

PESA Switching Systems 330A Wynn Drive Huntsville, AL 35805

Document No. 81-9059-0345-0 Rev. B

#### Manual Updates:

- 10/15/95 Manual released for initial printing.
- 04/30/96 Updated manual to incorporate ECO changes.
- 03/15/97 Updated manual to incorporate ECO changes.
- 05/01/98 Updated manual to incorporate ECO changes.
- 03-02-01 Rev B: Deleted Printing Specification per ECO CE00113. GLT

### Ordering Assistance, Service & Inquiries

Service and Ordering Assistance

#### **PESA Switching Systems, Inc.** 330A Wynn Drive Huntsville, AL 35805

Huntsville, AL 35805 Main Numbers: Tel: (256) 726-9200 Fax: (256) 726-9271 Service Department Numbers: Tel: (256) 726-9222 Fax: (256) 726-9268

### **Sales Office**

National Sales Office PESA Switching Systems, Inc. 35 Pinelawn Road, Suite 99E Melville, NY 11747 Tel: (800) 328-1008 Fax: (516) 845-5023



## NOTE

PESA reserves the right to change any information contained in this manual without notice. Unauthorized copying, modifications, distribution, or display is prohibited. All rights reserved.

Please address all comments or suggestions concerning this or other PESA manuals to:

Publications Department Attn: Charles E. Jaynes (Engineering Technical Writer) PESA Switching Systems, Inc. 330A Wynn Drive Huntsville, Alabama 35805 (256) 726-9200 EXT. 145 cjaynes@pesa.com



# ATTENTION

### ATTENTION

ALL EQUIPMENT ITEMS MANUFAC-TURED BY OR SOLD BY PESA SWITCHING SYSTEMS, INC. SHOULD BE SERVICED BY QUALIFIED SER-VICE PERSONNEL OR BY QUALIFIED SERVICE TECHNICANS ONLY.



#### Section 1. Introduction

1.1	Manual Overview	1.1
1.2	General Description	1.2
1.3	Specifications	1.3

#### Figures

Figure	1-1	Cougar Digital	Audio Routing Switche	r Front	View	1.2
Figure	1-2	Cougar Digital	Routing Switcher Rear	View		1.3

#### Section 2. Installation

2.1	Introduction	
	General	
2.2	Receipt Inspection	2.1
2.3	Unpacking	2.2
2.4	Location	2.2
2.5	Mounting	2.2
2.6	Cabling	2.3
2.7	Level Code (Strobe) Selection	2.5
2.8	Output/Input Code Selection	2.7
	Output Code	2.7
	Input Code	2.8
2.9	PS70V Setting Line Voltage	2.9
2.10	PS70V Power Supply Installation	
2.11	32X32 Digital Audio Matrix Card Installation	2.10
2.12	Rear Panel Connectors	
	RCP Panel Connectors (J152-J155)	2.11
	Serial (CPU Link) Connectors (J145 and J146)	2.11
	Control (PRC) Connectors (J147 and J148)	
	CPU Alarm Connector (J150)	
	Matrix Card Alarm Connector (J158)	
	Power In/Out Connector (J135)	2.13
	Power Supply Alarm Connectors (J133 and J136)	2.13
	Reference (Sync) Connectors (1 and 2)	
	Audio Input and Output Connectors	
2.13	System Connections	
	Connection Guide	

#### Section 2. Installation Continued:

#### **Figures**

Figure 2-1 Chassis Installation	2.3
Figure 2-2 Cables Attached to Supports	
Figure 2-3 Level Code Selection	2.5
Figure 2-4 Coding Switch Locations	
Figure 2-5 Output Code Selection	2.7
Figure 2-6 Input Code Selection	
Figure 2-7 Cougar Digital Audio Routing Switcher Rear View	

#### Section 3. Operation

3.1	Operation of the Cougar Digital Audio Routing Switcher 3.1
	General
3.2	Regulator Fault LED (Red)
3.3	CPU Fault LED (Red)
	Power OK LED (Green)
3.5	32X32 Digital Audio Matrix Card Adjustments

#### Section 4. Functional

4.1	Introduction	4.1
	General	4.1
4.2	32X32 Digital Audio Matrix Card	4.1
4.3	Control	4.1
4.4	Crosspoint Matrix	4.2
4.5	Input Equalizers	4.2
4.6	Output Drivers	4.2
4.7	Power Regulators	4.3
4.8	PS70V Power Supply	4.3
	Circuit Description	

#### Section 5. Maintenance

5.1	Introduction	
5.2	General	5.1
5.3	Test Equipment	5.1
5.4	Preventive Maintenance	5.2
5.5	Maintenance	5.2
5.6	Corrective Maintenance	5.2
	Factory Repair Service	5.3
	Troubleshooting	5.3
	System Checks	
	Replacement Parts	
5.7	Filter Cleaning	
5.8	PS70V Power Supply	5.5

#### Section 6. Schematics

6.1	Schematics	
	General	6.1
	Cougar Mainframe	CD63-0758 6.2
	Cougar Chassis	CD63-0759 6.3
	32X32 Audio Backplane	CA25-1282 6.4
		SC33-1282 6.5
	32X32 Digital Audio Matrix Card	CA25-1279 6.7
	-	SC33-1279 6.9
	Power Supply Assembly	CD63-0683 6.19
	Power Supply Card	CA25-1162 6.20
		SC33-1162 6.21

#### Section 7. Parts List

7.1
7.1
19065174207.2
19065175107.3
19065175307.4
19065174907.5
19065145507.8
19065145407.9

### 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 indepth 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.

PESA <b>Cougar</b>	

Figure 1-1 Cougar Digital Audio Routing Switcher Front View



### **1.2 General Description Continued:**

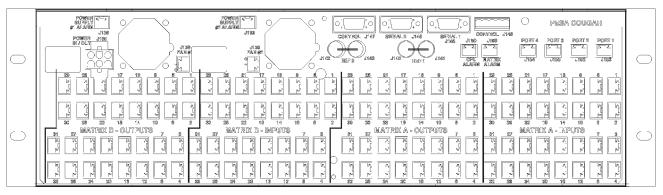


Figure 1-2 Cougar Digital Routing Switcher Rear View

### 1.3 Specifications

#### INPUTS

Type Impedance Signal Amplitude Number 3-Pin, 2-Part, Detachable Plug 110 Ohms, ±20% from 0.1MHz to 6MHz, Terminated 0.2V - 7.0V P-P 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 Any common mode signal present at the output terminals is Common Mode >30dB below output signal from DC to 6MHz. **Rise/Fall Times** 5 to 30nS (Measured from 10% 90% Amplitude Points) <±20nS from Ideal Jitter Free Clock (Measured at 50% Voltage Point) Jitter 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 INSTAL-LATIONS.

### 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:

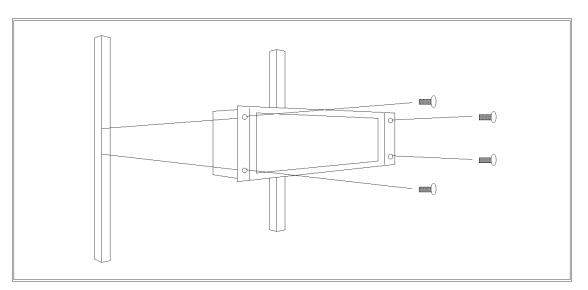


Figure 2-1 Chassis Installation

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

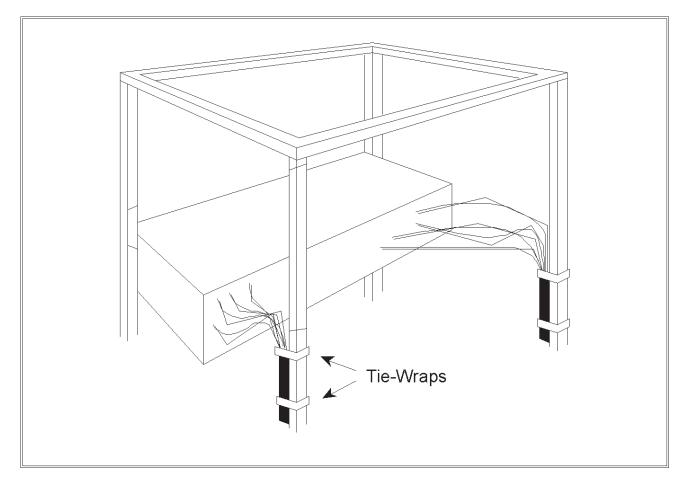
- 1. Align the frame with the slotted opening in the rack.
- 2. Install the bottom screws first.
- 3. Install the two top screws
- 4. Tighten all four screws securely.

### 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

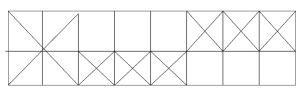
The level (strobe) select switches, S1 (matrix A) and S4 (matrix B) are located on the inside of the Cougar Digital Audio Routing Switcher on lower left-hand side of the backplane. Switch numbers are 1 through 8 right to left. Switches 1-6 select level codes 0 through 62. Switches 7 and 8 are not used – 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 STROBE LEVEL 1 STROBE LEVEL 2 STROBE LEVEL 3 STROBE LEVEL 4 STROBE LEVEL 5 STROBE LEVEL 5 STROBE LEVEL 6 STROBE LEVEL 7 UP TO STROBE LEVEL 62	0 0 0 0 0 0 0	0 0 0 0 0 0 0	0 0 0 0 0 0 0	0 0 0 1 1 1	0 0 1 1 0 0 1 1	0 1 0 1 0 1 0 1





### SHOWN WITH LEVEL CODE 7 SELECTED

Figure 2-3 Level Code Selection



### 2.7 Level Code (Strobe) Selection Continued:

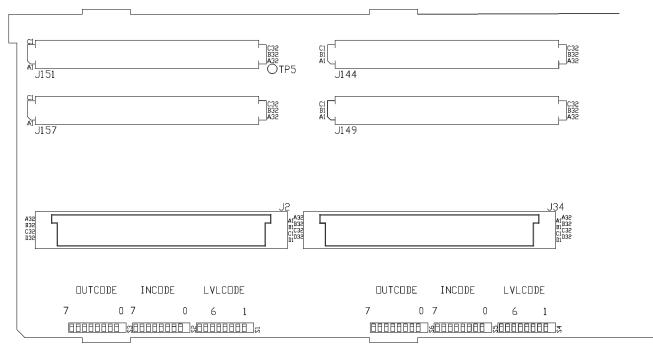


Figure 2-4 Coding Switch Locations



### 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 incode 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 OUTPUT CODE 1 0 OUTPUT CODE 2 0	0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 1	0 1 0	0-32 33-64 65-96
OUTPUT CODE 3 0 OUTPUT CODE 4 0 OUTPUT CODE 5 0	0	0 0 0	0 0 0	0 0 0	0 1 1	1 0 0	1 0 1	97-128 129-160 161-192
OUTPUT CODE 6 0 OUTPUT CODE 7 0	0	0 0	0 0	0 0	1 1	1 1	0 1	193-224 225-256
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:

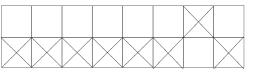
#### Input Code

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

**NOTE:** The following are logical selections.

SWITCH POSITION	17	6	5	4	3	2	1	0	INPUTS
INPUT CODE 0 INPUT CODE 1 INPUT CODE 2 INPUT CODE 3 INPUT CODE 4 INPUT CODE 5 INPUT CODE 5 INPUT CODE 6 INPUT CODE 7 UP TO	0 0 0 0 0 0 0	0 0 0 0 0 0 0	0 0 0 0 0 0 0	0 0 0 0 0 0 0	0 0 0 0 0 0 0	0 0 0 1 1 1	0 1 1 0 1 1	0 1 0 1 0 1 0	0-32 33-64 65-96 97-128 129-160 161-192 193-224 225-256
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 ( $\pm$  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 referring 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.

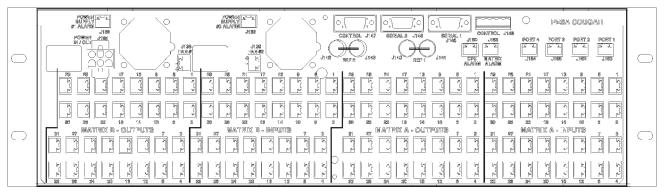


Figure 2-7 Cougar Digital Audio Routing Switcher Rear View

#### **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 bidirectional 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 backplane, 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  $\pm 5.6$  volts for U101 and input sync buffers Q1 and Q2.

U129 monitors all primary circuit card voltages for out of voltage range conditions ( $\pm$ 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 ( $\pm$  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 LEG-IBLE 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 EQUIP-MENT 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.



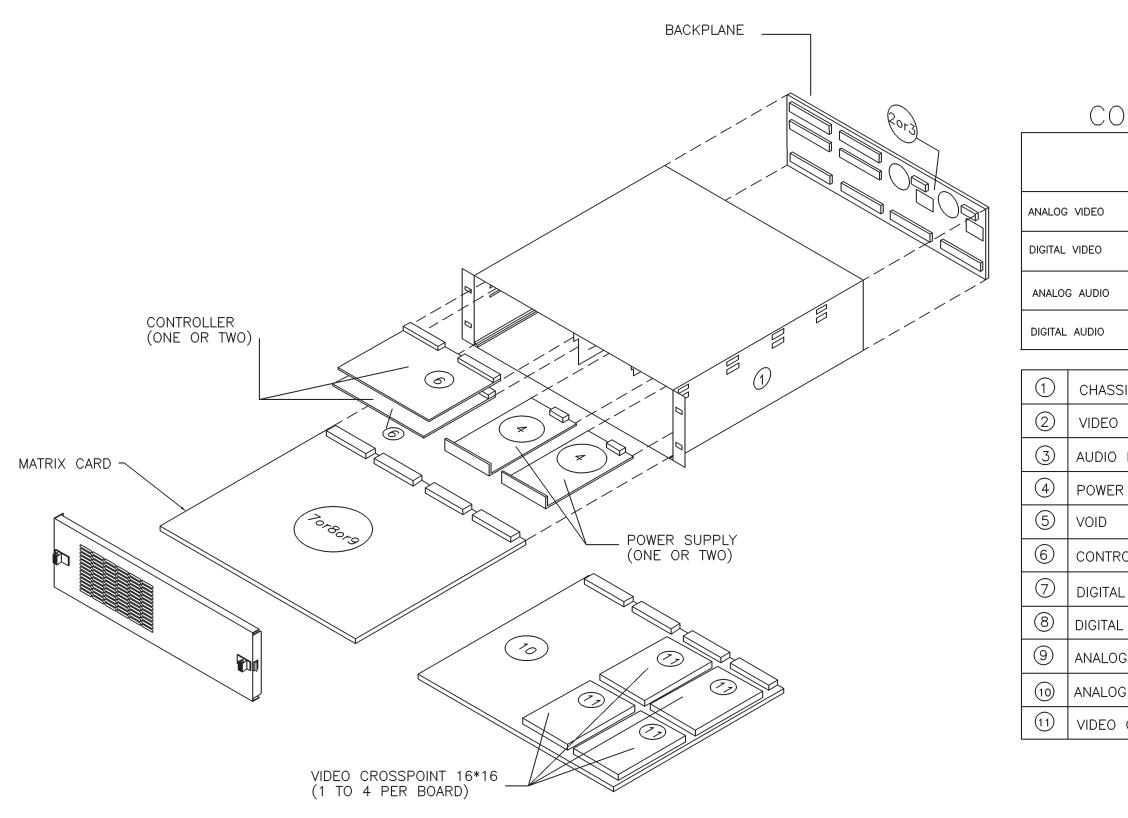
### 6.1 Schematics

#### 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.

<b>Description</b>	<u>Dwg No.</u>	<u>Page No.</u>
Cougar Mainframe	CD63-0758	6.2
Cougar Chassis	CD63-0759	6.3
32X32 Audio Backplane	CA25-1282	6.4
	SC33-1282	6.6
32X32 Digital Audio Matrix Card	CA25-1279	6.8
	SC33-1279	6.9
Power Supply Assembly	CD63-0683	6.19
Power Supply Card	CA25-1162	6.20
	SC33-1162	6.21





# COUGAR CONFIGURATION

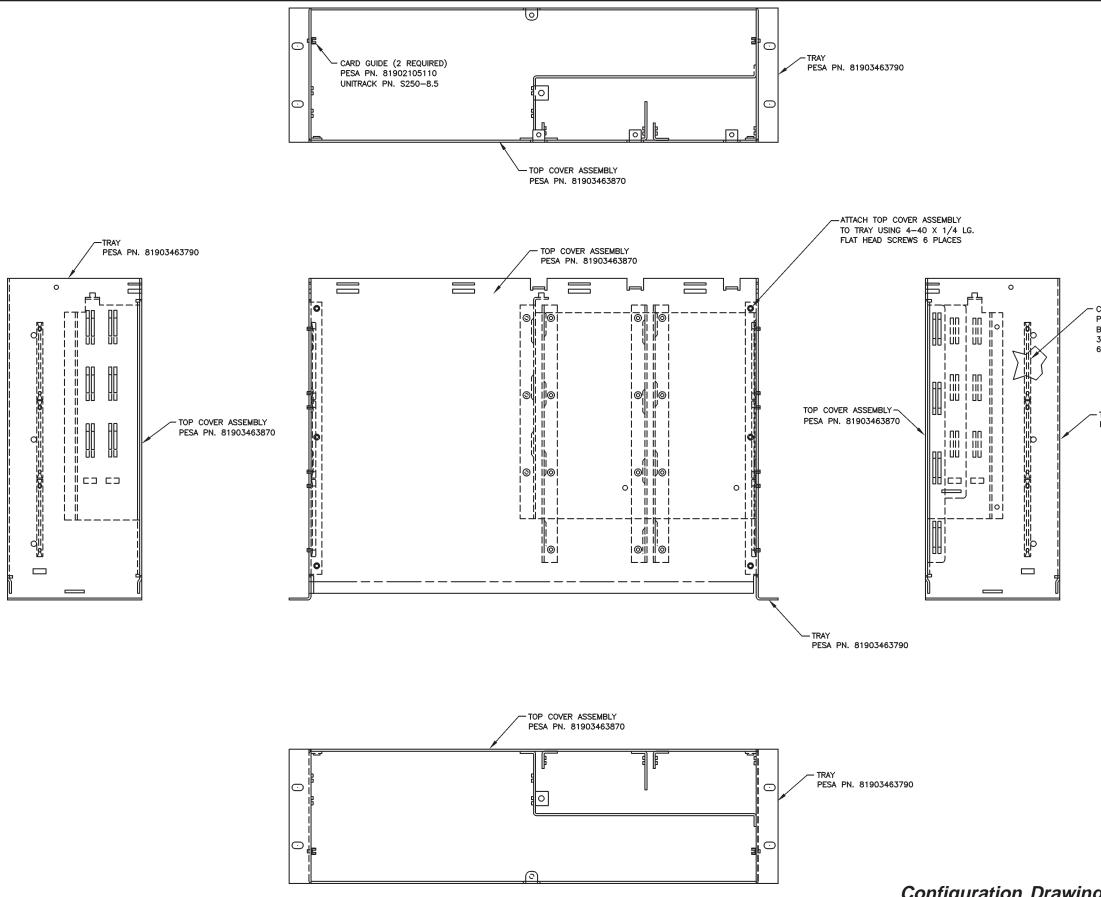
MAINFRAME	BACKPLANE	POWER SUPPLY	MATRIX CARD	VIDEO CROSSPOINT
81906517410	2	4	10	1)
81906517430	2	4	7	NA
81906517420	3	4	9	NA
81906517440	3	4	8	NA

SIS	81906517510
BACKPLANE	81906517520
BACKPLANE	81906517530
R SUPPLY	81906514550
	81906515680
OLLER	81906517030
VIDEO MATRIX	81906517480
AUDIO MATRIX	81906517490
G AUDIO MATRIX	81906517470
G VIDEO MATRIX	81906517460
CROSSPOINT 16*16	81906517550

Configuration Drawing • Cougar Mainframe • CD63-0758



**Schematics** 



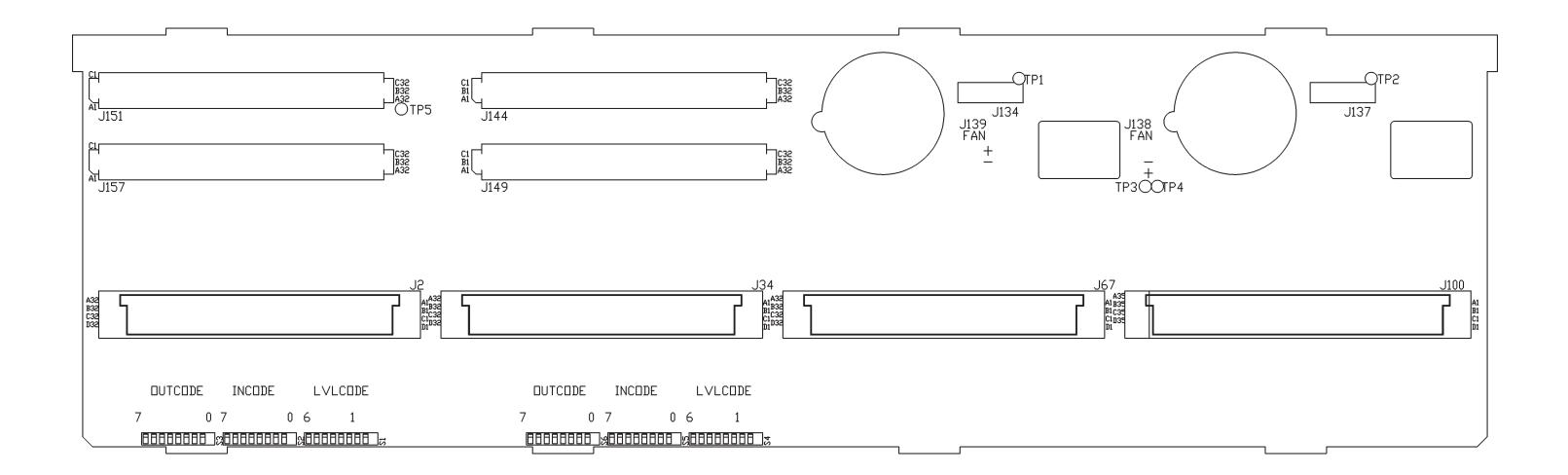
- CARD GUIDE PESA PN. 81902105220 BIVAR PN. N-300-2 3 PLACES EACH SIDE 6 PLACES TOTAL

TRAY PESA PN. 81903463790

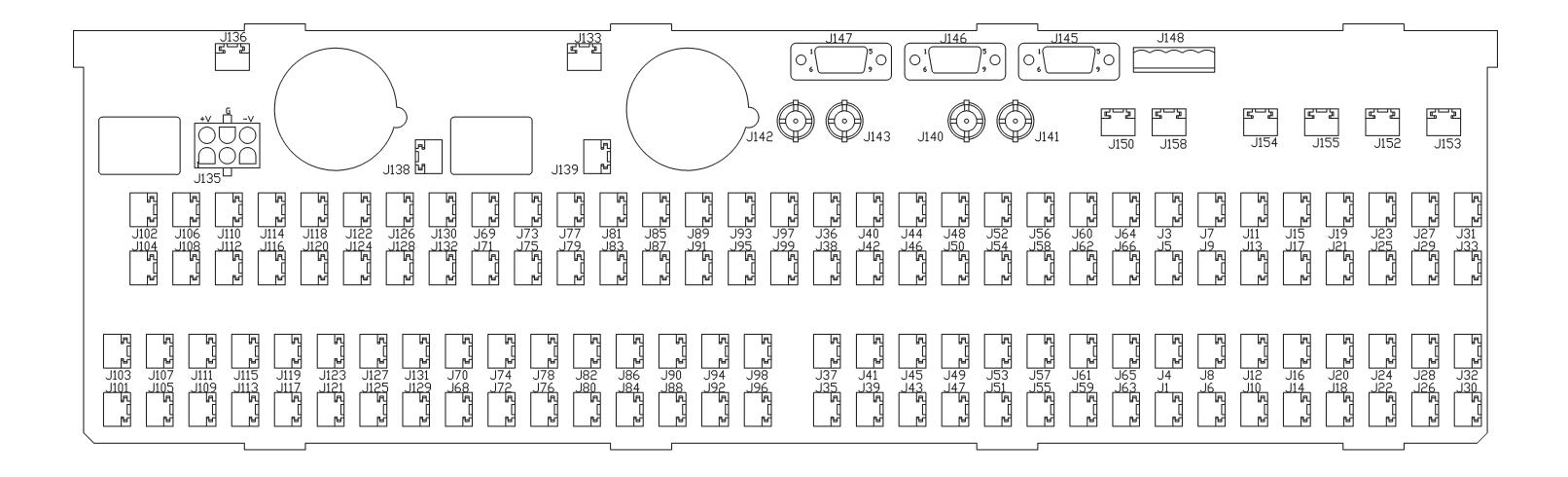
> NDTES: (UNLESS DTHERWISE SPECIFIED) 1. MATERIAL: SEE BODY OF DRAWING. 2. ASSEMBLY: ASSEMBLE PER INSTRUCTIONS IN BODY OF DRAWING.













