

ADL 700

Channel Strip

Owner's Manual



Important Safety Instructions



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in this manual.



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous" voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to humans.



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE THE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.



CAUTION: To reduce the risk of electric shock, do not expose this appliance to rain and moisture. The apparatus shall not be exposed to dripping or splashing liquids and no object filled with liquids, such as vases, shall be placed on the apparatus.



CAUTION: These service instructions are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operation instructions. Repairs must be performed by qualified service personnel.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry a cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources, such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades, with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade and the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Use only attachments/accessories specified by PreSonus.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer or sold with this apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.



14. Servicing is required when the apparatus has been damaged in any way, such as if a power-supply cord or plug is damaged; or liquid has been spilled, or objects have fallen, into the apparatus; or if the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped. All PreSonus products in the USA should be serviced at the PreSonus factory in Baton Rouge, Louisiana. If your product requires a repair, contact support@presonus.com to arrange for a return-authorization number. Customers outside the USA should contact their local distributor. Your distributor's contact information is available at www.presonus.com.
15. The apparatus shall be connected to a Mains power outlet with a protective grounding/earthing connection.
16. Where the Mains plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.

EU Directives on the Protection of the Environment and Other Euro Stuff

RoHS This product is compliant with the EU Directive 2011/65/EU for the Restriction of the use of Certain Hazardous Substances in Electrical and Electronic Equipment. No lead (Pb), cadmium (Cd), mercury (Hg), hexavalent chromium (Cr+6), PBB or PBDE is intentionally added to this device. Any traces of impurities of these substances contained in the parts are below the RoHS specified threshold levels.

REACH This product is compliant with the European Union Directive EC1907/206 for the Registration, Evaluation, Authorization, and Restriction of chemicals (REACH) and contains none or less than 0.1% of the chemicals listed as hazardous chemicals in the REACH regulation.

WEEE This symbol on the product or its packaging indicates that this product must not be disposed of with other waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city recycling office or the dealer from whom you purchased the product.



CE This product complies with the European Union Council Directives and Standards relating to electromagnetic compatibility EMC Directive (2006/95/EC) and the Low Voltage Directive (2004/108/EC).

Table of Contents

1 Overview — 1

- 1.1 Introduction — 1
- 1.2 Summary of ADL 700 Features — 2
- 1.3 What's in the Box — 2

2 Hookup — 3

- 2.1 Input Controls — 3
- 2.2 Compressor Controls — 4
- 2.3 EQ Controls — 5
- 2.4 VU Meter and Controls — 7
- 2.5 Master Controls — 8
- 2.6 Physical Connections — 8
- 2.7 Hookup Diagram: ADL 700 (mono) — 10
- 2.8 Stereo Linking Two ADL 700s — 11
- 2.9 Hookup Diagram: ADL 700 (stereo) — 13

3.0 Tutorial — 14

- 3.1 A Brief Tutorial on Dynamics Processing — 14
 - 3.1.1 Common Questions Regarding Dynamics Processing — 14
 - 3.1.2 Compression Demystified — 15
- 3.2 Equalizers — 16
 - 3.2.1 What is an EQ? — 16
 - 3.2.2 Equalization Settings: How to Find the Best and Leave the Rest — 17

4 Resources — 20

- 4.1 Audio Specification — 20
- 4.2 ADL 700 Block Diagram — 21
- 4.3 ADL 700 Recall Sheet — 22
- 4.4 Troubleshooting — 23
- 4.5 Warranty — 24

1 Overview

1.1 Introduction



Thank you for purchasing the PreSonus ADL 700. PreSonus Audio Electronics has designed the ADL 700 utilizing high-grade components to ensure optimum performance that will last a lifetime. The ADL 700 is a professional channel strip that includes a tube preamplifier with the same design as the award-winning ADL 600. This discrete Class A tube preamp is combined with an FET-based compressor and four-band semi-parametric equalizer, making it perfect for professional studio applications. Great for all types of microphones and instruments, the ADL 700 has the sonic power and flexibility to achieve luscious vocals, crystal-clear acoustic guitars, fat bass guitars, dynamic acoustic piano, cracking snares, and much more.

We encourage you to contact us with questions or comments regarding this product. You can reach us by email at support@presonus.com or call us at 1-225-216-7887 between 9 a.m. and 5 p.m. U.S. Central Time. PreSonus Audio Electronics is committed to constant product improvement, and we value your suggestions highly. We believe the best way to achieve our goal of constant product improvement is by listening to the real experts: our valued customers. We appreciate the support you have shown us through the purchase of this product and are confident that you will enjoy your ADL 700!

ABOUT THIS MANUAL: We suggest that you use this manual to familiarize yourself with the features, applications, and correct connection procedures for the ADL 700 before connecting it to the rest of your studio gear. This will help you avoid problems during installation and setup.

Throughout this manual you will find **Power User Tips** that can help make you an ADL 700 expert. In addition, tutorials covering the basics of dynamics processing and equalization can be found in **Section 3** of this manual.

1.2 Summary of ADL 700 Features

- High-voltage, all-tube, Class A, dual-transformer design
- >73 dB gain
- Selectable microphone input impedance
- Switched Gain and variable Fine Trim controls
- Microphone, instrument, and line inputs with Source Select
- Ultra-low noise (-100 dB S/N ratio)
- Variable high-pass filter
- Polarity invert
- 48V phantom power
- -20 dB pad
- Fully variable FET compressor with attack, release, threshold, ratio, make-up gain, and stereo link
- Four-band, semi-parametric EQ
- Dual-mode analog VU metering (output and gain reduction)

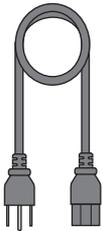
1.3 What's in the Box

In addition to this manual, your ADL 700 package contains the following:

PreSonus ADL 700 Channel Strip.



IEC power cable.



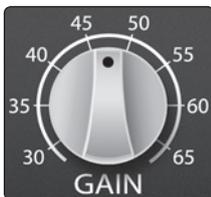
2 Hookup

2.1 Input Controls

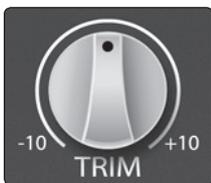


Input Source Select. The Input Source Select switch allows you to choose among all signal sources that you have connected to the ADL 700 inputs. It patches the selected input through the signal chain, completely bypassing the other two inputs. The Input Source Select switch also provides a choice of four mic-input impedances: 1500Ω, 900Ω, 300Ω, and 150Ω.

Power User Tip: The output of your microphone and the input of any microphone preamp each have a specific impedance. Measured in ohms, impedance is a way of expressing a circuit's opposition to a signal attempting to pass through. Lowering or raising the ADL 700 mic-input impedance can create subtle coloring and filtering effects, enabling you to get a wider variety of tonalities without using the EQ. In general, lower input impedance can produce effects that simulate a "darker," or more "closed-in" tone. Higher input impedance will produce a "brighter," or more "open" tone.



