VXP

DUAL SERVO MIC PREAMP
VOICE PROCESSOR

User s Manual

VXP

MICROPHONE PRE-AMPLIFIER

SMART COMPRESSOR

DE ESSER

EXPANDER

SEMI PARAMETRIC EQUALIZER

USER'S MANUAL

Version 1.0

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PreSonus Audio Electronics, Inc.
7257 Florida Blvd.
Baton Rouge, LA 70806
(225) 216-7887
(800) 750-0323
www.presonus.com

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1 OVERVIEW

1.1 INTRODUCTION

Thank you for purchasing the PreSonus VXP Voice Processor with Microphone Preamplifier – De-Esser – Expander – 4 Band Semi-Parametric Equalizer. The VXP by PreSonus is the only voice processor on the market that features a transformer coupled, Class A Mic Pre, Preset Compressor, De-esser, Expander, 4 band semi-parametric EQ, Peak Limiter and an optional 96k/24 Bit digital output card. PreSonus Audio Electronics has designed the VXP utilizing high-grade components to insure optimum performance for an infinite period of time. We believe the VXP to be an exceptional sounding unit and an exceptional value. We encourage you to contact us at 1-800-750-0323 with any questions or comments you may have regarding your PreSonus equipment. We value your suggestions, highly. PreSonus Audio Electronics is committed to constant product improvement. We believe the best way to achieve our goal of constant product improvement is by listening to the real *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 VXP to your system. Improper grounding is the most common cause of noise problems found in studio or "live" sound environments. We would like to suggest that you use this manual to familiarize yourself with the features, applications and correct connection procedure for your VXP before trying to hook it up to your system. Thank you, once again, for buying our product and may we wish you Good Luck and enjoy your VXP!

1.2 FEATURES

The following information is a summary of your VXP's features:

- **Microphone Pre-Amplifier.** Your VXP contains a Class A discrete input buffer followed by a dual servo gain stage. This arrangement results in ultra low noise and wide gain control allowing the VXP user to boost desirable signal without increasing unwanted background noise (**NO capacitors!**).

  - **48 Volt Phantom Power.** The VXP has 48V Phantom power available. This assures optimum performance of your condenser microphones that require Phantom power and that the power supplied will be free of noise or distortion.

  - **Pad.** A 20dB pad is available for reducing the in-coming signal level. This pad provides a more manageable signal from high output devices giving greater control over the in-coming signal and a much reduced chance of over-driving the input and avoiding distortion.

  - **+24dBu Headroom.** The VXP mic-pre has +24 dBu of headroom. This feature gives you a very wide dynamic range and excellent transient response characteristics.

- **IDSS Control.** The VXP offers a very high quality transformer and features an IDSS control (this control adjusts the drain current on the input FET amplifier altering the even harmonic levels of the signal being passed) with an adjustment range of 0% to 100%. The 0% position passes a pure signal. As the control is rotated to the 100% position, the signal's even harmonic series is boosted giving the signal "warmth" very much like a vacuum tube or similar to the sound of analog tape saturation. This remarkable effect gives you the sound of a tube without the headache of uneven performance often encountered with vacuum tube devices ("no tube to pick-up RF or to age and become "microphonic").

- **LED Meter.** LED metering provides an accurate reading of the input level and a fast reference of presence of signal.

❖ **Smart Compressor with Pre-Sets.** The VXP is equipped with a Smart Compressor with 16 Pre-Sets designed especially for processing voice.

- **16 Pre-Set Compression Curves.** The Compressor section of the VXP has 16 pre-sets with varying degrees of compression ranging from multiple settings graded and labeled "Light", "Medium" and "Heavy". These easy-to-use preset parameters were derived from pro audio engineers with years of recording experience to provide VXP owners with a wide variety of "studio tested and proven" compression settings uniquely suited for virtually any singing style or vocal application.

- **In / Out.** The In/Out switch lets you compare the compressed sound quickly to the uncompressed sound.

❖ **Expander.** The VXP's Expander section utilizes a concentric

control with the outer ring for threshold set and the inner knob for ratio adjustments. This feature gives you the benefit of seamless noise reduction through downward expansion ridding the signal of unwanted background noise. A 4 segment LED meter monitors the degree of expansion.

