

DigiTUBE

Single-Channel Tube Mic-Preamplifier
with S/PDIF Output

USER'S MANUAL 1.1

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1.1 INTRODUCTION

Thank you for purchasing the PreSonus DigiTUBE Single-Channel Tube Mic-Preamplifier with S/PDIF Output. This preamp was designed using state of the art components to deliver crystal clear audio for an indefinite period of time. We believe the DigiTUBE to be an exceptional sounding unit and an exceptional value.

Please contact us at 1-800-750-0323 with your questions or comments regarding this product. PreSonus Audio Electronics, Inc. is committed to constant product improvement and believes the best way to accomplish this task is by listening to the experts on our gear, our valued customers. We appreciate the support you have shown us through the purchase of this product.

Please pay close attention to how you connect your DigiTUBE to your system. Improper grounding is the most common cause of noise problems found in studio or live sound systems. We urge you to scan this manual before hooking up your DigiTUBE to familiarize yourself with its features and applications.

Good luck and enjoy your DigiTUBE!

1 OVERVIEW

1.2 FEATURES

The following is a summary of your DigiTUBE's features:

Dual Servo Gain Stage

Your DigiTUBE contains a dual servo gain stage (no capacitors). This design provides ultra low noise performance and wide dynamic control. The DigiTUBE can boost the desirable signal without increasing unwanted background noise.

Mic/Instrument/Line Input

The DigiTUBE has a Neutrik™ combo (XLR & ¼") connector. The XLR input can be used for microphone signals and phantom power is available for condenser mics when the 48V switch is engaged. The XLR will also accept line level signals when the PAD/LINE switch is engaged. The ¼" input will accept instrument level signals, only. The PAD/LINE switch has no effect on the ¼" input and it should be understood that the ¼" input is not designed to accept line level signals.

Pad/Line

A switch on the front panel may be used to engage a -20dB pad for mic level signals or change the XLR input operating level from mic to line. Using the -20dB pad provides a more manageable signal from high output devices giving the operator greater control over the incoming signal and a much reduced chance of over-driving the input, thereby avoiding distortion.

48V

The DigiTUBE has 48V phantom power available. Phantom power assures optimum performance from your condenser microphone without the need of an external power supply. A 80Hz switch is provided on the front panel of the DigiTUBE that enables the user to insert an 80Hz filter. Often referred to as a rumble filter, this feature is useful for eliminating bothersome low-end sounds such as air conditioning noise without greatly altering the desired audio.

Parametric Equalizer

The equalizer section is equipped with three dual concentric potentiometers. The outer control selects the frequency and the inner control boosts/cuts the selected frequency. The EQ controls are LOW, MID, HI from left to right. The bandwidths are broad enough and have enough overlap to allow a very effective contour of the incoming audio signal.

Drive

The DigiTUBE is provided with a DRIVE potentiometer for controlling the amount of signal routed through the 12AX7 vacuum tube. This feature lets you control how much saturation of the signal occurs. Greater levels of tube saturation give the signal greater warmth and a richer sound. This feature works equally well on mics and instruments and is just what is needed to tame that 'brittle' sound encountered with different types of digital media.

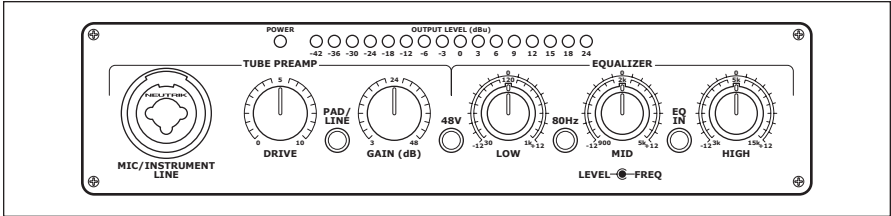
Internal Clock

An internal clock is provided for 44.1 kHz or 48 kHz operation selectable by way of the switch on the back panel. An INTERNAL/EXTRERNAL selector and a BNC connector for external clock input can be found on the back panel as well as the S/PDIF connector for the DigiTUBE's digital output.

2 CONTROLS & OPERATION

2.1 FRONT PANEL

The front panel of the DigiTUBE contains:



The front panel of the DigiTUBE is divided into two sections: the tube preamp controls are located on the left hand side of the unit's front panel and the equalizer section is on the right.