Gain. This 8-position rotary switch provides 35 dB of gain in 5 dB increments.



Trim. This variable potentiometer (± 10 dB) allows you to make fine trim adjustments to the final preamp stage of the ADL 700 input.



+48V. The 48-volt phantom power, supplied by way of the XLR input, provides power for condenser microphones and other devices requiring continuous power. This power is supplied at a constant level to prevent any signal degradation.

WARNING: Phantom power is only required for condenser microphones and can severely damage dynamic mics, especially ribbon mics. Therefore, switch phantom power off for all channels where it is not required.

XLR connector wiring for phantom power

Pin 1=Ground

Pin 2=+48V

Pin 3=+48V



Polarity Invert: Reverses the polarity of the signal.

Power User Tip: Use *Polarity Invert* when recording with more than one open microphone to combat phase cancellation between microphones.



-20 dB Pad: The pad provides 20 dB of attenuation for the microphone preamp only.

Power User Tip: The 20 dB pad reduces the signal level coming into your ADL 700, helping to prevent clipping and distortion from high-gain sources. Padding the input increases "headroom" and reduces the likelihood of signal overload.



High Pass Filter: The high-pass filter's frequency threshold can be set at 20 Hz, 40 Hz, 80 Hz, or 200 Hz, or it can be turned off completely. The slope of the filter is -12 dB/octave.

Power User Tip: A high-pass filter attenuates all frequencies below the set threshold. Use this filter, instead of an equalizer, to remove unwanted low frequencies from your source signal.

2.2 Compressor Controls



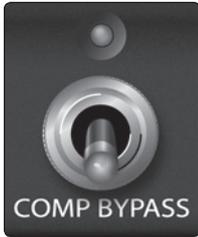
Threshold: Sets the threshold of the compressor. When the signal's amplitude (level) exceeds the threshold setting, the compressor engages. Turning the knob counterclockwise lowers the threshold so that compression begins at a lower amplitude, and more of the input signal becomes compressed (assuming you have a ratio setting greater than 1:1). The threshold can be set from -20 to +30 dBu.

When Threshold is turned fully counterclockwise to the ST position, all the onboard compressor controls, except for the Make-up Gain, are bypassed, and compression is controlled externally via the Link Connection. For more information on stereo-linking ADL 700s, please see Section 2.8.

Power User Tip: Using the Link function will help to maintain the source's stereo image because the compressor for both the left and right side of the image will raise and lower the gain by the same amount.



Ratio: The Ratio control sets the compression slope, which is the relationship between the output level and the input level. For example, if you have the ratio set to 2:1, then for every 2 dB of level increase above the threshold, the compressor's output will only increase 1 dB. The ratio can be set from 1:1 to 4:1.



Compressor Bypass: Bypasses the compressor in the signal chain.



Make-up Gain: Compression usually results in an overall reduction of level. The Make-up Gain knob allows you to restore the pre-compression level. You can adjust Make-up Gain from -0 dB to +18 dB.



Attack: Attack sets the speed at which the compressor acts on the input signal. A slow attack time (fully clockwise) allows the beginning component of a signal (commonly referred to as the initial transient) to pass through, uncompressed, whereas a fast attack time (fully counterclockwise) triggers compression immediately when a signal exceeds the threshold. The compressor attack time ranges from 0.5 ms (Fast) to 10 ms (Slow).



Release: Sets the release of the compressor, which is the time the compressor takes to return the gain reduction back to zero (no gain reduction) after the signal level crosses below the compression threshold. The compressor release time ranges from 40 ms (Fast) to 500 ms (Slow).

Power User Tip: *Very short release times can produce a choppy or "jittery" sound, especially when compressing instruments that have a lot of low-frequency components, such as bass guitar. Very long release times can result in an overcompressed, or "squashed," sound. All ranges of release can be useful, however, and you should experiment to become familiar with different possibilities.*

2.3 EQ Controls



EQ Bypass: This switch bypasses the EQ. When both the compressor and the EQ are bypassed, the ADL 700 acts as a tube preamplifier only.



EQ>Compressor: When the EQ>Compressor switch is engaged, it places the EQ before the compressor in the signal path. When it is disengaged, the signal passes through the compressor before passing through the EQ.

Power User Tip: *Placing the compressor before the EQ allows you to make dramatic changes to the EQ settings without needing to alter the compressor setting. However, if you place the EQ before the compressor, you can better control different frequencies, achieving a more natural response. The ADL 700 provides the flexibility to choose which signal flow is right for your application at any given time.*



Low Band Frequency: Sets the center frequency of the EQ's low-frequency band. You can adjust the center frequency from 20 to 250 Hz.



Low Band Gain: Sets the attenuation or boost of the EQ's low band. The gain can be set between -16 and +16 dB.



Low Band Peak: When the Peak switch is engaged, the low band of the EQ becomes a standard peak filter with a fixed Q of 0.6. When it is disengaged, the low band is a shelving filter.

Power User Tip: A shelving EQ attenuates or boost frequencies above or below a specified cutoff frequency. In practice, these types of EQs are much like the treble and bass controls on your car stereo. Like a bass control, a low-shelf filter will raise or lower the gain on all frequencies below the specified cutoff frequency. A high-shelf filter will raise or lower the gain on all frequencies above the specified cutoff frequency, just like a treble control. Shelving EQs can be used to make big changes to the sound very quickly by adding or removing an entire range of frequencies at once.

In contrast, a peak EQ offers continuous control over the center frequency of the band and of the level (boost/cut) of the designated frequency band, which makes it capable of more subtle changes.



Low Mid Band Frequency: Sets the center frequency of the EQ's low-mid frequency band. You can adjust the center frequency from 160 Hz to 2 kHz. The low-mid band has a fixed Q of 0.6.



Low Mid Band Gain: Sets the attenuation or boost of the EQ's low-mid band. The gain can be set between -16 and +16 dB.



High Mid Band Frequency: Sets the center frequency of the EQ's high-mid band. You can adjust the center frequency from 800 Hz to 8 kHz. The high-mid band has a fixed Q of 0.6.



High Mid Band Gain: Sets the attenuation or boost of the EQ's high-mid band. The gain can be set between -16 and +16 dB.



High Band Frequency: Sets the center frequency of the EQ's high-frequency band. You can adjust the center frequency from 2 kHz to 20 kHz.



High Band Gain: Sets the attenuation or boost of the EQ's high band. The gain can be set between -16 and +16 dB.



High Band Peak: When the Peak switch is engaged, the high band of the EQ becomes a standard peak filter with a fixed Q of 0.6. When it is disengaged, the high band is a shelving filter.

2.4 VU Meter and Controls



VU Meter: The analog VU meter displays the ADL 700's output level. When the Meter – GR switch is enabled, the VU meter will show the amount of gain reduction being applied by the compressor.