#### 5/98 P/N 81905903450

**Digital Audio** 

J144 A1 CPUALARM+						
	J144 B1 CPUALARM-	J144 C1 - CPUA/B*		J149 A1 CPUALARM+ ALA	RM J149 B1 CPUALARM-	J149 C1
J144 A2 SPARE	J144 B2 —	J144 C2	J145 1	TI40 NO CPUALARM+ J15		J149 C2
MEMUOL				SPARE		
CRT1_8	J144 B3 - CRT1-9	J144 C3 CRT1-4	J145 2		0<2 J149 B3 ≻	J149 C3
0144 R4	0144 84	0144 (4	J145 3	J149 A4 CRT1-8 J15	3 J149 B4 → CRT1-9	J149 C4 CRT1-4
J144 A5 CRT1RXD	J144 B5 CRT1TXD	J144 C5 CRT1-7	J145 4	J149 A5 CRT1RXD	J149 B5 CRT1TXD	J149 C5 CRT1-7
J144 A6	J144 B6 CRT1-6	J144 C6	J145 5	J149 A6	J149 B6 CRT1-6	J149 C6 CRT1-1
J144 A7 - 😾	J144 B7 >	J144 C7 - CRT1-1	J145 6	J149 A7 🔶 😽	J149 B7 >	J149 C7 >
J144 A8 >	J144 B8 >	J144 C8 >	J145 7	J149 A8 >	J149 B8 >	J149 C8 >
		· · · · · · · · · · · · · · · · · · ·				
J144 A9 >	J144 В9 —	J144 C9 >	J145 8	J149 A9 -	J149 B9 >	J149 C9 >
J144 A10 >	J144 B10 >	J144 C10 >-	J145 9	J149 A10 >	J149 B10 >	J149 C10 >
J144 A11 >	J144 B11 >	J144 C11 >		J149 A11 >	J149 B11 >	J149 C11 > 115 3
J144 A12 🦳	J144 B12 ≻	J144 C12 $\succ$		J149 A12 🦳	J149 B12 🦳	J149 C12 🦳
J144 A13 🥍	J144 B13 >	J144 C13 >		J149 A13 >	J149 B13 —	J149 C13 >
J144 A14	J144 B14 >	J144 C14 —	J146 1	J149 A14	J149 B14 >	J149 C14 >
J144 A15 CRT2-8	J144 B15CRT2-4	J144 C15CRT2-9	J146 2	J149 A15 CRT2-8	J149 B15 CRT2-4	J149 C15 CRT2-9
CRUSEL	J144 B16 CRT2-7	CDMOMOD	J146 3			
J144 A16 CRIZIAD	CRT2-1			J149 A16 CRT2RXD		J149 C16 CRT2TXD
OI44 AI7	0144 B17	J144 C17 CR12-6		J149 A17 SPARE1	J149 B17 CRT2-1	J149 C17 CRT2-6
J144 A18	J144 B18	J144 C18	J146 5	J149 A18 CTLTX+	J149 B18	J149 C18
J144 A19 CTLRX+	J144 B19 CTLRX- V	J144 C19 - CTLTX- 🐨	J146 6	J149 A19 CTLRX+	J149 B19 CTLRX- 🆤	J149 C19 🖯 CTLTX- 🆤
J144 A20 DUALTX+A	J144 B20	J144 C20	J146 7	J149 A20 DUALTX+B	J149 B20	J149 C20 >
J144 A21 AD3	J144 B21 → AD2 😾	J144 C21 🗡 DUALTX-A 😾	J146 8	J149 A21 BD3	J149 B21 - BD2 🔻	J149 C21 DUALTX-B
J144 A22 AD6	J144 B22 AD5	J144 C22 AD4	J146 9	J149 A22 BD6	J149 B22 BD5	J149 C22 BD4
J144 A23 DUALTX-B	J144 B23 DUALTX+B	J144 C23 AD7	АНЕТ 2 КНЕГ	J149 A23 DUALTX-A	J149 B23 DUALTX+A	J149 C23 - BD7
					,	
J144 A24 BD4	J144 B24 - BD3	J144 C24 BD2		J149 A24 AD4	J149 B24 AD3	J149 C24 AD2
J144 A25 BD7	J144 B25 BD6	J144 C25 BD5		J149 A25 AD7	J149 B25 AD6	J149 C25 AD5
J144 A26 SWX-B	J144 B26 $\rightarrow$ SEL1	J144 C26 > SEL0	J147 2	J149 A26 - SWX-A	J149 B26 - EXT1	J149 C26 - EXTO
J144 A27 - EXT1	J144 B27 - EXTO	J144 C27 ACTIVEA	J147 3	J149 A27 SEL1	J149 B27 SELO	J149 C27 — ACTIVEB
J144 A28	J144 B28 - ACTIVEB	J144 C28 - SWX-A	J147 4	J149 A28	J149 B28 — ACTIVEA	J149 C28 — SWX-В
J144 A29 >	😾 J144 B29 🦳	J144 C29 JD2	J147 5	J J149 A29 ≻ ★	J149 B29 >	J149 C29 ) ID2
J144 A30 >	J144 B30 #1REFIN	J144 C30 -	J147 6	J149 A30 -	J149 B30 #1REFIN	J149 C30 -
J144 A31 >	J144 B31 >	J144 C31 ===================================	J147 7		J149 B31 >	J149 C31 #2REFIN
J144 A32 ID3	J144 B32 >	J144 C32 >-		J149 A32 ID3	J149 B32 >	J149 C32 >-
0144 A32 1D3	0144 832	0144 052 /	J147 8 J147 9 J147 9 J147 9 J147 9 J147 9	0145 K32 / 1D3	0149 632 /	0149 C32 /
			J147 9 CILTUX- CILTUX- CILTUX- CILTUX- CILTUX- CILTUX-			
			5 5 <u>5 5</u>			
J151 A1 >	J151 B1 > +V	J151 C1 > +V		J157 A1 >	J157 B1 >+V	J157 C1 > +V
J151 A2	J151 B2 -V	J151 C2 - +V	co co co	71 5 30	74 57 50 11	
J151 A3 🥍			4 4 4 4 4	J157 A2	J157 B2 -V	J157 C2 > +V
	J151 B3	J151 C3		J157 A3	J157 B2 -V J157 B3	J157 C2 +V J157 C3 -
J151 A4 >			5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5			
	J151 B4 >	J151 C3 J151 C4 >	J152 1	J157 A3 >	J157 B3 > J157 B4 >	J157 C3 J157 C4 >
J151 A5 >	J151 B4 J151 B5	J151 C3 J J151 C4 > J151 C5 >	J152 1	J157 A3	J157 B3 J157 B4 J157 B5	J157 C3 J157 C4 J157 C5
J151 A5	J151 B4 > J151 B5 > J151 B6 >	J151 C3 J151 C4 > J151 C5 > J151 C6 > PORT	J152 1	J157 A3 - J157 A4 - J157 A5 - J157 A6 -	J157 B3 J157 B4 J157 B5 J157 B5 J157 B6	J157 C3 J157 C4 - J157 C5 - J157 C6 -
J151 A5 J151 A6 J151 A7	J151 B4 J151 B5 J151 B6 J151 B7	J151 C3 J151 C4 - J151 C5 - J151 C6 - J151 C7 - PORT	J152 1	J157 A3 - J157 A4 - J157 A5 - J157 A6 - J157 A7 -	J157     B3       J157     B4       J157     B5       J157     B6       J157     B7	J157 C3 J157 C4 - J157 C5 - J157 C6 - J157 C7 -
J151 A5 J151 A6 J151 A7 J151 A8	J151 B4 J151 B5 J151 B6 J151 B7 J151 B8	J151 C3 J151 C4 > J151 C5 > J151 C6 > J151 C7 > J151 C8 >	J152 1	J157     A3     -       J157     A4     -       J157     A5     -       J157     A6     -       J157     A7     -       J157     A8     -	J157     B3       J157     B4       J157     B5       J157     B6       J157     B7       J157     B8	J157 C3 J157 C4 - J157 C5 - J157 C6 - J157 C7 - J157 C8 -
J151 A5	J151 B4 J151 B5 J151 B6 J151 B7 J151 B8 J151 B9	J151 C3 J151 C4 J151 C5 J151 C5 J151 C6 PORT J151 C7 J151 C8 J151 C9	J152 1 J152 2 r1- J152 3	J157     A3     →       J157     A4     →       J157     A5     →       J157     A6     →       J157     A7     →       J157     A8     →       J157     A9     →	J157     B3       J157     B4       J157     B5       J157     B6       J157     B7       J157     B8       J157     B8	J157 C3 J157 C4 J157 C5 J157 C5 J157 C6 J157 C7 J157 C8 J157 C8 J157 C9
J151 A5 J151 A6 J151 A7 J151 A8	J151 B4 J151 B5 J151 B6 J151 B7 J151 B8	J151 C3 J151 C4 > J151 C5 > J151 C6 > J151 C7 > J151 C8 >	J152 1	J157     A3     -       J157     A4     -       J157     A5     -       J157     A6     -       J157     A7     -       J157     A8     -	J157     B3       J157     B4       J157     B5       J157     B6       J157     B7       J157     B8	J157 C3 J157 C4 - J157 C5 - J157 C6 - J157 C7 - J157 C8 -
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	J151 B4 J151 B5 J151 B6 J151 B7 J151 B8 J151 B9	J151 C3 J151 C4 J151 C5 J151 C5 J151 C6 PORT J151 C7 J151 C8 J151 C9	J152 1 J152 2 r1- J152 3	J157     A3     ▲       J157     A4     ↓       J157     A5     ↓       J157     A6     ↓       J157     A7     ↓       J157     A8     ↓       J157     A9     ↓       J157     A10     ▶	J157     B3       J157     B4       J157     B5       J157     B6       J157     B7       J157     B8       J157     B8	J157 C3 J157 C4 J157 C5 J157 C5 J157 C6 J157 C7 J157 C8 J157 C8 J157 C9
J151 A5 - J151 A6 - J151 A7 - J151 A8 - J151 A8 - J151 A9 - J151 A10 - PORT1+	J151 B4 J151 B5 J151 B6 J151 B7 J151 B8 J151 B9 J151 B10	J151 C3 J151 C4 J151 C5 J151 C5 J151 C6 J151 C7 J151 C7 J151 C8 J151 C9 J151 C10 J151 C11	J152 1 J152 2 r1- J152 3 J153 1	J157     A3     ▲       J157     A4     ↓       J157     A5     ↓       J157     A6     ↓       J157     A7     ↓       J157     A8     ↓       J157     A9     ↓       J157     A10     ▶	J157     B3       J157     B4       J157     B5       J157     B6       J157     B7       J157     B8       J157     B9       J157     B10	J157 C3 J157 C4 J157 C5 J157 C5 J157 C6 J157 C7 J157 C8 J157 C8 J157 C9 J157 C9 J157 C10 PORT1-
J151 A5 - J151 A6 - J151 A7 - J151 A8 - J151 A8 - J151 A9 - J151 A10 - PORT1+ J151 A11 -	J151 B4 - J151 B5 - J151 B6 - J151 B7 - J151 B8 - J151 B9 - J151 B10 - J151 B11 - J151 B12 -	J151 C3 J151 C4 J151 C5 J151 C5 J151 C6 PORT J151 C7 J151 C7 J151 C8 J151 C9 J151 C10 J151 C11	J152 1 J152 2 F1- J152 3 J153 1 J153 2	J157     A3       J157     A4       J157     A5       J157     A6       J157     A6       J157     A6       J157     A7       J157     A8       J157     A9       J157     A10       PORT1+       J157     A11       J157     A12	J157     B3       J157     B4       J157     B5       J157     B6       J157     B7       J157     B8       J157     B9       J157     B1	J157 C3 J157 C4 J157 C5 J157 C5 J157 C6 J157 C7 J157 C8 J157 C8 J157 C9 J157 C9 J157 C1 J157 C1 J157 C1
J151 A5 - J151 A6 - J151 A7 - J151 A8 - J151 A9 - J151 A10 - PORT1+ J151 A11 - J151 A12 - PORT2+ J151 A13 -	J151 B4 - J151 B5 - J151 B6 - J151 B7 - J151 B8 - J151 B9 - J151 B10 - J151 B11 - J151 B12 - J151 B13 -	J151 C3 J151 C4 J151 C5 J151 C5 J151 C6 J151 C7 J151 C7 J151 C7 J151 C7 J151 C7 J151 C10 J151 C10 J151 C12 PORT PORT PORT PORT PORT PORT PORT PORT J151 C5 PORT PORT J151 C5 PORT J151 C7 PORT J151 C5 PORT J151 C5 PORT J151 C5 PORT J151 C5 PORT J151 C5 PORT J151 C5 PORT J151 C5 PORT J151 C10 PORT J151 C12 PORT J151 C12 PORT	J152 1 J152 2 F1- J152 3 J153 1 J153 2	J157     A3       J157     A4       J157     A5       J157     A5       J157     A6       J157     A6       J157     A7       J157     A8       J157     A9       J157     A10       PORT1+       J157     A11       J157     A12	J157       B3         J157       B4         J157       B5         J157       B6         J157       B7         J157       B8         J157       B9         J157       B10         J157       B11         J157       B12         J157       B13	J157 C3 J157 C4 J157 C5 J157 C5 J157 C6 J157 C7 J157 C8 J157 C9 J157 C9 J157 C1 J157 C2 J157 C3 J157 C2 J157 C
J151 A5 - J151 A6 - J151 A7 - J151 A8 - J151 A9 - J151 A10 - PORT1+ J151 A11 - J151 A12 - PORT2+ J151 A13 - J151 A14 - PORT3+	J151 B4 - J151 B5 - J151 B6 - J151 B7 - J151 B8 - J151 B9 - J151 B10 - J151 B11 - J151 B12 - J151 B13 - J151 B14 -	J151 C3 J151 C4 J151 C5 J151 C5 J151 C6 J151 C7 J151 C7 J151 C7 J151 C7 J151 C7 J151 C10 J151 C10 J151 C12 PORT PORT PORT PORT PORT J151 C7 PORT J151 C12 PORT J151 C13 PORT J151 C12 PORT J151 C13 PORT J151 C12 PORT J151 C13 PORT J151 C14	J152 1 J152 2 F1- J152 3 J153 1 J153 2	J157     A3       J157     A4       J157     A5       J157     A5       J157     A6       J157     A7       J157     A8       J157     A9       J157     A10       PORT1+       J157     A11       J157     A12       PORT2+       J157     A13       J157     A14	J157       B3         J157       B4         J157       B5         J157       B6         J157       B7         J157       B7         J157       B8         J157       B9         J157       B10         J157       B11         J157       B12         J157       B13         J157       B14	J157 C3 J157 C4 J157 C5 J157 C5 J157 C6 J157 C7 J157 C8 J157 C9 J157 C9 J157 C10 PORT1- J157 C11 J157 C12 PORT2- J157 C13 J157 C14 PORT3-
J151 A5 - J151 A6 - J151 A7 - J151 A8 - J151 A9 - J151 A10 - PORT1+ J151 A11 - J151 A12 - PORT2+ J151 A13 - J151 A14 - PORT3+ J151 A15 -	J151 B4 - J151 B5 - J151 B5 - J151 B6 - J151 B7 - J151 B8 - J151 B9 - J151 B10 - J151 B10 - J151 B11 - J151 B12 - J151 B13 - J151 B14 - J151 B15 -	J151 C3 J151 C4 J151 C5 J151 C5 J151 C6 J151 C7 J151 C7 J151 C7 J151 C7 J151 C7 J151 C10 J151 C10 J151 C11 J151 C12 PORT PORT PORT PORT J151 C7 J151 C7 J1	J152 1 J152 2 T1- J152 3 J153 1 J153 2 RT2- J153 3	J157     A3     ✓       J157     A4     ✓       J157     A5     ✓       J157     A6     ✓       J157     A6     ✓       J157     A7     ✓       J157     A8     ✓       J157     A9     ✓       J157     A10     PORT1+       J157     A11     ✓       J157     A12     PORT2+       J157     A13     ✓       J157     A14     PORT3+       J157     A15     ✓	J157     B3       J157     B4       J157     B5       J157     B6       J157     B7       J157     B8       J157     B9       J157     B10       J157     B12       J157     B13       J157     B14       J157     B15	J157 C3 J157 C4 J157 C5 J157 C5 J157 C6 J157 C7 J157 C8 J157 C9 J157 C9 J157 C10 PORT1- J157 C11 J157 C12 PORT2- J157 C13 J157 C13 J157 C14 PORT3- J157 C15
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	J151 B4 - J151 B5 - J151 B6 - J151 B7 - J151 B9 - J151 B9 - J151 B10 - J151 B10 - J151 B12 - J151 B13 - J151 B13 - J151 B15 - J151 B15 - J151 B16 -	J151     C3       J151     C4       J151     C5       J151     C5       J151     C6       J151     C7       J151     C7       J151     C9       J151     C10       J151     C11       J151     C12       J151     C13       J151     C14       J151     C15       J151     C16	J152 1 J152 2 T1- J152 3 J153 1 J153 2 RT2- J153 3 J154 1	J157     A3       J157     A4       J157     A5       J157     A6       J157     A6       J157     A6       J157     A7       J157     A8       J157     A9       J157     A10       PORT1+       J157     A11       J157     A12       PORT2+       J157     A13       J157     A14       PORT3+       J157     A15       J157     A16	J157       B3         J157       B4         J157       B5         J157       B6         J157       B7         J157       B7         J157       B8         J157       B9         J157       B10         J157       B11         J157       B12         J157       B13         J157       B14         J157       B15         J157       B16	J157 C3 J157 C4 J157 C5 J157 C5 J157 C6 J157 C7 J157 C8 J157 C9 J157 C9 J157 C10 PORT1- J157 C11 J157 C12 PORT2- J157 C13 J157 C13 J157 C14 PORT3- J157 C15 J157 C16 PORT4-
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	J151 B4 - J151 B5 - J151 B6 - J151 B7 - J151 B9 - J151 B9 - J151 B10 - J151 B10 - J151 B12 - J151 B13 - J151 B13 - J151 B15 - J151 B16 - J151 B17 -	J151     C3       J151     C4       J151     C5       J151     C5       J151     C6       J151     C7       J151     C7       J151     C8       J151     C9       J151     C10       J151     C11       J151     C12       J151     C13       J151     C14       J151     C15       J151     C16       J151     C17	J152 1 J152 2 T1- J152 3 J153 1 J153 2 T2- J153 3 J154 1 J154 2	J157     A3       J157     A4       J157     A5       J157     A5       J157     A6       J157     A6       J157     A7       J157     A8       J157     A9       J157     A10       PORT1+       J157     A11       J157     A12       PORT2+       J157     A13       J157     A14       PORT3+       J157     A15       J157     A16       PORT4+       J157     A17	J157       B3         J157       B4         J157       B5         J157       B6         J157       B7         J157       B8         J157       B9         J157       B10         J157       B11         J157       B12         J157       B13         J157       B14         J157       B15         J157       B16         J157       B17	J157 C3 J157 C4 J157 C5 J157 C5 J157 C6 J157 C7 J157 C8 J157 C9 J157 C9 J157 C10 PORT1- J157 C11 J157 C12 PORT2- J157 C13 J157 C14 PORT3- J157 C15 J157 C15 J157 C16 PORT4- J157 C17
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	J151 B4 - J151 B5 - J151 B6 - J151 B7 - J151 B9 - J151 B10 - J151 B10 - J151 B12 - J151 B13 - J151 B14 - J151 B15 - J151 B16 - J151 B17 - J151 B18 -	J151     C3       J151     C4       J151     C5       J151     C5       J151     C6       J151     C7       J151     C7       J151     C8       J151     C1       J151     C1       J151     C12       J151     C13       J151     C14       J151     C15       J151     C16       J151     C17       J151     C18	J152 1 J152 2 T1- J152 3 J153 1 J153 2 J153 2 J153 3 J154 1 J154 2	J157     A3       J157     A4       J157     A5       J157     A6       J157     A6       J157     A6       J157     A6       J157     A6       J157     A7       J157     A8       J157     A9       J157     A10       PORT1+       J157     A11       J157     A12       PORT2+       J157     A13       J157     A14       PORT3+       J157     A16       PORT4+       J157     A17       J157     A18	J157       B3         J157       B4         J157       B5         J157       B6         J157       B7         J157       B7         J157       B8         J157       B9         J157       B10         J157       B11         J157       B12         J157       B13         J157       B14         J157       B15         J157       B16         J157       B17         J157       B18	J157 C3 J157 C4 J157 C5 J157 C5 J157 C6 J157 C7 J157 C8 J157 C9 J157 C9 J157 C10 PORT1- J157 C11 J157 C12 PORT2- J157 C13 J157 C13 J157 C14 PORT3- J157 C15 J157 C16 PORT4- J157 C17 J157 C18 )
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	J151 B4 - J151 B5 - J151 B6 - J151 B7 - J151 B9 - J151 B9 - J151 B10 - J151 B10 - J151 B12 - J151 B13 - J151 B13 - J151 B15 - J151 B16 - J151 B17 -	J151     C3       J151     C4       J151     C5       J151     C5       J151     C6       J151     C7       J151     C7       J151     C8       J151     C9       J151     C10       J151     C11       J151     C12       J151     C13       J151     C14       J151     C15       J151     C16       J151     C17	J152 1 J152 2 T1- J152 3 J153 1 J153 2 T2- J153 3 J154 1 J154 2	J157     A3       J157     A4       J157     A5       J157     A5       J157     A6       J157     A6       J157     A7       J157     A8       J157     A9       J157     A10       PORT1+       J157     A11       J157     A12       PORT2+       J157     A13       J157     A14       PORT3+       J157     A15       J157     A16       PORT4+       J157     A17	J157       B3         J157       B4         J157       B5         J157       B6         J157       B7         J157       B8         J157       B9         J157       B10         J157       B11         J157       B12         J157       B13         J157       B14         J157       B15         J157       B16         J157       B17	J157 C3 J157 C4 J157 C5 J157 C5 J157 C6 J157 C7 J157 C8 J157 C9 J157 C9 J157 C10 PORT1- J157 C11 J157 C12 PORT2- J157 C13 J157 C14 PORT3- J157 C15 J157 C15 J157 C16 PORT4- J157 C17
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	J151 B4 - J151 B5 - J151 B6 - J151 B7 - J151 B9 - J151 B10 - J151 B10 - J151 B12 - J151 B13 - J151 B14 - J151 B15 - J151 B16 - J151 B17 - J151 B18 -	J151     C3       J151     C4       J151     C5       J151     C5       J151     C6       J151     C7       J151     C7       J151     C8       J151     C1       J151     C1       J151     C12       J151     C13       J151     C14       J151     C15       J151     C16       J151     C17       J151     C18	J152 1 J152 2 T1- J152 3 J153 1 J153 2 T2- J153 3 J154 1 J154 2	J157     A3       J157     A4       J157     A5       J157     A6       J157     A6       J157     A6       J157     A6       J157     A6       J157     A7       J157     A8       J157     A9       J157     A10       PORT1+       J157     A11       J157     A12       PORT2+       J157     A13       J157     A14       PORT3+       J157     A16       PORT4+       J157     A17       J157     A18	J157       B3         J157       B4         J157       B5         J157       B6         J157       B7         J157       B7         J157       B8         J157       B9         J157       B10         J157       B11         J157       B12         J157       B13         J157       B14         J157       B15         J157       B16         J157       B17         J157       B18	J157 C3 J157 C4 J157 C5 J157 C5 J157 C6 J157 C7 J157 C8 J157 C9 J157 C9 J157 C10 PORT1- J157 C11 J157 C12 PORT2- J157 C13 J157 C13 J157 C14 PORT3- J157 C15 J157 C16 PORT4- J157 C17 J157 C18 )
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	J151 B4 - J151 B5 - J151 B6 - J151 B7 - J151 B9 - J151 B9 - J151 B10 - J151 B10 - J151 B12 - J151 B13 - J151 B13 - J151 B14 - J151 B15 - J151 B16 - J151 B18 - J151 B18 - J151 B19 - J151 B20 -	J151 C3 J151 C4 J151 C5 J151 C5 J151 C6 J151 C7 J151 C7 J151 C7 J151 C1 J151 C10 J151 C11 J151 C12 PORT J151 C12 PORT J151 C14 J151 C15 J151 C16 J151 C17 J151 C17 J151 C18 PORT J151 C19 J151 C19 J151 C20 PORT	J152 1 J152 2 T1- J152 3 J153 1 J153 2 T2- J153 3 J154 1 J154 2	J157     A3       J157     A4       J157     A5       J157     A6       J157     A6       J157     A6       J157     A6       J157     A7       J157     A8       J157     A9       J157     A10       PORT1+       J157     A11       J157     A12       PORT2+       J157     A14       PORT3+       J157     A15       J157     A16       PORT4+       J157     A18       J157     A19       J157     A20	J157       B3         J157       B4         J157       B5         J157       B6         J157       B7         J157       B8         J157       B9         J157       B10         J157       B11         J157       B12         J157       B13         J157       B14         J157       B15         J157       B16         J157       B17         J157       B18         J157       B19         J157       B20	J157 C3 J157 C4 J157 C5 J157 C5 J157 C6 J157 C7 J157 C9 J157 C9 J157 C1 J157 C1 J15
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	J151 C3 J151 C4 J151 C5 J151 C5 J151 C6 J151 C7 J151 C7 J151 C7 J151 C1 J151 C10 J151 C10 J151 C12 PORT J151 C12 PORT J151 C12 PORT J151 C14 J151 C15 J151 C16 J151 C17 J151 C16 J151 C17 J151 C19 J151 C20 J151 C21 PORT	J152 1 J152 2 T1- J152 3 J153 1 J153 2 T2- J153 3 J154 1 J154 2	J157     A3       J157     A4       J157     A5       J157     A6       J157     A6       J157     A6       J157     A6       J157     A7       J157     A8       J157     A9       J157     A10       PORT1+       J157     A11       J157     A12       PORT2+       J157     A13       J157     A14       PORT3+       J157     A15       J157     A16       PORT4+       J157     A18       J157     A19       J157     A20       J157     A21	J157       B3         J157       B4         J157       B5         J157       B6         J157       B7         J157       B8         J157       B9         J157       B10         J157       B11         J157       B12         J157       B13         J157       B14         J157       B15         J157       B16         J157       B17         J157       B18         J157       B19         J157       B20         J157       B21	J157 C3 J157 C4 J157 C5 J157 C5 J157 C6 J157 C7 J157 C9 J157 C9 J157 C1 J157 C1 J15
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	J151       C3         J151       C4         J151       C5         J151       C5         J151       C6         J151       C7         J151       C7         J151       C7         J151       C7         J151       C10         J151       C10         J151       C11         J151       C12         J151       C13         J151       C14         J151       C15         J151       C16         J151       C17         J151       C19         J151       C20         J151       C21         J151       C22	J152 1 J152 2 T1- J152 3 J153 1 J153 2 XT2- J153 3 J154 1 J154 2 C3- J154 3	J157     A3       J157     A4       J157     A5       J157     A6       J157     A6       J157     A6       J157     A7       J157     A8       J157     A9       J157     A10       PORT1+       J157     A11       J157     A12       PORT3+       J157     A14       PORT4+       J157     A15       J157     A16       PORT4+       J157     A18       J157     A12	J157       B3         J157       B4         J157       B5         J157       B6         J157       B7         J157       B8         J157       B9         J157       B10         J157       B11         J157       B12         J157       B13         J157       B14         J157       B15         J157       B16         J157       B17         J157       B18         J157       B19         J157       B2         J157       B2         J157       B2         J157       B2	J157 C3 J157 C4 J157 C5 J157 C5 J157 C6 J157 C7 J157 C9 J157 C9 J157 C1 J157 C2 J157 C2 J15
