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NOTICE

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- EMC Directive 89/336/EEC
- Low Voltage Directive 73/23/EEC
- A "Declaration of Conformity" in accordance with the above standards has been made and is on file at PESA Switching Systems, Inc., Huntsville, Alabama.



ATTENTION

ATTENTION

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Dual Audio Reference Interface	. 81906518550 7.5
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1.1 Manual Overview

This manual provides detailed instructions for installing and operating the PESA Jaguar Audio Routing Switchers. This manual is divided into seven sections as shown. Sections 3 and 4 contain operational and functional descriptions of the Jaguar Audio Routing Switchers and their associated circuit cards.



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 Jaguar Audio Routing Switchers offer reliable low cost answers to your audio routing needs while providing two levels of audio switching utilizing dual 64X64 switching matrixes within a single frame. The Jaguar Audio Routing Switcher can be configured as a dual 64X64 switcher or as a mono 128X64 switcher when output combiner cards are utilized. Jaguar Analog Audio and Digital Audio Routing Switchers are housed in 5RU frames providing a small profile for space efficient installations. Jaguar Audio Frames can also be equipped with redundant power supplies for maximum reliability and fail safe operation.

The Jaguar Analog Audio and Digital Audio Routing Switchers are designed with mid-range size routing matrix applications in mind. These cost efficient routers are expandable up to and beyond a 128X128 size matrix. Jaguar Audio Frames utilize plug-in circuit cards for ease of maintenance and component replacement. The Jaguar Audio Routing Switchers can be serviced hot, allowing circuit card changes without powering down the matrix.

The Jaguar Analog Audio and Digital Audio Routing Switchers both feature easily visible LED indicators for quick view of critical voltage and circuit conditions. Jaguar Audio Frames come equipped with a control port and external alarm connectors for audible monitoring the operation of the internal power and controller circuits.

The Jaguar Analog and Digital Audio Matrix Cards provide electronically balanced inputs and outputs for improved slew rate and lower distortion over comparable transformer coupled circuits. Both the Jaguar Analog and Digital Audio Matrix Cards feature short circuit protection; which protects the analog and digital matrix cards by automatically protecting and recovering if a sustained short circuit to a signal or chassis ground occurs.



1.2 General Description Continued:



Figure 1-1 Jaguar Audio Routing Switcher Front View



Figure 1-2 Jaguar Audio Routing Switcher Rear View (64X64)



1.3 Analog Audio Switcher Specifications

INPUT CHARACTERISTICS

Level Impedance Type Coupling Common Mode Rejection Ratio Connector Type

OUTPUT CHARACTERISTICS

Level Level Variation Between Inputs Impedance Type Number Coupling DC on Outputs Minimum Load @ 28dBm Connector Type Short Circuit Protection

GAIN CHARACTERISTICS

Gain Gain Stability Adjustment Range

FREQUENCY CHARACTERISTICS (REF. 1KHZ)

Sine Wave Response

Square Wave Response (Overshoot and Ringing)

+28dBm Max ≥60K Ohms Electronically Balanced Direct (DC) -80dB (50Hz to 60Hz) 3-Pin, 2-Part, Detachable Plug

+28dBm into 600 Ohms ±0.1dB ≤67 Ohms Electronically Balanced Single on System Direct (DC) ±20mV 600 Ohms 3-Pin, 2-Part, Detachable Plug Automatic

> Settable to ±0.1dB ±0.05dB Approx. ±0.9dB

<±0.1dB, 20Hz to 20KHz <-3.0dB to 200KHz <±5%, 3KHz 100uS Rise Time (20V P-P) <±10%, 100KHz 1uS Rise Time (5V P-P)

DISTORTION CHARACTERISTICS

Total Harmonic Distortion (THD) Intermodulation Distortion (IMD) <0.05% @ 24dBm, 20Hz to 20KHz with 30KHz Filter <0.01% @ 24dBm, 20Hz to 20KHz

CROSSTALK CHARACTERISTICS

20Hz to 20KHz

<-92dB (All Inputs and Outputs Hostile)



1.3 Analog Audio Switcher Specifications Continued:

HUM AND NOISE CHARACTERISTICS

Wideband 10Hz to 300KHz 80KHz Low Pass Filter 30KHz Low Pass Filter 15KHz Low Pass Filter "A" Weighted

SWITCHING CHARACTERISTICS

DC Offset Switching Transients (30KHz Low Pass Filter) <-89dBm <-90dBm

<-73dBm

<-78dBm

<-86dBm

<10mV, Peak <20mV, Peak

1.4 Digital Audio Switcher Specifications

110 Ohm Twisted Pair

INPUT CHARACTERISTICS

Type3-Pin, 2-Part, Detachable PlugImpedance110 Ohms, ±20% from 0.1MHz to 6MHz, TerminatedSignal Amplitude0.3V - 7V P-P

OUTPUT CHARACTERISTICS

Туре	3-Pin, 2-Part, Detachable Plug
Impedance	110 Ohms, ±20% from 0.1MHz to 6MHz
Signal Amplitude	2V - 7V P-P (Terminated into 110 Ohms)
Number	Single on System
Common Mode	Any common mode signal present at output terminals
	is \geq 30dB below output signal from DC to 6MHz.
Rise/Fall Times	5nS to 30nS Measured from 10% to 90% Amplitude Points
Jitter	<±20nS from Ideal Jitter Free Clock, When Output
	Signal is Measured at 50% Voltage Point
Standard	AES3-1993
Data Rate	DC to 20Mbit/s



1.5 Audio Frame Specifications

POWER REQUIREMENTS

Dual Range

115VAC ±10% and 220VAC ±10%, 47Hz - 63Hz (Auto Range)

IEC380 Standard Power Sockets

SAFETY STANDARDS

(APPLIED FOR AGENCY APPROVALS) UL, CSA, VDE, and CE

RFI AND EMI STANDARDS FCC

PHYSICAL CHARACTERISTICS

Height Width Depth Weight

OPERATIONAL ENVIRONMENT

Temperature Humidity 8.75 Inches (5RU) (222mm) 19 Inches (483mm) 16.25 Inches (?mm) 32lbs. (?kg)

> 0-40°C 0-90% Non-Condensing

1.6 PS130 Power Supply Specifications

INPUT POWER

Power Rated Voltage Range Operating Voltage Range Frequency Range Nominal Current

Peak Inrush Current Efficiency Power Factor

OUTPUT POWER

Maximum Total Power Output Voltage

High Frequency Noise Voltage (>10KHz) Ripple Voltage (2X Line Frequency)



163 Watts 100 - 240 VAC 90 - 264 VAC 47 - 63 Hz 1.6A rms @ 115 VAC 0.78A rms @ 230 VAC TBD A peak @ 230 VAC 80% 0.9 Minimum

130 Watts +8.5VDC +6%; -0% @ 7.65A -8.5VDC -6%, +0% @ 7.65A 20mV P-P +200mV peak

2.1 Introduction

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

- Receipt Inspection
- Unpacking
- Location
- Mounting
- Cabling
- Jaguar Frame Level Code (Strobe) Selection
- Jaguar Frame Input/Output Coding Selection
- Analog Audio Matrix Card Line and Sync Selection
- Digital Audio Matrix Card Line and Sync Selection
- Output Monitor Card Level Code (Strobe) Selection
- Output Monitor Card Input Coding Selection
- Output Monitor Card Output Coding Selection
- Output Monitor Card Line and Sync Selection
- PS130 Power Supply Installation
- Reference Card Installation
- 64X32 Matrix Card Installation
- Standard Audio Output Card Installation
- Optional Card Cage Installation
- Optional Output Combiner Card Installation
- Optional Output Monitor Card Installation
- Rear Panel Connectors
- Control Panel System Connections
- System Connections

General

If specified when ordered, the Jaguar Audio Frame 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.

WARNING

PS130 POWER SUPPLIES CONTAIN ELECTRICAL SHOCK HAZARDS. THE PS130 POWER SUPPLIES SHOULD ONLY BE SERVICED BY <u>QUALIFIED SERVICE PERSON-</u> <u>NEL AND/OR QUALIFIED TECHNICIANS</u>.



2.1 Introduction Continued:

NOTICE

BOTH THE ANALOG AND DIGITAL JAGUAR AUDIO ROUTING SWITCHERS CONTAIN STATIC SENSITIVE DEVICES. CARE SHOULD BE TAKEN WHEN IT IS NECESSARY TO HANDLE THE INTERNAL CIRCUIT CARDS. IT IS RECOMMENDED THAT A GROUND WRIST STRAP AND GROUNDING MAT BE USED BEFORE ATTEMPTING ANY EQUIPMENT INSTALLATIONS.

2.2 Receipt Inspection

The Jaguar 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 standard Jaguar Analog Audio Routing Switcher is comprised of a frame (which includes the Backplane), one Reference Interface Card, four 64X32 Analog Audio Matrix Cards, two Standard Audio Output Cards, and two PS130 Power Supplies. Optionally, an Analog Audio Output Monitor Card, a Card Cage, and eight Analog Audio Output Combiner Cards may also be included in the Jaguar Analog Audio Routing Switcher's configuration. See Table 2-1 for complete configuration details.

The standard Jaguar Digital Audio Routing Switcher is comprised of a frame (which includes the Backplane), one Reference Interface Card, four 64X32 Digital Audio Matrix Cards, two Standard Audio Output Cards, and two PS130 Power Supplies. Optionally, a Digital Audio Output Monitor Card, a Card Cage, and eight Digital Audio Output Combiner Cards may also be included in the Jaguar Digital Audio Routing Switcher's configuration. See Table 2-2 for complete configuration details.

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.



2.3 Unpacking Continued:

Table 2-1 Jaguar Analog Audio Configuration Table

JAGUAR ANALOG AUDIO ROUTING SWITCHER CONFIGURATION							
Audio Frame (Includes the Backplane)	1						
Reference Interface Card	1						
64X32 Analog Audio Matrix Cards	4						
Standard Audio Output Cards	2						
PS130 Power Supplies	2						
Analog Audio Output Monitor Control Card (Optional)	1						
Card Cage (Optional)	1						
Analog Audio Output Combiner Cards (Optional)	8						

Table 2-2 Jaguar Digital Audio Configuration Table

JAGUAR DIGITAL AUDIO ROUTING SWITCHER CONFIGURATION							
Audio Frame (Includes the Backplane)	1						
Reference Interface Card	1						
64X32 Digital Audio Matrix Cards	4						
Standard Audio Output Cards	2						
PS130 Power Supplies	2						
Digital Audio Output Monitor Control Card (Optional)	1						
Card Cage (Optional)	1						
Digital Audio Output Combiner Cards (Optional)	8						

2.4 Location

Both models of the Jaguar Audio Routing Switcher may be located anywhere 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 fans located at the back of the units. 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

Both the analog and digital models of the Jaguar Audio Routing Switcher are rack mountable in a standard 19" equipment rack. Sufficient space must be provided behind the equipment racks to allow for the control cables, signal cables, and power cables. 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 Jaguar Audio Routing Switcher's bottom while installing it in the rack.

To install a Jaguar 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. Install the other four screws in their allocated positions.
- 5. Tighten all of the screws until they are secure.

2.6 Cabling

Considerable weight will be added to the rear panel of the Jaguar Audio Routing Switchers by the control, signal, and power cables. Therefore, all cables should be strain 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 Jaguar Audio Routing Switcher should be installed in the equipment rack prior to attaching cables.

Use the following rules when cabling the Jaguar Audio Routing Switcher:



2.6 Cabling Continued:

- 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.

2.7 Level Code (Strobe) Selection

The level (strobe) select switches, S3 (matrix A) and S6 (matrix B) are located on the inside of the Jaguar Audio Routing Switcher on upper middle and lower middle, respectively, of the backplane. For all switch position to binary code conversions refer to Table 2-3.

SWITCH POSITION TO BINARY CODE CONVERSION							
SWITCH POSITION	BINARY CODE						
1	1						
2	2						
3	4						
4	8						
5	16						
6	32						
7	64						
8	128						

Table 2-3 Switch Position to Binary Code Conversion

Switch numbers are 1 through 8 right to left. Switches 1-6 select level codes 1 through 62. **Switches 7 and 8 are not used – their position is unimportant.** Refer to Figure 2-1 for an example of level code selection and see Figure 2-2 for the physical location of the level code switches.

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



2.7 Level Code (Strobe) Selection Continued:

SWITCH POSITIONS	6	5	4	3	2	1
STROBE LEVEL 1 STROBE LEVEL 2 STROBE LEVEL 3 STROBE LEVEL 4 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 1 1 1 1	0 1 0 0 1 1	1 0 1 0 1 0 1

654321



SHOWN WITH LEVEL CODE 7 SELECTED

Figure 2-1 Level Code Selection

2.8 Output/Input Code Selection

The input and output coding switches for matrix "A" (S2 and S1 respectively) are located on the inside of the Jaguar Audio Routing Switcher on the upper middle of the backplane. The input and output coding switches for matrix "B" (S5 and S4 respectively) are located on the inside of the Jaguar Audio Routing Switcher on the lower middle of the backplane. The input and output switch numbers run 1 to 8, right to left. For all switch position to binary code conversions refer to Table 2-3.

The output code switches (S1 for matrix "A" and S4 for matrix "B") select output codes 0-255 and the input code switches (S2 for matrix "A" and S5 for matrix "B") select input codes 0-255. Refer to Figures 2-3 and 2-4 for examples of input and output code selection and see Figure 2-2 for the physical location of the output and input code switches.



2.8 Output/Input Code Selection Continued:



Figure 2-2 Coding Switch Locations



2.8 Input/Output Code Selection Continued:

Output Code

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

NOTE: The following are logical selections. Output code 0 is all switches on (down) or all switches in the physical 1 position.

SWITCH I	POSITION	8	7	6	5	4	3	2	1	OUTPUTS
OUTPUT	CODE 0	0	0	0	0	0	0	0	0	1-64
OUTPUT	CODE 1	0	0	0	0	0	0	0	1	65-128
OUTPUT	CODE 2	0	0	0	0	0	0	1	0	129-192
OUTPUT	CODE 3	0	0	0	0	0	0	1	1	193-256
OUTPUT	CODE 4	0	0	0	0	0	1	0	0	257-320
OUTPUT	CODE 5	0	0	0	0	0	1	0	1	321-384
OUTPUT	CODE 6	0	0	0	0	0	1	1	0	385-448
OUTPUT	CODE 7	0	0	0	0	0	1	1	1	449-512
UP TO										
OUTPUT	CODE 14	0	0	0	0	1	1	1	0	961-1024

87654321





SHOWN WITH OUTPUT CODE 7 SELECTED

Figure 2-3 Output Code Selection



2.8 Input/Output Code Selection Continued:

Input Code

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

NOTE: The following are logical selections. Input code 0 is all switches on (down) or all switches in the physical 1 position.

SWITC	H POSITION	8	7	6	5	4	3	2	1	INPUTS
INPUT	CODE 0	0	0	0	0	0	0	0	0	1-64
INPUT	CODE 1	0	0	0	0	0	0	0	1	65-128
INPUT	CODE 2	0	0	0	0	0	0	1	0	129-192
INPUT	CODE 3	0	0	0	0	0	0	1	1	193-256
INPUT	CODE 4	0	0	0	0	0	1	0	0	257-320
INPUT	CODE 5	0	0	0	0	0	1	0	1	321-384
INPUT	CODE 6	0	0	0	0	0	1	1	0	385-448
INPUT	CODE 7	0	0	0	0	0	1	1	1	449-512
UP TO.										
OUTPL	JT CODE 14	0	0	0	0	1	1	1	0	961-1024



SHOWN WITH INPUT CODE 7 SELECTED

Figure 2-4 Input Code Selection



2.9 Analog Audio Matrix Card Line and Sync Selection

The 64X32 Analog Audio Matrix Card's line and sync select switch, SW1, is located in the lower, right side of the 64X32 Analog Audio Matrix Card. Switch numbers are 1 through 4 top to bottom. Switch numbers 1 and 2 select the video line (sync 2) to trigger switches on and switch numbers 3 and 4 select the video line (sync 1) to trigger switches on. Refer to Figure 2-5 for examples of line and sync selection and see Figure 2-6 for the physical location of the 64X32 Analog Audio Matrix Card's line and sync select switch.

