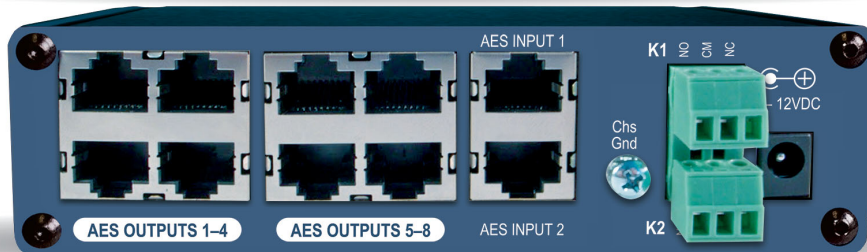
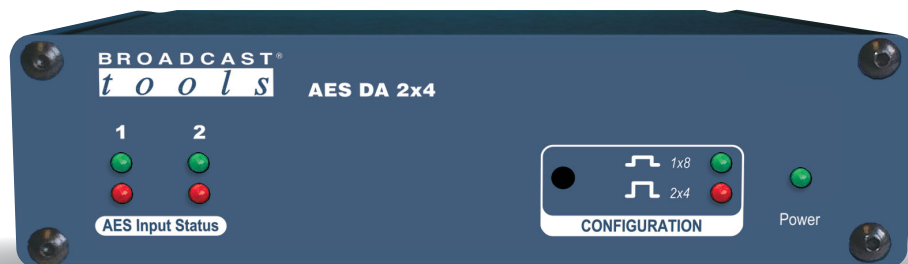


BROADCAST[®] tools INC

PROBLEM SOLVED

Installation and Operation Manual



AES DA 2x4

Eight-output, two-input AES/EBU Digital Audio Distribution Amplifier with StudioHub+ RJ45 Connectors

Manual update: 4/12/2015

If you need a firmware upgrade, contact Broadcast Tools[®]

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CHANGE WITHOUT NOTICE

NOTE: We recommend the use of Chrome, Firefox or Safari as your browser.

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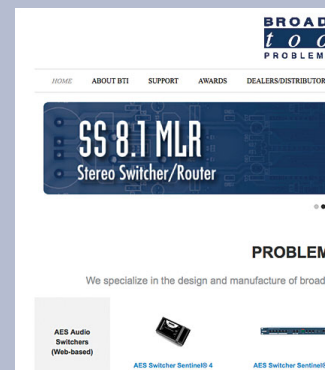
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INTRODUCTION

Thank you for your purchase of a BROADCAST TOOLS® AES DA 2X4 is a professional quality AES/EBU digital audio distribution amplifier. We're confident that this product will give you many years of dependable service. This manual is intended to give you all the information needed to install and operate the BROADCAST TOOLS® AES DA 2X4.

SAFETY INFORMATION

Only qualified technical personnel should install the AES DA 2X4. Any attempt to install this device by a person who is not technically qualified could result in a hazardous condition to the installer or other personnel or damage to the AES DA 2X4 or other equipment. Please ensure that proper safety precautions have been taken before installing this device. If you are unfamiliar with this type of equipment, please contact a properly qualified engineer to handle the installation and setup of the AES DA 2X4. Broadcast Tools, Inc., is unable to support NON-Broadcast Tools software, hardware or NON-Broadcast Tools computer/hardware/software problems. If you experience these problems, please research your hardware/software instruction manuals or contact the manufacturers technical support department.

WHO TO CONTACT FOR HELP

If you have any questions regarding your product or you need assistance, please contact your distributor from whom you purchased this equipment. If you would like more information about BROADCAST TOOLS® products, you may reach us at:

Broadcast Tools, Inc.

131 State Street
Sedro-Woolley, WA 98284-1503 USA
Voice: 360.854.9559
Fax: 866.783.1742

Internet Home Page: www.broadcasttools.com
E-mail: support@broadcasttools.com

**THANK YOU FOR CHOOSING
BROADCAST TOOLS® BRAND PRODUCTS!**

Broadcast Tools is a Veteran Owned Business



Designed, Assembled and Supported in WA State, USA



CAUTION!

Broadcast Tools® Products, as with any electronic device, can fail without warning. Do not use this product in applications where a life threatening condition could result due to failure.

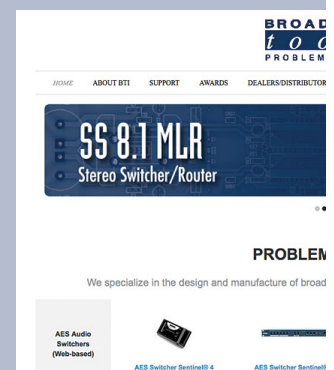


NOTE:

This manual should be read thoroughly before installation and operation.

