents

Warnings

- To prevent fire or shock hazard, do not expose your DAC9 to rain or moisture.

- Do not place objects containing water on top of this unit.

- This unit contains voltages which can cause serious injury or death. Do not operate with covers removed. Refer servicing to your authorized Audio Research dealer or other qualified personnel.

- The detachable power cord on your DAC9 is equipped with a heavy gauge, 3-conductor (where applicable) cable and a standard three-prong grounding plug. For absolute protection, do not defeat the ground power plug. This provides power line grounding of the DAC9 chassis to provide absolute protection from electrical shock.

- The appliance coupler (a.c. power connector) at the rear of this unit must be accessible for emergency power disconnect.

- The power button on the front of this unit, when off, does *not* disconnect all power from this unit. This unit is in sleep mode when not on. (In sleep mode, the tubes and audio circuit are powered off; the microprocessor that operates the DAC9 remains on).

- For continued protection against fire hazard, replace the fuse only with the same type and rating as specified at the fuse holder (see page 8 for fuse information).

- This unit is RoHS compliant.

- The DAC9 has automatic muting to help protect system components in the event of low line voltage. When sensing low line voltage, the converter displays 'Low Line' and automatically goes into 'Mute'. This condition will persist until the line voltage returns to a safe operating level; please note the unit will remain in 'Mute' even after 'Low Line' no longer appears.
- 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.

A note about packaging...

Save all packaging in a dry place away from fire hazard. Your DAC9 converter is a precision electronic instrument and should be properly cartoned any time shipment is made. You may not have occasion to return your unit to the factory for service, but if that should prove necessary, or another occasion requiring shipment occurs, the original packaging will protect your DAC9 from unnecessary damage or delay.

Installation
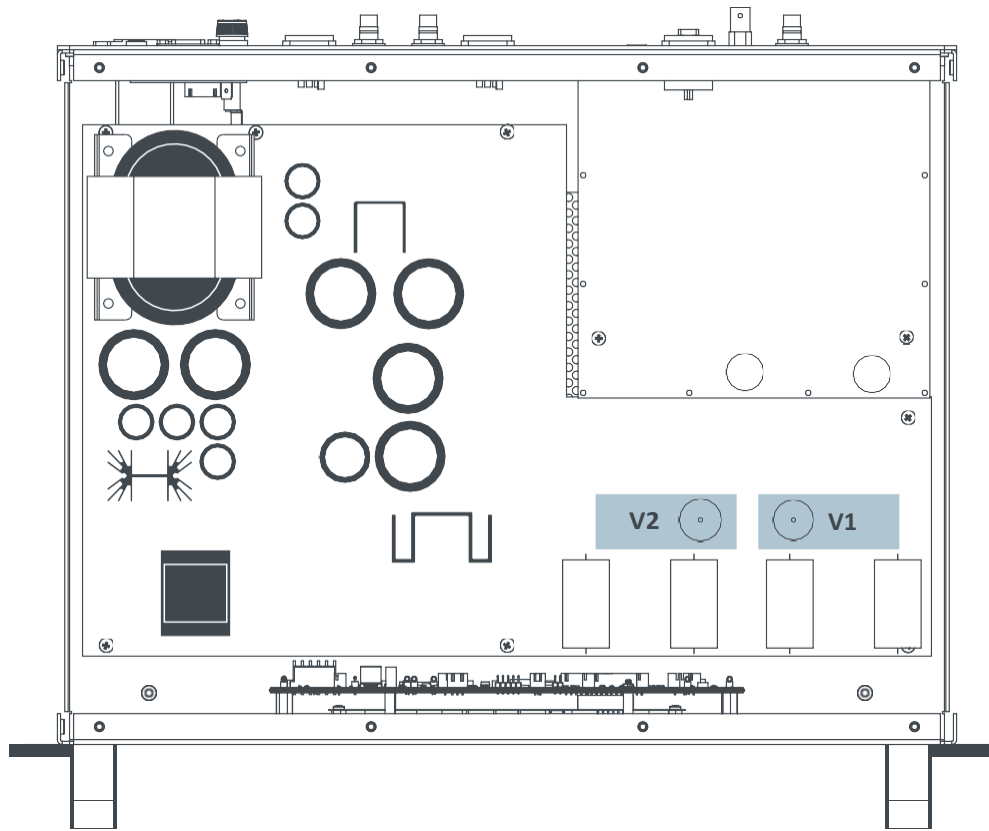
Before operating the DAC9

Your DAC9 converter is shipped with the vacuum tubes packed in a separate foam-lined carton. These must be unpacked and installed before you attempt to operate the converter. Included are two 6H30 tubes for the analog stage. Proceed according to the following instructions.

Remove all screws fastening the top cover. Carefully remove each vacuum tube from its protective foam and match its location 'V' number (written on the base of the tube) to the 'V' number printed next to each socket on the circuit board. Firmly seat each tube in its matching socket, taking care to 'key' the tube pins to the socket holes. Retain the tube carton with other packing materials for possible future use. Refasten the top cover on the converter.

Installation

In your system

• To ensure normal component life and safe operation this unit must be operated only in an upright position. Adequate airflow and proper cooling can occur only if there is no restriction above and behind the unit and on either side.

• The special non-marring elastomer feet provide adequate spacing and stability only on a smooth, hard surface, and also assist to isolate the converter from spurious vibrations. For upright stability and best performance, never operate the unit while it is sitting on a soft surface such as a thick rug or carpet.

• Due to its weight, this converter must be supported on a surface specifically rated for such a load. Check with the manufacturer of your support system to be sure it is rated to handle this weight.

• If the unit is to be operated in an enclosure such as an equipment rack, make certain that adequate airflow above and to each side of the unit is provided. Audio Research recommends a minimum of 6-8 inches (15-20 cm) of clearance above the DAC9 to maintain proper ambient operating temperature.

• The 'ambient' operating temperature should never exceed 30° C, 86° F. Improper installation will cause premature tube failure and will affect your warranty, as well as the service life of the unit.

• It is normal for a vacuum tube converter to run quite warm, and if used for prolonged periods, hot to the touch. All components within are operated at safe, conservative levels well within tolerances.

A Note about Vacuum Tubes

The vacuum tubes in your DAC9 have been burned in, tested and electrically matched to provide the best performance and reliability of your converter. That said, vacuum tubes must be replaced from time to time. The 6H30 tubes in the DAC9 should have an expected life of approximately 4,000 hours. This life expectancy is only approximate.