Meter -6 dB: This switch offsets the VU meter by 6 dB, which can help you meter loud input sources if your VU meter is "slamming" or pegged.



Meter – GR: This switch changes the VU metering to display the compressor's gain reduction rather than the ADL 700's output level.

2.5 Master Controls



Level: Adjusts the overall output volume of the ADL 700 from -80 dB to +6 dB



Power: Turns the ADL 700 on and off.

2.6 Physical Connections



Instrument Input: The ¼" TS connector on the front panel is for use with a passive instrument (guitar, bass, etc.). To use this input, turn the Source Select switch to the "Inst" position.

Power User Tip: *Passive instruments do not have an internal preamp and should be plugged into an instrument input. Active instruments have an internal preamp and a line-level output and should be plugged into a line input. Plugging a line-level source into the instrument input on the front of the ADL 700 risks damage to the circuit and is likely to produce a very loud and distorted audio signal. So don't do that!*



Mic Input: The ADL 700 mic preamp works great with all types of microphones including dynamic, ribbon, and condenser microphones. To use this input, turn the Source Select switch to the any of the mic-impedance positions.

Power User Tip: *Dynamic microphones and ribbon microphones (which are a special type of dynamic mic) are generally lower-output devices that, with few exceptions, require no external power source. Sending phantom power to a ribbon mic that doesn't require it can cause severe damage to the mic – usually beyond repair. Condenser microphones are generally more sensitive than dynamic and ribbon microphones and typically require external +48V phantom power. Always review your microphone's documentation and follow its recommended operating practices.*



Line Input: This balanced XLR connection can be used for line-level devices such as keyboards, drum machines, and sound modules. You can also use the line inputs on two stereo-linked ADL 700s to give a stereo mix an extremely full, rich character. To use this input, turn the Source Select switch to the Line position.



Comp Link: Use this TRS connection to link the compressor stage of two ADL 700s.

Power User Tip: You can leave your ADL 700s connected via the Comp Link jack at all times, even if you only use the Stereo Link function occasionally. Unless one of the units has its Threshold knob switched to the ST position, the two units will act independently.



Output: The ADL 700's output jack employs a balanced XLR connection.

Power User Tip: All input and output connectors are transformer-balanced XLRs with the following wiring standard:

Pin 1: GND

Pin 2: High (+)

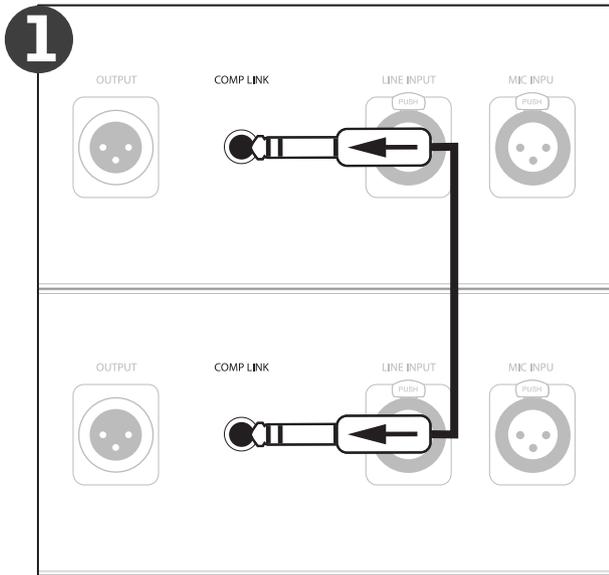
Pin 3: Low (-)



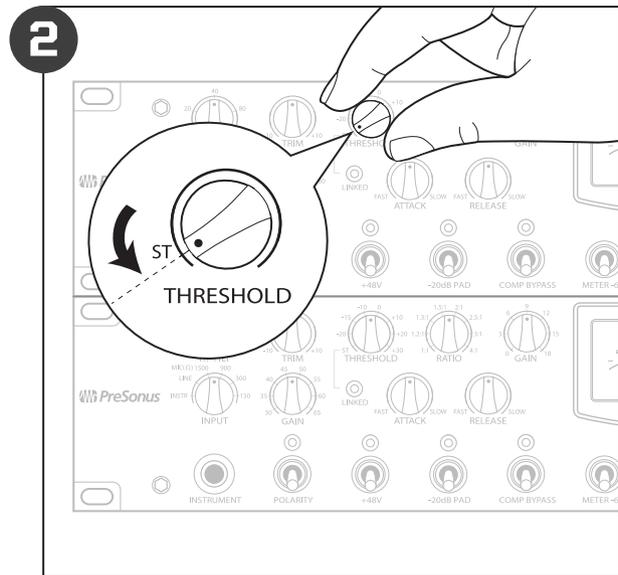
IEC Power Connection: Your ADL 700 accepts a standard IEC cord.

Note: The input power voltage is set at the factory to correspond with the country to which the ADL 700 was shipped.

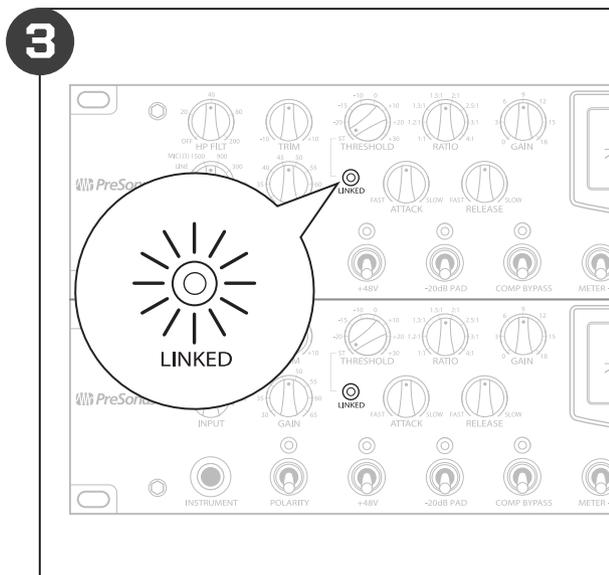
2.8 Stereo Linking Two ADL 700s



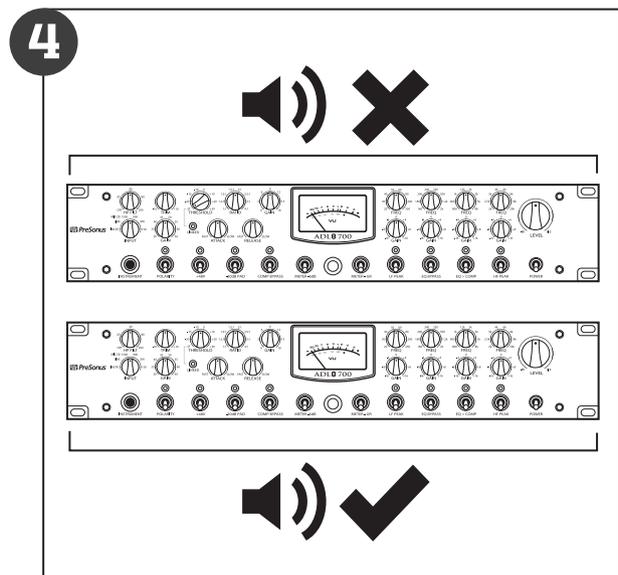
1. Connect a TRS cable to the Comp Link connection of the back of both of the ADL 700s.



