Monitors Make The Mix

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- choose the right speakers & headphones

ADAM Audio F5 and F7
ribbon-tweeter excellence for the masses

IsoAcoustics ISO-L8R200
turn any surface into an isolating speaker stand

16 Products Reviewed:
hot headphones from AKG and Sennheiser
the amazing Apollo from Universal Audio

and more from
Earthworks • Grace Design • Korg • Lauten • Moog
NonLinear Educating • PreSonus • Shure • Trident • Wizdom Music
New Hampshire-based Earthworks is a microphone company famous for their über-clean and honest microphones. Yes, the ones with the small tapering bodies and itty bitty capsules that look very much like microphones of the measurement variety. If you have read any of my recent reviews of their products you will know that I typically refer to these high-definition mics as the “straight wire with gain” of the microphone world.

Of course that phrase is typically attributed to microphone preamps and refers to designs where the sound from the microphone and source pass through the unit strongly and cleanly with as little coloration as possible.

Interestingly, this month we look at a mic preamp from Earthworks, which the company claims is truly worthy of the “straight wire with gain” title, the ZDT 1022 Microphone Preamp. This isn’t a brand-new product, but it’s one that is worthy of our readers’ attention, and I had a very interesting time reviewing it. Here’s what I found.

Zero distortion

ZDT stands for Zero Distortion Technology and is Earthworks' proprietary creation from the mind of their principal designer David Blackmer. To explain what the ZDT preamp is, I will start with Earthworks’ own definition: The ZDT is a “Class A bipolar input circuitry device”.

Internally the ZDT starts with a balanced input that is connected to a symmetrical, balanced output. It is a completely differential design and places no transformers or electrolytic capacitors into its signal flow. Because of this design, any nonlinear distortion stays below 1 part per million (that’s one ten thousandth of a percent) even at full gain, and... ta dah! Zero Distortion Technology!

The ZDT is designed to offer a wide yet flat frequency response of 1 Hz to 200 kHz (that’s not a typo, 200 kHz... just imagine that kind of frequency response in a microphone!), a slew rate of 22V/microsecond, a rise time of 0.27 microseconds, an impulse response of 1.4 microseconds, and an equivalent input noise of –132 dBV at 20 dB gain and -143 dBV at 60 dB gain.

All of this in English translates to a super fast, ultra clean preamp that Earthworks claims to be one of the quietest on the market. I cannot argue with that conclusion, since in my tests the ZDT 1022 was indeed quieter than any other mic pre in my studio.

The ZDT visually

The ZDT family is made up of the half-rack single-channel model 1021, the two-channel version 1022 (on review here), and the four-channel 1024. The 1022 and 1024 are housed in a single rack space that is clean and utilitarian in design. They are dressed in a simple matte black finish with white labeling, and the only visual nod to their boutique status is in their uniquely styled knobs.

Each channel has two knobs, a pair of LEDs, and 3 toggle switches. On the far left of the front panel is a +48 V phantom power switch with a yellow LED indicator. Below that is a polarity switch, and a switch labeled On or Standby. This is not a power switch; the unit powers on when plugged in. It’s intended to be used to mute the signal for switching mics, or to turn the signal off between takes or whenever else you might want to stop the pre from passing signal temporarily.

Next up is a large input-gain knob; this is a 12-position stepped switch that goes from 5 dB to 60 dB in 5 dB steps. This is followed by a smaller matching variable output pot that can attenuate the signal from 0 down to –20 dB when turned counter clockwise. While this looks like your standard “push-the-input-into-the-output” style of mic pre, it is not, and the output attenuation works only when used with a secondary 1/4” balanced output on the back of the unit. (See below.)

Around the back each channel has a balanced XLR microphone input and its corresponding ZDT-balanced XLR output. The secondary 1/4” TRS balanced output is tied to the output attenuation knob on the front and is useful if you do need to pad the unit’s output down when used inline with additional outboard equipment such as dynamics processors or hardware eq, etc... (Some early units went out with this output labeled as unbalanced, which has lead to some interesting internet discussions, but it is in fact balanced.)
In the studio

As I mentioned above, the ZDT Preamp is not a new item; it has actually been on the market for over a decade, and yet for some reason never got the widespread recognition it deserves. As a person who is quite fond of clean, “straight wire” pres, I can tell you the ZDT stands proudly alongside the likes of GML, John Hardy, TRUE Systems, Grace Design, and Millennia Media.

Currently in my room I use an 8-channel Millennia HV3-D. In side-by-side comparisons with the ZDT 1022, on drums, percussion, acoustic guitar, vocals, bright jangly tambourine, violin and the like, I had a very hard time discerning any aural difference in the highs and high mids of either unit. Their sounds are very close to one another in the highs. I found the sonic difference to be primarily audible in the low mids, with the ZDT being just a hair more forward, like 5-10%. Moving down to the low end, it was again too close to call.

Where I did notice a difference between the two was that the ZDT is in fact just a touch quieter than the HV3-D, especially when pushed into the 50–60 dB range when used with ribbon mics (in this case a Royer R-121) and my favored dynamic, the Shure SM7B, which is also a very low-output mic.

Of course this is not a vibey pre in any sense of the word, but when coupled with vintage-toned tube mics, in my studio a BeezNeez T-1 (a 47-ish modern clone) and my Telefunken AR-51 mics (reviewed November 2010), it allowed me to hear the true tone and character of each, and there is your vibe. It puts out what goes in, faithfully.

Conclusions

The ZDT 1022 delivers on its promises in spades and sounds (or doesn’t sound, depending on your perspective) phenomenal. It holds its own against every other straight-wire-with-gain preamp that I know of, and may even be sonically cleaner than most. If you’re looking for one, two, or four channels of absolutely uncompromising pre-amplification that lets your sources come through with only your mics and other processors to flavor them, the ZDT preamps should definitely be on your short list.

Prices: 1021, $1399; 1022 (as reviewed), $1999; 1024, $3299 (all prices street)