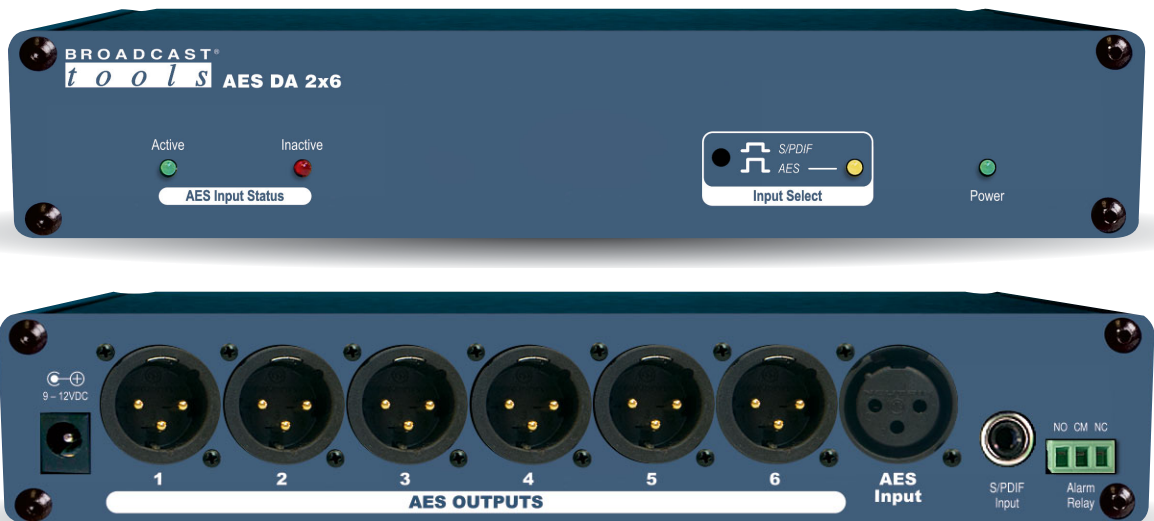


BROADCAST[®] tools INC

PROBLEM SOLVED

Installation and Operation Manual



AES DA 2x6

Six-output, two-input AES/EBU Digital Audio Distribution Amplifier

Manual update: 9/17/2015

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

No part of this document may be reproduced or distributed without permission.
ALL SPECIFICATIONS AND FEATURES FOR THIS PRODUCT ARE SUBJECT TO
CHANGE WITHOUT NOTICE

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

Due to the dynamic nature of product design, the information contained in this document is subject to change without notice. Broadcast Tools, Inc., assumes no responsibility for errors and/or omissions contained in this document. Revisions of this information or new editions may be issued to incorporate such changes.

*Broadcast Tools[®] is a registered trademark of Broadcast Tools, Inc.
All Sentinel[®] labeled products are registered trademarks of Broadcast Tools, Inc.
Copyright[®] 1989 - 2015 by Broadcast Tools, Inc. All rights reserved.
No part of this document may be reproduced or distributed without permission.*

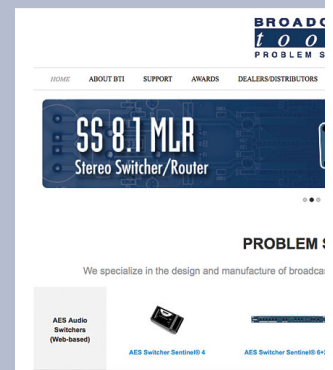
Visit www.broadcasttools.com for important product update information.

Table of Contents

Section Title	Page #
Introduction	3
Safety Information	3
Who to Contact for Help	3
Product Overview	4
Features/Benefits	4
Applications	4
Inspection	5
Installation/Operation	5
Surge Protection	5
UPS standby power system	5
Power	5
LED indicators	5
Input Select Switch	5
AES/EBU and S/PDIF Digital Audio Inputs	5
AES/EBU Outputs	6
XLR Connector Pinout	6
AES/EBU Activity Detector/Alarm Relay	6
Specifications	7
Warranty	8
Front and rear panel drawings	Appendix
Connector layout	Appendix
Fractional schematic	Appendix

WEBSITE:

Visit our web site for product updates and additional information.



INTRODUCTION

Thank you for your purchase of a BROADCAST TOOLS® AES DA 2X6 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 2X6.

