



MODEL PA-2[©]
AUDIOPATH ENHANCER[©]
(1998-MSRP \$399.00)

OPERATION
INSTALLATION MANUAL

INTRODUCTION

After countless hours of analyzing the performance of existing car audio systems, it became obvious to the engineers at **LINEAR POWER™** that certain areas of the audio spectrum consistently needed help. Something was needed to provide optimum performance to the system whether you were listening while cruising down the highway or sitting in traffic. A product you could use without having to stare at tiny menus till your head exploded from trying to figure out whether you were adjusting right rear time delay or the "Q" on the parametric EQ band centered at 50Hz. An EQ that wouldn't blast you with screeching maximum volume mids because you hit a bump in the road while you were trying to adjust it. Enter the **LINEAR POWER™ PA-2[©]**. Your new preamplifier will dramatically improve the dynamics, clarity, versatility and overall performance of any mobile electronics audio system. Hey, and such a novel idea... **YOU CAN USE IT WITHOUT LOOKING AT IT.** Enjoy the Music!!

PRODUCT OVERVIEW

The **PA-2[©]** is a combination line driver/4-band EQ preamplifier with internally patched or externally patched fader capability. Two stereo inputs with electronic source select are available for systems with two audio sources. Up to six audio outputs are available at one time to provide in-dash control of multiple amplifiers in your installation. There are separate input gain controls for the left and right channels, a green power LED to indicate the preamplifier is powered up, and a red clip LED to indicate 5Vrms output level. The **PA-2[©]** has a backlit display and is housed in a rugged, half-din chassis with plug-in power connections.

CONFIGURING THE PA-2© IN YOUR SYSTEM

Your purchase of the **LINEAR POWER™ PA-2©** is a major step towards creating the ultimate audiophile system for your vehicle. Before installing your new **PA-2©**, the preamp must be properly configured for your system. The **PA-2©** configuration is changed by moving 'shunts' inside the preamp chassis like those used for computers. Remove the top cover of the preamp and locate the 'shunts' near the RCA jacks and above the "LP" logo on the circuit board.

The **PA-2©** is shipped from the factory configured for two audio source input with front/rear fader control patched internally. The sample system shown in **Figure 1a** allows front/rear fader control without affecting the main output level sent to your subwoofer amplifier. The signal from the main output is sent to the fader control in this configuration. See **Figure 1B** for the internal shunt settings.

For systems using an external crossover such as the **LINEAR POWER™ X0-2©**, (**Figure 2a**), the **PA-2©** can be configured for externally patched fader capability to prevent the subwoofer level from being affected by the front/rear fader control. The signal from the second input on the **PA-2©** is sent to the fader control in this configuration. See **Figure 2b** for the internal shunt settings.

For the maximum in-dash control and optimum sound quality in your system, the **PA-2©** can be used with the **LINEAR POWER™ X0-3©** crossover. Patch the signal from the main output on the **PA-2©** to the **X0-3©** crossover, (**Figure 3a**), and use the three level controls on the **X0-3©** mounted in-dash to balance the signal levels in your system. The fader circuitry is completely disconnected from the audio path in this system to prevent any circuit loading from the unused fader control that may affect sound quality. See **Figure 3b** for the internal shunt settings.

Diagrams start on the following 3 pages.

