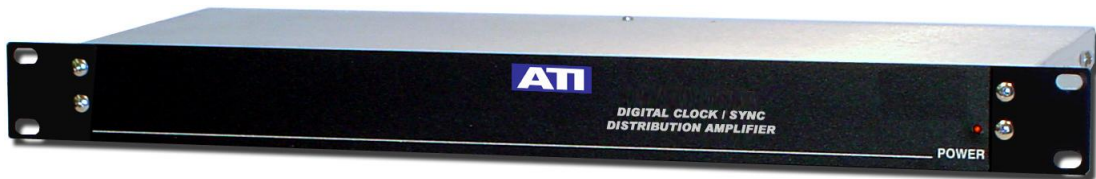




DXA SERIES

AES/EBU DIGITAL AUDIO DISTRIBUTION AMPLIFIERS

OPERATING AND MAINTENANCE MANUAL



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PURPOSE

The DXA Series of Digital Audio Distribution Amplifiers is designed to regenerate, isolate and distribute digital audio data formatted in accordance with specifications AES3-1992 and IEC 958. This is commonly called AES/EBU formatting.

DXAxxx-XLR models use XLR connectors and operate from and drive a 110-ohm balanced shielded twisted pair distribution system per AES3-1992.

DXAxxx-BNC models use BNC connectors and operate from and drive single-ended 75-ohm coaxial cable per AES-3id-1995 and are designed to integrate easily into video facilities.

SP/DIF (consumer) formatted digital audio data differs primarily in the use of consumer type "RCA" audio connectors in an unbalanced 75 ohm system and can be handled by a DXAxxx-BNC with use of an RCA to BNC input cable.

FEATURES

- Accepts sample rates from 27 to 96kHz
- Loop-thru transformer balanced and isolated inputs
- Switchable input termination resistors
- Individual, transformer balanced and isolated 110 ohm XLR outputs
- Individual isolated 75-ohm BNC outputs
- Single or dual inputs
- Up to 12 XLR or 24 BNC outputs
- Quiet, internal linear power supplies
- Attractive, one rack unit package

DESCRIPTION

INPUTS

Incoming AES/EBU formatted digital audio data is applied to input transformer T8 (and T9 for second input channel of dual unit). Both XLR and BNC inputs are balanced and DC isolated from ground. Input blocking capacitors C22 (C24) prevent accidental DC inputs from saturating (and perhaps damaging) the input transformers. Input termination resistors R25 (R26) at 75 ohms for BNC (and SP/DIF) inputs or 110 ohms for XLR inputs can be switched in or out of the circuit with rear panel DIP switches S1a (S1b). Inputs should always be terminated unless they are looped-thru to another device or DXA input. The last device or input should always terminate the line.

RECEIVERS

The equalized AES/EBU data stream is applied to the receiver circuit U8 (U17), a Crystal Semiconductor CS8414 96kHz Digital Audio Receiver IC. The CS8414 receives the data, recovers the clock and synchronization signals and separates the audio and digital data. The audio data may be 16 to 24 bits at sample rates from 27 to 96 kHz.

OUTPUT DRIVERS

DXAxxx-XLR use balanced, 110-ohm, transformer-coupled outputs and XLR type connectors. DXAxxx-BNC units use the alternative 75-ohm unbalanced outputs to BNC coax connectors. The XLR outputs are in full compliance with specification AES3-1992 and the BNC outputs are in accordance with the recommendations of AES-3id-1995. RS-422 differential line drivers U1 and U2 (U5 and U6) provide a balanced drive for XLR outputs of 8Vp-p, open circuit through 110-ohm source resistance to yield 4Vp-p when loaded by a 110-ohm load. XLR outputs are transformer-coupled for ground isolation. Each side of the differential line driver output is used to separately drive a 75-ohm capacitor-coupled BNC output. Each BNC output provides 4Vp-p open circuit thru 75 ohms for a loaded output of 2Vp-p. Although the two sides of a differential line driver are out of phase with each other there is no phase difference in the recovered audio since the AES/EBU digital data is defined only by the presence or absence of transitions. It makes no difference whether those transitions are hi-to-low or low-to-hi.