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	J151 B4 - J151 B5 - J151 B6 - J151 B7 - J151 B9 - J151 B1 - J151 B12 - J151 B13 - J151 B15 - J151 B16 - J151 B16 - J151 B17 - J151 B18 - J151 B18 - J151 B19 - J151 B20 - J151 B22 - J151 B22 - J151 B23 -	J151 C3 J151 C4 J151 C5 J151 C5 J151 C6 J151 C7 J151 C7 J151 C7 J151 C1 J151 C10 J151 C10 J151 C12 PORT J151 C22 J151 C22 J151 C23 PORT	J152 1 J152 2 T1- J152 3 J153 1 J153 2 J153 2 XT2- J153 3 J154 1 J154 2 C3- J154 3 J155 1	J157       A3         J157       A4         J157       A5         J157       A6         J157       A6         J157       A7         J157       A8         J157       A7         J157       A8         J157       A7         J157       A8         J157       A9         J157       PORT1+         J157       A10         J157       A11         J157       A12         J157       A13         J157       A14         J157       A15         J157       A16         PORT3+         J157       A18         J157       A19         J157       A19         J157       A20         J157       A21         J157       A22	J157       B3         J157       B4         J157       B5         J157       B6         J157       B7         J157       B8         J157       B9         J157       B10         J157       B11         J157       B12         J157       B13         J157       B14         J157       B15         J157       B16         J157       B17         J157       B18         J157       B19         J157       B20         J157       B2	J157       C3         J157       C4         J157       C5         J157       C6         J157       C6         J157       C6         J157       C6         J157       C7         J157       C8         J157       C9         J157       C10         J157       C10         J157       C11         J157       C12         J157       C13         J157       C14         J157       C15         J157       C16         J157       C17         J157       C18         J157       C19         J157       C19         J157       C20         J157       C21         J157       C22         J157       C23
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	J151 C3 J151 C4 J151 C5 J151 C5 J151 C6 J151 C7 J151 C7 J151 C7 J151 C1 J151 C10 J151 C10 J151 C12 PORT J151 C22 J151 C23 J151 C24 PORT	J152 1 J152 2 J152 2 M- J153 1 J153 2 J153 2 MT2- J153 3 MT2- J154 1 J154 2 MT2- J154 3 J155 1 J155 2	J157     A3       J157     A4       J157     A5       J157     A6       J157     A6       J157     A6       J157     A6       J157     A7       J157     A8       J157     A9       J157     A1       J157     A10       PORT1+       J157     A12       J157     A12       PORT2+       J157     A13       J157     A14       PORT3+       J157     A15       J157     A16       PORT4+       J157     A18       J157     A19       J157     A20       J157     A21       J157     A22       J157     A23	J157       B3         J157       B4         J157       B5         J157       B6         J157       B7         J157       B8         J157       B9         J157       B10         J157       B11         J157       B12         J157       B13         J157       B14         J157       B15         J157       B16         J157       B17         J157       B18         J157       B12         J157       B14         J157       B14         J157       B15         J157       B16         J157       B17         J157       B18         J157       B19         J157       B20         J157       B21         J157       B22         J157       B23         J157       B24	J157       C3         J157       C4         J157       C5         J157       C5         J157       C6         J157       C6         J157       C7         J157       C8         J157       C9         J157       C10         J157       C10         J157       C11         J157       C12         J157       C13         J157       C14         J157       C15         J157       C16         J157       C17         J157       C18         J157       C19         J157       C19         J157       C20         J157       C21         J157       C22         J157       C23         J157       C24
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	J151       C3         J151       C4         J151       C5         J151       C5         J151       C6         J151       C7         J151       C7         J151       C7         J151       C7         J151       C7         J151       C10         J151       C11         J151       C12         J151       C12         J151       C13         J151       C14         J151       C15         J151       C16         J151       C17         J151       C19         J151       C20         J151       C21         J151       C22         J151       C23         J151       C24         J151       C25	J152 1 J152 2 J152 2 M- J153 1 J153 2 J153 2 MT2- J153 3 MT2- J154 1 J154 2 MT2- J154 3 J155 1 J155 2	J157       A3         J157       A4         J157       A5         J157       A6         J157       A6         J157       A7         J157       A8         J157       A8         J157       A8         J157       A9         J157       A1         J157       A10         PORT1+         J157       A11         J157       A12         PORT2+         J157       A13         J157       A14         PORT3+         J157       A15         J157       A16         PORT4+         J157       A18         J157       A19         J157       A20         J157       A21         J157       A22         J157       A23         J157       A24         J157       A25	J157       B3         J157       B4         J157       B5         J157       B6         J157       B7         J157       B8         J157       B9         J157       B10         J157       B11         J157       B12         J157       B13         J157       B14         J157       B15         J157       B16         J157       B17         J157       B18         J157       B12         J157       B14         J157       B14         J157       B15         J157       B16         J157       B17         J157       B18         J157       B19         J157       B20         J157       B21         J157       B22         J157       B23         J157       B24         J157       B25	J157       C3         J157       C4         J157       C5         J157       C6         J157       C6         J157       C6         J157       C8         J157       C9         J157       C10         J157       C10         J157       C11         J157       C12         J157       C13         J157       C14         J157       C15         J157       C16         J157       C17         J157       C18         J157       C19         J157       C20         J157       C21         J157       C22         J157       C23         J157       C24         J157       C25
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	J151 C3 J151 C4 J151 C5 J151 C5 J151 C6 J151 C7 J151 C7 J151 C7 J151 C1 J151 C10 J151 C10 J151 C12 PORT J151 C22 J151 C23 J151 C24 PORT	J152 1 J152 2 J152 2 M- J153 1 J153 2 J153 2 MT2- J153 3 MT2- J154 1 J154 2 MT2- J154 3 J155 1 J155 2	J157     A3       J157     A4       J157     A5       J157     A6       J157     A6       J157     A6       J157     A6       J157     A7       J157     A8       J157     A9       J157     A1       J157     A10       PORT1+       J157     A12       J157     A12       PORT2+       J157     A13       J157     A14       PORT3+       J157     A15       J157     A16       PORT4+       J157     A18       J157     A19       J157     A20       J157     A21       J157     A22       J157     A23	J157       B3         J157       B4         J157       B5         J157       B6         J157       B7         J157       B8         J157       B9         J157       B10         J157       B11         J157       B12         J157       B13         J157       B14         J157       B15         J157       B16         J157       B17         J157       B18         J157       B20         J157       B21         J157       B2         J157	J157       C3         J157       C4         J157       C5         J157       C5         J157       C6         J157       C6         J157       C7         J157       C8         J157       C9         J157       C10         J157       C10         J157       C11         J157       C12         J157       C13         J157       C14         J157       C15         J157       C16         J157       C17         J157       C18         J157       C19         J157       C19         J157       C20         J157       C21         J157       C22         J157       C23         J157       C24
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	J151       C3         J151       C4         J151       C5         J151       C5         J151       C6         J151       C7         J151       C7         J151       C7         J151       C7         J151       C7         J151       C10         J151       C11         J151       C12         J151       C12         J151       C13         J151       C14         J151       C15         J151       C16         J151       C17         J151       C19         J151       C20         J151       C21         J151       C22         J151       C23         J151       C24         J151       C25	J152 1 J152 2 J152 2 M- J153 1 J153 2 J153 2 MT2- J153 3 MT2- J154 1 J154 2 MT2- J154 3 J155 1 J155 2	J157       A3         J157       A4         J157       A5         J157       A6         J157       A6         J157       A7         J157       A8         J157       A8         J157       A8         J157       A9         J157       A1         J157       A10         PORT1+         J157       A11         J157       A12         PORT2+         J157       A13         J157       A14         PORT3+         J157       A15         J157       A16         PORT4+         J157       A18         J157       A19         J157       A20         J157       A21         J157       A22         J157       A23         J157       A24         J157       A25	J157       B3         J157       B4         J157       B5         J157       B6         J157       B7         J157       B8         J157       B9         J157       B10         J157       B11         J157       B12         J157       B13         J157       B14         J157       B15         J157       B16         J157       B17         J157       B18         J157       B19         J157       B20         J157       B2         J157	J157       C3         J157       C4         J157       C5         J157       C6         J157       C6         J157       C6         J157       C8         J157       C9         J157       C10         J157       C10         J157       C11         J157       C12         J157       C13         J157       C14         J157       C15         J157       C16         J157       C17         J157       C18         J157       C19         J157       C20         J157       C21         J157       C22         J157       C23         J157       C24         J157       C25
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	J151       C3         J151       C4         J151       C5         J151       C6         J151       C7         J151       C10         J151       C11         J151       C12         J151       C13         J151       C14         J151       C15         J151       C16         J151       C17         J151       C16         J151       C17         J151       C19         J151       C20         J151       C21         J151       C22         J151       C23         J151       C24         J151       C25         PORT4-       J151         J151       C26	J152 1 J152 2 J152 2 M- J153 1 J153 2 J153 2 MT2- J153 3 MT2- J154 1 J154 2 MT2- J154 3 J155 1 J155 2	J157       A3         J157       A4         J157       A5         J157       A6         J157       A6         J157       A6         J157       A6         J157       A7         J157       A8         J157       A9         J157       A1         J157       A10         PORT1+         J157       A11         J157       A12         PORT2+         J157       A13         J157       A14         PORT3+         J157       A15         J157       A16         PORT4+         J157       A18         J157       A19         J157       A20         J157       A21         J157       A22         J157       A23         J157       A24         J157       A25         J157       A26	J157       B3         J157       B4         J157       B5         J157       B6         J157       B7         J157       B8         J157       B9         J157       B10         J157       B11         J157       B12         J157       B14         J157       B15         J157       B16         J157       B17         J157       B18         J157       B19         J157       B20         J157       B2         J157	J157       C3         J157       C4         J157       C5         J157       C5         J157       C6         J157       C6         J157       C7         J157       C8         J157       C9         J157       C10         J157       C10         J157       C11         J157       C12         J157       C13         J157       C14         J157       C15         J157       C16         J157       C17         J157       C18         J157       C20         J157       C21         J157       C22         J157       C23         J157       C24         J157       C25         J157       C25
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	J151       C3         J151       C4         J151       C5         J151       C5         J151       C6         J151       C7         J151       C7         J151       C7         J151       C7         J151       C7         J151       C7         J151       C10         J151       C10         J151       C11         J151       C12         J151       C13         J151       C14         J151       C15         J151       C16         J151       C17         J151       C16         J151       C17         J151       C19         J151       C20         J151       C21         J151       C22         J151       C23         J151       C24         J151       C26         J151       C27         J151       C28	J152 1 J152 2 J152 2 M- J153 1 J153 2 J153 2 MT2- J153 3 MT2- J154 1 J154 2 MT2- J154 3 J155 1 J155 2	J157       A3	J157       B3         J157       B4         J157       B5         J157       B6         J157       B7         J157       B8         J157       B9         J157       B10         J157       B11         J157       B12         J157       B13         J157       B14         J157       B15         J157       B14         J157       B15         J157       B14         J157       B15         J157       B14         J157       B15         J157       B16         J157       B17         J157       B18         J157       B19         J157       B20         J157       B21         J157       B22         J157       B23         J157       B24         J157       B25         J157       B26         J157       B27         J157       B28	J157       C3         J157       C4         J157       C5         J157       C6         J157       C6         J157       C8         J157       C9         J157       C1         J157       C2         J157
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	J151       C3         J151       C4         J151       C5         J151       C6         J151       C7         J151       C8         J151       C9         J151       C10         J151       C11         J151       C12         J151       C13         J151       C16         J151       C17         J151       C16         J151       C17         J151       C18         J151       C20         J151       C21         J151       C22         J151       C24         J151       C25         PORT4-       J151         J151       C27         J151       C28         J151       C29	J152 1 J152 2 J152 2 M- J153 1 J153 2 J153 2 MT2- J153 3 MT2- J154 1 J154 2 MT2- J154 3 J155 1 J155 2	J157       A3	J157       B3         J157       B4         J157       B5         J157       B6         J157       B7         J157       B8         J157       B9         J157       B1         J157       B14         J157       B15         J157       B14         J157       B15         J157       B16         J157       B17         J157       B18         J157       B20         J157       B21         J157       B22         J157       B23         J157       B24         J157       B25         J157       B26         J157       B28         J157       B28         J157       B28         J15	J157       C3         J157       C4         J157       C5         J157       C6         J157       C6         J157       C7         J157       C8         J157       C9         J157       C1         J157       C2         J157       C21         J157       C21         J157       C22         J157       C23         J157       C24         J157       C25         J157       C26         J157       C28         J157       C28
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	J151       C3         J151       C4         J151       C5         J151       C6         J151       C7         J151       C7         J151       C7         J151       C7         J151       C8         J151       C9         J151       C10         J151       C11         J151       C12         J151       C13         J151       C14         J151       C15         J151       C16         J151       C17         J151       C18         J151       C20         J151       C21         J151       C22         J151       C23         J151       C24         J151       C26         J151       C27         J151       C28         J151       C29         J151       C29         J151       C30	J152 1 J152 2 J152 2 M- J153 1 J153 2 J153 2 MT2- J153 3 MT2- J154 1 J154 2 MT2- J154 3 J155 1 J155 2	J157       A3	J157       B3         J157       B4         J157       B5         J157       B6         J157       B7         J157       B8         J157       B9         J157       B1         J157       B14         J157       B14         J157       B14         J157       B15         J157       B16         J157       B17         J157       B18         J157       B20         J157       B21         J157       B22         J157       B23         J157       B24         J157       B25         J157       B26         J157       B28         J157       B29         J157       B30 <td>J157       C3         J157       C4         J157       C5         J157       C5         J157       C6         J157       C7         J157       C9         J157       C0         J157       C1         J157       C14         PORT3-         J157       C16         J157       C16         J157       C16         J157       C17         J157       C18         J157       C21         J157       C22         J157       C23         J157       C24         J157       C25         J157       C26         J157       C28         J157       C28         J157       C29         J157       C30</td>	J157       C3         J157       C4         J157       C5         J157       C5         J157       C6         J157       C7         J157       C9         J157       C0         J157       C1         J157       C14         PORT3-         J157       C16         J157       C16         J157       C16         J157       C17         J157       C18         J157       C21         J157       C22         J157       C23         J157       C24         J157       C25         J157       C26         J157       C28         J157       C28         J157       C29         J157       C30
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	J151       C3         J151       C4         J151       C5         J151       C6         J151       C7         J151       C7         J151       C7         J151       C7         J151       C8         J151       C9         J151       C10         J151       C11         J151       C12         J151       C13         J151       C14         J151       C15         J151       C16         J151       C17         J151       C18         J151       C20         J151       C21         J151       C22         J151       C23         J151       C24         J151       C27         J151       C28         J151       C29         J151       C30         J151       C31	J152 1 J152 2 J152 2 M- J153 1 J153 2 J153 2 MT2- J153 3 MT2- J154 1 J154 2 MT2- J154 3 J155 1 J155 2	J157       A3	J157       B3         J157       B4         J157       B5         J157       B6         J157       B7         J157       B8         J157       B9         J157       B1         J157       B14         J157       B14         J157       B14         J157       B15         J157       B16         J157       B17         J157       B18         J157       B20         J157       B21         J157       B22         J157       B23         J157       B24         J157       B25         J157       B26         J157       B28         J157       B29         J157       B30         J15	J157       C3         J157       C4         J157       C5         J157       C6         J157       C7         J157       C9         J157       C9         J157       C1         J157       C14         PORT3-         J157       C16         J157       C16         J157       C17         J157       C18         J157       C21         J157       C22         J157       C23         J157       C24         J157       C25         J157       C26         J157       C28         J157       C29         J157       C30         J157       C31
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	J151       C3         J151       C4         J151       C5         J151       C6         J151       C7         J151       C7         J151       C7         J151       C7         J151       C8         J151       C9         J151       C10         J151       C11         J151       C12         J151       C13         J151       C14         J151       C15         J151       C16         J151       C17         J151       C18         J151       C20         J151       C21         J151       C22         J151       C23         J151       C24         J151       C26         J151       C27         J151       C28         J151       C29         J151       C29         J151       C30	J152 1 J152 2 T1- J152 3 J153 1 J153 2 J153 2 J153 2 J154 1 J154 2 J154 2 J154 3 J155 1 J155 2	J157       A3	J157       B3         J157       B4         J157       B5         J157       B6         J157       B7         J157       B8         J157       B9         J157       B1         J157       B14         J157       B14         J157       B14         J157       B15         J157       B16         J157       B17         J157       B18         J157       B20         J157       B21         J157       B22         J157       B23         J157       B24         J157       B25         J157       B26         J157       B28         J157       B29         J157       B30 <td>J157       C3         J157       C4         J157       C5         J157       C6         J157       C6         J157       C8         J157       C9         J157       C1         J157       C14         PORT3-         J157       C16         J157       C17         J157       C18         J157       C20         J157       C21         J157       C22         J157       C23         J157       C24         J157       C25         J157       C26         J157       C28         J157       C29         J157       C20         J157       C2</td>	J157       C3         J157       C4         J157       C5         J157       C6         J157       C6         J157       C8         J157       C9         J157       C1         J157       C14         PORT3-         J157       C16         J157       C17         J157       C18         J157       C20         J157       C21         J157       C22         J157       C23         J157       C24         J157       C25         J157       C26         J157       C28         J157       C29         J157       C20         J157       C2