RIGHT = CLOSED LEFT = OPEN

Switch 1	Switch 2	Switch 3	Switch 4	Sync 1 Line #	Sync 2 Line #
Х	Х	OPEN	OPEN	13	Х
Х	Х	OPEN	CLOSED	12	Х
Х	Х	CLOSED	OPEN	11	Х
Х	Х	CLOSED	CLOSED	10	Х
OPEN	OPEN	Х	Х	Х	13
OPEN	CLOSED	Х	Х	Х	12
CLOSED	OPEN	Х	Х	Х	11
CLOSED	CLOSED	Х	Х	Х	10

Figure 2-5 64X32 Analog Audio Matrix Card Line and Sync Selection



2.9 Analog Audio Matrix Card Line and Sync Sel. Cont:



Figure 2-6 64X32 Analog Audio Matrix Card Line and Sync Switch Location

2.10 Digital Audio Matrix Card Line and Sync Selection

The 64X32 Digital Audio Matrix Card's line and sync select switch, S1, is located on the lower, right side of the 64X32 Digital Audio Matrix Card. Switch numbers are 1 through 4 top to bottom. Switch numbers 1 and 2 select the video line (sync 2) to trigger switches on and switch numbers 3 and 4 select the video line (sync 1) to trigger switches on. Refer to Figure 2-5 for examples of line and sync selection and see Figure 2-7 for the physical location of the 64X32 Digital Audio Matrix Card's line and sync select switch.



2.10 Digital Audio Matrix Card Line and Sync Sel. Cont:



Figure 2-7 64X32 Digital Audio Matrix Card Line and Sync Switch Location

2.11 Output Monitor Card Level Code (Strobe) Selection

The Output Monitor Card's level (strobe) select switch, S3, (a binary coded switch) is located on the front edge of the Output Monitor Card. For all switch position to binary code conversions refer to Table 2-3.

Switch numbers are 1 through 8 left to right. Switches 1-6 select level codes 1 through 62. **Switches 7 and 8 are not used – their position is unimportant.** Refer to Figure 2-8 for an example of level code selection and see Figure 2-10 for the physical location of the level code switch.



SHOWN WITH LEVEL CODE 7 SELECTED

Figure 2-8 Output Monitor Card Level Code



2.11 Output Monitor Card Level Code Selection Cont:

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

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



Figure 2-9 Output Monitor Card Switch Locations



2.12 Output Monitor Card Input/Output Coding Select.

The Output Monitor Card's input and output code select switches are located on the front edge of the Output Monitor Card. For all switch position to binary code conversions refer to Table 2-3.

The input and output switch numbers run 1 to 8, left to right. Switch S2 (input code switch) selects input codes 0-255 and switch S1 (output code switch) selects output codes 0-255. Refer to Figures 2-10 and 2-11 for examples of input and output code selection and see Figure 2-9 for the physical location of the output and input code switches.

Input Code

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

NOTE: The following are logical selections. Input code 0 is all switches on (up) or all switches in the physical 1 position.

SWITCH POSITION	1	2	3	4	5	6	7	8	INPUTS
INPUT CODE 0	0	0	0	0	0	0	0	0	1-64
INPUT CODE 1	1	0	0	0	0	0	0	0	65-128
INPUT CODE 2	0	1	0	0	0	0	0	0	129-192
INPUT CODE 3	1	1	0	0	0	0	0	0	193-256
INPUT CODE 4	0	0	1	0	0	0	0	0	257-320
INPUT CODE 5	1	0	1	0	0	0	0	0	321-384
INPUT CODE 6	0	1	1	0	0	0	0	0	385-448
INPUT CODE 7	1	1	1	0	0	0	0	0	449-512
UP TO									
OUTPUT CODE 14	0	0	0	0	1	1	1	0	961-1024



SHOWN WITH INPUT CODE 7 SELECTED

Figure 2-10 Output Monitor Card Input Code Selection



2.12 Output Monitor Card In/Out Coding Select. Cont:

Output Code

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

NOTE: The following are logical selections. Output code 0 is all switches on (up) or all switches in the physical 1 position.

SWITCH POSITION	1	2	3	4	5	6	7	8	OUTPUT
OUTPUT CODE 0	0	0	0	0	0	0	0	0	0
OUTPUT CODE 1	1	0	0	0	0	0	0	0	1
OUTPUT CODE 2	0	1	0	0	0	0	0	0	2
OUTPUT CODE 3	1	1	0	0	0	0	0	0	3
OUTPUT CODE 4	0	0	1	0	0	0	0	0	4
OUTPUT CODE 5	1	0	1	0	0	0	0	0	5
OUTPUT CODE 6	0	1	1	0	0	0	0	0	6
OUTPUT CODE 7 UP TO	1	1	1	0	0	0	0	0	7
OUTPUT CODE 255	1	1	1	1	1	1	1	1	255

SHOWN WITH OUTPUT CODE 7 SELECTED

12345678

Figure 2-11 Output Monitor Card Output Code Selection



S4

2.13 Output Monitor Card Line and Sync Selection

The Output Monitor Card's line and sync select switch, S4, is located on the right, front edge of the Output Monitor Card. Switch numbers are 1 through 4 left to right. Switches 1 and 2 select the video sync line to trigger switches on. Switch 3 selects the sync signal which will be used to time switch commands. **Switch 4 is not used – its position is unimportant.** Refer to Figure 2-12 for examples of line and sync selection and see Figure 2-9 for the physical location of the Output Monitor Card's line and sync select switch.

UP = CLOSED DOWN = OPEN

LINE SEL 0	SWITCH LINE
OPEN	LINE 13
CLOSED	LINE 12
OPEN	LINE 11
CLOSED	LINE 10
	LINE SEL 0 OPEN CLOSED OPEN CLOSED

SYNC1/SYNC2	SELECTED SYNC
OPEN	SYNC2
CLOSED	SYNC1

Figure 2-12 Output Monitor Card Line and Sync Selection

2.14 PS130 Power Supply Installation

The PS130 Power Supplies are installed in the upper, right-hand portion of the front of the Jaguar Audio Routing Switcher. The Jaguar Audio Routing Switcher is designed for the internal installation of up to two PS130 Power Supplies.

WARNING

PS130 POWER SUPPLIES CONTAIN ELECTRICAL SHOCK HAZARDS. THE PS130 POWER SUPPLIES SHOULD ONLY BE SERVICED BY <u>QUALIFIED SERVICE PERSON-</u> <u>NEL AND/OR QUALIFIED TECHNICIANS</u>.



2.14 PS130 Power Supply Installation Continued:

To install the PS130 Power Supplies in the Jaguar Audio Routing Switcher take the following steps while referring to the Jaguar Audio Mainframe configuration drawing on page 6.2:

- 1. Align the shield plate on the first PS130 Power Supply with the lefthand set of circuit card guides in the upper, right-hand portion of the front of the Jaguar Audio Routing Switcher (circuit side up).
- 2. Carefully push the PS130 Power Supply into the Jaguar Audio Routing Switcher until the power supply connectors make initial contact with the backplane connectors. At this point, firmly but carefully continue pushing the PS130 Power Supply into the frame while making sure the connectors are properly aligned. Continue pushing the power supply until the slide lock snaps into place and the connectors are firmly mated.
- 3. Align the shield plate on the next (redundant) PS130 Power Supply with the next set of circuit card guides in the upper, right-hand portion of the front of the Jaguar Audio Routing Switcher and repeat step 2.
- 4. Repeat step 3 until all of the PS130 Power Supplies are installed in the Jaguar Audio Frame.

2.15 Reference Interface Card Installation

The Reference Interface Card is installed in the lower set of the stand-off circuit card guides (between card slots 2 and 3) in the Jaguar Audio Routing Switcher. To install the Reference Interface Card in the Jaguar Audio Routing Switcher take the following steps while referring to the Jaguar Audio Mainframe configuration drawing on page 6.2:

1. Align Reference Interface Card with the lower set of stand-off circuit card guides in the Jaguar Audio Routing Switcher (component side up).



2.15 Reference Interface Card Installation Continued:

2. Carefully push the Reference Interface Card into the Jaguar Audio Routing Switcher until the circuit card connectors make initial contact with the backplane connectors. At this point, firmly but carefully continue pushing the interface card into the frame while making sure the connectors are properly aligned. Continue pushing the interface card until it is in place and the connectors are firmly mated.

2.16 64X32 Matrix Card Installation

The 64X32 Matrix Cards are installed in the lower portion of the front of the Jaguar Audio Routing Switcher. The Jaguar Audio Routing Switcher is designed for the installation of up to four 64X32 Matrix Cards.

To install the 64X32 Matrix Cards in the Jaguar Audio Routing Switcher take the following steps while referring to the Jaguar Audio Mainframe configuration drawing on page 6.2:

- 1. Align the shield plate on the first 64X32 Matrix Card with the upper set of circuit card guides in the lower portion of the front of the Jaguar Audio Routing Switcher.
- 2. Carefully push the 64X32 Matrix Card into the Jaguar Audio Routing Switcher until the matrix card connectors make initial contact with the backplane connectors. At this point, firmly but carefully continue pushing the 64X32 Matrix Card into the frame while making sure the connectors are properly aligned. Continue pushing the matrix card until the connectors are firmly mated. Make sure the circuit card extractors are engaged in the slots in the sides of the frame.
- 3. Align the shield plate on the next 64X32 Matrix Card with the next available set of circuit card guides in the lower portion of the front of the Jaguar Audio Routing Switcher and repeat step 2.
- 4. Repeat step 3 until all of the 64X32 Matrix Cards are installed in the Jaguar Audio Frame.


2.17 Standard Audio Output Card Installation

The Standard Audio Output Cards are installed on the left-hand side of the rear of the Jaguar Audio Routing Switcher. The Jaguar Audio Routing Switcher is designed for the installation of two Standard Audio Output Cards. To install the Standard Audio Output Cards take the following steps while referring to the Jaguar Audio Mainframe configuration drawings on pages 6.3 and 6.4:

- 1. Align the first Standard Audio Output Card with the right-hand group of 15-pin output connectors on the left-hand side of the rear of the Jaguar Audio Routing Switcher.
- 2. Carefully push the Standard Audio Output Card onto the rear panel of the Jaguar Audio Routing Switcher until the circuit card connectors make initial contact with the 15-pin backplane connectors. Continue pushing the output card until it is in place and the connectors are firmly mated.
- 3. Align the second Standard Audio Output Card with the left-hand group of 15-pin output connectors on the left-hand side of the rear of the Jaguar Audio Routing Switcher and repeat step 2.
- 4. Once both Standard Audio Output Cards are installed, attach them to the Jaguar Audio Routing Switcher's rear panel using Phillips head screws.
- 5. Once the Standard Audio Output Cards are attached to the rear panel, install the Standard Audio Output Card metal work over the Standard Audio Output Cards and attach it to the rear of the Jaguar Frame and to the card cage extension using four Phillips head screws.

2.18 Optional Card Cage Installation

The Card Cage must be installed prior to the installation of any optional Audio Output Combiner Cards. The Card Cage is designed to accommodate the installation of up to eight Audio Output Combiner Cards. To install the Card Cage take the following steps:

1. Attach the top piece of the Card Cage to the side piece of the Card Cage to form an inverted "L" using two Phillips head screws.



2.18 Optional Card Cage Installation Continued:

- 2. Align the inverted "L" assembly to the corresponding screw holes on the rear of the Jaguar Audio Frame and on the card cage extension.
- 3. Once the inverted "L" assembly is aligned with the corresponding screw holes, attach it to the rear of the Jaguar Audio Frame and to the card cage extension using six Phillips head screws.

2.19 Optional Output Combiner Card Installation

The optional Output Combiner Cards are installed in the left-hand portion of the rear of the Jaguar Audio Routing Switcher inside the optional Card Cage. The optional Card Cage is designed for the installation of up to eight Output Combiner Cards.

To install the Output Combiner Cards take the following steps while referring to the Jaguar Audio Mainframe configuration drawings on pages 6.3 and 6.4:

- 1. Align the first Output Combiner Card with the right-hand of circuit card guides in the Card Cage (component side to the left).
- 2. Carefully push the Output Combiner Card into the Card Cage until the circuit card connectors make initial contact with the backplane connectors. At this point, firmly but carefully continue pushing the combiner card into the card cage while making sure the connectors are properly aligned. Continue pushing the combiner card until it is in place and the connectors are firmly mated.
- 3. Once the Output Combiner Card is installed in the Card Cage, install the appropriate combiner card locking brace. To install the combiner card locking brace align the tab end of the locking brace with the slot provided on the card cage extension and insert the tab into the slot. Once the tab is inserted into the appropriate slot, align the screw hole on upper end of the locking brace with the appropriate screw hole on the Card Cage. Once the locking brace screw hole is aligned with the screw hole on the Jaguar Audio Frame, attach the combiner card locking brace to the Card Cage using a pan-head Phillips screw.
- 4. Align the next Output Combiner Card with the next set of circuit card guides in the Card Cage of the rear of the Jaguar Audio Routing Switcher and repeat steps 2 and 3.



2.19 Optional Output Combiner Card Installation Cont:

5. Repeat steps 2 thru 4 until all of the Output Combiner Cards are installed in the Card Cage.

2.20 Optional Output Monitor Control Card Installation

The optional Output Monitor Control Card is installed in the upper set of stand-off circuit card guides (between circuit card slots 1 and 2) in the front of the Jaguar Audio Routing Switcher. The Jaguar Audio Routing Switcher is designed for the installation of one Output Monitor Card.

To install the Output Monitor Control Card in the Jaguar Audio Routing Switcher take the following steps while referring to the Jaguar Audio Mainframe configuration drawing on page 6.3:

- 1. If necessary, carefully remove the upper two audio matrix cards to gain access to the upper set of stand-off circuit guides.
- 2. Align the Output Monitor Control Card with the upper set of stand-off circuit card guides in the Jaguar Audio Routing Switcher (component side up).
- 3. Carefully push the Output Monitor Control Card into the Jaguar Audio Routing Switcher until the circuit card connectors make initial contact with the backplane connectors. At this point, firmly but carefully continue pushing the interface card into the frame while making sure the connectors are properly aligned. Continue pushing the interface card until it is in place and the connectors are firmly mated.
- 4. If any audio matrix cards were removed to install the Output Monitor Control Card, reinstall them at this time using the installation instructions found in Section 2.17.

2.21 Rear Panel Connectors

These manual subsections discuss the various system connectors found on the rear of a fully configured Jaguar Audio Routing Switcher. Refer to Figure 2-13 and to Jaguar Audio Mainframe Assembly configuration drawing on page 6.3 for visual references.





Figure 2-13 Jaguar Audio Routing Switcher Rear View

DC Power In/Out Connector

Power can be supplied to the Jaguar Audio Routing Switcher by the use of an externally mounted power supply or by the use of internal PS130 Power Supplies. The DC Power In/Out Connector can be used as DC power input (external power supply) or as DC power output (internal power supplies) to allow the Jaguar Audio Routing Switcher to power additional equipment items. External power supplies must be diode isolated from the internal power supplies. 1N5821 or equivalent type diodes may be used for this purpose. See Figure 2-14 for an external power supply connection guide. **NOTE:** An inline fuse should be used to prevent damage to the frame.







Fan Connectors

The fan connectors provide DC power to the Jaguar Audio Routing Switcher's chassis fans.

AC Power Connectors

The AC Power Connector enables the connection of the AC line to the Jaguar Audio Routing Switcher. The AC line input voltage can be from 100 - 240 VAC and the AC line frequency range can be from 47 - 63 Hz.

System Alarm Connectors

Matrix Card Alarm Connector (MATRIX)

An alarm circuit has been provided in the circuitry of each of the 64X32 Audio Matrix Cards. This circuit acts as a switch to trigger an optional external alarm in the event of a matrix card CPU fault or failure. The controller alarm circuit supplies a "contact" closure but does not provide a voltage to the external alarm. The alarm circuit has 10mA current limit. The Matrix Card Alarm Connector allows connection of the Matrix Card Alarm.

Power Supply Alarm Connectors (PWR)

An alarm circuit has been provided in the circuitry of each of the PS130 Power Supplies. This circuit acts as a switch to trigger an optional external alarm in the event of a failure in the power supply or of the AC line source. The alarm circuit supplies a contact closure but does not provide a voltage to the external alarm and has a 10mA current limit. The Power Supply Alarm Connectors allow connection of the Power Supply Alarms.

Control (PRC) Connectors (CONTROLS IN)

The 9-Pin Control Connector provides for the connection of an optional external controller to the Jaguar Audio Routing Switcher. The 5-Pin Control Connector provides for the connection of additional Jaguar Audio Routing Switchers to form a larger switching matrix. Both of the control connectors allow for the bi-directional transmission of data.



Control (PRC) Connectors (CONTROLS IN) Continued:

The pinout of the 9-Pin Control Connector 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 5-Pin Control Connector is as follows:

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

For PRC communications, the user should use a direct pin-for-pin cable for interfacing between the control connectors and the peripheral equipment. DO NOT use a "NULL MODEM" cable.