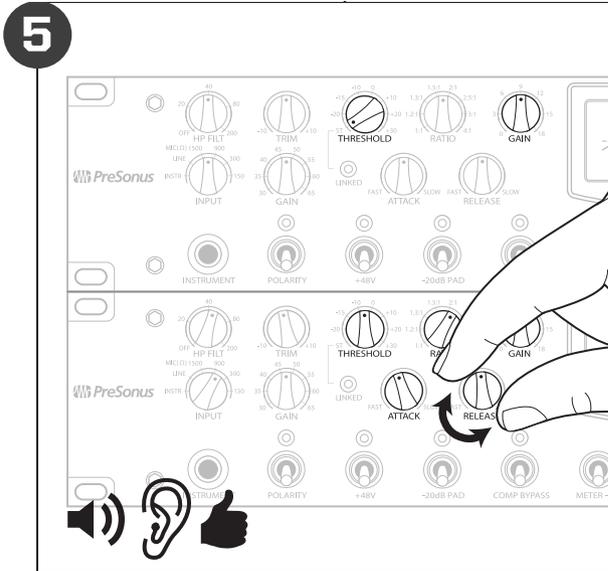
2. Determine which unit you would like to be the slave and turn its Threshold knob to the ST position.



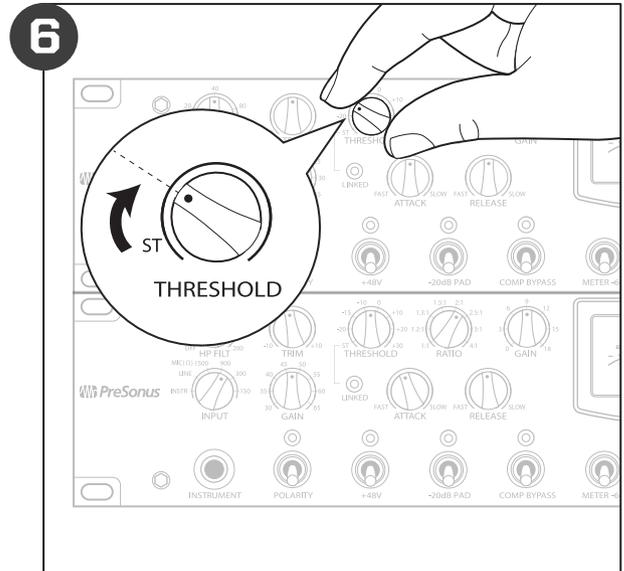
3. The Link LED will illuminate when Stereo Link mode is enabled.



4. The compressor controls on the slaved unit will no longer have any effect on the audio.

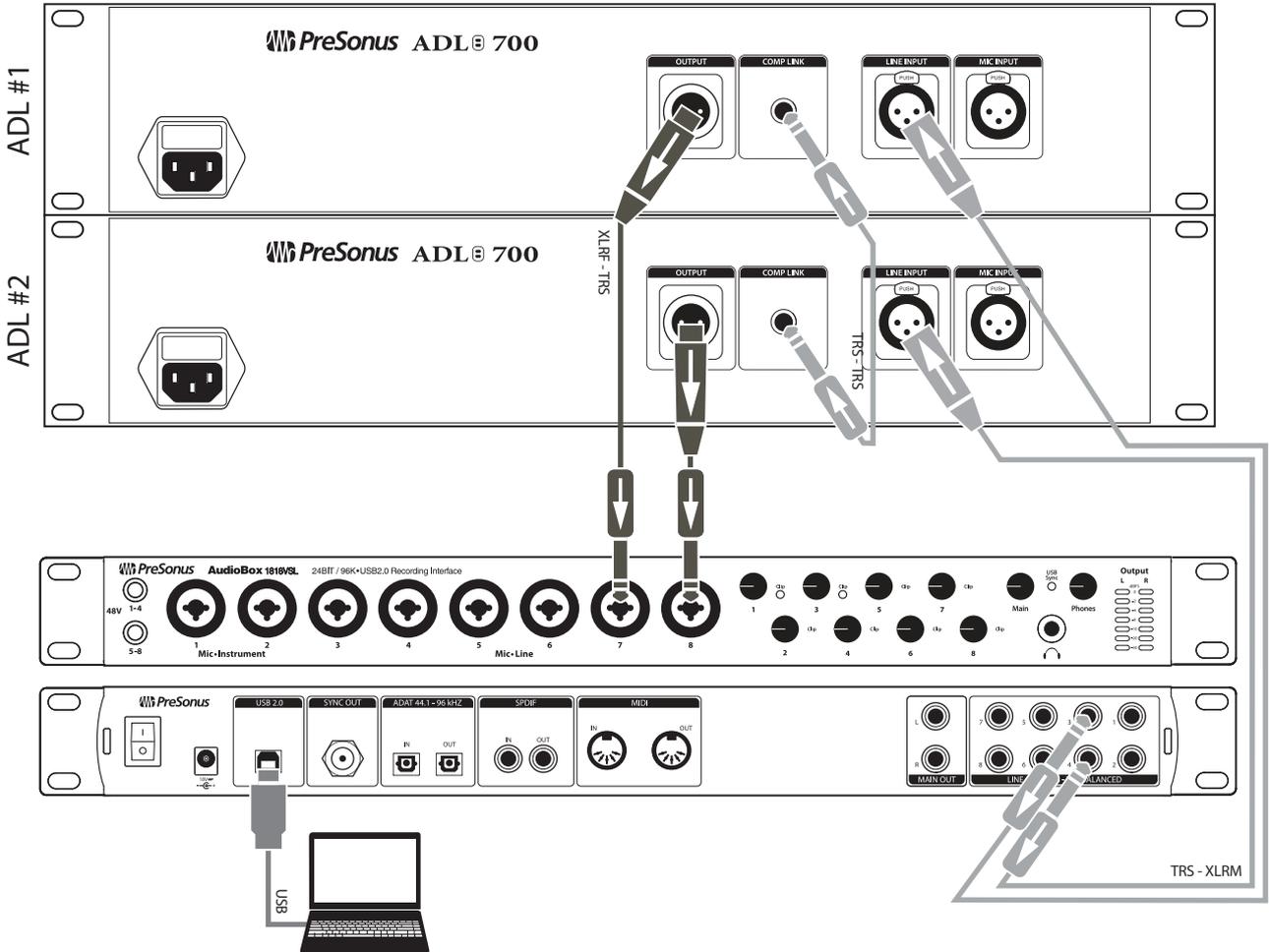
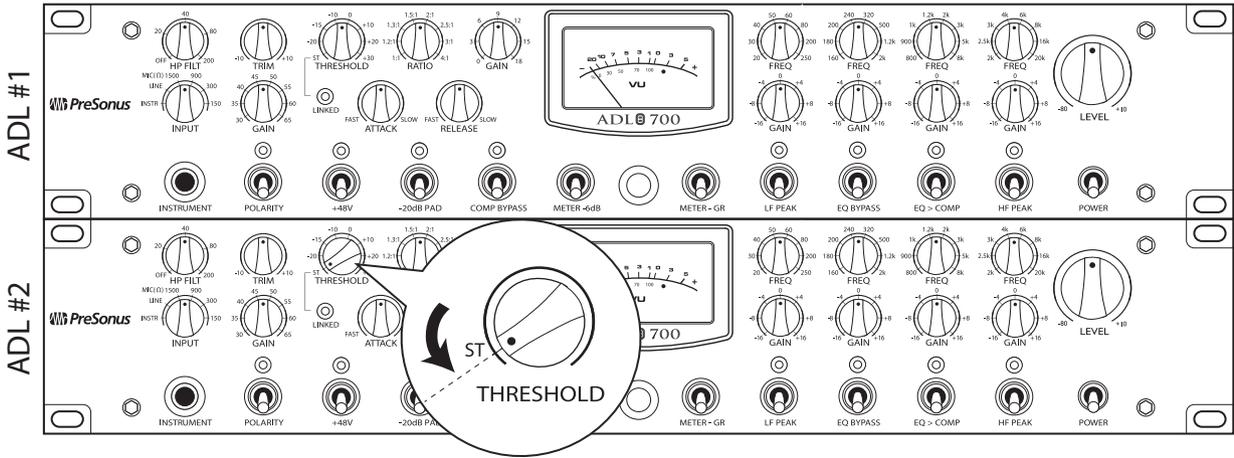