## **Schematics**

\_\_\_\_\_J158\_1 MXALARM+ TP5 \_\_\_\_\_\_J158\_2 \_\_\_\_\_\_J158\_3 MXALARM-

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

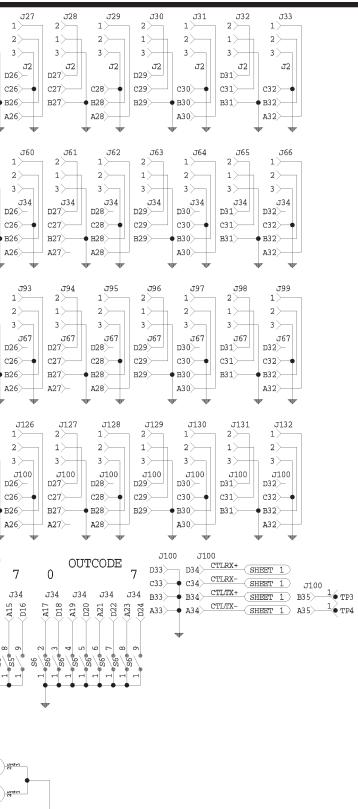
Schematic (Sheet 1 of 2) • 32X32 Audio Backplane • SC33-1282



## **Schematics**

B4 B5
<ul> <li>10 J134</li> <li>10 J134</li> <li>9 J134</li> <li>8 J134</li> </ul>
7 0134 6 0134 5 0134 4 0134 1 0134
B11 B12 A12 A12 A132 C 0132 A132 A132 C 0132 A132 A132 C 0132 C 0
B13 B14 A13 A14 J2 J2 J2 J E VLCC 1 J2 J2 J2 J E V V V V V E V V V V V E V V V V V V V
6 0 12 J2 J2 01 01 01 01 01 01 01 01 01 01
INCODE J2 J2 J III CODE J2 J2 J III CODE
0 2 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
5 A21 7 D22 8 A23 9 D24 2 A3
$\begin{array}{c} c_{22} \\ c_{23} \\ c_{23$
A24 A IN J34 J34 A 10 H
25 B24 25 A24 NCODE