Monitor Output Connectors

The Monitor Output Connectors provide a test signal which will be utilized to monitor Jaguar Audio Routing Switcher activity when an optional monitor card and output combiner cards are installed in the Jaguar Frame.

Reference (Sync) Connectors (1 and 2)

The sync connectors are used to connect an external sync signal to the Jaguar Audio Routing Switcher. The sync signal may be either a color black or composite sync 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 Connectors

There are 64 matrix "A" and 64 matrix "B" audio input connectors located on the rear of the Jaguar Audio Routing Switcher when the Jaguar Frame is configured as a 64X64 stereo routing switcher. When the Jaguar Frame is configured as a 128X64 mono routing switcher matrix "A" inputs function as inputs 1-64 and matrix "B" inputs function as inputs 65-128. These connectors allow the connection of the audio sources to the Jaguar Audio Routing Switcher.

The pinout of the audio input connectors is as follows:

PIN NO.	DESCRIPTION
1	SIGNAL +
3	SHIELD

Audio Output Connectors

There are 64 matrix "A" and 64 matrix "B" outputs on the rear of the Jaguar Audio Routing Switcher. These connectors allow the connection of the audio destinations to the Jaguar Audio Routing Switcher.

The pinout of the audio output connectors is as follows:

PIN NO.	DESCRIPTION
1	SIGNAL +
2	SIGNAL -
3	SHIELD

2.22 System Connections

Once the Jaguar Audio Routing Switcher is installed in the equipment rack and the Standard Output Cards or the optional Output Combiner Cards are installed; system connections can be made. Use the following guide to insure that the Jaguar Audio Routing Switcher system interconnections are properly connected and that the control, power, sync, and audio cables are correctly installed.



2.22 System Connections Continued:

Connection Guide

- 1. Connect the external sync sources to the reference inputs using Belden 8281 coaxial cable or equivalent. Be sure to properly terminate the external sync sources into 75 ohms.
- 2. If an additional Jaguar Routing Switcher is to be utilized as part of the switching matrix, connect the 5-Pin Control Connector on the primary Jaguar Routing Switcher to 5-Pin Control Connector on the other Jaguar Audio Routing Switcher using a 5-pin cable.
- 3. Connect the external controller (a stand-alone System Controller or a control connection from a Jaguar Video Frame) to the 9-Pin Control Connector using a 9-pin RS232 cable or the 5-Pin Control Connector using 5-pin ribbon cable.
- 4. If desired, connect external alarms to the Alarm Connectors.
- 5. Connect the audio sources to the audio inputs.
- 6. Connect the audio outputs to the audio destinations.



3.1 Introduction

This section details the Jaguar Audio Routing Switcher operational procedures. The operation of the Jaguar Audio Routing Switcher consists of periodically monitoring the power supply and circuit card LEDs. The following topics are discussed:

- PS130 Power Supply Operation
- Dual Reference Interface Card Operation
- Analog Audio Matrix Card Operation
- Digital Audio Matrix Card Operation
- Optional Audio Output Combiner Card Operation
- Optional Audio Output Monitor Card Operation

WARNING

PS130 POWER SUPPLIES CONTAIN ELECTRICAL SHOCK HAZARDS. THE PS130 POWER SUPPLIES SHOULD ONLY BE SERVICED BY <u>QUALIFIED SERVICE PERSON-</u> <u>NEL AND/OR QUALIFIED TECHNICIANS</u>.

3.2 PS130 Power Supply Operation

The operation of the PS130 Power Supplies consists of periodically monitoring each power supply's LED to insure that each power supply is functioning properly.

3.3 Dual Reference Interface Card Operation

The operation of the Dual Reference Interface Card consists of periodically monitoring the interface card LEDs. The interface card LEDs and their proper indication is discussed in the following manual sub-sections.

Sync #1A Fail LED (Red)

The Sync #1A Fail LED (CR11), located on the front edge of the dual interface card, is utilized to visually indicate that external sync number one "A" has failed or is missing. Normally, the Sync #1A Fail LED should be extinguished.



3.3 Dual Reference Interface Card Operation Cont:

Sync #2A Fail LED (Red)

The Sync #2A Fail LED (CR10), located on the front edge of the interface card, is utilized to visually indicate that external sync number two "A" has failed or is missing. Normally, the Sync #2A Fail LED should be extinguished.

Sync A Power OK LED (Green)

The Sync A Power OK LED (CR9) on the front edge of the interface 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.

Sync #1B Fail LED (Red)

The Sync #1B Fail LED (CR12), located on the front edge of the interface card, is utilized to visually indicate that external sync number one "B" has failed or is missing. Normally, the Sync #1 Fail LED should be extinguished.

Sync #2B Fail LED (Red)

The Sync #2B Fail LED (CR13), located on the front edge of the interface card, is utilized to visually indicate that external sync number two "B" has failed or is missing. Normally, the Sync #2 Fail LED should be extinguished.

Sync B Power OK LED (Green)

The Sync B Power OK LED (CR14) on the front edge of the interface 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.



3.4 Analog Audio Matrix Card Operation

The operation of the Jaguar Analog Audio Matrix Card consists of periodically monitoring the matrix card's LEDs. The matrix card LEDs and their proper indications are discussed in the following manual sections.

Regulator Fault LED (Red)

The Regulator Fault LED (CR4) 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.

CPU Fault LED (Red)

The CPU Fault LED (CR3) 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.

Power OK LED (Green)

The Power OK LED (CR2) 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 Digital Audio Matrix Card Operation

The operation of the Jaguar Digital Audio Matrix consists of periodically monitoring the matrix card 's LEDs. The matrix card LEDs and their proper indications are discussed in the following manual sub-sections.

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.

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.



3.5 Digital Audio Matrix Card Operation Continued:

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.

3.6 Optional Output Monitor Control Card Operation

The operation of the optional Analog Audio Output Monitor Card consists of periodically monitoring the circuit card LEDs. The monitor card LEDs and their proper indications are discussed in the following manual subsections.

Power OK LED (Green)

The Power OK LED (CR1) 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.

CPU Fault LED (Red)

The CPU Fault LED (CR2) is utilized to visually indicate a microprocessor problem on the monitor card. A problem with the CPU or controller circuits will cause this LED to light.



4.1 Introduction

This section contains the functional descriptions of the major circuit cards which can comprise the configuration of the Jaguar Audio Switchers (both analog and digital versions). Please note that your Jaguar Audio Switcher configuration may or may not contain all of the listed circuit cards. The circuit cards described in this manual sections are as follows:

- Backplane
- PS130 Power Supply
- Single Reference Interface Card
- 64X32 Analog Audio Matrix Card
- 64X32 Digital Audio Matrix Card
- Standard Output Card
- Optional Analog Output Combiner Card
- Optional Output Monitor Control Card

4.2 Backplane

The Jaguar Audio Backplane is responsible for providing passive distribution of the audio input signals to the audio matrix cards and for providing distribution of the audio output signals to the standard output cards or the optional output combiner cards. The backplane is also responsible for distribution of power from the power supplies to the Jaguar Audio Frame's circuit cards and to the chassis fans. An additional function of the backplane is to distribution control and communication signals to and from the matrix cards, monitor control card (if installed), and control ports. The power supply alarm signals and the matrix card alarm signals are also distributed by the backplane. The backplane are provides the passive distribution of the reference input signals (sync signals). Binary coded DIP switches on the backplane allow the selection of level, input, and output codes for both the matrix "A" and matrix "B" audio matrix cards.



4.3 PS130 Power Supply

The PS130 Power Supply is responsible for providing an unregulated ± 8.5 VDC @ 7.65A at a maximum power rating of 130 watts to the Jaguar Frame. The PS130 Power Supply is designed to operate within output specifications with AC line voltage ranges from 100 - 240 VAC and with AC line frequency ranges from 47 - 63 Hz automatically. 3.15A 250VAC AC line fuses provide over-load protection.

NOTE

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. <u>The internal circuits of the PS130 Power Supply contain dangerous voltage and current levels.</u>

4.4 Dual Reference Interface Card

The Dual Reference Interface Card is responsible for providing sync signals to the Jaguar Audio Frame. The sync signals provided by the Dual Reference Interface Card can either be derived from composite sync or color black signals or generated internally by the Dual Reference Interface Card. The Dual Reference Interface Card's electronic circuits contain two complete sync separating and generating networks (one is primary, the other one is backup) which are discussed in the following manual sub-sections. Please note the primary sync circuit operates until the output signal from the card is lost, then the card switches to the backup circuit.

Primary

U15 provides regulated power, +5V, for the Dual Reference Interface Card's matrix "A" electronic circuits. U1 and U3 (sync separators) along with their associated components form the Dual Reference Interface's matrix "A" sync separator network. U1 and U2 can separate the sync signal from either composite sync or color black video signals. Once the sync signal is separated, it is provided to U7 (inverter) and to U9 (quad two-input or gate). U7 and U9 along with U11 form a gating network that passes the external sync signal to the Jaguar Audio Frame when an external sync signal is present.

If no external sync is supplied, the gating network will pass the internally generated sync signal to the Jaguar Audio Frame. Also when the external sync fails the gating network will illuminate the LED (CR10 or CR11) corresponding to the failed sync signal. U5 working in conjunction with U12 generate the matrix "A" internal sync signal.



4.4 Dual Reference Interface Card Continued:

Backup

U16 provides regulated power, +5V, for the Dual Reference Interface Card's matrix "B" electronic circuits. U2 and U4 (sync separators) along with their associated components form the Dual Reference Interface's matrix "B" sync separator network. U2 and U4 can separate the sync signal from either composite sync or color black video signals. Once the sync signal is separated, it is provided to U8 (inverter) and to U10 (quad twoinput or gate). U8 and U10 along with U14 form a gating network that passes the external sync signal to the Jaguar Audio Frame when an external sync signal is present.

If no external sync is supplied the gating network will pass the internally generated sync signal to the Jaguar Audio Frame. Also when the external sync fails the gating network will illuminate the LED (CR12 or CR13) corresponding to the failed sync signal. U4 working in conjunction with U5 generate the matrix "B" internal sync signal.

4.5 64X32 Analog Audio Matrix Card

The 64X32 Audio Matrix Card contains a 64X32 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).

Control

The microprocessor controller (U316) is used to interface switch commands from the PRCI control port (U256) to the switch matrix and return status information to the controller. Communications to and from the system controller are through U246, a RS485 receiver and transmitter. System timing is provided to the microprocessor by U1411, a 7.3728MHz oscillator. The microprocessor divides the timing single from the oscillator by a factor of four to form the system clock single. Reset for the microprocessor is provided by U317.

U326, a power supply monitor, monitors the output of the 64X32 Audio Matrix Card's power circuits and reports power fault conditions to the microprocessor. CR4 is utilized by power supply monitor circuit to provide a visual indication of power supply fault conditions.



4.5 64X32 Analog Audio Matrix Card Continued:

Control Continued:

Matrix output, input, and level coding is read from the backplane through U290, U305, and U306 respectively for matrix A and U293, U292, and U291 respectively for matrix B. U277, U295, U276, and U307 provide address decoding for the 64X32 Audio Matrix Card.

U278 and U279 comprise the nonvolatile RAM for the processor. C156 provides memory backup voltage for approximately seven days **as long as the matrix card is not removed from the Jaguar Frame.** CR3 is utilized by the processor on the 64X32 Audio Matrix Card to indicate a CPU fault condition. An external alarm connection is provided by U327. The external connection can be utilized to audibly indicate CPU fault conditions.

Two external sync signals are used for timing switches as set by SW1. The external sync can be color black or composite sync. U185 and U206 decode the composite signal to an even/odd field signal which is used by the microprocessor.

32X8 Control ICs

The 32X8 control ICs (U198, U225, U199, and U226) are responsible for the control and switching of 32 inputs to 8 outputs for matrix A. The 32X8 control ICs (U204, U227, U205, and U228) are responsible for the control and switching of 32 inputs to 8 outputs for matrix B. The control of the control ICs is accomplished by signals sent over the control bus by the microprocessor. The control ICs interpret the signals and provide control signals and the BUSEN to the 32X1 crosspoint switch circuits. U215 and U216 provide the reset, data, and clock signals for the 32X8 control ICs.

64X1 Crosspoint

The 64X1 crosspoint switches are responsible for switching one of 64 inputs to an output. The 64X1 crosspoint switches are comprised of four 16X1 crosspoints which form a 64X1 matrix. The switching of a selected input signal to a selected output by 64X1 crosspoint is controlled by the state of the associated BUS and BUSEN data lines. The 64X1 crosspoint switches are also responsible for providing the selected output to the associated output circuit on the 64X32 Audio Matrix Card.



4.5 64X32 Analog Audio Matrix Card Continued:

Input

The input circuits on the 64X32 Audio Matrix Card provide the initial conditioning and termination of the audio input signals. The input circuits are comprised of an operational amplifier and its associated components. Common mode rejection ratio adjustments in each input circuit provide the means to eliminate unwanted common mode hum and noise on the input audio signals. The input circuits also provide the connection of the audio input signals to the 64X1 crosspoint switch circuits.

Output

The output circuits on the 64X32 Audio Matrix Card are responsible for providing an electronically balanced output and driving the output lines. The output circuits are comprised of two dual staged operational amplifiers and their associated components. The first stage of primary operational amplifier is responsible for conditioning the audio output signal and the second stage of the primary operational amplifier is responsible for inverting the audio output to provide an electronically balanced output. The secondary operational amplifier is responsible for driving the audio output lines are driven through precision 33.2 ohm resistors. An adjustment is provided in each output circuit to adjust the output for unity gain for either high impedance termination or 600 ohm termination.

Power

The power regulator circuits on the 32X32 Audio Matrix Card are responsible for producing all of the regulated operational voltages required by the matrix card's electronic circuits. The heart of the power supply circuit on the audio matrix card is a switching regulator (U300) which produces the +20V DC and -20V DC. Adjustment of the output of the switching regulator is provided by R492, a variable resistor. Regulation of the +5V DC supply is provided by U281. CR2 provides a visual indication that power is being applied to the input of the regulator circuits. Fuses F1 and F2 protect the power regulator circuits from overload conditions and protect the audio matrix card from overload damage. The power circuits also contain a fan speed regulator circuit which controls the speed of the associated chassis fans. As the temperature of the hottest matrix card's circuits increase the fan speed will increase. Inversely as the hottest matrix card's circuits circuits decrease in temperature the fan speed will slow down.



4.6 64X32 Digital Audio Matrix Card

The 64X32 Digital Audio Matrix Card contains a 64X32 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).

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 64X32 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.

Crosspoint Matrix

U81 thru U84 and U89 thru U92 comprise the 64X32 matrix A switch. Refer to Schematic Sheets 4 and 5, 32X32 Digital Audio Matrix Card, pages 6.50 and 6.51. U85 thru U88 and U93 thru U96 comprise the 32X32 matrix B switch. The two matrix sections "A"and "B" are summed together to form a 64X32 matrix.

U97 and U99 contain the data used to configure the 64X4 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.



4.6 64X32 Digital Audio Matrix Card Continued:

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.

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.

Power Regulators

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

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

U129 monitors all primary circuit card voltages for out of voltage range conditions ($\pm 15\%$). If a fault is sensed CR11 will light and the controller will report the error condition. CR9 indicates that power is applied to the 64X32 Digital Audio Matrix Card.

4.7 Standard 64X64 Audio Output Card

The Standard Audio Output Card provides passive distribution of the audio output signals from the 15-pin audio output connectors located on the Backplane to the 3-pin audio output connectors located on the Standard Audio Output Card. See Schematic, Standard Audio Output Card, page 6.55.



4.8 Optional 128X64 Analog Audio Output Comb. Card

The electronic circuits on the Analog Audio Output Combiner Card are responsible for combining two outputs from the 64X32 Analog Audio Matrix Cards to form one output from the Jaguar Audio Frame. The circuits on the Analog Audio Output Combiner Card consist of eight 2X1 summing combiner circuits, control circuits, and a power regulation circuit. Optionally, a monitor circuit may also be included on the Analog Audio Output Combiner Card.

Each 2X1 output combiner circuit is comprised of a dual DG405 switch which functions as 2X1 crosspoint. The 2X1 crosspoints are controlled by U25 which functions as a serial port decoder. On power-up U25 loads its program from U6. U25 obtains data, clock, and clear information from all four audio matrix cards. All four matrix cards send control information is sequence (slot 1 thru slot 4) using TDM. The serial data stream is then decoded into parallel control lines that are made available to the 2X1 crosspoints. The audio output signal selected by the 2X1 crosspoint is coupled to a dual operational amplifier which functions as an audio output line driver.