5. Use the Threshold, Attack, Release, and Ratio controls on the master unit to adjust the compressor setting for both units. Adjust the Make-up Gain as necessary on both units.



6. When you want to disable Stereo Link mode, simply turn the Threshold knob on the slaved unit to any position other than ST. You do not have to disconnect the TRS connection to disable Stereo Link mode.

2.9 Hookup Diagram: ADL 700 (stereo)



3.0 Tutorial

3.1 A Brief Tutorial on Dynamics Processing

ADL 700 includes a custom FET Compressor. What follows is an excerpt from a brief tutorial on dynamics processing written by PreSonus president and founder Jim Odom. It is included to help you get the most out of your ADL 700. This tutorial will take you through the basics of dynamics processing.

3.1.1 Common Questions Regarding Dynamics Processing

What is dynamic range?

Dynamic range can be defined as the ratio between the loudest possible audio level and the noise floor. For example, if a processor states that the maximum input level before distortion is +24 dBu, and the output noise floor is -92 dBu, then the processor has a total dynamic range of $24 - (-92) = 116$ dB.

The average dynamic range of an orchestral performance can range from -50 dBu to +10 dBu, on average. This equates to a 60 dB dynamic range. Although 60 dB may not appear to be a large dynamic range, do the math, and you'll discover that +10 dBu is 1,000 times louder than -50 dBu!

Rock music, on the other hand, has a much smaller dynamic range: typically -10 dBu to +10 dBu, or 20 dB. This makes mixing the various signals of a rock performance together a much more tedious task.

Why do we need compression?

Consider the previous discussion: You are mixing a rock performance with an average dynamic range of 20 dB. You wish to add an uncompressed vocal to the mix. The average dynamic range of an uncompressed vocal is around 40 dB. In other words, a vocal performance can go from -30 dBu to +10 dBu. The passages that are +10 dBu and higher will be heard over the mix. However, the passages that are at -30 dBu and below will never be heard over the roar of the rest of the mix. A compressor can be used in this situation to reduce (compress) the dynamic range of the vocal to around 10 dB. The vocal can now be placed at around +5 dBu. At this level, the dynamic range of the vocal is from 0 dBu to +10 dBu. The lower level phrases will now be well above the lower level of the mix, and louder phrases will not overpower the mix, allowing the vocal to "sit in the track."

The same points can be made about any instrument in the mix. Each instrument has its place, and a good compressor can assist the engineer in the overall blend.

Does every instrument need compression?

This question may lead many folks to say "absolutely not, overcompression is horrible." That statement can be qualified by defining overcompression. The term itself must have been derived from the fact that you can hear the compressor working. A well-designed and properly adjusted compressor should not be audible! Therefore, the overcompressed sound is likely to be an improper adjustment on a particular instrument—unless, of course, it is done intentionally for effect.

The world's best mixing consoles offer compression on every channel because most instruments need some form of compression, often very subtle, to be properly heard in a mix.

3.1.2 Compression Demystified

Punch, apparent loudness, presence—these are just three of the many terms used to describe the effects of compression.

Compression is a form of dynamic-range (gain) control. Audio signals have very wide peak-to-average signal-level ratios (sometimes referred to as dynamic range, which is the difference between the loudest level and the softest level). The peak signal can cause overload in the audio-recording or sound-reinforcement chain, resulting in signal distortion.

A compressor is a type of amplifier in which gain is dependent on the signal level passing through it. You can set the maximum level a compressor allows to pass through, thereby causing automatic gain reduction above some predetermined signal level, or threshold. Compression refers, basically, to the ability to reduce, by a fixed ratio, the amount by which a signal's output level can increase relative to the input level. It is useful for lowering the dynamic range of an instrument or vocal, making it easier to record without distorting the recorder. It also assists in the mixing process by reducing the amount of level changes needed for a particular instrument.

Take, for example, a vocalist who moves around in front of the microphone while performing, making the output level vary up and down unnaturally. A compressor can be applied to the signal to help correct this recording problem by reducing the louder passages enough to be compatible with the overall performance.

How severely the compressor reduces the signal is determined by the compression ratio and compression threshold. A ratio of 2:1 or less is considered mild compression, reducing the output by a factor of two for signals that exceed the compression threshold.

As the compression threshold is lowered, more of the input signal is compressed (assuming a nominal input-signal level). Care must be taken not to overcompress a signal, as too much compression destroys the acoustic dynamic response of a performance. (That said, overcompression is used by some engineers as an effect, with killer results!)

Compressors are commonly used for many audio applications. For example:

A kick drum can get lost in a wall of electric guitars. No matter how much the level is increased, the kick drum stays lost in the "mud." A touch of compression can tighten up that kick-drum sound, allowing it to punch through without having to crank the level way up.

