



Broadcast Devices, Inc.

***CTD-1* Composite Decoder/AES Generator**

TECHNICAL REFERENCE MANUAL

Broadcast Devices, Inc.
Tel. (914) 737-5032

REV: B 03/2026

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The CTD-1 Composite Decoder/AES Transmitter

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Regulatory and Safety Information

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Introduction

The CTD-1 Composite Decoder/AES Transmitter is intended to be used in conjunction with the BDI CDS-300 or CDS-302 composite switcher DA products. This module can be plugged directly into these products. The CTD-1 will accept the selected composite signal, decode it back to left/right, and then convert it to a pair of AES3 compatible streams suitable for input to digital exciter equipment. Suggested uses include converting any composite stereo generator or STL to an AES signal compatible with modern digital AM/FM digital exciters. As an option, it is also possible to output a balanced +4 dBm left/right output for analog decoder applications. See setup diagram at rear of this manual for more information.

A. Unpacking and Inspection

Carefully unpack the unit after receipt and inspect for damage that may have occurred during shipping. If damage is noted, contact the shipper immediately and file a damage claim. The contents of the package have been insured to cover total replacement cost. Make certain that the package contents are the same as noted on the packing slip. If not, contact Broadcast Devices, Inc.

General Description

The CTD-1 contains a high quality, phase locked loop stereo decoder, analog to digital converter and AES transmitter. Stereo composite audio is routed to the stereo decoder where it is converted back to analog and then routed to a 24 bit analog to digital converter. The output of the converted is then routed to an AES transmitter/DA where it is outputted on a pair of XLR connectors at the rear of a CDS-300 or CDS-302 composite switcher/DA. In this configuration it is possible to drive a pair of composite outputs for older analog exciters and a pair of digital input exciters simultaneously with the same composite source. It is also possible to output a balanced +4 dBm left/right output to the CDS series XLR connectors if AES output is not needed.

Specifications

Composite Input Impedance:	100K unbalanced – Accepts 3.5 Volt RMS composite
Output Impedance:	110 ohm balanced digital 600 ohms balanced – analog
Number of outputs:	2 – AES3 or 1 – analog left/right
Sample rate:	32, 44.1, 48 or 96 KHz
Pre/de emphasis:	50 or 75uS selectable.

II. Installation

A. Initial Configuration Digital Output

This installation description assumes the customer will install the CTD-1 in an existing CDS-300/302.

1. Remove power and then unit top cover and locate a header with four jumpers. Make note of the position of these jumpers and then remove them.
2. Install the CTD-1 module with its connector plugging into the header from which the jumpers were removed. The module faces you as viewed from the front of the unit. Use extreme care to install the module so that the connector is plugged in correctly. Damage can occur if the module is plugged in incorrectly. Before powering the unit back up make sure that the connector is seated properly by observing that it is not plugged in incorrectly.

3. After verifying that the module is plugged in correctly, power up the CDS-300/302 and apply normal composite level audio to the input of the switcher. Connect the AES outputs to suitable AES equipped excitors or BDI AES-302 digital audio switcher/DA and observe modulation on a suitable modulation monitor. If level adjustment is necessary, there are two options for adjusting level. If the overall level needs adjustment, turn VR1 up or down as necessary to maintain desired modulation level. If balance between left and right channels is not correct, this can be compensated for by adjusting VR2 and 3. VR2 is left channel and VR3 is right channel. Refer to the setup diagram at the rear of the manual for location of these controls.
4. The CTD-1 is normally shipped from the factory with 75 uS pre emphasis enabled for North American applications and 50 uS for European applications. Jumpers JP3,4 are installed for pre emphasis. For de emphasized or flat frequency response audio output, remove jumpers JP3 and JP4.
5. Sample rate adjustment. The CTD-1 is normally shipped configured for 44.1 KHz sample rate. Other sample rates are possible including 32, 48 and 96 KHz. To adjust sample rate to other than 44.1 KHz, consult the sample rate chart on the setup diagram page at the rear of the manual.