SAFETY INFORMATION

Only qualified technical personnel should install the AES DA 2X6. 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 2X6 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 2X6. 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



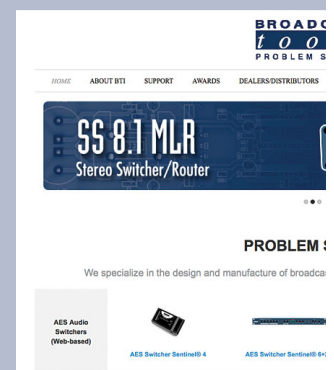
Broadcast Tools® Products, as with any electronic device, can fail without warning. Do not use this product in applications where a life threatening condition could result due to failure.



This manual should be read thoroughly before installation and operation.

WEBSITE:

Visit our web site for product updates and additional information.



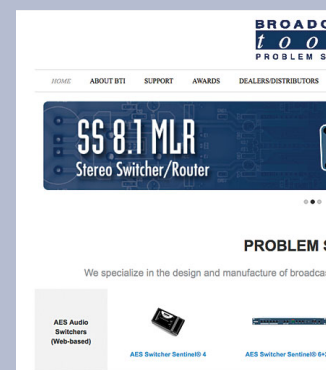
INTRODUCTION

Product Overview

The AES DA 2x6, six output two-input AES/EBU distribution system follows in the footsteps of the RDDA 4x4 product and is ideal for distributing AES/EBU signals or word clock at sample rates of up to 192 kHz. The system provides two switch selectable transformer isolated inputs, one with a female XLR connector for balanced AES/EBU signals the other with an RCA for unbalanced S/PDIF signals. The selected input is distributed to six transformer isolated AES/EBU XLR outputs. Signal bypass is built-in with the XLR AES/EBU input passively routing to output one in the event of power loss. Local and remote signal monitoring is provided by an internal AES/EBU activity detector that will indicate the presence or loss of clock with active and inactive front panel LED indicators and a SPDT alarm relay. The alarm relay contacts are available on a rear panel plug-in euro-block connector. The AES DA 2x6 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 half rack form-factor allows the unit to be set on a desktop, mounted on a wall, or two units may be rack mounted using the RA-1, Rack-Able mounting shelf.

WEBSITE:

Visit our web site for product updates and additional information.



Inspection

Please examine your AES DA 2X6 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 2X6, and a 9 VDC wall power supply with domestic connector. Manuals may be downloaded from our web site.

Installation/Operation

Surge Protection

The AES DA 2X6 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 2X6 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 2X6 to a UPS system. A UPS helps minimize the risk to the AES DA 2X6 and provides power during a power outage.

NOTE: Signal bypass is provided by an internal relay that will passively route the XLR input signal to output one in the event of power loss.

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)
- “Active” LED: Lit when an AES signal is detected on one of the inputs. (Green)
- “Inactive” LED: Lit when no AES signal is detected on the inputs. (Red)
- “Input Select” LED: Lit when AES XLR input is selected, out when S/PDIF RCA input is selected. (Yellow)

Input Select Switch

When this switch is in the out position the AES XLR input connection is used to feed the outputs and when it is in the in position the S/PDIF RCA input is used to feed the outputs.

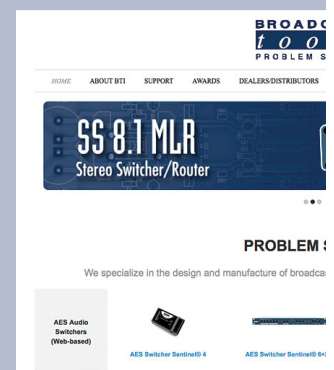
AES/EBU and S/PDIF Digital Audio Inputs

The AES DA 2X6 has two digital audio inputs, the first is an XLR input jack for balanced AES/EBU and the second is an RCA input jack for and S/PDIF and unbalanced AES/EBU. Balanced 110-ohm AES/EBU Input: connect the signal source to the female XLR jack labelled “AES Input” and make sure that the front panel Input Select switch is in the out position; when the unit is powered up the yellow Input Select LED will be lit to indicate that the XLR input is selected.

Unbalanced 75-ohm S/PDIF Input: connect signal source to the female RCA jack labelled “S/PDIF Input” and make sure that the front panel Input Select is in the in position.

WEBSITE:

Visit our web site for product updates and additional information.



AES/EBU Outputs

The AES DA 2X6 has six transformer isolated 110-ohm AES/EBU outputs with male XLR jacks, labelled 1-6. Connect the inputs of your AES/EBU compatible devices to the male XLR AES output jacks.

