

“Like Wire With Gain”



- Zero Distortion, Less Than One Part Per Million (>0.0001%)
- Lowest Noise of any Preamp on the Market
- All Discrete Components, Class A Amplification (no ICs in signal path)
- No Electrolytic Capacitors in Signal Path
- Greater Transparency with Minimum Signal Path and Minimum Features
- High Output Level + 30dBu
- Full Differential (balanced) from XLR in to XLR out (no internal conversion to single-ended)
- Black Finish

### Architectural & Engineering Specifications

#### ZDT Preamplifiers

The preamplifier shall have a frequency response of 1Hz - 200kHz  $\pm 0.5$ dB and distortion less than 0.0001%. An input noise of -140dB @ 40dB of gain and a slew rate of 22/ $\mu$ s with a DC offset servo balanced to  $\pm 1$  mV typical. Power requirements of 120 or 240 VAC. Inputs will be transformerless, differential balanced terminating in an XLR-F connector(s) with pin 2+. Input impedance shall be 10K ohm with phantom power on and 100K ohm with phantom power off. The amplifier will have a balanced differential output with XLR-M connector(s) pin 2+ that will only feed balanced signal lines and an auxiliary output terminating in a 1/4 inch t-r-s connector (tip+ & ring ref) which will feed either balanced or unbalanced signal lines. The amplifier shall be available in single channel, dual channel or four channel models, with two and four channel models rack mountable and the single channel model in a half-rack size. The 1021 single channel model will have dimensions of 1.75" h x 8.1" w x 10.4"d (4.4 x 20.6 x 26.4 cm) weighing 4lbs. (1.8kg). The 1022 dual channel and 1024 four channel models are rack mountable with a height of 1.75 inches (4.4mm) a width of 19" (48.2mm) and a depth of 10.4 in (26.4mm). The weight of the 1022 and 1024 is 13 lbs. (5.9kg). The Earthworks 1021, 1022 or 1024 is specified.

### Zero Distortion Technology -

in amplifiers was invented by David Blackmer, the engineering genius of dbx® and founder of Earthworks®. His goal was to create an amplifier which contributed no audible noise, distortion, or color of any kind - absolutely pure amplification with nothing added, “Like Wire with Gain.” And he did it! We proudly present the Earthworks ZDT series of preamplifiers for those who wish to hear no unwanted additives in their amplification.

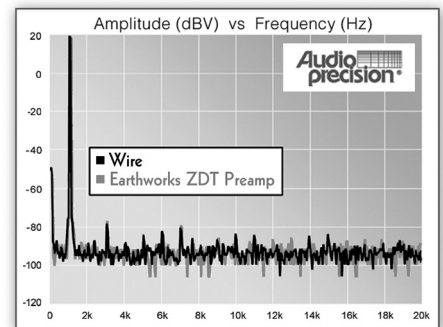
Many sound contractors and audio engineers have expressed the need for a preamp with “pure gain” that will allow you to hear the true characteristics of a microphone and an artist’s performance. Then, if desired add color (signal processing or special effects). David Blackmer’s Zero Distortion Technology preamps have incredibly low distortion (less than 1 part per million (<0.0001%). It’s like having “wire with gain”, meaning pure gain with not color, no distortion, phenomenal headroom and extremely low noise. The ZDT preamps are Class A and made with all discrete components in the main signal path (no ICs) for unparalleled transparency. The remarkable Earthworks ZDT preamps are available in single channel, two and four channel models. Also available, the 521 ZDT single channel preamplifier module that will plug into a standard 500 series rack. Let “Pure Gain” start working for you, and take greater control of your sound.

### The Proof is in the Pudding

Many would tell us that our claim of “Like Wire with Gain” was too bold, and may not stand up to scrutiny. So, we decided to measure the distortion of a straight piece of wire on an Audio Precision® Audio Analyzer which is the industry standard for measuring distortion. We measured the distortion of the wire and stored it on one trace, then we measured the distortion of a ZDT preamp channel and stored it on a separate trace. Then we overlaid the two traces, which can be seen in the graphic at the above right. The results show that both the wire and the ZDT preamp have distortion levels so low, that they were immeasurable.

### Looking Deeper into the ZDT Preamp

The primary signal path has an XLR input through the stepped gain amplifier to an XLR output. Input to output is fully differential and is balanced all the way through, from input to output (i.e. no internal



Distortion measurements made with the Audio Precision Model One Audio Analyzer.

conversion to single-ended). The gain control for the main signal path is controlled with precision stepped gain switch from 5dB to 60dB, in 5dB steps. In addition, there is a simultaneous t-r-s output with a variable gain control that allows 20dB of gain variation from each stepped switch setting. When you change gain from the main 5dB stepped gain controls, the 5dB steps may be too much or too little, so the t-r-s output is controlled by a continuously variable potentiometer on the front panel to provide you the exact level you desire.

There is a 48-volt phantom power switch for each channel with an accompanying LED indicator. Each channel also has a standby switch to mute the channel output when desired. A clip indicator on each channel shows imminent overload conditions (firing at 10% below clipping level). Each channel also has a polarity reversal switch, and there is a “power on” LED indicator. We follow that up with an impressive frequency response of 1Hz to 200kHz within  $\pm 0.5$ dB (almost DC to light). The Earthworks ZDT Zero Distortion Technology preamplifiers set a new and impressive standard for external microphone preamps.