Initial Setup for Analog output

1. Follow steps 1-4 above
2. Remove power and locate L1,2,3,4D jumpers on CTD-1 board and remove them with a soldering pencil.
3. Install jumpers across L1,2,3,4A just to the left of the pads in the above step. With this change, the output presented to the rear XLR connectors will be a +4 dBm balanced stereo output. Output 1 is left channel and output 2 is right channel.

IV. Warranty

Broadcast Devices, Inc. Limited Product Warranty

Broadcast Devices, Inc. ("BDI") products are warranted against failure due to faulty materials or workmanship for a period of one (1) year from the date of shipment to the ultimate user. The warranty covers repair or replacement of defective parts at the factory, provided the unit has been returned prepaid by the user. All shipments to the factory shall have a Returned Material Authorization (RMA) number affixed to the outside of the container, obtained from the factory. The above warranty is void if the unit has been modified by the user outside any factory recommendations or if the unit has been abused or operated outside its electrical or environmental specifications. If customer conducted field tests suggest that the unit may be faulty, whether the unit is in warranty, a full report of the difficulty should be sent to the Broadcast Devices, Inc. factory. The factory may suggest further tests or authorize a return for factory evaluation.

Units sent to the factory should be well-packed and shipped to Broadcast Devices, Inc. The current shipping address can be found by visiting our main web page: www.broadcast-devices.com. Remember to affix the RMA number to the outside of the carton. Any packages received without such an RMA number will be refused. Note: Freight collect shipments will also be refused. When the unit has been received, inspected, and tested, the customer will receive a report of the findings along with a quotation for recommended repairs that fall outside the standard warranty. Units returned for in-warranty repairs that are found not to be defective will be subject to an evaluation and handling charge. In-warranty units will be repaired at no charge and returned via prepaid freight.

Out-of-warranty units needing repair require a purchase order and will be invoiced for parts, labor, and shipping charges.

When ordering a replacement part, contact any authorized reseller of Broadcast Devices, Inc. Always specify A) Part Description, and Quantity; B) Date of Purchase, Where Purchased; C) Any Special Shipping Instructions. Always specify a street address, as shipping companies cannot deliver to a postal box.

BDI. is not responsible for any other manufacturer's warranty on original equipment. Nor are we responsible for any failure, damage, or loss of property resulting from the installation or operation of our equipment outside the recommended specifications.

Broadcast Devices, Inc. reserves the right to change materials, specifications, and features at any time.

BROADCAST DEVICES, INC. MAKES NO WARRANTY, EXPRESS OR IMPLIED, OTHER THAN AS SPECIFICALLY STATED ABOVE. EXPRESSLY EXCLUDED IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PURPOSE. THE FOREGOING SHALL CONSTITUTE ALL OF BDI'S LIABILITY (EXCEPT AS TO PATENT INFRINGEMENT) WITH RESPECT TO THE BDI PRODUCTS. IN NO EVENT SHALL SELLER BE LIABLE FOR SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INSTALLATION COSTS, LOST REVENUE OR PROFITS, OR ANY OTHER COSTS OF ANY NATURE AS A RESULT OF THE USE OF BDI PRODUCTS MANUFACTURED BY BDI, WHETHER USED IN ACCORDANCE WITH INSTRUCTIONS OR NOT. UNDER NO CIRCUMSTANCES SHALL BDI'S LIABILITY TO BUYER EXCEED THE ACTUAL SALES PRICE OF THE PRODUCTS PROVIDED HEREUNDER. NO REPRESENTATIVE IS AUTHORIZED TO ASSUME FOR BDI ANY OTHER LIABILITY IN CONNECTION WITH RF PRODUCTS.



Broadcast Devices, Inc.

