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Installation and Operation Manual



2x6 DA Plus/RJ
2x3 or 1x6 Analog RJ45 Audio Distribution Amplifier

Manual update: 1/11/2022

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

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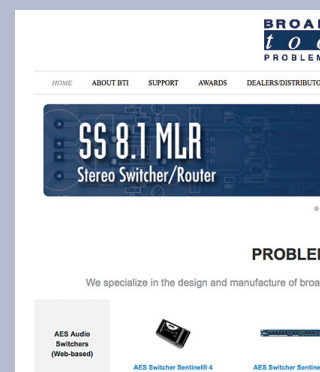
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INTRODUCTION

Thank you for your purchase of the 2x6 DA Plus/RJ Stereo Distribution Amplifier, which we will refer to throughout the manual as the 2x6 DA Plus/RJ. We are confident 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® 2x6 DA Plus/RJ.

SAFETY INFORMATION

Only qualified technical personnel should install the 2x6 DA Plus/RJ. 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 2x6 DA Plus/RJ 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 2x6 DA Plus/RJ. 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.

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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

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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.

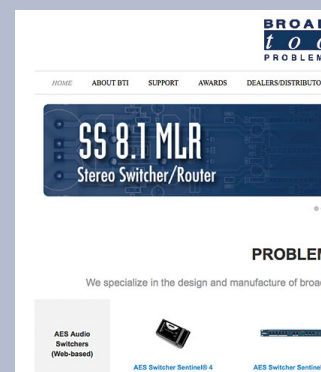


NOTE:

This manual should be read thoroughly before installation and operation.

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INTRODUCTION

Product Overview

The Broadcast Tools 2x6 DA Plus/RJ provides 3 channels of stereo or 6 channels of mono audio distribution in a compact and easy to form factor. The 2x6 DA Plus/RJ accepts professional balanced +4 dBu analog audio input (RJ45) or consumer unbalanced -10 dBV (RCA) inputs eliminating the need for an additional unbalanced to balanced level converter. Each stereo output pair can be individually configured as a mono sum of the stereo input via internal jumper. Each output amplifier has a recessed front panel level adjustment trimmer. Standard pinout RJ45 audio jacks make installation with Cat5 or Cat6 cables plug and play.

Features/Benefits

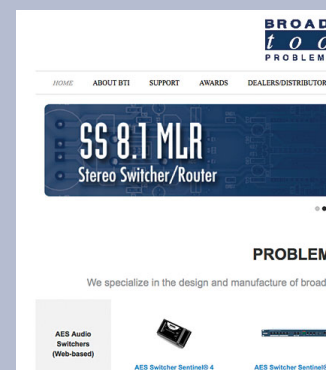
- Stereo (2x3) or monaural (1x6) output set via internal jumpers. Each output pair is independently configurable.
- Front panel output level adjustment trimmers.
- Balanced +4 dBu RJ45 audio input and unbalanced -10/-15 dBV RCA input, eliminating the need for external input level conversion.
- Balanced RJ45 outputs: three RJ45 audio outputs jacks with standard Cat5/6 audio pinout.
- Fully RFI proofed.
- Surge protected PS-1515/IEC universal switching +/-15VDC desktop power supply with IEC AC inlet included.
- Up to three units may be mounted on the optional RA-1 rack shelf. Desktop and wall mounting is also possible.

Inspection

Please examine your 2x6 DA Plus/RJ 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 2x6 DA Plus/RJ, and a PS-1515/IEC, +/-15 VDC desktop power supply. Manuals may be downloaded from our web site.

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Installation/Operation

Chassis Ground screw: This #4-40 sized chassis ground screw should be tied to the station (house) or system ground.

Power

Connect the supplied PS-1515/IEC desktop power supply's 3-pin AMP-style latching power connector to the unit and the +/-15 VDC switching power supply with IEC-inlet into a 120 Vac 50-60 Hz power source. The "+Power" and "-Power" LEDs will light to indicate supply voltage is present.

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

Surge Protection

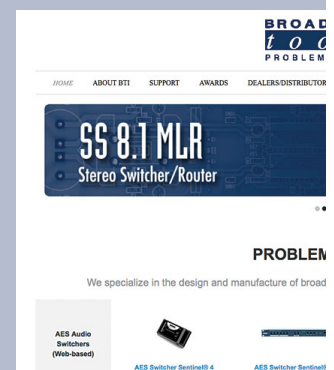
The 2x6 DA Plus/RJ has built-in resistance to voltage changes; we recommend that you use a power surge protector or line conditioner on the incoming AC line. Lightning strikes and/or other high voltage surges may damage your 2x6 DA Plus/RJ and connected equipment if it is not properly protected. For lightning protection devices, check out www.polyphaser.com and www.itwlinx.com.

