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Grace Design 901 Headphone Amplifier

by Tom Jung

Grace Design has earned a reputation for quality products over the past few years with a line of high-end microphone preamplifiers. I reviewed the 801 eight-channel preamplifier in the March/April 1996 issue of *PAR* and have since used it on many projects.

Michael Grace has come up with a headphone amplifier employing the same passion for quality as he has for his microphone preamp designs.

Features

The 901 has the same quality look and feel of the Grace mic preamps, complete with a precision gold contact 24-position level control switch. Most headphone amplifiers use dual gang potentiometers with tracking errors of several dB, especially at lower gain settings. Interchannel tracking error can be a real problem affecting both stereo image and internal balances with the potential of throwing off a mix. With the 901 precision attenuator, channel-to-channel accuracy is maintained within 1/20th of a dB at all gain settings! Try that with a pot.

The 901 has both balanced XLR and unbalanced RCA analog inputs as well as PCM digital inputs in both AES/EBU and S/PDIF formats, the latter available in RCA and Toslink optical. A back panel miniature toggle switch selects between the pro and consumer formats.

The front panel has two centered 1/4-inch stereo headphone jacks wired in parallel and a large power switch to starboard, gain range



control to the left. The digital/analog push-buttons are sealed gold contact relays and are illuminated. Nice. A low distortion 24-bit DAC accepts sample rates up to 96 kHz with four LEDs indicating from 32

kHz to 96 kHz. The DAC also employs an automatic digital de-emphasis filter.

Like the Grace mic preamps, the level

control is adjusted with a custom knob machined out of solid aluminum and is shaped so that from across the room you can tell by the angle of the knob where the gain is set. The 24-position gain control is just right, making it easy to get back precisely to your reference settings while providing just enough resolution. In addition, the taper layout is well thought out. Here is the breakdown of level control taper: fully counter-clockwise is off, the next two steps go from -60 to -50, the next four steps are 4 dB each and the remaining to full up are in 2 dB steps. Perfect. The Gain Range switch provides an extra 10 dB of gain for monitoring -10 dBV or consumer level signals. This is also useful for low sensitivity headphones.

The 3 dB down points for frequency response are at 4 Hz and 600 kHz. Of course this is in the analog mode, which is where I generally listen to the 901. You can be sure DSD signals are not going to be compromised by this kind of bandwidth.

Fast Facts

Applications:
Studio

Key Features:
24-position gain control;
onboard D/A converter; 96
kHz performance; XLR, RCA
inputs; digital inputs; consumer
and pro operation

Price:
\$1,495

Contact:
Grace Design at 303-443-
7454, www.gracedesign.com.

In Use

The 901 uses a high-current output amplifier with an output impedance of 1 ohm and is capable of driving 8 ohm loads. Perhaps because of its low output impedance, the 901 has the best low-frequency control of any headphone amp I have heard. Most headphone amplifiers have output impedances of 100 ohms or more, making them potentially more bulletproof at the expense of low-frequency control.

The internal high-current linear power supply uses a high-current, low-noise, toroidal power transformer, giving the 901 just enough weight so that when you plug and unplug your headphones you do not have to hold on to the amplifier with your other hand.

The signal path is about as pure as you can get using high-grade instrumentation input amplifiers, high-quality metal film resistors and no electrolytic capacitors in the signal path.

I really liked the sound of the Grace 901. About five seconds after I plugged in my Grado HP-1 reference headphones (*PAR* 9/96) I knew this amp was going to take these phones to places they had never been before sonically. The first and most obvious area was the low end. Much of my work

includes acoustic bass, which is traditionally difficult to reproduce accurately, especially with headphones. This is the one area where reference monitoring on headphones falls apart due to the fact that most amplifiers do not have good control of the headphone drivers, causing low-end boom. This boom creates a masking effect that clouds the entire bottom end, making it difficult to mix or make tonal adjustments in those low-frequency areas. The 901 has the best bottom-end control I have heard. It also seems like my Grado headphones have another octave of bass extension.

Good bass is not all; the top end has openness and extension as well with incredible harmonic detail and air. With a DSD signal connected to the analog inputs, the depth and width of the soundstage was about as good as I have heard on headphones. The PCM inputs are very good as well, with proper analog circuitry following the DAC chip. This makes the 901 an excellent D-to-A reference monitoring device. The Grado headphones are about 40 ohms and are fairly easy to drive, but the 901 has plenty of power and can drive much lower impedances and more difficult loads.

Summary

I know of no other headphone amplifier

that performs as well as the Grace 901. At \$1,495 the 901 is not cheap, but this kind of excellence represents a good investment if you really care about audio quality.

Tom Jung, founder of DMP Records, is Pro Audio Review's technical consultant and a regular contributor.

REVIEW SETUP

Philips SACD-10 PE CD player; EMM Labs DAC8 D/A converter.

Product Points

Grace Design 901 Headphone Amplifier

Plus

- High-end performance
- Quality construction
- Useful I/O choices

Minus

- Price

The Score

I know of no other headphone amplifier that performs as well as the Grace 901.

GRACE
d e s i g n

Presents the **model 901** Reference Headphone Amplifier

Born of the same inspiration and attention to detail as our award winning microphone preamplifiers, the model 901 is a truly unique tool designed to provide engineers and musicians with the finest quality headphone amplification available for tracking, mixing and mastering.

LEVEL BANDS HIGH DIGITAL ANALOG OUTPUTS REFERENCE HEADPHONE AMPLIFIER MODEL 901 POWER

"We're blown away with the accuracy, detail and ability to deal with both analog and digital inputs that the 901 provides. In the final stages of quality control, both stereo and 5.1 music projects are monitored through a high-end headphone monitoring chain. The 901 has become the new headphone reference standard here at Gateway."

-Bob Ludwig, President Gateway Mastering and DVD

With its high current transimpedance output amplifier, the model 901 can control the transducers in your headphones with dramatically better accuracy and resolution than the amplifiers in other audio playback devices.

The model 901 hosts analog and digital inputs so it can accurately monitor from a variety of sources. The 901's ultra-precise volume control ensures that you will hear your recordings with exact stereo balance at any monitor volume.

Simply put, the model 901 is able to present a soundfield so well balanced and articulated, you will discover new details and nuances in familiar tracks you have never heard before. Now imagine how this will empower your ability to hear and manipulate subtle, yet critical elements in your work.

• 120 dB dynamic range • AES, S/PDIF and Toslink digital inputs • 10dB gain boost switch for -10dB sources • Ultra low distortion 24-bit DAC except sample rates from 32 to 96kHz • Sealed gold contact relays for input select and gain boost switching • Balanced XLR, unbalanced RCA analog inputs • 24 position level attenuator with 0.5dB channel level matching •

for more information, visit WWW.GRACEDESIGN.COM
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