Cougar Digital Audio

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1.1 Manual Overview

This manual provides detailed instructions for installing and operating the PESA Cougar Digital Audio Switcher. This manual is divided into seven sections as shown. Sections 3 and 4 contain operational and functional descriptions of the Cougar Digital Audio Routing Switcher and the associated 32X32 Digital Audio Matrix Card.

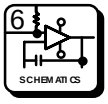
Section 1, **INTRODUCTION**, summarizes the manual, describes the product, presents a list of terms, and provides the panel specifications.

Section 2, **INSTALLATION**, provides installation and setup instructions.

Section 3, **OPERATION**, describes system operation procedures.

Section 4, **FUNCTIONAL DESCRIPTIONS**, presents an in-depth description of each component.

Section 5, **MAINTENANCE**, explains procedures for maintenance.



Section 6, **SCHEMATICS**, gives a complete package of technical documents such as schematics, and assembly drawings.

Section 7, **PARTS LIST**, provides a detailed list of system parts and components.

1.2 General Description

The PESA Cougar Digital Audio Routing Switcher offers a reliable low cost answer to your digital audio routing needs while providing a 2 levels of digital audio switching utilizing a 32X32 matrix within a single frame. The Cougar Digital Audio Routing Switcher is housed in a 3RU frame providing a small profile for space efficient installations. The Cougar Frame can also be equipped with redundant power supplies for maximum reliability and fail safe operation.

The Cougar Digital Audio Routing Switcher is designed with small to mid-range size routing matrix applications in mind. This cost efficient router is expandable to 64X64 size matrix. The main matrix components use plug-in circuit cards for ease of maintenance and component replacement. The Cougar Digital Audio Routing Switcher can be serviced hot, allowing circuit card changes without powering down the matrix. Board level voltage regulation in the Cougar Frame eliminates the possibility of a central, single point power failure.

The Cougar Digital Audio Matrix Card features easily visible LED indicators for quick view of critical voltage and circuit conditions. The Cougar Frame comes equipped with a control port and external alarm connectors for audible monitoring the operation of the internal power and controller circuits.

The Cougar Digital Audio Matrix Card provides electronically balanced input and outputs for improved slew rate and lower distortion over comparable transformer coupled circuits. The Cougar Digital Audio Matrix Card features short circuit protection; which protects the matrix card by automatically protecting and recovering if a sustained short circuit to a signal or chassis ground occurs.

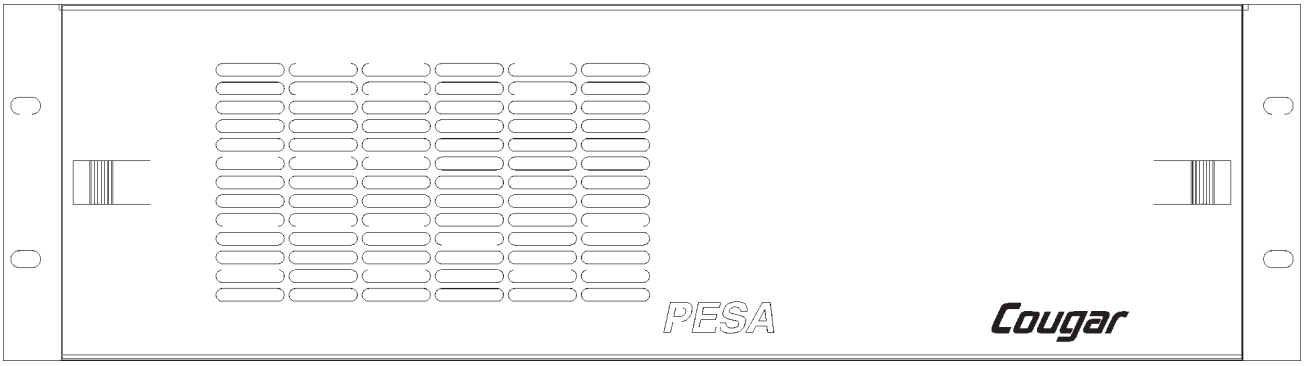


Figure 1-1 Cougar Digital Audio Routing Switcher Front View

1.2 General Description Continued:

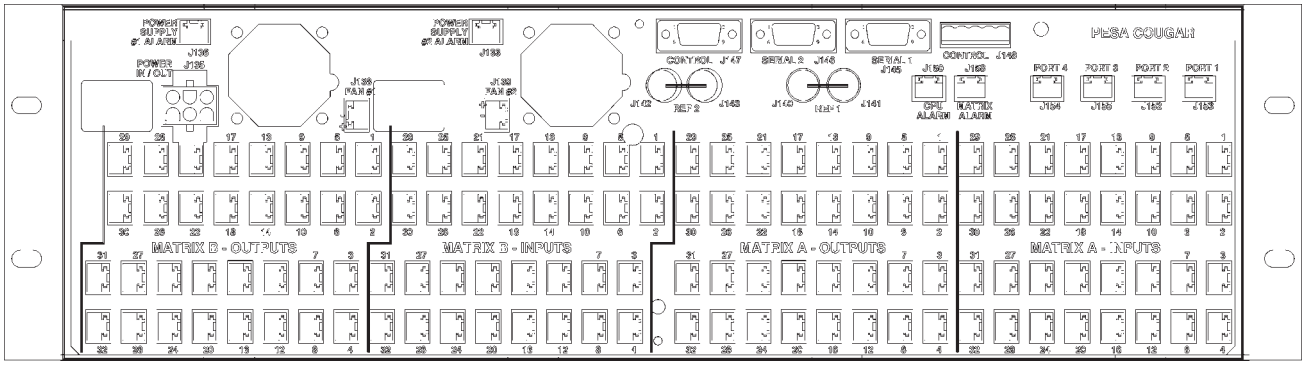


Figure 1-2 Cougar Digital Routing Switcher Rear View

1.3 Specifications

INPUTS

Type	3-Pin, 2-Part, Detachable Plug
Impedance	110 Ohms, ±20% from 0.1MHz to 6MHz, Terminated
Signal Amplitude	0.2V - 7.0V P-P
Number	32 per Level

OUTPUTS

Type	3-Pin, 2-Part, Detachable Plug
Impedance	110 Ohms, ±20% from 0.1MHz to 6MHz
Signal Amplitude	0.2V - 7.0V P-P into a line terminated with 110 Ohms
Number	32 per Level
Common Mode	Any common mode signal present at the output terminals is >30dB below output signal from DC to 6MHz.
Rise/Fall Times	5 to 30nS (Measured from 10% 90% Amplitude Points)
Jitter	<±20nS from Ideal Jitter Free Clock (Measured at 50% Voltage Point)
Standard	AES3-1993
Data Rate	DC to 20Mbit/s

2.1 Introduction

This section details the Cougar Digital Audio Routing Switcher installation procedures. The following topics are discussed:

- Receipt Inspection
- Unpacking
- Location
- Mounting
- Cabling
- Level Code (Strobe) Selection
- Input/Output Coding Selection
- PS70V Setting Line Voltage
- PS70V Power Supply Installation
- 32X32 Digital Audio Matrix Card Installation
- Rear Panel Connectors
- System Connections

General

If specified when ordered, the Cougar Digital Audio Routing Switcher will be configured for the intended system at the factory. Before attempting to install any frame, matrix card, controller card, or power supply; this section should be read carefully.

NOTICE

THE COUGAR DIGITAL AUDIO ROUTING SWITCHER CONTAINS STATIC SENSITIVE DEVICES. CARE SHOULD BE USED WHEN IT IS NECESSARY TO HANDLE THE INTERNAL CIRCUIT CARDS. IT IS RECOMMENDED THAT A GROUND WRIST STRAP AND GROUNDING MAT BE USED BEFORE ATTEMPTING ANY EQUIPMENT INSTALLATIONS.

2.2 Receipt Inspection

The Cougar Digital Audio Routing Switcher was tested and inspected prior to leaving the factory. Upon receipt, inspect the equipment for shipping damage. If any damage is found, contact the carrier immediately and save all packing material.

2.3 Unpacking

The Cougar Digital Audio Matrix Switcher is comprised of a frame, backplane, a 32X32 Digital Audio Matrix Card, and up to two PS70V Power Supplies. Prior to discarding packing material compare the parts received against the packing list. Carefully inspect the layers of packing material for any components which may have been overlooked during the initial unpacking.

2.4 Location

The Cougar Digital Audio Routing Switcher may be located in any suitable environment where power is available. However, units should be mounted as close as possible to their associated equipment to minimize cable runs. Forced air cooling is provided by a small fans located at the back of the unit. Care should be taken not to block airflow around these fans. Installation should be in an area where the ambient temperature does not exceed 40°C (104°F) inside the equipment rack.

2.5 Mounting

The Cougar Digital Audio Routing Switcher is rack mountable in a standard 19” equipment rack. Sufficient space must be provided behind the equipment racks to allow for the control cables and power cable. All mounting holes should be utilized and mounting hardware tightened securely. As with all equipment installed in a rack, the bottom screw on each side should be installed before proceeding with the remainder of the screws. Then all screws should be securely tightened. Support the Cougar Digital Switcher's bottom while installing it in the rack. Figure 2-1 illustrates chassis installation in the equipment rack. **NOTE:** Remove the power supply retaining screws before installing the Cougar Digital Audio Routing Switcher in an equipment rack.

Consideration should be given to the connection of the equipment to the supply circuit and the effect that the overloading could have on overcurrent protection circuits and supply wiring. Refer to the nameplate ratings when addressing this concern. Reliable grounding of rack-mounted should be maintained. Particular attention should be given to supply connections other than direct connection to the rack's internal AC power connections (power strip).

2.5 Mounting Continued:

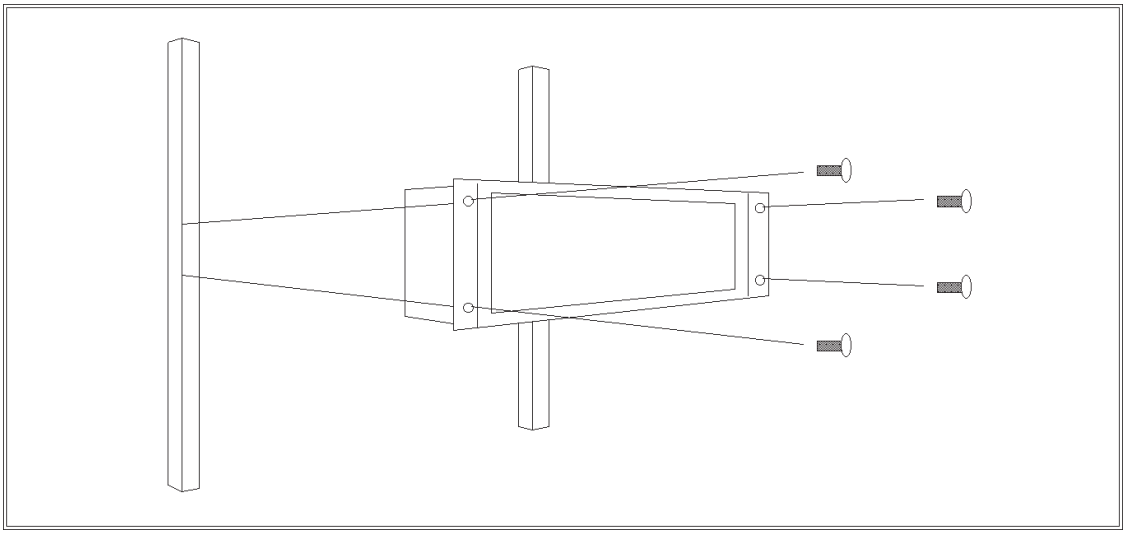


Figure 2-1 Chassis Installation

To install a Cougar Digital Audio Routing Switcher in an equipment rack follow these steps:

1. Align the frame with the slotted opening in the rack.

2. Install the bottom screws first.

3. Install the two top screws

4. Tighten all four screws securely.

2.6 Cabling

Considerable weight will be added to the rear panel of the Cougar Digital Audio Routing Switcher by the audio, control, and power cables. Therefore, all cables should be strained relieved and secured to racks or other supporting structures. Failure to provide adequate cable support can result in cables separating from connectors. If cable runs are to be stored under an elevated floor, they should be tied to the racks as a guide. If cables are run along the floor, do not allow them to lay in the work area behind the racks. Stepping or tripping on the cables may result in connections being pulled free or wire breakage inside the insulation. The Cougar Digital Audio Routing Switcher should be installed in the equipment rack prior to attaching cables.

2.6 Cabling Continued:

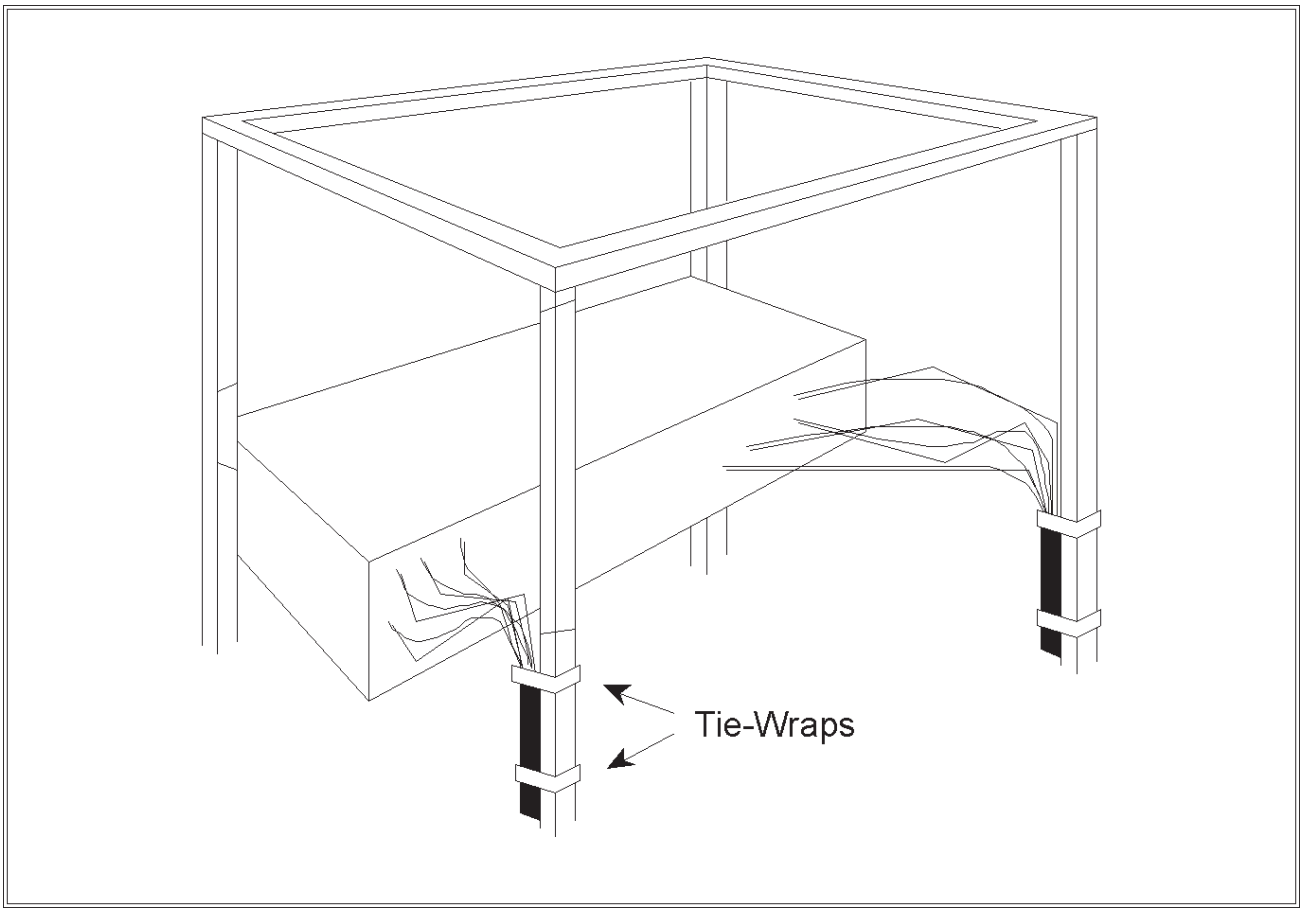


Figure 2-2 Cables Attached to Supports

Use the following rules when cabling the Cougar Digital Audio Routing Switcher:

1. Lay all cables in their intended positions, separating control, audio, and power cables wherever possible.

2. Provide proper support for each cable during the cabling process. The use of tie-wraps is recommended as shown in Figure 2-2.

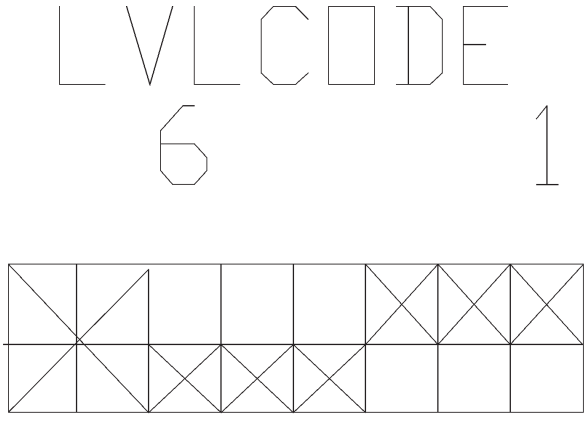
2.7 Level Code (Strobe) Selection

The level (strobe) select switches, S1 (matrix A) and S4 (matrix B) are located on the inside of the Cougar Digital Audio Routing Switcher on lower left-hand side of the backplane. Switch numbers are 1 through 8 right to left. Switches 1-6 select level codes 0 through 62. **Switches 7 and 8 are not used – their position is unimportant.** See Figure 2-3 for an example of setting the level code switches and Figure 2-4 for the switch locations.

Physical 0 (Logical 1) = OFF (UP)
Physical 1 (Logical 0) = ON (DOWN)

NOTE: The following are logical selections.