Westchester Industrial Complex
3199 Albany Post Road, Suite 122
Buchanan, New York 10511 USA

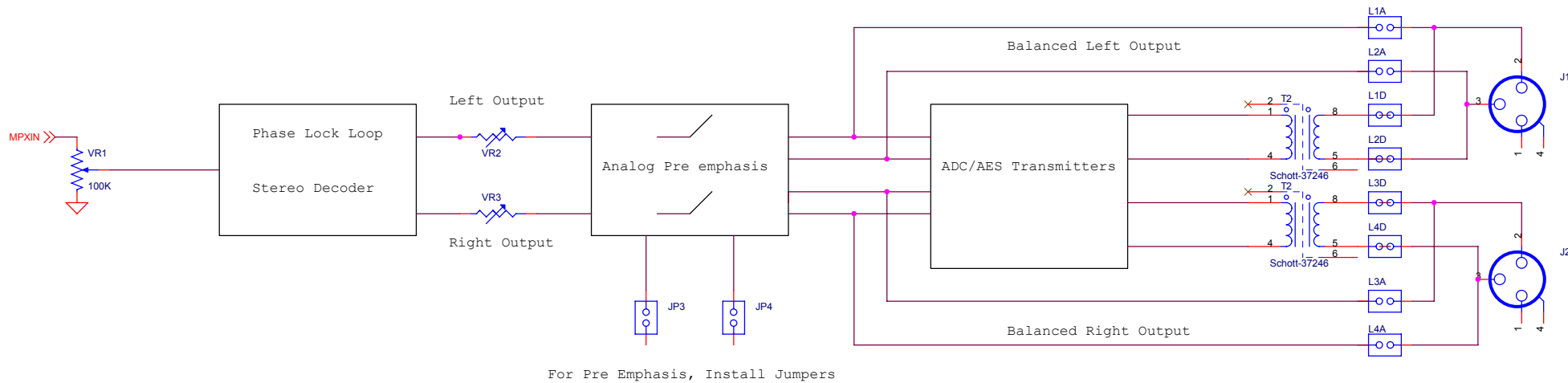
Phone: +1 (914) 737-5032

Email: customer.service@broadcast-devices.com

Web: <https://broadcast-devices.com>

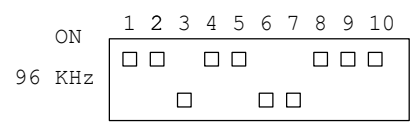
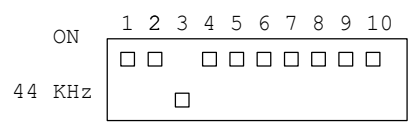
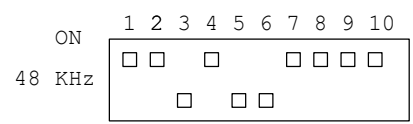
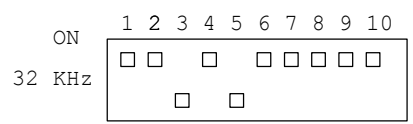
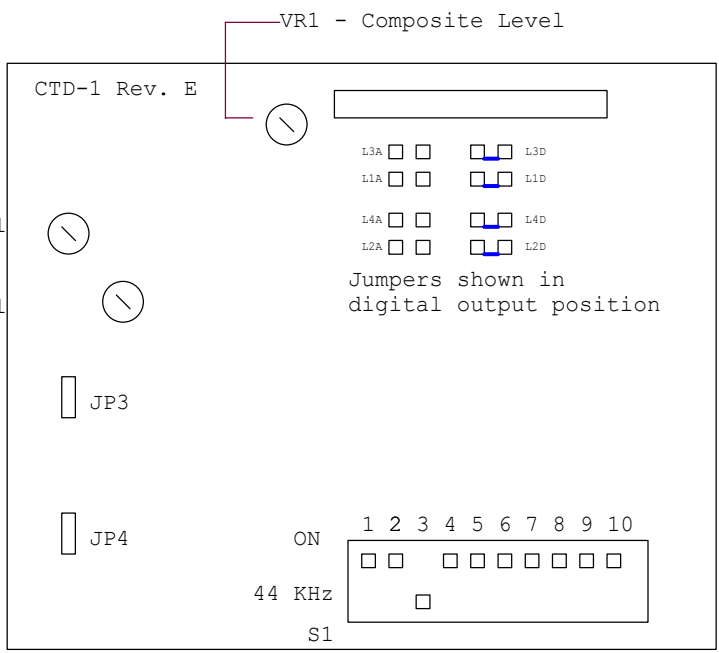
V. Schematic Diagrams