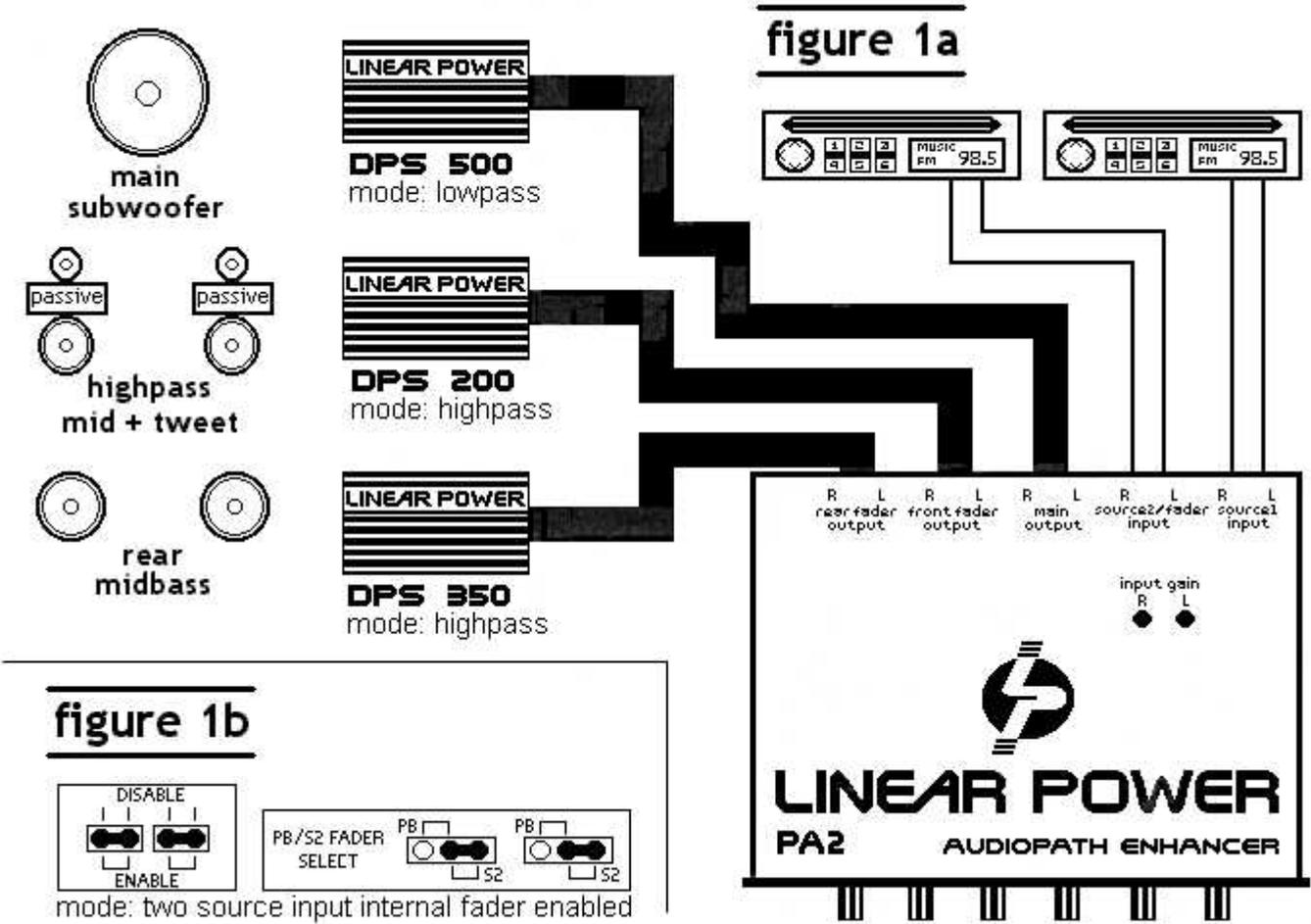


figure 2a

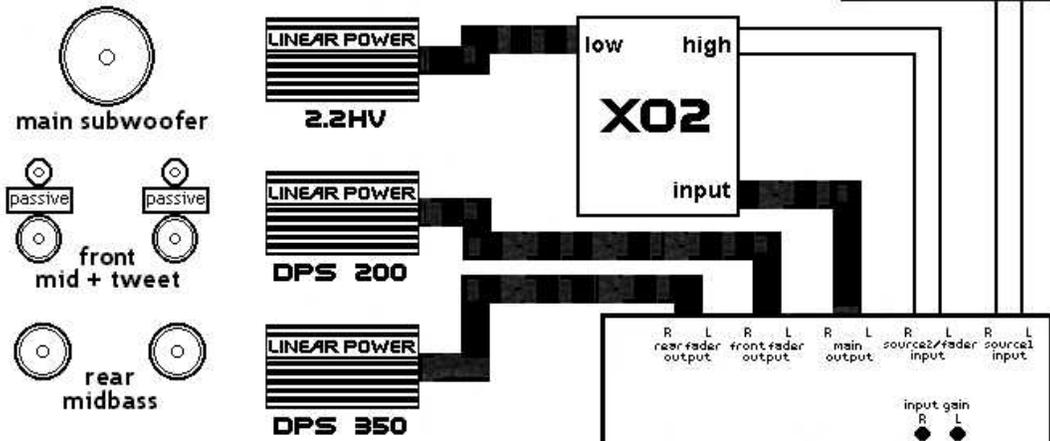


figure 2b

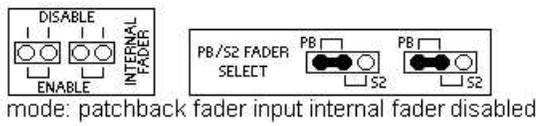


figure 3a

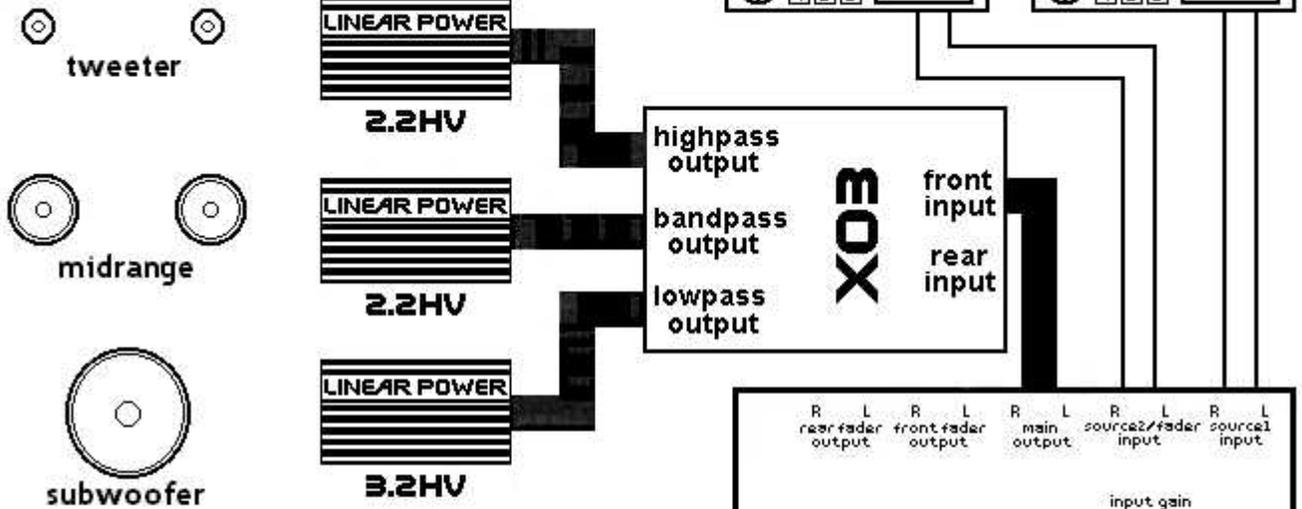
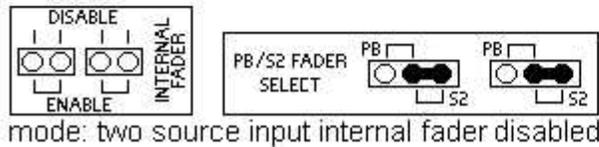
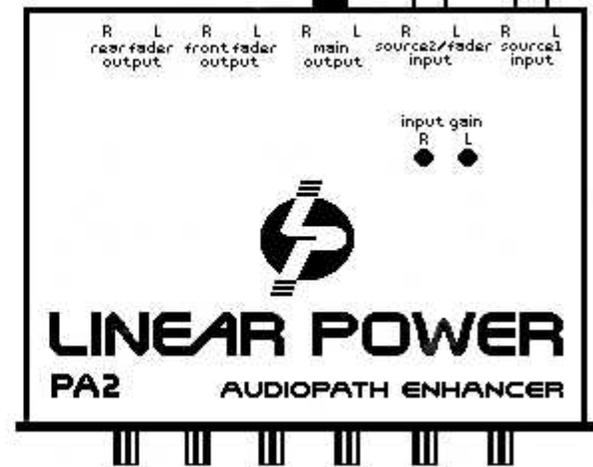


figure 3b



mode: two source input internal fader disabled



CONTROLS AND INDICATORS ON YOUR PA-2©

VOLUME: The volume control sets the output level of the main output, front fader output, and rear fader output on the **PA-2©** without affecting the input gain settings.

FADER: The fader control balances the signal level between the front fader and rear fader stereo outputs on the **PA-2©** without affecting the input gain settings. The maximum output level on the front fader and rear fader outputs is set by the volume control.

EQ CONTROLS:

sub:	45Hz	+/- 16dB
bass:	190Hz	+/- 12dB
mid:	3.5kHz	+/- 12dB
treble:	14kHz	+/- 12Db

The EQ controls can affect the optimum input gain setting. See the section on INPUT GAIN ADJUSTMENT in this manual in order to get the best performance out of your **PA-2**.

POWER INDICATOR: The red clip indicator will light at signal levels greater than 5Vrms even though the **PA-2** does not actually clip until the signal level is approximately 10Vrms. The 5Vrms signal level was chosen by our engineers in order to provide your car audio system with excellent channel separation and great power supply noise isolation while still providing a high output signal level for driving the audiopath to your amplifiers. If the clip indicator is constantly flashing or staying on steadily, readjust the input gain controls in the top cover of the **PA-2** as outlined in the INPUT GAIN ADJUSTMENT section of this manual. The clip indicator should flash occasionally on musical peaks to obtain optimum performance with **LINEAR POWER™** amplifiers.