UPS Standby Power System

We recommend that you power your 2x6 DA Plus/RJ from an uninterruptable power supply (UPS) system. A UPS, like the BE600M1 from APC, helps minimize the risk to the 2x6 DA Plus/RJ and provides power during a power outage.

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LED Indicators

“+Power” and “-Power”: Indicate positive and negative power supply. (Green)

“LT Act” and “RT Act” LEDs: Indicate left and right audio input activity. (Green)

Audio Input Connections

Connect a balanced +4 dBu audio source to the RJ45 input jack or an unbalanced -10/-15 dB audio source to the RCA input jacks. The input is labeled: “IN” See page 6 for pinouts. Only connect to one input per channel at a time, either balanced RJ45, or unbalanced RCA.

Audio Output Connections

The 2x6 DA Plus/RJ provides balanced analog outputs on three RJ45 audio jacks. Connect each load to the DA outputs, labeled "OUTPUTS" For unbalanced loads, use the "+" and GND terminals only. Do not connect the "-" terminal to ground. Shields should be tied to the “GND” terminals.

| | |
|------------------|------------------|
| Input RJ45 | Output 2 RJ45 |
| Output 1 RJ45 | Output 3 RJ45 |

Audio Output Level Adjustment

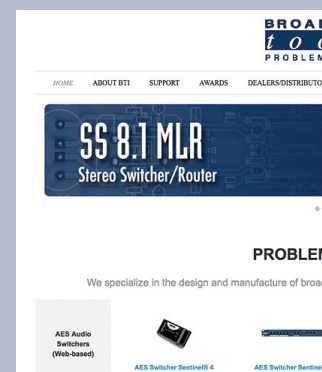
The level of each of the 6 output channels is adjustable via front panel 1-turn trimmers, labeled 1-6 for mono operation, and 1-3 L/R for stereo operation. All outputs are set from the factory for unity gain so that a +4 dBu input produces +4 dBu output level on each audio output channel. From this factory default setting the trimmers can be used to add up to +11 dB of gain or -4 dB of attenuation.

Stereo/Monaural Jumper Settings

Each stereo output pair can be set to output a monaural (mono) sum of the left and right input audio independently. Follow the silk-screened “M” and “S” labels on the PCB. If the jumper is installed in the “M” position, that output will be combined (summed) to monaural. For example, placing a jumper in the “M” position on JP1 converts output one to mono, JP2 output two, JP3 output three. The factory setting is “S” for Stereo. The stereo outputs operate independently; setting one output pair to mono has no effect on the other pairs and does not degrade the integrity of the other stereo outputs.

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RJ45 Audio Pinout:

| Function: | Wire Pair: | RJ45 Pins: |
|-------------|--------------|------------------|
| Left+ | White/Orange | 1 |
| Left- | Orange/White | 2 |
| Right+ | White/Green | 3 |
| Right - | Green/White | 6 |
| n/c | White/Blue | 5 |
| GND | Blue/White | 4 |
| n/c | White/Brown | 7 |
| n/c | Brown/White | 8 |
| Sig. Shield | Cable Shield | Connector Shield |

Please use shielded twisted pair Cat5e or Cat6 cables and connectors (STP) with the input and output RJ45 audio jacks.

Unbalanced RCA (-10/-15 dBV) Inputs and Pinout:

J1 Left = Left (White)

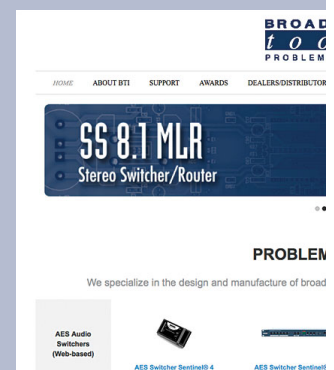
J1 Right = Right (Red)