SWITCH POSITIONS	**6**	**5**	**4**	**3**	**2**	**1**
STROBE LEVEL 0	0	0	0	0	0	0
STROBE LEVEL 1	0	0	0	0	0	1
STROBE LEVEL 2	0	0	0	0	1	0
STROBE LEVEL 3	0	0	0	0	1	1
STROBE LEVEL 4	0	0	0	1	0	0
STROBE LEVEL 5	0	0	0	1	0	1
STROBE LEVEL 6	0	0	0	1	1	0
STROBE LEVEL 7	0	0	0	1	1	1
UP TO....						
STROBE LEVEL 62	1	1	1	1	1	0



SHOWN WITH LEVEL CODE 7 SELECTED

Figure 2-3 Level Code Selection

2.7 Level Code (Strobe) Selection Continued:

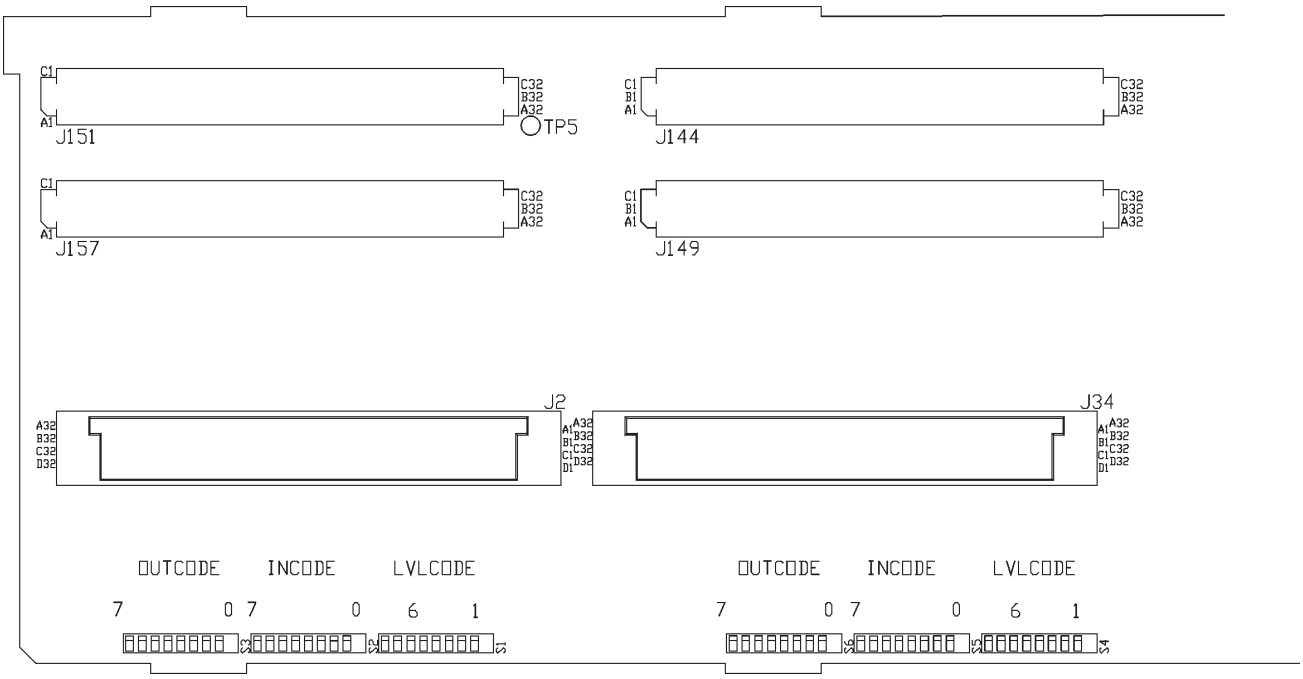


Figure 2-4 Coding Switch Locations

2.8 Output/Input Code Selection

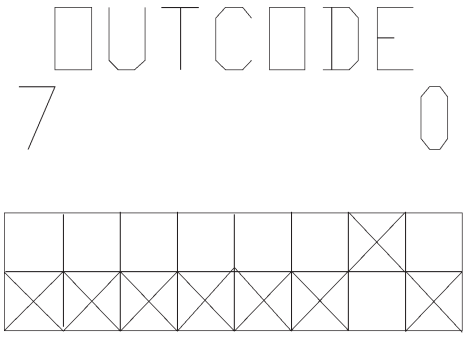
Input and output coding switches are located on the inside of the Cougar Digital Audio Routing Switcher on the lower left corner of the backplane. The input and output switch numbers run 0 to 7, right to left. Switches S2 and S3 (matrix A and matrix B outcode switches respectively) select output codes 0-255 and switches S3 and S6 (matrix A and matrix B in-code switches respectively) select input codes 0-255. See Figure 2-5 for an example of output code selection and Figure 2-6 for an example of input code selection.

Output Code

Physical 0 (Logical 1) = OFF (UP)
Physical 1 (Logical 0) = ON (DOWN)

NOTE: The following are logical selections.

SWITCH POSITION	7	6	5	4	3	2	1	0	OUTPUTS
OUTPUT CODE 0	0	0	0	0	0	0	0	0	0-32
OUTPUT CODE 1	0	0	0	0	0	0	0	1	33-64
OUTPUT CODE 2	0	0	0	0	0	0	1	0	65-96
OUTPUT CODE 3	0	0	0	0	0	0	1	1	97-128
OUTPUT CODE 4	0	0	0	0	0	1	0	0	129-160
OUTPUT CODE 5	0	0	0	0	0	1	0	1	161-192
OUTPUT CODE 6	0	0	0	0	0	1	1	0	193-224
OUTPUT CODE 7	0	0	0	0	0	1	1	1	225-256
UP TO....									
OUTPUT CODE 255	1	1	1	1	1	1	1	1	8161-8192



SHOWN WITH OUTPUT CODE 2 SELECTED

Figure 2-5 Output Code Selection

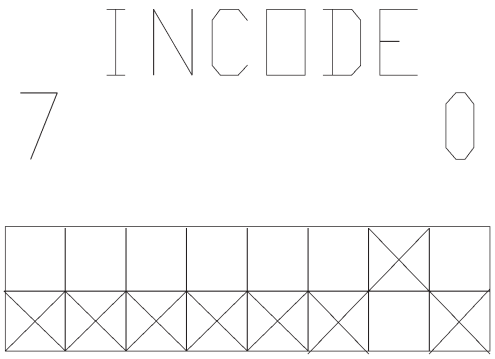
2.8 Output/Input Code Selection Continued:

Input Code

Physical 0 (Logical 1) = OFF (UP)
Physical 1 (Logical 0) = ON (DOWN)

NOTE: The following are logical selections.

SWITCH POSITION	7	6	5	4	3	2	1	0	INPUTS
INPUT CODE 0	0	0	0	0	0	0	0	0	0-32
INPUT CODE 1	0	0	0	0	0	0	0	1	33-64
INPUT CODE 2	0	0	0	0	0	0	1	0	65-96
INPUT CODE 3	0	0	0	0	0	0	1	1	97-128
INPUT CODE 4	0	0	0	0	0	1	0	0	129-160
INPUT CODE 5	0	0	0	0	0	1	0	1	161-192
INPUT CODE 6	0	0	0	0	0	1	1	0	193-224
INPUT CODE 7	0	0	0	0	0	1	1	1	225-256
UP TO....									
INPUT CODE 255	1	1	1	1	1	1	1	1	8161-8192



SHOWN WITH INPUT CODE 2 SELECTED

Figure 2-6 Input Code Selection

2.9 PS70V Setting Line Voltage

The PS70V Power Supply has an AC Line Select Switch that allows you to select the required line voltage range. This switch is accessed by removing the plug-in power supply from the switcher, if the power supply is already installed. Be sure to disconnect the AC power cord before removing the power supply from the switcher. A separate jumper, located under the plastic safety cover surrounding the switch is used to add 15 volts to each switch setting. Using only the switch, nominal (± 10%) voltages available are 100, 120, 140, 200, 220, and 240. If the jumper is also moved, these voltages become 115, 135, 155, 215, 235, and 255. **Be sure the AC Line Select Switch and jumper are set to the correct positions before powering up the audio routing switcher.**

Access is provided to the jumper by removing the two screws that secure the cover. These screws also secure the PC board to the mounting tray. Be sure to replace both screws. Tighten securely but avoid cracking the plastic cover.

Caution: To avoid electrical shock, insure that the filter capacitors are completely discharged before changing the switch or jumper selection.

2.10 PS70V Power Supply Installation

The PS70V Power Supply(s) are installed in the upper right-hand portion of the Cougar Digital Audio Routing Switcher. The Cougar Digital Audio Routing Switcher is designed for the installation of up to two PS70V Power Supplies. If only one PS70V Power Supply is to be installed in the Cougar Digital Audio Routing Switcher, install it in the left-hand position.

To install the PS70V Power Supply or to install the PS70V Power Supplies in the Cougar Digital Audio Routing Switcher take the following steps while refering to the Cougar Digital Audio Mainframe configuration drawing on page 6.2:

1. Align the primary power supply with the left-hand set of circuit card guides in the upper right-hand side of the Cougar Digital Audio Routing Switcher.

2.10 PS70V Power Supply Installation Continued:

2. Carefully push the power supply into the switcher until the power supply connector makes initial contact with backplane power connector. At this point, firmly but carefully continue pushing the power supply into the switcher while making sure the connectors are properly aligned and that no connector pins are being bent. Continue pushing the power supply until it is in place and the connectors are firmly mated.

3. Align the secondary (redundant) power supply with the right-hand set of circuit card guides in the upper right-hand side of the Cougar Digital Audio Routing Switcher.

4. Repeat step two.

5. If the Cougar Digital Audio Routing Switcher is being shipped, install the two power supply retainer screws through the top of the Cougar Digital Audio Routing Switcher.

2.11 32X32 Digital Audio Matrix Card Installation

The 32X32 Digital Audio Matrix Card is installed in the lower portion of the Cougar Digital Audio Routing Switcher. To install the matrix board in the Cougar Digital Audio Routing Switcher take the following steps while referring to the Cougar Digital Audio Mainframe configuration drawing on page 6.2:

1. Align the matrix card shield plate with the set of circuit card guides in the lower portion of the Cougar Digital Audio Routing Switcher.

2. Carefully push the matrix board into the switcher until the circuit card connectors make initial contact with backplane connectors. At this point, firmly but carefully continue pushing the matrix card into the switcher while making sure the connectors are properly aligned and that no connector pins are being bent. Continue pushing the card until it is in place and the connectors are firmly mated.

2.12 Rear Panel Connectors

The manual subsections discuss the various system connectors found on the rear backplane (rear panel) of the Cougar Digital Audio Routing Switcher. Refer to the 32X32 Audio Backplane component assembly drawing on page 6.4 and to Figure 2-7 for a visual references.

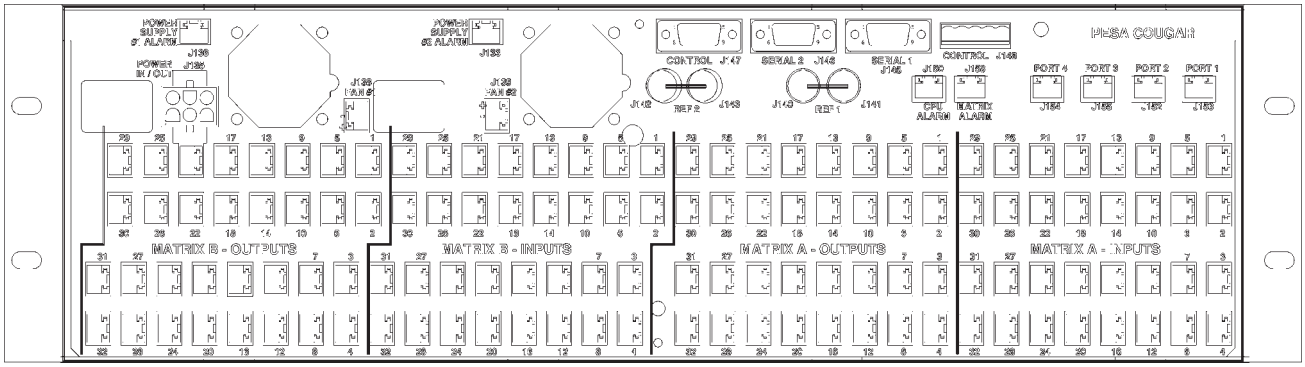


Figure 2-7 Cougar Digital Audio Routing Switcher Rear View

RCP Panel Connectors (J152-J155)

Not used.

Serial (CPU Link) Connectors (J145 and J146)

Not used.

Control (PRC) Connectors (J147 and J148)

J147 provides for the connection of an optional external controller to the Cougar Digital Audio Routing Switcher. J148 provides for the connection of additional Cougar Digital Audio Routing Switchers to form up to a 64X64 switching matrix. Both of the control connectors allow for the bi-directional transmission of data.

2.12 Rear Panel Connectors Continued:

Control (PRC) Connectors (J147 and J148) Continued:

The pinout of control connector J147 is as follows:

PIN NO.	DESCRIPTION
1	GROUND
2	RX+ DATA
3	TX- DATA
4	GROUND
5	SPARE
6	GROUND
7	RX- DATA
8	TX+ DATA
9	GROUND

The pinout of control connector J148 is as follows:

PIN NO.	DESCRIPTION
1	TX+ DATA
2	TX- DATA
3	GROUND
4	RX+ DATA
5	RX- DATA

For serial communications, the user should use a direct pin-for-pin cable for interfacing between the optional System Controller and the peripheral equipment. DO NOT use a "NULL MODEM" cable.

CPU Alarm Connector (J150)

Not used.

Matrix Card Alarm Connector (J158)

An alarm circuit has been provided in the 32X32 Digital Audio Matrix Card's circuitry. This circuit acts as a switch to trigger an optional external alarm in the event of a controller fault or failure. The controller alarm circuit supplies a contact closure but does not provide a voltage to the external alarm. The matrix card alarm connector, located on the back-plane, allows connection of the matrix card alarm.

2.12 Rear Panel Connectors Continued:

Power In/Out Connector (J135)

Power can be supplied to the Cougar Digital Audio Routing Switcher by the use of an externally mounted power supply, by the use of an internal PS70V Power Supply, or by the use dual internal PS70V Power Supplies. The DC Power Connector can be used as DC power input (external power supply) or as DC power output (internal power supply or power supplies) to allow the Cougar Digital Audio Routing Switcher to power additional equipment items. External power supplies must be diode isolated from the internal power supply. An 1N5821 or equivalent type diode may be used for this purpose.

Power Supply Alarm Connectors (J133 and J136)

An alarm circuit has been provided in the PS70V Power Supply's circuitry. This circuit acts as a switch to trigger an optional external alarm in the event of a failure in the power supply or failure of the external 110VAC (220VAC for the international version) source. The alarm circuit supplies a contact closure but does not provide a voltage to the external alarm. The alarm connectors, located on the backplane, allow connection of external power supply alarms.

Reference (Sync) Connectors (1 and 2)

The sync connectors are used to connect an external sync signal to the Cougar Digital Video Routing Switcher. The sync signal may be either a color black or composite video signal. The use of an external sync signal allows switch changes to be accurately timed in the vertical interval. The sync connectors are loop-thru connectors and must be terminated with 75 ohms if looping is not used.

Audio Input and Output Connectors

There are 32 matrix A and B twisted pair audio input connectors and 32 matrix A and B twisted pair audio output connectors located on the Cougar Digital Audio Routing Switcher's rear panel. These connectors allow the connection of the digital audio sources (input connectors) and digital audio destinations (output connectors) to the Cougar Digital Audio Routing Switcher.

2.13 System Connections

Once the Cougar Digital Audio Routing Switcher is installed in the equipment rack, system connections can be made. Use the following guide to insure that the Cougar Digital Audio Routing Switcher system interconnections are properly connected and that the control, power, sync, and digital audio cables are correctly installed.

3.1 Operation of the Cougar Digital Audio Routing Swit.

General

The operation of the Cougar Digital Audio Routing Switcher consists of periodically monitoring the 32X32 Digital Audio Matrix Card LEDs. The matrix card LEDs and their proper indications are discussed in the following manual sections.

3.2 Regulator Fault LED (Red)

The Regulator Fault LED (CR11) is utilized to visually indicate a regulator problem on the matrix card. A problem with the power supply or regulator circuits will cause this LED to light. However, in the event of a total power outage this LED will be rendered inoperable.

3.3 CPU Fault LED (Red)

The CPU Fault LED (CR10) is utilized to visually indicate a microprocessor problem on the matrix card. A problem with the matrix card CPU or controller circuits will cause this LED to light.

3.4 Power OK LED (Green)

The Power OK LED (CR9) on the front edge of the matrix card is utilized to visually indicate that the proper power supply voltage is being supplied to the card. A decrease in the brightness of this LED indicates an approximate 12% drop in voltage and should be checked. A 25% drop in voltage will cause the LED to extinguish.

3.5 32X32 Digital Audio Matrix Card Adjustments

There are no user adjustments on the 32X32 Digital Audio Matrix Card.

4.1 Introduction

General

The Cougar Digital Audio Routing Switcher provides 2 levels of switching withing a 32X32 digital audio matrix. The 32 matrix A and B audio inputs and outputs are electronically balanced for improved slew rate and lower distortion levels.

4.2 32X32 Digital Audio Matrix Card

The 32X32 Digital Audio Matrix Card contains a 32X32 matrix consisting of several main circuits. This discussion will be broken down to the main circuits as they are found on the schematics in Section 6 (Schematics).

4.3 Control

The microprocessor controller (U126) is used to interface switch commands from the PRCI control port (U103) to the switch matrix and return status information to the controller. Two external sync signal signals are used for switch timing as set by S1. The external sync can be either color black or composite sync. U102 and U103 decode the composite sync signal to produce the even/odd field signal used by the microprocessor.

Matrix input, output, and level coding is read from the backplane through U116 thru U118 for matrix A and U119 thru U121 for matrix B. U110, U123, and U111 provide address decoding for the 32X32 Digital Audio Matrix Card.

U112 and U108 comprise the nonvolatile RAM for the microprocessor. C218 provides memory backup voltage for approximately seven days as long as the matrix card is not removed from the Cougar Digital Audio Frame. CR10 can be turned on by the processor to indicate a fault condition.

4.4 Crosspoint Matrix

U81 thru U84 and U89 thru U92 comprise the 32X32 matrix A switch. Refer to Schematic Sheets 4 and 5, 32X32 Digital Audio Matrix Card, pages 6.12 and 6.13. U85 thru U88 and U93 thru U96 comprise the 32X32 matrix B switch.