INSTALLATION OF THE PA-2 IN YOUR SYSTEM

POWER CONNECTION: Connect the red wire labeled **bat** on the top cover to one end of a 500mA AGC style fuse. Connect the other end of the 500mA AGC style fuse to the exact same location that the head unit receives its constant power.

GROUND CONNECTION: Connect the black wire labeled **gnd** on the top cover to the exact same location the head unit is connected to ground.

REMOTE TURN-ON CONNECTION: Connect the blue wire with the white stripe labeled **rem** on the top cover to the power antenna or remote turn-on output on the head unit whose signal is connected to the **source 1 input**. This input wire turns on the **PA-2**. It is not an output wire as in previous versions of the **PA-2**.

SOURCE SELECT CONNECTION: If you are using two head units (e.g. cassette and CD) in your system, connect the white wire labeled **src2** to the power antenna or remote turn-on output of the head unit whose signal is connected to the **source 2/fader input**. When the head unit connected to the source 2/fader input is turned on the source 2/fader input on the **PA-2** will automatically be selected. When the head unit connected to the source 2/fader is turned off, the source 1 input on the **PA-2** will automatically be selected. Alternatively, the **src2** wire can be connected to an external switch. When this switch supplies **+12Vdc** to the **src2** wire, the source 2/fader input on the **PA-2** will be selected. When this switch supplies **0Vdc** to the **src2** wire, the source 1 input will be selected.

INPUTS/OUTPUTS: The RCA (phono) jacks will accommodate signal levels from 100mV RMS to 10V rms. To minimize system noise, avoid routing signal cables near power wires, power connections, speaker wires, engine alternator, or fire wall of the vehicle.

INPUT GAIN ADJUSTMENT:

1. Rotate the left and right input gains located in the top cover of the **PA-2** fully counterclockwise.
2. Set all EQ controls on the source and on the **PA-2** to the neutral position (i.e.- no boost or cut).
3. Choose a tape or CD with a high signal level and increase the volume control on the source to the maximum level where you still have clean output. The **volume** control on the **PA-2** should be in the position that gives you a comfortable listening level while doing this step. After completing this step, never touch the volume, fader, or EQ controls on the head unit again. Use only the **volume**, **fader**, and **EQ** controls on the **PA-2**.
4. Rotate the **volume** control on the **PA-2** fully counterclockwise. While playing the same music from step 3, rotate the **L input gain** control slowly clockwise until the clip indicator just begins to flash. Now, rotate the **L input gain** control counterclockwise until the clip indicator just stops flashing. Repeat this process for the **R input gain** control. The **PA-2** is now providing a 5Vrms output level to send to the next component in your audiopath.
5. Adjusting the **EQ controls** on your **PA-2** can affect the maximum output signal level of the preamplifier. After setting the EQ controls where you want them, check the clip indicator to be sure it is flashing occasionally on musical peaks. When checking the clip indicator, the position of the **volume** and **fader** controls does not matter. If the clip indicator never flashes, flashes constantly, or stays on all of the time, leave the EQ controls where you have set them and repeat steps 1 and 4. The clip indicator should flash occasionally on musical peaks to obtain the optimum performance with **LINEAR POWER™** Amplifiers.

GENERAL TROUBLESHOOTING

NO SOUND: Check all signal connections. Check that the power indicator is on. Check for the +12Vdc on the **bat** and **rem** wires. Check the **gnd** wire connection. Bypass the **PA-2** and check for signal output.

BLOWS FUSES: Check all connections to be sure all power wires do not touch ground or each other. Re-check polarity of main power wires.

NOISE PROBLEMS: Be sure the metal sleeve on the RCA (phono) jack does not touch the metal chassis of the vehicle, the chassis of the **PA-2**, or the chassis of any other component in your installation. Route signal cables away from power wires, power connectors, speaker wires, engine alternator and vehicle firewall. Make sure all amplifier(s) or head unit(s) are properly and securely grounded.

SERVICE OR REPAIR

To obtain modification, service or repair, please contact our **ONLY Authorized LINEAR POWER™ Product Service Center:**

T.I.P.S. INC.

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(601) 932-8477

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Specifications

PA-2© AUDIOPATH ENHANCER

THD + Noise	.002%
Frequency Response	3Hz - 75kHz
Signal-to-Noise (min / max gain)	102dB / 100dB
Channel Separation	>80dB
Input Gain	0 - 30dB
Input/Output Impedance	47K Ohms/ 75 Ohms
Recommended Fuse (+12Vdc, red wire)	500mA AGC
Faceplate Dimensions	1.00"x7.00"x0.06"
Dimensions	0.95"x6.65"x5.00"

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