**Section 6** 



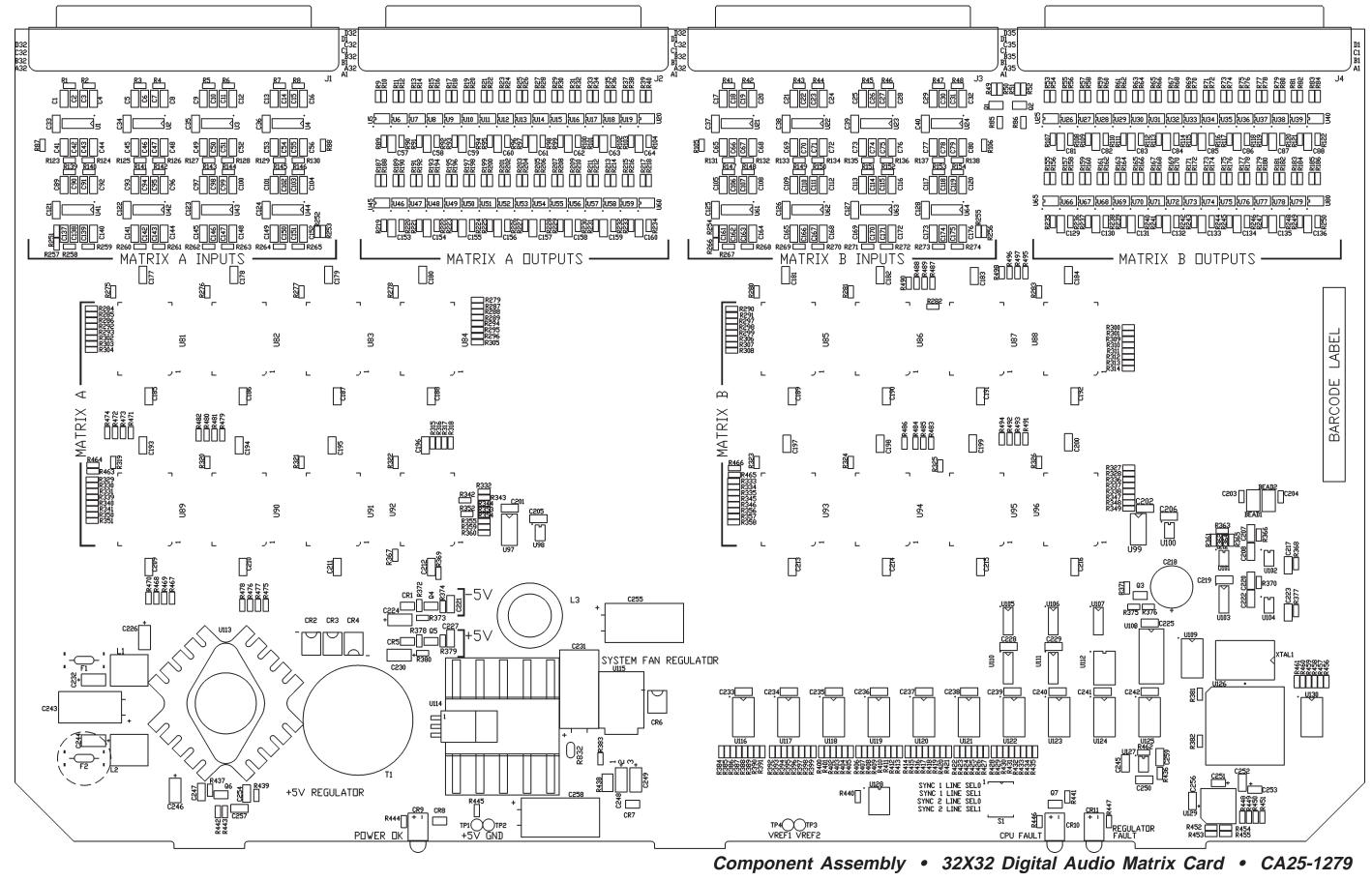


Schematic (Sheet 2 of 2) • 32X32 Audio Backplane • SC33-1282





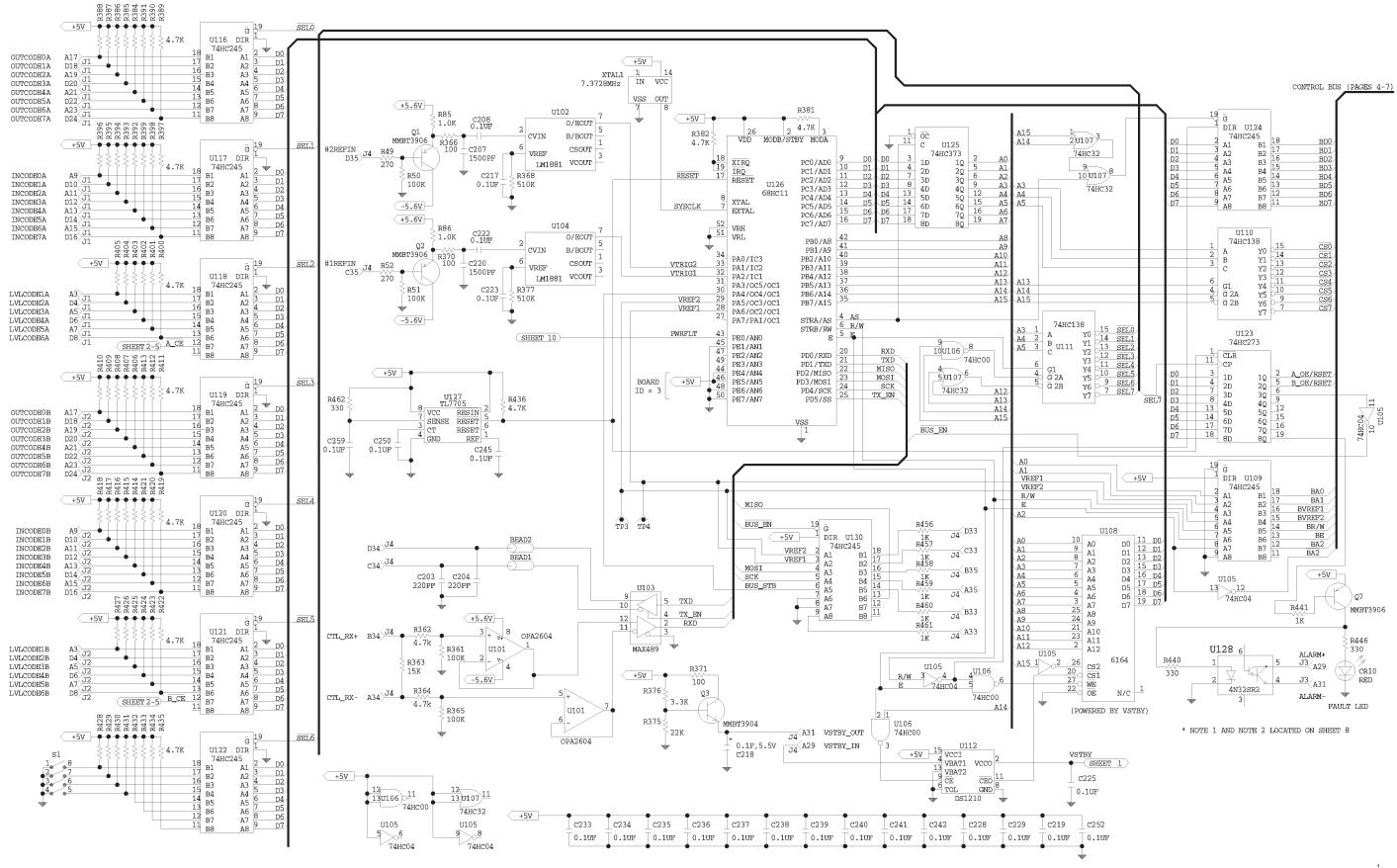
## **Schematics**



5/98 P/N 81905903450



## **Schematics**

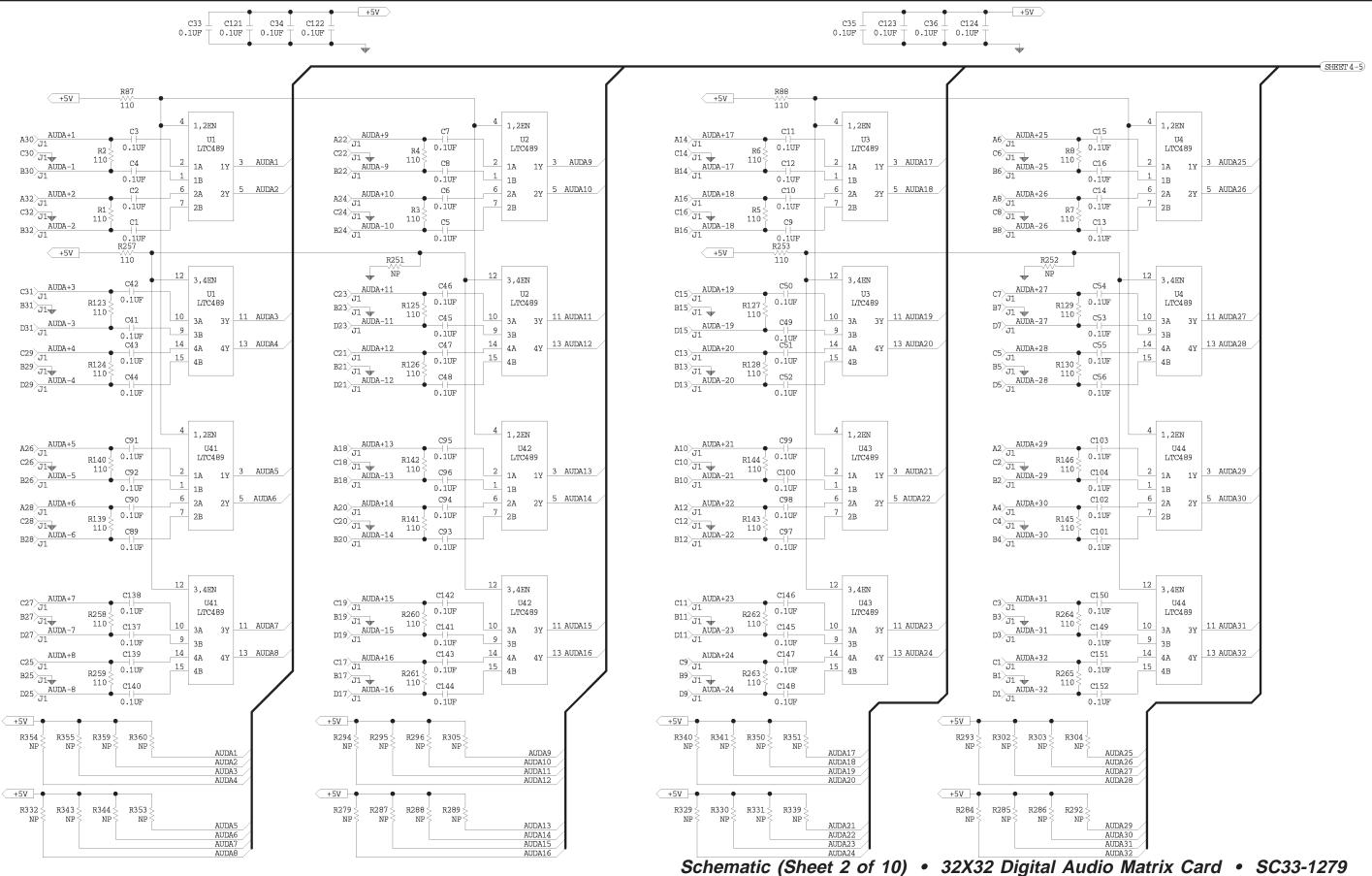


Schematic (Sheet 1 of 10) • 32X32 Digital Audio Matrix Card • SC33-1279

## **Section 6**

6 CHEM ATI CS

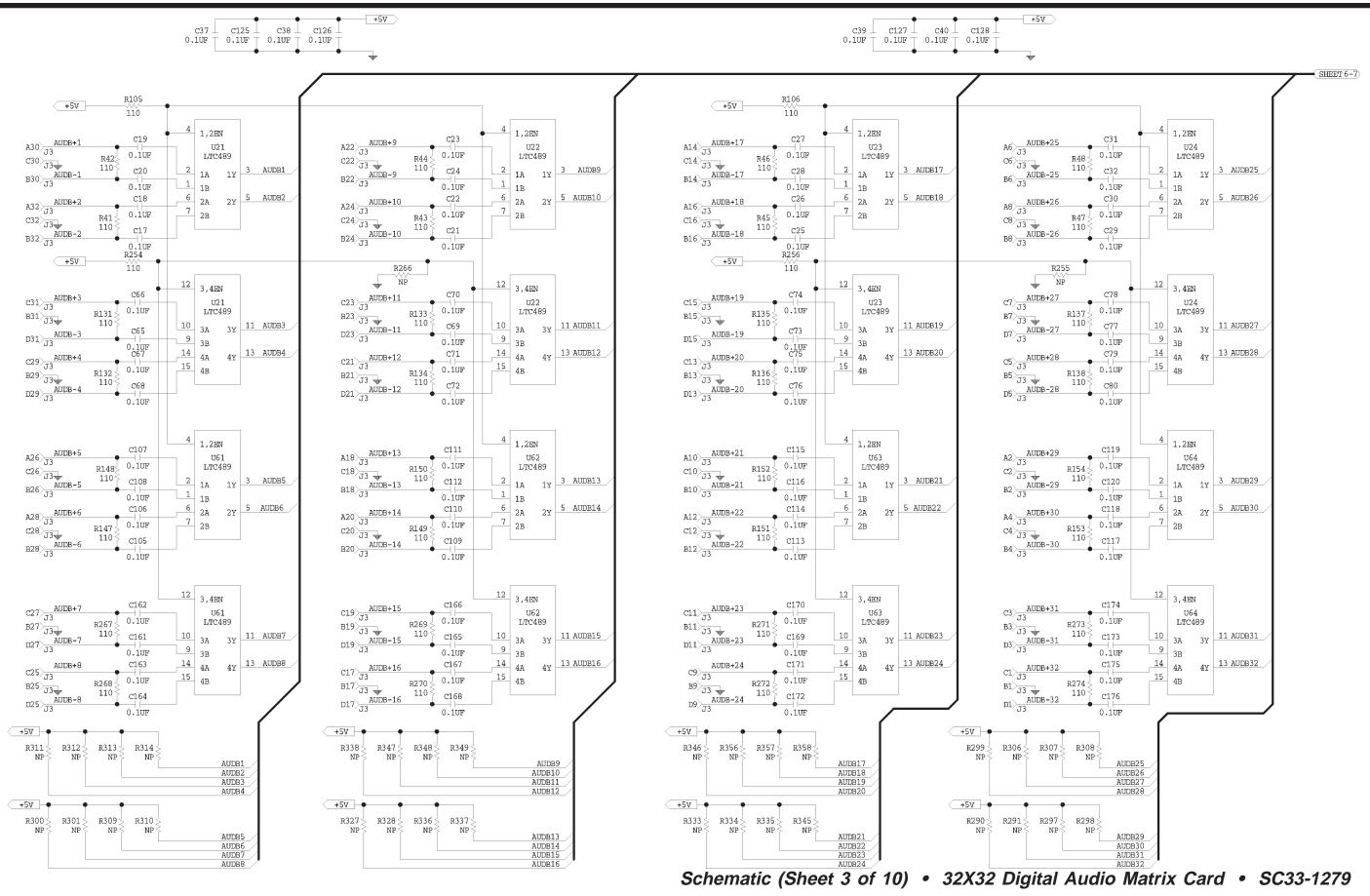
### **Schematics**



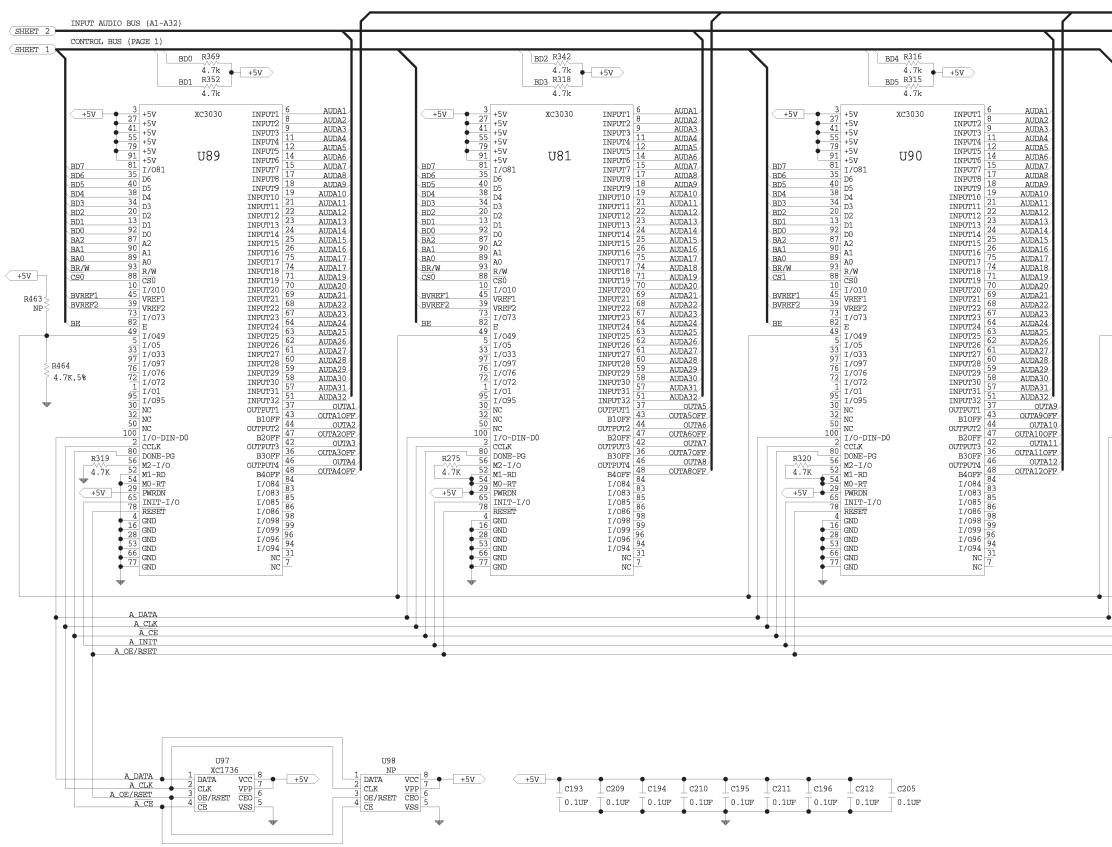
5/98 P/N 81905903450



#### **Schematics**



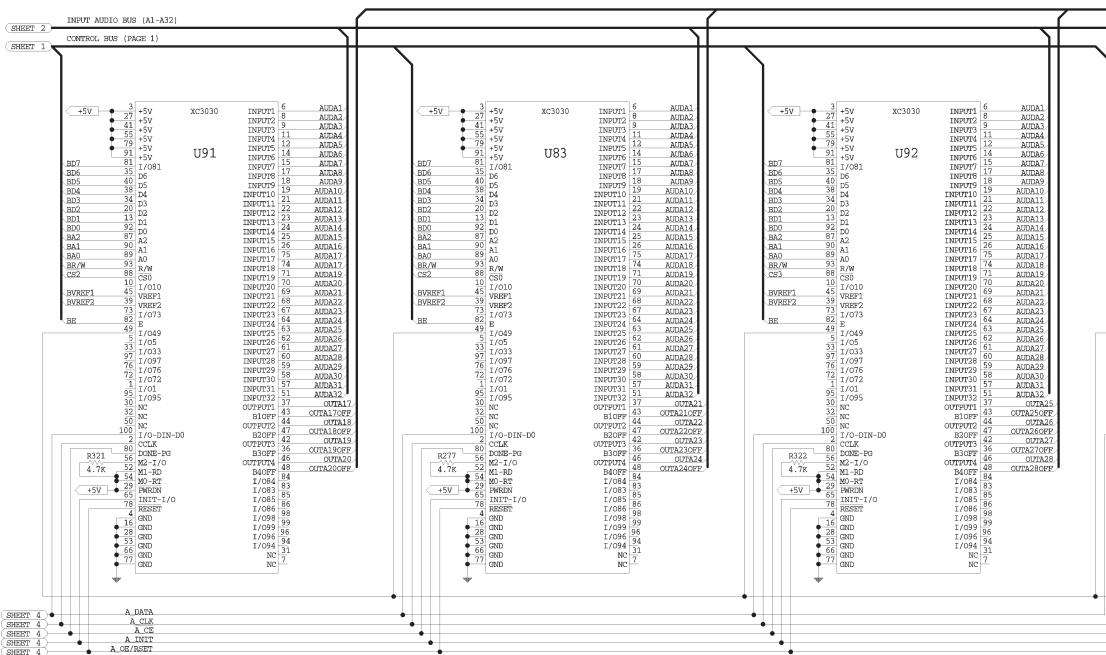




Schematic (Sheet 4 of 10) • 32X32 Digital Audio Matrix Card • SC33-1279

		OUTPUT AUD	IO BUS	(A1-A16)	
					7 SHEET 8
				$\overline{}$	
	-24 5				
$\mathbf{Y}$	R317				
<u></u>	BD6 4.7k BD7 R367	- <u>+5v</u>			
<u></u>	4.7k				
+5v +5v +5v	XC3030	INPUT1	6	AUDA1	
+5V $27$ $+5V$ $+5V$ $+5V$ $+5V$ $+5V$ $+5V$	ACSUSU	INPUT2	8	AUDA2	
● 41 +5V ● 55 +5V		INPUT3 INPUT4	11	AUDA3 AUDA4	
19 ±5V	1100	INPUT4 INPUT5	12	AUDA5	
BD7 81 1/08	U82	INPUT6	14 15	AUDA6 AUDA7	
BD6 35 D6	1	INPUT7 INPUT8	17	AUDA8	
BD5 40 D5		INPUT9	18 19	AUDA9 AUDA10	
BD3 34 D4		INPUT10 INPUT11	21	AUDA10	
BD2 20 D2		INPUT12	22 23	AUDA12	
BD0 92 D1		INPUT13	23	AUDA13 AUDA14	
BA2 87 A2		INPUT14 INPUT15	25	AUDA15	
BA1 90 BA0 89 A1		INPUT16	26 75	AUDA16 AUDA17	
BR/W 93 P/W		INPUT17 INPUT18	74	AUDA17	
		INPUT19	71 70	AUDA19	
BVREF1 45 I/01		INPUT20 INPUT21	69	AUDA20 AUDA21	
BVREF2 39 VREF		INPUT21 INPUT22	68	AUDA22	
BE 73 1/07	3	INPUT23	67 64	AUDA23 AUDA24	
49 E	9	INPUT24 INPUT25	63	AUDA25	
5 33 I/05		INPUT26	62 61	AUDA26	
97 1/03		INPUT27 INPUT28	60	AUDA27 AUDA28	
$\frac{76}{72}$ 1/07		INPUT29	59 58	AUDA29	
1 1/0/		INPUT30	57	AUDA30 AUDA31	
95 I/01 1/09		INPUT31 INPUT32	51	AUDA32	
$\frac{30}{32}$ NC		OUTPUT1	37 43 (	OUTA13 OUTA130FF	1
50 NC		B1OFF OUTPUT2	44	OUTA14	
100 I/O-	DIN-D0	B20FF	47 ( 42	OUTA14OFF OUTA15	
80 DONE		OUTPUT3 B30FF		UTA150FF	
M2-I		OUTPUT4	46 48 (	OUTA16	
		B40FF	84	OUTA160FF	~
+5V 29 WRD		I/084 I/083	83		
/×	-I/O	I/085	85 86		
4 RESE	T	I/086 I/098	98		
16 GND 28 GND		I/099	99 96		
53 GND		I/096 I/094	94		
60 CND		NC	31		
T7 GND		NC	7		
NP1 (	SHEET 5				
A_DATA	CTITETER E				
A_CLK	SHEET 5				
A_CE	SHEET 1				
A_INIT	SHEET 5				
A_OE/RSET	SHEET 5				
L(	<u>SHEET 1</u> )				



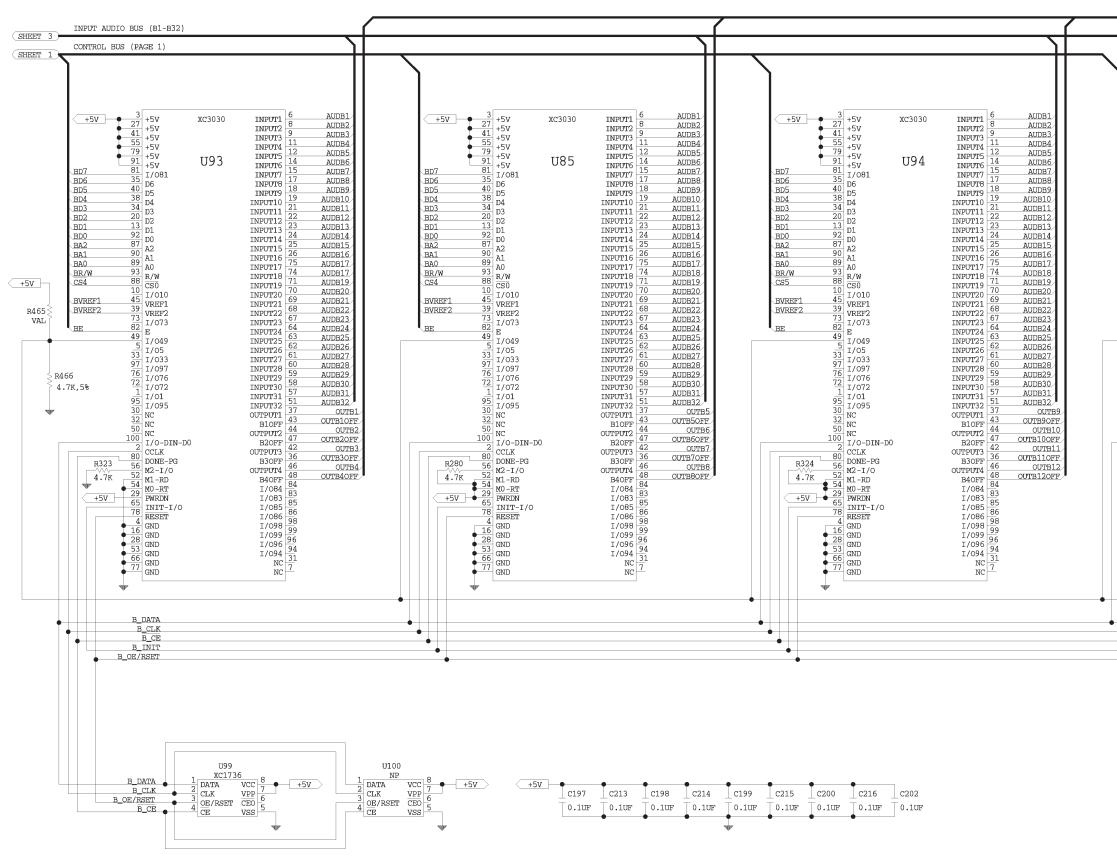




Schematic (Sheet 5 of 10) • 32X32 Digital Audio Matrix Card • SC33-1279

			OUTPUT AUI	DIO BUS	(A17-A32)	SHEET 8
						SHEET 0
					Ì	
$\mathbf{i}$						
+5V • 3	+5V	XC3030	INPUT1	6	AUDA1	
21	+5V	VC2020	INPUT2	8	AUDA2	
41	+5V		INPUT3	9	AUDA3	
55	+5V		INPUT4	11 12	AUDA4	
91	+5V	U84	INPUT5	14	AUDA5 AUDA6	
BD7 81	+5V	004	INPUT6	15	AUDA7	
BD6 35	I/081 D6		INPUT7 INPUT8	17	AUDA8	
BD5 40	D6 D5		INPUT9	18	AUDA9	
BD4 38	D3 D4		INPUT10	19	AUDA10	
BD3 34	D3		INPUT11	21	AUDA11	
BD2 20 BD1 13	D2		INPUT12	22	AUDA12	
BD1 13 BD0 92	D1		INPUT13	23	AUDA13 AUDA14	
BA2 87	DO		INPUT14	25	AUDA14	
BA1 90	A2		INPUT15	26	AUDA16	
BA0 89	A1 A0		INPUT16 INPUT17	75	AUDA17	
<u>BR/W</u> 93	R/W		INPUT18	74	AUDA18	
CS3 88	CS0		INPUT19	71	AUDA19	
10 BVREF1 45	I/010		INPUT20	70 69	AUDA20	
BVREF1 45 BVREF2 39	VREF1		INPUT21	68	AUDA21	
<u>BVREF2</u> 55 73	VREF2		INPUT22	67	AUDA22 AUDA23	
BE 82	1/073		INPUT23	64	AUDA24	
49	E I/049		INPUT24 INPUT25	63	AUDA25	
5	1/049		INPUT26	62	AUDA26	
33	1/033		INPUT27	61	AUDA27	
97 76	1/097		INPUT28	60 59	AUDA28	
78 72	I/076		INPUT29	59	AUDA29 AUDA30	
1	1/072		INPUT30	57	AUDA30	
95	I/01		INPUT31	51	AUDA32	
30	I/095 NC		INPUT32 OUTPUT1	37	OUTA29	
32	NC		B10FF	43	OUTA290FF	
50	NC		OUTPUT2	44	OUTA30	
100	I/O-DIN-DO		B20FF	47 42	OUTA30OFF	
80	CCLK		OUTPUT3	0.0	OUTA31 OUTA310FF	
R278 56	DONE-PG		B30FF	46	OUTA32	
4.7K 52	M2-I/O		OUTPUT4 B4OFF	48	OUTA320FF	I
54	M1-RD M0-RT		I/084	84		
+5V 29	PWRDN		I/083	83		
65	INIT-I/O		I/085	85		
78	RESET		I/086	86 98		
16	GND		I/098	99		
28	GND		I/099	96		
53	GND GND		I/096 I/094	94		
66	GND		17094 NC	31		
77	GND		NC	7		
T			110			
♥						
NP1	SHEET 4					



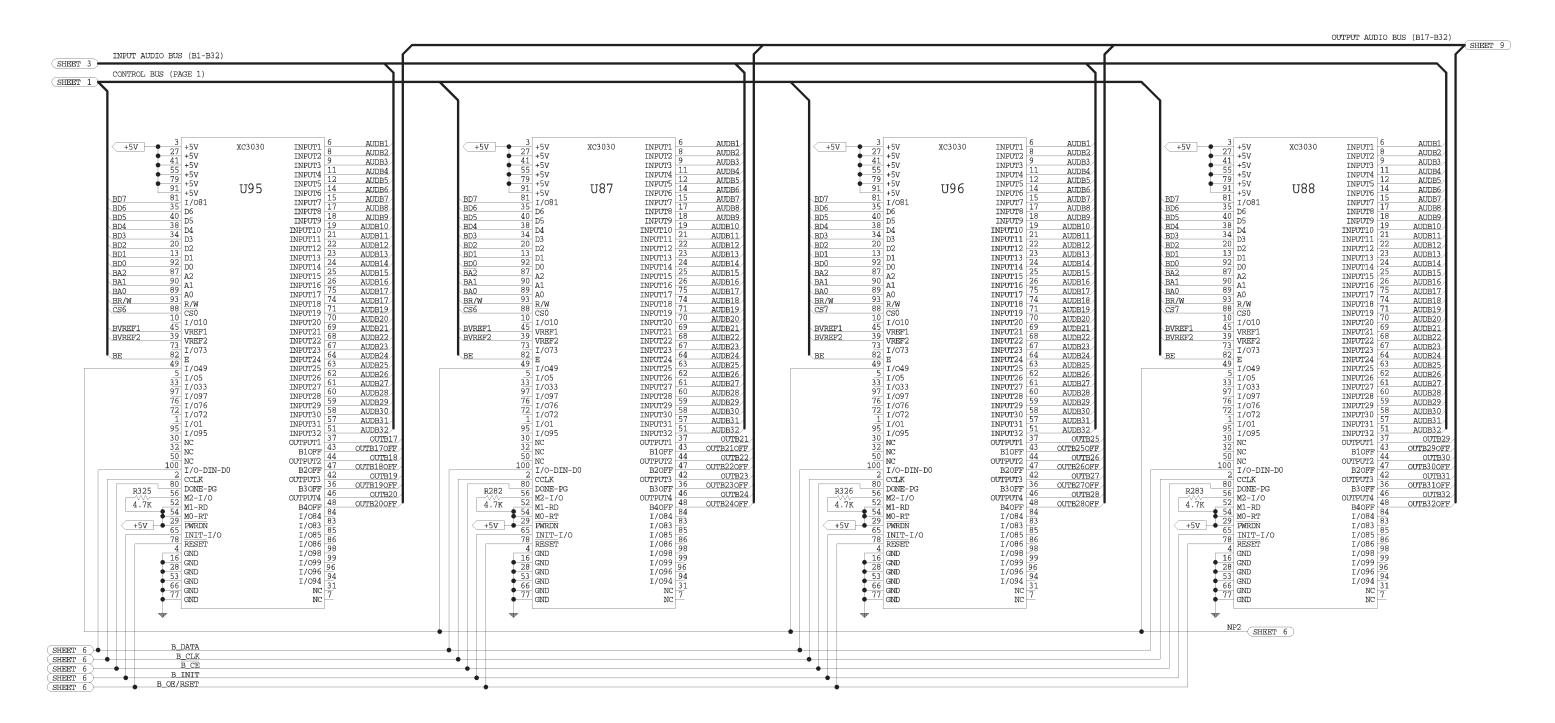


Schematic (Sheet 6 of 10) • 32X32 Digital Audio Matrix Card • SC33-1279

## **Section 6**

			OUTPUT AUD	DIO BUS	(B1-B16)	
						Z <sup>SHEET 9</sup>
)						
+5V 3	+5V	XC3030	INPUT1	6	AUDB1	
21	+5V		INPUT2	8	AUDB2	
	+5V		INPUT3	9 11	AUDB3	
79	+5V		INPUT4	12	AUDB4	
91	+5V	U86	INPUT5	14	AUDB5 AUDB6	
BD7 81	+5V	000	INPUT6	15	AUDB7	
BD6 35	I/081 D6		INPUT7 INPUT8	17	AUDB8	
BD5 40	D5		INPUT9	18	AUDB9	
BD4 38	D4		INPUT10	19	AUDB10	
BD3 34	D3		INPUT11	21	AUDB11	
BD2 20 BD1 13	D2		INPUT12	22 23	AUDB12	
BD1 13 BD0 92	D1		INPUT13	24	AUDB13 AUDB14	
BA2 87	DO		INPUT14	25	AUDB14	
BA1 90	A2		INPUT15	26	AUDB16	
BA0 89	A1 A0		INPUT16 INPUT17	75	AUDB17	
<u>BR/W</u> 93	R/W		INPUT18	74	AUDB18	
CS5 88	CS0		INPUT19	71	AUDB19	
10 BVREF1 45	I/010		INPUT20	70 69	AUDB20	
	VREF1		INPUT21	68	AUDB21	
BVREF2 39 73	VREF2		INPUT22	67	AUDB22 AUDB23	
BE 82	I/073 E		INPUT23	64	AUDB24	
49	E I/049		INPUT24 INPUT25	63	AUDB25	
5	I/05		INPUT26	62	AUDB26	
33	1/033		INPUT27	61	AUDB27	
97 76	I/097		INPUT28	60 59	AUDB28	
70	I/076		INPUT29	59	AUDB29 AUDB30	
1	I/072		INPUT30	57	AUDB30	
95	I/01 I/095		INPUT31 INPUT32	51	AUDB32	
30	NC		OUTPUT1	37	OUTB13	/
32	NC		B10FF	43	OUTB130FF	2
50	NC		OUTPUT2	44	OUTB14	/
100	I/O-DIN-D0		B20FF	47 42	OUTB140FF	/
80	CCLK		OUTPUT3	36	OUTB15 OUTB150FF	1
R281 56	DONE-PG		B30FF	46	OUTB16	
	M2-I/O M1-RD		OUTPUT4 B40FF	48	OUTB160FF	
<b>9</b> 54	MO-RT		I/084	84		
+51 29	PWRDN		I/083	83 85		
+5V 65 78	INIT-I/O		I/085	86		
1	RESET		I/086	98		
16	GND		I/098	99		
28	GND GND		I/099 I/096	96		
53	GND		I/090 I/094	94		
66	GND		I, OD I NC	31		
77	GND		NC	7		
N N	IP2					
	SHEET	7				
	· · · · · · · · · · · · · · · · · · ·					
B_DA		$\underline{7}$				
	OF STILLT	$\frac{1}{2}$				
		7)				
B_II	IT SHEET	<del>7</del> ≺				
B_OE/RS	וועסי	$\overrightarrow{7}$				
L		1)				







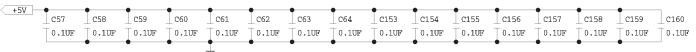
Schematic (Sheet 7 of 10) • 32X32 Digital Audio Matrix Card • SC33-1279



AUDIO A OUTPUT BUS 1 TO 32 SHEET 4-5

**Schematics** 





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

## **Section 6**

#### (NOTE 1)

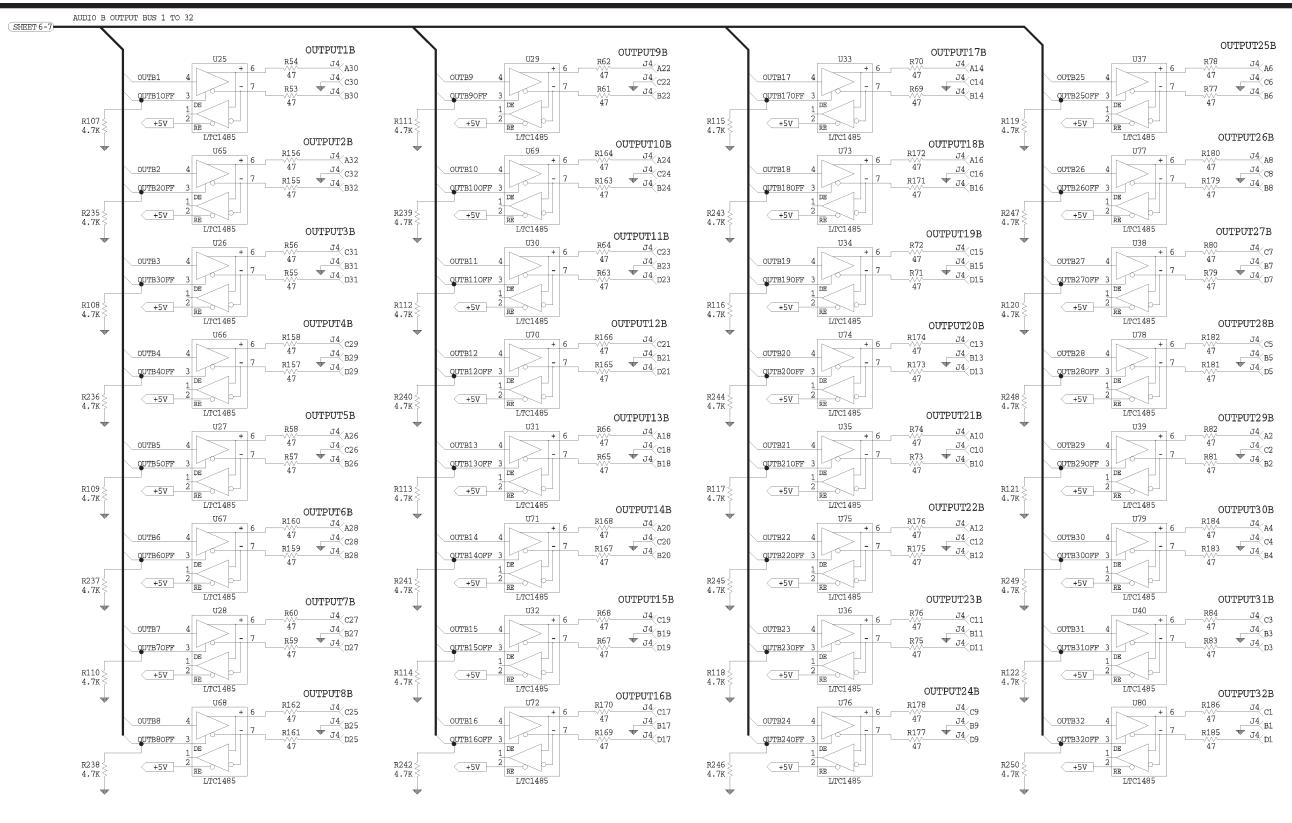
FOR 81906519000 ADD 32, 0.0 OHM RESISTORS PESA PART NUMBER 81906601521 TO R467 THRU R498 ADD 2, 4.7K OHM RESISTORS PESA PART NUMBER 81906600820 TO R463 AND 465 AND REMOVE R464 AND R466.