2.1.1 TUBE PREAMP SECTION

Neutrik™ Combo Microphone (XLR) / Instrument (1/4") Input

Drive Control

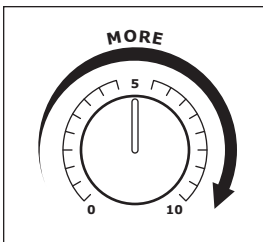
Pad/Line Switch

Gain Control (3dB - 48dB)

+48V Phantom Power Switch

Mic/Line/Instrument Input

The DigiTUBE has a Neutrik™ combo connector which provides both an XLR and a 1/4" TS input. The XLR connector can accept microphones or by engaging the PAD/LINE switch, line level signals. The 1/4" input is for instrument level signals only. If you wish to adapt a line level device with a 1/4" connector, An XLR connector with pins 1 and 3 tied together for ground and the hot connected to pin 2 must be made. This adapts the unbalanced line level cable to input signal via the XLR input and the PAD/LINE switch to convert the input to accept a line level signal.



Drive

The DRIVE potentiometer controls how much signal is routed through the 12AX7 vacuum tube. The effect achieved by this procedure can be subtle to extreme, depending on the setting being used. A 'warming up' of the sound can be noticed at lower settings. This effect can be used to compensate for the harshness commonly encountered in digital signals with

CONTROLS & OPERATION 2

the resulting sound possessing a 'richer' and 'sweeter' tone. If an overdriven signal is desired, this can be achieved by significantly raising the level of the DRIVE control. Overdriving the tube is especially useful for direct electric guitar sounds. Setting the DRIVE control is a matter of taste; the amount of saturation needed to achieve a desired result depends upon the resulting sound you want to hear. Experiment!



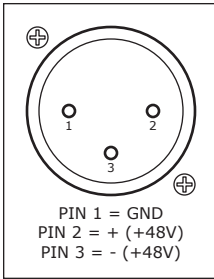
Gain

This control is used to determine the amount that a signal being processed by the pre-amplifier is increased in level at output. Dynamic mics and instruments without pre-amps may require more gain than condenser mics and instruments that have a built-in pre-amp (care should be taken with instruments having their own built-in pre-amp not to overdrive the 1/4" input of the DigiTUBE).

Line level signals can only be processed through the XLR input connector with the PAD/LINE switch in the LINE position. Attempting to use the 1/4" input for line level signals exceeds the design parameters of the DigiTUBE. The 1/4" input of the Neutrik™ connector is designed to accept instrument level signals and attempting to use the 1/4" input for line level will likely yield an unsatisfactory result. Activating the PAD/LINE switch reduces the incoming signal by 30dB. This is a very useful feature for rapidly reducing the level coming into the DigiTUBE to prevent the input signal from over-modulating (distorting). This may occur due to a high output level from a microphone. Padding the mic input serves to provide increased 'headroom' for the operator and allow greater variance in adjusting the GAIN control. Placing the switch to the PAD/LINE position allows the XLR connector to accept line level signals. Line level signals can be used in the XLR input without overdriving the input. Keyboards and other line level devices can be inserted into the DigiTUBE XLR input by selecting the LINE position.

Note: the PAD/LINE switch does not affect the 1/4" input of the Neutrik™ connector. The 1/4" input is designed to accept instrument level signals ONLY!

2 CONTROLS & OPERATION



Input

Phantom power is available through the XLR input of the DigiTUBE. This 48V of phantom power is for condenser mics and/or any other devices that may require it via XLR inputs.