- **De - Esser.** A variable De-Esser with a range of 800Hz to 8kHz removes unwanted sibilance (hiss or "S" sounds) while allowing the signal to remain completely natural. The Threshold control makes setting the De-Esser extremely precise and fine-tuning a simple process. Above the controller, a 4 segment LED shows the operation of the De-Esser and how much gain is reduced to eliminate the sibilance.

- **4 Band Semi-Parametric Equalizer.** Total tonal control is what the Equalizer section provides. Low and High Shelving coupled with Low Mid and High Mid controls with an extremely wide Frequency band and narrow "Q" will let you fine tune the sound to suit your taste with exacting precision.

  - **Low Shelving.** The Low frequency control is fixed at 100 HZ with plus or minus 12 dB giving ample boost or cut at the frequency.

  - **Q Switch.** A switchable Q function decreases or increases the width of the frequency control parameters. The frequency width is selectable from .5 or by a factor of 2.

  - **Low Mid-Range.** The Low Mid-Range control is a concentric control with the outer ring for Level adjustments of plus or minus 12 dB and the center knob for setting the frequency(90Hz to 700Hz) of boost or cut.

- **80Hz.** An 80Hz filter is provided for eliminating low frequency noise. This lets you greatly reduce background noise such as air conditioners or wind noise with the flick of a switch without effecting the desired frequencies.

- **In /Out Switch.** An In /Out switch is provided to audition the signal in an equalized version as compared to a direct unaffected signal.

- **High Mid-Range**. High Mid-Range is adjusted by way of a concentric controller with the outer ring for Level changes of up to plus or minus 12 dB and the center knob providing frequency control from 450 Hz(0.45 kHz) up to 5.8 kHz.

- **Q Switch**. The High Mid-Range Q allows a widening of the frequency point by a factor of 0.5 to as narrow as 2 for pinpoint adjustment of important mid band frequencies that are the most prevalent frequency in the normal audible range.

- **High Shelving**. A rotary control for boosting the high frequencies by as much as 12 dB or cutting them by 12dB is tuned to 12kHz for accurate recreation of the upper end of the signal. The shelving contour accentuates the naturalness of the sound for better adjustment of vocal signals.

Master Section

- **Peak Limit.** The Peak Limit control adjusts the threshold point that the output signal is not allowed to cross. This benefits you by preventing overload of downstream devices such as DAT's and Hard Drives where signal overload is completely unacceptable. This is done without "squashing" the signal in an audibly apparent way like some peak limiters are prone to do.

- **Level.** The output of the VXP is adjusted by the Level control and is useful for compensating for gain loss due to compression or to decrease output signal that boosting frequencies with the Equalizer section may have caused. The output is variable from –70 dB to +10 dB.

Power. A BIG RED lighted push-button power switch is located on the front of the VXP for your convenience.

2 CONTROLS & CONNECTIONS

2.1 FRONT PANEL BASIC LAYOUT

Notice that the front panel of the VXP is divided into six sections - section one is the **Mic Preamp**.

The Mic Preamp section contains:

- Gain Control
- IDSS Control
- +48 Volt Switch
- -20db Pad
- LED Input Meter

Compressor Section contains:

- Pre-Set Selector
- Level Control
- Process In/Out Switch
- Gain Reduction Meter

Expander Section:

- Threshold Control (Outer Ring)
- Ratio Control(Inner Knob)
- LED Expansion Meter

De-Esser Section:

- Threshold (Outer Ring)

- Frequency (Inner Knob)
- Gain Reduction Meter

EQ section:

- 4 Band Semi-Parametric
- Low Shelving Control
- Low Mid Q Select Switch
- Low Mid Level (Outer Ring)
- Low Mid Frequency Select (Inner Knob)
- 80 Hz Filter Switch
- EQ In/Out Switch
- High Mid-Range Level Control(Outer Ring)
- High Mid-Range Frequency Control (Inner Knob)
- High Mid Q Switch
- High Shelving Control

Master Section Includes:

- Peak Limiter Control
- Level Control
- Limiter LED Meter

2.2 MIC PREAMP SECTION

GAIN: This control provides 60dB of gain.

IDSS CONTROL: Selects the amount of increase (0% to 100%) applied to the even harmonic series of the signal being amplified by the VXP. The effect of manipulating the harmonic distortion is of increasing or decreasing the apparent "warmth" of the signal. This feature is derived from manipulating the drain current of the FET input buffer of the Mic Preamp. Experiment with the IDSS control and see what type of sounds you can get from your present microphone selection.