Connections

Back Panel Connections

RS-232 connector

IR Input

audio research
MINNEAPOLIS, MINNESOTA
MADE IN U.S.A.

MODEL DAC9
DIGITAL TO ANALOG CONVERTER

WARNING
TO PREVENT FIRE AND SHOCK HAZARD
DO NOT EXPOSE THIS DEVICE TO RAIN
OR MOISTURE.
UNIT MUST BE OPERATED FROM DIGITAL POWER ONLY
DO NOT OPERATE WITH COVER IS REMOVED.
UNIT CONTAINS VOLTAGES WHICH MAY BE HAZARDOUS

SERIAL

VOLTS

DIGITAL INPUTS

ANALOG OUTPUTS

USB 2.0   RCA   BNC   XLR   OPT

LEFT

RIGHT

RS-232   IR INPUT

CAUTION
FOR PROTECTION
AGAINST FIRE HAZARD
REPLACE ONLY WITH
SAME RATING FUSES

50 WATTS MAX 50/60Hz ~

3A SLO-BLO
T2A (230V)

Fuse Holder

Main Outputs

Digital Inputs

A.C. Mains connector

Connections

Input Connectors

The DAC9 provides five digital   inputs
- USB, RCA, BNC, XLR, and Optical.
Connect the output of your digital
sources to any of these inputs.

Output Connectors

A pair of balanced and single-ended
main outputs are provided. Connect the
output of the DAC9 to an input of your
preamplifier or integrated amplifier.

A.C. Power Connection

It is important that the DAC9 be connected
via its supplied 15 amp IEC 14-gauge
power cord to a secure, dedicated A.C.
power receptacle. Never connect to
convenience power receptacles on
other equipment. Only use the power
switch on the front of the DAC9 for
On/Off control of the converter, or the
IR input, RS232 or remote control.

RS-232 Input

The RS-232 input allows connection of
a control or automation system.

IR Input

The IR input allows a remote IR sensor
or repeater system to be connected to
the DAC9 for control purposes, utilizing
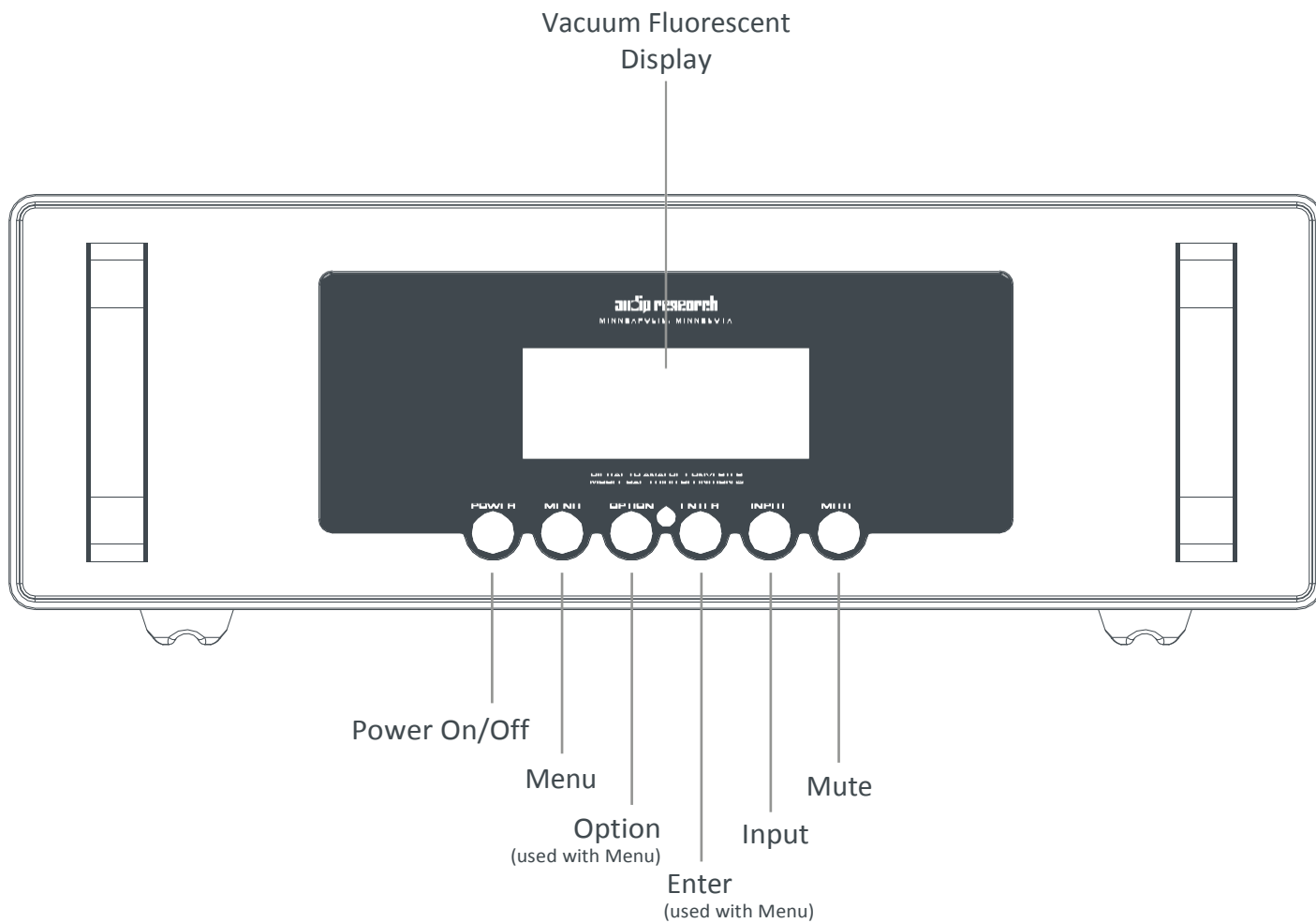a standard mono 1/8" connector.

Important

Use the best available speaker wires
and interconnects. Audio Research
cannot emphasize this enough. As
better components and systems are
developed, it becomes increasingly
important to avoid the limitations of
inferior system interconnections.
It is important sonically that your entire
system be connected so that the audio
signal arriving at the speakers has correct,
or 'absolute' polarity (i.e., non-inverted).