The power regulator circuit on the Analog Audio Output Combiner Card consist of power regulator U1 and its associated components. U1 is responsible for providing a regulated +5V to the Analog Audio Output Combiner Card's electronic circuits. +20V, -20V, +V, and -V are also distributed to the Analog Audio Combiner Card's electronic circuits.

Optionally, the Analog Audio Output Combiner Card can be equipped with an output monitor circuit consisting of additional 2X1 crosspoints and their associated components. The monitor circuits and audio monitor signal selection are controlled by the optional Output Monitor Control Card. U12, a dual operational amplifier, and its associated components functions as the line driver for the monitor outputs.

4.9 Optional Output Monitor Control Card

The Output Monitor Control Card contains the circuits that control the selection of the audio monitor output signals. The control circuits on the Output Monitor Control Card consists of a microprocessor and its associated components as described in the following paragraphs.



4.9 Optional Output Monitor Control Card Continued:

The microprocessor controller (U13) is used to interface commands from the system controller and return status information to the system controller. Communications to and from the system controller are through U6, a RS485 receiver and transmitter. System timing is provided to the microprocessor by XTAL1, a 7.3728MHz oscillator. Reset for the microprocessor is provided by U7.

Monitor output, input, and level coding is read from S1, S2, and S3 by U17, U18, and U19 respectively. Two external sync signals are used for timing switches as set by S4. The external sync can be color black or composite sync. U8 and U14 decode the composite signal to an even/odd field signal which is used by the microprocessor.

U4 and U5 comprise the nonvolatile RAM for the processor. C2 provides memory backup voltage for approximately seven days as long as the monitor control card is not removed from the Jaguar Frame. CR2 is utilized by the processor on the Output Monitor Control Card to indicate a CPU fault condition. An external alarm connection is provided by U2. The external connection can be utilized to audibly indicate CPU fault conditions.

The power regulator circuits on the Output Monitor Control Card are comprised of U3 and its associated components. U3 is responsible for providing a regulated +5V to the Output Monitor Control Card's electronic circuits. CR1 provides a visible indication of the health of the regulator circuits.



5.1 Introduction

This section will cover the maintenance, troubleshooting, and repair of the Jaguar Audio Switchers.

WARNING

PS130 POWER SUPPLIES CONTAIN ELECTRICAL SHOCK HAZARDS. THE PS130 POWER SUPPLIES SHOULD ONLY BE SERVICED BY <u>QUALIFIED SERVICE PERSON-</u> <u>NEL AND/OR QUALIFIED TECHNICIANS</u>.

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 Jagaur Audio Switchers are designed to produce the proper audio levels throughout the frame. There is no need to perform periodic adjustments and the need for regular maintenance is minimal.

5.3 Test Equipment

The test equipment recommended for servicing the Jaguar Audio Switchers and their associated circuit cards is listed below. Equivalent test equipment may be used.

Audio Generator Distortion Analyzer Digital Voltmeter Oscilloscope 600 Ohm Termination



5.4 Preventive Maintenance

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 low velocity 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 chassis fans and may overheat the internal circuit cards.

5.5 Maintenance

The Jaguar Audio Switchers and their 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 Jagaur Audio Switchers and their associated circuit cards.

5.6 Corrective Maintenance

The following paragraphs provide information to assist the servicing technician in performing the maintenance of the Jagaur Audio Switchers and their 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 (the phone number is listed on the Service Information Sheet) 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 Jaguar Audio Switchers or their 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 and a replacement card is available, 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 Jagaur Audio Switchers 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 Jaguar Audio Switchers and their 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 same lead lengths (if applicable).

5.7 Filter Cleaning

The front door of the Jagaur Audio Switchers 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.



6.1 Schematics

General

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

Description	<u>Dwg No.</u>	<u>Page No.</u>
Jaguar Audio Mainframe Assembly	CD63-0768	6.2
Jaguar Audio Chassis Assembly	CD63-0766	6.4
Jaguar Audio Backplane	CA25-1322	6.5
	SC33-1322	6.7
Dual Audio Reference Interface Card	CA25-1337	6.13
	SC33-1337	6.14
64X32 Analog Audio Matrix Card	CA25-1277	6.16
	SC33-1277	6.18
64X32 Digital Audio Matrix Card	CA25-1279	6.42
	SC33-1279	6.43
Standard Audio Output Card	CA25-1323	6.53
	SC33-1323	6.54
Card Cage	CD63-0767	6.55
128X64 A/A Output Combiner Card	CA25-1324	6.56
	SC33-1324	6.57
Digital Audio Output Combiner Card	CA25-1327	6.60
	SC33-1327	6.61
Output Monitor Control Card	CA25-1334	6.63
	SC33-1334	6.64



NOT AVAILABLE AT TIME OF PRINTING

Configuration Drawing (Sheet 1 of 2) • Jaguar Audio Mainframe Assembly • CD63-0768







NOT AVAILABLE AT TIME OF PRINTING

Configuration Drawing • Jaguar Chassis Assembly • CD63-0766













SILKSCREEN LAYER 6 DF 6



32 J45 2 1 3	29 J21 1 2 3	31 ^{J37} 2 1 3	30 J29 1 2 3 3	28 ^{J46} 1 3	25 J22 1 2 3	27 ^{J38} 2 1 3	26 J30 1 2 3 3	24 J47 2 1 3	21 J23 1 2 3 3	23 J39 2 1 3	22 J31 1 2 3	20 J48 2 1 3	17 J24 1 2 3	19 ^{J40} 2 1 3	18 ^{J32} 1 2 3	16 J49 2 1 3	$\begin{array}{c} 13\\ {}_{J25}\\ 1\\ 2\\ 3\\ \end{array}$	15 J41 2 1 3	14 J33 1 2 3	12 ^{J50} 2 1 3	9 1 2 3	11 J42 2 1 3	10 J34 1 2 3	8 ^{J51} 2 1 3
		J1 D3 C3 B3	J1 C4 B4 A4	J1 D5 C5 B5	J1 C6 B6 A6 	J1 D7 C7 B7	J1 C8 B8 A8	J1 D9 C9 B9	J1 c10) e B10) A10)	J1 D11 C11 B11	J1 • C12) • B12 A12)	J1 D13 C13 B13	J1 C14 B14 A14	J1 D15 C15 B15	J1 C16 B16 A16 	J1 D17 C17 B17	J1 C18 • B18 A18 	J1 D19> C19> B19>	J1 • C20) • • B20) • A20)	J1 D21 C21 B21	J1 C22) B22 A22 A22	J1 D23 C23 B23	J1 • C24 • B24 • A24	J1 D25 C25 B25 A25
	J5 C2 B2 A2	J5 D3 C3 B3	J5 C4) • B4) A4	J5 D5 C5 B5	J5 C6 B6 A6	J5 D7 C7 B7	J5 C8 B8 A8	15 D9 C9 B9	J5 c10) • B10) A10)	J5 D11 C11 B11	J5 c12 B12 A12	J5 D13 C13 B13	J5 C14 • B14 A14	J5 D15 C15 B15	J5 C16 B16 A16	J5 D17 C17 B17	J5 c18 • B18 A18	J5 D19> C19> B19>	J5 C20) B20) A20)	J5 D21) C21) B21)	J5 C22 • B22 A22 •	J5 D23 C23 B23	J5 C24 B24 A24	J5 D25 C25 B25 A25
64 J77 2 1 3	61 J53 1 2 3	63 J69 2> 1> 3>	62 J61 1 2 3	60 J78 2> 1> 3>	57 J54 1 2 3	59 J70 2 1 3	58 1 2 3	56 J79 2> 1> 3>	53 J55 1 2 3 3	55 J71 2> 1> 3>	54 J63 1 2 3	52 JB0 2 1 3	49 ^{J56} 1> 2> 3>	10000000000000000000000000000000000000	$ \begin{array}{c} 5 & 1-32 & 0 \\ & 50 \\ & 50 \\ & 3 \\ & 3 \\ \end{array} $	CHANNEL 48 JB1 2 1 3	#2 45 J57 1 2 3	47 ^{J73} 2> 1> 3>	46 J65 1>	44 J82 2 1 3	41 J58 1>	43 J74 2 1 3	42 J66 1 2 3	40 ^{J83} 2 1 3
64 J77 2 1 3 J9 D1 C1 B1	61 J53 1 2 3 J9 C2 B2 A2 	63 J69 2 1 3 J9 D3 c3 B3	62 J61 1 2 3 J9 C4 B4 A4	60 J78 2 1 3 J9 D5 c5 B5	57 J54 1 2 3 J9 C6 • B6 • A6	59 J70 2> 1> 3> J79 D7> 67 67 67	58 J62 1 2 3 J9 C8 A8	56 J79 2 1 3 J9 D9 c9 B9	53 J55 1 2 3 J9 c10 • B10 A10	55 J71 2 1 3 J9 D11 B11 	54 J63 1 2 3 J9 c12 A12 A12	52 J80 2 1 3 J9 D13 C13 B13	49 J56 1 2 3 J9 c14 e14 A14	INPUTS 51 372 2 1 3 	$ \begin{array}{c} 5 \ 1-32 \ 0 \\ $	CHANNEL 48 J81 2 1 3 	#2 45 J57 1 2 3 J9 C18 B18 A18	47 J73 2 1 3 J79 D19 B19 	46 J65 1 2 3 J9 C20 B20 A20 	44 J82 2> 1> 3> J9 D21 • B21 • B21	41 J58 1 2 J9 C22 A22 A22	43 J74 2 1 3 J79 D23 C23 B23	42 J66 1 2 3 J9 C24 B24 A24 	40 J83 2 1 3 J9 D25 C25 A25 A25

INPUTS 1-32 CHANNEL #1



Schematic (Sheet 1 of 6) • Jaguar Audio Backplane • SC33-1322



														INPUTS	33-64	CHANNEL	#1							
32 J109 2 1 3	29 J85 1 2 3	31 J101 2 1 3	30 ^{J93} 1 2 3 3	28 J110 2 1 3	25 J86 1 2 3	27 J102 2 1 3	26 J94 1 2 3	24 J111 2 1 3	21 J87 1 2 3 3	23 J103 2 1 3	22 J95 1 2 3	20 J112 2 1 3	17 J88 1) 2) 3)	19 J104 2 1 3	18 ^{J96} 1 2 3	16 ^{J113} 2 1 3	13 J89 1 2 3 3	15 J105 2 1 3	14 J97 1) 2) 3)	12 J114 2 1 3	9 J90 1 2 3	11 J106 2 1 3	10 J98 1 2 3	8 J115 2 1 3
	J3 C2 B2 A2	J3 D3 C3 B3	J3 C4 • B4 A4	J3 D5 C5 B5	G6 → B6 → A6 → C6 → C6 → C6 → C6 → C6 → C6 → C	J3 D7 C7 B7	J3 C8) B8) A8)	J3 D9 C9 B9	J3 c10 • B10 A10	J3 D11) C11) B11)	J3 c12) • B12) A12) 	J3 D13 C13 B13	J3 c14) • B14) A14) 	J3 D15 C15 B15	J3 c16 B16 A16	J3 D17) C17) B17)	J3 c18 • B18 	J3 D19) C19) B19)	J3 C20) B20) A20)	J3 D21 C21 B21	J3 • C22 • B22 A22 	J3 D23 C23 B23	J3 C24 B24 A24	J3 D25 c25 B25 A25
	J7 C2 B2 A2	J7 D3 C3 B3 J J J J J J J J J J J J J	J7 C4 • B4 A4	J7 D5 C5 B5	J7 C6 B6 A6	J7 D7 C7 B7	J7 C8 B8 A8 	J7 D9 C9 B9	J7 c10 • B10 A10	J7 D11> C11> B11>	J7 c12 • B12 A12 • C12	J7 D13 C13 B13	J7 c14 • B14 A14	J7 D15 C15 B15	J7 C16 • B16 A16 •	J7 D17 C17 B17	J7 c18 • B18 A18	J7 D19 C19 B19	J7 C20) • B20) A20)	J7 D21 C21 B21	J7 C22) B22 A22) V	J7 D23 C23 B23	J7 C24 • B24 A24	J7 D25 C25 B25 A25
														τησιώ	2 33-61	CHAMMET.	#2							
64 J141 2 1 3	61 J117 2 3	63 J133 2 1 3	62 J125 1 2 3	60 J142 2 1 3	57 J118 1 2 3	59 J134 2 1 3	58 J126 1 2 3	56 J143 2 1 3	53 J119 1 2 3	55 J135 2 1 3	54 J127 1 2 3	52 J144 2 1 3	49 J120 1 2 3	51 ^{J136} ² 1 3	50 J128 1 2 3	48 J145 2 1 3	45 J121 1 2 3	47 J137 2 1 3	46 J129 1 2 3	44 J146 2 1 3	41 ^{J122} 1 2 3 3	43 J138 2 1 3	42 J130 1 2 3	40 J147 2 1 3
J11 D1 C1	J11	J11 D3		J11 D5	 J11	J11 D7	J11	J11 D9	J11	J11 D11	J11	 J11 D13	J11	J11	J11				J11	J11	J11	J11	J11	
B1	B2 A2	C3>	C4 B4 A4	C5 B5	C6 B6 A6 	C7>+ B7>+	C8 B8 A8	C9) B9)	C10) • B10) • A10)	C11> B11>	C12) B12) A12) 	C13 B13 	C14 • B14 A14 	D15 C15 B15 	• C16>-• • B16>	D17 C17 B17 	C18) • B18) A18) 	D19 C19 B19	C20) • B20) A20)		• c22>-• • B22>-• A22>	D23 C23 B23	C24 B24 A24	D25 C25 B25 A25



Schematic (Sheet 2 of 6) • Jaguar Audio Backplane • SC33-1322



Jaguar Audio

Schematics

J2 D1 C1 B1 B1	J2 C2≻ B2≻ A2≻	J2 D3≻ C3≻ B3≻	J2 C4>- B4>- A4>-	J2 D5≻ C5≻ B5≻	J2 C6 B6 A6	J2 D7≻ C7≻ B7≻	J2 C8 B8 A8 	J2 D9≻ C9≻ B9≻	J2 c10)- B10)- A10)-	J2 D11≻ C11≻ B11≻	J2 C12>- B12>- A12>-	J2 D13 C13 B13 B13	J2 C14 B14 A14	J2 D15 C15 B15 -	J2 C16 B16 A16	J2 D17 C17 B17 B17	J2 C18 B18 A18	J2 D19 C19 B19 B19	J2 c20)- B20)- A20)-	$ \begin{array}{c} J^2 \\ D21 \\ C21 \\ B21 \\ \end{array} $	J2 C22>- B22>- A22>-	$ \begin{array}{c} J^2 \\ D23 \\ C23 \\ B23 \\ B23 \\ \end{array} $	J2 C24 B24 A24	J2 D25 C25 B25 A25 A25	J2 D26 C26 B26 A26	J2 D27 C27 B27 A27	J2 D28 C28 B28 A28	J2 D29)- C29)- B29)-	J2 D30> C30> B30> A30>	J2 D31) C31) B31)	J2 D32 C32 B32 A32 A32	MATRIX SLOT #1
 								J6 D9≻ C9≻ B9≻					J6 C14≻ B14≻ A14≻				J6 C18≻ B18≻ A18≻				J6 C22>- B22>- A22>-			J6 D25≻ C25≻ B25≻ A25≻	J6 D26≻ C26≻ B26≻ A26≻	J6 D27≻ C27≻ B27≻ A27≻	J6 D28≻ C28≻ B28≻ A28≻		J6 D30≻ C30≻ B30≻ A30≻		J6 D32≻ C32≻ B32≻ A32≻	MATRIX SLOT #2

