



PB2X8

“PRESS BOX”

DISTRIBUTION AMPLIFIER

OPERATING AND MAINTENANCE MANUAL



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DESCRIPTION

The PB2X8 is an analog audio distribution amplifier with special features making it ideal for a Press Distribution system. It provides two high quality XLR inputs that can be individually switched or mixed into any of eight isolated line level outputs. Each input may be individually switched for microphone or line level operation with phantom power and low cut filters available for the microphone inputs.

A calibrated test tone oscillator can be switched in place of either input for system test and level checks.

A bargraph LED display provides audio level metering for either input, or any of the eight outputs. The meter may be switched for 0VU indication at nominal XLR line outputs of +4, +8 or +18dBm with the top position an effective headroom indicator. A front panel headphone output follows the meter selection for audible monitoring.

Each of the eight XLR outputs is a separate, independent and isolated amplifier channel which may be switched to the A input, the B input or to the A+B sum to mix both inputs. Each output channel has its own level control and a transformer isolated XLR output, which will drive balanced or unbalanced 600 ohm and higher loads at full line level. In addition, alternate output positions provide either a 1/4-inch or a 3.5mm TRS jack with an attenuated output at -10dBu IHF level. Internal jumper plugs can convert any of the -10 outputs to a nominal microphone level at -50dBu. Either balanced TRS (Tip/Ring/Sleeve) plugs or unbalanced TS (Tip/Sleeve) plugs may be interchangeably plugged into the PB2X8.

A pair of 1/4-inch TRS jacks parallels the main XLR inputs to allow convenient loop-thru connection into another PB2X8 for further system expansion. A ground lift switch isolates the shields of the loop-thru TRS jacks to prevent ground loop induced hum.

PURPOSE

Use your PB2X8 to clear out the usual forest of podium microphones by distributing just an unobtrusive single or back-up pair of microphones.

Safely Isolate and distribute audio to all types of professional, semi-professional and consumer grade recorders with no interaction or hum loops. Easily match multiple level requirements and connector types. Cleanly mix or switch both inputs into any or all eight outputs. Efficiently distribute stereo, left, right and summed mono audio from a single stereo microphone, IHF or 600 ohm line level source.

CIRCUIT OPERATION

Input signals applied to the rear panel XLR or TRS jacks are RF filtered by a ferrite balun and capacitor network and limited by zener clippers. Low noise balanced input instrumentation amplifier ICs A1 and A2 are individually switched to boost microphone inputs by 40dB (MIC position) or provide unity input gain for line level inputs (LINE position). A second MIC low-cut position on the two input switches inserts a two pole active 150Hz low cut filter, A3 and A4, into the microphone signal path to block wind noise and reduce room reverberation.

Input levels A and B are adjusted by pots R13 and R14, boosted 19dB by A3A and A4A, high pass filtered, fed to the A and B distribution busses by A3B and A4B and metered by positions A and B on the meter selector. Nominal A and B input levels should be maintained around 0VU on the +4 meter scale.

A 750Hz sine wave test tone oscillator, A5A and A5B, can be switched (via S5) into either A or B input path just after the input level controls. The test tone provides a nominal 0VU +4 A or B internal buss level to the system. Turn down the input pots when feeding test tone thru the system, set your XLR line output levels using the internal meter (1 to 8), 0VU LEVEL (+4 or +8) meter switch and the individual screwdriver output level adjustments, then turn off the test tone and turn up your input to match your nominal A or B input buss level to the test tone 0VU.

Each of the eight output channels may be driven from either the A input, the B input or the A+B sum of both inputs. The summing switches are S6 thru S13 driving eight unity gain summing amplifiers (A6A-D and A7A-D) and the output level pots R45, R51, R57, R63, R69, R75, R81 and R87).

Eight 21dB gain output stages (A8 through A15) drive the eight output isolation transformers (T1 through T8). RC networks across each output transformer maintain smooth peak-free high frequency response even if the line output is not loaded. The transformers drive the XLR 600 ohm line outputs directly and also feed their associated 1/4" or 3.5mm TRS output jacks thru resistive balanced attenuator networks. Jumper plugs P1 through P8, located just inside the rear panel and accessible by removing the top cover, convert any TRS output from a -10dBu IHF level to -50dBu microphone level. Tip/Sleeve plugs for unbalanced loads may be inserted into the TRS jacks with no ill effects on balanced or unbalanced line level outputs. Shield pin 1 of the XLR output connectors is ungrounded to avoid hum loops. If necessary, ground jumpers may be inserted into the PC board directly behind the #1 pin of the output XLR connectors.

The meter circuit, A16, drives the ten-segment bargraph display with a very close approximation of VU ballistics. The 0VU LEVEL switch, S14, sets the meter 0VU point to +4, +8 or +18dBm equivalent output. The meter CAL trimpot is R176.