Operation
Front Panel Controls and Display

Vacuum Fluorescent
Display

Power On/Off

Menu

Option
(used with Menu)

Enter
(used with Menu)

Input

Mute

Operation

Start-Up

- Secure all rear-panel connections between DAC9, preamplifier, and input sources.
- Plug three-prong power cord from rear of chassis into grounded A.C. wall outlet. The Power switch defaults to 'off' when the unit is plugged into a power receptacle.
- Press power switch (either on the remote or front panel). The converter will begin the warm-up sequence, which lasts approximately 45 seconds, during which 'MUTE' will flash on the display. After the warm-up sequence is complete, the unit will be muted. Depress the front panel 'MUTE' button or the Mute button on the remote to initiate normal operation. You may depress the Mute button prior to the unit completing the warm-up cycle; 'MUTE OFF' will flash on the display until the warm-up cycle is complete.
- Select input source and adjust the volume on your preamplifier as necessary.

Note
The 45 second warm-up time is required for the circuit to come to an appropriate operating temperature, as well as for the power supply to stabilize. This is a normal function of the DAC9.

Shut-Down

- Activate 'MUTE' function.
- Turn off power amplifier(s).
- Turn off preamplifier.
- Press Power switch to 'off' on DAC9.
- Turn off input sources.

Note
The DAC9 should be turned on before the preamplifier or amplifier in your system. If the DAC9 is turned on after the preamplifier and amplifier, it will amplify any extraneous turn-on noises the DAC9 might generate, which could potentially damage the loudspeakers. Good operating practice dictates that the amplifier should be turned on last, and turned off first in an audio system.

Break-in

All quality stereo equipment benefits from a break-in period; during this time, the various components, wiring and solder connections change as electrical signals pass through them. While your DAC9 will sound fantastic out of the box, it will only improve with continued use.

Operation

Front Panel Controls

The DAC9 has six buttons: Power, Menu, Option, Enter, Mono, and Mute.

Power On/Off

Supplies power from the A.C. wall outlet to converter; indicated by active display window. The DAC9 requires approximately 45 seconds to warm up; this time is required to stabilize the circuitry. See 'Start-Up Procedure' on page 11 for details.

Menu

The Menu button enters the setup menu of the DAC9 to allow customizing certain settings of the converter. See page 15 for further details about using the setup menu.

Option

The Option button is used in conjunction with the Menu button to select the various options in the settings menu.

Enter

The Enter button is used in conjunction with the Menu button to make changes to the systems settings of the DAC9.

Input

The Input button rotates through the different inputs on the DAC9; note the remote has direct access buttons for each of the five digital inputs.

Mute

When activated, Mute electrically disables all outputs of the converter; indicated by 'MUTE' in display window, in the bottom right corner. 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.

Operation

Remote Only Functions

In addition to the controls found on the front panel, the remote control offers access to the following additional features of the DAC9:

Hours

Pressing the 'HOURS' button will display the total accumulated hours of operation for the DAC9. This is useful to determine the approximate number of hours the vacuum tubes have been in use. After five seconds, the display will revert to the normal operation screen. After replacing vacuum tubes, the hours counter should be reset (see instructions under 'Settings Menu' on page 16).

Note

The installed 6H30 vacuum tubes have an average life span of approximately 4,000 hours. By this time, we recommend replacing them to maintain the best performance of your converter.

Input Select Buttons

The input buttons labeled USB, RCA, BNC, AES/EBU, and TOS allow direct selection of the five digital inputs on the DAC9.

Display Brightness Adjustment

The front panel display has six brightness settings, as well as the ability to dim the display completely. To change the brightness, use the 'DSP UP' or 'DSP DN' buttons on the remote. Note that when the display is completely dimmed, a small square appears in the middle of the display to indicate the unit is powered on.

Upsample

When selected, the DAC9 upsamples the incoming signal to either 354.8 or 384 kHz. Upsampling is not applicable for DSD files.

Invert

The invert button allows the absolute phase of the recording to be switched between 'normal' (in-phase) and 'invert' (180° inversion).
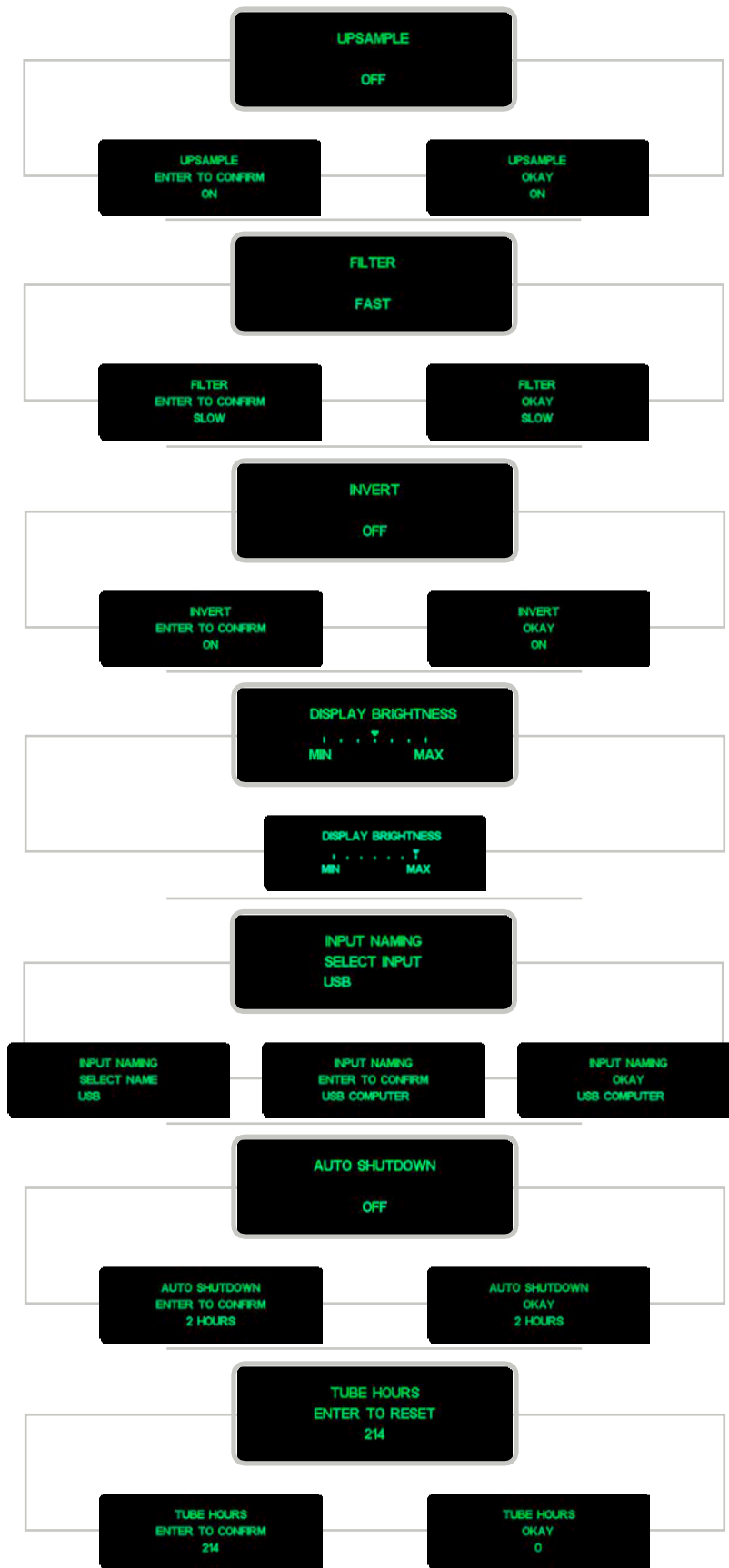
Filter (Fast and Slow)