RCA connector center pin = Signal/Positive

RCA connector outer shell = Ground/Negative

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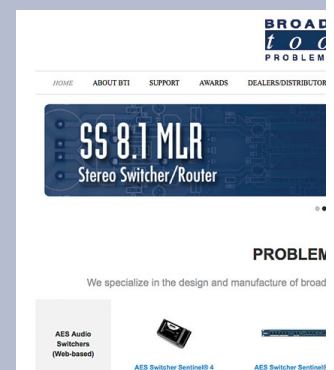
Specifications

* Audio Precision Test Equipment

| | |
|----------------------|--|
| Input Level: | -10/15dBv or +4dBu nominal. +25 dBu max. |
| Input Impedance: | 20K Ω balanced, 10 K Ω unbalanced |
| Output Level: | +4dBu nominal, + 24dBu max, @ 600 Ω , balanced |
| Output Impedance: | 100 Ω balanced, 47 Ω unbalanced |
| System Gain: | 20 dB |
| Frequency Response:* | +/- 0.2dB (20Hz – 20kHz) |
| THD+N:* | .005% @ +24 dBu |
| Noise:* | 84 dB below nominal |
| Power: | PS-1515/IEC Universal AC (100-240 VAC, 46-63 Hz) IEC input, multi-voltage +/-15 VDC @ 500ma output DC switching power supply. CE. (Supplied with domestic IEC AC cord). |
| Dimensions: | 6 x 5.25 x 1.63 in (W x L x H) |
| Options: | RA-1 Rack Shelf – 1 RU. Accommodates up to 3 units, filler panels supplied. Note: Velcro is supplied to secure the product to the RA-1 shelf. RJ-XLR 8F 8M – RJ45 to XLR Breakout Panel RJ-XLR 16F – RJ45 to XLR-F Breakout Panel RJ-XLR 16M – RJ45 to XLR-M Breakout Panel |