XLR Connector Pinout

The input and output XLR connector pinouts conform to 3-pin XLR Wiring Standards: Pin 1 = Ground. Pin 2 = Positive. Pin 3 = Negative. Please use cable qualified for AES/EBU signals.

AES/EBU Activity Detector/Alarm Relay

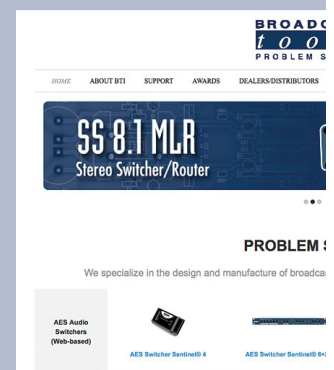
When valid signal is present the front panel “Active” LED will light, the “Inactive” LED will extinguish, and the alarm relay will open. When AES signal is lost the front panel “Inactive” LED will light, the “Active” LED will extinguish, and the Alarm Relay will close. The AES DA 2x6 has one SPDT alarm relay labeled “Alarm Relay.” 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.

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

Note: For wiring information, refer to the grids in this section of the manual, the silk-screen text on the rear panel of the product or the fractional schematic in the appendix.

WEBSITE:

Visit our web site for product updates and additional information.

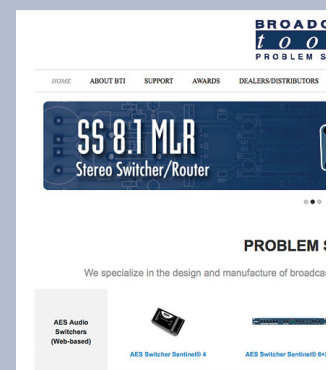


SPECIFICATIONS

Digital Inputs:	One transformer isolated AES/EBU female XLR input (110-ohm) and one transformer isolated AES S/PDIF female RCA input (75-ohm) selectable via front panel “Input Select” switch.
Digital Outputs:	Six transformer isolated AES/EBU outputs. 110-ohm impedance.
Sample Rate:	Up to 192 khz. Outputs follow input sample rate.
Alarm Relay Output:	SPDT dry contacts, 30 VDC @ 1 amp maximum.
CAUTION! For safety, never connect 120 Vac circuits to the above relay!	
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:	8.50” x 7.10” x 1.576” (WDH)
Weight:	3.0 lb.
Shipping Weight:	4.0 lb.
Options:	RA-1 rack shelf, holds two units (1-RU) / Filler panels supplied.

WEBSITE:

Visit our web site for product updates and additional information.



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.

NO OTHER WARRANTIES OR REMEDIES

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.

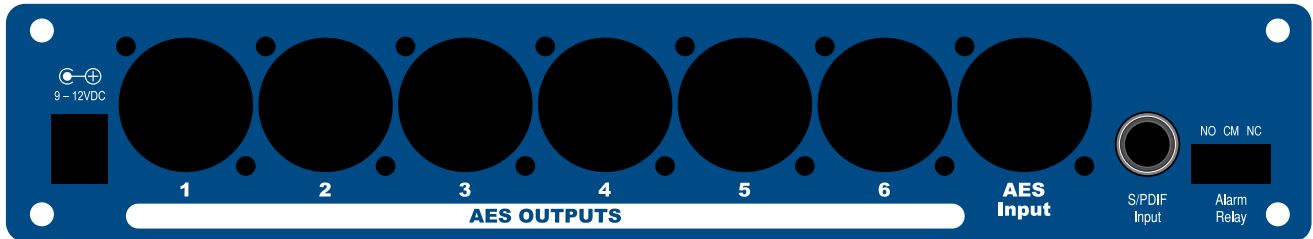
NO LIABILITY FOR CONSEQUENTIAL DAMAGES

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, NEITHER BROADCAST TOOLS NOR ANY OF ITS SUPPLIERS SHALL HAVE ANY LIABILITY FOR ANY SPECIAL, INCIDENTAL, INDIRECT, CONSEQUENTIAL OR PUNITIVE DAMAGES WHATSOEVER (INCLUDING, WITHOUT LIMITATION, ANY DAMAGES FOR LOST PROFITS, BUSINESS INTERRUPTION, LOSS OF DATA OR INFORMATION, COST OF CAPITAL, CLAIMS OF CUSTOMERS, OR ANY OTHER PECUNIARY LOSS) ARISING OUT OF THE USE OF OR THE INABILITY TO USE ANY ITEM SUPPLIED BY BROADCAST TOOLS, EVEN IF BROADCAST TOOLS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES HAVE ANY LIABILITY FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL, EXEMPLARY OR PUNITIVE DAMAGES. THIS LIMITATION OF LIABILITY APPLIES WHETHER A CLAIM IS ONE ALLEGING BREACH OF A CONTRACT OR WARRANTY, NEGLIGENCE OR OTHER TORT, FOR THE VIOLATION OF ANY STATUTORY DUTY, THE FAILURE OF ANY LIMITED OR EXCLUSIVE REMEDY TO ACHIEVE ITS ESSENTIAL PURPOSE, OR ANY OTHER CLAIM OF ANY NATURE. BECAUSE SOME STATES AND JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, THIS LIMITATION MAY NOT APPLY TO YOU.