U97 and U99 contain the data used to configure the 32X4 crosspoints. On power up the data is automatically loaded on the crosspoint ICs. BA0-BA2 select the output buss to control. BD0-BD7 select the input to be routed to the selected output. CS0-CS7 latches the data into a hold register, then either BVREF1 or BVREF2 (depending on the received switch command) latches the data into the crosspoint control registers.

4.5 Input Equalizers

U1 thru U4 and U41 thru U44 provide adequate input cable equalization for matrix A inputs dependent upon the quality of the input cables. U21 thru U24 and U61 thru U64 provide adequate cable equalization for matrix B inputs dependent upon the quality of the input cables. For input cable runs of 5000 feet or longer please verify the quality of the audio input cables.

4.6 Output Drivers

U5 thru U20 and U45 thru U60 are used to drive the outputs for matrix A. U25 thru U40 and U65 thru U80 are used to drive the outputs for matrix B.

4.7 Power Regulators

U113 is a switching regulator that creates +5.0 volts @ 3 amps to power the crosspoint matrix, input, control, output ICs.

U115 provides power to the backplane for the chassis fan. Q4 and Q5 provide ±5.6 volts for U101 and input sync buffers Q1 and Q2.

U129 monitors all primary circuit card voltages for out of voltage range conditions (±15%). If a fault is sensed CR11 will light and the controller will report the error condition. CR9 indicates that power is applied to the 32X32 Digital Audio Matrix Card.

4.8 PS70V Power Supply

The PS70V Power Supply is an unregulated power source that supplies positive and negative voltages to the Cougar Digital Audio Routing Switcher.

Each power supply produced by PESA has an AC Select Switch that allows you to select the required voltage range. This switch is accessed by removing the plug-in supply. Insure that power is off before changing the switch setting. A separate jumper, located under the plastic safety cover surrounding the switch is used to add 15 volts to each switch setting. Using only the switch, nominal (± 10%) voltages available are 100, 120, 140, 200, 220, and 240. If the jumper is also moved, these voltages become 115, 135,155, 215, 235, and 255.

Access is provided to the jumper by removing the two screws that secure the cover. These screws also secure the PC card to the mounting tray. Be sure to replace both screws. Tighten securely but avoid cracking the plastic cover.

Note: To avoid electrical shock, insure that the filter capacitors are completely discharged.

4.8 PS70V Power Supply Continued:

Circuit Description

Input fuses provide overcurrent protection from internal faults and output overloads. If a fuse opens, correct the overcurrent condition then replace the fuse(s). Both sides of the line are fused.

The AC selector switch interconnects the transformer primaries in series and/or parallel combinations to provide the proper ratio for the input line voltage.

The secondaries drive full wave rectifiers with capacitor input filters providing positive and negative voltages with respect to ground.

After the filters, series diodes are used to allow supplies to be paralleled for redundancy. The diodes assure that one supply cannot load the output of the others in case of a shorted diode or capacitor.

A temperature sensing circuit controls the fan speed according to the air temperature and the temperature of the rectifier diodes. The fan usually runs at half speed at normal temperature (25°C).

A circuit senses the voltages across the filter capacitors. If the combined voltages decrease by approximately 25% from normal, the green LED is turned off. The red LED, located on the PC card, is then lit and the alarm closure activated at the same time. The green LED, located on the front panel, serves as a rough indicator of output voltage; it dims as the combined positive and negative voltages decrease.

These supplies are unregulated and follow input line changes and output load variations.

5.1 Introduction

This section will cover the maintenance, troubleshooting, and repair of the Cougar Digital Audio Routing Switcher.

NOTICE

THIS EQUIPMENT CONTAINS STATIC SENSITIVE DEVICES. IT IS RECOMMENDED THAT A GROUNDED WRIST STRAP AND MAT BE USED WHILE MAKING REPAIRS OR ADJUSTMENTS.

5.2 General

The Cougar Digital Audio Routing Switcher is designed to produce the proper digital audio levels throughout the frame. There are no adjustments on the 32X32 Digital Audio Matrix Card and the need for regular maintenance is minimal.

5.3 Test Equipment

The test equipment recommended for servicing the Cougar Digital Audio Routing Switcher and its associated circuit cards is listed below. Equivalent test equipment may be used.

Digital Voltmeter
Digitizing Oscilloscope
Pattern Generator
Oscilloscope
75 Ohm Termination

5.4 Preventive Maintenance

CAUTION

TO AVOID POSSIBLE ELECTRICAL SHOCK, REMOVE ALL POWER SUPPLY CORDS BEFORE SERVICING.

Use the following guidelines for general preventive maintenance:

- Keep the inside of the equipment items clean, especially if your facility is subject to dust or dirt in the atmosphere. Use compressed air, an antistatic cloth, or a gentle vacuum to clean the frame and internal components.

- Observe proper procedures for preventing electrostatic discharge when cleaning the units, and when inserting and removing cards. Ensure that all tools and personnel handling individual components are properly grounded.

- Avoid covering the front grille for any extended period. Blocking the front grille will block the air flow through the fan and may overheat the internal circuit cards.

5.5 Maintenance

The Cougar Digital Audio Routing Switcher and its associated circuit cards are designed and manufactured to give long, trouble free service with minimum maintenance requirements. If problems do occur, follow the troubleshooting procedure provided in this section. If additional technical assistance is required, refer to the General Assistance and Service information in the front of the manual. Section 6 contains component layout drawings and schematics for assistance in troubleshooting and Section 7 contains the lists of replacement parts for repairing the Cougar Digital Audio Routing Switcher and its associated circuit cards.

5.6 Corrective Maintenance

The following paragraphs provide information to assist the servicing technician in maintenance of the Cougar Digital Audio Routing Switcher and its associated circuit cards.

5.6 Corrective Maintenance Continued:

Factory Repair Service

If desired, equipment or boards may be returned to the factory (transportation prepaid) for repair. Refer to the General Assistance and Service information sheet in the front of this manual. Call the PESA Service Department for a RMA number before shipping an equipment item.

NOTE

PACK THE EQUIPMENT SECURELY AND LABEL WITH THE CORRECT ADDRESS. PROPER PACKAGING SAVES MONEY. THE SMALL AMOUNT OF EXTRA CARE AND TIME IT TAKES TO CUSHION A PART OR UNIT PROPERLY MAY PREVENT COSTLY DAMAGE WHILE IN TRANSIT. MAKE CERTAIN THAT THE ADDRESS IS BOTH LEGIBLE AND COMPLETE. FAILURE TO DO SO OFTEN RESULTS IN DELAY OR EVEN LOSS.

Troubleshooting

The best troubleshooting tool is a familiarity with the equipment and a through understanding of its operation. Before troubleshooting the Cougar Digital Audio Routing Switcher or its associated circuit cards review Sections 3 and 4 of this manual. Use the functional descriptions and adjustment procedures to quickly locate problems.

- If a problem is suspected with an individual circuit card, first swap out the card and recheck the system for the problem. If the problem can be isolated to the card , and your facility is equipped for component level repair, proceed with repairs using the schematics provided in Section 6 of this manual.

NOTE

BEFORE PROCEEDING WITH COMPONENT LEVEL REPAIR MAKE SURE THE EQUIPMENT IS OUT OF WARRANTY. REPAIRING EQUIPMENT COVERED BY A WARRANTY WILL VOID THE WARRANTY.

5.6 Corrective Maintenance Continued:

System Checks

Prior to troubleshooting the Cougar Digital Audio Routing Switcher the following basic system checks should be performed.

1. Verify the AC circuit condition. Ensure the unit is receiving the correct voltage from the main AC power source.

2. Check all line fuses and power cords.

3. Ensure that all circuit cards are firmly seated

4. Ensure all interconnecting cables and connectors are plugged in or firmly seated.

5. If applicable, ensure main power switch is turned on.

Replacement Parts

Only parts of the highest quality have been used in the design and manufacture of the Cougar Digital Audio Routing Switcher and its associated circuit cards. If the inherent stability and reliability are to be maintained, replacement parts must be of the same quality. A replacement parts list is provided in Section 7 of this manual. When replacing parts, avoid using excessive solder on the printed circuit board. Always make sure that the solder does not short two circuits together. Be sure the replacement part is identical to the original, and is placed in exactly the same position with the lead lengths (if applicable).

5.7 Filter Cleaning

The front door of the Cougar Digital Audio Routing Switcher contains an air filter. The air filter should be cleaned on a periodic basis. Remove the filter from the door and clean it with soapy water or low pressure air. After drying reinstall the filter in the door.

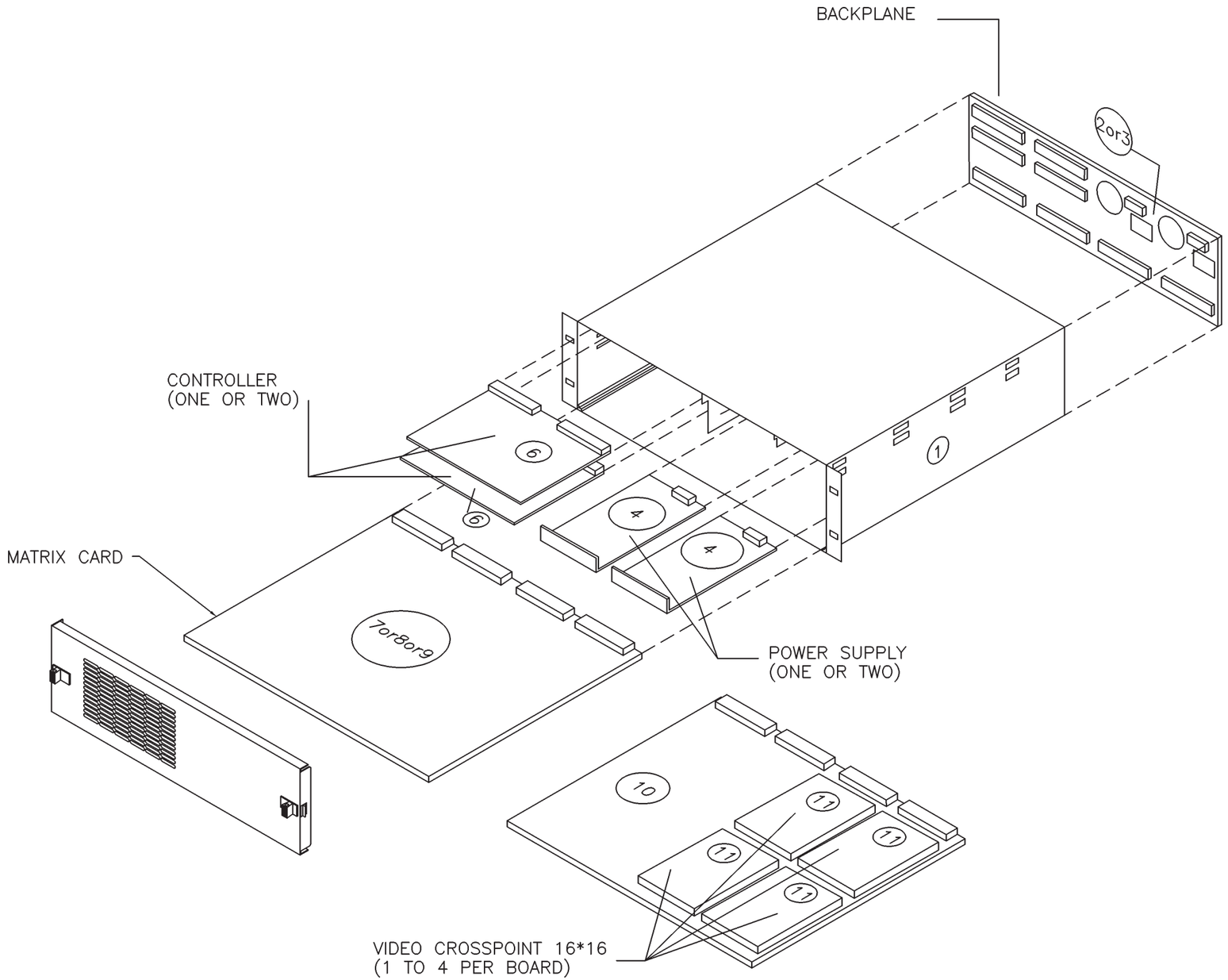
5.8 PS70V Power Supply

Replacement of the two power supply fuses is accomplished by disconnecting power to the unit, removing the power supply and disassembling the fuse holder on the rear of the supply. The replacement value of the power supply fuses is 1.5 Amp (5x20mm) for a line voltage of 115VAC and 0.8 Amp for a line voltage of 220VAC.

6.1 Schematics

General

This section contains the schematic diagrams and parts location diagrams for the Cougar Digital Audio Routing Switcher . Please refer to this section when troubleshooting the equipment or replacing defective parts.



COUGAR CONFIGURATION

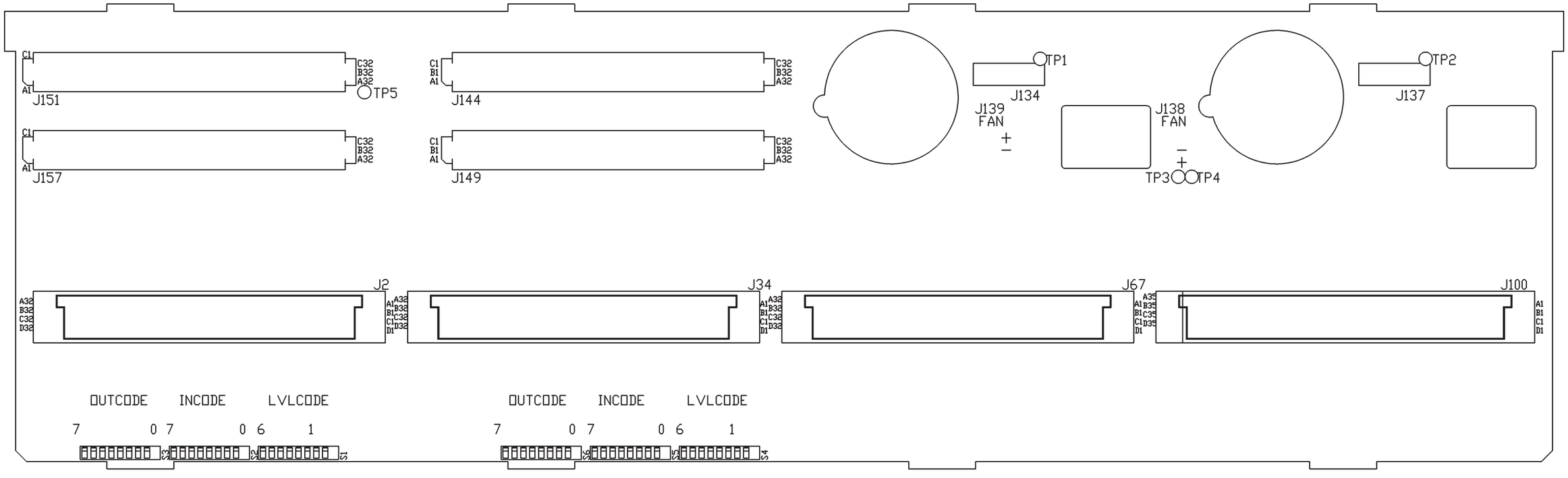
	MAINFRAME	BACKPLANE	POWER SUPPLY	MATRIX CARD	VIDEO CROSSPOINT
ANALOG VIDEO	81906517410	②	④	⑩	⑪
DIGITAL VIDEO	81906517430	②	④	⑦	NA
ANALOG AUDIO	81906517420	③	④	⑨	NA
DIGITAL AUDIO	81906517440	③	④	⑧	NA

①	CHASSIS	81906517510
②	VIDEO BACKPLANE	81906517520
③	AUDIO BACKPLANE	81906517530
④	POWER SUPPLY	81906514550
⑤	VOID	81906515680
⑥	CONTROLLER	81906517030
⑦	DIGITAL VIDEO MATRIX	81906517480
⑧	DIGITAL AUDIO MATRIX	81906517490
⑨	ANALOG AUDIO MATRIX	81906517470
⑩	ANALOG VIDEO MATRIX	81906517460
⑪	VIDEO CROSSPOINT 16*16	81906517550

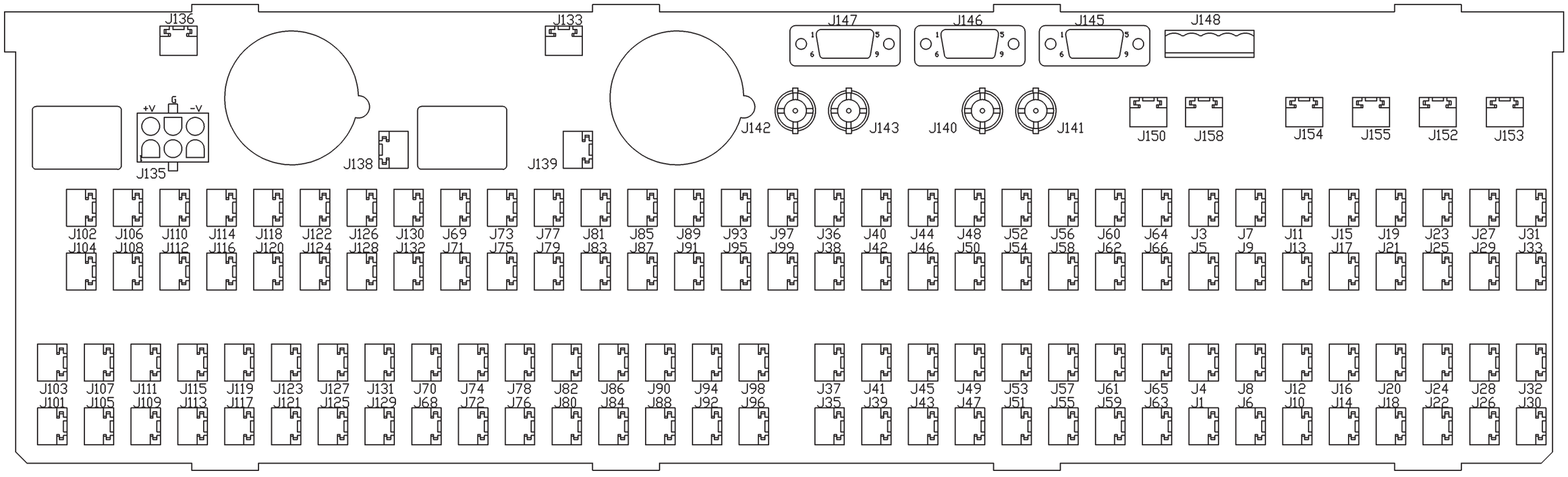
Configuration Drawing • Cougar Mainframe • CD63-0758

NOTES: (UNLESS OTHERWISE SPECIFIED)
1. MATERIAL: SEE BODY OF DRAWING.
2. ASSEMBLY: ASSEMBLE PER INSTRUCTIONS IN BODY OF DRAWING.