The two filter buttons allow selection between fast and slow digital filter algorithms.

DSD or PCM Modes

When you select a DSD music file, the DAC9 automatically switches to the DSD 1X or 2X modes. When you play a PCM music file, the DAC9 automatically switches to one of the PCM sample rates, 44.1 to 384 kHz. The DAC9 will also play DoP (DSD over PCM) music files.

Operation

System Settings - MenuTree

```
        UPSAMPLE

          OFF
```

```
     UPSAMPLE                    UPSAMPLE
 ENTER TO CONFIRM                  OKAY
       ON                          ON
```

```
         FILTER

          FAST
```

```
      FILTER                      FILTER
 ENTER TO CONFIRM                  OKAY
       SLOW                        SLOW
```

```
        INVERT

          OFF
```

```
      INVERT                      INVERT
 ENTER TO CONFIRM                  OKAY
       ON                          ON
```

```
   DISPLAY BRIGHTNESS
    |  .  .  ▼  .  .  .
    MIN              MAX
```

```
   DISPLAY BRIGHTNESS
    |  .  .  .  .  .  ▼
    MIN              MAX
```

```
     INPUT NAMING
     SELECT INPUT
        USB
```

```
  INPUT NAMING          INPUT NAMING          INPUT NAMING
  SELECT NAME         ENTER TO CONFIRM            OKAY
     USB               USB COMPUTER          USB COMPUTER
```

```
    AUTO SHUTDOWN

         OFF
```

```
   AUTO SHUTDOWN              AUTO SHUTDOWN
 ENTER TO CONFIRM                 OKAY
     2 HOURS                    2 HOURS
```

```
      TUBE HOURS
    ENTER TO RESET
         214
```

```
    TUBE HOURS                   TUBE HOURS
 ENTER TO CONFIRM                   OKAY
       214                           0
```

Operation

Settings Menu

The DAC9 has been designed with a simple, intuitive menu to allow adjustment of the various features of the converter. To adjust the settings, press the 'MENU' button on the remote or front panel. If no further action is taken with the converter or remote for five seconds, the DAC9 reverts back to its normal operation screen. Continuing to press the 'MENU' button will step you through the different setting options:

While a menu item is displayed, press 'OPTION' on the front panel or remote to adjust the settings of that particular selecton. After making the appropriate change, pressing the 'ENTER' button will confirm the new setting, and the display will show 'OKAY' for five seconds before reverting back to the normal operation screen.

Note

For the following menu settings, please refer to the menu tree on page 14 for examples of the front panel display.

The 'MENU', 'OPTION', and 'ENTER' buttons (found on the front panel and remote) are used to make changes to the menu settings. Note that the 'MENU' button can also be used to back out of a menu selection, returning to the main settings options. Several of these menu options are also available as direct buttons on the remote control.

Using the Digital-to-Analog Converter (DAC)

The DAC9 is equipped with a high-resolution, low jitter DAC9 to allow direct digital connections to devices with digital outputs. The DAC9 accepts SPDIF (RCA and Toslink) and USB digital inputs. The DAC9 also offers upsampling to 352.8 or 384kHz, and two digital filter curves.

To use the DAC9, connect the digital output from a source device into one of the digital inputs of the DAC9. Use the input knob on the front panel, or the direct input buttons on the remote, to select the connected input. The display will show the selected input and, at the top center, the sampling rate of the incoming signal (or the upsampled frequency).

Display showing SPDIF digital input

Display showing the DSD 1X digital input

Display showing the DSD 2X digital input

Operation

Upsample

The upsample feature allows you to take native rate sampling frequencies (such as 44.1 and 48 kHz) and interpolate additional samples (upsampling) to 354.8 and 384 kHz sampling frequencies.

To turn the upsampling on or off, press the 'MENU' button until the display reads 'UPSAMPLE'. Press the 'OPTION' button to toggle between 'ON' and 'OFF'. Press the 'ENTER' button to confirm your selection, and the display will read 'OKAY'. Upsampling is not applicable for DSD music files.

Filter

The DAC9 offers two different digital filter algorithms, labeled 'FAST' and 'SLOW'. Each algorithm has its own sound characteristics, one of which may suit your listening preferences over the other. The digital filter is always active, and can not be defeated.

To select a filter algorithm, press the 'MENU' button on the remote until the display reads 'FILTER'. Pressing the option button will toggle between 'SLOW' and 'FAST'. Press 'ENTER' to confirm your selection, and the display will read 'OKAY'.

Invert

The invert button allows the absolute phase of the recording to be switched between 'normal' (in-phase) and 'invert' (180° inversion).

To invert the audio signal, press the 'MENU' button until the display reads 'INVERT'. Use the 'OPTION' button to select between 'ON' (inverted signal, 180 degree phase) and 'OFF' (non-inverted, 0 degree phase). Pressing the 'ENTER' button confirms your selection, and the display will read 'OKAY'.

Display Brightness

The display brightness feature offers six different settings (including off) for the vacuum fluorescent display on the front panel. When the lowest setting (off) is selected, the display will remain on for five seconds after any button is pushed, after which it will revert to a black screen with a small, illuminated square in the center to indicate the unit is powered on.

To change the display brightness, press the 'MENU' button until 'DISPLAY BRIGHTNESS' appears. Press the 'OPTION' button. Continue to press the 'OPTION' button to change the display brightness to your preference. Once you have selected the appropriate brightness, there is no need to press 'ENTER' or any further buttons.

Note

The remote control offers direct control of the display brightness via two buttons labeled 'DISP UP' and 'DISP DN'. You can choose to use these buttons as an alternate to the settings menu.