Broadcast Tools, Inc.

131 State Street
Sedro-Woolley, WA 98284 • USA

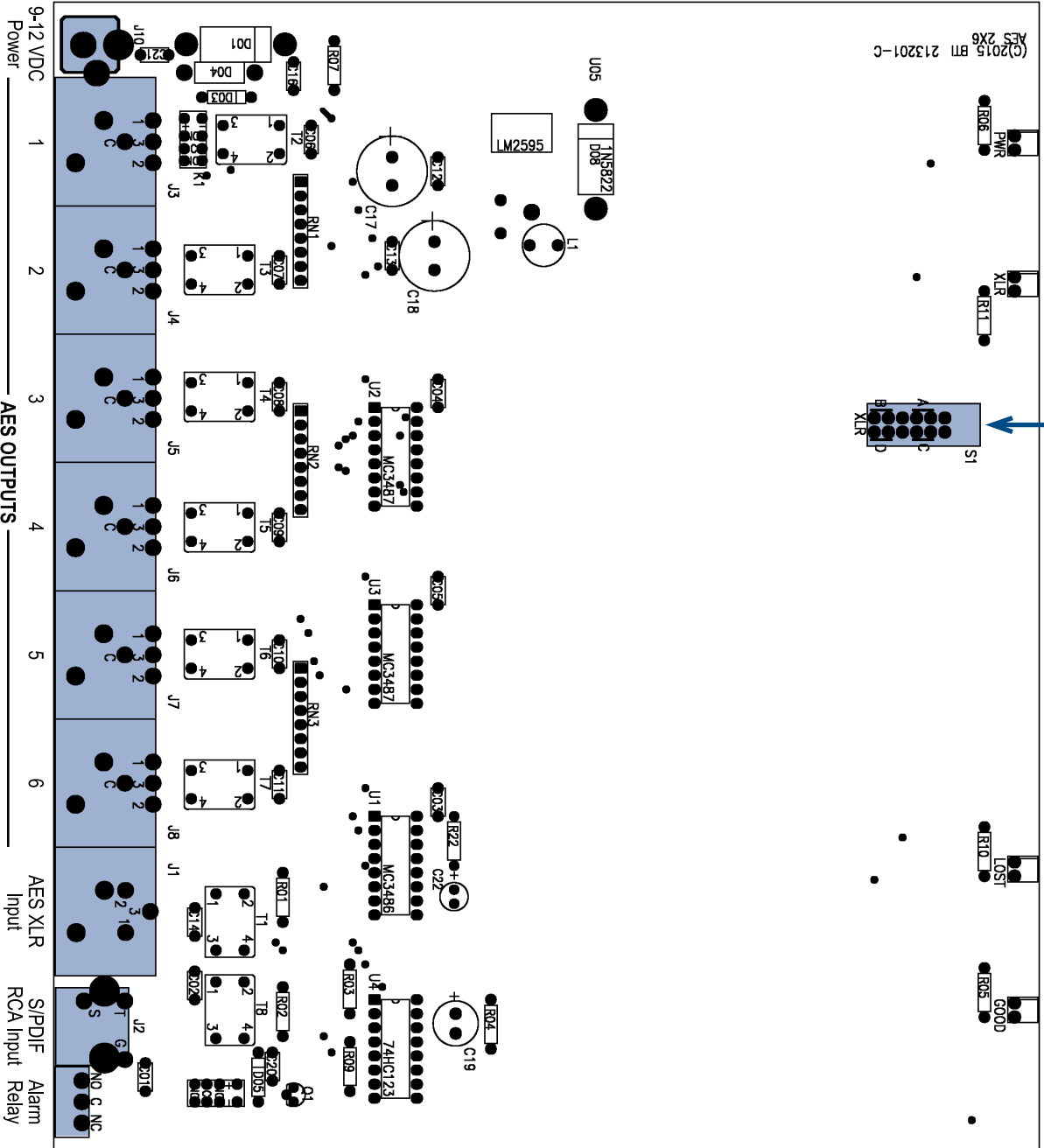
360.854.9559 **voice** • 866.783.1742 **fax**
support@broadcasttools.com **e-mail**
www.broadcasttools.com **website**