A vocal performance usually has a wide dynamic range. Transients (normally the loudest portions of the signal) can be far outside the average level of the vocal signal. Because the level can change continuously and dramatically, it is extremely difficult to ride the level with a console fader. A compressor automatically controls gain without altering the subtleties of the performance.

A solo guitar can seem to be masked by the rhythm guitars. Compression can make your lead soar above the track without shoving the fader through the roof.

Bass guitar can be difficult to record. A consistent level with good attack can be achieved with proper compression. Your bass doesn't have to be washed out in the low end of the mix. Let the compressor give your bass the punch it needs to drive the bottom of the mix.

3.2 Equalizers

Your ADL 700 is equipped with a 4-band semi-parametric EQ. Here's a brief explanation of how an EQ functions, as well as some charts to help you navigate the frequency ranges of various instruments so you can quickly choose the best EQ settings for your recordings and live mixes.

3.2.1 What is an EQ?

An equalizer is a filter that allows you to adjust the level of a frequency, or range of frequencies, of an audio signal. In its simplest form, an EQ will let you turn the treble and bass up or down, allowing you to adjust the coloration of, let's say, your car stereo or iPod®. In recording, equalization is a sophisticated art. Good equalization is critical to a good mix.

When used correctly, an equalizer can provide the impression of nearness or distance, "fatten" or "thin" a sound, and help blend or provide separation between similar sounds in a mix allowing them to both shine through the mix.

Parametric EQ

The parametric EQ and semi-parametric EQ are the most common equalizers found in recording and live situations because they offer continuous control over all parameters. A parametric EQ offers continuous control over the audio signal's frequency content, which is divided into several bands of frequencies (most commonly three to seven bands). A fully parametric EQ like those in the StudioLive 24.4.2 offers control over the bandwidth (basically, the range of frequencies affected), the center frequency of the band, and the level (boost/cut) of the designated frequency band. It also offers separate control over the Q, which is the ratio of the center frequency to the bandwidth. A semi-parametric EQ provides control over most of these parameters but the Q is fixed. Some devices, such as the StudioLive 16.4.2 and 16.0.2, have quasi-parametric EQ, which is semi-parametric EQ with a simple, switchable Q setting (typically, High and Low Q).

Q

Q is the ratio of center frequency to bandwidth, and if the center frequency is fixed, then bandwidth is inversely proportional to Q—meaning that as you raise the Q, you narrow the bandwidth. In fully parametric EQs, you have continuous bandwidth control and/or continuous Q control, which allows you to attenuate or boost a very narrow or wide range of frequencies.

A narrow bandwidth (higher Q) has obvious benefits for removing unpleasant tones. Let's say the snare drum in your mix has an annoying ring to it. With a very narrow bandwidth, you can isolate this one frequency (usually around 1 kHz) and remove, or reject, it. This type of narrow band-reject filter is also known as a *notch filter*. By notching out the offending frequency, you can remove the problem without removing the instrument from the mix. A narrow

bandwidth is also useful in boosting pleasant tones of an instrument such as the attack. Take for instance, a kick drum. A kick drum resonates somewhere between 60 to 125 Hz, but the attack of the kick drum is much higher at 2 to 5 kHz. By setting a narrow bandwidth and boosting the attack a bit, you can achieve a punchier kick drum without overpowering the rest of the mix.

A broad bandwidth accentuates or attenuates a larger band of frequencies. The broad and narrow bandwidths (high and low Q) are usually used in conjunction with one another to achieve the desired effect. Let's look at our kick drum again. We have a kick drum that has a great, big, low-end sound centered around 100 Hz and an attack hitting almost dead-on at 4 kHz. In this example, you would use a broad bandwidth in the low frequency band, centered at 100 Hz, and a narrow bandwidth boosted at 4 kHz. In this way you are accentuating the best and downplaying everything else this particular kick drum has to offer.

Shelving EQ

A shelving EQ attenuates or boost frequencies above or below a specified cutoff point. Shelving equalizers come in two different varieties: high-pass and low-pass.

Low-pass shelving filters pass all frequencies below the specified cutoff frequency while attenuating all the frequencies above it. A high-pass filter does the opposite: passing all frequencies above the specified cut-off frequency while attenuating everything below.

3.2.2 Equalization Settings: How to Find the Best and Leave the Rest

How do you find the best and worst each instrument has to offer and adjust their frequency content accordingly? Here's a quick guide:

- First, solo just the instrument with which you are working. Most engineers start building their mix with the drums and work from the bottom up (kick, snare, toms, hi-hat, overheads). Each instrument resonates primarily in a specific frequency band, so if you are working on your kick-drum mic, start with the lowest band of the EQ. Tune in the best-sounding low end and move on to the attack. It is not uncommon to hear an annoying ringing or a "twang" mixed in with your amazing-sounding low end and perfect attack, so your next task will be to find that offending frequency and notch it out. Once you are satisfied with your kick drum, mute it, and move on to the next instrument.
- Taking your time with equalization is well worth the effort. Your mix will have better separation and more clarity.

Additional advice:

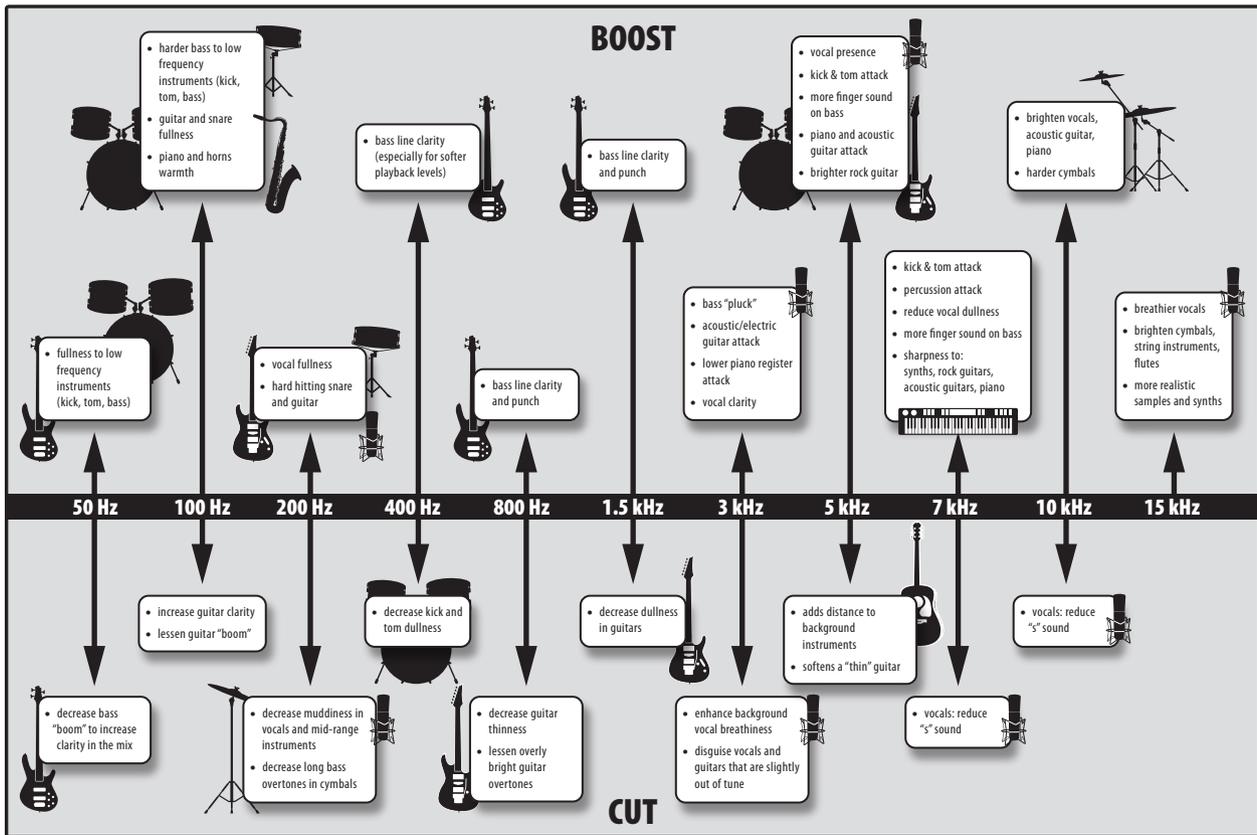
- **You can only do so much.** Not every instrument can or should have a full, rich low end and a sharp attack. If every instrument is EQ'd to have the same effect, it will lose its identity in the mix. Your goal is not individual perfection, it is perfection in unity.
- **Step away from the mix.** Your ears get fatigued, just like the rest of you. If you are working particularly hard on one instrument, your ears will be quite literally numbed to that frequency range.

- **Your memory is not what you think it is.** Comparing a flat EQ and the curve that you've created allows you to see and hear exactly what you've done. So be honest with yourself. Sometimes that EQ setting you've been working on for 15 minutes is not the right choice, so move on.
- **Never be afraid of taking a risk.** The best EQ tricks were found by mad scientists of sound. With every instrument, there are frequencies that can be attenuated or boosted to add clarity or fullness. Altering the wrong frequencies can make an instrument shrill, muddy, or just downright annoying. The following two charts suggest frequency ranges that should be accentuated or downplayed for the most common instruments. These are just suggestions; the frequencies may need to be adjusted up or down depending on the instrument, room, and microphone.

Table 1

Instrument	What to Cut	Why to Cut	What to Boost	Why to Boost
Human Voice	7 kHz	Sibilance	8 kHz	Big sound
	2 kHz	Shrill	3 kHz and above	Clarity
	1 kHz	Nasal	200-400 Hz	Body
	80 Hz and below	Popping P's		
Piano	1-2 kHz	Tinny	5 kHz	More presence
	300 Hz	Boomy	100 Hz	Bottom end
Electric Guitar	1-2 kHz	Shrill	3 kHz	Clarity
	80 Hz and below	Muddy	125 Hz	Bottom end
Acoustic Guitar	2-3 kHz	Tinny	5 kHz and above	Sparkle
	200 Hz	Boomy	125 Hz	Full
Electric Bass	1 kHz	Thin	600 Hz	Growl
	125 Hz	Boomy	80 Hz and below	Bottom end
String Bass	600 Hz	Hollow	2-5 kHz	Sharp attack
	200 Hz	Boomy	125 Hz and below	Bottom end
Snare Drum	1 kHz	Annoying	2 kHz	Crisp
			150-200 Hz	Full
			80 Hz	Deep
Kick Drum	400 Hz	Muddy	2-5 kHz	Sharp attack
	80 Hz and below	Boomy	60-125 Hz	Bottom end
Toms	300 Hz	Boomy	2-5 kHz	Sharp attack
			80-200 Hz	Bottom end
Cymbals	1 kHz	Annoying	7-8 kHz	Sizzle
			8-12 kHz	Brilliance
			15 kHz	Air
Horns	1 kHz	Honky	8-12 kHz	Big sound
	120 Hz and below	Muddy	2 kHz	Clarity
String section	3 kHz	Shrill	2 kHz	Clarity
	120 Hz and below	Muddy	400-600 Hz	Lush and full

Table 2



4 Resources

4.1 Audio Specification

Input Impedance

Microphone	Selectable, 150/300/900/1500Ω
Balanced Line	2 kΩ
Instrument	1 MΩ

Maximum Input Level

Microphone (1500Ω, +20 dB Pad out)	+10 dBu
Microphone (1500Ω, +20 dB Pad in)	+30 dBu
Balanced Line	+30 dBu
Instrument	+20 dBu

Gain Range

Microphone (1500Ω, +20 dB Pad out)	+6 dB to +70 dB
Balanced Line	-20 dB to +40 dB
Instrument	-20 dB to +40 dB

Performance

Noise Floor (all inputs, minimum gain)	-95 dBu (A-weighted)
Microphone Equivalent Input Noise (EIN)	-123 dBu (A-weighted)
Frequency Response	10 Hz to 45 kHz, ±1 dB
Maximum Output Level	+28 dBu (@ 0.5% THD+N)
Output Impedance	50Ω
Tube Complement (per channel)	(1) 12AT7A and (2) 6922

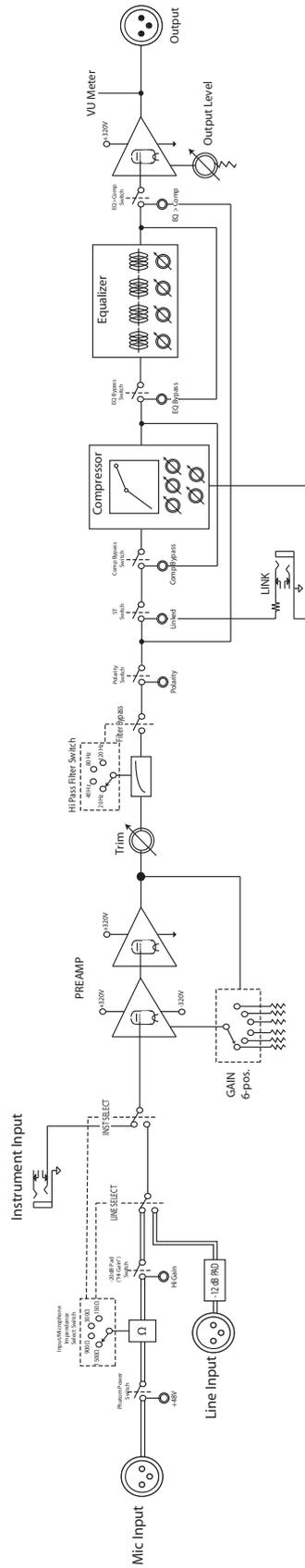
EQ

Type	2nd-order shelving filter
Q	0.55
Low Band (Low-pass or Bandpass)	20 Hz to 250 Hz, ±16 dB
Low-Mid Band	160 Hz to 2 kHz, ±16 dB
High-Mid Band	800 Hz to 8 kHz, ±16 dB
High Band (High-pass or Bandpass)	2 kHz to 20 kHz, ±16 dB