Operation

Input Naming

The DAC9 is pre-loaded with a selection of names which can be assigned to the five inputs of the converter, allowing for easier identification of the various inputs. When selected, the chosen input name will display below the default name (USB, BNC, etc.) on the normal operation screen.

To select an input name for any of the inputs, press the 'MENU' button until 'INPUT NAMING' is displayed. Press the 'OPTION' button to select the desired input for naming. Press 'ENTER' to engage the naming utility, and use the 'OPTION' button to select the appropriate name for the input. Press 'ENTER' a final time to confirm the input name. The display will show 'OKAY'.

Auto Shutdown

The DAC9 is equipped with an auto shut-off feature, designed to turn the converter off after a period of time during which it is not used. The auto shut-off feature senses any interaction with the converter, such as button presses, remote usage, etc., but it is not designed to sense whether a signal is present.

To change/disengage the auto shutdown feature, press the 'MENU' button until the 'AUTO SHUTDOWN' screen is displayed. Pressing the 'OPTION' button on the front panel or on the remote, the DAC9 will scroll through the options for 'off' (no auto shutdown), or 1-8 hours. Once you have made a selection, press 'ENTER' to confirm. The display will show 'OKAY' before reverting back to the normal operation screen.

Note

The auto shutdown feature is not in the signal path of the converter and has no deleterious sonic effect.

Tube Hours

The tube hours display shows the accumulated time the DAC9 has been powered on. This is useful for determining the number of usage hours of the installed vacuum tubes. See *A Note about Vacuum Tubes* on page 7 for specific information regarding the tubes in the DAC9.

To reset the tube hours counter, press the 'MENU' button until 'TUBE HOURS' is shown. Press the 'OPTION' button to display 'ENTER TO RESET'. Press 'ENTER', and the display will read 'ENTER TO CONFIRM'. A final press of the 'ENTER' button will reset the tube hour counter to 0 and the display will show 'OKAY'.

Note

Once the hour counter has been reset, the total accumulated hours cannot be recalled.

Software Installation

Windows PC Software Installation Instructions

Installation of the DAC USB Audio Device drivers is only necessary when using the USB 2.0 HS input on the DAC9. Software installation is not necessary if only using the Toslink, RCA, BNC or AES/EBU inputs.

Note to Mac OS users

No driver install is necessary when using a Mac computer in conjunction with the DAC9 as long as your operating system is updated to the latest OS X El Capitan (10.11 or later) version. Earlier OS X Yosemite (10.10 or earlier) versions are not compatible with the DAC9.

Before starting, make certain the DAC9 is disconnected from the PC system. You will be prompted to connect the converter at the proper time during the update/installation procedure.

Perform the following operations with the DAC9 disconnected from the PC.

Note

If you have had another Audio Research driver installed on your PC, please see page 25 for instructions to uninstall any previous driver versions before installing the new version.

Load the latest Audio Research DAC9 USB driver for your PC by going to www.audioresearch.com/downloads.html. Select and download the DAC9 driver listed. This will be a zip folder. If necessary contact your dealer for assistance.


MacOS core audio does not support DSD directly. Settings in your player software may need to be adjusted for DoP. If your player software does not support the correct DoP format, use PCM. Certain versions of MacOS and Macintosh hardware may not allow all sampling rates. Refer to your player software documentation for DoP or PCM selection instructions.
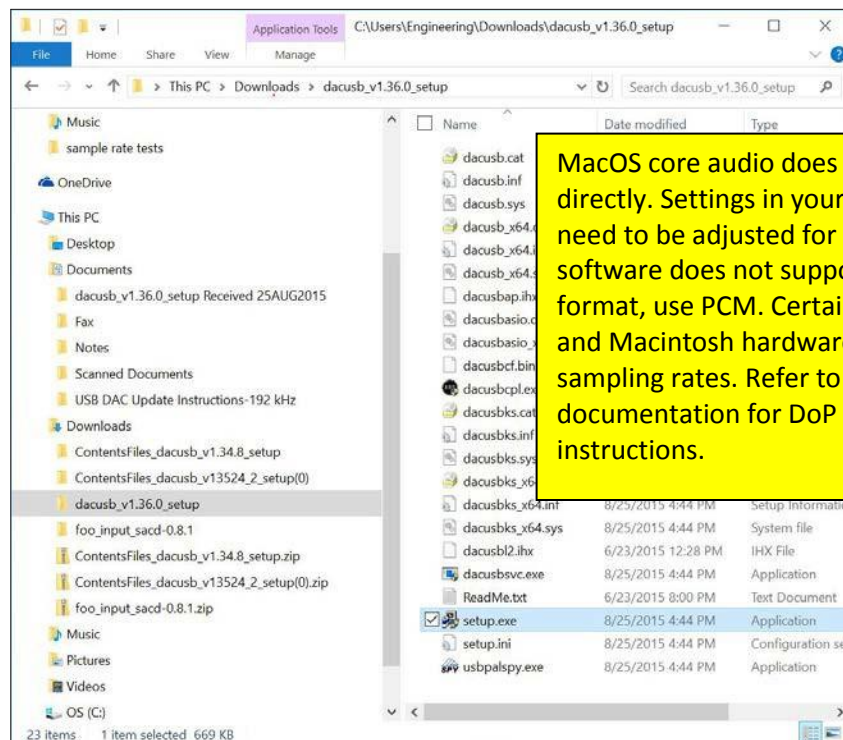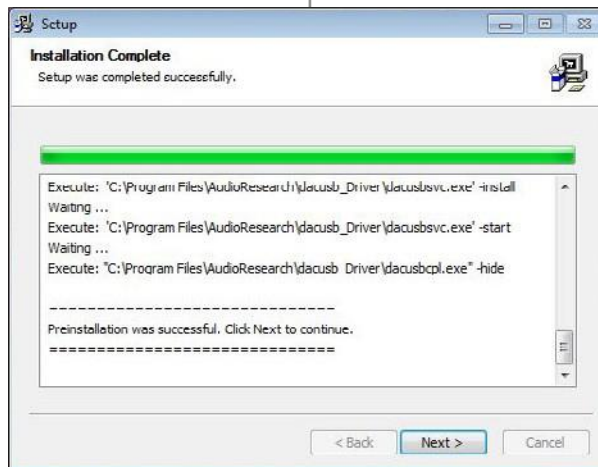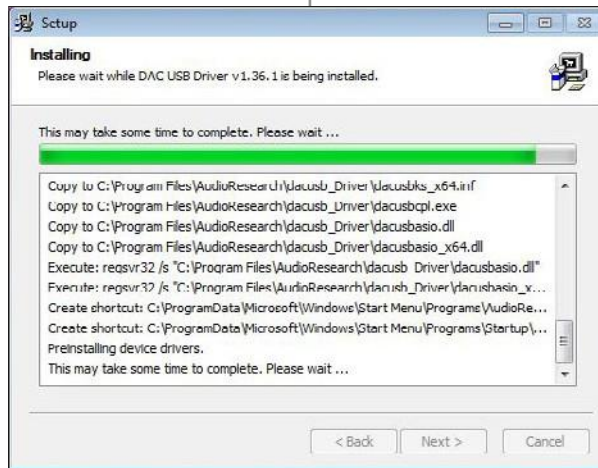
Software Installation