J10 D1- C1- B1-	J10 c2>- B2>- A2>-	J10 D3 C3 B3 -	J10 C4 B4 A4	J10 D5≻ C5≻ B5≻	J10 C6>- B6>- A6>-	J10 D7≻ C7≻ B7≻	J10 C8>- B8>- A8>-	J10 D9≻ C9≻ B9≻	J10 c10>- B10>- A10>-	J10 D11>- C11>- B11>-	J10 c12>- B12>- A12>-	J10 D13≻ C13≻ B13≻	J10 c14 B14 A14 	J10 D15≻ C15≻ B15≻	J10 C16 B16 A16 -	J10 D17≻ C17≻ B17≻	J10 c18>- B18>- A18>-	J10 D19>- C19>- B19>-	J10 c20>- B20>- A20>-	J10 D21>- C21>- B21>-	J10 c22)- B22)- A22)-	J10 D23 C23 B23	J10 c24 B24 A24 A24	J10 D25>- C25>- B25>- A25>-	J10 D26> C26> B26> A26>	J10 D27>- C27>- B27>- A27>-	J10 D28>- C28>- B28>- A28>-	J10 D29≻ C29≻ B29≻	J10 D30>- C30>- B30>- A30>-	J10 D31≻ C31≻ B31≻	J10 D32≻ C32≻ B32≻ A32≻	MATRIX SLOT #3
J14 D1≻ C1≻ B1≻	J14 C2>- B2>- A2>-	J14 D3≻ C3≻ B3≻	J14 C4 B4 A4	J14 D5≻ C5≻ B5≻	J14 C6≻ B6≻ A6≻	J14 D7≻ C7≻ B7≻	J14 C8>- B8>- A8>-	J14 D9≻ C9≻ B9≻	J14 c10> B10>- A10>-	J14 D11≻ C11≻ B11≻	J14 c12> B12>- A12>-	J14 D13≻ C13≻ B13≻	J14 C14>- B14>- A14>-	J14 D15≻ C15≻ B15≻	J14 c16>- B16>- A16>-	J14 D17≻ C17≻ B17≻	J14 c18>- B18>- A18>-	J14 D19) C19) B19)	J14 c20> B20>- A20>-	J14 D21≻ C21≻ B21≻	J14 C22>- B22>- A22>-	J14 D23≻ C23≻ B23≻	J14 c24>- B24>- A24>-	J14 D25≻ C25≻ B25≻ A25≻	J14 D26≻ C26≻ B26≻ A26≻	J14 D27≻ C27≻ B27≻ A27≻	J14 D28≻ C28≻ B28≻ A28≻	J14 D29≻ C29≻ B29≻	J14 D30≻ C30≻ B30≻ A30≻	J14 D31≻ C31≻ B31≻	J14 D32≻ C32≻ B32≻ A32≻	MATRIX SLOT #4