+48V: The 48 volts supplied by way of the XLR connector, provides power for condenser mics and any other devices requiring continuous

Phantom power through the XLR input. This power is supplied at a constant level to prevent any degradation of audio quality.

PIN 1	GND
PIN 2	+48v
PIN 3	+48v

XLR connector wiring for **Phantom Power**

PAD: Engaging the Pad switch provides -20 decibels of attenuation with the push of a button. This is a very useful feature for rapidly reducing the level coming into the VXP and thus preventing the input signal from over-driving (distorting) the input. This may occur due to high output level from a microphone or other device. Padding the input serves to provide increased "headroom" for the operator while lessening the likelihood of an input signal overload.

2.3 COMPRESSOR

CONTROL: The knob labeled Control selects one of the 16 factory preset compression curves. The amount of compression available ranges from Light, Medium, to Heavy. The appropriate setting depends upon your taste and application.

PRESETS

LIGHT: The five presets contained in the section labeled "Light" have ratios ranging from 1.1:1 to 1.5:1. These settings are subtle and retain most of the dynamic range of the input signal with only slight restriction of the transient characteristics of the signal. These settings are appropriate for vocals as normally encountered in Ballads that have quiet passages in the

verse section with much louder portions of signal typically found in the chorus sections of a song. The lower ratio settings give greater range within the performance. These settings are useful for dramatic readings and any type of spoken word performance.

MEDIUM: Five factory presets with Ratios ranging from 1.6:1 up to 2:1 are found in these settings. Using these presets would be effective when more control over transients is necessary. Examples for applications where this might be desired would be program content that is less uniform in loudness and less variance is needed between the quieter and louder portions of the signal being processed. A medium tempo song with a vocalist who generally stays "on" the mic is an example where one of these settings would be useful. Another vocal application might be a newscaster or "on-air" talent reading copy for radio or television.

HEAVY: The group of six presets found in this section range from 2.5:1 up to 8:1. These settings provide the greatest control over signal transient content. The range within the performance is restricted with these settings allowing the least divergence from the loudest to the quietest portions on the signal being processed. These settings are very useful when control is more important than the dynamics within a performance. A really rockin' vocal with the singer "eating the mic" is a type of application where the higher settings really shine. If you are concerned with losing signal level during a take or performance, these higher settings can assist you by keeping the signal more consistent and reduce the need of constantly pushing the fader up or down just to keep a uniform volume being sent out or recorded. The engineers at PreSonus have done a remarkable job in designing a function that is this effective at constraining the signal level, while at the same time, manages to let the signal remain audibly transparent and sounding relatively unaffected.

An Expander is a processing device used to increase the dynamic range of the signal being processed through it or in the case of down ward expansion, as in the VXP, to decrease the signal. Expanders can make quiet sounds quieter and loud sounds louder. Downward expansion provides a hybrid result, i.e., signals above the Threshold are untouched while those below the Threshold are attenuated at a ratio set by the Ratio control. In this application, downward expansion is used for noise reduction. Setting the Threshold level to just below quietest vocal level and adjusting the Ratio to 3:1 will cause the Expander to decrease the signal below the point set by the threshold as soon as the vocal signal stops. This level decrease will occur at the rate set by the ratio setting, in this case 3:1, effectively eliminating any unwanted noise from coming through. The resulting decrease in signal would be down to –30dB if the VXP Expander's Threshold had been set to –10 dB. The VXP's Expander is designed to operate below the selected Threshold at the amount determined by the ratio setting selected. If the quietest signal was –10 dB as in the example, then the decrease that automatically occurs with the –10 dB threshold setting would be-30 dB at a ratio of 3:1.

2.5 DE-ESSER

A de-esser is a special type of compressor designed to operate only at predetermined frequencies to reduce the effect of vocal sibilant sounds such as S's at the beginning and ending of words, for example. The VXP De-Esser has a variable threshold range from –40 dB to +20 dB. The frequency of operation is determined by selecting the most effective frequency with the Frequency Range controller. It has a range from 800Hz to 8kHz. Annoying "S" sounds can be completely removed leaving the desired signal intact with the proper adjustment of the frequency and threshold controls. The 4 segment LED shows the gain reduction occurring due to the De-Esser functioning.

2.6 EQUALIZER

The Equalizer section of the VXP contains a 4 Band Semi-Parametric Equalizer. There is also available Low Mid Narrow Q Select and High Mid Narrow Q Select, as well as, an 80Hz filter. An In/Out switch is provided for auditioning the effects that the equalizer settings are having on the signal being processed.