2.1.2 EQUALIZER SECTION

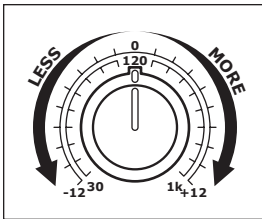
Low (30Hz - 1kHz) +/- 12dB

Mid (900Hz - 5kHz) +/-12dB

High (3kHz - 15kHz) +/-12dB

80Hz Switch

EQ IN Switch

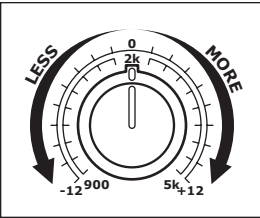


Low

The LOW control is a dual concentric potentiometer with the outer ring allowing the selected frequency to be boost or cut by as much as twelve decibels. The straight up, twelve o'clock, position is labeled zero (0). When the outer control knob is in this position, no effect is exerted on the signal, regardless of what

frequency is selected with the inner controller. Rotating the outer control knob to the left or counter-clockwise reduces the selected frequency. Rotating the outer controller to the right or clockwise increases the selected frequency. The inner control knob selects the frequency. The LOW EQ control goes from 30Hz to 1kHz. The control frequency is narrower to the fully counter-clockwise or left side. As the inner control is rotated clockwise, the frequency bandwidth is much more broadly defined.

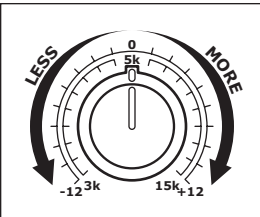
For example, from the fully counter-clockwise position of 30Hz to the first mark represents a difference of 10Hz - 15Hz whereas from fully clockwise or 1kHz to the first marked position back represents as much as a 100Hz difference. The significance of this to the operator is that a movement of the frequency selector from a fully counter-clockwise position to approximately the twelve o'clock position represents smaller incremental frequency changes compared to the frequency changes that occur when the selector travels clockwise past the twelve o'clock position and beyond.



Mid

The dual concentric potentiometer labeled MID controls the frequencies from 900Hz to 5kHz. The outer ring provides boost or cut at the frequency selected by the inner knob by plus or minus twelve decibels with the straight-up noon position equal to zero or no boost or cut. The inner control knob begins at 900Hz in the left or fully counter-clockwise position and continues to 5kHz in the right or fully clockwise position.

This control behaves in the same manner as the LOW control with the frequency widths delineated by the knob's markings becoming wider as the knob travels to the right or the clockwise direction.



High

The Equalizer dual concentric control labeled HIGH operates in the same manner as the LOW and MID controller. The inner HIGH control knob is used to boost or cut frequencies ranging from 3kHz to 15kHz by as much as 12dB by adjusting the outer ring of the controller.

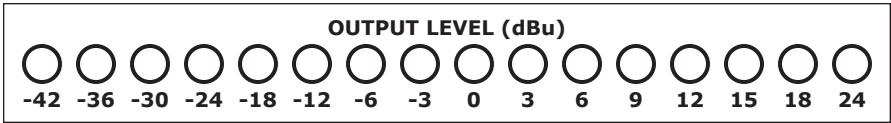
80Hz Switch

The DigiTUBE equalizer section contains a switch labeled 80Hz. Engaging this switch activates an 80Hz filter (often referred to as a rumble filter). This filter is useful for eliminating extraneous low-end sounds from the signal being amplified. Frequencies from 80Hz and below are cut from the incoming signal. This will eliminate low-frequency noises such as air-conditioning hum or the sounds of nearby traffic or other vibrations that may be transmitted through the microphone stand into the microphone. It can also be useful for reducing the effect of electrical hum that may be the result of grounding problems.

EQ In

The EQ IN switch provides the ability to audition the effect that the equalizer is having on the signal being processed. Pushing the switch to the latched position inserts the equalizer into the signal path. Releasing the switch takes the EQ out of the signal path. You can quickly judge the effect your efforts at adjusting the equalization of the incoming signal are achieving and rapidly compare it to the un-equalized signal.

2 CONTROLS & OPERATION



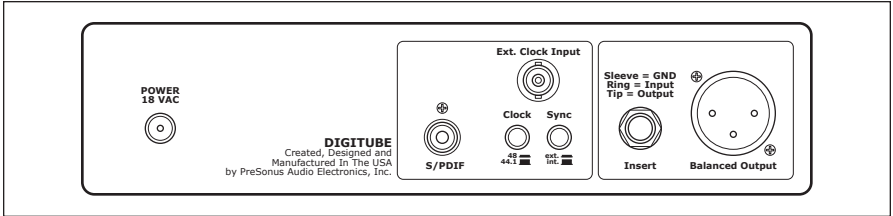
Metering

The DigiTUBE has a 16 step LED meter to observe output level. The meter begins at -42dbu and goes to +24dbu (clip). A red LED is also provided on the front panel to indicate when the unit has power and is ready for operation.