Additional information including complete specifications are on the reverse side of this page.



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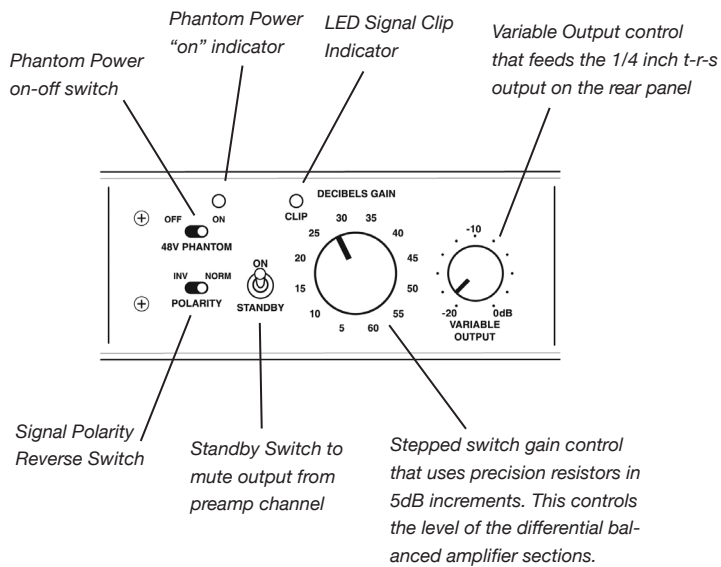
# The Ultimate in Microphone Preamplifiers

Many of today's sound and recording engineers choose microphone preamplifiers for their color or unique sound. Earthworks takes a different approach, in making preamplifiers that have "no color," but are "pure" with nothing added. In addition, the noise is extremely low and distortion is immeasurable. Some professionals want an uncolored microphone preamplifier that will pass the amplified sound of their microphones untainted, uncolored

and unaltered. The Earthworks ZDT preamplifiers are the perfect choice for these individuals. The ZDT preamplifiers will let you hear all of the character and minute detail of your microphone and the sound it is picking up. Just pristine! Then you can add any additional color you desire with signal processing or other enhancements. The sound of the Earthworks ZDT preamplifiers is "pure" and "transparent" with no added artifacts, no added noise and no added

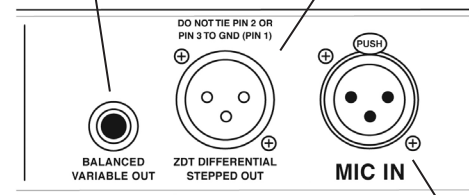
distortion. If it is a pure signal path you desire, then look no further. The Earthworks ZDT preamplifiers are the master's choice. And, the preamps are backed by a 15-year warranty. How can you go wrong? Just choose a rack mount model with the number of channels you require and enter the world of pristine preamplification. Don't forget about the 521 ZDT preamplifier module for standard 500 series racks, if that better fits your requirements.

## Front & Rear Panel Functions of a ZDT Preamplifier Channel



1/4 inch t-r-s output, controlled by front panel variable output control. Will feed balanced or unbalanced lines.

XLR output for differential balanced amplifier section. Will feed balanced lines only.



XLR microphone input. Will accept balanced lines only and will accept phantom powered or non-phantom powered microphones.

## Specifications

<b>Frequency Response:</b>	2Hz - 100kHz $\pm$ 0.1dB, 1Hz - 200kHz $\pm$ 0.5dB
<b>Impulse Response:</b>	1% settling time - 1.4 $\mu$ s square wave rise time - 0.27 $\mu$ s
<b>Distortion:</b>	XLR stepped output < 0.0001% Variable output 0.001%
<b>Enoise (input):</b>	1.6nV/Hz <sup>1/2</sup> typical spectral density @20dB gain, .86nV/Hz <sup>1/2</sup> @40dB gain; .6nV/Hz <sup>1/2</sup> @60dB
<b>Translation of Enoise to EIN</b>	-132dBv@20dB gain, -140dBV@40dB gain, -143dB@ 60dB gain (20Hz to 20kHz, A weighted) Typical current noise spectral density @ input 1.5pA/Hz <sup>1/2</sup>
<b>Slew Rate:</b>	22V/ $\mu$ s
<b>DC offset:</b>	servo balanced to $\pm$ 1 mV typical
<b>Power Requirement:</b>	120V AC (100V, 240V available), standard IEC connector (supplied), internal 250mA 250V spare fuse included.
<b>Input:</b>	XLR balanced, transformerless input (pin 2 +) one per channel
<b>Input Impedance:</b>	10K ohm with phantom power on, 100K ohm with phantom power off
<b>Outputs:</b>	XLR (differential, Pin 2+) per channel from stepped gain control, 1/4 inch t-r-s (tip+, ring ref) from variable gain control, balanced, single ended
<b>Product Dimensions:</b>	1022, 1024 - 1 rack space 1.75" x 19" x 10.375" (1021 is 1/2 rack space)
<b>Weight:</b>	1022, 1024 6lb. (shipping 13lb), 1021 4lb. (shipping 7lb.) (shipping 10lb.)