Open (unzip) the new USB DAC driver folder and install the new driver, using the "setup.exe" program, highlighted in the previous illustration.

Follow the installation steps when prompted.
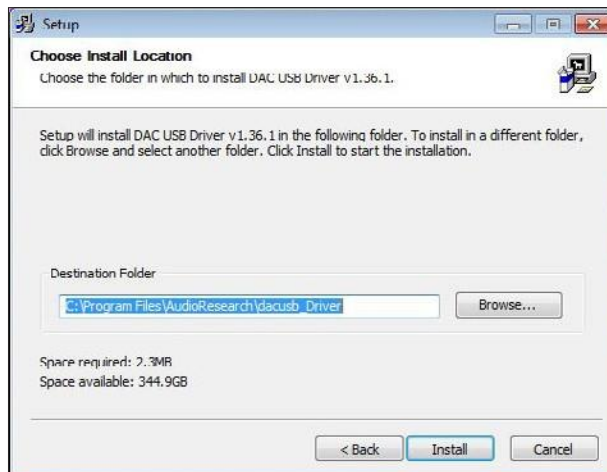
Software Installation

Software Installation

You will have the option to complete the process by connecting the DAC9 at a later time if you choose. If so, click finish.

Otherwise, when prompted during the install, connect the DAC9 to a USB 2.0 H.S. or USB 3.0 port on your PC system. Prior to connecting the converter, make certain the system is powered off. Next, connect to the USB port, and power on the DAC9. The PC system will acknowledge the presence of the converter, and complete installation of the DAC USB device driver. This driver attachment can be found in the Windows Control Panel under:/ Hardware and Sound/Devices and Printers.
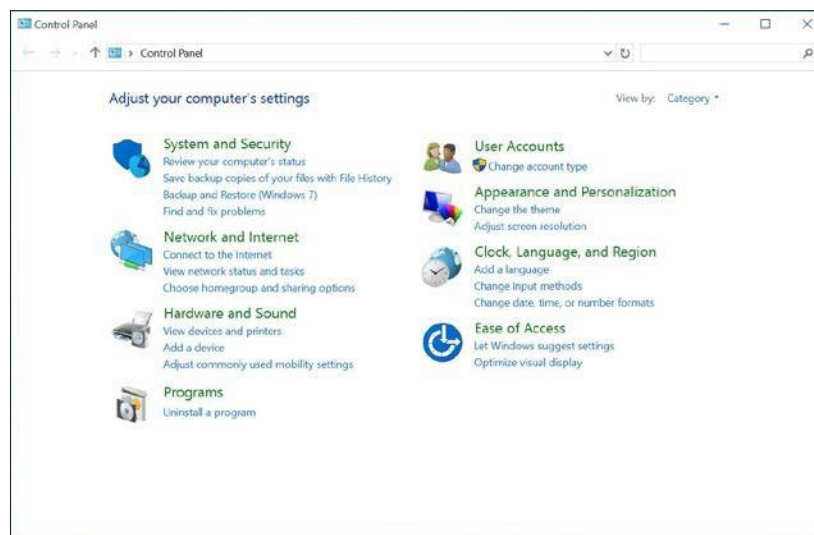
The device should be shown as "USB DAC 2.0", or, depending upon the operating system, it may appear as "USB DAC 2.0 192". (Please note that you will only see this device in the control panel if the source player is attached to the USB port and power is on for the DAC9).

Software Installation

When the device driver is successfully installed, power down the DAC9 momentarily, and power it up again (while remaining connected to the USB port on your PC). At this time, the system will automatically search for and complete installation of the audio output driver that is needed to format the audio output for DAC9.


The system will prompt when completed "DAC USB WDM AUDIO device driver software installed successfully". After the audio output driver is installed, your system drivers are configured and ready to play audio source files.

Also, when the DAC9 is connected and powered up, within the Windows: Control Panel/ Device Manager, you will be able to see the presence of the "DAC USB DEVICE":
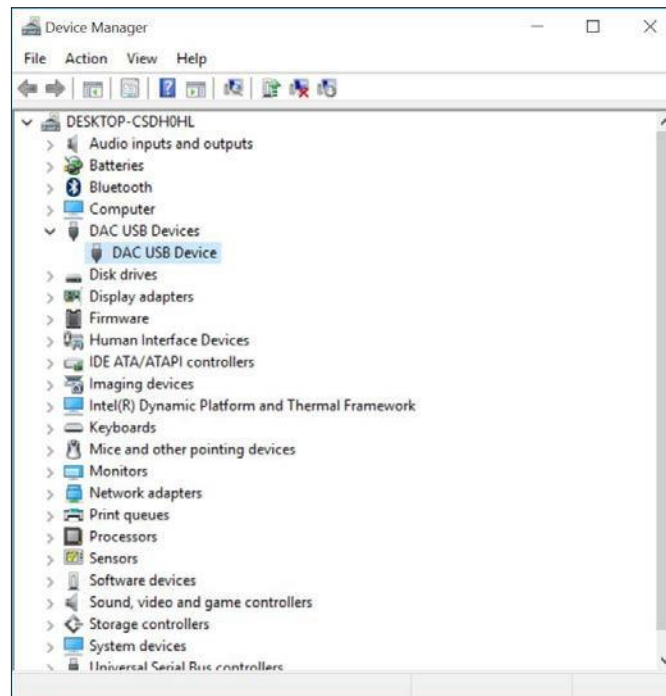
Software Installation

