

## Model 22.1 HDCD® D/A Converter Instructions

The VAC 22.1 is one of the first D/A converters ever designed from the ground up around the Pacific Microsonics PMD-100 HDCD® digital filter. This is one of the best digital filters in the world, and gives superb sound with all CDs. The Model 22 was designed specifically around the PMD-100, an important distinction from many other dacs where the PMD-100 was merely fitted to existing designs.

The jitter-resistant input is implemented with a Crystal Devices receiver. The D/A conversion IC is a high quality Analogue Devices unit. The a-v conversion is accomplished by a unique "charge-pump" circuit that results in low noise and distortion, with high transparency and ease.

The output stage is a highly accurate and linear Class A cathode-bias triode.

Six separate power supplies ensure pure operating conditions within the 22.1, helping eliminate the hardness and opacity typical of lesser designs.

*HDCD® and High Definition Compatible Digital® are registered trademarks of Pacific Microsonics, Inc.*

### General Directions

0. DANGEROUSLY HIGH VOLTAGES ARE PRESENT WITHIN THE 22.1 CHASSIS. IF YOU NEED TO REMOVE THE COVER TO CHANGE THE TUBE, UNPLUG THE 22.1 FROM THE AC POWER OUTLET AND FROM ALL OTHER COMPONENTS. ALLOW THE UNIT TO REMAIN UNPLUGGED FOR THIRTY MINUTES BEFORE REMOVING THE COVER. DO NOT RECONNECT THE 22.1 TO THE AC OUTLET OR ANY OTHER COMPONENTS UNTIL THE COVER IS REPLACED AND SECURED.

TUBES BECOME HOT IN USE. DO NOT EXPOSE THE UNIT TO MOISTURE.

1. Complete all connections before connecting the AC cord to the wall outlet.
2. The associated preamplifier should be set to mute and/or its gain controls turned fully down.
3. The associated CD or DAT transport should be switched on and emitting a synch signal (playing).
4. The power switch has three positions: off, on but muted (indicator is red), on and unmuted (indicator is green). The unit will automatically remain muted for 45 seconds after turn on.
5. Select a digital input (1 and 2 on coax, 3 for optional AT&T optical).

6. Continuous operation of the DAC is recommended for best sound and longest tube life.
7. The tube inside is type 12AX7/12AX7A/ECC83/E83CC. A low noise tube is not required.
8. Please call us with any questions you may have. It is better to ask than to guess.

### **Model 22.1 nominal specifications**

#### Conventions Supported:

SP-DIF  
AES-EBU professional

#### Sampling Rates:

32 kHz  
44.1 kHz  
48 kHz  
...and all rates in between

#### Inputs:

2 coaxial, 1 optionally AES-EBU XLR jack  
1 optical, AT&T type, optional (see special instructions)

#### Outputs:

1 set coaxial audio (unbalanced)

#### Output Voltage:

1.9 volts at full output

#### Distortion:

.02% at full output, 1 kHz  
.02% at 9 below full output, 1 kHz

#### Tube Compliment:

1 E83CC/ECC83/12AX7A (Golden Dragon preferred)

The VAC was voiced specifically with the Golden Dragon range of premium tubes. It is recommended that this range be used when replacing tubes. Other brands will function but likely will not sound as good.

#### AC Power Requirements:

120 VAC nominal, 50/60 Hz, 300 mA slow blow fuse. May be set for 240 VAC operation by means of the voltage configuration card under the fuse holder, with 150 mA slow blow fuse.

#### Options:

BNC coaxial input connectors  
XLR balanced input connector (AES-EBU)  
AT&T optical input

## SPECIAL INSTRUCTIONS FOR AT&T GLASS OPTIC USERS

For proper function with AT&T systems, the special attenuators provided must be used. These devices, which resemble washers, are provided in five sizes. The thinnest provides the least attenuation, the thickest provides the greatest attenuation. The correct size for your particular application must be found by trial, much like fine tuning a turntable.

If your transport has a metal bezel on the ST jack, start with the middle thickness attenuator. This is to be placed over the ferule (the thin shaft that sticks out of the connector) of the ST connector at the transport end of the AT&T cable before the cable is attached to the transport. If your transport has a plastic bezel on the ST jack, start with the yellow and red attenuators at the transport end and the green attenuator at the DAC end.

The correct attenuator provides clear, detailed sound with no ticks or noise spikes. With incorrect values you will hear less detail and, in extreme cases, digital no-sync noise.

These special steps are required with the VAC DAC because of the special quality high resolution wide bandwidth optical receiver employed.

## Warranty

Your equipment is warranted for a period of thirty (30) days from the date of purchase. In addition, if the registration card(s) is received by VAC along with a copy of your sales receipt from an authorized VAC dealer within this thirty days, a service contract will be extended to cover your equipment for two (2) years (except tubes which are covered for 90 days). Receipt of your registration card will be confirmed in writing by VAC: it is important that you call VAC if you do not receive this confirmation.

This warranty applies only to units sold to and operated by private individuals in the United States of America through authorized VAC dealers. For warranty information outside of the U.S. contact the importer of VAC equipment for your country. Units sold outside of the U.S. should still be registered with VAC.

Valve Amplification Company  
807 Bacon Street  
Durham, NC 27703  
Tel 919-596-1107 / Fax 919-596-2037

*Please fold & mail this form along with a copy of your sales receipt as soon as possible. This activates your extended coverage and entitles you to receive our newsletter.*

---

**REGISTRATION FORM**  
Model 22.1 HDCD® Triode D/A Converter

Name \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

Telephone \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_

Dealer \_\_\_\_\_

Salesperson \_\_\_\_\_

Purchase date \_\_\_\_\_ Serial Number to be registered \_\_\_\_\_

How did you first learn of VAC products? \_\_\_\_\_

Please provide any comments on VAC products or your dealer \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Please tell us more about your system:

Power amplifier \_\_\_\_\_

Speakers \_\_\_\_\_

Preamplifier \_\_\_\_\_

CD Drive \_\_\_\_\_

Turntable/arm/cartridge \_\_\_\_\_

Interconnects \_\_\_\_\_

Other \_\_\_\_\_