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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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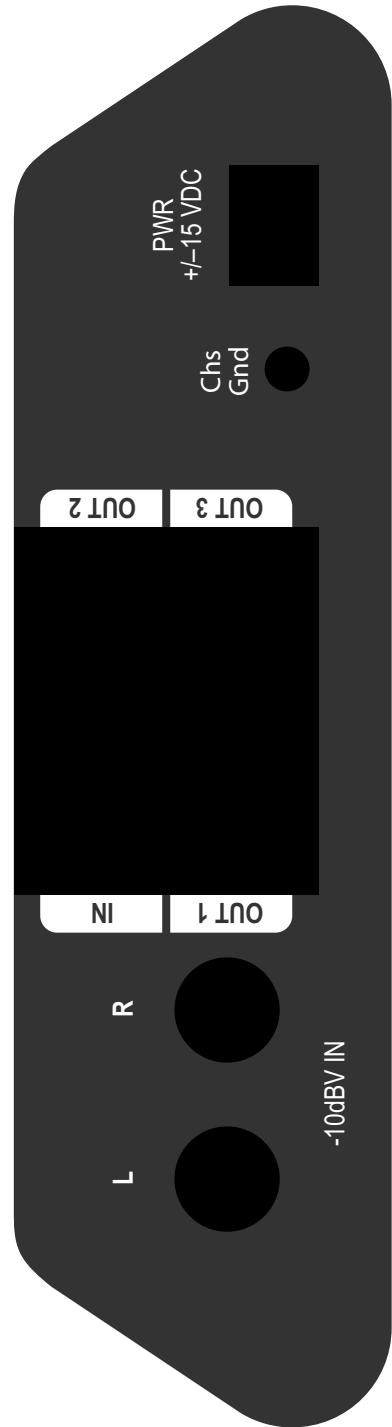
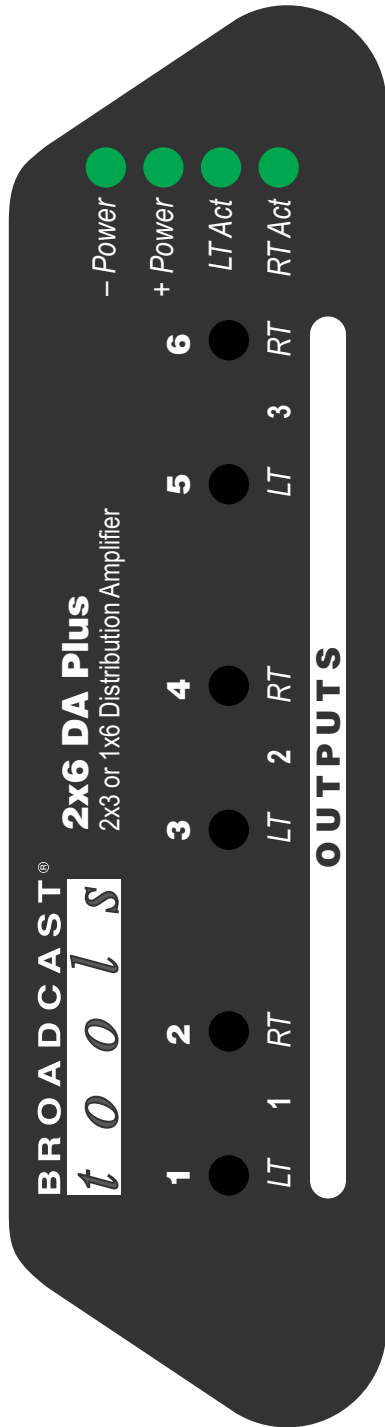