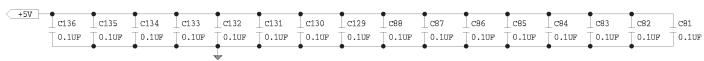
#### (NOTE 2)

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



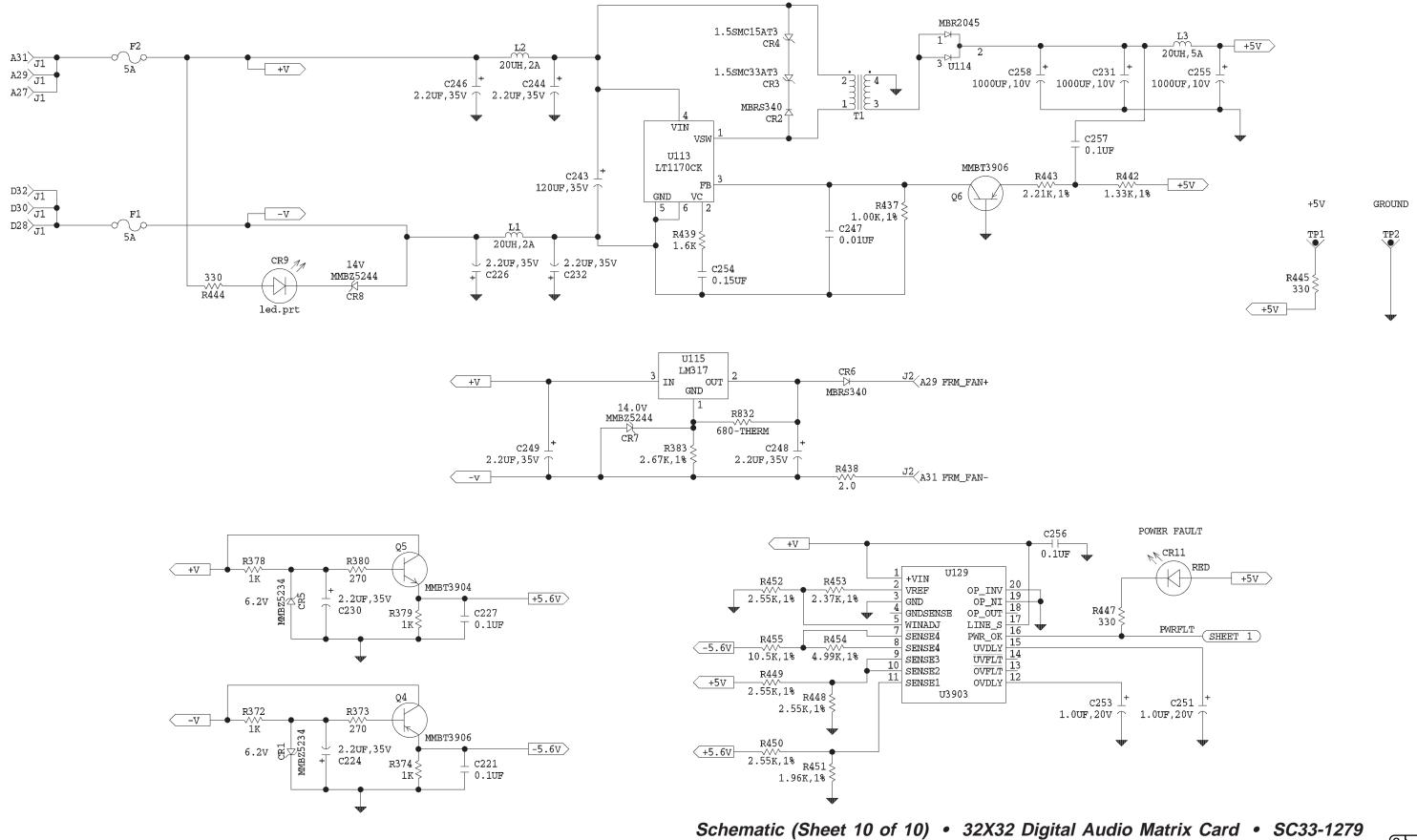
**Schematics** 





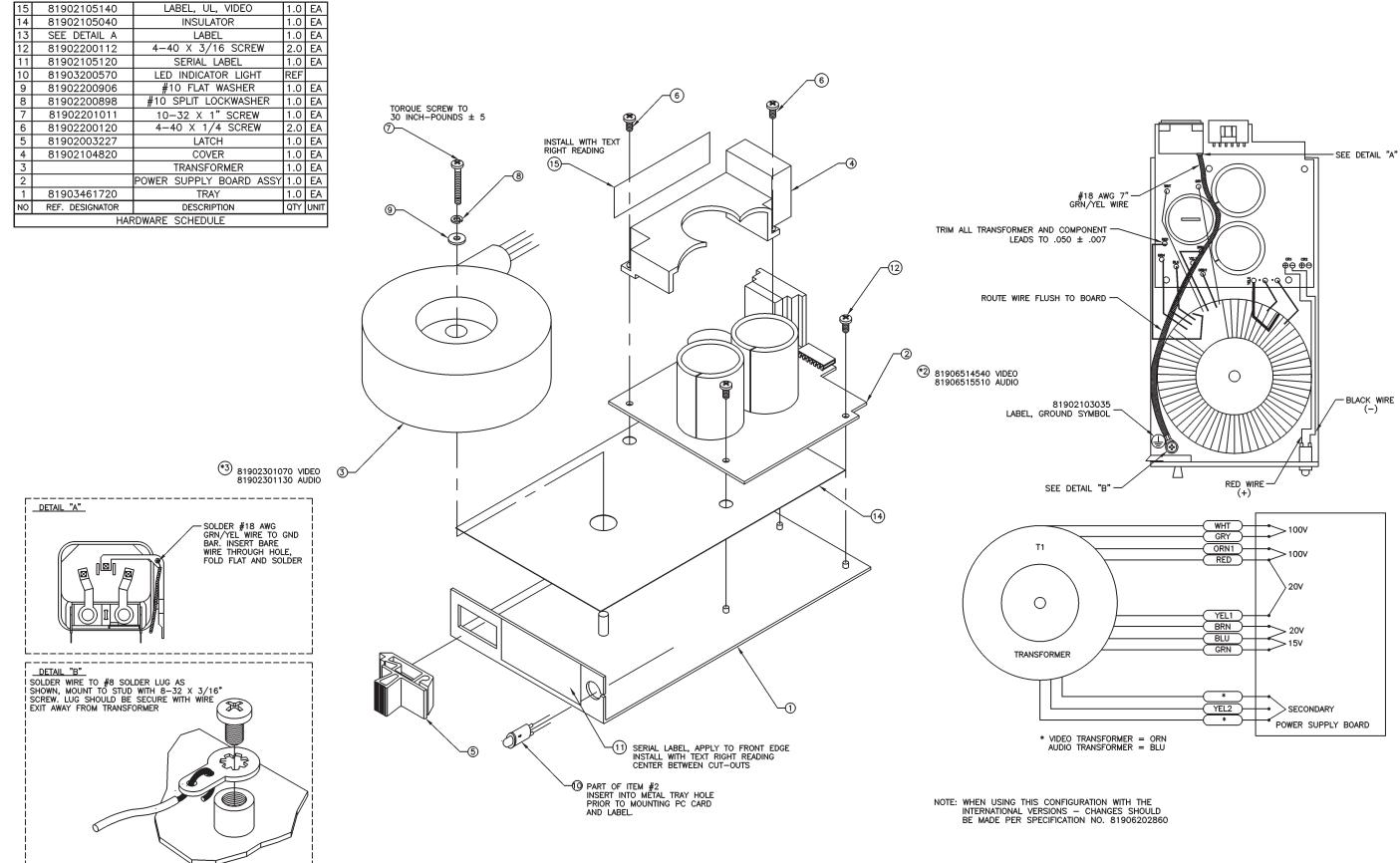
Schematic (Sheet 9 of 10) • 32X32 Digital Audio Matrix Card • SC33-1279

## **Schematics**



## **Section 6**



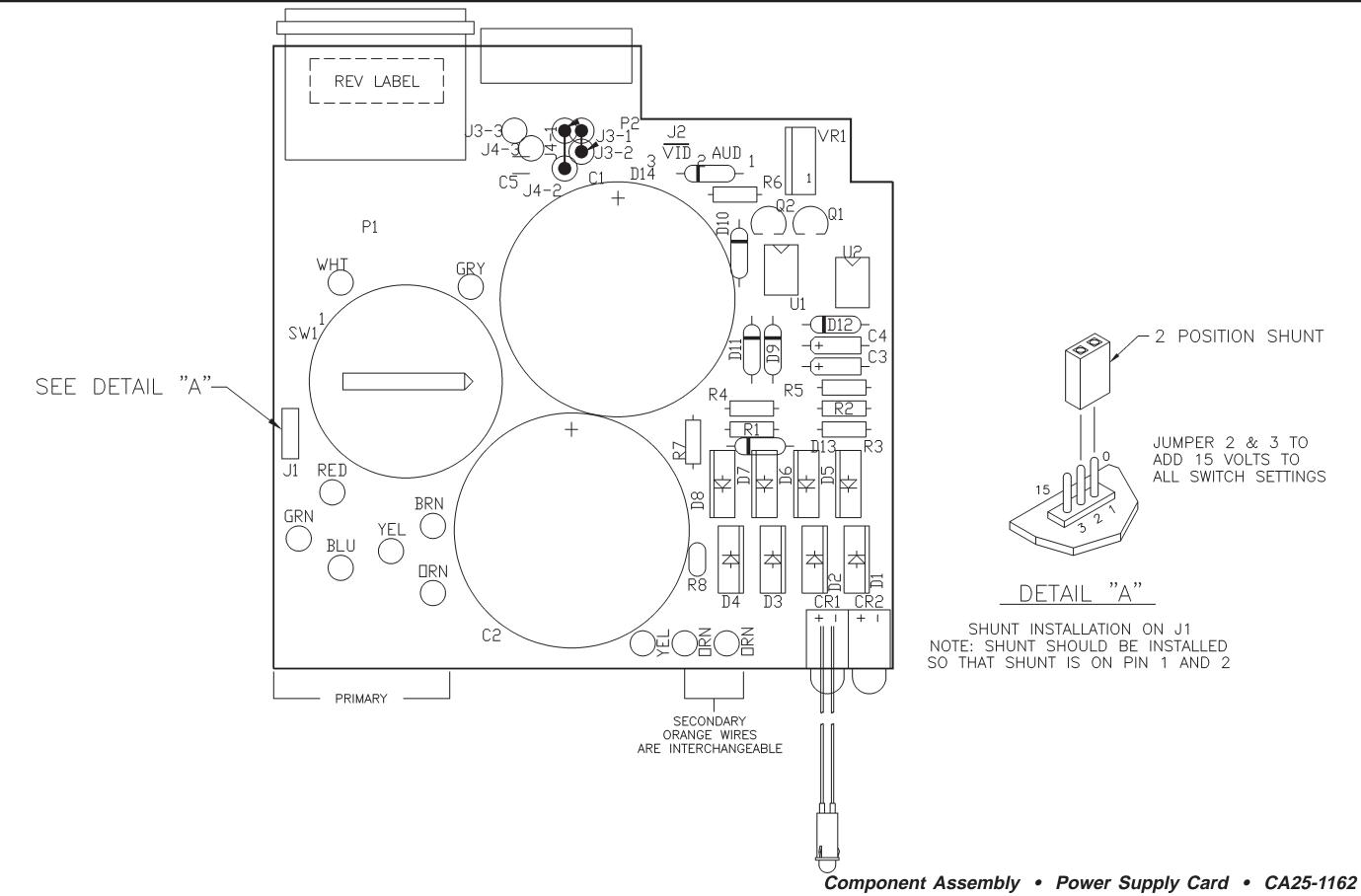


L\_\_\_\_\_\_

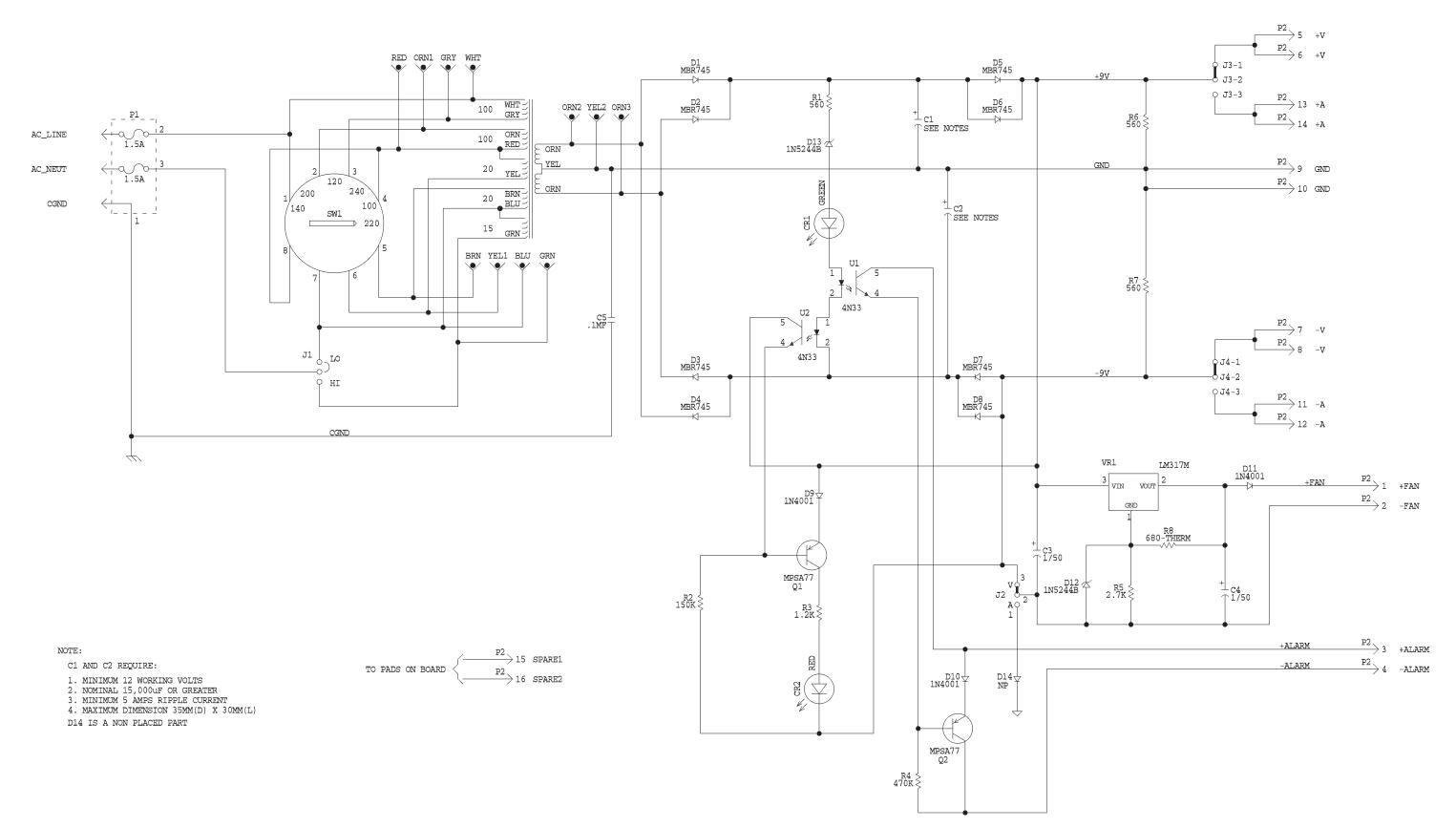
#### Configuration Drawing • Power Supply Assembly • CD63-0683



**Schematics** 







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.

Part	Part Number	<u>Page</u>
Cougar Mainframe	81906517420	7.2
Cougar Chassis	81906517510	7.3
32X32 Audio Backplane	81906517530	7.4
32X32 Digital Audio Matrix Card	81906517490	7.5
Power Supply Assembly	81906514550	7.8
Power Supply Card	81906514540	7.9



#### Cougar Mainframe - 81906517420

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

- EA EA EA EA REF:FAN EA
  - EA REF:AIR FILTER
- EA REF: P.S. SHIPPING SCREWS
- EA REF: FAN, ALARMS
- EA
- EA
- 1 EA
- 1 EA
- 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



5/98 P/N 81905903450

#### 32X32 Audio Backplane - 81906517530

81902200146 SCREW 4-40x3/8 PN HD PHIL 6 81902412820 PCB 32x32 AUD BACKPLANE 1 81902600832 SWITCH 8 POS SIP LO PROFL 6 81902903061 CONN 6-POS MNL FEMALE RED 1 81902906486 CONN BNC PRESS-IN 75 OHM 4 81902906932 CONN 9-PIN MALE D SOLDER 1 81902907200 CONN 16-POS PC MT FEMALE 2 81902907900 CONN 128 PIN 4 ROW VERT 3 81902907910 CONN 140 PIN 4 ROW VERT 1 81902908010 CONN 5 PIN 5.08mm VT MALE 1 81902908100 CONN 3 PIN PC MNT VERTCL CA25-1282 DOC 32x32 AUDIO BCKPLNE 0 DOC 32x32 AUDIO BCKPLNE SC33-1282 0

- EA EA EA SW1 - SW6
- EA J135
- EA J140 J141 J142 J143
- EA J147
- EA J134 J137
- EA J2 J34 J67
- 1 EA J100
- EA J148
- 133 EA J101-J132 J68-J99 J35-J66 J1 J3-J33 J136 J138 J133 J139 J158
- 0 EA 0 EA