NOTE: THESE PINS SHOULD REMAIN GROUNDED GROUNDED CASE ON ENC CONNECTORS TOUCH THESE PINS

Section 6

Schematic (Sheet 3 of 6) • Jaguar Audio Backplane • SC33-1322



Schematics

Jaguar Audio

													0	JTPUTS 1	L-32 CHA	NNEL #3	1															
J164 B1 >	J164 B2	J164 вз —	J164	J165 B1	J165 B2	J165 B3	J165	J166 B1	J166 B2	J166 вз —	J166	J167 B1 >	J167 B2	J167 вз >	J167	J168 B1	J168 B2	J168 вз —	J168	J169 B1	J169 B2	J169 ВЗ ——	J169	J170 B1	J170 B2	J170 вз —	J170	J171 B1	J171 B2	J171 вз >	J171	
C2 >	C5	A2 >	A5 >	C2	C5	A2	A5 >	C2	C5>		A5 >	C2	C5>	A2	A5 >	C2 >	C5 >	A2	A5 >	C2	C5 >	A2	A5 >	C2	C5 >	A2	A5 >	C2	C5 >	A2	A5 >]
		A1	A4			A1					A4					C1		A1	A4			A1	A4							A1		
CG CG		84	AS	Ca		B4	AJ	CG CG		B4	AS	85		B4	AS	BO		B4	AS	вэ		B4	AS	85		64	AS	вэ		B4	AJ	
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C1>	C2>	C3>	C4)-•	C5>	C6>	C7>	C8>	C9>	C10>	C11>	C12)	C13>	C14>	C15	C16>	C17	C18)	C19)	C20>	C21)	C22>	C23	C24>	C25	C26	C27>	C28	C29>	C30>	C31	C32>•	
B1)	• B2	B3>		в5>	• B6	B7>	• B8		• B10		• B12		• B14		• B16	B17>	• B18	B19	B20	B21	B22	B23	• B24	B25	• B26	B27>	• B28	B29>	• B30	B31>	• B32	
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B1 /2		вз >	J172	B1 >		B3 >	J173	B1 /4	B2	B3	J174	B1 >		вз >	J175	B1	B2	вз —	J176	B1		вз —	J177	B1		ылуя Вз >	J178	B1	B2	B3	J179	
C2	C5	A2	A5 >	C2	C5	A2	A5 >		C5>		A5>		C5>		A5 >	C2	C5 >	A2	A5	C2	C5 >	A2	A5 >		C5 >		A5 >		C5 >	A2	A5 >]
		A1				A1													A4			A1	A4							A1		
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		C3	C4	C5	C6	C7>	C8 •	C9	C10		C12	C13	C14	C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27		C29	C30	C31	C32	
		83/	A4	вэ	A6		A8		A10	A11	A12	A13	A14	A15	A16	A17)-	A18	A19	A20	A21	A22	A23	A24	A25	A26	A27	A28	829/	A30	B31/	A32	
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∟ _	J180	J180		J181	J181	J181		J182	J182	J182		J183	01 J183	JTPUTS 1 J183	L-32 CH4	NNEL #2 J184	2 J184	J184		J185	J185	J185		J186	J186	J186		J187	J187	J187		
J180 B1	J180	J180 B3 >	J180	J181 B1	J181 B2	J181 B3 >	J181	J182 B1	J182 B2	J182 B3 >	J182	J183 B1	01 J183 B2	UTPUTS 1 J183 B3 —	J183	NNEL #2 J184 B1	2 J184 B2	J184 B3	J184	J185 B1	J185 B2	J185 B3	J185	J186 B1	J186 B2	J186 B3	J186	J187 B1	J187 B2	J187 B3	J187	
J180 B1 C2 C1	J180 B2 C5 C4	J180 B3 >- A2 >	J180 A5 A4	J181 B1 C2 C1	J181 B2 C5 C4	$ \begin{array}{c} J181\\B3 \\ A2 \\ A1 \\ \end{array} $	J181 A5 \ A4 \	J182 B1 C2 C1	J182 B2 C5 C4	J182 B3 >- A2 >	J182 A5	J183 B1	OI J183 B2 C5 C5 C4	JTPUTS 1 J183 B3 A2	J183 A5 A4	NNEL #2 J184 B1 C2 C1	$ \begin{array}{c} 3 \\ 3 \\ 3 \\ 3 \\ 5 $	J184 B3 A2 A1	J184 A5 A4	J185 B1 C2 C1	J185 B2 C5 C4	J185 B3 A2 A1	J185 A5	J186 B1 >	J186 B2 C5 C4	J186 B3 A2 A1	J186 A5 A4	J187 B1 C2 C1	J187 B2 C5 C4	J187 B3 A2 A1	J187 A5]
J180 B1 C2 C1 B5	J180 B2 C5 C4 C3	J180 B3	J180 A5 A4 A3	J181 B1 C2 C1 B5	J181 B2 C5 C4 C3	J181 B3	J181 A5 A4 A3	J182 B1 C2 C1 B5	J182 B2 C5 C4 C3 C3	J182 B3	J182 A5 A4 A3	J183 B1 C2 C1 B5	OT J183 B2 C5 C4 C3	UTPUTS 1 J183 B3 A2 A1 B4	J183 A5 A4 A3	NNEL #2 J184 B1 C2 C1 B5	2 J184 B2 C5 C4 C4 C3	J184 B3 A2 A1 B4	J184 A5 A4 A3	J185 B1 C2 C1 B5	J185 B2 C5 C4 C3	J185 B3 A2 A1 B4	J185 A5 A4 A3	J186 B1 C2 C1 B5	J186 B2 C5 C4 C3	J186 B3 A2 A1 B4	J186 A5 A4 A3	J187 B1 C2 C1 B5	J187 B2 C5 C4 C3 O	J187 B3 A2 A1 B4	J187 A5 A4 A3	
J180 B1 C2 C1 B5	J180 B2 C5 C4 C3 C3	J180 B3 -> A2 -> A1 -> B4 ->	J180 A5 A4 A3	J181 B1 C2 C1 B5	J181 B2 C5 C4 C3 (3)	J181 B3 > A2 > A1 > B4 >	J181 A5 A4 A3	J182 B1 C2 C1 B5	J182 B2 C5 C4 C3 C3	J182 B3	J182 A5 A4 A3	J183 B1 C2 C1 B5	01 J183 B2 C5 C4 • C3	JTPUTS 1 J183 B3 A2 A1 B4	J183 A5 A4 A3	NNEL #2 J184 B1 C2 C1 B5	2 J184 B2 C5 C4 C3 C3	J184 B3 A2 A1 B4	J184 A5 A4 A3	J185 B1 C2 C1 B5	J185 B2 C5 C4 C3 O	J185 B3 A2 A1 B4	J185 A5 A4 A3	J186 B1 C2 C1 B5	J186 B2 C5 C4 ← C3 →	J186 B3 A2 A1 B4	J186 A5 A4 A3 A3	J187 B1 C2 C1 B5	J187 B2 C5 C4 C3 C3	J187 B3 A2 A1 B4	J187 A5 A4 A3	
J180 B1 C2 C1 B5	J180 B2 C5 C4 C3 C3 J12	J180 B3	J180 A5 A4 A3 J12	J181 B1 C2 C1 B5 J12	J181 B2 C5 C4 C3 C3 J12	J181 B3 >- A2 >- A1 >- B4	J181 A5 A4 A3 	J182 B1 C2 C1 B5 J12 J12	J182 B2 C5 C4 C3 J12	J182 B3 A2 A1 B4 J12	J182 A5 A4 A3 J12	J183 B1 C2 C1 B5	OI J183 B2 C5 C4 • C3 • C3 • J12	DTPUTS 1 J183 B3 A2 A1 B4 B4 J12	L-32 CHA J183 A5 A4 A3 J12	NNEL #2 J184 B1 C2 C1 B5 	2 J184 B2 C5 C4 • C3 • C3 • J12	J184 B3 A2 A1 B4 U12 D12	J184 A5 A4 A3 - J12	J185 B1 C2 C1 B5 J12	J185 B2 C5 C4 C3 0 C3 0 J12	J185 B3 A2 A1 B4 - J12	J185 A5 A4 A3 J12 J12	J186 B1 C2 C1 B5 J12	J186 B2 C5 C4 C3 C4 C3 J12	J186 B3 A2 A1 B4 J12	J186 A5 A4 A3 J12	J187 B1 C2 C1 B5 J12	J187 B2 C5 C4 • C3 • J12 J12	J187 B3 A2 A1 B4 	J187 A5 A4 • A3	
J180 B1 C2 C1 B5 J12 D1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1	$ \begin{array}{c} J180\\B2\\C5\\C4\\\bullet C3\\\hline\\J12\\D2\\\hline\\C2\\\hline\\C2\\\hline\\C2\\\hline\\\end{array} $	J180 B3	J180 A5 A4 A3 J12 D4 C4	J181 B1 C2 C1 B5 J12 D5 C5	$ \begin{array}{c} J181\\B2\\C5\\C4\\C3\\D6\\C6\\C6\\C6\\C6\\C6\\C6\\C6\\C6\\C6\\C6\\C6\\C6\\C6$	J181 B3	J181 A5 A4 A3 J12 D8 C8	J182 B1 C2 C1 B5 J12 D9 C9	J182 B2 C5 C4 C3 C3 J12 D10 C10	J182 B3 A2 A1 B4 J12 D11 C11	J182 A5 A4 A3 J12 D12 C12	J183 B1 C2 C1 B5 J12 D13 C13	$\begin{array}{c} \text{OI}\\ \text{J183}\\ \text{B2}\\ \text{C5}\\ \text{C4}\\ \text{C3}\\ \text{J12}\\ \text{D14}\\ \text{C14}\\ \end{array}$	JTPUTS 1 J183 B3 A2 A1 B4 J12 D15 C15	L-32 CHZ J183 A5 A4 A3 J12 D16 C16	NNEL #2 J184 B1 C2 C1 B5 J12 D17 C17	2 J184 B2 C5 C4 C3 C3 C3 C18	J184 B3 A2 A1 B4 J12 D19 C19	J184 A5 A4 A3 J12 D20 C20	J185 B1 C2 C1 B5 J12 D21 C21	J185 B2 C5 C4 C3 C3 J12 D22 C22	J185 B3 A2 A1 B4 J12 D23 C23	J185 A5 A4 A3 J12 D24 C24	J186 B1 C2 C1 B5 J12 D25 C25	J186 B2 C5 C4 C3 J12 D26 C26	J186 B3 A2 A1 B4 J12 D27 C27	J186 A5 A4 A3 J12 D28 C28	J187 B1 C2 C1 B5 J12 D29 C29	J187 B2 C5 C4 C3 J12 D30 C30	J187 B3 A2 A1 B4 J12 D31 C31	J187 A5 A4 A3 J12 D32 C32	
J180 B1 C2 C1 B5 J12 D1 C1 B1 B1 B1	J180 B2 C5 C4 C3 J12 D2 C2 B2	J180 B3 - A2 A1 B4 J12 D3 C3 B3	J180 A5 A4 A3 J12 D4 C4 B4	J181 B1 C2 C1 B5 J12 D5 C5 B5	$ \begin{array}{c} J181\\B2\\c5\\c4\\c3\\\hline\\J12\\D6\\c6\\\hline\\B6\\\end{array} $	J181 B3 A2 A1 B4 J12 D7 C7 B7	J181 A5 A4 A3 J12 D8 C8 B8	J182 B1 C2 C1 B5 J12 D9 C9 B9	J182 B2 C5 C4 C3 J12 D10 C10 B10	J182 B3 - A2 A1 B4 J12 D11 C11 B11	J182 A5 A4 A3 J12 D12 C12 B12	J183 B1 C2 C1 B5 J12 D13 C13 B13	OT J183 B2 c5 c4 • c3 • c3 • c3 • c3 • c3 • c3 • c3 • c3	JTPUTS 1 J183 B3 A1 B4 J12 D15 C15 B15	J183 A5 A4 A3 J12 D16 C16 B16	NNEL #2 J184 B1 C2 C1 B5 J12 D17 C17 B17	2 J184 E2 C5 C4 • C3 • C3 • C3 • C18 • B18	J184 B3 A2 A1 B4 J12 D19 C19 B19	J184 A5 A4 A3 J12 D20 C20 B20	J185 B1 C2 C1 B5 J12 D21 C21 C21 B21	J185 B2 C5 C4 C3 J12 D22 C22 B22	J185 B3 A2 A1 B4 J12 D23 C23 B23	J185 A5 A4 A3 J12 D24 C24 B24	J186 B1 C2 C1 B5 J12 D25 C25 B25	J186 B2 C5 C4 C3 C3 J12 D26 C26 B26	J186 B3 A2 A1 B4 J12 D27 C27 B27	J186 A5 A4 A3 J12 D28 C28 B28	J187 B1 C2 C1 B5 J12 D29 C29 B29	J187 B2 C5 C4 C3 J12 D30 C30 B30	J187 B3 A2 A1 B4 J12 D31 C31 B31	J187 A5 A4 A3 J12 D32 C32 B32	
J180 B1 C2 C1 B5 J12 D1 C1 B1	$\begin{array}{c} J180\\ B2\\ C5\\ C4\\ C3\\ J12\\ D2\\ C2\\ B2\\ A2\\ \end{array}$	J180 B3 A2 A1 B4 J12 D3 C3 B3	J180 A5 A4 A3 J12 D4 C4 B4 A4	J181 B1 C2 C1 B5 J12 D5 C5 B5	$ \begin{array}{c} J181\\B2\\C5\\C4\\C3\\0\\J12\\D6\\C6\\B6\\A6\\A6\end{array} $	J181 B3	J181 A5 A4 A3 J12 D8 C8 B8 A8	J182 B1 C2 C1 B5 J12 D9 C9 B9 A9	J182 B2 C5 C4 C3 C4 C3 D10 C10 B10 A10	J182 B3	J182 A5 A4 A3 J12 D12 C12 B12 A12	J183 B1 C2 C1 B5 J12 D13 C13 B13 A13	OT J183 B2 C5 C4 • C3 • C3 • C3 • C3 • C14 • B14 A14	JTPUTS 1 J183 B3 A2 A1 B4 J12 D15 C15 B15 A15	J183 A5 A4 A3 J12 D16 C16 B16 A16	NNEL #2 J184 B1 C2 C1 B5 J12 D17 C17 B17 A17	2 J184 B2 C5 C4 • C3 • C3 • C18 • B18 A18	J184 B3 A2 A1 B4 J12 D19 C19 B19 A19 A19	J184 A5 A4 A3 J12 D20 C20 B20 A20	J185 B1 C2 C1 B5 J12 D21 C21 C21 B21 A21	J185 B2 C5 C4 C3 0 C3 0 0 0 0 0 0 0 0 0 0 0 0 0	J185 B3 A2 A1 B4 J12 D23 C23 B23 A23	J185 A5 A4 A3 J12 D24 C24 E24 A24	J186 B1 C2 C1 B5 J12 D25 C25 B25 A25	J186 B2 C5 C4 C3 C3 J12 D26 C26 B26 A26	J186 B3 A2 A1 B4 J12 D27 C27 B27 A27	J186 A5 A4 A3 J12 D28 C28 B28 A28	J187 B1 C2 C1 B5 J12 D29 C29 B29	J187 B2 C5 C4 C3 C3 J12 D30 C30 B30 A30	J187 B3 A2 A1 B4 J12 D31 C31 B31	J187 A5 A4 • A3 - J12 D32 - C32 • B32 A32]
J180 B1 C2 C1 B5 J12 D1 E1 B1	J180 B2 C5 C4 C3 J12 D2 C2 B2 A2	J180 B3 >- A2 >- A1 >- B4 >- D3 C3 B3	J180 A5 A4 A3 J12 D4 C4 B4 A4	J181 B1 C2 C1 B5 J12 D5 C5 B5	J181 B2 C5 C4 C3 J12 D6 C6 C6 B6 A6	J181 B3 A2 A1 B4 J12 D7 C7 B7 A7-	J181 A5 A4 A3 J12 D8 C8 B8 A8	J182 B1 C2 C1 B5 J12 D9 C9 B9 A9	J182 B2 C5 C4 C3 C3 D10 C10 B10 A10	J182 B3 A2 A1 B4 J12 D11 C11 B11 A11	J182 A5 A4 A3 J12 D12 C12 B12 A12	J183 B1 C2 C1 B5 J12 D13 C13 B13 A13	OT J183 B2 C5 C4 C3 - J12 D14 C14 B14 A14 -	JTPUTS 1 J183 B3 A2 A1 B4 J12 D15 C15 B15 A15 -	J183 A5 A4 A3 J12 D12 D16 C16 B16 A16	NNEL #2 J184 B1 C2 C1 B5 J12 D17 C17 B17 A17	2 J184 B2 C5 C4 C3 C3 C18 B18 A18	J184 B3 A2 A1 B4 J12 D19 C19 B19 A19 A19	J184 A5 A4 A3 J12 D20 C20 B20 A20	J185 B1 C2 C1 B5 J12 D21 C21 C21 B21 A21	J185 B2 c5 c4 c3 J12 D22 c22 e B22 A22	J185 B3 A2 A1 B4 J12 D23 C23 B23 A23 A23	J185 A5 A4 A3 J12 D24 C24 B24 A24	J186 B1 C2 C1 B5 J12 D25 C25 B25 A25	J186 B2 C5 C4 C3 J12 D26 C26 B26 A26	J186 B3 A2 A1 B4 J12 D27 C27 B27 A27	J186 A5 A4 A3 J12 D28 C28 B28 A28	$\begin{array}{c} J187\\ B1\\ \hline \\ C2\\ \hline \\ C1\\ B5\\ \hline \\ J12\\ D29\\ \hline \\ C29\\ B29\\ \end{array}$	J187 B2 C5 C4 C3 J12 D30 C30 B30 A30	J187 B3 A2 A1 B4 J12 D31 C31 B31	J187 A5 A4 A3 J12 D32 C32 B32 A32	
J180 B1 C2 C1 B5 J12 D1 C1 B1 C1 B1	J180 B2 C5 C4 C3 J12 D2 C2 B2 A2	J180 B3 A2 A1 B4 J12 D3 C3 B3	J180 A5 A4 A3 J12 D4 C4 B4 A4	J181 B1 C2 C1 B5 J12 D5 C5 B5	$ \begin{array}{c} J181\\B2\\C5\\C4\\C3\\0\\J12\\D6\\C6\\B6\\A6\\A6\end{array} $	$ \begin{array}{c} J181\\B3 \\ \hline \\ A2 \\ A1 \\ B4 \\ \hline \\ J12 \\ D7 \\ C7 \\ B7 \\ A7 \\ \hline \\ A7 \\ \hline \end{array} $	J181 A5 A4 A3 J12 D8 C8 B8 A8	J182 B1 C2 C1 B5 J12 D9 C9 B9 A9	J182 B2 C5 C4 C3 J12 D10 C10 B10 A10	J182 B3 - A2 - A1 - B4 - J12 D11 - C11 - B11 - A11 -	J182 A5 A4 A3 J12 D12 C12 E12 A12	J183 B1 C2 C1 B5 J12 D13 C13 B13 A13	$\begin{array}{c} 0 \\ J183 \\ B2 \\ c5 \\ c4 \\ \bullet c3 \\ \bullet c3 \\ \bullet c14 \\ \bullet c14 \\ \bullet c14 \\ \bullet b14 \\ A14 \\ \bullet c14 \\ \bullet$	UTPUTS 1 J183 B3 A2 A1 B4 J12 D15 C15 B15 A15 C15 D17PUTS 3	$\begin{array}{c c} J183 \\ A5 \\ A4 \\ A3 \\ J12 \\ D16 \\ C16 \\ B16 \\ A16 \\ \end{array}$	NNEL #2 J184 B1 C2 C1 B5 J12 D17 C17 B17 A17 ANNEL #	2 J184 B2 C5 C4 C3 D18 C18 B18 A18 #2	J184 B3 A2 A1 B4 J12 D19 C19 B19 A19 A19	J184 A5 A4 A3 J12 D20 C20 B20 A20	J185 B1 C2 C1 B5 J12 D21 C21 C21 B21 A21	J185 B2 C5 C4 C3 J12 D22 C22 B22 A22	J185 B3 A2 A1 B4 J12 D23 C23 B23 A23	J185 A5 A4 A3 J12 D24 C24 E24 A24	J186 B1 C2 C1 B5 J12 D25 C25 B25 A25	J186 B2 C5 C4 C3 C3 J12 D26 C26 B26 A26	J186 B3 A2 A1 B4 J12 D27 C27 B27 A27	J186 A5 A4 A3 J12 D28 C28 B28 A28	J187 B1 C2 C1 B5 J12 D29 C29 B29	J187 B2 C5 C4 C3 J12 D30 C30 B30 A30	J187 B3 A2 A1 B4 J12 D31 C31 B31	J187 A5 A4 A3 J12 D32 C32 B32 A32]
J180 B1 C2 C1 B5 J12 D1 C1 B1 B1 J188 B1	J180 B2 C5 C4 C3 C3 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2	J180 B3 A2 A1 B4 J12 D3 C3 B3 J188	J180 A5 A4 A3 J12 D4 C4 B4 A4	J181 B1 C2 C1 B5 J12 D5 C5 B5 J189 B1	J181 B2 C5 C4 C3 C4 C3 C6 C6 B6 B6 A6 V J189 B2	J181 B3	J181 A5 A4 A3 J12 D8 C8 B8 A8	J182 B1 C2 C1 B5 J12 D9 C9 B9 A9 J190	J182 B2 C5 C4 C3 J12 D10 C10 B10 A10 J190 B22	J182 B3 A2 A1 B4 J12 D11 C11 B11 A11 J190	J182 A5 A4 A3 J12 D12 C12 A12 A12	J183 B1 C2 C1 B5 J12 D13 C13 B13 A13 J191 B1	OT J183 B2 C5 C4 • C3 • C4 • C3 • C5 · C4 · C5 · C5 · C4 · C5 · C5 · C4 · C5 · C5 · C4 · C5 · C5	UTPUTS 1 J183 B3 A2 A1 B4 J12 D15 C15 B15 A15 UTPUTS 3 J191	$\begin{array}{c} J183 \\ A5 \\ A4 \\ A3 \\ J12 \\ D16 \\ C16 \\ B16 \\ A16 \\ A3 \\ S3-64 CH $	NNEL #2 J184 B1 C2 C1 B5 D17 C17 B17 A17 ANNEL # J192 B192	2 J184 B2 C5 C4 C3 C18 C18 C18 C18 C18 C192	J184 B3 A2 A1 B4 J12 D19 C19 B19 A19 J192	J184 A5 A4 A3 J12 D20- C20 B20 A20	J185 B1 C2 C1 B5 J12 D21 C21 C21 B21 A21 J193 B1	J185 B2 C5 C4 C3 J12 D22 C22 A22 J193 B22	J185 B3 A2 A1 B4 J12 D23 C23 B23 A23 J193	J185 A5 A4 A3 J12 D24 C24 B24 A24	J186 B1 C2 C1 B5 C25 C25 B25 A25 A25	J186 B2 C5 C4 C3 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2	J186 B3 A2 A1 B4 J12 D27 C27 B27 A27 J194	J186 A5 A4 A3 J12 D28 C28 B28 A28	J187 B1 C2 C1 B5 J12 D29 C29 B29 J195 B1	J187 B2 C5 C4 C3 B30 A30 J195 B2	J187 B3 A2 A1 B4 J12 D31 C31 B31 J195	J187 A5 A4 A3 J12 D32 C32 B32 A32	