Compressor

Threshold Range	-20 dBu to +30 dBu
Ratio	1:1 to 4:1
Attack Time	Fast (0.5 ms) to Slow (10 ms)
Release Time	Fast (30 ms) to Slow (500 ms)
Curve Type	Soft knee

4.2 ADL 700 Block Diagram



4.3 ADL 700 Recall Sheet

DATE: _____ SONG TITLE: _____ NOTES: _____
 ARTIST: _____ MIC/INSTR: _____

PreSonus ADL 700

HP FILT: 2000 OFF (MIC) 1500 LINE INSTR 300 1150 2000 40 20

THRESHOLD: -15 -10 0 -20 -57

RATIO: 1.5:1 2:1 1.3:1 1:1 3:1 4:1

ATTACK: SLOW FAST

RELEASE: SLOW FAST

20dB PAD: On Off

COMP: On Off

GAIN: 45 30 65 55

POLARITY: On Off

INPUT: INSTRUMENT

METER: 6dB METER-GR

EQ BYPASS: On Off

EQ > COMP: On Off

HF PEAK: On Off

LEVEL: -10 -80

POWER

DATE: _____ SONG TITLE: _____ NOTES: _____
 ARTIST: _____ MIC/INSTR: _____

PreSonus ADL 700

HP FILT: 2000 OFF (MIC) 1500 LINE INSTR 300 1150 2000 40 20

THRESHOLD: -15 -10 0 -20 -57

RATIO: 1.5:1 2:1 1.3:1 1:1 3:1 4:1

ATTACK: SLOW FAST

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20dB PAD: On Off

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GAIN: 45 30 65 55

POLARITY: On Off

INPUT: INSTRUMENT

METER: 6dB METER-GR

EQ BYPASS: On Off

EQ > COMP: On Off

HF PEAK: On Off

LEVEL: -10 -80

POWER

4.4 Troubleshooting

No power.

First make sure your unit is plugged in. If it's connected to a power conditioner, verify that the power conditioner is turned on and functioning properly. Check the fuse on the back panel of the ADL 700. (Be sure to disconnect the power from the ADL 700 before opening the fuse housing.) A blown fuse may look black on the inside or the wire inside might appear broken, and a very black fuse indicates that something may have shorted out. Try replacing the fuse with a new one. The ADL 700 uses a 500 mA/250V time-delay fuse for 100-120 VAC systems or a 250 mA/250V time-delay fuse for 220-240 VAC systems. If the fuse blows again, please contact PreSonus to get your ADL 700 repaired.

Not passing audio.

If the ADL 700 appears to power on but it's not passing signal (the lights are on but nobody's home), first check all the cables connected to your ADL 700 and make sure that they are working correctly. Also, verify that the Source Select switch is set to the correct input and that the Gain and Output Level controls are set to provide enough amplitude for the signal. If you have your ADL 700 connected to a patch bay, try connecting a source directly to the ADL 700 to rule out a problem with the patch bay.

ADL 700 emits noise when the front panel is tapped.

Tubes can become microphonic over time, which is a fancy way of say they can begin to act like microphone—and not a good one. In this case, one or more of the tubes will need to be replaced. You'll need to contact PreSonus or a service professional to locate and replace the offending tube.

Hiss.

This is another common indication of a tube in need of replacement. Again, contact PreSonus or a service professional to locate and replace the offending tube.

4.5 Warranty

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, 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.

PreSonus Audio Electronics, Inc.
7257 Florida Blvd.
Baton Rouge, LA 70806 USA
www.presonus.com

Added bonus: PreSonus' previously Top Secret recipe for...

Chicken and Andouille Gumbo

Ingredients:

- 1 C All-Purpose flour
- $\frac{3}{4}$ C Vegetable Oil
- 1 large onion (diced)
- 1 small onion (quartered)
- 6 celery stalks (diced)
- 1 large green bell pepper (diced)
- 3 cloves garlic (2 minced, 1 whole)
- 1 lb link Andouille sausage
- 4 Chicken leg quarters
- 4 qt water
- 4 bay leaves
- 1 tsp thyme
- 1 tsp Old Bay seasoning
- 1-2 C frozen okra, sliced
- $\frac{1}{4}$ C fresh parsley, minced
- 6-8 eggs (optional)

Cooking Instructions:

1. In a large pot, combine whole chicken leg quarters, water, quartered onion, Old Bay, 2 bay leaves and 1 whole clove garlic. Cover and bring to a low boil. Simmer stock until chicken is falling off the bone. Remove the chicken and set aside. Discard the onion, bay leaves, and garlic, reserving the liquid.
2. In a heavy saucepan, heat 1 Tbsp of the oil on medium high heat and brown the andouille until it is cooked through. Set aside sausage for later.
3. In the same saucepan, add and heat remaining oil. Slowly add flour 1-2 Tbsp at a time, stirring continuously. Continue cooking and stirring the roux until it is a dark brown (it should look like melted dark chocolate). Be careful to not to get the oil too hot or the flour will burn and you'll have to start over.
4. Once roux has reached the correct color, add diced onion, celery, green pepper, and minced garlic. Cook until vegetables are very tender. Do not cover.
5. Slowly add 1 quart of chicken broth and bring to a low boil, stirring constantly.
6. Transfer roux mixture to a soup pot and bring to low boil. Do not cover, the roux will settle on the bottom of the pot and burn.
7. Add remaining chicken broth, bay leaves, and thyme. Simmer for 30 minutes.
8. While gumbo is simmering, debone and shred chicken and slice the andouille.
9. Add chicken and andouille to gumbo and return to a simmer. Simmer for 30-45 minutes.
10. Stir in frozen okra and parsley and bring to a rolling boil
11. **Optional:** Crack one egg into a teacup and quickly pour into the boiling gumbo. Repeat with the other eggs being careful not to cluster them too closely. After all the eggs have risen back to the surface, reduce heat and simmer.
12. Correct seasoning with salt and pepper (red, white and/or black) if necessary.
13. Serve over rice with potato salad.

Serves 12

ADL 700

Channel Strip

Owner's Manual



7257 Florida Boulevard • Baton Rouge,
Louisiana 70806 USA • 1-225-216-7887
www.presonus.com

Part# 820-PAS0017-D