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INTRODUCTION

Product Overview

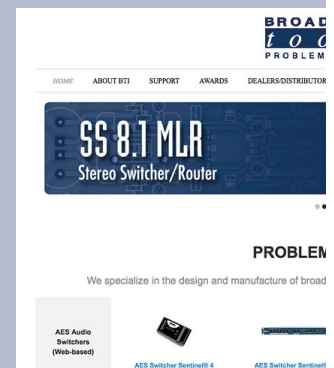
The AES DA 2x4, eight output two-input AES/EBU distribution amplifier is ideal for distributing AES/EBU signals or word clock at sample rates of up to 96kHz. It can be configured for 2x4 operation, acting as two separate one input, four output DAs, or for 1x8 operation acting as a one input eight output DA. The system's two transformer isolated inputs use StudioHub+ compatible RJ45 jacks for balanced AES/EBU signals. The selected input is distributed transformer isolated AES/EBU outputs with StudioHub+ compatible RJ45 jacks. Internal AES/EBU activity detectors provide local and remote signal monitoring for both inputs via front panel LED indicators and SPDT alarm relays. The alarm relay contacts are available on rear panel plug-in euro-block connectors. The AES DA 2x4 is powered by a surge protected internal power supply. A 9 volt DC universal switching power supply with domestic AC connector is included. International AC connectors are optional. The compact 1/3 rack form-factor allows the unit to be set on a desktop, mounted on a wall, or three units may be rack mounted using the RA-1, Rack-Able mounting shelf.

Inspection

Please examine your AES DA 2X4 carefully for any damage that may have been sustained during shipping. If any damage is present, please notify the shipper immediately and retain the packaging for inspection by the shipper. The package should contain the AES DA 2X4, and a 9 VDC wall power supply with domestic connector. Manuals may be downloaded from our web site.

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Installation/Operation

Surge Protection

The AES DA 2X4 has built-in resistance to voltage changes; we recommend that you use a power surge protector or line conditioner on the incoming AC line. Lightning strikes and/or other high voltage surges may damage your AES DA 2X4 and connected equipment if it is not properly protected. For lightning protection devices, check out www.polyphaser.com and www.itwlinx.com.

UPS Standby Power System

We recommend that you connect your AES DA 2X4 to a UPS system. A UPS helps minimize the risk to the AES DA 2X4 and provides power during a power outage.

Power

Connect the 2.1mm barrel type power connector into the unit and the 9 to 12 VDC universal switching power supply with domestic AC connector into a 120 Vac 50-60 Hz power source.

NOTE: Never use any type of power supply other than the specified/supplied power supply.

LED Indicators

- “Power” LED: Illuminates when power is applied. (Green)
- “AES Input Status” LEDs: When an AES/EBU signal is present on the input the Green LED will be lit, if no signal is present the Red LED will be lit.
- “Configuration” LEDs: Green LED = 1x8 configuration, Red LED = 2x4 configuration.

Configuration Switch

When this switch is in the out position the DA will be in the 2x4 configuration, where Input One feeds Outputs 1-4 and Input Two feeds Outputs 5-8. When the switch is in the in position the DA will be in the 1x8 configuration, where Input One feeds all eight outputs.

AES/EBU Digital Audio Inputs

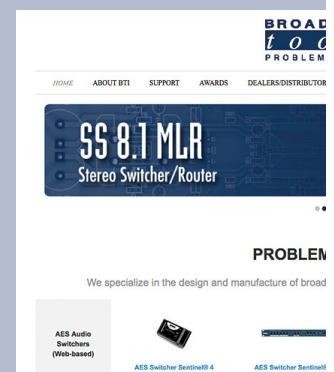
The AES DA 2x4 has two RJ45 StudioHub+ compatible balanced 110-ohm digital audio inputs for AES/EBU signals.

For 1x8 operation connect the signal source to the RJ45 jack labelled “AES Input 1” and make sure that the front panel switch is in the In position; when the unit is powered up the Green 1x8 LED will be lit.

For 2x4 operation connect the signal sources to the RJ45 jacks labelled “AES Input 1” and “AES Input 2.” Make sure that the front panel switch is in the Out position; when the unit is powered up the Red 2x4 LED will be lit. Input 1 will feed Outputs 1-4 and Input 2 will feed Outputs 5-8.

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INSTALLATION

AES/EBU Outputs

The AES DA 2x4 has eight transformer isolated 110-ohm AES/EBU outputs with StudioHub+ RJ45 jacks, labelled “1-4” and “5-8”. Connect the inputs of your AES/EBU compatible devices to the AES output jacks.

RJ45 Pinout

The input and output RJ45 jacks conform to StudioHub+ wiring standards. Please use shielded twisted pair Cat5e or Cat6 cables and connectors (STP).