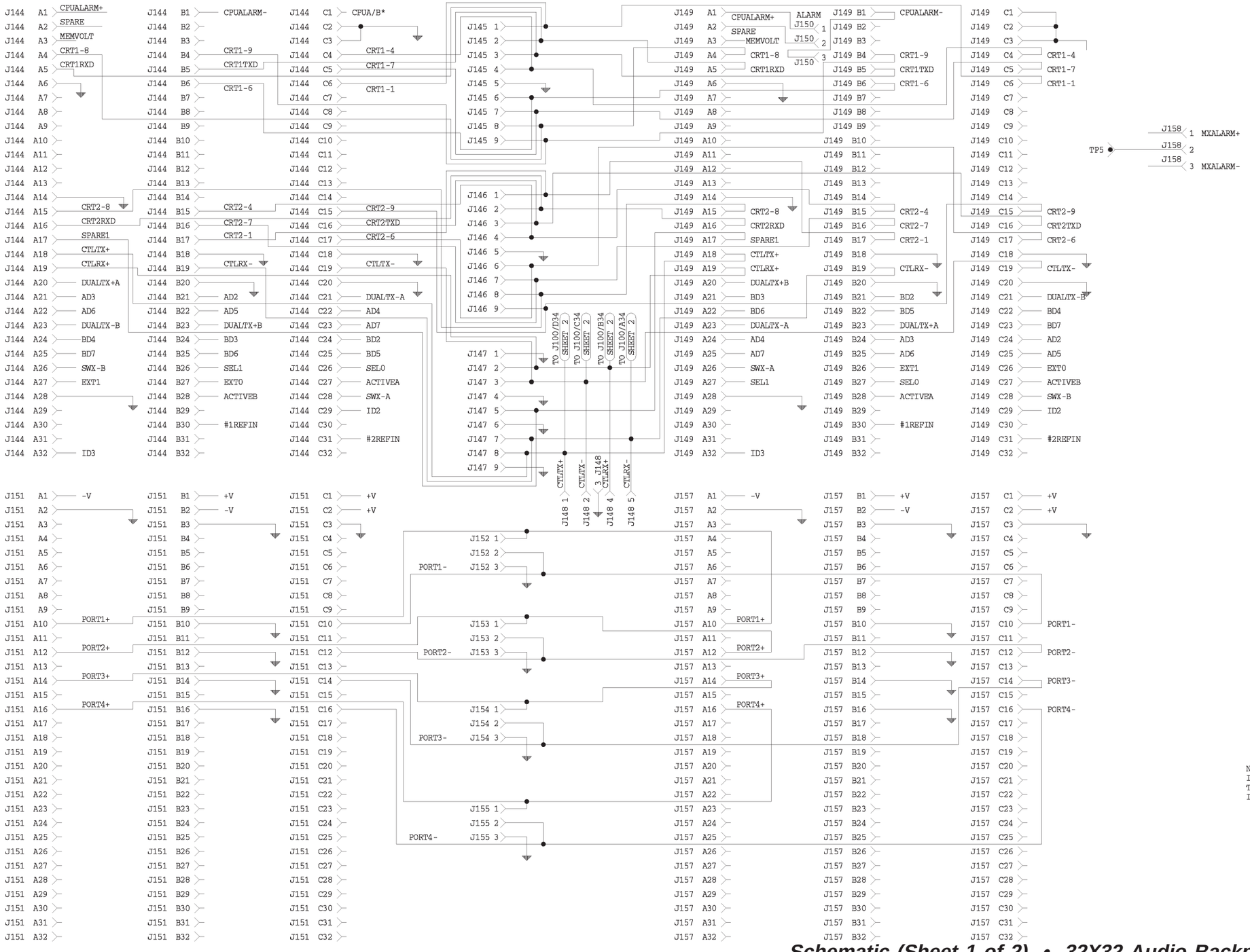
Configuration Drawing • Cougar Chassis • CD63-0759



Component Assembly (Sheet 1 of 2) • 32X32 Audio Backplane • CA25-1282

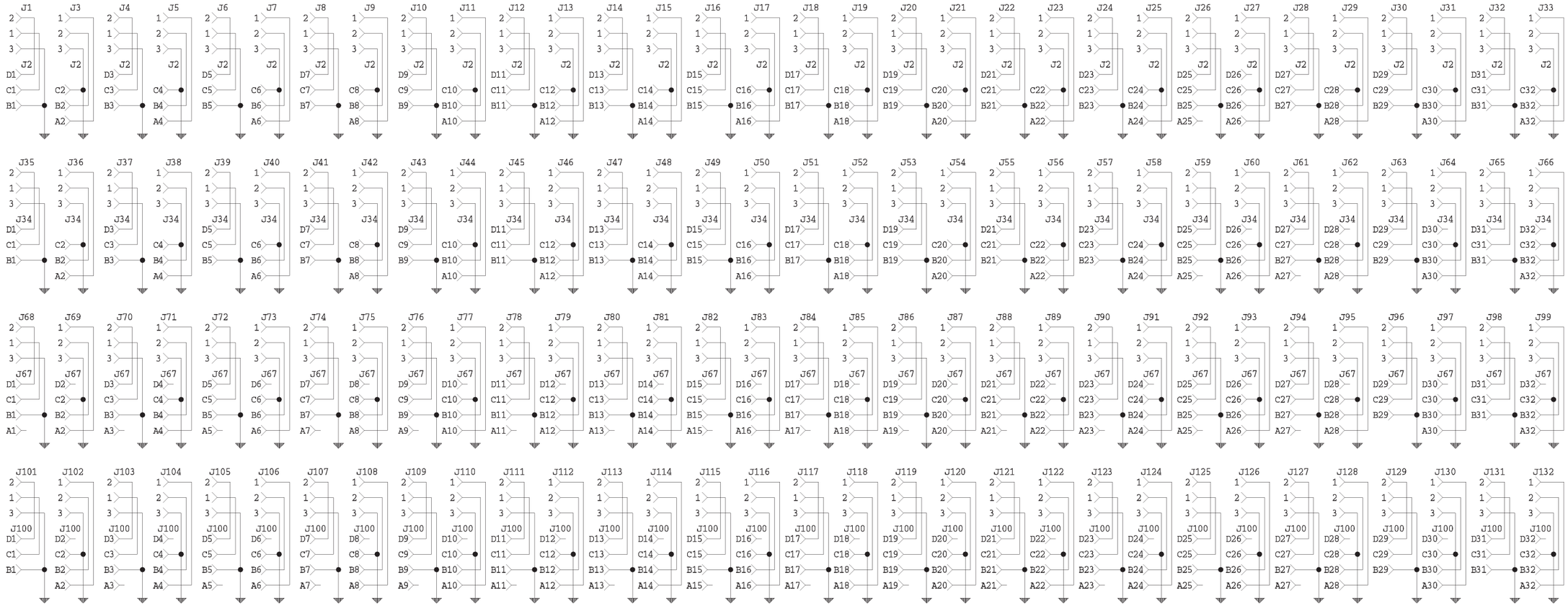


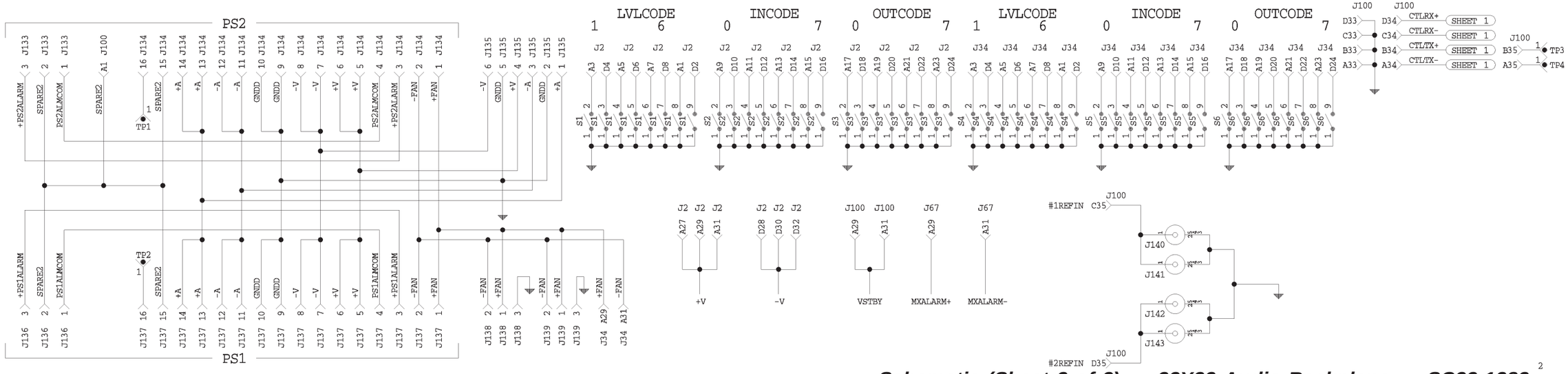
Component Assembly (Sheet 2 of 2) • 32X32 Audio Backplane • CA25-1282



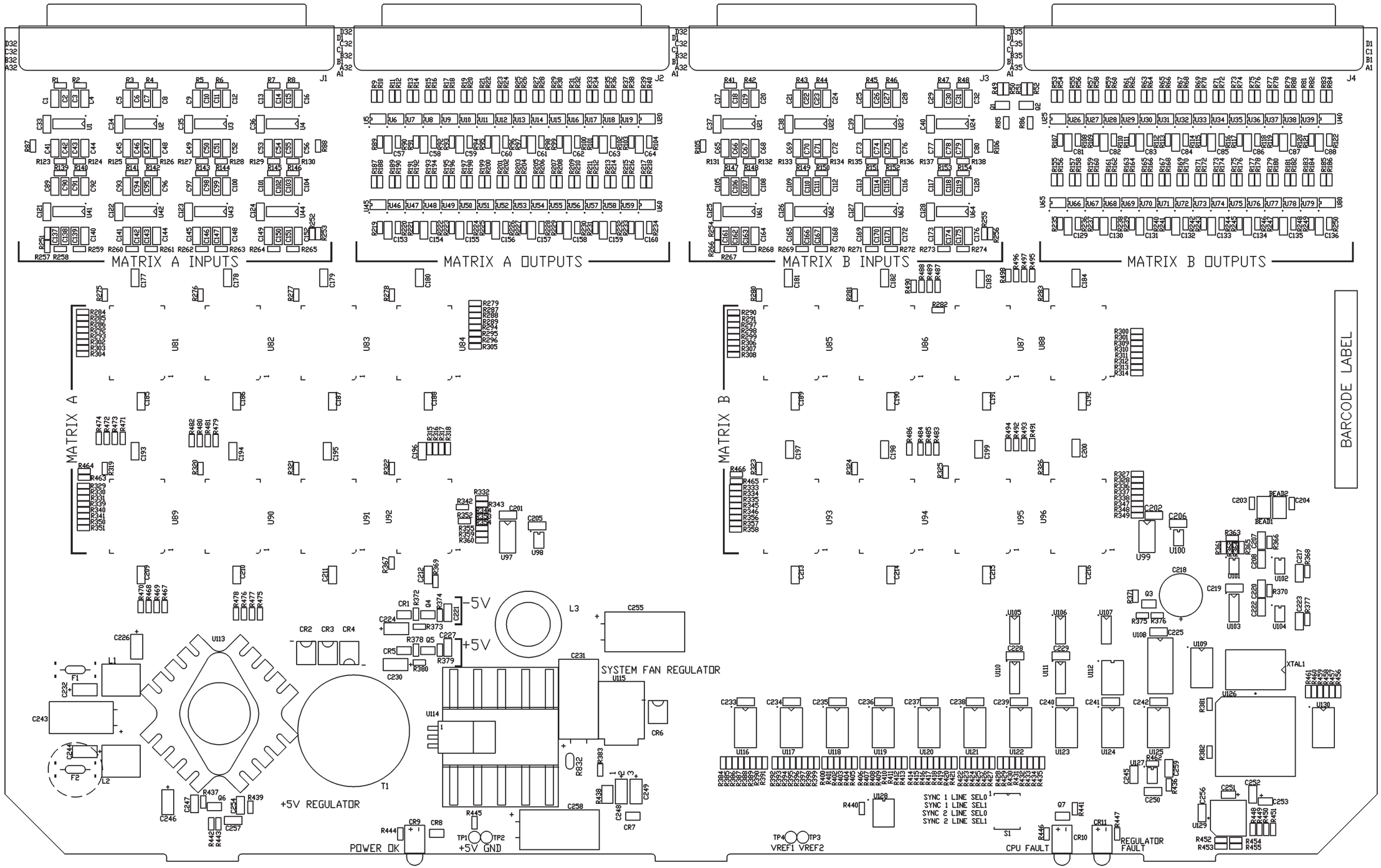
NOTES:
ID0 - ID3 ARE USED TO IDENTIFY THE FRAME TO THE CPU.
ID0,2,3 = OPEN ID1 = GND.

Schematic (Sheet 1 of 2) • 32X32 Audio Backplane • SC33-1282

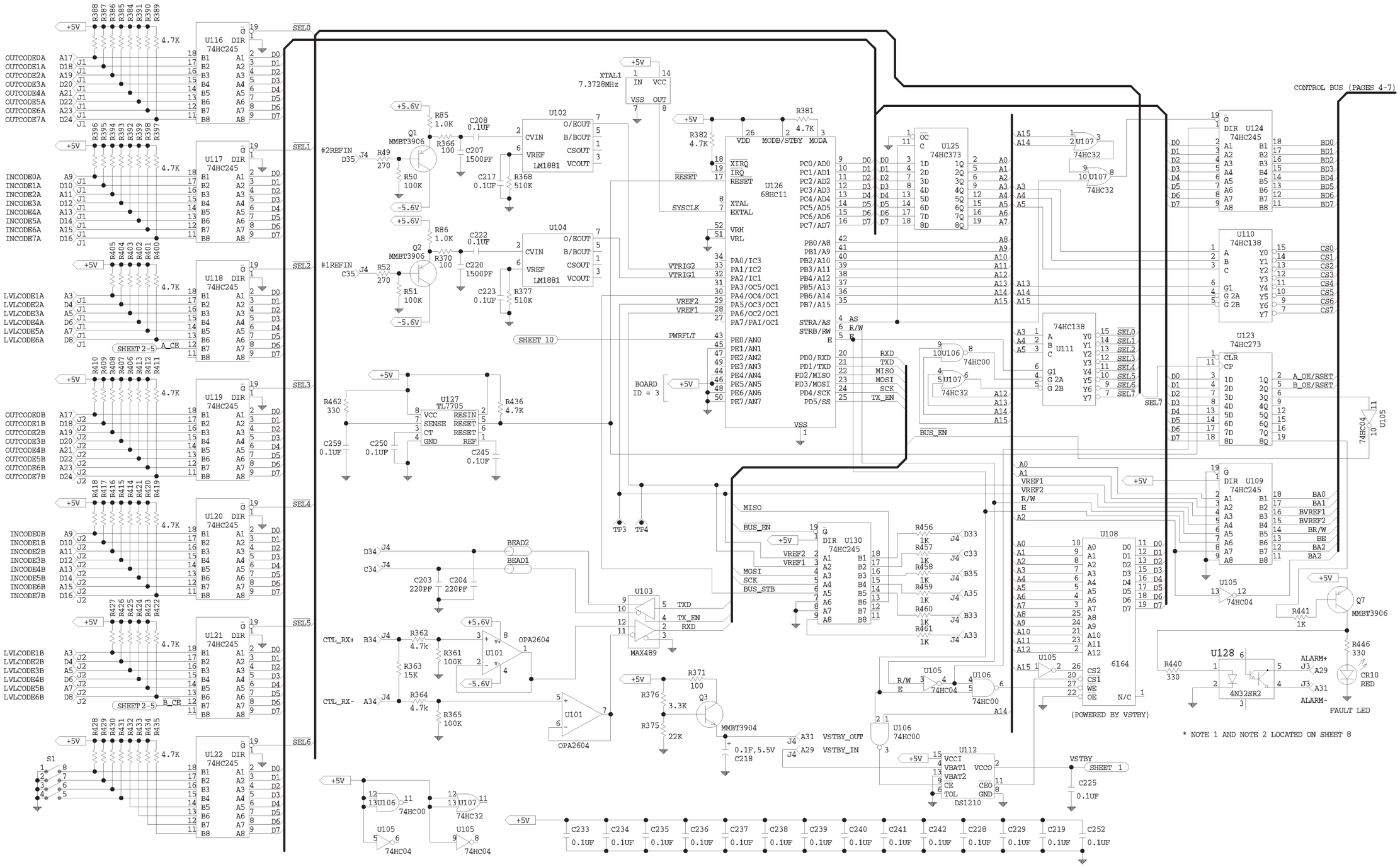




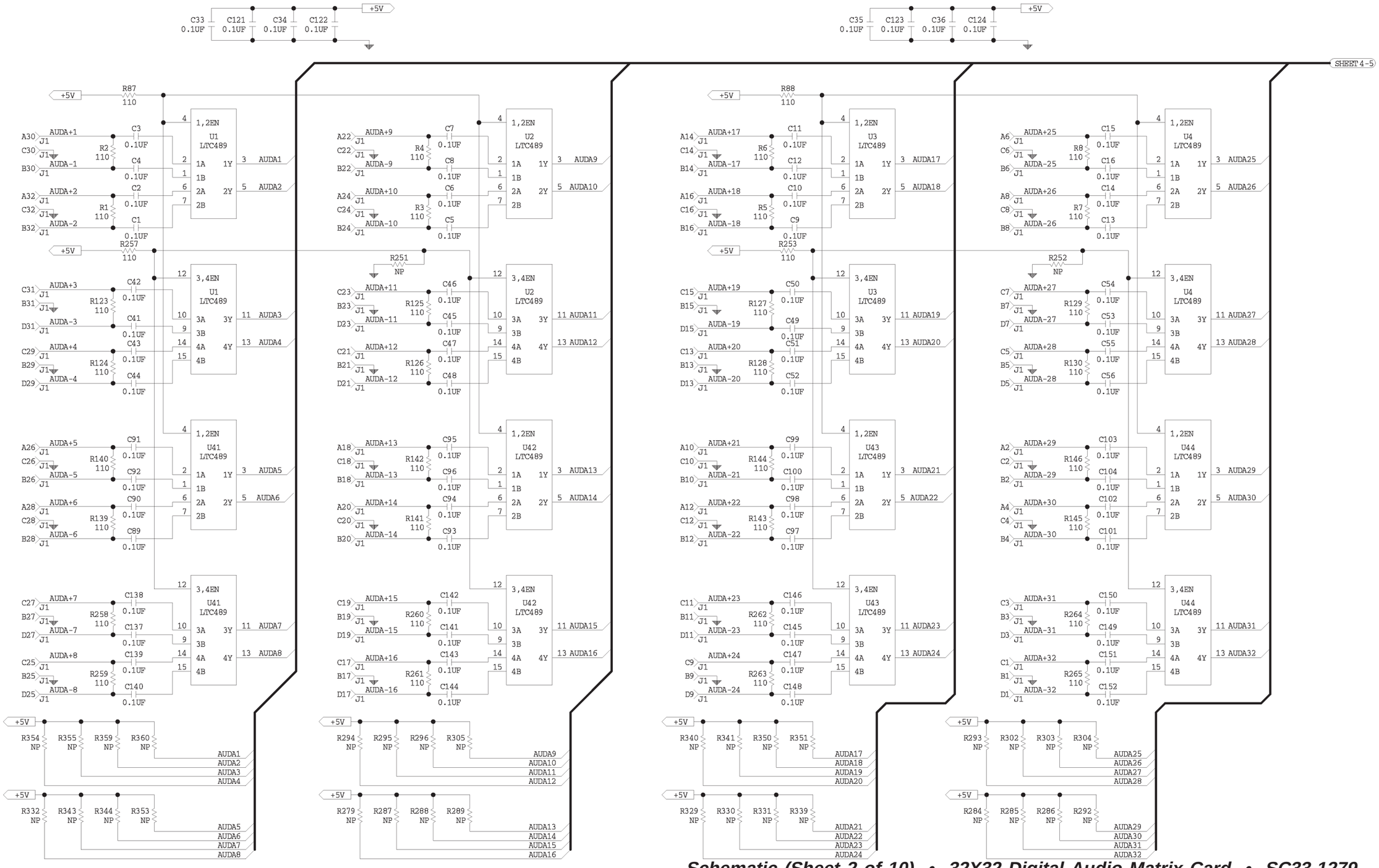
Schematic (Sheet 2 of 2) • 32X32 Audio Backplane • SC33-1282 2