- A. Simplified Block Diagram
- B. Functional Diagram
- C. Setup Diagram
- D. Applications Diagram
- E. CTD-1 Schematic



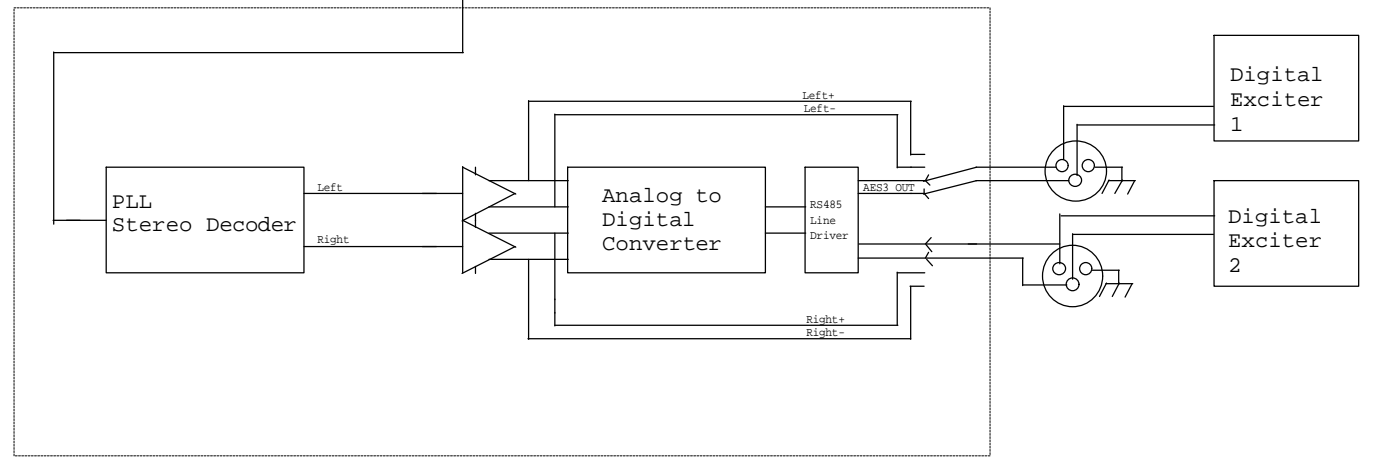
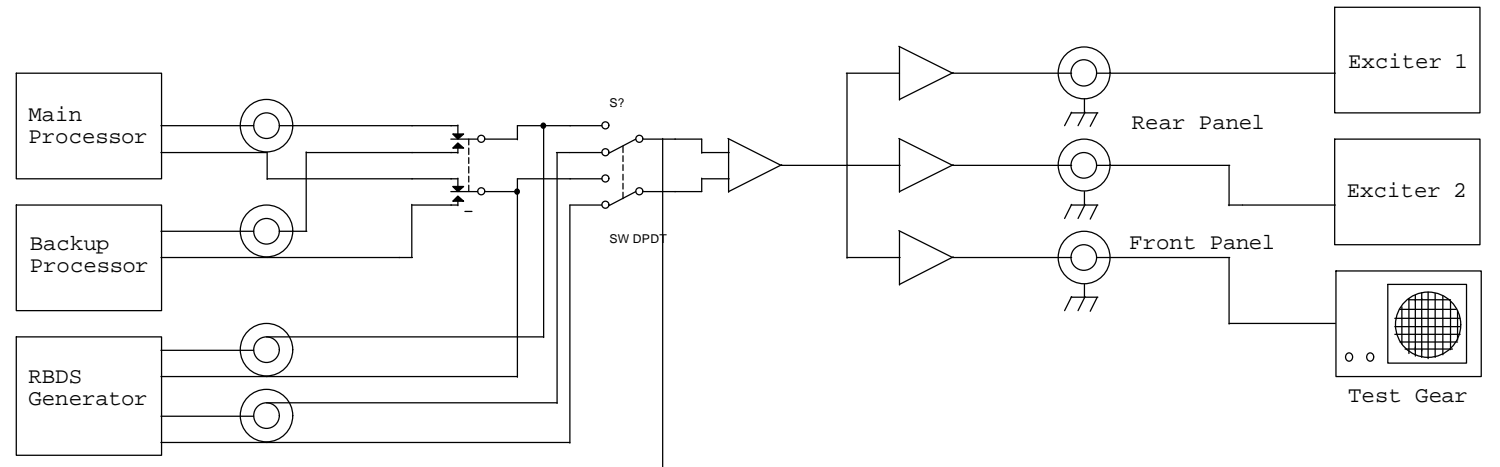
Note: Optional Balanced Left/Right Output is selectable by removing L1,2,3,4D and placing Jumpers in L1,2,3,4,A.