StudioHub+ Pinout for AES/EBU:

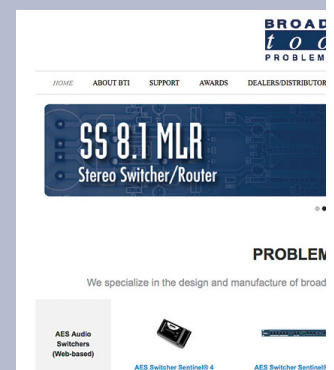
Function:	Wire Pair:	RJ45 Pins:
AES+	White/Orange	1
AES-	Orange/White	2
n/c	White/Green	3
n/c	Green/White	6
n/c	White/Blue	5
n/c	Blue/White	4
n/c	White/Brown	7
n/c	Brown/White	8
GND	Shield	Shield

Ground Configuration

The JP2,3,4,5 headers on the printed circuit board allow the shield/ground of the input and output sections of the DA to be configured. From the factory all shields are common and tied to ground. Please see the fractional schematic in the appendix for other options.

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AES/EBU Activity Detectors/Alarm Relays

When signal is present on an input its green front panel activity LED will light, its red inactivity LED will extinguish, and its alarm relay will be open. When AES signal is lost on an input its front panel Red inactivity LED will light, its Green activity LED will extinguish, and its Alarm Relay will close.

The AES DA 2x4 has two SPDT alarm relays, one labeled “K1” for Input One and one labelled “K2” for Input Two. Connections should be made to the three-position plugin euro-block’s NO (normally open), CM (common) and NC (normally closed) terminals. Limit contact current to 1 amp at 30 VDC.

K1 relay (Input One Alarm)

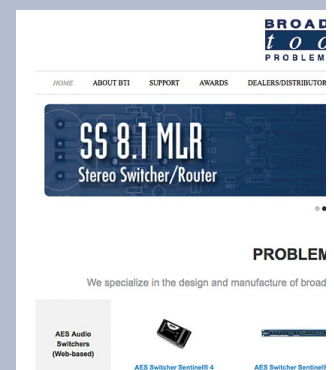
NO (Normally Open)	CM (Common)	NC (Normally Closed)
--------------------------	----------------	----------------------------

K2 relay (Input Two Alarm)

NO (Normally Open)	CM (Common)	NC (Normally Closed)
--------------------------	----------------	----------------------------

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SPECIFICATIONS

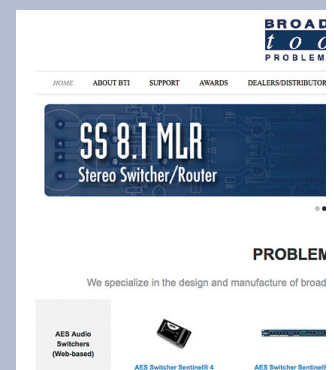
Digital Inputs:	Two transformer isolated AES/EBU inputs (110-ohm) with StudioHub+ compatible RJ45 jacks.
Digital Outputs:	Eight transformer isolated AES/EBU outputs with StudioHub+ compatible RJ45 jacks. 110-ohm impedance. Switch selectable 1x8 or 2x4 configuration.
Sample Rate:	Outputs follow input sample rate.
Alarm Relay Outputs:	SPDT dry contacts for both inputs, 30 VDC @ 1 amp maximum.

CAUTION! For safety, never connect 120 Vac circuits to the above relays!

Power Requirements:	9 to 12 VDC @ 660 mA. CE certified universal switching 9 VDC adapter with domestic AC connector supplied. International connectors optional.
Physical Dimensions:	5.66" x 7.00" x 1.58", aluminum extrusion chassis w/ 4 - 4-40 (or 6/32 screw threads) mounting holes.
Weight:	2.0 lb.
Shipping Weight:	3.0 lb.
Options:	* RA-1 rack shelf, holds three units (1-RU) / Filler panels supplied. * International AC Plug kit for wall power supply.

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LIMITED WARRANTY

The term “Buyer” as used in this document refers to and includes both (but only) (a) any person or entity who acquires such an item for the purpose of resale to others (i.e., a dealer or distributor of an item), and (b) the first person or entity who acquires such an item for such person’s or entity’s own use.

Broadcast Tools warrants to each Buyer of any item manufactured by Broadcast Tools that the item will be free from defects in materials and workmanship at the time it is shipped by Broadcast Tools if the item is properly installed, used and maintained.

EXCLUSIVE REMEDIES

If Broadcast Tools is notified, in writing, of a failure of any item manufactured by Broadcast Tools to conform to the foregoing Limited Warranty within one (1) year following the date of the Buyer’s acquisition of the item, and if the item is returned to Broadcast Tools in accordance with Broadcast Tools’ instructions for confirmation by inspection of the defect (which at Broadcast Tools’ election may include, without limitation, a requirement that the Buyer first obtain a Return Authorization number from Broadcast Tools, that the Buyer furnish proof of purchase in the form of an invoice and/or receipt, and that the Buyer prepay all freight charges associated with any return of the item to Broadcast Tools using such freight service as Broadcast Tools reasonably may specify), Broadcast Tools will repair or replace the defective item, or will refund the purchase price paid by the Buyer for the item. Broadcast Tools shall have the exclusive right to choose between these alternative remedies.