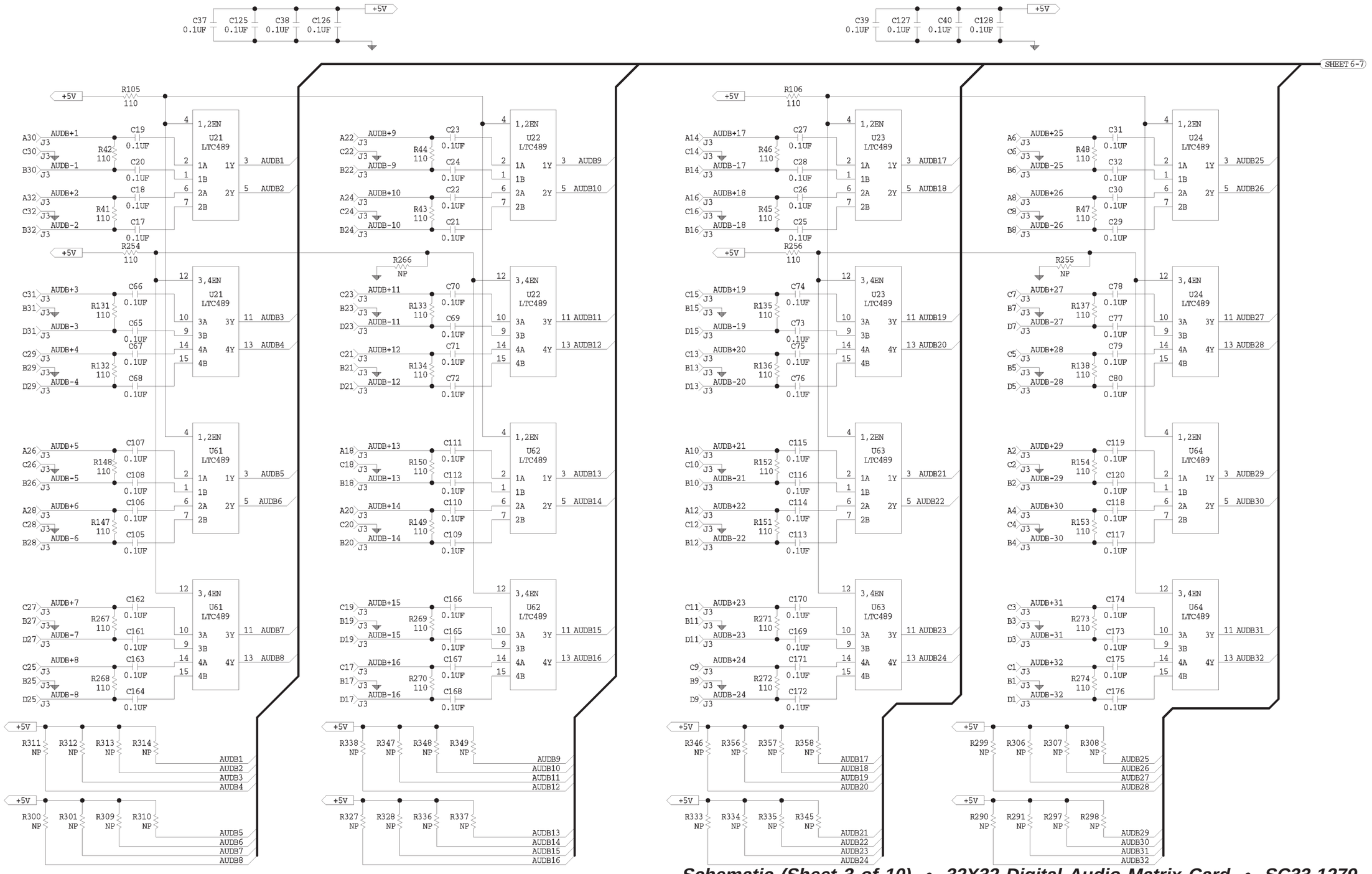
Component Assembly • 32X32 Digital Audio Matrix Card • CA25-1279



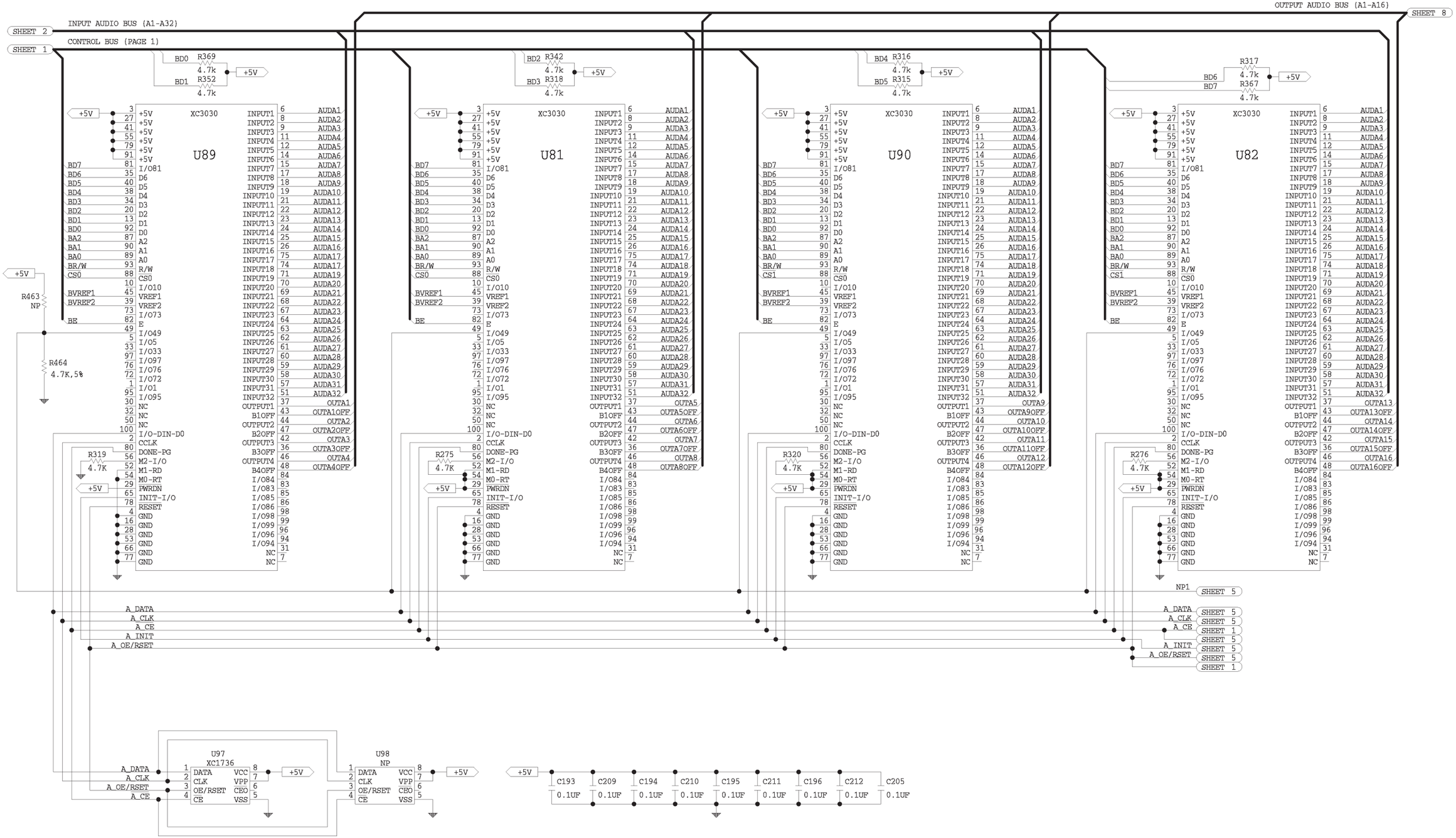
Schematic (Sheet 1 of 10) • 32X32 Digital Audio Matrix Card • SC33-1279[1]



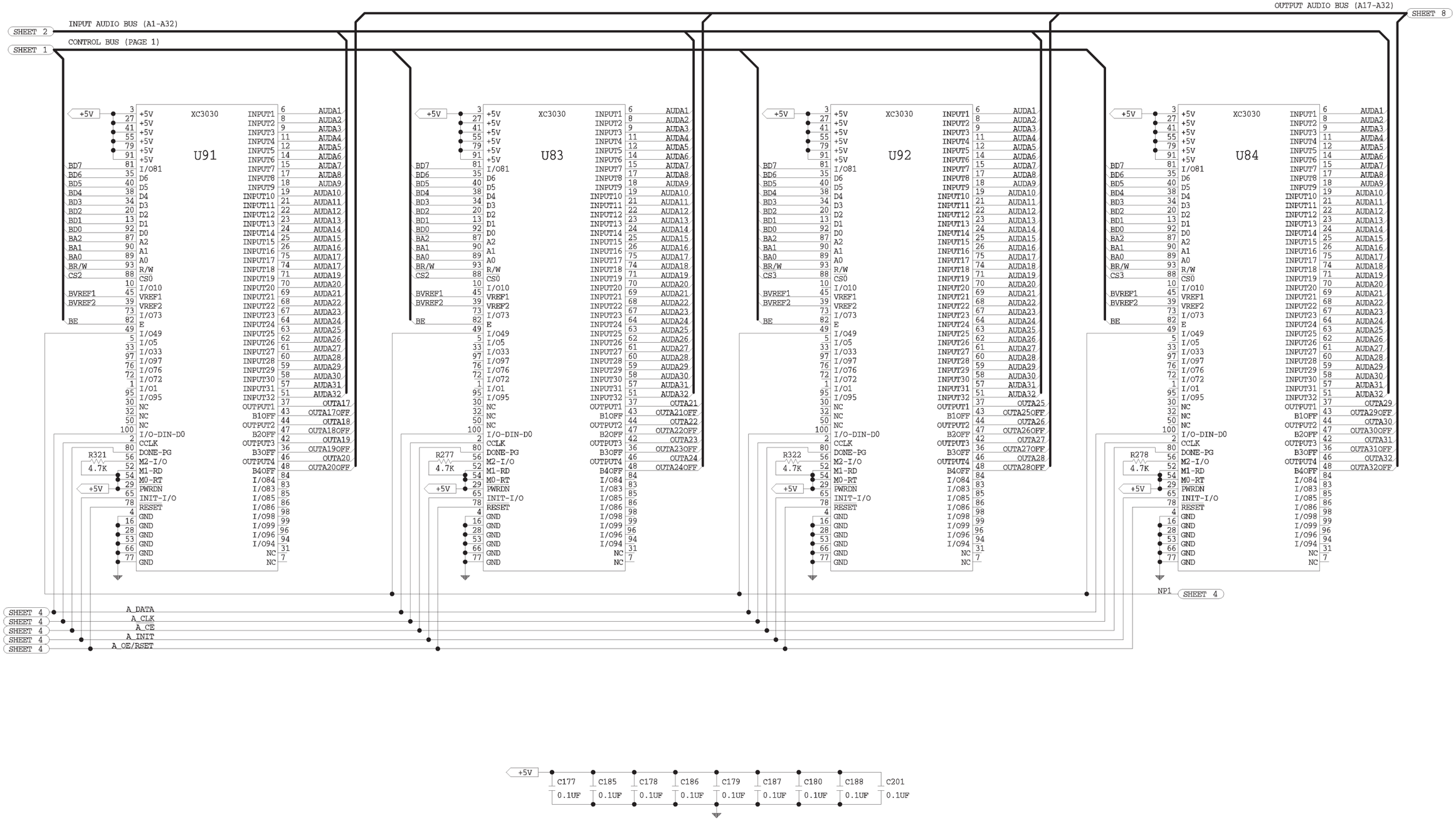
Schematic (Sheet 2 of 10) • 32X32 Digital Audio Matrix Card • SC33-1279



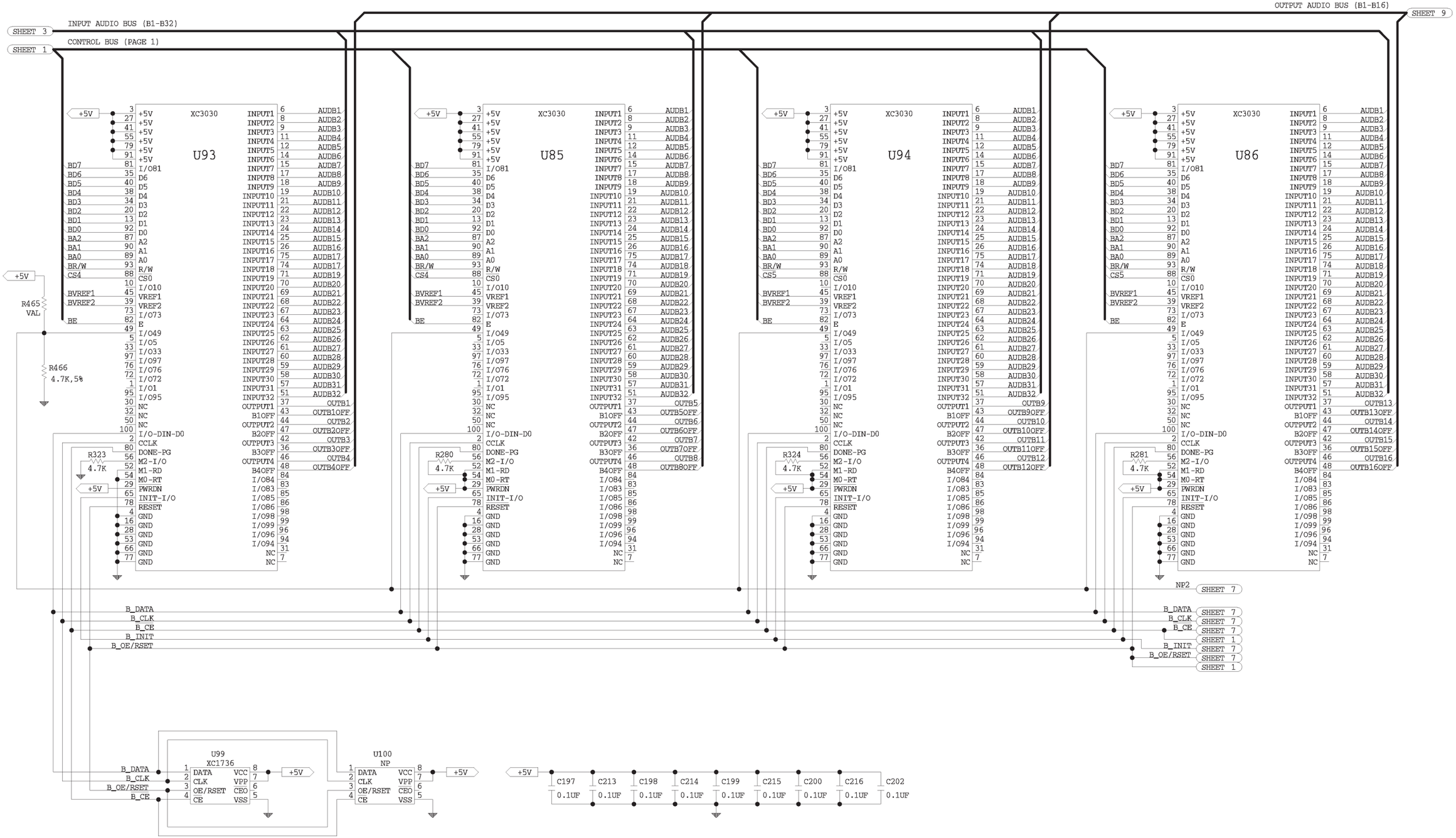
Schematic (Sheet 3 of 10) • 32X32 Digital Audio Matrix Card • SC33-1279