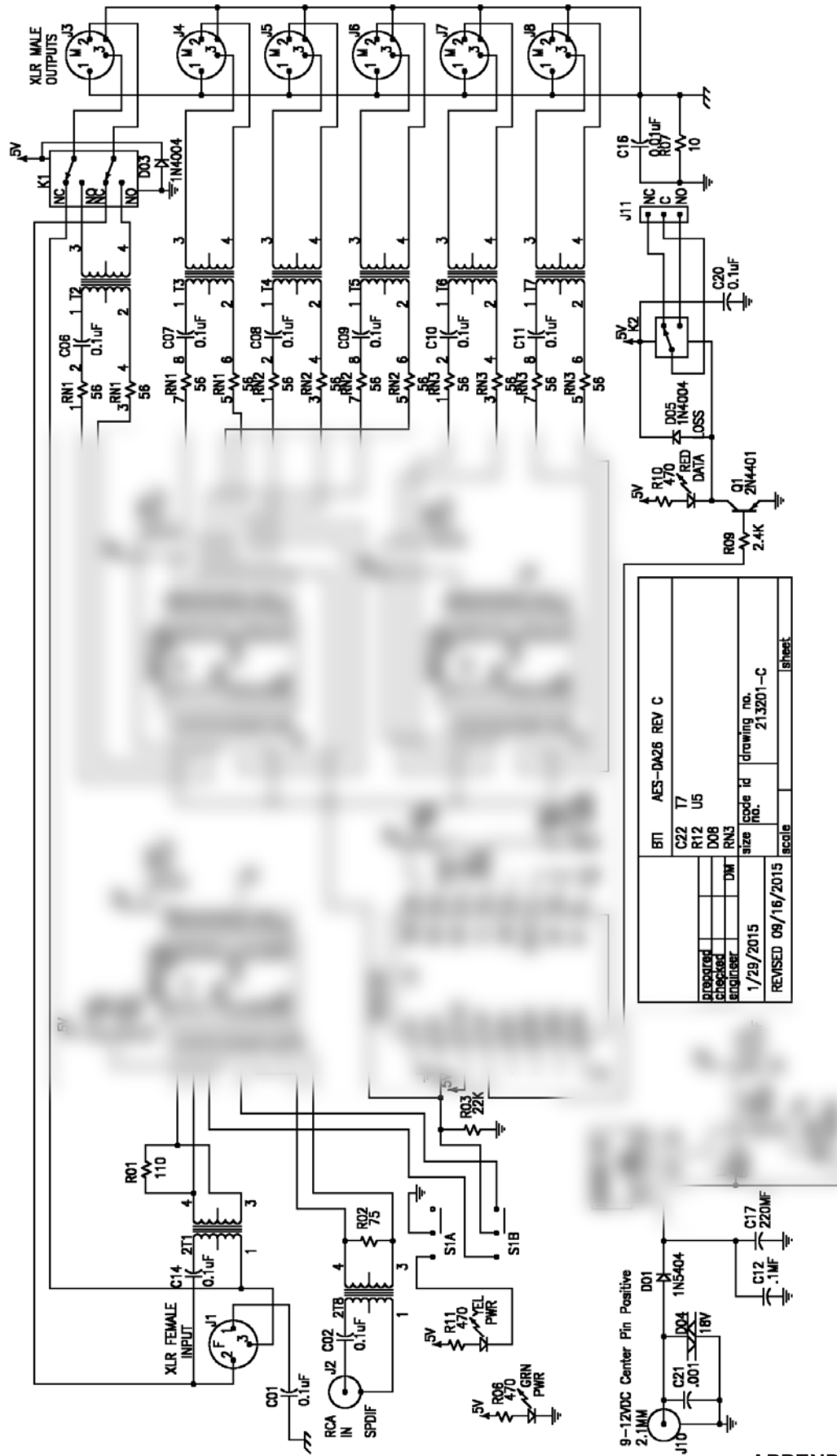
AES DA 2X6

Component Layout

Input Select Switch



FRACTIONAL SCHEMATIC



APPENDIX