If you open the window for that device, you will see the DAC USB device properties. Click on the "DRIVER" tab to see the current revision of the driver software installed.
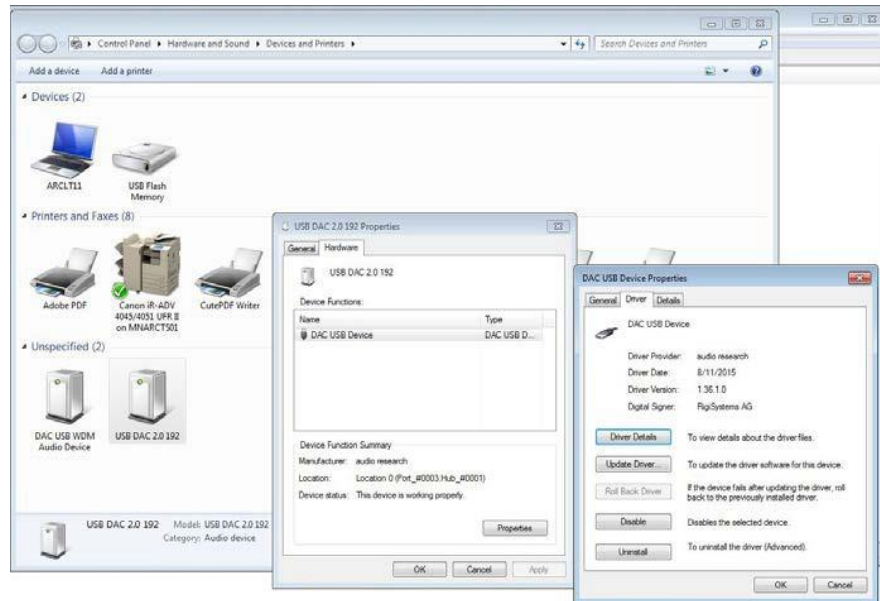
Software Installation

Next, You will need to direct your PC System music software player (e.g. JRiver, Foobar2000, Signalyst HQPlayer, etc.) to connect and play your audio tracks through the DAC9. With the converter connected and powered up:

Set your software preferences to the DAC USB output path.

There is also a separate application control panel available for the DAC9. When attached and powered, the ARC icon will be located in the pop-up window in the bottom right corner of the PC master window:
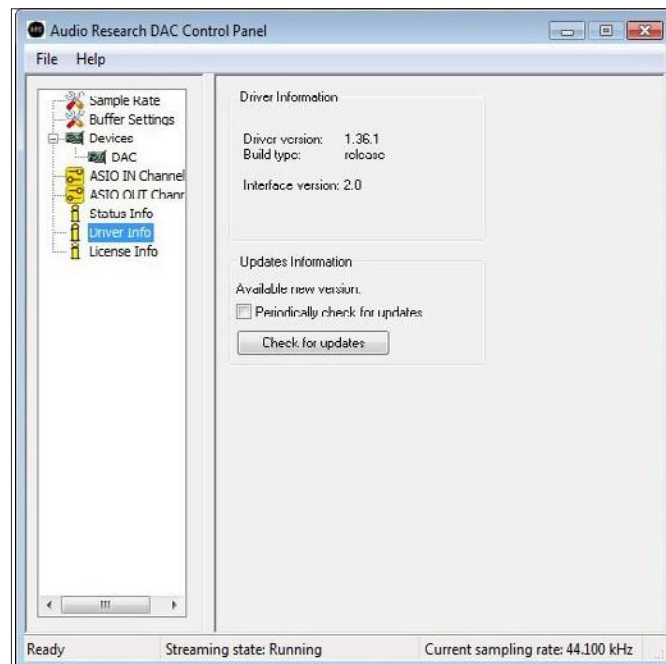

Finally, verify in the Windows Control Panel, under (Devices and Printers) that your Windows Speaker/Volume option is able to see and select the external Audio Research "USB DAC 1/2" audio output path. (Alternatively, you may need to select this path in the "Windows Speaker/Mixer" popup.) Select the "MIXER" and then choose the USB DAC 1/2 in order to set the audio output path to be directed to the DAC input. (Please remember that this output path will not show up or be selectable unless the DAC9 is attached *and* powered up).
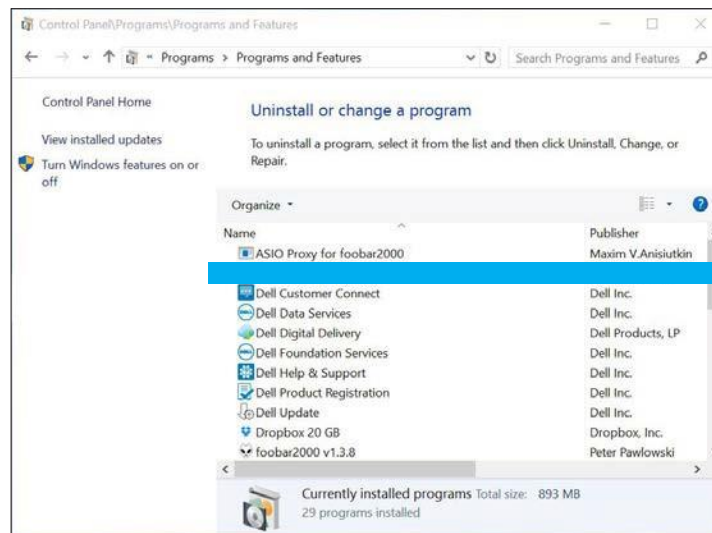
Software Installation