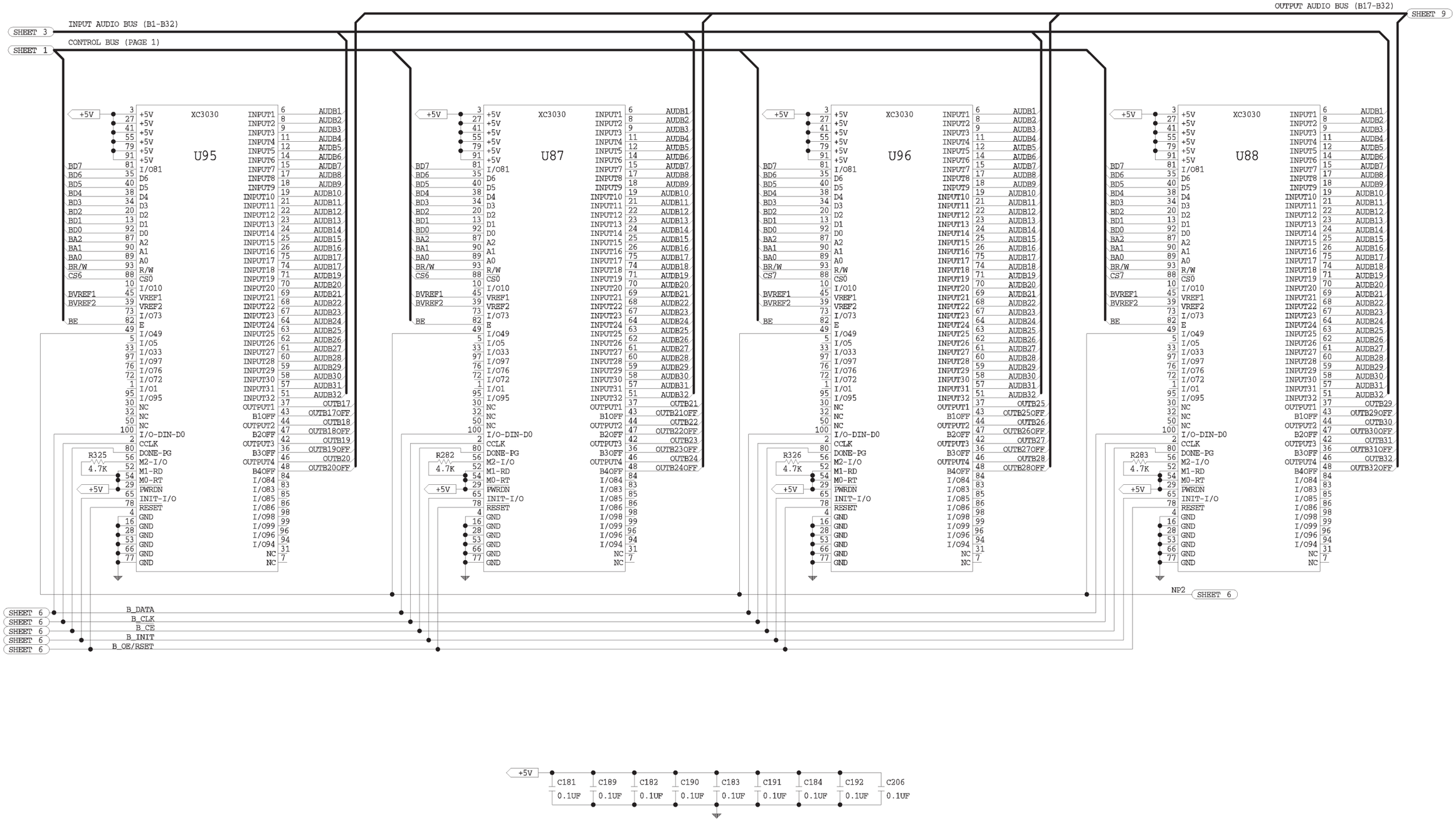
Schematic (Sheet 4 of 10) • 32X32 Digital Audio Matrix Card • SC33-1279



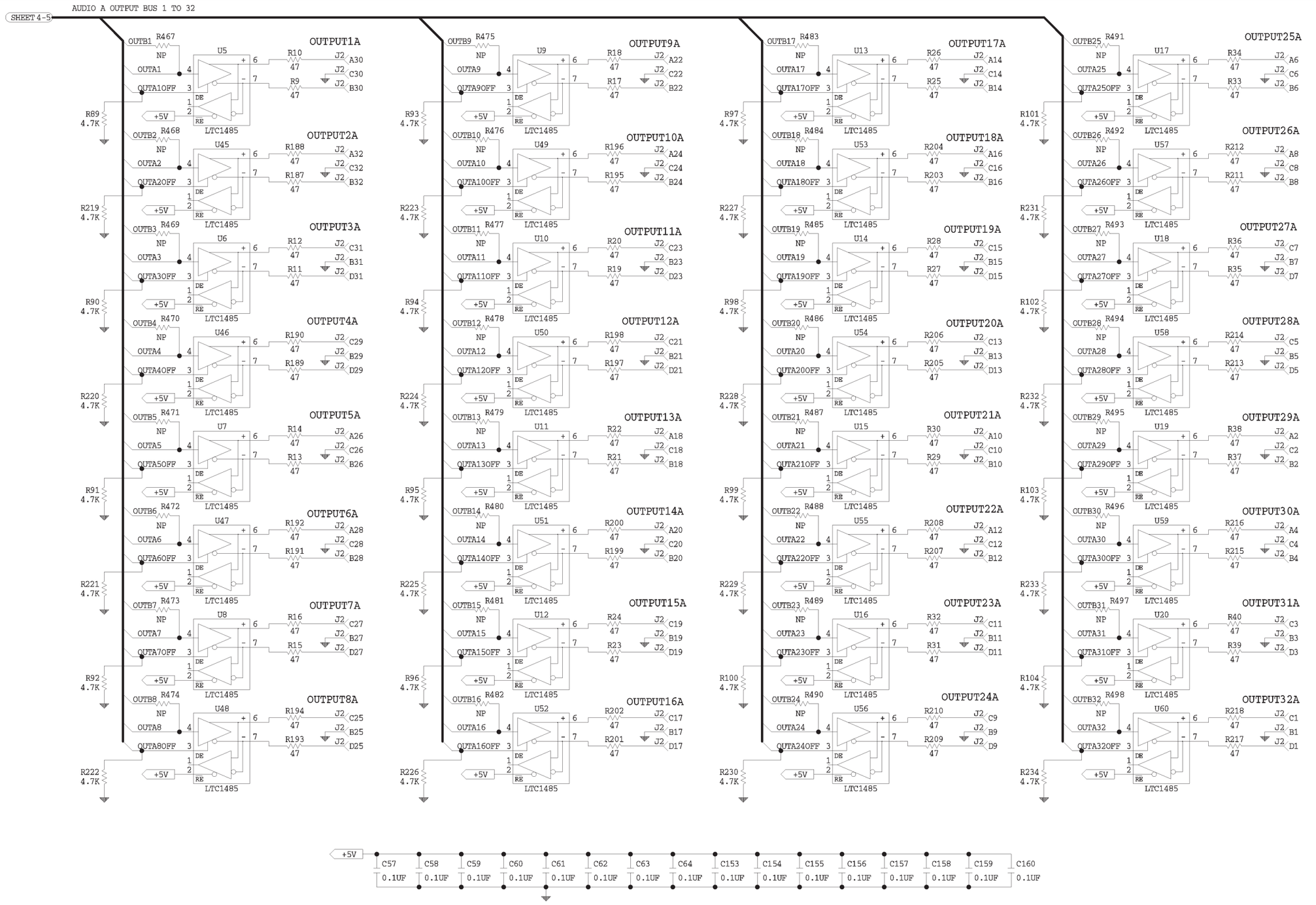
Schematic (Sheet 5 of 10) • 32X32 Digital Audio Matrix Card • SC33-1279



Schematic (Sheet 6 of 10) • 32X32 Digital Audio Matrix Card • SC33-1279



Schematic (Sheet 7 of 10) • 32X32 Digital Audio Matrix Card • SC33-1279



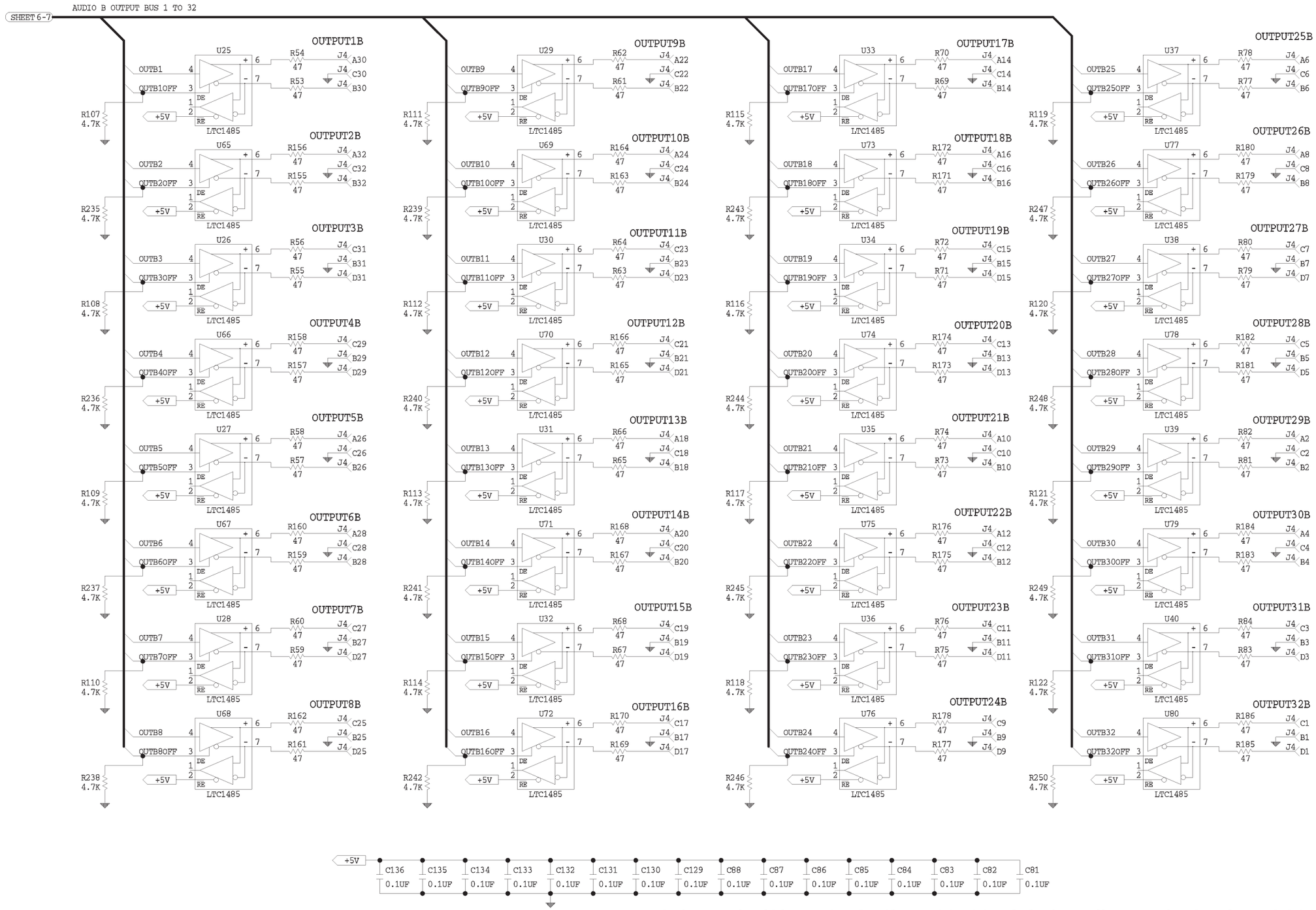
(NOTE 1)

FOR 81906519000 ADD 32, 0.0 OHM RESISTORS PESA PART NUMBER 81906601521 TO R467 THRU R498, ADD 2, 4.7K OHM RESISTORS PESA PART NUMBER 81906600820 TO R463 AND 465 AND REMOVE R464 AND R466.

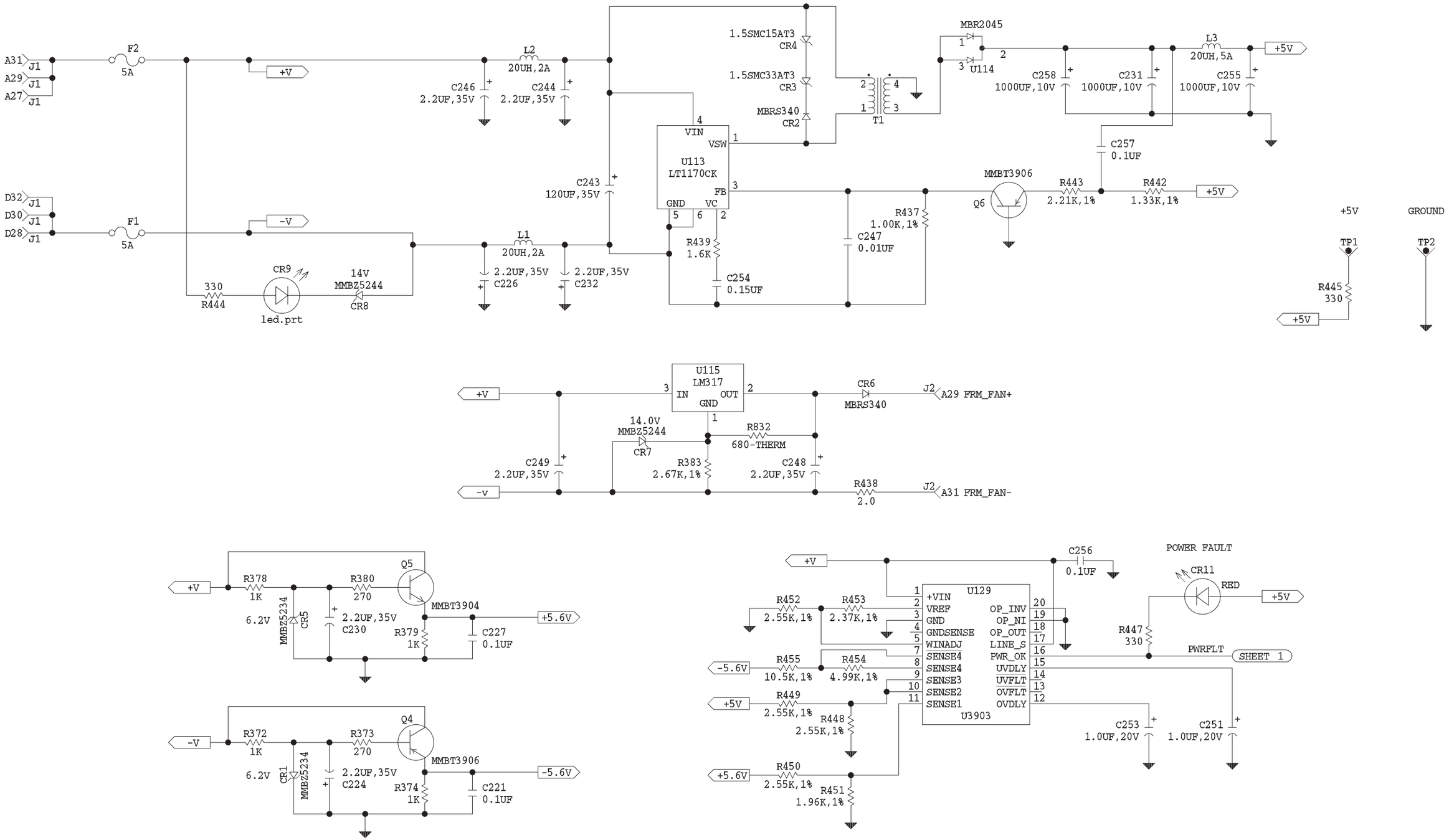
(NOTE 2)