LOW SHELVING

The 100Hz control adjusts frequencies 100Hz and below. The operator can boost (up to +12dB) or cut (down to -12dB) those frequencies below 100Hz. The term Shelving describes a filter that adjusts all frequencies above or below a center frequency.

LOW MID RANGE

The LOW MID-RANGE controls those frequencies in the lower mid portion of the frequency spectrum. The controls provide for continuous sweep from 90Hz to 700Hz. The outer concentric knob adjusts the desired frequency up to +12dB or –12dB, if desired. The inner concentric knob adjusts the frequency.

HI Q

The position of the HI Q switch determines the width (shape) of the frequency being affected when boosting or cutting at the selected frequency with the level control. The widest bandwidth effect is available with the HI Q switch in the "**OUT"** (UN-depressed) position The value in the "**OUT"** (UN-depressed) position is a Q of 0.5. By depressing the HI Q switch the width of the frequencies which are acted upon become greatly narrowed and the result is a much more precise tuning of the selected frequencies. When the HI Q switch is engaged the value changes to 2 and the width of

the effect from the center frequency is 1/4 as wide.

The HI Q OUT position is a much broader in its effect and the tonal variation derived is similar to a control you may have used on a hi-fi or guitar amplifier. When the HI Q switch is engaged, the effect on the frequency is much more specific. The selected frequency is reduced or increased in greater proportion than the nearest frequencies. This results in greater control over the particular frequency you are attempting to manipulate. This makes it possible for you to smooth out a harsh sounding vocal or to dial in just the right amount of, say, 2kHz to really make a voice pop out of the "mix" without having to push the fader all the way up.

HIGH MID RANGE

The High-Mid Range control is variable from 450 Hz to 5.8 kHz. The inner concentric knob adjusts the frequency setting while the outer ring can boost the selected frequency +12 dB or cuts the frequency selected by as much as -12 dB, if desired.

HIGH SHELVING

The control labeled High Shelving provides the fine tuning of the upper frequencies of the input signal. Shelving occurs at 12 kHz and above and the associated controller allows the user to boost (+12 dB) or cut (-12 dB) the very high frequencies.

80 HZ

The VXP has an eighty-hertz filter that is activated by engaging the switch on the front panel. This filter (often referred to as a *RUMBLE* filter) is useful for eliminating extraneous low-end information from the signal being amplified. Frequencies from eighty hertz and below are cut from the incoming signal at 6dB per octave. This feature is useful in eliminating low frequency noise such as air-conditioning rumble or for reducing the sound of

footsteps or other types of vibrations from being transmitted through the microphone stand into the microphone.

2.7 MASTER

PEAK LIMIT This control adjusts the operating parameters of the Peak limiter. This device is variable allowing the user to select a point from 0 dBu to +24 dBu. The set point is the point that a signal being processed will not be allowed to go above. This feature, sometimes referred to as a "Brick Wall Limiter", is extremely useful for preventing overloading which is especially vexing when encountered while recording with digital recording media.

LEVEL: This control adjusts the output level of the VXP. It functions as a master fader for the entire processing strip. It is useful for adjusting the overall output level up or down to match the optimum input level of a recorder, mixer, etc.

POWER: A lighted push button is located on the front panel for turning the VXP On and Off.

2.4 BACK PANEL BASIC LAYOUT

PIN 1	GND	
PIN 2	High	(+)
PIN 3	Low	(-)

Cable Wiring Diagram for Input and Output XLR

The **Output XLR Connector** is servo balanced and operates at +4dBu.

The **Return / Line In** connector of the VXP is provided for use in conjunction with audio process devices such as reverbs/delays and as a Line In for recording media such as tape machines, hard disc recorders, or DAT's.

TIP	High	(+)
RING	Low	(-)
SLEEVE	GND	

Cable Wiring Diagram for Balanced Send / Return Jacks

The **Send Jack** on the back panel of the VXP routes the signal being processed by the unit to an outboard device such as a reverb or delay or to recording media.

2.7 POWER SUPPLY

The **Power Jack** on your VXP accepts a standard IEC cord like those found on most computers and professional recorders.