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TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, BROADCAST TOOLS AND ITS SUPPLIERS DISCLAIM ALL OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE; AND THE FOREGOING ALTERNATIVE REMEDIES SHALL BE EXCLUSIVE OF ALL OTHER REMEDIES. THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY HAVE OTHER RIGHTS, WHICH VARY FROM STATE/JURISDICTION TO STATE/JURISDICTION.

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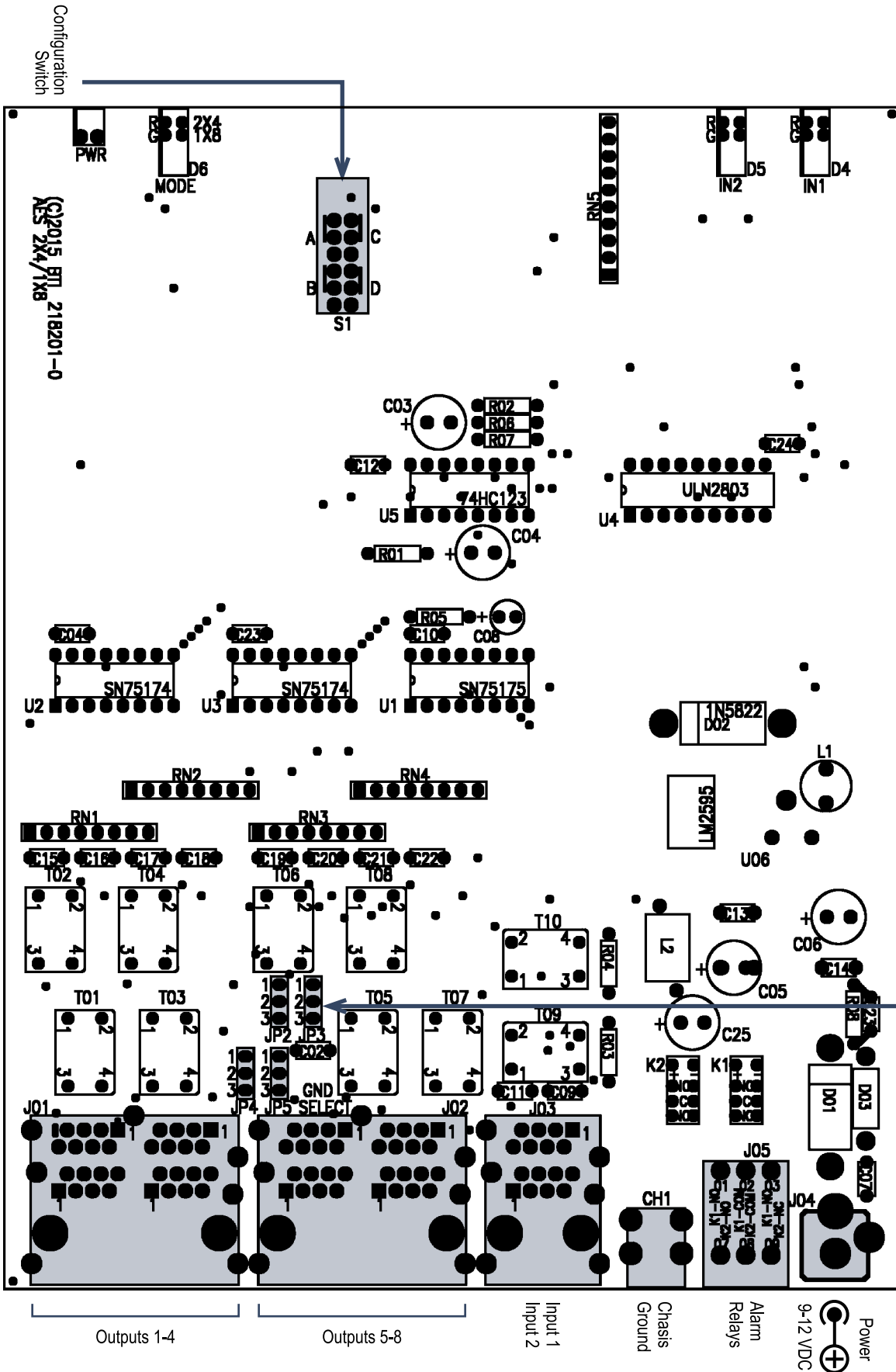
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AES DA 2x4

Component Layout



APPENDIX

FRACTIONAL SCHEMATIC