Headphone amplifier A17 drives both sides of a stereo headset with an in-phase signal from the mono input or output channel selected by the rotary meter select switch. Internal trimpot R186 sets the headphone level. If necessary, readjust R186 for a comfortable listening level at 0VU. Use stereo headphones only; mono phones short one output.

A5C and A5D form a 40kHz oscillator and voltage doubler to generate the +48VDC microphone phantom power. Phantom power is applied to both HI and LO input lines thru matched 6810-ohm resistors only when the input channel is set for microphone operation and only if the rear panel phantom power switch (S2) is ON. Regulated + and – 15VDC power is provided by IC regulators A18 and A19. A separate +10VDC unregulated supply powers the LED bargraph meter display. PC board jumpers W1 and W2 set the nominal AC input voltage to 117Vrms. Removing W1 and W2 and inserting W3 sets the input for 234VAC. A 1/2A fuse is required for 117V operation and a 1/4A fuse for 234V.

INSTALLATION

Open the Press Box by removing the top cover (4 #6 side screws and 2 #4 top screws) and adjust output jumper plugs before mounting the unit under other equipment in your system. The 1/4" and 3.5mm TRS output jacks are shipped set for -10 dBu (.25V) output level. If you would like to dedicate some or all of them to -50dBu (2.5mV) microphone levels, move the selected jumper plugs (PI-M). Be sure to mark the rear label!

Plug a stereo headphone into the front panel jack and run the test tone oscillator to check headphone loudness. Adjust PHONES trimpot R186 if necessary.

The PB2X8 Press Box may be desk mounted on its suction cup mounting feet or EIA rack mounted in 1.75 inches using optional heavy-duty rack mounting brackets P/N 21181-501. Remove the four #6 screws from each side to attach the optional rack mount brackets.

If you are looping inputs through to another PB2X8, place the rear panel loop shields switch in the LIFT position on the sending unit only. This will prevent ground loop hum via the AC line green wire ground. If you use a TRS loop in jack as your main (or loop) input, be sure the shield switch is in the GND position. The XLR input jack's pin 1 (shield) is permanently grounded.

The wiring convention used on the PB2X8 XLR connectors is pin 2 HI, pin 3 LO, pin 1 shield. TRS connectors, Tip HI, Ring LO, Sleeve is shield.

SPECIFICATIONS

Output Levels	XLR: +4dBm nominal, +22dBm max. TRS: -10dBu (.25V), balanced or unbalanced, -50dBu via internal jumper plug
Input Levels	Microphone: -50dBm nominal from 50 to 600 ohm microphone Line: -10 to +4dBm nominal
Distortion	0.1% maximum THD, 20 Hz to 20 KHz +20dBm level
Response	+0, -.25dB, 30Hz to 20kHz
Noise 20kHz Bandwidth	Mic Inputs: -124dBm EIN Line Inputs: -94dBm EIN
Mic Filters	Two-pole active low cut, 150Hz
Phantom Mic Power	+48VDC, rear panel switch
Headphone Output	.2W into 600 ohm stereo TRS phones
Test Oscillator	750Hz at internal buss levels equivalent to nominal levels
Connectors	XLR type, 1/4inch TRS, 3.5mm TRS
Size	17" (43.2cm) W x 1.75" (4.5cm) H x 10.5" (26.7cm) D
Shipping Weight	11lbs. (5kg)
Mounting	Suction feet for non-slip desk mounting, optional Rack Mounting Kit 21181-501
Power	117/234VAC (via internal wiring change), ±10%, 47-63 Hz, 10VA

One Year Limited Warranty

ATI warrants this product to be free from defects in materials and workmanship to its original owner for a period of one year from date of purchase. ATI will repair or replace such product or part thereof, which upon inspection by ATI, is found to be defective in materials or workmanship.

The Proper Return Authorization Number must be obtained from ATI in advance of return. Contact ATI at 856-626-3480 or email sales@atiaudio.com to receive the number and instructions for return of your unit.

A written statement providing the name, address, daytime telephone number and email address of the original owner, together with receipt from the original purchase, and a brief description of any claimed defects, must accompany all returns. Parts or product for which replacement is made shall become the property of ATI.

The customer shall be responsible for costs of transportation and insurance to the factory of ATI, and shall be required to prepay such costs.

ATI shall use reasonable efforts to repair or replace any product covered by this limited warranty within thirty days of receipt. In the event repair or replacement shall require more than thirty days, ATI shall notify the customer accordingly. ATI reserves the right to replace any product that has been discontinued from its product line with a new product of comparable value and function.

This warranty shall be void in the event a covered product has been damaged, or failure is caused by or attributable to acts of God, abuse, accident, misuse, improper or abnormal usage, failure to follow instructions, improper installation or maintenance, alteration, or lightning, power fluctuations and other incidental or environmental conditions. Further, product malfunction or deterioration due to normal wear is not covered by this warranty.

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