CONTROLS & OPERATION 2

2.2 BACK PANEL

The back panel of the DigiTUBE contains:



The back panel of the DigiTUBE is divided into a digital and an analog section.

2.2.1 DIGITAL SECTION

S/PDIF Digital Output (RCA)

External Clock Input (BNC)

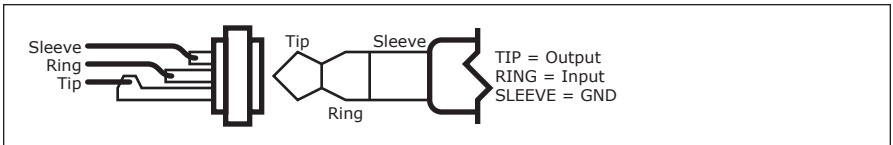
Clock switch (44.1k and 48k)

Sync switch (Internal and External)

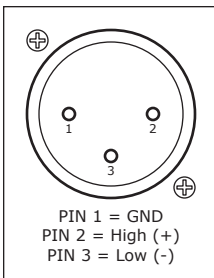
2.2.2 ANALOG SECTION

TRS Insert

The 1/4" TRS Insert connector operates at line level.



Cable Wiring Diagram for 1/4" TRS Insert



XLR Output Jack

The output XLR connector is servo balanced and operates at 0 = 0dB. It should be noted that the output signal available on Channel 1 and Channel 2 are identical mono outputs, not stereo.

2 CONTROLS & OPERATION

2.3 VACUUM TUBES

The DigiTUBE comes supplied with a 12AX7 vacuum tube that provides excellent performance characteristics. We encourage owners of the DigiTUBE to try different brands of 12AX7 vacuum tubes to investigate the various performance possibilities they might provide.

2.3.1 REPLACING THE VACUUM TUBE

1. Disconnect the DigiTUBE from it's electrical outlet.
2. Remove the six screws that attach the top of the unit's chassis. The vacuum tube is mounted in a horizontal fashion in the middle of the DigiTUBE's body.
3. Carefully remove the vacuum tube from it's receptacle. Be sure to hold the socket in place while gently wiggling the vacuum tube out.
4. Insert the replacement vacuum tube into the receptacle. Care should be taken to properly align the pins on the vacuum tube to the corresponding holes in the receptacle. (Caution should also be taken to not break the circuitboard.)
5. Replace the top of the DigiTUBE.
6. Restore power to the unit and resume operation.

Remember, tube life and performance are affected by how often a tube is used and by how 'hard' the tube is driven when in use. Signs of wear may be exhibited by poor performance or by the tube becoming 'microphonic'. Periodic replacement of the vacuum tube is recommended. The time interval for tube replacement may vary greatly. If you notice deterioration in sound quality then it's probably time to change the vacuum tube.

2.4 POWER SUPPLY

This unit is supplied with an external power supply designed to operate at the required voltage of the country where the retail sale occurred. Use of a power supply other than one supplied with the unit constitutes an infringement of the warranty and effectively voids it. Use of an improper power supply may damage the unit and could pose serious danger of electrical shock or fire.

4 TECHNICAL SPECIFICATIONS

Number of Channels One

Performance

THD + Noise (Unweighted)0.05% @ 0dB
Tube Drive.....10% @ 30dB
Noise Floor -94dBu
Signal to Noise..... >90dB
Power Supply Rejection >98dB
Amplifier Type.....Dual Servo

Input

Connectors Neutrik™ Combo
Input Impedance, XLR 5k Ohms
Input Impedance, High Z ¼"..... 1Meg Ohms

Output

Output Impedance, XLR Balanced 51 Ohms
Output Impedance, ¼" TRS InsertTip = Out
Ring = In
Sleeve = GND
Digital..... S/PDIF RCA Connector

Front Panel Controls

Tube Drive..... 0dB to +30dB
Gain 0dB to +40dB - 20dB
Pad..... + 48V Phantom Power
EQ..... In/Out Selector
Low 30Hz - 1kHz
Mid..... 900Hz - 5kHz
High 3kHz - 15kHz

