



# **HDA600**

## **STEREO HEADPHONE AMPLIFIERS**

### **OPERATING AND MAINTENANCE MANUAL**



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## DESCRIPTION

The HDA600 is a rugged, AC powered headphone amplifier that will provide excellent performance driving a wide range of typical stereo headphones. It will drive the usual 32 to 600 ohm high efficiency stereo headphones to teeth rattling levels near 120dB SPL with a combination of high output voltage swing (16Vp-p) for high impedance phones and a protected high current capability (.2Ap-p) for low impedance phones. It will do the above at distortion levels below .10% and response flat to .25db both measured over the full frequency range of 20Hz to 20kHz.

The HDA600 provides a stereo program input plus a mono cue input driving six stereo headphone output drivers. The HDA600 will bridge both balanced and unbalanced program input lines with individual left and right XLR and ¼-inch TRS input connectors. The spare connector set may be used to loop-through the input signal to additional HDAs. Inputs are electronically balanced but will operate properly when an unbalanced ¼-inch plug is inserted. An internal input stage gain selector plug (P2) optimizes the input stage gain for either -10dBu or +4dBu nominal inputs or the program INPUT CLIP indicator shows input overdrive. A MASTER LEVEL control and MONO/STEREO switch adjusts the program signal fed to all output channels via an internal stereo distribution buss. The MONO/STEREO switch allows a quick check of the mono compatibility of a stereo mix and allows two separate mono signals, applied to the stereo inputs, to be easily summed for monitoring.

A balanced CUE input at either microphone or line level is input through paralleled XLR and TRS connectors. Mic or Line level is selected with a rear panel MIC/LINE SWITCH (S2). Line level at -10 or 0dBu is selected with internal jumper plug P4. Phantom power suitable for most condenser type microphones (+12VDC) can be selected with internal jumper plug P3 and is switched on only in the MIC mode with the MIC/LINE switch. The CUE signal may be selected into either right, left or both distribution busses with front panel pushbuttons. A CUE LEVEL control and CUE CLIP overdrive indicator are included. The CUE input is ideal to add an IFB or mix-minus feed into the mix in an on-air studio application or a click track into one channel in a recording studio or instructor comments in a classroom setting or language laboratory. Six individual output channels bridge the internal stereo distribution buss and drive paralleled front and rear panel ¼-inch TRS output jacks. The high compliance output circuitry comfortably drives all stereo headphones from 32 to 600 ohms. Although designed to drive either front or rear outputs, two sets of headphones can be plugged in to a single channel with reduced drive to each. To avoid major level differences, identical headphones should be used in this case. The rear jacks can also feed remote headphone distribution boxes. Individual output channels can be setup for monaural operation by inserting a jumper plug into the PX02 position. Do not use mono headphones with a Tip-Sleeve plug with the HDA600.

DIRECT inputs into each output channel are available on the rear panel. A TRS plug wired as UNBALANCED STEREO (L-R-GND = TRS) inserted into a direct input will interrupt the main mix and feed its own stereo signal through that channel's amplifier and output jacks. Individual direct inputs can also be configured as BALANCED MONO inputs (HI-LO-SHLD = TRS) by moving internal jumper plugs PX01 to the BAL MONO position and adding a jumper plug at PX02 to combine left and right output channels. PX02 can also mono sum a single output if desired. (X in a part number indicates channel 1 thru 6).

A SIGNAL PRESENT indicator for each output channel illuminates at about 30dB below nominal input levels. The HDA600 includes an internal bi-polar power supply that will operate at 115 or 230VAC by changing internal jumpers. The power cord is a standard IEC320 type that you can easily swipe from someone else if you lose it.

## CONNECTIONS

Balanced inputs are connected with their HI to XLR pin 2 or TRS-TIP and LO to XLR pin 3 or TRS-RING. Shields go to XLR pin 1 or TRS-SHLD. Unbalanced input lines should be connected with their center hot wire to XLR pin 2 or TRS-TIP and with the cable shield to XLR pin 1 or TRS-SHLD. Be careful to observe HI-LO input polarity to avoid monaural or center stage cancellation effects.

The HDA600 is shipped setup for -10dBu nominal Program input level (+12dBu peak). An internal jumper plug P2 may be moved to accommodate levels at +4dBu nominal (+22dBu peak). To change P2, remove the top cover by removing the four upper Phillips head screws (two on each side). P2 is located on the right side of the PC board directly behind the volume control and has two positions. For -10dBu inputs move the plug to the left; for +4dBu inputs move the plug to the right. Ensure that no internal wiring is caught or pinched, and replace the cover and screws.

Use only TRS output plugs and stereo headphones. The use of TS plugs on mono headphones shorts one headphone output to ground. Although this will not damage the HDA400, it will load down the power supply and reduce maximum output levels to the other output channels. Output TRS plugs should all be wired Left to TIP, Right to RING and common to SHIELD.

## CAUTION

The HDA600 provides a comfortable listening level of 1mW at around 12 o'clock on the volume control for most headsets. The HDA600 is capable of driving many headsets to DANGEROUS LEVELS over 120dB SPL. If you can hear distortion, it is TOO LOUD! Levels near 120dB SPL can easily cause PERMANENT HEARING DAMAGE.

## PERFORMANCE SPECIFICATIONS

|                       |   |
|-----------------------|---|
| <b>OUTPUTS:</b>       | Six high compliance 6V/80mA stereo drivers capable of over 100mW into six 32 to 600 ohm stereo headphones   |
| <b>DYNAMIC RANGE:</b> | 110dB Typical at output into 600-ohm headphones   |
| <b>DISTORTION:</b>    | .10% THD max, .01% type, 20-20,000 Hz, any level below clipping   |
| <b>RESPONSE:</b>      | +0/-.5dB, 20-20,000 Hz  |
| <b>GAIN:</b>          | Program Inputs 26dB<br>Cue Input 65db Mic, 35 or 25dB line,<br>Direct Input 10dB.   |
| <b>NOISE:</b>         | Program Input -90dBu E.I.N., 20-20,000 Hz<br>Cue Mic Input -110dBu E.I.N.<br>Direct Inputs -90dBu E.I.N.  |
| <b>SEPARATION:</b>    | 70dB minimum at 1kHz  |
| <b>INPUTS:</b>        | Program: Stereo, 20K balanced, bridging, -10 or +4dBu nominal<br>Cue: Mono, 2Kohm balanced, diode protected, -50, and -10, 0dBu nominal<br>Direct: Stereo 10K unbalanced or Mono 20K balanced, 0dBu nominal                     |
| <b>PHANTOM POWER:</b> | +12VDC available for Cue Microphone, selected with P3 and S2 in MIC position, Rsource = 600 ohms  |
| <b>INDICATORS:</b>    | INPUT CLIP—onset of input stage clipping, Yellow LED<br>CUE CLIP—onset of cue input clipping, Yellow LED<br>SIGNAL PRESENT—lights 20dB below nominal input level, Six Green LEDs<br>POWER—monitors internal DC voltage, Red LED |
| <b>POWER:</b>         | 115/230VAC (selectable via wiring change) ±10%, 50/60Hz, 24VA, and IEC320 3 pin connector   |
| <b>SIZE:</b>          | 1RU package; 19" (48.3cm) W x 1 ¾"(4.5cm) H x 7.5" (19.05cm) D  |
| <b>WEIGHT:</b>        | 6 lbs. (2.7kg) Shipping Weight  |

## 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](mailto: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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If warranty problems arise, or if you need assistance in using your product contact us.