Before powering on your VXP for the first time, be sure to check the *position* of the power selector. Make certain that the power voltage level selected for operation of the unit matches that of the country where the unit will be used. (USA = 115V)

3 OPERATION

3.1 DYNAMIC MICROPHONES

Dynamic microphones are characterized by lower output levels. Hence, more gain is needed to amplify a dynamic microphone to operating level. Occasionally it is necessary to add the –20dB pad to the microphone to avoid distortion (e.g. when recording percussion). Do not use phantom power when using dynamic microphones.

3.2 PHANTOM POWERED MICROPHONES

Phantom powered microphones such as condenser and some ribbon microphones require external power to pre-amplify the microphone acoustic pickup. These microphones typically have much higher output than dynamic microphones. Hence the –20dB pad is almost always necessary when close mic-ing to avoid clipping the amplifier.

3.3 INSERTING REVERBS OR DELAY UNITS, ETC.

The VXP features a send jack and a return jack. This feature allows the use of external processors such as reverbs and digital devices. Simply connect the send jack, balanced or unbalanced to the input of the external processor. Then connect the VXP's return jack to the output of the external processor. The signal is now routed out of the VXP, into the external processor, then back into the VXP. The final, processed signal will be available at the VXP output connector.

3.5 USING RETURN AS LINE IN

The return jack can be used to insert external audio devices such as tape machine outputs, DAT machine outputs, etc.

3.6 96K/24-BIT DIGITAL OUTPUT CARD (OPTIONAL)

A 96K/24-BIT Digital Output Card is available as an *option* for the

PreSonus VXP. It has AES/EBU and SPDIF output connectors, as well as, an auxiliary ¼" TRS analog Line input connector. The card has a selectable sample rate of 96kHz, 48kHz and 44.1kHz. The A to D converters are made by Crystal Semiconductor for superior performance. Psycho-acoustic dithering is provided to improve BIT resolution characteristics which may become noisy when conversion from 24 BIT to 16 BIT sampling is necessary. The ¼" TRS Line input will provide the benefit of allowing two VXP's to share one Digital Output Card and in so doing, share both sides of the A/D converter.

VXP

Channels ..... ONE
Dynamic Range ..... >115dB
Noise Floor ..... @ +12dB Gain -97.2dBu
Headroom ..... +24dBu
Frequency Response ..... 10Hz to 50kHz
Internal Operating Level ..... 0dBu = 0dB

Microphone Pre Amp

Gain ..... + 12dB to +38dB
THD + Noise(0%IDSS) ..... <0.003%
THD + Noise (Full IDSS) ..... >0.500%
Input Connector ..... XLR
Input Impedance ..... 1.3K Ohms
Send Connector ..... 1/4” TRS Balanced/Unbalanced
Send Output Impedance ..... 51 Ohms
Return Connector ..... 1/4”TRS Balanced/Unbalanced
Return Input Impedance ..... 10K Ohms
Metering (8-LED) ..... Full Scale
Switchable Pad 0dB/-20dB

Smart Compressor

Input Attenuation/Gain ..... -12dB to + 18dB
Output Attenuation/Gain ..... -20dB to +20dB
Presets ..... 16(light to Heavy)
Metering (8-LED) ..... Gain Reduction
Process ..... IN/OUT Switch

Expander

Threshold Range.....-70dBu to +20dBu
Ratio Range .....1:1 to 20:1
Metering (4-LED)..... Gain Reduction

De- Esser

Threshold Range.....-40dBu to +20dBu
Frequency Range.....800Hz to 8kHz
Metering(4-LED)..... Gain Reduction

Equalizer

Rumble Filter Cutoff Frequency.....80Hz
Low Shelving (+/-12dB)..... 100Hz
Low Mid-Range (+/-12dB).....90Hz to 700Hz
Switchable Q.....0.5/2.0
High Mid-Range(+/-12dB).....450Hz to 5.8kHz
Switchable Q.....0.5 /2.0
High Shelving (+/-12dB)..... 12kHz
Process.....IN/OUT Switch

Master

Peak-limit Range .....0dBu to + 24dBu
Output Fader ..... -70dB to + 10dB

Output Connectors..... XLR Balanced 1/4” TRS Balanced/Unbalanced
Output Impedance 51Ohms
Metering (8-LED)..... Full Scale
Output Headroom ..... +24dBu

Physical

Power Supply ..... Internally Regulated Linear Type
Power Requirements..... 100VAC to 120VAC200VAC to 240 VAC
Size.....1U Rack (19” x 1.75” x 7”)
Weight .....8 pounds

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