

Audio Alchemy, Inc.

Professional Digital Transmission Interface

DTI·PRO 32

Thank you for purchasing the new Audio Alchemy DTI·PRO 32 ... our second generation Digital Signal Processor (DSP)-based resolution enhancement technology, combined with our third generation of digital jitter filter technology. DTI·PRO 32 utilizes an ultra-low jitter Voltage Controlled Crystal Oscillator (VCXO) based clock recovery system, a 40 mHz DSP computer, and user-upgradable, software controlled, resolution enhancement.

Before installing your new unit please make note of the following precautions:

- o Do not plug the DTI·PRO 32 power supply into AC Mains before making all other connections to the DTI·PRO 32 itself first.
- o By design, the DTI·PRO 32 runs quite warm, do not be alarmed. Be sure to provide adequate ventilation.

INSTALLATION

Locate the DTI·PRO 32 in a location convenient to your CD transport and Digital-to-Analog Converter. These connections should be as short as possible. Locate the standard power supply (Power Station 4) in a remote location near AC Mains and run its DC output cable up to the DTI·PRO 32. The 6 pin DC cable plugs into the back of DTI·PRO 32 with the alignment notch pointing up, and should be pushed in firmly. If you have the optional upgrade Power Station 3, place it directly to the right of DTI·PRO 32 so the faceplates "nest". Attach the removable DC power cord to both the DTI·PRO 32 and the PS3 as described above. Plug the AC mains cable into the back of the PS3.

NOTE: *Do not plug the power supply into AC Mains before making all other connections to the DTI·PRO 32 first.*

DTI·PRO 32 will accept digital input in the form of Coaxial (via a BNC jack), TosLink optical (ST glass optional) and Audio Alchemy's exclusive I²S bus. Digital output is in the form of Coaxial (via a BNC jack), ST glass (optional) and I²S. Attach a cable of your choice from your transport's output to the appropriate input on the DTI·PRO 32, and from the DTI·PRO 32's output to your DAC. For best results, we recommend using the I²S connection anytime other comparably equipped Audio Alchemy products are involved. I²S connections are virtually immune to jitter, and cause almost no waveform distortion to any of the fragile clock and data signals. In lieu of I²S, Coaxial connections and Audio Alchemy's DataStream Transceiver ("DST") powered digital cable are recommended.

Be sure that your system volume control is turned down and then attach the power supply to AC Mains. All three Power status LEDs should illuminate.

SETUP

Shortly after power-up and a brief warm-up period, the DTI-PRO 32 will default to the last active input and phase position. By depressing the "INPUT" button you may select alternate inputs. When you have selected an active input the DTI-PRO 32 will immediately enter "PRIMARY LOCK", indicating the presence of valid digital data from the transport. It will also un-mute it's digital outputs. Within about five seconds DTI-PRO 32 will then acquire "SECONDARY LOCK". In approximately 1 minute after second lock is achieved the bandwidth of the jitter filter switches into 5 Hz mode to assure that any remaining phase noise (jitter) is un-correlated with music. In rare instances, DTI-PRO 32 may be unable to acquire SECONDARY LOCK. This would be due to a imprecision in the CD transport's internal clock and would require that the transport be adjusted or replaced. You can still use the DTI-PRO 32 if there is no secondary lock, it just will not be giving its best performance.

DTI-PRO 32 allows switching the absolute polarity of the output signal, thus inverting the phase of both channels simultaneously in the digital domain. By alternately depressing the "PHASE" button one selects either the 0° or 180° position by which one produces the most realistic bass reproduction.

For best performance you should now set the optimum output dither. Dither is a special type of digital "noise" which is added to the digital signal and helps improve the low-level performance of your Digital-to-Analog Converter. DTI-PRO 32 has seven dither settings available: HDCD[®], 16 bit, 18 bit, 20 bit, 22 bit, 24 bit, and none. The first 4, and last, settings are for consumer use on existing DACs, 22 and 24 bit are for professional use, though DTI-PRO 32 is ready for the introduction of higher resolution in-home DACs.

Under most conditions, the correct dither setting will be equal to the number of actual data bits your DAC can accept. This does not just refer to the DAC chips themselves, but to whatever is the limiting factor inside the converter; the input receiver and digital filter may have less than 20 bit resolution even if the DAC chip is rated at 20 bits. Thus, if you are using a D/A converter of 20 bit resolution you should supply 20 bit dither. If your converter is of 18 bit resolution then 18 bit dither is the correct setting. If your converter has 16 bit resolution (or you are unsure of its resolution) you should select the 16 bit or "None" dither position. The only time these guidelines are not correct is when playing an HDCD[®] encoded disc. Dither must be set to the HDCD[®] position to correctly decode these discs.

In all cases, use the following procedure to select dither: Press and hold down the "PHASE" button. In about 1 second the POWER LEDs will go off and then come back on in a pattern which indicates the current dither setting. Read the code using the following key:

| HDCD® | 16 | 18 | 20 | 22 | 24 | None |
|-------|-----|-----|-----|-----|-----|------|
| off | off | off | off | on | on | on |
| off | off | on | on | off | off | on |
| off | on | off | on | off | on | off |

To change the dither, while the "PHASE" switch is depressed, press the "INPUT" button, note that the POWER LEDs change each time it is depressed, indicating which dither selection has been made. When you have made your selection, release both buttons.

NOTE that if you have selected the HDCD® position, the phase switch will be disabled and both of the PHASE LEDs will be on, assuring correct decoding of these discs by a properly equipped DAC.

Your DTI-PRO 32 is now optimized for operation. You may wish to experiment with dither settings in order to determine which will sound best in your system; no damage will be done. Note that you will not need to set the dither after every power-up, DTI-PRO 32 remembers all settings on power-down.

Enjoy!

In a continuing effort to pursue the state of the art in resolution enhancement we will periodically make new field-upgradable EPROM chips available which will improve the performance of your DTI-PRO 32. By returning your warranty card you will be registering your unit with us so we will be able to inform you when new software becomes available.

Designed and Manufactured in the United States of America

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C/Audio Alchemy, Inc. June, 1995

Audio Alchemy, Inc. 31133 Via Colinas #111, Westlake Village, CA 91362
Phone (818) 707-8504 FAX 707-2610