REFERENCE OSCILLATORS AND POWER SUPPLIES

U7 and U13 provide regulated and quiet +/-5VDC for all circuits. Power transformer primary windings are paralleled for 115VAC or wired in series for 230VAC. Jumper group E1 allows field modification if necessary.

INSTALLATION:

LOCATION

To avoid addition of jitter (timing variations) to the digital bitstream, which could cause noise and distortion in the recovered audio, avoid locating the DXA in close proximity to a high energy, high frequency switching type power supply or a power amplifier that utilizes a switching supply. If possible, do not power both devices from the same AC power line.

Expensive components start to die at internal temperatures above 70°C (158°F). We recommend that you maintain rack temperatures below 50°C (122°F) to prevent excessive internal temperature buildup. This is another good reason not to mount the DXA directly above that 500W power amplifier. Don't force the DXA to support the weight of 28 coax or 16 XLR cables (especially when you drop that 500W power amplifier on the cable bundle); support the cables.

POWER

If it is necessary to convert a unit wired for 115VAC to 230VAC operation, unplug the unit from the power source, remove the four cover mounting screws and locate the E1 jumpers next to the power transformer. Clip the jumpers 1-2 and 3-4 (don't unsolder), jumper from 2-3 carefully soldering together the free ends of 2-3 previously clipped. This procedure is recommended to avoid soldering damage to the multi-layer PC board.

WIRING

XLR-equipped units require special controlled impedance, 110 ohm, low loss, foil shielded, twisted pair cables. Standard audio cable is not recommended except for runs of only a few feet. Belden and most other cable manufacturers offer special digital audio cabling for this application. BNC types use 75-ohm coax (RG59). Select a cable with losses less than 20dB at 12MHz (for data rates up to 96kHz) at the maximum distance you require.

SPECIFICATIONS:

INPUTS

Connectors:	XLR female or BNC, DC isolated from chassis Input connector pairs paralleled for loop-thru
Level:	200mVp-p minimum
Impedance:	Transformer isolated, capacitor coupled, balanced and floating, XLR inputs 110 ohms; BNC inputs 75 ohms Terminating resistors may be switched in or out on rear panel
Sample Rates:	Accepts 27kHz to >100kHz

OUTPUTS

Connectors:	XLR male, 6 or 12; BNC chassis mount, 12 or 24
Levels:	XLR, 4Vp-p loaded at 110 ohms; BNC, 2Vp-p loaded at 75 ohms
Impedances:	XLR, 110 ohms, balanced, transformer isolated and capacitor coupled; BNC, 75 ohms, unbalanced, capacitor coupled
Output Jitter:	<3 nanoseconds peak-to-peak at 96kHz sample rate
Output Delay:	Three frames (sample intervals) at the sample rate

INDICATORS

Power:	Lit RED for ON
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POWER	Internal supply, 115/230VAC (selectable via internal wiring change) $\pm 10\%$, 50/60Hz, 10VA, IEC320 3 pin connector
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SIZE	1 RU, 19" (48.3cm) W X 1- $\frac{3}{4}$ " (4.5cm) H X 7" (18cm) D
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WEIGHT	5lbs (2.3kg) Shipping Weight
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MODELS AVAILABLE

- DXA112-BNC 1 input to 12 outputs, BNC connectors
- DXA112-XLR 1 input to 12 outputs, XLR connectors
- DXA124-BNC 1 input to 24 outputs, BNC connectors
- DXA212-XLR Dual 1 input to 6 outputs, XLR connectors
- DXA224-BNC Dual 1 input to 12 outputs, BNC connectors

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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If warranty problems arise, or if you need assistance in using your product contact us.