DDA-208
SERIES 2

HIGH RESOLUTION DUAL 1x4 DIGITAL AUDIO DISTRIBUTION AMPLIFIERS

OPERATING AND MAINTENANCE MANUAL

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DESCRIPTION

DDA208 Series 2 1x4 Dual Digital Audio Distribution Amplifiers are 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 or AES3.

DDA208 Series 2 units inputs feed AES audio to eight separate outputs. Internal jumpers select either re-clocking or non-reclocking of the input signal. In most cases, re- clocking is preferred, as this feature improves the integrity of weak or distorted input signals. Re-clocking may be switched off to allow distribution of AES sync signals, Dolby E encoded AES signals, or other signals that should not be re- clocked.

DDA208 Series 2 units work with AES signals that contain sample rates from 27 through 192kHz and16-bit through 24-bit density, thus permitting very high resolution signals to be distributed.

The Model DDA208-XLR uses XLR connectors and operates from and drives a 110-ohm balanced shielded twisted pair distribution system per AES3-1992.

The Model DDA208-BNC uses BNC connectors and operates from and drives single-ended 75-ohm coaxial cable per AES-3id-1995 and is designed to integrate easily into video facilities.

S/PDIF (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 DDA208-BNC with use of an RCA-to-BNC input cable.

Input Loop-through connection is provided to permit multiple units to be stacked, or to insert the DDA208 into your digital workflow. Switchable line termination is provided via Internal jumpers. Standard practice dictates that the last AES input be terminated; therefore, if you are not using the loop-through feature, Input Termination should be switched ON.

FEATURES

- Accepts sample rates from 27 to 192kHz
- Switchable re-clocking regenerates stable data before distribution
- Loop thru transformer balanced and isolated inputs
- Switchable input termination
- Individual, transformer balanced and isolated 110-ohm XLR outputs (XLR only)
- Individual isolated 75-ohm BNC outputs (BNC only)
- Eight outputs
- Quiet, internal power supply
- AC Input 100-250 VAC 50/60 Hz, 25W Maximum
- Attractive and rugged 1RU package

DESCRIPTION

INPUTS

Incoming AES/EBU formatted digital audio data is selected by the internal jumpers and applied to the input transformer. Both XLR and BNC inputs are balanced and DC isolated from ground. Input termination resistors at 75 ohms for BNC inputs or 110 ohms for XLR inputs can be switched in or out of the circuit with the internal jumpers. Inputs should always be terminated unless they are looped thru to another device or DDA input. The last device or input should always terminate the line.

RECEIVERS

When input re-clocking is enabled, the equalized AES/EBU data stream is applied to the receiver circuit, which 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 192 kHz.

Frame sync (FSYNC), Serial Clock (SCK), Serial audio data (SDATA), Channel status (C), User channel data (U), and data validity information (VERF) are passed directly to the transmitter section for reformatting into the output data stream. VERF is an OR'ing of the validity information from the incoming data (V) with an internal error flag (ERF) that detects serious transmission errors such as parity errors, bi-phase coding violations and an out-of-lock PLL receiver. VERF then becomes the transmitted validity bit (V) and can be used by downstream error correction devices to interpolate through errors.

TRANSMITTERS

The Frame sync (FSYNC), Serial Clock (SCK), Serial audio data (SDATA), Channel status (C), User channel data (U), and data Validity information (VERF) are passed directly to the transmitters for reformatting into the AES/EBU output data stream. The transmitters are capable of operation from 27 to 192 kHz equivalent sample rates. The transmitters operate in a transparent mode, which allows the transmitter block structure (Channel Status, User and Validity bits) to be slaved to the block structure of the receiver. In the transparent mode the propagation delay of data are less than 25 nanoseconds even at the lowest sample rate.

OUTPUT DRIVERS

DDA208-XLR units are equipped with balanced, 110-ohm, transformer coupled outputs and XLR type connectors. DDA208-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. XLR outputs are transformer coupled for ground isolation.

POWER SUPPLY

Power transformer primary windings are paralleled for 115VAC or wired in series for 230VAC. Internal jumpers allow field modification if necessary. See below for voltage conversion instructions.

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 DDA 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 DDA directly above that 500W power amplifier.

POWER

If it is necessary to convert a unit wired for 115VAC to 230VAC operation, unplug the unit from the power source, remove the cover mounting screws and locate the 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 types 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. With equalization, cable runs of 300 meters (about 1000 feet) should be achievable. BNC types use 75-ohm coax (RG59). Select a cable for losses less than 20dB at 12MHz (for data rates up to 96kHz) at the maximum distance you require. Runs up to 1000 meters should be readily achievable with low loss coax.

SPECIFICATIONS

INPUTS

Connectors:	2 XLR female or BNC, DC isolated from chassis. Input connector pairs paralleled for loop-thru.
Level:	200mVp-p minimum
Impedance:	Transformer isolated, balanced and floating, XLR inputs 110 ohms, and BNC inputs 75 ohms
Termination:	Terminating resistors may be switched in or out from Internal jumpers
Sample Rates:	Accepts 27kHz to >192kHz
Clock:	With re-clocking on, regenerated from input signal; clock jitter <300 picoseconds peak-to-peak at 96kHz sample rate
	With re-clocking off, input clock is passed directly to outputs

OUTPUTS

Connectors:	8 x XLR male or 8 x BNC chassis mount
Levels:	XLR, 4Vp-p loaded at 110 ohms BNC, 2Vp-p loaded at 75 ohms
Impedances:	XLR: 110 ohms, balanced, transformer isolated BNC: 75 ohms, unbalanced
Output Jitter:	<300 picoseconds peak to peak at 96kHz sample rate
Propagation Delay:	<25 nanoseconds
POWER	Internal supply, 115/230VAC+/-10%, 50/60Hz, 10VA, IEC320 3 pin connector
SIZE	1 RU, 19”(48.3cm) W X 1.75”(4.5cm) H X 8.5”(21.6cm) D
WEIGHT	7 lbs. (3.2kg) net; 9 lbs. (4.1kg) shipping weight
MODELS:	DDA208-XLR DDA208-BNC

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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ATI reserves the right to modify or discontinue, without prior notice to you, any model or style product.

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