FOR 81906517490 R467 THRU 489, R463, AND R465 ARE NOT PLACED. R464 AND R466 ARE 4.7K OHM PESA PART NUMBER 81906600820

Schematic (Sheet 8 of 10) • 32X32 Digital Audio Matrix Card • SC33-1279

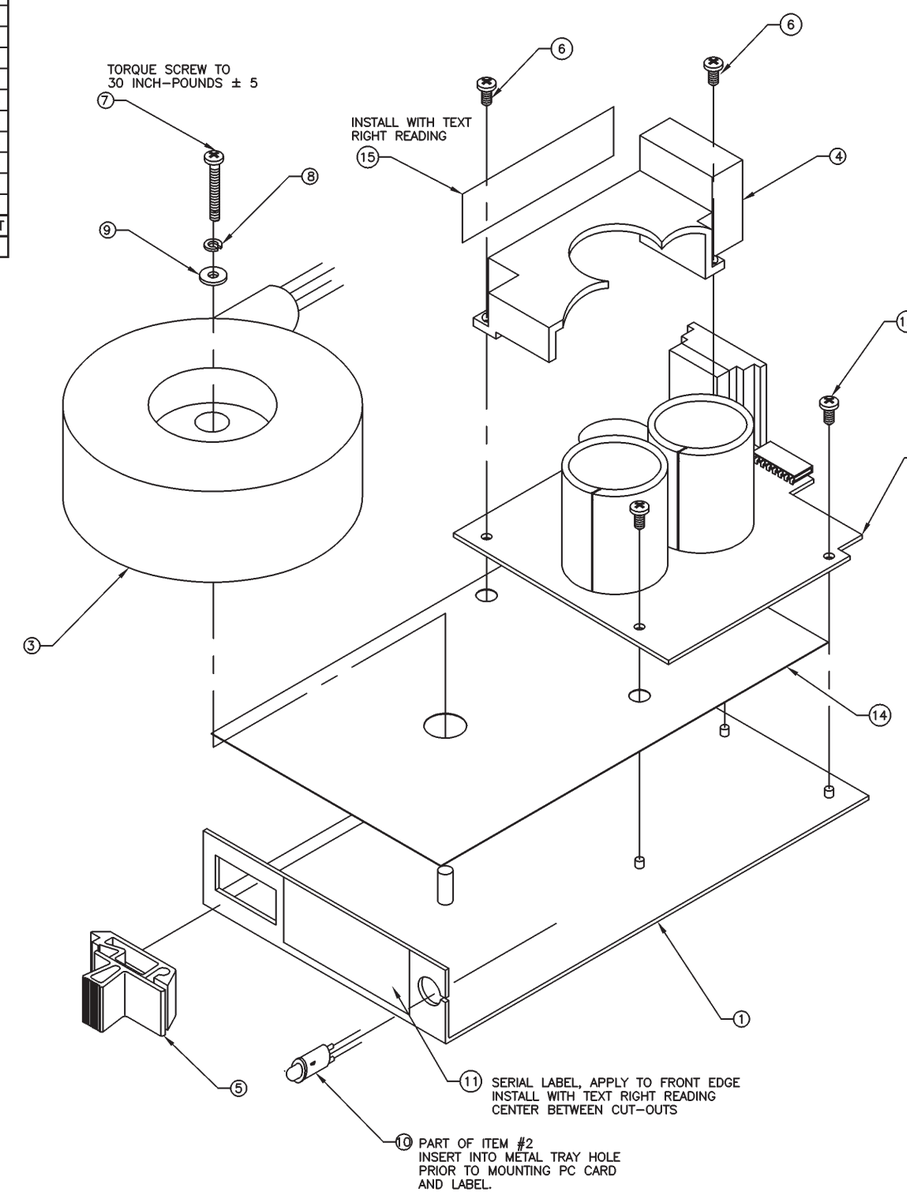


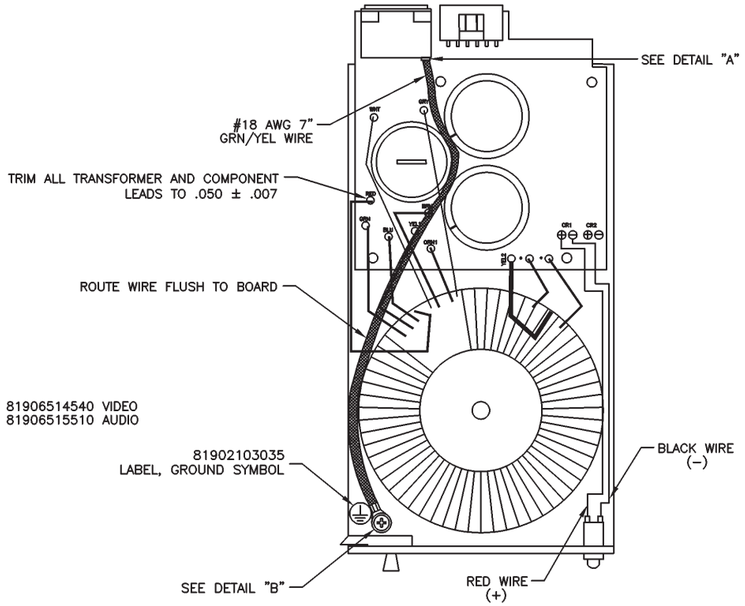
Schematic (Sheet 9 of 10) • 32X32 Digital Audio Matrix Card • SC33-1279

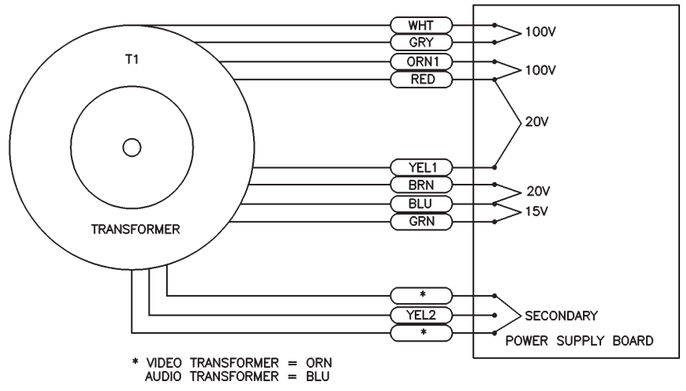


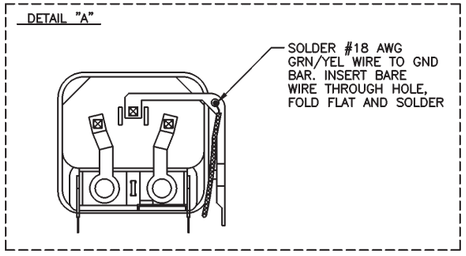
Schematic (Sheet 10 of 10) • 32X32 Digital Audio Matrix Card • SC33-1279

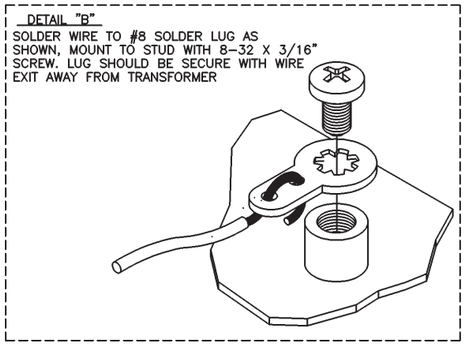
NO	REF. DESIGNATOR	DESCRIPTION	QTY	UNIT
		HARDWARE SCHEDULE		
15	81902105140	LABEL, UL, VIDEO	1.0	EA
14	81902105040	INSULATOR	1.0	EA
13	SEE DETAIL A	LABEL	1.0	EA
12	81902200112	4–40 X 3/16 SCREW	2.0	EA
11	81902105120	SERIAL LABEL	1.0	EA
10	81903200570	LED INDICATOR LIGHT	REF	
9	81902200906	#10 FLAT WASHER	1.0	EA
8	81902200898	#10 SPLIT LOCKWASHER	1.0	EA
7	81902201011	10–32 X 1" SCREW	1.0	EA
6	81902200120	4–40 X 1/4 SCREW	2.0	EA
5	81902003227	LATCH	1.0	EA
4	81902104820	COVER	1.0	EA
3		TRANSFORMER	1.0	EA
2		POWER SUPPLY BOARD ASSY	1.0	EA
1	81903461720	TRAY	1.0	EA





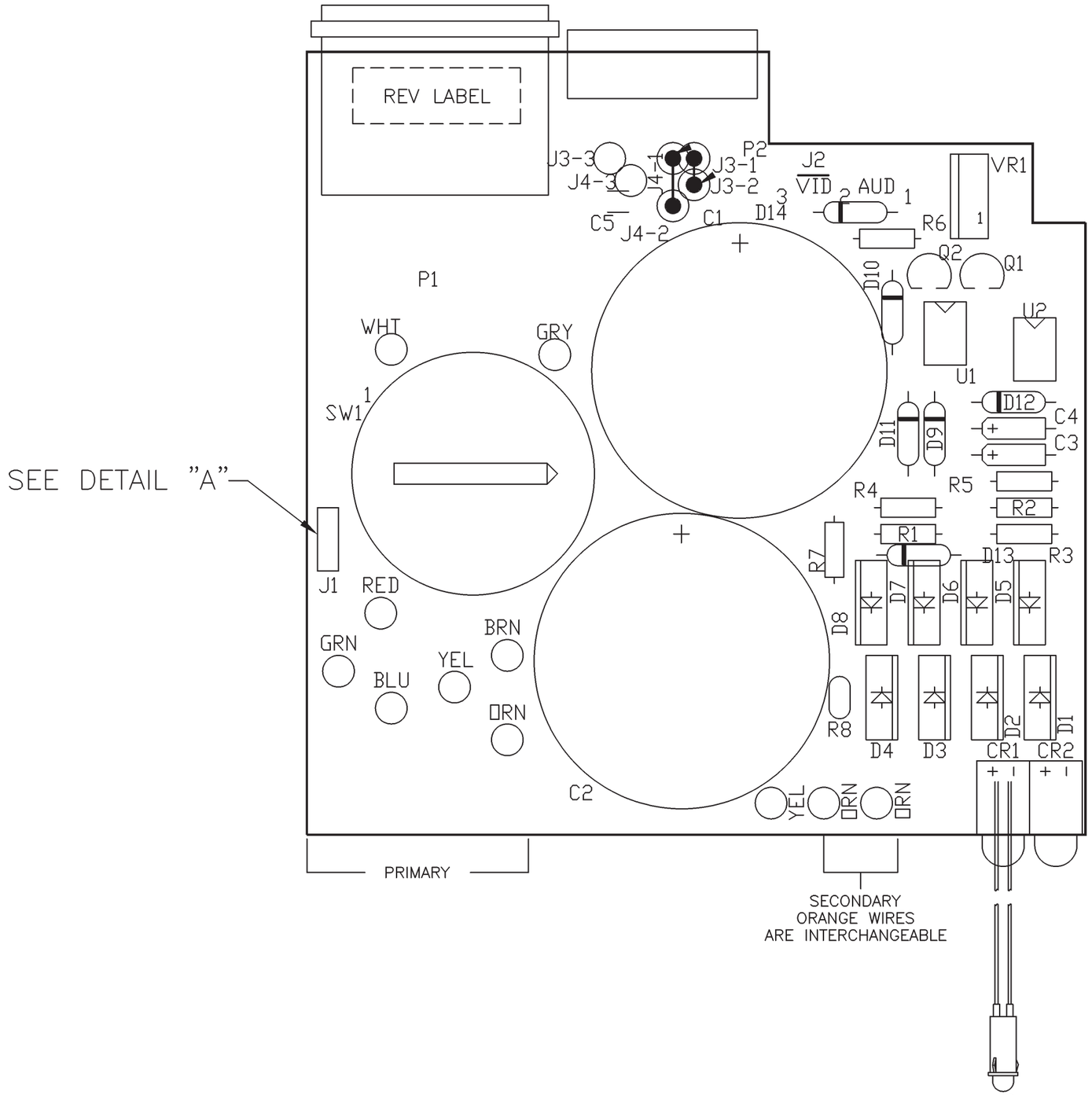


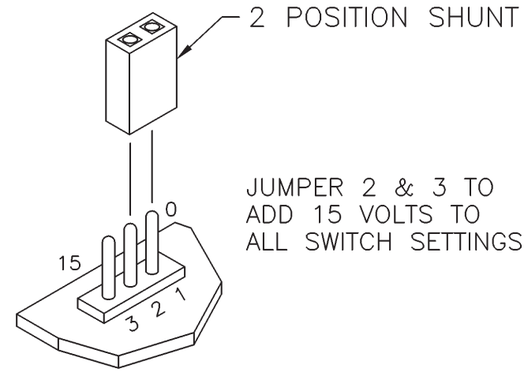




NOTE: WHEN USING THIS CONFIGURATION WITH THE INTERNATIONAL VERSIONS – CHANGES SHOULD BE MADE PER SPECIFICATION NO. 81906202860

Configuration Drawing • Power Supply Assembly • CD63-0683

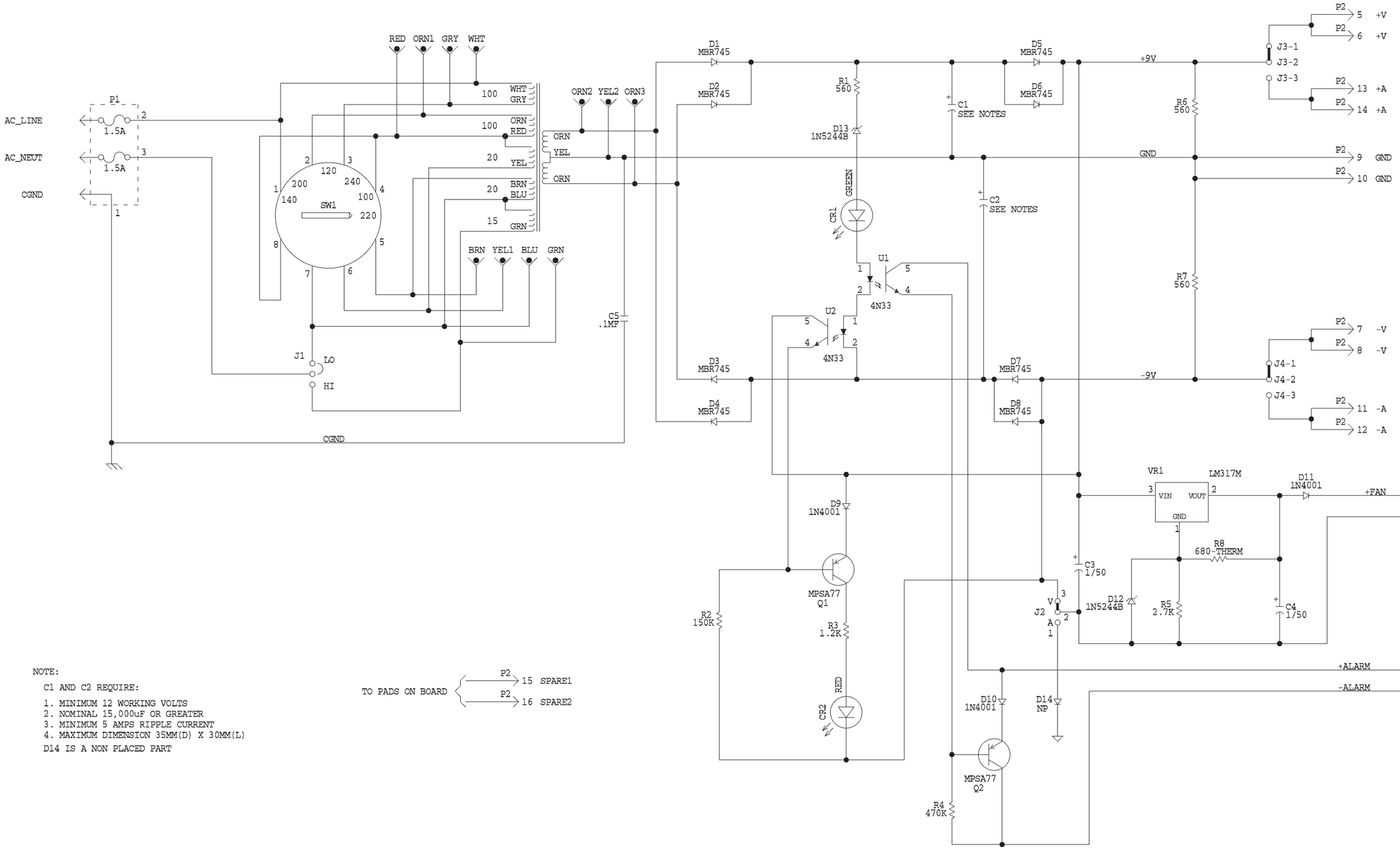




DETAIL "A"

SHUNT INSTALLATION ON J1
NOTE: SHUNT SHOULD BE INSTALLED
SO THAT SHUNT IS ON PIN 1 AND 2

Component Assembly • Power Supply Card • CA25-1162



NOTE:

C1 AND C2 REQUIRE:

1. MINIMUM 12 WORKING VOLTS
2. NOMINAL 15,000uF OR GREATER
3. MINIMUM 5 AMPS RIPPLE CURRENT
4. MAXIMUM DIMENSION 35MM(D) X 30MM(L)

D14 IS A NON PLACED PART

TO PADS ON BOARD → P2 15 SPARE1, P2 16 SPARE2

Schematic • Power Supply Card • SC33-1162

7.1 Parts List

General

The Parts List in this section have been grouped according to each assembly associated with the Cougar Digital Audio Routing Switcher. Refer to each list by name of card, board, or section of the equipment requiring replacement parts.

Cougar Mainframe - 81906517420

81901701730	FAN 12V 10.8cfm 40x28mm	2	EA	
81901702700	AIR FILTER 7" x 4.5"	1	EA	
81902003227	LATCH SLIDE BLK TAB CEI	2	EA	
81902200146	SCREW 4-40x3/8 PN HD PHIL	3	EA	
81902200237	SCREW 4-40x1.25 PN HD PHI	8	EA	REF:FAN
81902202647	SCREW 4-40x1/4 SIMM PANHD	4	EA	
81902202980	#6 WING NUT	2	EA	REF:AIR FILTER
81902202990	SCREW 8-32x1/2 WING HEAD	2	EA	REF: P.S. SHIPPING SCREWS
81902908110	CONN 3 PIN F STRAIN RELF	5	EA	REF: FAN, ALARMS
81903463810	DOOR 32x32 CHASSIS	1	EA	
81903463880	REAR PLATE ANALOG AUDIO	1	EA	
81906517510	CHASSIS 32x32	1	EA	
81906517530	32x32 AUD BACKPLANE ASSY	1	EA	
CD63-0758	DOC MAINFRAME 32x32	0	EA	

Cougar Chassis - 81906517510

81902105220	CARD GUIDE PLASTIC 3"	6	EA
81902201409	SCREW 4-40x1/4 FLT HD PHI	6	EA
81902202647	SCREW 4-40x1/4 SIMM PANHD	3	EA
81903463790	TRAY 32x32 CHASSIS	1	EA
81903463870	COVER TOP CHASSIS 32x32	1	EA
CD63-0759	DOC CHASSIS 32x32	0	EA

32X32 Audio Backplane - 81906517530

81902200146	SCREW 4-40x3/8 PN HD PHIL	6	EA	
81902412820	PCB 32x32 AUD BACKPLANE	1	EA	
81902600832	SWITCH 8 POS SIP LO PROFL	6	EA	SW1 - SW6
81902903061	CONN 6-POS MNL FEMALE RED	1	EA	J135
81902906486	CONN BNC PRESS-IN 75 OHM	4	EA	J140 J141 J142 J143
81902906932	CONN 9-PIN MALE D SOLDER	1	EA	J147
81902907200	CONN 16-POS PC MT FEMALE	2	EA	J134 J137
81902907900	CONN 128 PIN 4 ROW VERT	3	EA	J2 J34 J67
81902907910	CONN 140 PIN 4 ROW VERT	1	EA	J100
81902908010	CONN 5 PIN 5.08mm VT MALE	1	EA	J148
81902908100	CONN 3 PIN PC MNT VERTCL	133	EA	J101-J132 J68-J99 J35-J66 J1 J3-J33 J136 J138 J133 J139 J158
CA25-1282	DOC 32x32 AUDIO BCKPLNE	0	EA	
SC33-1282	DOC 32x32 AUDIO BCKPLNE	0	EA	