Metering

8 Segment LED -28dBu to +18dBu
Power Indicator..... LED

Back Panel Controls

Sample Rate Selector.....44.1kHz / 48kHz
Internal / External Clock..... 44.1kHz / 48kHz only

TECHNICAL SPECIFICATIONS 4

Power Supply

Type Linear Supply
Input 18 VAC/1000mA
Power15 Watts

Physical

Weight 8lbs.
Size Ω U Rack
Dimensions.....8" X 5" X 1.75"
MountingUniversal Rack Tray Insert
Chassis Steel
Front PanelBrushed Aluminum

As a commitment to constant improvement, PreSonus reserves the right to change any specification stated herein at any time in the future without prior notification.

5 PRESONUS LIMITED WARRANTY

IN THE UNITED STATES

PreSonus Audio Electronics Inc. warrants this product to be free of defects in material and workmanship for a period of one year from the date of original retail purchase. This warranty is enforceable only by the original retail purchaser. To be protected by this warranty, the purchaser must complete and return the enclosed warranty card within 14 days of purchase. During the warranty period PreSonus shall, at its sole and absolute option, to either repair or replace, free of charge, any product that proves to be defective on inspection by PreSonus or its authorized service representative. To obtain warranty service, the purchaser must first call or write PreSonus at the address and telephone number printed below to obtain a Return Authorization Number and instructions of where to return the unit for service. All inquiries must be accompanied by a description of the problem. All authorized returns must be sent to the PreSonus repair facility postage prepaid, insured and properly packaged. PreSonus reserves the right to update any unit returned for repair. PreSonus reserves the right to change or improve the design of the product at any time without prior notice. This warranty does not cover claims for damage due to abuse, neglect, alteration or attempted repair by unauthorized personnel, and is limited to failures arising during normal use that are due to defects in material or workmanship in the product. Any implied warranties, including implied warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this limited warranty. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. In no event will PreSonus be liable for incidental, consequential or other damages resulting from the breach of any express or implied warranty, including, among other things, damage to property, damage based on inconvenience or on loss of use of the product, and, to the extent permitted by law, damages for personal injury. Some states do not allow the exclusion of limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state. This warranty only applies to products sold and used in the United States of America. For warranty information in all other countries please refer to your local distributor.

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PRESONUS LIMITED WARRANTY 5

OUTSIDE OF THE UNITED STATES

PreSonus Audio Electronics products are warranted only in the country where originally purchased, through the authorized PreSonus distributor in the country of original purchase, against defects in material and workmanship. The specific period of this limited warranty shall be that which is described to the original retail purchaser by the authorized PreSonus dealer or distributor at the time of purchase. PreSonus does not, however, warrant its products against any and all defects: 1) arising Out of materials or workmanship not provided or furnished by PreSonus, or 2) resulting from abnormal use of the product or use in violation of instructions, or 3) in products repaired or serviced by other than authorized PreSonus repair facilities, or 4) in products with removed or defaced serial numbers, or 5) in components or parts or products expressly warranted by another manufacturer. PreSonus agrees, through the applicable authorized distributor in the country of original retail purchase, to repair or replace defects covered by this limited warranty with parts or products of original or improved design, at its option in each respect, if the defective product is shipped prior to the end of the warranty period to the designated authorized PreSonus warranty repair facility in the country where purchased, or to the PreSonus factory in the U.S., in the original packaging or a replacement supplied by PreSonus, with all transportation cost and full insurance paid each way by the purchaser or owner. All remedies and the measure of damages are limited to the above services. It is possible that economic loss or injury to person or property may result from the failure of the product; However, even if PreSonus has been advised of this possibility, this limited warranty does not cover any such consequential or incidental damages. Some states or countries do not allow the limitations or exclusion of incidental or consequential damages, so the above limitation may not apply to you. Any and all warranties, express or implied, arising by law, course of dealing, course of performance, usage of trade, or otherwise, including but not limited to implied warranties of merchantability and fitness for a particular purpose, are limited to a period of two years from either the date of original retail purchase or, in the event no proof of purchase date is available, the date of manufacture. Some states or countries do not allow limitations on how long an implied warranty last, so the above limitations may not apply to you. This limited warranty gives you specific legal rights, and you may also have other rights which vary from state to state, country to country.

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