



### Warranty

All Earthworks ZDT Preamplifiers carry a two-year limited warranty (parts and labor).

### Product Registration

To help you get the most out of your Earthworks purchase, please take a moment and register your product with us online at [earthworksaudio.com/register](http://earthworksaudio.com/register).

### Service & Repair

If you have any problems with your Earthworks products, please contact our Service & Repair Department.

Email: [returns@earthworksaudio.com](mailto:returns@earthworksaudio.com)

Telephone: (603) 654-2433, ext. 119

## Precision Microphone Preamplifiers Featuring David Blackmer's Zero Distortion Technology™

### Owner's Manual



1021 Single Channel



1022 Two Channel



1024 Four Channel

## Description

Earthworks Zero Distortion Technology™ (ZDT) precision microphone preamplifier is a discrete-component Class A bipolar input circuitry device. The primary signal path from the balanced XLR input to a balanced and symmetrical XLR output is completely differential (the signal is never converted to single-ended). There are no transformers or electrolytic capacitors in the signal path. All connectors and switches are gold-plated.

The ZDT preamplifiers have extremely flat wideband frequency response from 1Hz to 200kHz, slew rate of 22V/μs, and the lowest self-noise available from any pre-amplifier on the market. The nonlinear distortion is kept well below one part per million (.0001%) even at the highest signal levels (below clipping). Each channel has separate phantom power switch, polarity reversal, and mute switch that turns off the output while keeping the microphone powered and the gain unchanged. A separate 1/4" t-r-s output has additional vernier gain reduction of up to 20dB after the stepped gain.

The ZDT preamplifiers are available in single (Model 1021), two-channel (Model 1022), or four-channel (Model 1024) versions. The multi-channel preamplifiers have separate signal boards divided by electromagnetic shields to minimize crosstalk.

## Specifications

Frequency Response: 2Hz to 100kHz ±0.1dB, 1Hz to 200kHz ±0.5dB

Settling Time: 1.4μs

Distortion: XLR out: less than 1ppm (0.0001%); 1/4" out: 0.001%

Input Noise SD Enoise:  $1.6 \frac{\sqrt{\text{Hz}}}{\text{mV}}$  @ 20dB gain;  $0.6 \frac{\sqrt{\text{Hz}}}{\text{mV}}$  @ 60dB gain

EIN: -132dBV @ 20dB gain; -143dBV @ 60dB gain

Slew Rate: 22V/μs

Output DC Offset: ±1mV typical, servo balanced

Power Requirements: 120V AC (100V and 220-240V versions available)

Inputs: XLR3-F balanced transformerless

Input Impedance: 10kohm phantom ON, 100kohm phantom OFF

Outputs: XLR3-M balanced transformerless (stepped)

1/4" t-r-s jack balanced transformerless (variable)\*

Output Impedance: 5 ohm nominal

Max. Output Level: +33dBu (37V peak-to-peak)

Dimensions H x W x D: 1 rack space 1.75" x 19" x 10.375" (1021 is 1/2 rack)

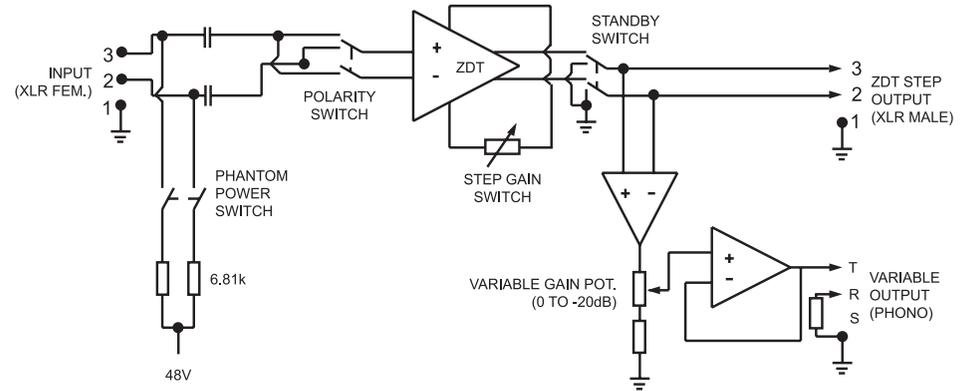
Weight: 1024, 1022: 6lb (ship: 10lb); 2.7kg (ship: 4.5kg)

1021: 4lb (ship: 7lb); 1.8kg (ship: 3kg)

Specifications subject to change without notice.

\*note: on some units the 1/4" t-r-s outputs may be incorrectly labeled as "unbalanced"

## Block Diagram of the Signal Path



## Front Panel (one channel)

48V phantom switch  
(yellow LED)

Clip indicator  
(red LED)



polarity reversal switch

output standby

stepped gain switch 5 to 60dB to XLR output

variable gain 0 to -20dB from the step (1/4" t-r-s output)

Power indicator (green LED)

## Rear Panel (one channel + power)



IEC power connector fuse compartment

AC voltage and serial number

variable gain out (balanced)

stepped gain out (balanced symmetrical)

mic input

**Important: the XLR stepped output is fully differential, that is, it has equal and opposite signal present on pins 2 and 3. NO extra gain stage is used, and the preamp relies upon the signals on pins 2 and 3 to be equal and opposite for distortion correction. Never short pin 2 or pin 3 of the male XLR output connector to ground (pin 1)!**