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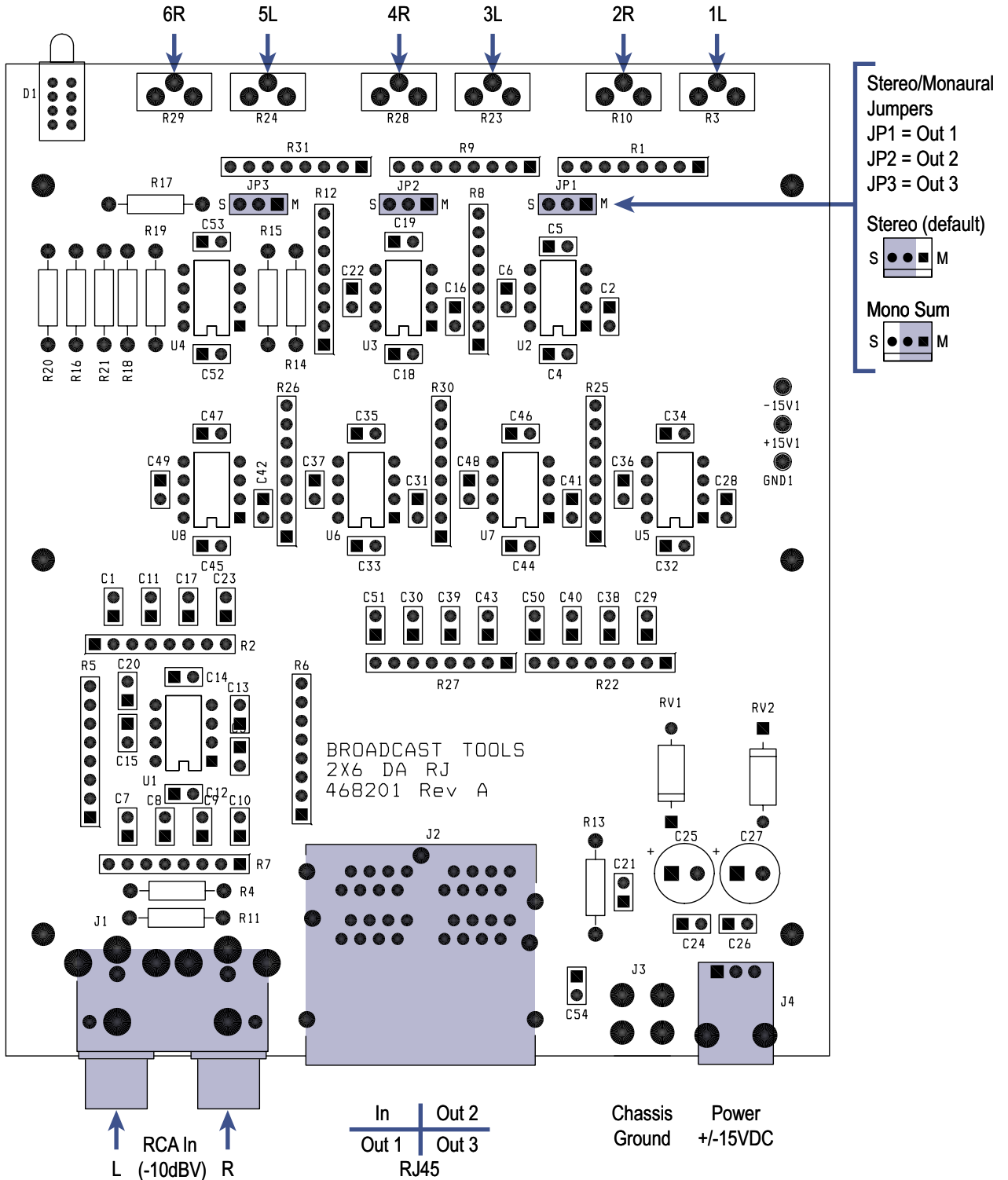
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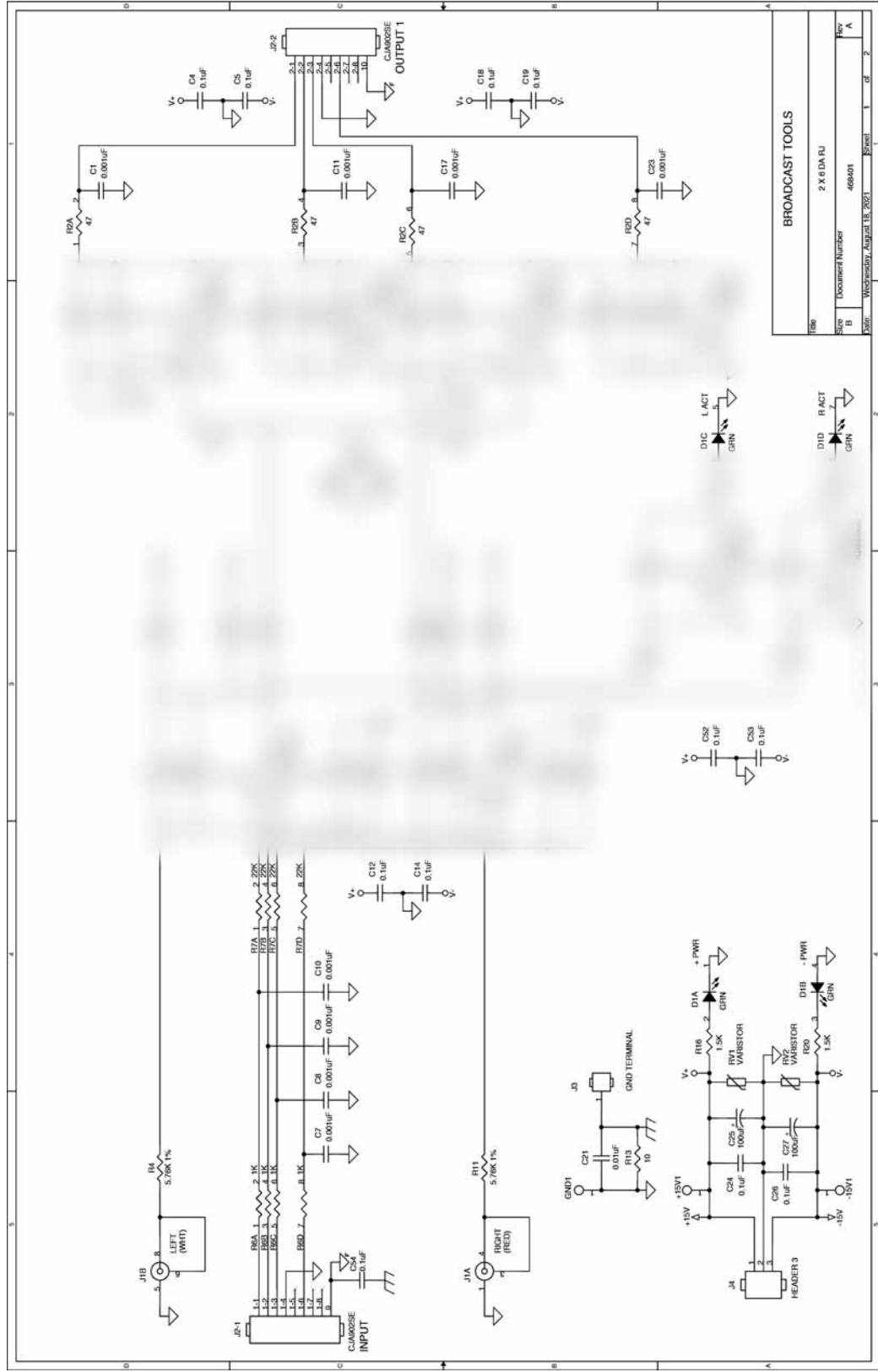
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Component Layout



Fractional Schematic



Fractional Schematic