Removal of previous driver versions

Uninstall any prior/existing Audio Research Corp. system Drivers (Windows OS). Using your PC system, find and open the Windows "Control Panel" features.
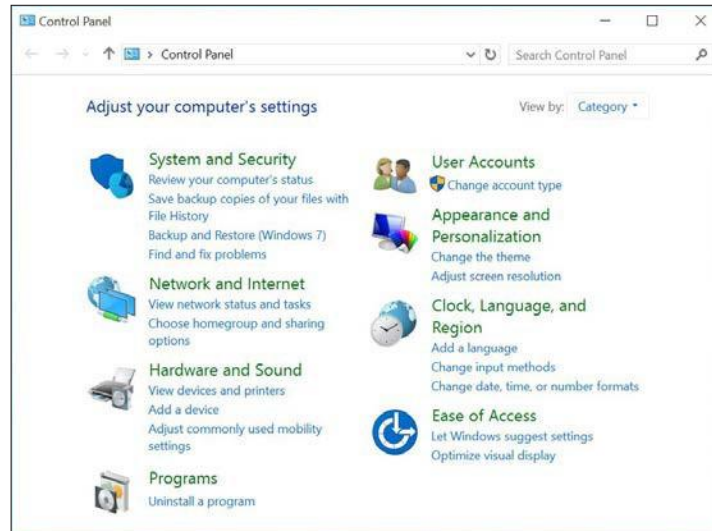
Find and open the "Uninstall Programs" for your particular computer. This may be named: "Programs" or "Programs and Features".
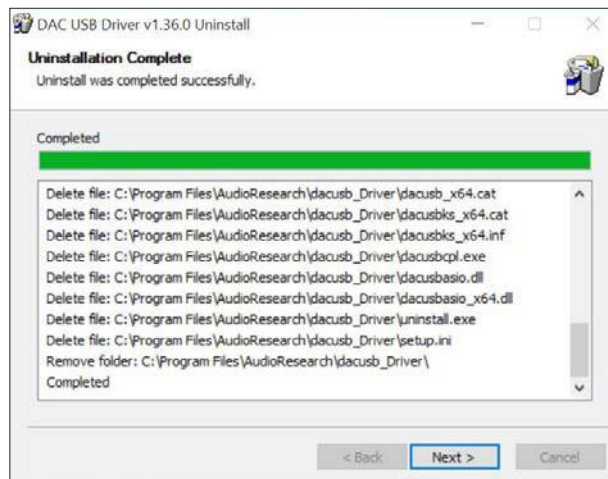

Find the driver in the program list

Software Installation

Find and select all programs named "DAC USB Driver" or similar, whose Publisher name is "AudioResearch", "AudioResearchCorp" or "RigiSystems AG" or similar.
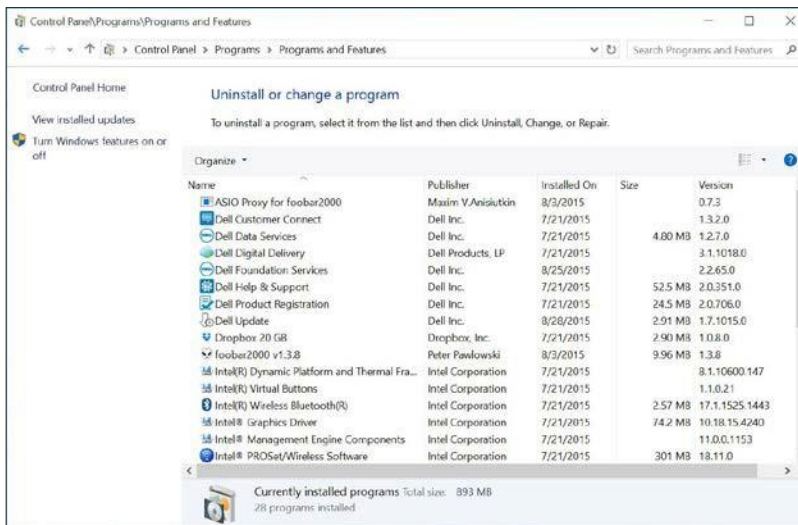

Select Uninstall for each program found with this identity, and follow the directions to complete this process.

Software Installation

After you click "Finish" you should see an updated Program listing with the driver(s) removed:

Maintenance

Vacuum Tubes

It is recommended that you replace the 6H30 vacuum tubes of your DAC9 in sets. All of the tubes in your converter have been matched to have similar operating characteristics, to provide the best sound quality and reliability.

Servicing

Because of its careful design and exacting standards of manufacture, your DAC9 converter should normally require only minimal maintenance to maintain its high level of performance.

Should you need service, please contact your authorized Audio Research dealer. For additional questions regarding the operation, maintenance or servicing of your converter, please contact the Customer Support Department of Audio Research Corporation at service@audioresearch.com or call 763-577-9700. You may also initiate service by visiting the Audio Research website (www.audioresearch.com) and selecting 'Service Repair' at the top right of the home page.

Caution

Your DAC9 converter contains sufficient levels of voltage and current to be lethal. Do not tamper with a component or part inside the unit. Even with the power turned off, a charge remains in the energy storage capacitors for hours, or even days.

Cleaning

To maintain the new appearance of this converter, 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, 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.

audio research
HIGH DEFINITION®

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. The warranty terms are also available on the internet at www.audioresearch.com/en-us/company/warranty-statement. 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: 6Hz - 192kHz +0/-3 dB; 20Hz - 20kHz +0/-0.15 dB.

Noise Floor: >-103 dB RMS, 20 Hz - 20 kHz

Signal-to-Noise Ratio: >114 dB

Total Harmonic Distortion + Noise: 0.002% @ 2VRMS, I kHz balanced output

IMD + Noise: 0.001% (SMPTE ratio).

DAC resolution: 24 bits.

Intrinsic Jitter: <10 pS.

Channel Separation: 107 dB.

Dynamic Range: 114 dB (AES17)

Output Impedance: 500 ohms balanced, 250 ohms single-ended.

Master Oscillator: 22.579 mHz ±20 Hz for 44.1, 88.2, and 176.4 kHz
24.576 mHz ±20 Hz for 48, 96, and 192 kHz.

Inputs: USB 2.0 HS (480 Mbps): 44.1 to 384 kHz, DSD (2.28225 mHz), 2xDSD (5.6448 mHz); RCA (75Ω SPDIF): 44.1 to 192 kHz; BNC (75Ω SPDIF): 44.1 to 192 kHz; XLR (110Ω SPDIF): 44.1 to 192 kHz; AES/EBU: 44.1 to 192 kHz; Optical (660 nM Toslink fiber): 44.1 to 96 kHz.

Digital Filter: Selectable Fast and Slow algorithms.

Upsampling: Inputs upsample to 354.8 or 384 kHz.

Compliance: FCC and CE.

Rated Outputs: 3.8V max balanced; 1.9V max single-ended.

Controls: 6 Push Buttons: Power, Menu, Option, Enter, Input, Mute.

Power Supplies: Electronically regulated low and high voltage supplies. Automatic 45 second warm-up/brown-out mute. Line regulation better than .01%. Maximum ambient air operating temperature: 30° C, 86° F.

Tube Complement: (2)-6H30P dual triodes.

Power Requirements: 100-125VAC 60Hz (200-250VAC 50/60Hz) 60 watts maximum.
Standby: 1.8 watts.

Dimensions:
Width	19" (48 cm)
Height	6.5" (13.7 cm)
Depth	13.7" (34.8 cm)

Handles extend 1.6" (4 cm) forward of the front panel.

Weight: 13.9 lbs. (6.3 kg) Net; 20.4 lbs. (9.3 kg) Shipping.

FOUNDATION
SERIES

audio research
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