#### 32X32 Digital Audio Matrix Card - 81906517490

81900007102       THERMISTOR 680 OHM 5%       1       EA       R832         81901000760       CAP SWXR REG OUT 10V 12mm       3       EA       C255 C231 C258         81901000760       CAP SWXR REG OUT 10V 12mm       3       EA       C255 C231 C258         81901000840       CAP 0.1F 5.5V       1       EA       C218         819016003738       REG LM317T 1.2V-37V ADJST       1       EA       U114         81901606830       REG LT170 5A SWXING 60V       1       EA       U113         81901606830       REG LT170 5A SWXING 60V       1       EA       REF:U114         8190200500       LABEL BARCODE 1.5'NO 25'       1       EA       REF:U113 U114         81902202070       NUT 4-40 HEX       4       EA       REF:U113 U114         819022020712       SCREW 4-40x1/4 SIMM PANHD       EA       REF:U113 U114         8190220070       NUT 4-40 HEX       4       EA       REF:U113 U114         81902200120       TRANSPORMER CUST SDV24x16       EA       T1         81902200120       TRANSPORMER CUST SDV24x16       EA       T1         81902200300       RULCTOR 30 UH CUSTOM       1       EA         81902200129       CONN 142 RECPT R/A 4 ROW       2       EA					
81901000760       CAP SWXR REG OUT 10V 12mm       3       EA       C255 C231 C258         81901000840       CAP 0.1F 5.5V       1       EA       C218         81901000872       DIODE PACK MBR2045       1       EA       U114         819016003738       REG LM317T 1.2V-37V ADJST       1       EA       U115         81901606830       REG LT1170 5A SWXING 60V       1       EA       U113         81901200200       HEATSINK LOW PROFILE       1       EA       REF: U114         81902105050       LABEL BARCODE 1.5"X0.25"       1       EA         819022007070       NUT 4-40 HEX       4       EA       REF: SHIELD PLATE         81902202712       SCREW 4-40x1/4 SIMM PANHD       EA       REF: SHIELD PLATE         81902202712       SCREW 4-40x1/6 SIMM PANHD       EA       L1 L2         81902201280       TRANSFORMER CUST SDV24x16       1       EA         81902201280       TRANSFORMER CUST SDV24x16       1       EA         81902200479       SOCKET 8 PIN LOW PROF IC       2       EA       F1 F2         8190220020 CONN 140 RECPT R/A 4 ROW       1       EA       J1 J2 J3         819022003058       LED RED RT/A HEFF PC MT       2       EA       CR19 <tr< td=""><td></td><td></td><td></td><td></td><td></td></tr<>					
81901000840       CAP 0.1F 5.5V       1       EA       C218         8190160377       DIODE PACK MBR2045       1       EA       U114         8190160378       REG LM317T 1.2V-37V ADJST       EA       U114         8190160378       REG LM317T 1.2V-37V ADJST       EA       U113         819016068980       REG LT1170 5A SWXING 60V       1       EA       XTAL1         81901200280       HEATSINK LOW PROFILE       EA       REF:U114         81902200270       NUT 4-40 HEX       4       EA       REF:U113 U114         819022026712       SCREW 4-40x1/4 SIMM PANHD       EA       REF:U113 U114         81902202672       SCREW 4-40x1/4 SIMM PANHD       EA       REF:U113 U114         819022026712       SCREW 4-40x1/4 SIMM PANHD       EA       REF:U113 U114         819022026712       SCREW 4-40x1/4 SIMM PANHD       EA       L1 L2         81902201680       INDUCTOR 20UH 2A TOROIDAL       EA       L1 L2         819022006730       SCREW 4-40x1/4 SIMM PANHD       EA       L3         81902200680       INDUCTOR 20UH 2A TOROIDAL       EA       L1 L2         81902200680       INDUCTOR 20UH 2A TOROIDAL       EA       L1 L2         81902200730       CONN 140 RECPT R/A 4 ROW <t< td=""><td></td><td></td><td></td><td></td><td></td></t<>					
81901500827       DIODE PÄCK MBR2045       1       EA       U114         819016003738       REG LM317T 1.2V-37V ADJST       1       EA       U115         81901608305       IC.7.3728       MHZ OSCILLATOR       1       EA       VTAL1         81901606980       REG LT1170 5A SWXING 60V       1       EA       U113         81902106050       LABEL BARCODE 1.5"x0.25"       1       EA       REF:SHIELD PLATE         8190220070       NUT 4-40 HEX       ISM PANHD       6       EA       REF:U113 U114         81902202712       SCREW 4-40x1/4 SIMM PANHD       6       EA       REF:U113 U114         81902202712       SCREW 4-40x1/4 SIMM PANHD       EA       L1 L2         81902202712       SCREW 4-40x1/4 SIMM PANHD       EA       REF:U113 U114         81902202709       PCB 32x32 AUD DIOT TOR 100 H 10       EA       L1 L2         819022070806       FUSE 5A PICO AXIAL 125V       2       EA       F1 F2         81902207920       CONN 140 RECPT RIA 4 ROW       EA       J1 J J J J       S1         81902207303       CONN 140 RECPT RIA 4 ROW       EA       REF: U126       S1         81902605141       LED GREEN RT/A HIEFF PC MT       EA       REF: U126       S1       S1 </td <td></td> <td>6 OUT 10V 12mm</td> <td>3</td> <td>ΕA</td> <td></td>		6 OUT 10V 12mm	3	ΕA	
81901603738       REG LM317T 1.2V-37V ADJST       1       EA       U115         81901606830       IC 7.3728 MH2 OSCILLATOR       1       EA       U113         81901606808       REG LT1705A SWING 60V       1       EA       U113         81901600280       HEATSINK LOW PROFILE       1       EA       REF:U114         81902104512       INSERT/EXTRACTR NYLON       2       EA       REF:U113 U114         81902200070       NUT 4-40 HEX       4       EA       REF:U113 U114         81902200677       SCREW 4-40x1/4 SIMM PANHD       6       EA       REF:U113 U114         81902201080       INDUCTOR 20UH 2A TOROIDAL       2       EA       L1 L2         819022003030       INDUCTOR 30 UH CUSTOM       1       EA       L3         819022003303       INDUCTOR 30 UH CUSTOM       1       EA       L3         81902200330       CONN 140 RECPT R/A 4 ROW       3       EA       J1 J2 J3         819022003020       CONN 140 RECPT R/A 4 ROW       EA       J4       S190220050         81902200568       ED RECP TR/A 4 ROW       EA       J4       S190220050       SCH Z2X HDIGTALAUD XPT       EA       L3         81902200560       SPLITTERMINAL       4       EA <td< td=""><td>81901000840 CAP 0.1F 5.5V</td><td></td><td>1</td><td>EA</td><td>C218</td></td<>	81901000840 CAP 0.1F 5.5V		1	EA	C218
81901606830       IC 7.3728 MHZ OSCILLATOR       1       EA       XTAL1         81901606980       REG LT1170 5A SWXING 60V       1       EA       REF:U113         81902106050       HEATSINK LOW PROFILE       1       EA       REF:U114         81902202070       NUT 44 0 HEX       4       EA       REF:U113 U114         8190220070       NUT 44 0 HEX       4       EA       REF:U113 U114         81902202070       NUT 44 0 HEX       4       EA       REF:U113 U114         81902202070       NUT 44 0 HEX       4       EA       REF:U113 U114         819022020712       SCREW 4-40x5/16 SIMM PNHD       4       EA       L1 L2         81902201200       TRANSFORMER CUST SDV24x16       1       EA       L1 L2         81902200709       COS X32 AUD DIGTL 110       1       EA         819022007090       CONN 140 RECPT R/A 4 ROW       EA       JJ J J J         819022007090       CONN 140 RECPT R/A 4 ROW       EA       CR1 CR11         819022007090       CONN 140 RECPT R/A 4 ROW       EA       CR1 CR11         81902200505       LED RED RT/A HI-EFF PC MT       EA       CR9         81903200558       LED RED RT/A HI-EFF PC MT       EA       RS7	81901500827 DIODE PACK ME	3R2045	1	ΕA	U114
81901606980       REG LT1170 5A SWXING 60V       1       EA       U113         81901600280       HEATSINK LOW PROFILE       1       EA       REF:U114         81902105050       LABEL BARCODE 1.5"x0.25"       1       EA         81902200070       NUT 4-40 HEX       4       EA       REF:SHIELD PLATE         81902202647       SCREW 4-40x1/4 SIMM PANHD       6       EA       REF:SHIELD PLATE         81902301280       INDUCTOR 20uH 2A TOROIDAL       2       EA       L1 L2         81902200709       TRANSFORMER CUST SDV24x16       1       EA       L1         819022007030       TRANSFORMER CUST SDV24x16       1       EA       L3         81902207020       CONN 140 UCUSTOM       1       EA       L3         819022070380       FUES 5A PLCO AXIAL 125V       2       EA       F1 F2         81902200720       CONN 140 RECPT R/A 4 ROW       3       EA       J1 J2 J3         81902200531       LED RED RT/A HI-EFF PCMT       2       EA       CR9         81903200541       LED GREEN RT/A HI-EFF PCMT       2       EA       CR10 CR11         81906517080       SOFT COUGAR BIOS       1       EA       R9-R40 R53-R84 R155-R218         81906600340       RESISTO	81901603738 REG LM317T 1.2	V-37V ADJST	1	ΕA	U115
81901900280       HEATSINK LOW PROFILE       1       EA       REF:U114         81902104512       INSERT/EXTRACTR NYLON       2       EA       REF:SHIELD PLATE         81902200070       NUT 4-40 HEX       4       EA       REF:U113 U114         81902202047       SCREW 4-40x1/4 SIMM PANHD       6       EA       REF:U113 U114         81902200171       SCREW 4-40x1/4 SIMM PANHD       6       EA       REF:U113 U114         819022012712       SCREW 4-40x1/6 SIMM PNHD       4       EA       REF:U113 U114         819022012012       SCREW 4-40x1/6 SIMM PNHD       4       EA       REF:U113 U114         8190220120       TRANSFORMER CUST SDV24x16       1       EA       T1         81902207030       INDUCTOR 30 UH CUSTOM       1       EA       L3         81902907930       CONN 128 RECPT R/A 4 ROW       3       EA       J1 J2 J3         81902907930       CONN 120 RECPT R/A 4 ROW       1       EA       REF:U126         81903200554       LED RED RT/A HI-EFF PCM       2       EA       CR10 CR11         81906500341       RESISTOR ATO HIM 5% 0805       1       EA       R371 R368 R370         81906600424       RESISTOR 100 OHM 5% 0805       128       EA       R371 R368 R370 <td>81901606830 IC 7.3728 MHZ O</td> <td>SCILLATOR</td> <td>1</td> <td>EA</td> <td>XTAL1</td>	81901606830 IC 7.3728 MHZ O	SCILLATOR	1	EA	XTAL1
81901900280       HEATSINK LOW PROFILE       1       EA       REF:U114         81902104512       INSERT/EXTRACTR NYLON       2       EA       REF:SHIELD PLATE         81902200070       NUT 4-40 HEX       4       EA       REF:U113 U114         81902202047       SCREW 4-40x1/4 SIMM PANHD       6       EA       REF:U113 U114         81902200171       SCREW 4-40x1/4 SIMM PANHD       6       EA       REF:U113 U114         819022012712       SCREW 4-40x1/6 SIMM PNHD       4       EA       REF:U113 U114         819022012012       SCREW 4-40x1/6 SIMM PNHD       4       EA       REF:U113 U114         8190220120       TRANSFORMER CUST SDV24x16       1       EA       T1         81902207030       INDUCTOR 30 UH CUSTOM       1       EA       L3         81902907930       CONN 128 RECPT R/A 4 ROW       3       EA       J1 J2 J3         81902907930       CONN 120 RECPT R/A 4 ROW       1       EA       REF:U126         81903200554       LED RED RT/A HI-EFF PCM       2       EA       CR10 CR11         81906500341       RESISTOR ATO HIM 5% 0805       1       EA       R371 R368 R370         81906600424       RESISTOR 100 OHM 5% 0805       128       EA       R371 R368 R370 <td>81901606980 REGIT1170 5A \$</td> <td>SWXING 60V</td> <td>1</td> <td>FA</td> <td>U113</td>	81901606980 REGIT1170 5A \$	SWXING 60V	1	FA	U113
81902104512       INSERT/EXTRACTR NYLON       2       EA       REF:SHIELD PLATE         81902210505       LABEL BARCODE       1.5"x0.25"       1       EA         8190220070       NUT 44 0 HEX       4       EA       REF:U113 U114         8190220070       NUT 44 0 HEX       4       EA       REF:U113 U114         8190220070       NUT 44 0 HEX       4       EA       REF:U113 U114         8190220071       SCREW 4-40x1/4 SIMM PANHD       6       EA       REF:U113 U114         81902201300       INDUCTOR 20uH 2A TOROIDAL       2       EA       L1 L2         81902201301       TRANSFORMER CUST SDV24x16       1       EA       L3         819022003130       INDUCTOR 30 UH CUSTOM       1       EA       L3         81902200780       FUB 5A PICO AXIAL 125V       2       EA       F1 F2         81902900790       CONN 128 RECPT R/A 4 ROW       3       EA       J1 J J J 3         819029007930       CONN 140 RECPT R/A 4 ROW       1       EA       A         81902907930       CONN 140 RECPT R/A 4 ROW       1       EA       GR10 CR11         8190260058       LD RED RT/A HI-EFF PC MT       2       EA       CR10 CR11         81906600341       RESI					
81902105050       LABEL BARCODE 1.5"x0.25"       1       EA         8190220070       NUT 4-40 HEX       4       EA       REF:U113 U114         81902202712       SCREW 4-40x5/16 SIMM PNHD       6       EA       REF:U113 U114         81902202712       SCREW 4-40x5/16 SIMM PNHD       4       EA       REF:U113 U114         81902201280       TRANSFORMER CUST SDV24x16       1       EA       T1         819022102709       PCB 32x32 AUD DIGTL 110       1       EA       L3         81902207300       FUES 5A PICO AXIAL 125V       2       EA       FIF:U97 U99         81902207920       CONN 128 RECPT R/A 4 ROW       3       EA       JJ 2 J3         81902207920       CONN 140 RECPT R/A 4 ROW       3       EA       J4         81902200541       LED GREEN RT/A HI-EFF PCB       1       EA       REF: U126         81903200541       LED GRED RT/A HI-EFF PCMT       2       EA       REF:U126         81906600340       SHIELD BOARD AUDIO 32x32       1       EA         81906600341       RESISTOR 100 OHM 5% 0805       1       EA         81906600520       RESISTOR 110 OHM 5% 0805       2       EA       R371 R366 R370         81906600549       RESISTOR 133 OHM 5% 0805					
81902200070       NUT 4-40 HEX       4       EA       REF:U113 U114         81902202712       SCREW 4-40x5/16 SIMM PANHD       6       EA       REF:SHIELD PLATE         81902202712       SCREW 4-40x5/16 SIMM PNHD       4       EA       REF:U113 U114         81902301280       INDUCTOR 200H 2A TOROIDAL       2       EA       L1 L2         81902301380       INDUCTOR 30 UH CUSTOM       1       EA       L3         8190220202020       CONN 140 COR 30 UH CUSTOM       1       EA       L3         819022002020       CONN 140 RECPT R/A 4 ROW       3       EA       J J J J J 3         8190290730       CONN 140 RECPT R/A 4 ROW       1       EA       CR9         8190290730       CONN 140 RECPT R/A 4 ROW       1       EA       CR9         8190290730       CONN 140 RECPT R/A 4 ROW       1       EA       CR9         8190290730       CONN 140 RECPT R/A 4 ROW       1       EA       CR9         8190290730       CONN 140 RECPT R/A 4 ROW       1       EA       CR9         81903200558       LED RED RT/A HI-EFF PCMT       2       EA       CR10 CR11         8190661020       SOFT 32x4 DIGITAL AUD XPT       2       EA       R371 R366 R370         819066004					
81902202647       SCREW 4-40x1/4 SIMM PANHD       6       EA       REF:SHIELD PLATE         81902202712       SCREW 4-40x5/16 SIMM PNHD       4       EA       REF:U113 U114         81902201280       TRANSFORMER CUST SDV24x16       1       EA       L1 L2         81902301300       INDUCTOR 20UH 2A TOROIDAL       2       EA       L1 L2         81902201280       TRANSFORMER CUST SDV24x16       1       EA       L3         81902201479       SOCKET 8 PIN LOW PROF IC       2       EA       REF:U1709         81902907920       CONN 128 RECPT R/A 4 ROW       3       EA       J 1 2 J3         81902907930       CONN 140 RECPT R/A 4 ROW       1       EA       J4         81902907930       CONN 128 RECPT R/A 4 ROW       1       EA       REF: F1 F2         81903200541       LED GREEN RT/A HI-EFF PCB       1       EA       CR10 CR11         81903200558       LED RED RT/A HI-EFF PC MT       2       EA       REF:U126         81906600341       RESISTOR 47 OHM 5% 0805       1       EA       R9-R40 R53-R84 R155-R218         81906600424       RESISTOR 100 OHM 5% 0805       128       EA       R9-R40 R53-R84 R155-R218         81906600520       RESISTOR 270 OHM 5% 0805       128       EA <td></td> <td>L 1.5 X0.25</td> <td>-</td> <td></td> <td>REF-1111311111</td>		L 1.5 X0.25	-		REF-1111311111
81902202712       SCREW 4-40x5/16 SIMM PNHD       4       EA       REF:U113 U114         81902201280       INDUCTOR 20/H 2A TOROIDAL       2       EA       L1 L2         81902301280       INDUCTOR 30 UH CUSTOM       1       EA       T1         8190230130       INDUCTOR 30 UH CUSTOM       1       EA       T1         819022007080       FUS 5A PICO AXIAI L5V       2       EA       F1 F2         81902907920       CONN 128 RECPT R/A 4 ROW       3       EA       J1 J2 J3         81902907930       CONN 140 RECPT R/A 4 ROW       1       EA       REF: U97 U99         81902907930       CONN 140 RECPT R/A 4 ROW       1       EA       J4         81902907930       CONN 140 RECPT R/A 4 ROW       1       EA       REF: U172         81903200541       LED GREEN RT/A HI-EFF PC MT       2       EA       CR10 CR11         8190651790       SOFT COUGAR BIOS       1       EA       REF:U126         81906600424       RESISTOR 47 OHM 5% 0805       128       EA       R371 R366 R370         81906600520       RESISTOR 10 OHM 5% 0805       128       EA       R371 R366 R370         81906600549       RESISTOR 1.6K OHM 5% 0805       13       EA       R372 R374 R378 R379 R441 R45					
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         81902907930       CONN 140 RECPT R/A 4 ROW       3       EA       J1 J2 J3         81902907930       CONN 140 RECPT R/A 4 ROW       1       EA       REF: F1 F2         81903200541       LED RED RT/A HI-EFF PC BT       1       EA       CR9         81903200558       LED RED RT/A HI-EFF PC MT       2       EA       CR10 CR11         81906517980       SOFT COUGAR BIOS       1       EA       R9-R40 R53-R84 R155-R218         81906600341       RESISTOR 47 OHM 5% 0805       128       EA       R9-R40 R53-R84 R155-R218         81906600424       RESISTOR 100 OHM 5% 0805       128       EA       R371 R366 R370         81906600520       RESISTOR 270 OHM 5% 0805       128       EA       R372 R374 R378 R379 R441 R45         81906600633       RESISTOR 1.6K OHM 5% 0805       1       EA       R440 R444 R445 R4					
81902301280       TRANSFORMER CUST SDV24x16       1       EA       T1         81902301330       INDUCTOR 30 UH CUSTOM       1       EA       L3         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       3       EA       J1 J2 J3         81902900541       LED GREEN RT/A HI-EFF PCB       1       EA       CR9         81903200558       LED RED RT/A HI-EFF PC MT       2       EA       CR10 CR11         81906517800       SOFT COUGAR BIOS       1       EA       V97 U99         81906600341       RESISTOR 47 OHM 5% 0805       128       EA       R9-R40 R53-R84 R155-R218         81906600424       RESISTOR 110 OHM 5% 0805       128       EA       R9-R40 R53-R84 R155-R218         81906600520       RESISTOR 270 OHM 5% 0805       128       EA       R1-R8 R41-R48 R87 R88 R105         81906600549       RESISTOR 270 OHM 5% 0805       14       EA       R49 R52 R373 R380         81906600520       RESISTOR 1.6K OHM 5% 0805       1       EA <td></td> <td></td> <td></td> <td></td> <td></td>					
81902301330       INDUCTOR 30 UH CUSTOM       1       EA       L3         81902412790       PCB 32x32 AUD DIGTL 110       1       EA         8190270080       FUSE 5A PICO AXIAL 125V       2       EA       F1 F2         81902907920       CONN 128 RECPT R/A 4 ROW       3       EA       J1 J2 J3         81902907930       CONN 140 RECPT R/A 4 ROW       3       EA       J1 J2 J3         81902907930       CONN 140 RECPT R/A 4 ROW       1       EA       J4         81902907930       CONN 140 RECPT R/A 4 ROW       1       EA       REF: U97 U99         81903200541       LED GREEN RT/A HI-EFF PCB       1       EA       CR9         81906517980       SOFT COUGAR BIOS       1       EA       REF: U126         81906600341       RESISTOR 47 OHM 5% 0805       128       EA       R9-R40 R53-R84 R155-R218         81906600424       RESISTOR 110 OHM 5% 0805       128       EA       R371 R366 R370         81906600520       RESISTOR 270 OHM 5% 0805       128       EA       R372 R374 R378 R380         81906600543       RESISTOR 1.6K OHM 5% 0805       1       EA       R440 R444 R445 R446 R447 R462         81906600540       RESISTOR 1.6K OHM 5% 0805       1       EA       R49 R52 R373 R380 </td <td></td> <td></td> <td></td> <td></td> <td></td>					
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         81902907930       CONN 128 RECPT R/A 4 ROW       3       EA       J1 J2 J3         81902907930       CONN 140 RECPT R/A 4 ROW       4       EA       REF: F1 F2         81903200541       LED GREEN RT/A HI-EFF PCB       1       EA       CR9         81903200558       LED RED RT/A HI-EFF PCMT       2       EA       CR10 CR11         81906517980       SOFT COUGAR BIOS       1       EA       REF:U126         81906600341       RESISTOR 47 OHM 5% 0805       128       EA       R9-R40 R53-R84 R155-R218         81906600422       RESISTOR 110 OHM 5% 0805       128       EA       R371 R366 R370         81906600520       RESISTOR 270 OHM 5% 0805       128       EA       R440 R442 R445 R446 R447 R462         81906600549       RESISTOR 1.6K OHM 5% 0805       1       EA       R439       R372 R374 R378 R379 R441 R85         81906600733       RESISTOR 1.6K OHM 5% 0805 SMT       1       EA       R439       R376         81906600738       RESISTOR 1.6K OHM 5% 0805 SM			•		
81902700880       FUSE 5A PICO AXIAL 125V       2       EA       F1 F2         81902901479       SOCKET 8 PIN LOW PROFIC       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       4       EA       J4         81902907900       CONN 140 RECPT R/A 4 ROW       4       EA       REF: F1 F2         81903200541       LED GREEN RT/A HI-EFF PCM       2       EA       CR10 CR11         81903200558       LED RD RT/A HI-EFF PCMT       2       EA       V99         81906517900       SOFT COUGAR BIOS       1       EA       REF:U126         81906500341       RESISTOR 47 OHM 5% 0805       1       EA       N97 U99         81906600424       RESISTOR 100 OHM 5% 0805       2       EA       R371 R366 R370         81906600520       RESISTOR 270 OHM 5% 0805       FA       R372 R374 R378 R379 R441 R85       R40 R427 R438 R105         81906600713       RESISTOR 1.6K OHM 5% 0805       13       EA       R40 R444 R445 R446 R447 R462         81906600713       RESISTOR 1.6K OHM 5% 0805 SMT       1       EA       R439         81906600745       RESISTOR 1.6K OHM 5% 0805 SMT       1					L3
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         81902907930       CONN 140 RECPT R/A 4 ROW       1       EA       J4         81902907830       CONN 140 RECPT R/A 4 ROW       1       EA       J4         81902907830       SPLITTERMINAL       4       EA       CR9         81903200551       LED RED RT/A HI-EFF PC MT       2       EA       CR10 CR11         81903617980       SOFT COUGAR BIOS       1       EA       REF:U126         81906600341       RESISTOR 47 OHM 5% 0805       1       EA       R371 R366 R370         81906600424       RESISTOR 110 OHM 5% 0805       1       EA       R106 R123-R154 R253 R254         81906600520       RESISTOR 270 OHM 5% 0805       4       EA       R49 R52 R373 R380         81906600549       RESISTOR 1.6K OHM 5% 0805       1       EA       R439         81906600713       RESISTOR 1.6K OHM 5% 0805       1       EA       R372 R374 R378 R379 R441 R85         81906600745       RESISTOR 1.5K 5% 0805 SMT       1       EA       R439					
81902907920       CONN 128 RECPT R/A 4 ROW       3       EA       J1 J2 J3         81902907930       CONN 140 RECPT R/A 4 ROW       1       EA       J4         81902907930       CONN 140 RECPT R/A 4 ROW       1       EA       J4         81902907930       CONN 140 RECPT R/A 4 ROW       1       EA       J4         81902907930       CONN 140 RECPT R/A 4 ROW       1       EA       J4         81902907930       CONN 140 RECPT R/A 4 ROW       1       EA       J4         81903200541       LED RED RT/A HI-EFF PC MT       2       EA       CR10 CR11         81906517980       SOFT COUGAR BIOS       1       EA       REF:U126         81906518020       SOFT 32x4 DIGITAL AUD XPT       2       EA       U97 U99         81906600341       RESISTOR 100 OHM 5% 0805       1       EA       R371 R366 R370         81906600424       RESISTOR 100 OHM 5% 0805       3       EA       R371 R366 R370         81906600520       RESISTOR 270 OHM 5% 0805       4       EA       R49 R52 R373 R380         81906600633       RESISTOR 1.6K OHM 5% 0805       1       EA       R372 R374 R378 R379 R441 R85         81906600733       RESISTOR 1.6K OHM 5% 0805 SMT       1       EA       R376 <td>81902700880 FUSE 5A PICO A</td> <td>XIAL 125V</td> <td></td> <td>ΕA</td> <td>F1 F2</td>	81902700880 FUSE 5A PICO A	XIAL 125V		ΕA	F1 F2
81902907930       CONN 140 RECPT R/A 4 ROW       1       EA       J4         81902908060       SPLITTERMINAL       4       EA       REF: F1 F2         81903200541       LED GREEN RT/A HI-EFF PCB       1       EA       CR9         81903200558       LED RED RT/A HI-EFF PCM       2       EA       CR9         81903200558       LED RD RT/A HI-EFF PCM       2       EA       CR10 CR11         81903200558       LED ROAD AUDIO 32x32       1       EA         81906517800       SOFT COUGAR BIOS       1       EA         81906518000       SOFT COUGAR BIOS       1       EA         81906600341       RESISTOR 47 OHM 5% 0805       128       EA       R9-R40 R53-R84 R155-R218         81906600424       RESISTOR 100 OHM 5% 0805       128       EA       R371 R366 R370         72       EA       R1-R8 R41-R48 R87 R88 R105       R106 R123-R154 R253 R254         81906600520       RESISTOR 270 OHM 5% 0805       6       EA       R49 R42 R373 R380         81906600549       RESISTOR 30 OHM 5% 0805       1       EA       R372 R374 R378 R379 R441 R85         81906600713       RESISTOR 1.6K OHM 5% 0805       1       EA       R439       R372 R374 R378 R379 R441 R85         81906600745	81902901479 SOCKET 8 PIN L	OW PROF IC	2	ΕA	REF:U97 U99
81902908060       SPLITTERMINAL       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         81903200558       LED RED RT/A HI-EFF PC MT       2       EA       CR10 CR11         81906517980       SOFT COUGAR BIOS       1       EA       REF: U126         81906518020       SOFT 32x4 DIGITAL AUD XPT       2       EA       U97 U99         81906600341       RESISTOR 47 OHM 5% 0805       128       EA       R9-R40 R53-R84 R155-R218         81906600424       RESISTOR 100 OHM 5% 0805       128       EA       R9-R40 R53-R84 R155-R218         81906600520       RESISTOR 270 OHM 5% 0805       3       EA       R371 R366 R370         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         81906600713       RESISTOR 1.6K OHM 5% 0805       1       EA       R372       R374 R378 R379 R441 R85         81906600945       RESISTOR 4.7K 5% 0805 SMT       1       EA       R439       R440 R447 R452       R446 R447 R452	81902907920 CONN 128 RECF	PT R/A 4 ROW	3	ΕA	J1 J2 J3
81903200541       LED GREEN RT/A HI-EFF PCB       1       EA       CR9         81903200558       LED RED RT/A HI-EFF PC MT       2       EA       CR10 CR11         81903200558       LED RED RT/A HI-EFF PC MT       2       EA       CR10 CR11         81903200508       SOFT COUGAR BIOS       1       EA       REF:U126         81906517980       SOFT COUGAR BIOS       1       EA       REF:U126         81906518020       SOFT ZAX4 DIGITAL AUD XPT       2       EA       U97 U99         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         81906600520       RESISTOR 110 OHM 5% 0805       3       EA       R41-R48 R87 R88 R105         81906600520       RESISTOR 270 OHM 5% 0805       4       EA       R49 R52 R373 R380         81906600549       RESISTOR 1.6K OHM 5% 0805       1       EA       R440 R444 R445 R446 R447 R462         81906600713       RESISTOR 1.6K OHM 5% 0805       1       EA       R439         81906600820       RESISTOR 1.6K OHM 5% 0805       1       EA       R439         81906600983       RESISTOR 1.6K OHM 5% 0805       1       E	81902907930 CONN 140 RECF	PT R/A 4 ROW	1	ΕA	J4
81903200558       LED RED RT/A HI-EFF PC MT       2       EA       CR10 CR11         819032464030       SHIELD BOARD AUDIO 32x32       1       EA         81906517980       SOFT COUGAR BIOS       1       EA         81906518020       SOFT 32x4 DIGITAL AUD XPT       2       EA       U97 U99         81906600341       RESISTOR 47 OHM 5% 0805       1       EA       R9-R40 R53-R84 R155-R218         81906600424       RESISTOR 100 OHM 5% 0805       3       EA       R371 R366 R370         81906600520       RESISTOR 110 OHM 5% 0805       72       EA       R49 R52 R373 R380         81906600549       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         81906600713       RESISTOR 1.6K OHM 5% 0805       1       EA       R376         81906600820       RESISTOR 3.3K 5% 0805 SMT       147       EA       R439         81906600945       RESISTOR 15K 5% 0805 SMT       147       EA       R362         81906600945       RESISTOR 15K 5% 0805 SMT       1       EA       R363         81906600945       RESISTOR 15K 5% 0805 SMT       1       EA       R363	81902908060 SPLITTERMINAL	_	4	ΕA	REF: F1 F2
81903200558       LED RED RT/A HI-EFF PC MT       2       EA       CR10 CR11         819032464030       SHIELD BOARD AUDIO 32x32       1       EA         81906517980       SOFT COUGAR BIOS       1       EA         81906518020       SOFT 32x4 DIGITAL AUD XPT       2       EA       U97 U99         81906600341       RESISTOR 47 OHM 5% 0805       1       EA       R9-R40 R53-R84 R155-R218         81906600424       RESISTOR 100 OHM 5% 0805       3       EA       R371 R366 R370         81906600520       RESISTOR 110 OHM 5% 0805       72       EA       R49 R52 R373 R380         81906600549       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         81906600713       RESISTOR 1.6K OHM 5% 0805       1       EA       R376         81906600820       RESISTOR 3.3K 5% 0805 SMT       147       EA       R439         81906600945       RESISTOR 15K 5% 0805 SMT       147       EA       R362         81906600945       RESISTOR 15K 5% 0805 SMT       1       EA       R363         81906600945       RESISTOR 15K 5% 0805 SMT       1       EA       R363	81903200541 LED GREEN RT/	A HI-EFF PCB	1	EA	CR9
81903464030       SHIELD BOARD AUDIO 32x32       1       EA         81906517980       SOFT COUGAR BIOS       1       EA         81906518020       SOFT 32x4 DIGITAL AUD XPT       2       EA       U97 U99         81906500341       RESISTOR 47 OHM 5% 0805       1       EA       R371 R366 R370         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         81906600520       RESISTOR 270 OHM 5% 0805       72       EA       R1-R8 R41-R48 R87 R88 R105         81906600549       RESISTOR 330 OHM 5% 0805       6       EA       R49 R52 R373 R380         81906600713       RESISTOR 1.K OHM 5% 0805       1       EA       R372 R374 R378 R379 R441 R85         81906600783       RESISTOR 3.3K 5% 0805 SMT       1       EA       R439         81906600945       RESISTOR 4.7K 5% 0805 SMT       1       EA       R439         81906600945       RESISTOR 15K 5% 0805 SMT       1       EA       R439         81906600945       RESISTOR 15K 5% 0805 SMT       1       EA       R362         81906600945       RESISTOR 15K 5% 0805 SMT       1       EA       R363			2		
81906517980       SOFT COUGAR BIOS       1       EA       REF:U126         81906518020       SOFT 32x4 DIGITAL AUD XPT       2       EA       U97 U99         81906500341       RESISTOR 47 OHM 5% 0805       1       EA       R371 R366 R370         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         81906600520       RESISTOR 270 OHM 5% 0805       72       EA       R49 R52 R373 R380         81906600549       RESISTOR 330 OHM 5% 0805       4       EA       R49 R52 R373 R380         81906600713       RESISTOR 1.6K OHM 5% 0805       6       EA       R440 R444 R445 R446 R447 R462         81906600783       RESISTOR 3.3K 5% 0805 SMT       1       EA       R372 R374 R378 R379 R441 R85         81906600945       RESISTOR 4.7K 5% 0805 SMT       1       EA       R439         81906600945       RESISTOR 15K 5% 0805 SMT       1       EA       R362 R364 R367 R369 R381 R382         81906600945       RESISTOR 15K 5% 0805 SMT       1       EA       R363         81906600945       RESISTOR 15K 5% 0805 SMT       1       EA       R363         81906600945       RESISTOR					
81906518020       SOFT 32x4 DIGITAL AUD XPT       2       EA       U97 U99         81906518600       HOLD OFF CIRCUIT L1170       1       EA         81906600341       RESISTOR 47 OHM 5% 0805       3       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         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         81906600713       RESISTOR 1.6K OHM 5% 0805       1       EA       R372 R374 R378 R379 R441 R85         81906600783       RESISTOR 3.3K 5% 0805 SMT       1       EA       R439         81906600820       RESISTOR 1.6K OHM 5% 0805       1       EA       R376         81906600945       RESISTOR 1.5K 5% 0805 SMT       1       EA       R362       R362 R364 R367 R369 R381 R382         81906600945       RESISTOR 15K 5% 0805 SMT       1       EA       R363         81906600945       RESISTOR 22K 5% 0805 SMT       1       EA       R363         81906600945       RESISTOR 2					REF:11126
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         81906600520       RESISTOR 270 OHM 5% 0805       72       EA       R40 R4123-R154 R253 R254         81906600549       RESISTOR 330 OHM 5% 0805       4       EA       R49 R52 R373 R380         81906600663       RESISTOR 1.6K OHM 5% 0805       6       EA       R440 R444 R445 R446 R447 R462         81906600713       RESISTOR 1.6K OHM 5% 0805       1       EA       R372 R374 R378 R379 R441 R85         81906600783       RESISTOR 3.3K 5% 0805 SMT       1       EA       R439         81906600945       RESISTOR 1.5K 5% 0805 SMT       147       EA       R362 R364 R367 R369 R381 R382         81906600945       RESISTOR 15K 5% 0805 SMT       1       EA       R363         81906600945       RESISTOR 15K 5% 0805 SMT       1       EA       R363         81906600945       RESISTOR 15K 5% 0805 SMT       1       EA       R363         81906600945       RESISTOR					
81906600341       RESISTOR 47 OHM 5% 0805         81906600424       RESISTOR 100 OHM 5% 0805         81906600432       RESISTOR 110 OHM 5% 0805         81906600432       RESISTOR 110 OHM 5% 0805         81906600520       RESISTOR 270 OHM 5% 0805         81906600549       RESISTOR 330 OHM 5% 0805         81906600663       RESISTOR 1K OHM 5% 0805         81906600713       RESISTOR 1.6K OHM 5% 0805         81906600783       RESISTOR 3.3K 5% 0805 SMT         81906600945       RESISTOR 4.7K 5% 0805 SMT         81906600945       RESISTOR 15K 5% 0805 SMT         81906601133       RESISTOR 22K 5% 0805 SMT         81906601133       RESISTOR 100K 5% 0805 SMT         1       EA					037 035
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         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       6       EA       R440 R444 R445 R446 R447 R462         81906600713       RESISTOR 1.6K OHM 5% 0805       1       EA       R372 R374 R378 R379 R441 R85         81906600783       RESISTOR 3.3K 5% 0805 SMT       1       EA       R439         81906600820       RESISTOR 4.7K 5% 0805 SMT       1       EA       R376         81906600945       RESISTOR 15K 5% 0805 SMT       147       EA       R363         81906600945       RESISTOR 15K 5% 0805 SMT       1       EA       R363         81906600945       RESISTOR 22K 5% 0805 SMT       1       EA       R363         81906600945       RESISTOR 22K 5% 0805 SMT       1       EA       R363         81906600945       RESISTOR 22K 5% 0805 SMT       1       EA       R363         819066001133       RESISTOR 22K 5% 0805 SMT			-		D0 D10 D52 D91 D155 D219
81906600432       RESISTOR 110 OHM 5% 0805       72       EA       R1-R8 R41-R48 R87 R88 R105         81906600520       RESISTOR 270 OHM 5% 0805       R4       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       6       EA       R440 R444 R445 R446 R447 R462         81906600713       RESISTOR 1.6K OHM 5% 0805       1       EA       R439         81906600783       RESISTOR 3.3K 5% 0805 SMT       1       EA       R439         81906600820       RESISTOR 4.7K 5% 0805 SMT       1       EA       R439         81906600945       RESISTOR 15K 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         81906601133       RESISTOR 100K 5% 0805 SMT       1       EA       R363         81906601133       RESISTOR 100K 5% 0805 SMT       1       EA       R361					
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 1 K OHM 5% 0805       6       EA       R440 R444 R445 R446 R447 R462         81906600713       RESISTOR 1.6K OHM 5% 0805       13       EA       R372 R374 R378 R379 R441 R85         81906600783       RESISTOR 3.3K 5% 0805 SMT       1       EA       R439         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         81906600945       RESISTOR 15K 5% 0805 SMT       1       EA       R363         81906600945       RESISTOR 15K 5% 0805 SMT       1       EA       R363         81906601133       RESISTOR 22K 5% 0805 SMT       1       EA       R375         81906601133       RESISTOR 100K 5% 0805 SMT       4       EA       R50 R51 R361 R365					
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         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         81906600945       RESISTOR 15K 5% 0805 SMT       1       EA       R363         81906600945       RESISTOR 15K 5% 0805 SMT       1       EA       R363         81906601133       RESISTOR 100K 5% 0805 SMT       1       EA       R363         1906601133       RESISTOR 100K 5% 0805 SMT       4       EA       R50 R51 R361 R365	81906000432 RESISTOR 110 C	JHIVI 5% 0805	12	EA	
81906600520       RESISTOR 270 OHM 5% 0805         81906600549       RESISTOR 330 OHM 5% 0805         81906600663       RESISTOR 1K OHM 5% 0805         R86       R456-R461         81906600713       RESISTOR 1.6K OHM 5% 0805         81906600783       RESISTOR 3.3K 5% 0805 SMT         819066007820       RESISTOR 3.3K 5% 0805 SMT         81906600783       RESISTOR 4.7K 5% 0805 SMT         81906600945       RESISTOR 15K 5% 0805 SMT         81906600945       RESISTOR 15K 5% 0805 SMT         81906600945       RESISTOR 22K 5% 0805 SMT         81906600945       RESISTOR 22K 5% 0805 SMT         81906601133       RESISTOR 100K 5% 0805 SMT					
81906600549       RESISTOR 330 OHM 5% 0805         81906600663       RESISTOR 1K OHM 5% 0805         R86       R456-R461         81906600713       RESISTOR 1.6K OHM 5% 0805         81906600783       RESISTOR 3.3K 5% 0805 SMT         81906600820       RESISTOR 3.3K 5% 0805 SMT         81906600945       RESISTOR 4.7K 5% 0805 SMT         81906600945       RESISTOR 15K 5% 0805 SMT         81906600945       RESISTOR 15K 5% 0805 SMT         81906600945       RESISTOR 22K 5% 0805 SMT         81906600945       RESISTOR 15K 5% 0805 SMT         81906600945       RESISTOR 15K 5% 0805 SMT         81906600945       RESISTOR 15K 5% 0805 SMT         81906601133       RESISTOR 100K 5% 0805 SMT					
81906600663       RESISTOR 1K OHM 5% 0805       13       EA       R372 R374 R378 R379 R441 R85         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         819066001133       RESISTOR 100K 5% 0805 SMT       1       EA       R363         1906601133       RESISTOR 100K 5% 0805 SMT       4       EA       R375			-		
R86 R456-R461         81906600713 RESISTOR 1.6K OHM 5% 0805         81906600783 RESISTOR 3.3K 5% 0805 SMT         1       EA         R439         1       EA         R376         147       EA         R89-R104 R107-R122 R219-R250         R275-R278 R315-R326 R342 R352         R362 R364 R367 R369 R381 R382         R362 R364 R367 R369 R381 R382         R384-R436 R280-R283 R464 R466         81906600945 RESISTOR 15K 5% 0805 SMT         1       EA         81906600986 RESISTOR 22K 5% 0805 SMT         1       EA         1       EA         R363         1906601133 RESISTOR 100K 5% 0805 SMT         4       EA         R375         4       EA			-		
81906600713       RESISTOR 1.6K OHM 5% 0805         81906600783       RESISTOR 3.3K 5% 0805 SMT         81906600820       RESISTOR 4.7K 5% 0805 SMT         1       EA       R439         1       EA       R376         147       EA       R89-R104 R107-R122 R219-R250         R275-R278 R315-R326 R342 R352       R362 R364 R367 R369 R381 R382         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       R363         81906601133       RESISTOR 100K 5% 0805 SMT       4       EA       R50 R51 R361 R365		HM 5% 0805	13	ΕA	R372 R374 R378 R379 R441 R85
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       R363         81906601133       RESISTOR 100K 5% 0805 SMT       4       EA       R50 R51 R361 R365					
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       R362 R364 R367 R369 R381 R382         81906600945       RESISTOR 15K 5% 0805 SMT       1       EA       R363         81906600986       RESISTOR 22K 5% 0805 SMT       1       EA       R363         81906601133       RESISTOR 100K 5% 0805 SMT       4       EA       R50 R51 R361 R365	81906600713 RESISTOR 1.6K	OHM 5% 0805	1	EA	R439
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         81906601133 RESISTOR 100K 5% 0805 SMT       4         EA       R361 R361 R365	81906600783 RESISTOR 3.3K	5% 0805 SMT	1	ΕA	R376
R362 R364 R367 R369 R381 R382         R384-R436 R280-R283 R464 R466         81906600945 RESISTOR 15K 5% 0805 SMT       1         EA       R363         81906601133 RESISTOR 100K 5% 0805 SMT       1         EA       R375         EA       R50 R51 R361 R365	81906600820 RESISTOR 4.7K	5% 0805 SMT	147	ΕA	R89-R104 R107-R122 R219-R250
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					R275-R278 R315-R326 R342 R352
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					R362 R364 R367 R369 R381 R382
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					
81906600986       RESISTOR 22K 5% 0805 SMT       1       EA       R375         81906601133       RESISTOR 100K 5% 0805 SMT       4       EA       R50 R51 R361 R365	81906600945 RESISTOR 15K 5	5% 0805 SMT	1	EA	
81906601133 RESISTOR 100K 5% 0805 SMT 4 EA R50 R51 R361 R365					
			•		
			-		7-