CTD-1 Functional Block Diagram

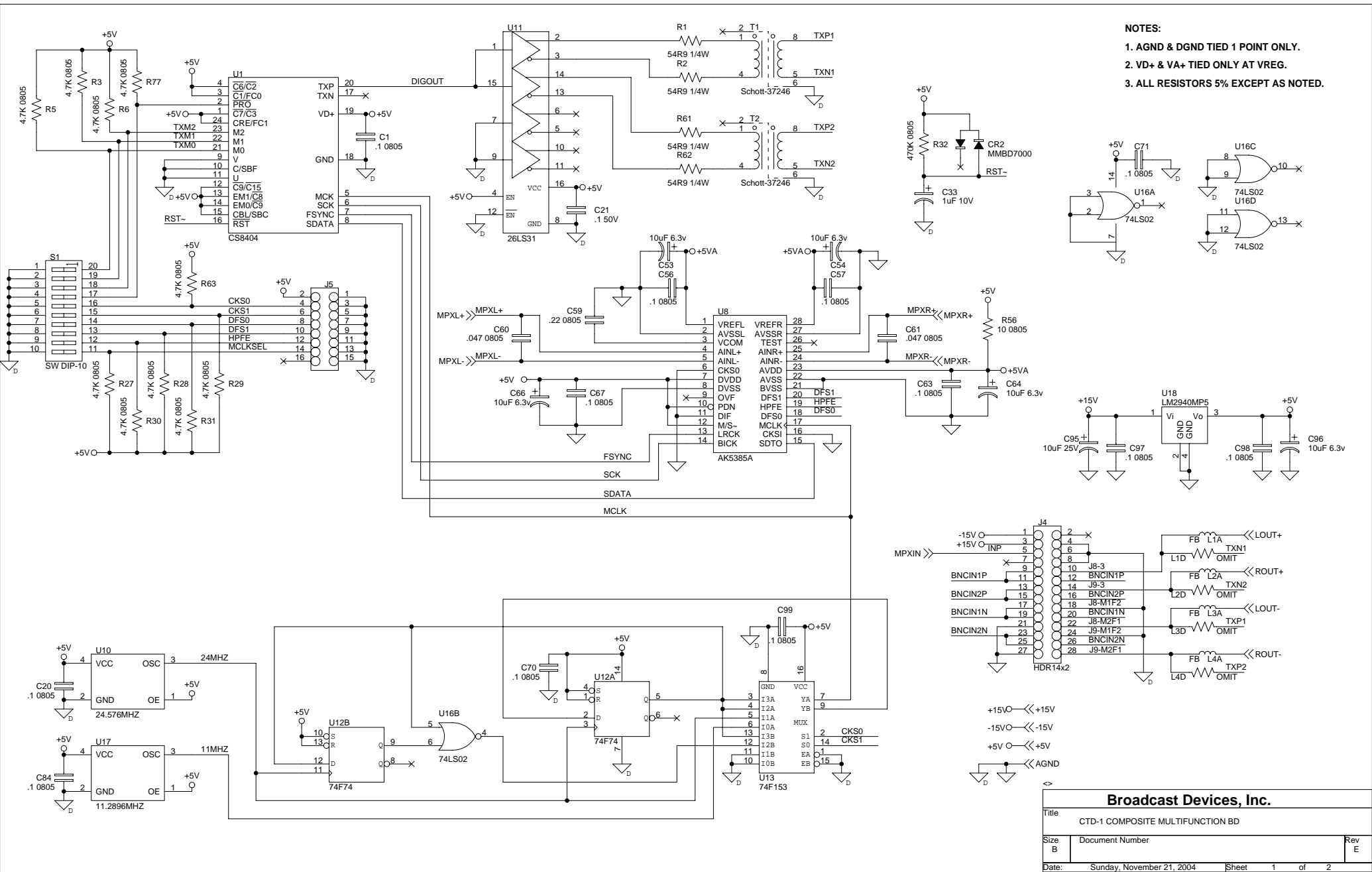


CTD-1 Set Up Diagram

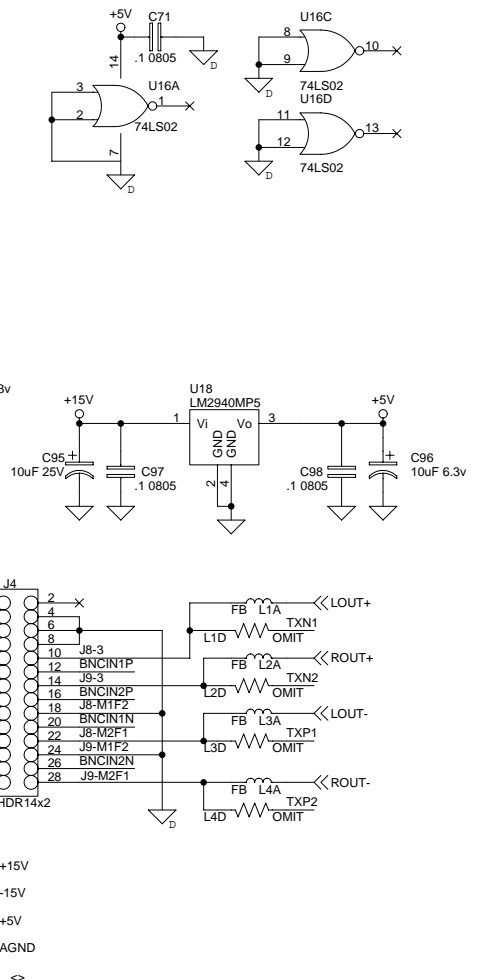
CDS-300/302 Composite Switcher/DA



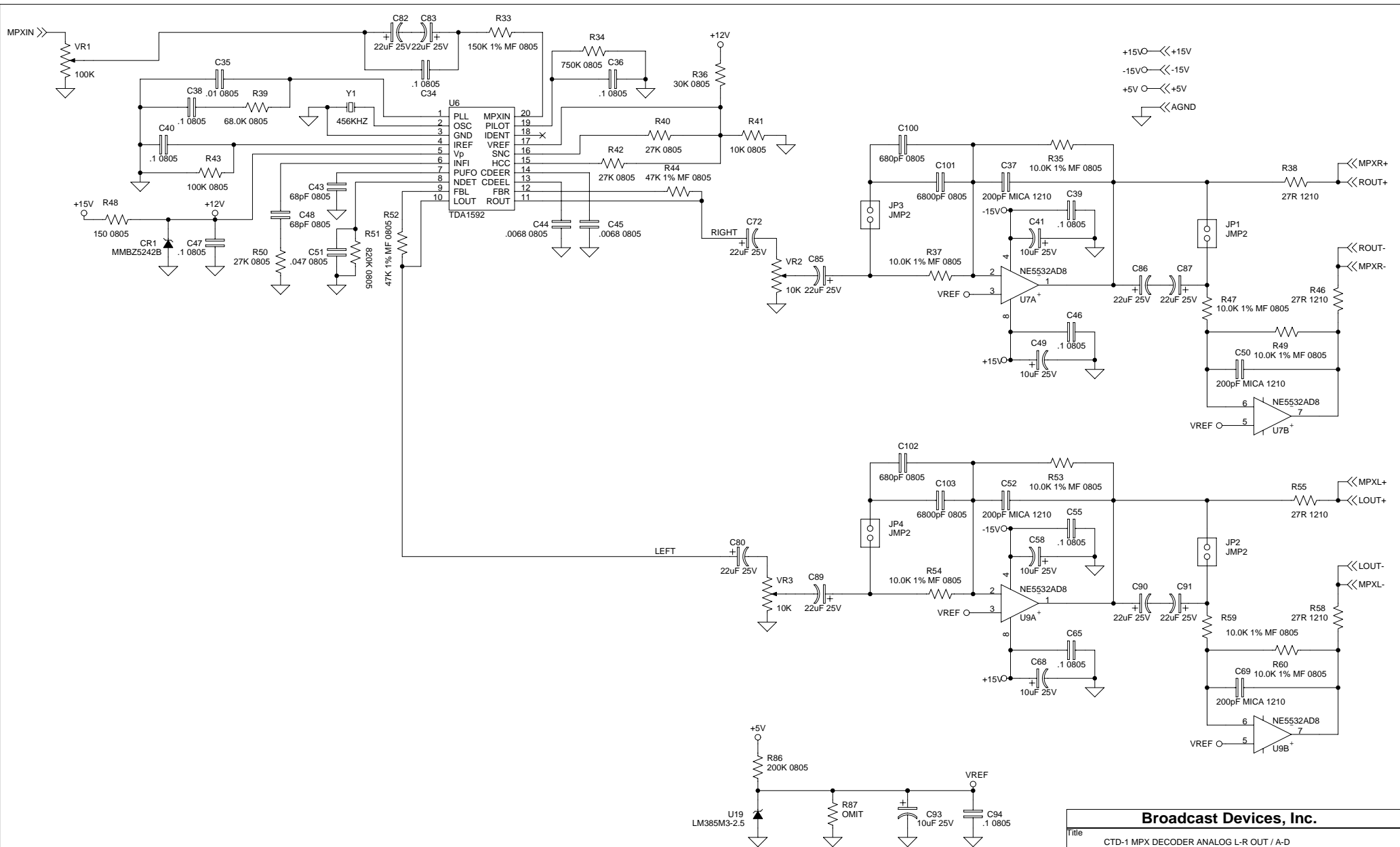
Model CTD-1 Composite to Digital Module



- NOTES:**
1. AGND & DGND TIED 1 POINT ONLY.
 2. VD+ & VA+ TIED ONLY AT VREG.
 3. ALL RESISTORS 5% EXCEPT AS NOTED.



Broadcast Devices, Inc.		
Title CTD-1 COMPOSITE MULTIFUNCTION BD		
Size B	Document Number	Rev E
Date: Sunday, November 21, 2004	Sheet 1	of 2



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Title	CTD-1 MPX DECODER ANALOG L-R OUT / A-D	
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