J180 B1 C2 C1 B5 J12 D1 C1 B1 C1 B1 C1 C1 B1 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B1 C2 C2 C1 B1 C2 C2 C1 B1 C2 C2 C1 B1 C2 C2 C1 B1 C2 C2 C1 B1 C2 C2 C1 B1 C2 C1 B1 C2 C1 B1 C2 C1 B1 C2 C1 B5 C2 C1 B1 C2 C1 B1 C2 C1 B5 C2 C1 B1 C2 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1	J180 B2 C5 C4 C3 J12 D2 C2 B2 B2 A2 J188 B2 C5 C4	J180 B3	J180 A5 A4 A3 J12 D4 C4 B4 A4 J188 A5	J181 B1 C2 C1 B5 C5 B5 C5 B5 J189 B1 C2 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5	J181 B2 C5 C4 C3 C4 C3 D6 C6 C6 B6 A6 J189 B2 C5 C5	J181 B3 - A2 A1 B4 J12 D7 C7 B7 A7 J189 A2	J181 A5 A4 A3 J12 D8 C8 B8 A8 A8 J189 A5	J182 B1 C2 C1 B5 C1 B5 C9 B9 A9 C9 B9 A9 C9 B9 A9 C2 C1 C1 C1 B5 C1 B5 C2 C1 B5 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C2 C1 B5 C2 C2 C1 B5 C2 C1 B5 C2 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 D12 C1 C2 C1 D12 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1	J182 B2 C5 C4 C3 C3 C10 B10 A10 J190 B2 C5	J182 B3 A2 A1 B4 J12 D11 C11 B11 A11 J190 A2	J182 A5 A4 A3 J12 D12 C12 B12 A12 J190 A5	J183 B1 C2 C1 B5 J12 D13 C13 B13 A13 J191 B1 C2	$\begin{array}{c} \text{OI} \\ \text{J183} \\ \text{B2} \\ \text{C5} \\ \text{C4} \\ \text{C3} \\ \text{C14} \\ \text{B14} \\ \text{A14} \\ \text{C14} \\ $	UTPUTS 1 J183 B3 A2 A1 B4 J12 D15 C15 B15 A15 C15 B15 A15 DTPUTS 3 J191 A2 A1 B4 J183 B3 A2 A1 B4 A2 A1 B15 A1 A1 A2 A1 B15 A1 A2 A1 A1 A1 A2 A1 A1 A2 A1 A1 A1 A1 A1 A2 A1 A1 A1 A1 A1 A1 A1 A1 A1 A1	$\begin{array}{c c} J183 \\ A5 \\ A4 \\ A3 \\ J12 \\ D16 \\ C16 \\ B16 \\ A16 \\ \end{array}$ $\begin{array}{c} J12 \\ B16 \\ A16 \\ J191 \\ A5 \\ \end{array}$	NNEL #2 J184 B1 C2 C1 B5 J12 D17 C17 B17 A17 A17 C17 B17 A17 C17 B17 C17 C17 C17 C17 C17 C17 C17 C	2 J184 B2 C5 C4 C3 D12 D18 C18 B18 A18 H2 J192 B2 C5 C5 C18 B192 C5 C18 C18 C18 C18 C18 C18 C18 C18	J184 B3 A2 A1 B4 J12 D19 C19 B19 A19 A19 J192 J192	J184 A5 A4 A3 J12 D20 C20 B20 A20 J192 A5	J185 B1 C2 C1 B5 J12 D21 C21 B21 A21 A21 C2	J185 E2 C5 C4 C3 J12 D22 C22 A22 J193 E2 C5	J185 B3 A2 A1 B4 J12 D23 C23 B23 A23 J193 A2	J185 A5 A4 A3 J12 D24 C24 B24 A24 J193 A5	J186 B1 C2 C1 B5 J12 D25 C25 B25 A25 A25 J194 B1 C2	J186 B2 C5 C4 C3 J12 D26 C26 B26 A26 J194 B2 C5	J186 B3 A2 A1 B4 J12 D27 C27 B27 A27 J194 A2	J186 A5 A4 A3 J12 D28 C28 B28 A28 J194 A5	J187 B1 C2 C1 B5 J12 D29 E29 B29 J195 B1 C2	J187 B2 C5 C4 C3 J12 D30 C30 B30 A30 J195 B2 C5	J187 B3 A2 A1 B4 J12 D31 C31 B31 J195 A2	J187 A5 A4 A3 J12 D32 C32 B32 A32 J195 A5]
J180 B1 C2 C1 B5 J12 D1 C1 B1 C1 B1 C1 C1 B1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1	J180 B2 C5 C4 C3 J12 D2 C2 B2 A2 J188 B2 C5 C4 J188 B2 C5 C4	J180 B3 A1 B4 J12 D3 C3 B3 J188 J188 A2 A1	J180 A5 A4 A3 J12 D4 C4 B4 A4 A4 J188 A5 A4	J181 B1 C2 C1 B5 J12 D5 C5 B5 S J189 B1 C2 C1 C1	$ \begin{array}{c} J181\\B2\\C5\\C4\\C3\\C3\\D6\\C6\\B6\\A6\\C6\\C6\\C6\\C6\\C6\\C6\\C6\\C6\\C6\\C6\\C6\\C6\\C6$	J181 B3 A2 A1 B4 J12 D7 C7 B7 A7 J189 A2 A1	J181 A5 A4 A3 J12 D8 C8 B8 A8 A8 J189 A5 A4	J182 B1 C2 C1 B5 J12 D9 C9 B9 A9 J190 B1 C2 C1 C1	J182 B2 C5 C4 C3 J12 D10 C10 B10 A10 J190 B2 C5 C4	J182 B3 A2 A1 B4 J12 D11 C11 B11 A11 J190 A2 A1	J182 A5 A4 A3 J12 D12 C12 B12 A12 J190 A5 A4	J183 B1 C2 C1 B5 J12 D13 C13 B13 A13 J191 B1 C2 C1 C1	$\begin{array}{c} \text{OI} \\ \text{J183} \\ \text{B2} \\ \text{c5} \\ \text{c4} \\ \text{c3} \\ \text{c14} \\ \text{c16} \\ \text{c16} \\ \text{c2} \\ \text{c3} \\ \text{c4} \\ \text{c1} \\ \text{c1} \\ \text{c1} \\ \text{c1} \\ \text{c1} \\ \text{c2} \\ \text{c2} \\ \text{c2} \\ \text{c3} \\ \text{c2} \\ \text{c3} \\ \text{c4} \\ \text{c1} \\ \text{c1} \\ \text{c2} \\ \text{c5} \\ \text{c4} \\ \text{c4} \\ \text{c4} \\ \text{c6} $	UTPUTS 1 J183 B3 A2 A1 B4 J12 D15 C15 B15 C15 B15 A15 UTPUTS 3 J191 A2 A1 A2 A1 B4 B4 A1 B4 B4 A1 B4 B4 B4 B4 B4 B4 B4 B4 B4 B4	J183 A5 A4 A3 J12 D16 C16 B16 A16 B16 A16 J191 A5 A4	NNEL #2 J184 B1 C2 C1 B5 J12 D17 C17 B17 A17 ANNEL = J192 B1 C2 C1	2 J184 B2 C5 C4 C3 D18 C18 B18 A18 H2 J192 B2 C5 C4 J12 D18 C18 C18 C18 C18 C18 C18 C18 C	J184 B3 A2 A1 B4 J12 D19 C19 B19 A19 J192 A2 A1	J184 A5 A4 A3 J12 D20 C20 B20 A20 J192 A5 A4	J185 B1 C2 C1 B5 J12 D21 C21 B21 A21 A21 C2 C1 J193 B1 C2 C1 C1 C1 C2 C1 C1 C1 C2 C1 C1 C1 C2 C1 C1 C2 C1 C1 C2 C1 C1 C2 C1 C1 C2 C1 C1 C2 C1 C1 C2 C1 C1 C2 C1 C1 C2 C1 C1 C2 C1 C1 C2 C1 C1 C2 C1 C1 C2 C1 C1 C2 C1 C1 C2 C1 C1 C2 C1 C2 C1 C2 C1 C2 C1 C2 C1 C2 C1 C2 C1 C2 C1 C2 C1 C2 C1 C2 C1 C2 C2 C1 C2 C2 C1 C2 C2 C1 C2 C2 C2 C1 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2	J185 B2 C5 C4 C3 J12 D22 C22 A22 J193 B2 C5 C4	J185 B3 A2 A1 B4 J12 D23 C23 B23 A23 J193 A2 A1	J185 A5 A4 A3 J12 D24 C24 B24 A24 J193 A5 A4	J186 B1 C2 C1 B5 J12 D25 C25 B25 A25 A25 J194 B1 C2 C1	J186 B2 C5 C4 C3 C26 B26 A26 A26 J194 B2 C5 C4 C3 C4 C26 C26 C26 C26 C26 C26 C26 C26 C26 C26	J186 B3 A2 A1 B4 J12 D27 C27 B27 A27 J194 A2 A1	J186 A5 A4 A3 J12 D28 C28 B28 A28 J194 A5 A4	J187 B1 C2 C1 B5 J12 D29 C29 B29 J195 B1 C2 C1 C1	J187 B2 C5 C4 C3 J12 D30 C30 B30 A30 J195 B2 C5 C4	J187 B3 A2 A1 B4 J12 D31 C31 B31 J195 A2 A1	J187 A5 A4 A3 J12 D32 C32 B32 A32 J195 A5 A4]
J180 B1 C2 C1 B5 J12 D1 C1 B1 C1 B1 C1 B1 C1 B1 C1 B1 C1 B1 C1 B1 C1 B1 C1 B1 C2 C1 B1 C2 C1 B5 C1 B1 C2 C1 B1 C2 C1 B1 C2 C1 B1 C2 C1 B1 C2 C1 B1 C2 C1 B1 C2 C1 B1 C2 C1 B1 C2 C1 B1 C2 C1 B5 C1 C1 B1 C2 C1 B1 C1 C1 B1 C1 C1 B1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1	J180 B2 C5 C4 C3 J12 D2 C2 B2 A2 J188 B2 C5 C4 C3 C3 C4 C3 C5 C4 C3 C5 C4 C3 C5 C3 C5 C5 C4 C5 C5 C3 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5	J180 B3 A2 A1 B4 J12 D3 C3 B3 J188 A2 A1 B4	J180 A5 A4 A3 J12 D4 C4 B4 A4 A4 A3 J188 A5 A4 A3	J181 B1 C2 C1 B5 J12 D5 C5 B5 J189 B1 C2 C1 B5 C1 B5	J181 B2 C5 C4 C3 J12 D6 C6 B6 A6 B2 C5 C4 C3 C5 C4 C6 C6 C6 C6 C6 C6 C6 C6 C6 C6	J181 B3 A2 A1 B4 J12 D7 C7 B7 A7 J189 A2 A1 B4	J181 A5 A4 A3 J12 D8 C8 B8 A8 A8 A5 A4 A3	J182 B1 C2 C1 B5 J12 D9 C9 B9 A9 J190 B1 C2 C1 B5	J182 B2 C5 C4 C3 J12 D10 C10 B10 A10 J190 B2 C5 C4 C3 C3 C3 C4 C3 C4 C3 C4 C3 C5 C4 C3 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C5 C5 C5 C4 C5 C5 C5 C5 C5 C4 C5 C5 C5 C5 C5 C4 C5 C5 C5 C5 C4 C5 C5 C5 C4 C5 C5 C5 C5 C5 C4 C5 C5 C1 C5 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1	J182 B3 A2 A1 B4 J12 D11 C11 B11 A11 J190 A2 A1 B4	J182 A5 A4 A3 J12 D12 C12 B12 A12 J190 A5 A4 A3	J183 B1 C2 C1 B5 J12 D13 C13 B13 A13 J191 B1 C2 C1 B5	$\begin{array}{c} \text{OI} \\ \text{J183} \\ \text{B2} \\ \text{c5} \\ \text{c4} \\ \text{c3} \\ \text{c14} \\ \text{c15} \\ \text{c5} \\ \text{c4} \\ \text{c2} \\ \text{c3} \\ \text{c5} \\ \text{c4} \\ \text{c3} \\ \text{c6} \\ \text{c3} \\ \text{c6} \\ \text{c6}$	UTPUTS 1 J183 B3 A2 A1 B4 J12 D15 C15 B15 A15 UTPUTS 3 J191 A2 A1 B4	J183 A5 A4 A3 J12 D16 C16 B16 A16 A16 A16 A16 A16 A16 A16 A16 A16 A	NNEL #2 J184 B1 C2 C1 B5 D17 C17 B17 A17 ANNEL = J192 B1 C2 C1 B5 C1 D17 C17 B17 A17 C17 B17 B17 C17 B17 B17 C17 B17 B17 B17 B17 B17 B17 C17 B17 B17 B17 B17 B17 B17 B17 B	2 J184 B2 C5 C4 C3 B18 A18 C18 C18 C18 C18 C18 C18 C19 C192 C5 C4 C5 C4 C3 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C5 C4 C5 C5 C5 C4 C5 C5 C5 C4 C5 C5 C5 C4 C5 C5 C5 C4 C5 C5 C5 C4 C5 C5 C5 C5 C4 C5 C5 C5 C4 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5	J184 B3 A2 A1 B4 J12 D19 C19 B19 A19 J192 A2 A1 B4	J184 A5 A4 A3 J12 D20 E20 A20 J192 A5 A4 A3	J185 B1 C2 C1 B5 J12 D21 C21 C21 B21 A21 A21 C2 C1 B5 C2 C1 B5 B1	J185 B2 C5 C4 C3 J12 D22 C22 B22 A22 J193 B2 C5 C4 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3	J185 B3 A2 A1 B4 J12 D23 C23 B23 A23 J193 A2 A1 B4	J185 A5 A4 A3 J12 D24 C24 B24 A24 A24 J193 A5 A4 A3	J186 B1 C2 C1 B5 C25 B25 A25 A25 C1 B5	$ \begin{array}{c} J186 \\ B2 \\ C5 \\ C4 \\ C3 \\ \hline C26 \\ B26 \\ A26 \\ \hline S2 \\ C5 \\ C4 \\ C3 \\ \hline C4 \\ C3 \\ \hline \end{array} $	J186 B3 A2 A1 B4 D27 C27 B27 A27 J194 A2 A1 B4 B4	J186 A5 A4 A3 J12 D28 C28 B28 A28 J194 A5 A4 A3	J187 B1 C2 C1 B5 J12 D29 C29 B29 J195 B1 C2 C1 B5	J187 B2 C5 C4 C3 B30 A30 J12 D30 C30 B30 A30 J195 B2 C5 C4 C3 C4 C3 C3 C5 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C5 C4 C5 C4 C5 C5 C4 C5 C5 C4 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5	J187 B3 A2 A1 B4 J12 D31 C31 B31 J195 A2 A1 B4	J187 A5 A4 A3 J12 D32 C32 B32 A32 A32 J195 A5 A4 A3]
J180 B1 C2 C1 B5 J12 D1 C1 C1 B1 C1 C1 B1 C1 C1 B1 C1 C1 C1 C1 C1 B1 C2 C1 B5 C1 C1 B5 C1 C1 B5 C1 C1 B5 C1 C1 B1 C2 C1 B5 C1 C1 B1 C2 C1 B5 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1	J180 B2 C5 C4 C3 J12 D2 C2 B2 B2 A2 J188 B2 C5 C4 C3 C3 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C5 C5 C4 C5 C5 C4 C5 C5 C5 C5 C5 C4 C5 C5 C5 C5 C5 C5 C5 C5 C4 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5	J180 B3	J180 A5 A4 A3 J12 D4 C4 B4 A4 A3 J188 A5 A4 A3	J181 B1 C2 C1 B5 C5 B5 C5 B5 C5 B5 C1 B5 C1 B5 C1 B5	J181 B2 C5 C4 C3 J12 D6 C6 B6 A6 J189 B2 C5 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C3 C5 C5 C4 C3 C5 C5 C4 C3 C5 C5 C4 C5 C4 C5 C5 C4 C3 C5 C5 C4 C5 C5 C4 C3 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C5 C4 C5 C5 C5 C4 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5	J181 B3 - A2 A1 B4 J12 D7 C7 B7 A7 J189 A2 A1 B4 B4	J181 A5 A4 A3 J12 D8 C8 B8 A8 A8 J189 A5 A4 A3	J182 B1 C2 C1 B5 C1 B5 C9 B9 A9 C9 B9 A9 C9 B9 A9 C9 B9 C9 B9 C9 B9 C9 B9 C9 B9 C9 C9 B9 C9 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1	J182 B2 C5 C4 C3 C3 C10 B10 A10 J190 B2 C5 C4 C3 C3 C4 C3 C3 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C10 C10 C10 C10 C10 C10 C10 C10 C10 C10	J182 B3 A2 A1 B4 J12 D11 C11 B11 A11 J190 A2 A1 B4	J182 A5 A4 A3 J12 D12 C12 B12 A12 J190 A5 A4 A3	J183 B1 C2 C1 B5 J12 D13 C13 B13 A13 C13 B13 A13 C1 B1 B1 C2 C1 B5 C1 B5	OT $J183$ B2 C5 C4 C3 J12 D14 C14 B14 A14 J191 B2 C5 C5 C4 C3 C191 C5 C5 C4 C191 C191 C5 C5 C4 C191 C190	UTPUTS 1 J183 B3 A2 A1 B4 J12 D15 C15 B15 A15 C15 B15 A15 C15 B15 A15 C15 B15 A15 C15 B15 A15 C15 B15 A1 B4 D12 D12 D12 D12 D12 D12 D12 D12	J183 A5 A4 A3 J12 D16 C16 B16 A16 B16 A16 J191 A5 A4 A3	NNEL #2 J184 B1 C2 C1 B5 J12 D17 C17 B17 A17 A17 C2 C1 B1 C2 C1 B5 B1 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 C1 C1 C2 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1	2 J184 B2 C5 C4 C3 D12 D18 C18 B18 A18 H2 J192 B2 C5 C4 C3 C18 C18 C18 C18 C18 C18 C18 C18	J184 B3 A2 A1 B4 C19 B19 A19 A19 A19 J192 A1 B4 A1 B4	J184 A5 A4 A3 J12 D20 C20 B20 A20 A20 J192 A5 A4 A3	J185 B1 C2 C1 B5 J12 D21 C21 B21 A21 A21 C2 C1 B5 C2 C2 C1 C2 C1 C2 C1 C2 C1 C2 C1 C2 C2 C1 C2 C1 C2 C2 C1 B5 C2 C2 C1 C2 C1 C2 C2 C1 C2 C2 C1 C2 C1 C2 C1 C2 C1 C2 C2 C1 C2 C2 C1 C2 C1 C2 C1 C2 C1 C2 C1 C2 C1 C2 C1 C2 C1 C2 C1 C2 C1 C2 C1 C2 C1 C2 C1 C2 C1 C2 C1 C2 C2 C1 C1 C2 C1 C1 C1 C2 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1	J185 E2 C5 C4 C3 B22 C22 A22 A22 J193 E2 C5 C4 C3 C3	J185 B3 A2 A1 B4 J12 D23 C23 B23 A23 A23 J193 A2 A1 B4	J185 A5 A4 A3 J12 D24 C24 B24 A24 J193 A5 A4 A3	J186 B1 C2 C1 B5 J12 D25 C25 B25 A25 A25 J194 B1 C2 C1 B5	J186 B2 C5 C4 C3 J12 D26 C26 B26 A26 B26 A26 C5 C4 C3 C3	J186 B3 A2 A1 B4 J12 D27 C27 B27 A27 J194 A2 A1 B4	J186 A5 A4 A3 J12 D28 C28 B28 A28 J194 A5 A4 A3	J187 B1 C2 C1 B5 J12 D29 C29 B29 B29 C29 B29 C29 B29 C29 B29 C29 B29 C29 B29	J187 B2 C5 C4 C3 J12 D30 C30 B30 A30 A30 J195 B2 C5 C4 C3 C3 C3 C5 C5 C4 C3 C5 C5 C4 C3 C5 C3 C5 C4 C3 C5 C3 C3 C5 C3 C5 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3	J187 B3 A2 A1 B4 J12 D31 C31 B31 J195 A2 A1 B4 B4	J187 A5 A4 A3 J12 D32 C32 B32 A32 J195 A5 A4 A3]