32X32 Digital Audio Matrix Card - 81906517490

81900601022	THERMISTOR 680 OHM 5%	1	EA	R832
81901000740	CAP SWXR REG OUT 35V ELEC	1	EA	C243
81901000760	CAP SWXR REG OUT 10V 12mm	3	EA	C255 C231 C258
81901000840	CAP 0.1F 5.5V	1	EA	C218
81901500827	DIODE PACK MBR2045	1	EA	U114
81901603738	REG LM317T 1.2V-37V ADJST	1	EA	U115
81901606830	IC 7.3728 MHZ OSCILLATOR	1	EA	XTAL1
81901606980	REG LT1170 5A SWXING 60V	1	EA	U113
81901900280	HEATSINK LOW PROFILE	1	EA	REF:U114
81902104512	INSERT/EXTRACTR NYLON	2	EA	REF:SHIELD PLATE
81902105050	LABEL BARCODE 1.5"x0.25"	1	EA	
81902200070	NUT 4-40 HEX	4	EA	REF:U113 U114
81902202647	SCREW 4-40x1/4 SIMM PANHD	6	EA	REF:SHIELD PLATE
81902202712	SCREW 4-40x5/16 SIMM PNHD	4	EA	REF:U113 U114
81902301080	INDUCTOR 20uH 2A TOROIDAL	2	EA	L1 L2
81902301280	TRANSFORMER CUST SDV24x16	1	EA	T1
81902301330	INDUCTOR 30 UH CUSTOM	1	EA	L3
81902412790	PCB 32x32 AUD DIGTL 110	1	EA	
81902700880	FUSE 5A PICO AXIAL 125V	2	EA	F1 F2
81902901479	SOCKET 8 PIN LOW PROF IC	2	EA	REF:U97 U99
81902907920	CONN 128 RECPT R/A 4 ROW	3	EA	J1 J2 J3
81902907930	CONN 140 RECPT R/A 4 ROW	1	EA	J4
81902908060	SPLIT TERMINAL	4	EA	REF: F1 F2
81903200541	LED GREEN RT/A HI-EFF PCB	1	EA	CR9
81903200558	LED RED RT/A HI-EFF PC MT	2	EA	CR10 CR11
81903464030	SHIELD BOARD AUDIO 32x32	1	EA	
81906517980	SOFT COUGAR BIOS	1	EA	REF:U126
81906518020	SOFT 32x4 DIGITAL AUD XPT	2	EA	U97 U99
81906518600	HOLD OFF CIRCUIT L1170	1	EA	
81906600341	RESISTOR 47 OHM 5% 0805	128	EA	R9-R40 R53-R84 R155-R218
81906600424	RESISTOR 100 OHM 5% 0805	3	EA	R371 R366 R370
81906600432	RESISTOR 110 OHM 5% 0805	72	EA	R1-R8 R41-R48 R87 R88 R105 R106 R123-R154 R253 R254 R256-R265 R267-R274
81906600520	RESISTOR 270 OHM 5% 0805	4	EA	R49 R52 R373 R380
81906600549	RESISTOR 330 OHM 5% 0805	6	EA	R440 R444 R445 R446 R447 R462
81906600663	RESISTOR 1K OHM 5% 0805	13	EA	R372 R374 R378 R379 R441 R85 R86 R456-R461
81906600713	RESISTOR 1.6K OHM 5% 0805	1	EA	R439
81906600783	RESISTOR 3.3K 5% 0805 SMT	1	EA	R376
81906600820	RESISTOR 4.7K 5% 0805 SMT	147	EA	R89-R104 R107-R122 R219-R250 R275-R278 R315-R326 R342 R352 R362 R364 R367 R369 R381 R382 R384-R436 R280-R283 R464 R466
81906600945	RESISTOR 15K 5% 0805 SMT	1	EA	R363
81906600986	RESISTOR 22K 5% 0805 SMT	1	EA	R375
81906601133	RESISTOR 100K 5% 0805 SMT	4	EA	R50 R51 R361 R365

32X32 Digital Audio Matrix Card - 81906517490 Continued:

81906601307	RESISTOR 510K 5% 0805 SMT	2	EA	R368 R377
81906611930	RESISTOR 1.0K 1% 0805 SMT	1	EA	R437
81906612050	RESISTOR 1.33K 1% 0805	1	EA	R442
81906612213	RESISTOR 1.96K 1% 0805	1	EA	R451
81906612264	RESISTOR 2.21K 1% 0805	1	EA	R443
81906612296	RESISTOR 2.37K 1% 0805	1	EA	R453
81906612320	RESISTOR 2.55K 1% 0805	4	EA	R448 R449 R450 R452
81906612340	RESISTOR 2.67K 1% 0805	1	EA	R383
81906612593	RESISTOR 4.99K 1% 0805	1	EA	R454
81906612900	RESISTOR 10.5K 1% 0805	1	EA	R455
81906640024	RESISTOR 2.0 OHM 5% 1210	1	EA	R438
81906700320	CAP 220PF NPO 0805 CERAMC	2	EA	C203 C204
81906710110	CAP 0.15MF 50V CERAM 1206	1	EA	C254
81906730015	CAP 0.1MF 50V CERMIC 1206	238	EA	C1-C202 C205 C206 C208-C217 C219 C221 C222 C223 C225 C227 C228 C229 C233-C242 C245 C250 C252 C256 C257 C259
81906730056	CAP 0.01MF 50V CERAM 1206	1	EA	C247
81906760160	CAP 1500PF 50V CERAM 1206	2	EA	C207 C220
81906770037	CAP TANTLM,SMT,2.2MFD/35V	8	EA	C224 C226 C230 C232 C244 C246 C248 C249
81906770052	CAP 1MF 20V TANLUM SIZE A	2	EA	C251 C253
81906800016	TRANS SMT,MMBT3904LT1	2	EA	Q3 Q5
81906800065	TRANS SMT,MMBZ5234B	2	EA	CR1 CR5
81906800107	TRANS SMT,MMBT3906L	5	EA	Q1 Q2 Q4 Q6 Q7
81906800230	DIODE MBR340 40V 3A SHTTK	2	EA	CR2 CR6
81906800360	ZENER MB5244 14V SOT-23	2	EA	CR7 CR8
81906800390	ZENER MC15 15V 1.5W SMT	1	EA	CR4
81906800410	TRANSIENT SUPPRESSOR 33V	1	EA	CR3
81906810072	IC 3903 QUAD SPLY MONITOR	1	EA	U129
81906810106	IC LM1881 VID SYNC SEPART	2	EA	U102 U104
81906810171	IC SMT,74HC04 (SOIC-14)	1	EA	U105
81906810340	IC 74HC00 QUAD AND SO SMT	1	EA	U106
81906810510	IC 6264 8Kx8 SRAM 100ns	1	EA	U108
81906810550	IC 74HC245 OCTL TRANSCEVR	10	EA	U109 U116-U122 U124 U130
81906810570	IC 74HC373 OCTAL LATCH SO	1	EA	U125
81906810770	IC 74HC32 QUAD 2-INPUT OR	1	EA	U107
81906810890	IC RS485 RECVR/TRANSMITTR	1	EA	U103
81906810900	IC DUAL 24V AMP AUDIO	1	EA	U101
81906810930	IC TL7705 MICRO SUPERVISR	1	EA	U127
81906810960	IC OPTOCOUPLER SMT 4N32	1	EA	U128
81906810970	IC DIFF BUS TRANSCEIVER	64	EA	U5-U20 U25-U40 U45-U60 U65-U80
81906810980	IC QUAD LINE RECEIVER	16	EA	U1-U4 U21-U24 U41-U44 U61-U64
81906811030	IC 74HC273 OACTAL REGISTR	1	EA	U123
81906811040	IC 74HC138 3 TO 8 DECODER	2	EA	U110 U111
81906811060	IC XC3030A LCA	16	EA	U81-U96
81906811080	IC DS1210 NONVOL CNTL CHP	1	EA	U112

32X32 Digital Audio Matrix Card - 81906517490 Continued:

81906920030	SWITCH DIP 4 POS GULLWING	1	EA	S1
81906940040	SOCKET 52 PIN PLCC SMT	1	EA	REF:U126
81906950040	BEAD INDUCTOR SMT	2	EA	BEAD1 BEAD2
CA25-1279	DOC 32x32 AUD DIGTL 110	0	EA	
NOT-PLACED	ITEMS NOT PLACED ON EBOM	0	EA	R251 R252 R255 R266 R279 R284-R314 R327-R341 R343-R351 R353-R360 TP1 TP2 TP3 TP4 U98 U100 R463 R465 R467-R498
SC33-1279	DOC 32x32 AUD DIGTL 110	0	EA	

Power Supply Assembly - 81906514550

81902003227	LATCH SLIDE BLK TAB CEI	1	EA
81902103035	LABEL GROUND SYMBOL	1	EA
81902104820	COVER AC DA3000 PLASTIC	1	EA
81902105040	INSULATOR PS70 CARD/TRAY	1	EA
81902105120	LABEL 2"x1" METAL POLYEST	1	EA
81902105140	LABEL CAUTION PS70V U.L.	1	EA
81902200112	SCREW 4-40x3/16 PN HD PHI	2	EA
81902200120	SCREW 4-40x1/4 PN HD PHIL	2	EA
81902200674	SCREW 8-32x3/16 PH SS PHI	1	EA
81902200898	WASHER #10 SPLIT LOCK	1	EA
81902200906	WASHER #10 FLAT	1	EA
81902201011	SCREW 10-32 x 1" PN HD PH	1	EA
81902301070	TRANSFORMER VID PS70 TORO	1	EA
81902700820	FUSE 1.25A SLOBLO 5x20mm	2	EA
81902804030	CORD PWR 3 CND 18AWG 7’6"	1	EA
81902804040	WIRE 18 AWG GRN/YEL	7	IN
81902907590	FUSE DRAWER 2 POLE PC MNT	1	EA
81902908080	LOCKWASHER TERM LUG #8	1	EA
81903461720	TRAY PS70 PWR SUPPLY BD	1	EA
81906514540	PS70 VIDEO BOARD ASSEMBLY	1	EA
CD63-0683	DOC PWR SUPPLY PS70 A/V	0	EA

Power Supply Card - 81906514540

81900200601	RESISTOR 560 OHM 5% 1/4W	3	EA	R1 R6 R7
81900200684	RESISTOR 1.2K 5% 1/4W	1	EA	R3
81900200767	RESISTOR 2.7K 5% 1/4W	1	EA	R5
81900201179	RESISTOR 150K 5% 1/4W	1	EA	R2
81900201294	RESISTOR 470K 5% 1/4W	1	EA	R4
81900601022	THERMISTOR 680 OHM 5%	1	EA	R8
81900700055	CAP 0.1MF 50V CERAM RADIL	1	EA	C5
81900900168	CAP 1MF 50V TANTLM AXIAL	2	EA	C3 C4
81901000800	CAP C1 & C2 PS70 VIDEO	2	EA	C1 C2
81901400465	TRANS MPSA77 PNP TO-92	2	EA	Q1 Q2
81901500173	ZENER 1N5244 14V 9MA	2	EA	D13 D12
81901500587	DIODE 1N4001	3	EA	D9 D10 D11
81901500910	DIODE MBR745 SCHKY TO-220	8	EA	D1-D8
81901602318	IC 4N33 OPTO DARLNGTN OUT	2	EA	U1 U2
81901606244	REG LM317MT POS .5A TO220	1	EA	VR1
81901900250	HEATSINK AAVID 574004B	1	EA	
81902411620	PCB PWR SUPPL BD PS70 A/V	1	EA	
81902600890	SWITCH 6-POS 3A AC SELECT	1	EA	SW1
81902800507	WIRE 22AWG BUSS	1	IN	
81902903350	JUMPER 2 POSITION	1	EA	
81902903483	HEADER 3 POS	1	EA	J1
81902907190	CONN AC W/FUSE PC MT 10A	1	EA	P1
81902907210	CONN 16-PIN HEADER R/A MA	1	EA	P2
81903200558	LED RED RT/A HI-EFF PC MT	1	EA	CR2
81903200570	LED GREEN PNL MT w/LEADS	1	EA	CR1
PK65-1454	DOC PWER SUPPLY BD DA3000	0	EA	

Internal PS130 Power Supply Addendum

Introduction

CAUTION

PS130 POWER SUPPLIES CONTAIN ELECTRICAL SHOCK HAZARDS AND SHOULD ONLY BE SERVICED BY QUALIFIED SERVICE PERSONNEL WITH EXPERIENCE IN SERVICING OFF-LINE SWITCHING REGULATORS.

CAUTION

There are no user serviceable parts contained in the PS130 Power Supply. All service performed on the PS130 Power Supply should be accomplished by qualified service personnel. **The internal circuits of the PS130 Power Supply contain dangerous voltage and current levels. Prior to servicing any PS130 Power Supply make absolutely sure that the AC line input is disconnected.**

NOTE

The PS130 Power Supply replaces the power supply formerly used to power the PESA equipment item referenced in the technical manual to which this addendum is attached. This addendum takes precedence over any mention of the former power supply in the technical manual for any PESA equipment items where the PS130 Power Supply is utilized.

This addendum contains the power connection, front door removal and replacement, power supply removal and installation, and fuse replacement instructions for the PS130 Power Supply. The purpose of this addendum is to provide technical information to the customer concerning the operation and servicing of the PS130 Power Supply.

General

CAUTION

HIGH LEAKAGE CURRENT AT 230 VAC

The PS130 Power Supply leakage current exceeds 3.5mA when used at 230VAC because of leakage through emission filter capacitors.

Internal PS130 Power Supply Addendum

The PS130 Video Power Supply is responsible for providing a regulated ±8.9VDC @ 5.5A to the switching frame. The PS130 Power Supply is designed to operate within output specifications with AC line voltages ranges from 105 - 240 VAC and with AC line frequencies of 50/60 Hz automatically. 3.15A 250VAC AC line fuses provide over-load protection.

The PS130 Audio Power Supply is responsible for providing a regulated ±24VDC @ 2.35A to the switching frame. The PS130 Power Supply is designed to operate within output specifications with AC line voltages ranges from 105 - 240 VAC and with AC line frequencies of 50/60 Hz automatically. 3.15A 250VAC AC line fuses provide over-load protection.

CAUTION

Disconnect AC Power Cord Before Removing Power Supply.

In the event of a PS130 Power Supply failure, PESA suggets returning the malfunctioning unit to the PESA Service Department for replacement. **PS130 Power Supplies contain lethal voltages when operating and should only be serviced by technicians qualified to service off-line switching regulators.** Please call the PESA Service Department for a RMA number before returning any units for replacement. The service department's phone number is listed on the Service and Ordering Assistance Page.

Power Connections

CAUTION

PS130 POWER SUPPLIES CONTAIN ELECTRICAL SHOCK HAZARDS AND SHOULD ONLY BE SERVICED BY QUALIFIED SERVICE PERSONNEL AND/OR QUALIFIED TECHNICIANS.

CAUTION

THIS POWER SUPPLY USES AN INDIVIDUAL AC POWER CORD. DISCONNECT CORD BEFORE REMOVING SUPPLY.

Power Connect

To power-up a PS130 Power Supply and its associated routing switcher frame take the following steps:

1. Insert the power supply into the frame following the instructions in the Power Removal Section of this addendum.

2. Connect the power supply to the AC line.

3. Repeat steps 1 and 2 for a secondary power supply if applicable.

4. If applicable, connect any DC power looped to and from other frames in the routing switcher system to the unit under test.

Power Disconnect

To power-down a PS130 Power Supply, disconnect the AC power cord from the power supply's AC line input connector. To power-down a PS130 Power Supply and its associated routing switcher frame take the following steps:

1. If applicable, disconnect any DC power looped to and from other frames in the routing switcher system from the unit under test.

2. Disconnect the AC line from the primary PS130 Power Supply.

3. If applicable, disconnect the AC line from the secondary PS130 Power Supply.

Front Door Removal and Replacement

Front Door Removal (Removable Front Doors Only)

To remove the PESA equipment item's front door (cover) take the following steps:

1. Grasp the both the left and right front cover slide locks and push or pull them towards the center of the equipment item's front.

2. Once both slide locks are slide toward the center of the equipment items front, carefully pull the front door off the equipment item.

Front Door Installation (Removable Front Doors Only)

To install the PESA equipment item's front door (cover) take the following steps:

1. Align the front door with the front of the PESA equipment item.

2. Once the front door is aligned with the front of the PESA equipment item, slide the front door onto the equipment item until the slide locks snap into the locking provided on the equipment item's chassis.

Power Supply Removal and Replacement

CAUTION

Two AC Power Cords may be connected to this unit.

Power Supply Removal

To remove the PESA equipment item's power supply or power supplies take the following steps:

1. **Disconnect the AC power cord connected to the power supply to be removed.**

2. Remove or open the equipment item's front door.

3. Grasp the power supply slide lock and pull it toward the center of the supply.

4. Once the slide lock is slid toward the center of the supply, carefully pull the power supply out of the equipment chassis.

5. Repeat step 1 and steps 3 and 4 to remove any additional power supplies from the equipment item.

Power Supply Installation

To install the PESA equipment item's power supply or power supplies take the following steps:

1. Align the primary power supply with the primary set of power supply circuit card guides in the equipment item's chassis.

2. Carefully push the power supply into the chassis until the power supply connector makes initial contact with the backplane power connector. At this point, firmly but carefully continue pushing the power supply into the equipment chassis while making sure the power connectors are properly aligned. You may have to slide the power supply latch toward the center of the supply in order for the latch to move past the frame's metal work. Continue pushing the power supply until the power supply slide lock clicks into the power supply slide lock hole provided in the equipment chassis and the power connectors are firmly mated.

3. If additional power supplies are to be installed in the equipment chassis, align them with a set of power supply circuit card guides in the equipment item and repeat step 2.

Fuse Replacement

CAUTION

DOUBLE-POLE/NEUTRAL FUSING

To replace the PS13O Power Supply line fuses take the following steps:

1. **Disconnect the AC power cord from the power supply being serviced.**

2. Remove or open the front door of the equipment item containing the PS130 Power Supply needing serviced.

3. Remove the power supply from the equipment item. Refer to the Power Supply Removal Section of this addendum for power supply removal instructions.

4. Carefully pull the AC line fuse holder open. The fuse holder is located adjacent to the PS130 Power Supply AC line input connector.

5. **Replace the fuses with fuses of equal current and voltage rating.**

6. Carefully slide the AC line fuse holder closed.

7. Install the power supply back into the equipment chassis. Refer to the Power Supply Installation Section of this addendum for complete power supply installation instructions.

5. Reconnect the associated AC power cord.