2

1

1

1

1

1

4

1

1

1

1

2

1

1

2

8

2

2

2

5

2

2

1

1

1

2

1

1

1

1

1

#### 32X32 Digital Audio Matrix Card -

81906601307 RESISTOR 510K 5% 0805 SMT 81906611930 RESISTOR 1.0K 1% 0805 SMT 81906612050 RESISTOR 1.33K 1% 0805 81906612213 RESISTOR 1.96K 1% 0805 81906612264 RESISTOR 2.21K 1% 0805 81906612296 RESISTOR 2.37K 1% 0805 81906612320 RESISTOR 2.55K 1% 0805 81906612340 RESISTOR 2.67K 1% 0805 81906612593 RESISTOR 4.99K 1% 0805 81906612900 RESISTOR 10.5K 1% 0805 81906640024 RESISTOR 2.0 OHM 5% 1210 81906700320 CAP 220PF NPO 0805 CERAMC 81906710110 CAP 0.15MF 50V CERAM 1206 81906730015 CAP 0.1MF 50V CERMIC 1206 81906730056 CAP 0.01MF 50V CERAM 1206 81906760160 CAP 1500PF 50V CERAM 1206 81906770037 CAPTANTLM,SMT,2.2MFD/35V 81906770052 CAP 1MF 20V TANLUM SIZE A 81906800016 TRANS SMT, MMBT3904LT1 81906800065 TRANS SMT, MMBZ5234B 81906800107 TRANS SMT, MMBT3906L 81906800230 DIODE MBR340 40V 3A SHTTK 81906800360 ZENER MB5244 14V SOT-23 81906800390 ZENER MC15 15V 1.5W SMT 81906800410 TRANSIENT SUPPRESSOR 33V 81906810072 IC 3903 QUAD SPLY MONITOR 81906810106 IC LM1881 VID SYNC SEPART 81906810171 IC SMT,74HC04 (SOIC-14) 81906810340 IC 74HC00 QUAD AND SO SMT 81906810510 IC 6264 8Kx8 SRAM 100ns 81906810550 IC 74HC245 OCTL TRANSCEVR 81906810570 IC 74HC373 OCTAL LATCH SO 81906810770 IC 74HC32 QUAD 2-INPUT OR 81906810890 IC RS485 RECVR/TRANSMITTR 81906810900 IC DUAL 24V AMP AUDIO 81906810930 IC TL7705 MICRO SUPERVISR 81906810960 IC OPTOCOUPLER SMT 4N32 81906810970 IC DIFF BUS TRANSCEIVER 81906810980 IC QUAD LINE RECEIVER 81906811030 IC 74HC273 OACTAL REGISTR 81906811040 IC 74HC138 3 TO 8 DECODER 81906811060 IC XC3030A LCA 81906811080 IC DS1210 NONVOL CNTL CHP

81906517490 Continued: EA R368 R377 EA R437 EA R442 ΕA R451 EA R443 EΑ R453 EA R448 R449 R450 R452 EA R383 EA R454 EA R455 EA R438 EA C203 C204 EA C254 238 ΕA C1-C202 C205 C206 C208-C217 C219 C221 C222 C223 C225 C227 C228 C229 C233-C242 C245 C250 C252 C256 C257 C259 C247 EA EA C207 C220 EA C224 C226 C230 C232 C244 C246 C248 C249 EA C251 C253 EA Q3 Q5 ΕA CR1 CR5 EA Q1 Q2 Q4 Q6 Q7 ΕA CR2 CR6 EA CR7 CR8 EA CR4 EA CR3 EA U129 EA U102U104 ΕA U105 EA U106 EΑ U108 10 ΕA U109 U116-U122 U124 U130 EΑ U125 EA U107 EA U103

- 1
- 1 ΕA U101
- 1 EA U127
- 1 EA U128
- 64 EA U5-U20 U25-U40 U45-U60 U65-U80
- 16 EA U1-U4 U21-U24 U41-U44 U61-U64
- 1 ΕA U123
- U110U111 2 EA
- 16 EΑ U81-U96 1
  - EA U112



1

0

#### 32X32 Digital Audio Matrix Card - 81906517490 Continued:

81906920030 SWITCH DIP 4 POS GULLWING 81906940040 SOCKET 52 PIN PLCC SMT 81906950040 BEAD INDUCTOR SMT DOC 32x32 AUD DIGTL 110 CA25-1279 NOT-PLACEDITEMS NOT PLACED ON EBOM

- EA S1
- EA **REF:U126** 1 2
  - EΑ **BEAD1 BEAD2**
- 0 ΕA
  - ΕA 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 ΕA



## Power Supply Assembly - 81906514550

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



## Power Supply Card - 81906514540

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



## Introduction

### \*CAUTION\*

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

#### \*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  $\pm 8.9$ VDC @ 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  $\pm 24$ VDC @ 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 <u>QUALIFIED SERVICE PERSONNEL AND/OR QUALIFIED</u> <u>TECHNICIANS</u>.

#### \*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.

## Internal PS130 Power Supply Addendum

#### 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.