J180 B1 C2 C1 B5 J12 D1 C1 B1 C1 B1 C1 B1 C1 B1 C1 B1 C1 D1 C1 C1 D1 C1 D1 C1 D1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1	$ \begin{array}{c} J180 \\ B2 \\ C5 \\ C4 \\ C3 \\ J12 \\ D2 \\ C2 \\ B2 \\ A2 \\ J188 \\ B2 \\ C5 \\ C4 \\ C3 \\ J16 \\ D2 \\ J16 \\ J1$	J180 B3 A1 B4 J12 D3 C3 B3 J188 A2 A1 B4 J188 A2 A1 B4 J16 D3	J180 A5 A4 A3 J12 D4 C4 B4 A4 A4 A4 A3 J188 A5 A4 A3 J16 D4	J181 B1 C2 C1 B5 J12 D5 C5 B5 C5 B5 C5 B5 C1 B5 C1 B5 C1 B5 C1 B5 C1 D5 C5 C5 D5 C1 D1 D1 D1 D1 D1 D1 D1 D1 D1 D1 D1 D1 D1	J181 B2 C5 C4 C3 J12 D6 C6 B6 A6 C5 C5 C4 C5 C5 C4 C5 C6 C7 C6 C7 C6 C7 C6 C7 C6 C7 C6 C7 C7 C7 C6 C7	J181 B3 A2 A1 B4 B4 J12 D7 C7 B7 A7 C7 J189 A2 A1 B4 J16 D7	J181 A5 A4 A3 J12 D8 C8 B8 B8 A8 A8 A5 A4 A3 J16 D8 C8	J182 B1 C2 C1 B5 J12 D9 C9 B9 C9 B9 C9 B9 C9 B9 C9 B9 C9 C9 C9 B9 C9 C9 C9 C9 C9 C9 C9 C9 C9 C9 C9 C9 C9	J182 B2 C5 C4 C3 J12 D10 C10 B10 A10 J190 B2 C5 C4 C3 J16 D10 D10	J182 B3 A2 A1 B4 J12 D11 C11 B11 A11 J190 A2 A1 B4 J16 D11	J182 A5 A4 A3 J12 D12 C12 B12 A12 J190 A5 A4 A3 J16 D12	J183 B1 C2 C1 B5 J12 D13 C13 B13 A13 C13 B13 A13 C13 B13 C13 B13 C13 B13 C13 B13 A13 C13 D191 B1 C2 C1 D191 B1 D1 D191 B1 D1 D191 B1 D1 D191 D1 D191 D10 D191 D10 D191 D10 D10 D10 D10 D10 D10 D10 D10 D10 D1	OT J183 B2 C5 C4 • C3 • C3 • C3 • C3 • C3 • C4 • C14 • B14 A14 • C14 • B14 A14 • C14 •	UTPUTS 1 J183 B3 A2 A1 B4 J12 D15 C15 B15 C15 B15 J191 A2 A1 B4 J12 D15 C15 B15 A1 J12 D15 C15 B15 J191 A2 J191 A2 A1 B4 J12 D15 C15 B15 J191 A1 D12 D15 C15 D19 A1 D19 A1 D12 D15 C15 D19 A1 D19 A1 D19 A1 D19 A1 D19 A1 D19 A1 D19 A1 D19 A1 D19 A1 D19 A1 D19 A1 D19 A1 D19 A1 D19 A1 D19 A1 D19 A1 A1 D19 A1 D19 A1 A1 D19 A1 A1 A1 A1 A1 A1 A1 A1 A1 A1	$ \begin{array}{c} J183 \\ A5 \\ A4 \\ A3 \\ J12 \\ D16 \\ C16 \\ B16 \\ A16 \\ \end{array} $ $ \begin{array}{c} J12 \\ D16 \\ C16 \\ A16 \\ J12 \\ J12 \\ D16 \\ J12 \\ J12 \\ D16 \\ J12 \\ J12$	NNEL #2 J184 B1 C2 C1 B5 J12 D17 C17 B17 A17 C17 B17 A17 C2 C1 B5 C2 C1 B5 C2 C1 D17 D17 C17 D17 C17 D17 C17 D17 C17 D17 D17 C17 D17 C17 D17 D17 C17 D17 D17 D17 D17 D17 D17 D17 D	2 J184 B2 C5 C4 C3 B18 A18 B18 A18 B192 B2 C5 C4 C18 B18 A18 B2 C18 C18 C18 C18 C18 C18 C18 C18	J184 B3 A2 A1 B4 J12 D19 C19 B19 A19 C19 B19 A19 J192 A2 A1 B4 J16 D19	J184 A5 A4 A3 J12 D20 C20 B20 A20 A20 J192 A5 A4 A3 J16 D20	J185 B1 C2 C1 B5 J12 D21 C21 B21 C21 B21 A21 C2 C1 B5 C1 B5 C1 B5 J16 D21	J185 B2 C5 C4 C3 J12 D22 C22 A22 A22 J193 B2 C5 C4 C3 C3 C3 C3 C5 C4 C3 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C5 C4 C5 C5 C5 C4 C5 C5 C5 C5 C4 C5 C5 C5 C4 C5 C5 C5 C4 C5 C5 C4 C5 C5 C5 C4 C5 C5 C5 C4 C5 C5 C5 C4 C5 C5 C5 C4 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5	J185 B3 A2 A1 B4 J12 D23 C23 B23 A23 A2 J193 A2 A1 B4 J16 D23	J185 A5 A4 A3 J12 D24 C24 B24 A24 B24 A24 J193 A5 A4 A3 J16 D24 J16 D24	J186 B1 C2 C1 B5 J12 D25 C25 B25 A25 A25 A25 C1 B5 J194 B1 C2 C1 B5 J16 D25	$ \begin{array}{c} J186 \\ B2 \\ C5 \\ C4 \\ C3 \\ \hline J12 \\ D26 \\ C26 \\ B26 \\ A26 \\ \hline C3 \\ \hline C4 \\ C3 \\ \hline J194 \\ B2 \\ C5 \\ C4 \\ C3 \\ \hline J16 \\ D26 \\ \hline $	J186 B3 A2 A1 B4 J12 D27 C27 B27 A27 J194 A2 A1 B4 J16 D27	J186 A5 A4 A3 J12 D28 C28 B28 A28 B28 A28 A28 J194 A5 A4 A3 J16 D28	J187 B1 C2 C1 B5 J12 D29 C29 B29 C29 B29 C29 B29 C29 C29 C29 C29 C29 C29 C29 C29 C29 C	J187 B2 C5 C4 C3 J12 D30 C30 B30 A30 A30 J195 B2 C5 C4 C3 C3 C3 C3 C5 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C3 C5 C3 C5 C5 C4 C3 C5 C5 C5 C4 C3 C5 C3 C5 C5 C4 C3 C5 C3 C5 C3 C3 C5 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3	J187 B3 A2 A1 B4 J12 D31 C31 B31 J195 A2 A1 B4 J195 A2 A1 B4 J16 D31	J187 A5 A4 A3 J12 D32 C32 B32 A32 A32 J195 A5 A4 A3 J16 D32]
J180 B1 C2 C1 B5 J12 D1 C1 B1 B1 C2 C1 B1 C1 B1 C1 C1 B1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1	$ \begin{array}{c} J180 \\ B2 \\ C5 \\ C4 \\ C3 \\ J12 \\ D2 \\ C2 \\ B2 \\ A2 \\ \end{array} $ $J188 \\ B2 \\ C5 \\ C4 \\ C3 \\ J16 \\ D2 \\ C2 \\ C2 \\ J16 \\ D2 \\ C2 \\ C2 \\ O2 \\ C2 \\ O2 \\ O2 \\ C2 \\ O2 \\ C2 \\ O2 \\ $	J180 B3 A2 A1 B4 J12 D3 C3 B3 J188 A2 A1 B4 J16 D3 C3 C3 C3	J180 A5 A4 A3 J12 D4 C4 B4 A4 A4 A3 J188 A5 A4 A3 J16 D4 C4 O4 C4	J181 B1 C2 C1 B5 J12 D5 C5 B5 J189 B1 C2 C1 B5 C1 B5 J16 D5 C5	J181 B2 C5 C4 C3 J12 D6 C6 B6 A6 B6 A6 C5 C4 C3 C4 C3 C5 C4 C5 C4 C6 C6 C6 C6 C6 C6 C6 C6 C6 C6	J181 B3 A2 A1 B4 J12 D7 C7 B7 A7 C7 B7 A7 J189 A2 A1 B4 J16 D7 C7 C7	J181 A5 A4 A3 J12 D8 C8 B8 A8 A8 A8 A3 A5 A4 A3 J16 D8 C8 C8	J182 B1 C2 C1 B5 J12 D9 C9 B9 A9 J190 B1 C2 C1 B5 C1 B5 C1 B5 C1 B5 C2 C1 D9 C9 C9 C9 C9 C9 C1 C9 C9 C9 C1 C9 C9 C9 C1 C1 C9 C9 C9 C1 C1 C9 C9 C1 C9 C9 C1 C1 C9 C9 C1 C1 C9 C9 C1 C1 C9 C9 C1 C1 C9 C9 C1 C1 C9 C9 C1 C1 C9 C9 C1 C1 C9 C9 C1 C1 C9 C1 C1 C9 C9 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1	J182 B2 C5 C4 C3 J12 D10 C10 B10 A10 B2 C5 C4 C3 C3 C3 J16 D10 C10 C10	J182 B3 A2 A1 B4 J12 D11 C11 B11 A11 J190 A2 A1 B4 J16 D11 C11	J182 A5 A4 A3 J12 D12 C12 A12 A12 A12 A12 A12 A12 A12 A12 A12 A	J183 B1 C2 C1 B5 J12 D13 C13 B13 A13 A13 C13 J191 B1 C2 C1 B5 J16 D13 C13	$\begin{array}{c} \text{OI} \\ \text{J183} \\ \text{B2} \\ \text{c5} \\ \text{c4} \\ \text{c3} \\ \text{c3} \\ \text{b14} \\ \text{c14} \\ \text{c14} \\ \text{c14} \\ \text{c5} \\ \text{c5} \\ \text{c4} \\ \text{c3} \\ \text{c3} \\ \text{c4} \\ \text{c14} $	JTPUTS 1 J183 B3 A2 A1 B4 J12 D15 C15 B15 A15 JTPUTS 3 J191 A2 A1 B4 J12 D15 C15 C15 C15 C15 C15 C15 C15 C	J183 A5 A4 A3 A5 D16 C16 B16 A16 B16 A16 B16 A16 C16 C16 C16 C16 C16 C16 C16 C16 C16 C	NNEL #2 J184 E1 C2 C1 B5 - J12 D17 C17 E17 A17 A17 - C17 E1 C2 C17 E17 C17 C17 C17 C17 C17 C17 C17 C	2 J184 B2 C5 C4 C3 B18 A18 #2 J192 B2 C5 C4 C3 C5 C4 C18 C5 C18 C18 C18 C5 C18 C18 C5 C18 C18 C5 C18 C18 C5 C18 C18 C5 C18 C18 C5 C18 C18 C18 C18 C18 C18 C18 C18	J184 B3 A2 A1 B4 J12 D19 C19 B19 A19 J192 A2 A1 B4 J16 D19 C19 C19	J184 A5 A4 A3 J12 D20 C20 E20 A20 V J192 A5 A4 A3 J16 D20 C20 C20	J185 B1 C2 C1 B5 J12 D21 C2 C1 B21 A21 A21 C1 B5 C1 B5 J16 D21 C2 C1 D21 C2 C1 D21 C2 C2 C2 C1 D21 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2	J185 B2 C5 C4 C3 J12 D22 C22 B22 A22 S C5 C4 C3 C3 J16 D22 C22 C22 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3	J185 B3 A2 A1 B4 J12 D23 C23 B23 A23 A2 A1 B4 A1 B4 A1 B4 J16 D23 C23	J185 A5 A4 A3 J12 D24 C24 B24 A24 A3 A5 A4 A3 J193 A5 A4 A3 J16 D24 C24 C24	J186 B1 C2 C1 B5 C25 B25 A25 A25 C1 B5 C1 B5 C1 B5 C1 B5 C25 C25 C25 C25 C25 C25 C25 C25 C25 C2	$ \begin{array}{c} J186 \\ B2 \\ C5 \\ C4 \\ C3 \\ \hline J12 \\ D26 \\ C26 \\ B26 \\ A26 \\ \hline S2 \\ C3 \\ \hline J194 \\ B2 \\ C5 \\ C4 \\ C3 \\ \hline J16 \\ D26 \\ C26 \\ \hline C26 \\ \hline J16 \\ D26 \\ C26 \\ \hline C26 \\ \hline $	J186 B3 A2 A1 B4 B4 C27 C27 B27 A27 J194 A2 A1 B4 B4 J16 D27 C27 C27	J186 A5 A4 A3 J12 D28 C28 B28 A28 A28 J194 A5 A4 A3 J16 D28 C28 C28	J187 B1 C2 C1 B5 J12 D29 C29 B29 B29 C29 C29 C29 C1 B5 C1 B5 C1 B5 C1 D29 C29 C29 C29 C29 C29 C29 C29 C2 C1 C1 D29 C2 C1 C1 D29 C2 C2 C2 C1 D29 C2 C1 D29 C2 C1 D29 C2 C1 C1 D29 C2 C2 C1 D29 C2 C1 D29 C2 C1 D29 C2 C1 C1 D29 C2 C2 C1 D29 C2 C2 C1 C1 D29 C2 C2 C1 C1 D29 C2 C2 C1 D29 C2 C2 C1 D29 C2 C2 C1 C1 D29 C2 C2 C2 C1 D29 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C1 C1 C1 C1 C1 C1 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2	J187 B2 C5 C4 C3 J12 D30 C30 B30 A30 J195 B2 C5 C4 C3 C3 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C3 C5 C5 C4 C3 C5 C5 C4 C3 C5 C5 C4 C3 C5 C5 C5 C4 C5 C5 C5 C5 C4 C3 C5 C5 C4 C3 C5 C5 C3 C5 C5 C4 C3 C5 C3 C5 C3 C5 C3 C5 C3 C5 C3 C5 C3 C5 C3 C5 C3 C5 C3 C5 C3 C5 C3 C5 C3 C4 C3 C5 C3 C5 C3 C4 C3 C5 C3 C5 C5 C4 C3 C5 C3 C5 C4 C3 C5 C5 C5 C5 C4 C3 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5	J187 B3 A2 A1 B4 J12 D31 C31 B31 J195 A2 A1 B4 B4 J16 D31 C31 C31	J187 A5 A4 A3 J12 D32 C32 B32 A32 A32 J195 A5 A4 A3 J16 D32 C32 C32]
J180 B1 C2 C1 B5 J12 D1 C1 B1 C1 C1 B5 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1	J180 B2 C5 C4 C3 J12 D2 C2 B2 B2 A2 S C5 C4 C3 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2	J180 B3 A2 A1 B4 B4 C3 B3 C3 B3 J188 A2 A1 B4 B4 C3 B3 C3 B3 C3 B3 C3 B3 C3 B3 C3 B3 C3 B3 C3 B3 C3 B3 C3 B3 C3 B3 C3 C3 B3 C3 C3 B3 C3 C3 B3 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3	J180 A5 A4 A3 J12 D4 C4 B4 A4 A4 A3 J188 A5 A4 A3 J16 D4 C4 B4 A3 A3 J16 D4 C4 C4 C4 A3 A3 A3 A3 A3 A3 A3 A3 A3 A3 A3 A3 C C4 C4 A3 C4 C4 C4 C4 C4 C4 C4 C4 C4 C4 C4 C4 C4	J181 B1 C2 C1 B5 C5 B5 C5 B5 C1 B5 C1 B5 C5 C5 C5 B5 C5 B5 C5 B5 C5 B5	J181 B2 C5 C4 C3 J12 D6 C6 B6 A6 B2 C5 C4 J189 B2 C5 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C5 C4 C3 C5 C4 C5 C5 C4 C5 C4 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C5 C4 C5 C5 C5 C4 C5 C5 C5 C5 C5 C4 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5	J181 B3 A2 A1 B4 J12 D7 C7 B7 A7 - J189 A2 A1 B4 B4 J16 D7 C7 B7 A7 -	J181 A5 A4 A3 J12 D8 C8 B8 A8 B8 A8 A3 A3 A3 A3 J16 D8 C8 C8 A4 A3 A3 A3 A3 A3 A3 A3 A3 A3 A3 A3 A3 A3	J182 B1 C2 C1 B5 J12 D9 C9 B9 A9 C9 B9 A9 C2 C1 B5 C2 C1 B5 C2 C1 B9 C9 B9 A9 C9 B9 A9 C9 B9 C9 C9 B9 C9 C9 C9 C9 C9 C9 C9 C9 C9 C9 C9 C9 C9	J182 B2 C5 C4 C3 D10 C10 B10 A10 B10 A10 B10 C5 C5 C4 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3	J182 B3 A2 A1 B4 J12 D11 C11 B11 A11 J190 A2 A1 B4 J16 D11 C11 B11 C11 B11 C11 B11 C11 B12 C11 B12 C11 B12 C11 B12 C11 B12 C11 C11 C11 C11 C11 C11 C11 C11 C11 C	J182 A5 A4 A3 J12 D12- C12 B12 A12 J190 A5 A4 A3 J16 D12- C12 C12 C12 B12 A12	J183 B1 C2 C1 B5 C1 D13 C13 B13 A13 C13 B13 A13 C13 B13 C13 B13 C13 B13 C13 B13 C13 B13 C13 B13 C13 B13 C13 C1 B1 C1 C1 D13 C1 C1 C1 D13 C1 C1 D13 C1 C1 D13 C1 C1 D13 C1 C1 D13 C1 C1 D13 C1 C1 D13 C1 C1 D13 C1 C1 D13 C1 C1 D13 C1 C1 D13 C1 C1 D13 C1 C1 D13 C1 C1 C1 D13 C1 C1 C1 D13 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1	$\begin{array}{c} \text{OI} \\ \text{J183} \\ \text{B2} \\ \text{c5} \\ \text{c4} \\ \text{c3} \\ \text{c14} \\ \text{c14} \\ \text{c14} \\ \text{c14} \\ \text{c14} \\ \text{c5} \\ \text{c5} \\ \text{c5} \\ \text{c4} \\ \text{c6} \\ \text{c14} \\ c14$	JTPUTS 1 J183 B3 A2 A1 B4 J12 D15 C15 B15 A15 JTPUTS 3 J191 A2 A1 B4 J16 D15 C15 B15 A1 B4 J16 D15 C15 B15 A1 B4 J17 B15 A1 A1 A1 A1 A1 A1 A1 A1 A1 A1	J183 A5 A4 A3 J12 D16 C16 B16 A16 B16 A16 J191 A5 A4 A3 J16 D16 C16 D16 C16 D16 C16 D16 C16 D16 C16 D16 C16 D191	NNEL #2 J184 B1 C2 C1 B5 J12 D17 C17 B17 A17 C17 B17 C17 B17 C17 B17 C17 B17 C17 B17 C17 C17 B17 C17 C17 B17 C17 C17 C17 C17 C17 C17 C17 C	2 J184 B2 C5 C4 C3 E18 A18 F18 A18 F192 C5 C4 E18 A18 F192 C5 C4 C3 C5 C4 C18 C18 C18 C5 C18 C5 C18 C18 C5 C18 C192 C5 C18 C192 C5 C18 C192 C5 C192	J184 B3 A2 A1 B4 J12 D19 C19 B19 A19 A19 J192 A19 B4 B4 J16 D19 C19 B19 C19 B4	J184 A5 A4 A3 J12 D20 C20 E20 A20 J192 A5 A4 A3 J16 D20 C20 E20 E20	J185 B1 C2 C1 B5 J12 D21 C21 B21 A21 A21 C2 C1 B5 J16 D21 C21 C1 B5 J16 D21 C21 C1 B5 C2 C1 C2 C1 B5 C2 C2 C1 B5 C2 C2 C1 B21 C2 C2 C1 B21 C2 C2 C1 B21 C2 C2 C1 C2 C2 C1 B21 C2 C2 C1 B21 C2 C2 C2 C1 B21 C2 C2 C1 C2 C2 C1 B21 C2 C2 C1 C2 C2 C1 C2 C2 C1 C2 C2 C1 C2 C2 C1 C2 C2 C2 C1 C2 C2 C1 C2 C2 C2 C1 C2 C2 C1 C2 C2 C1 C2 C2 C1 C2 C2 C1 C2 C2 C1 C2 C2 C1 C2 C2 C1 C2 C2 C1 C2 C2 C1 C2 C1 C2 C1 C2 C1 C2 C2 C1 C2 C2 C1 C2 C2 C1 C2 C2 C1 C2 C2 C1 C2 C2 C1 C2 C2 C1 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2	J185 E2 C5 C4 C3 B22 C22 A22 A22 A22 C5 C4 C3 C3 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C5 C5 C4 C5 C5 C6 C3 C5 C5 C6 C5 C6 C5 C6 C5 C6 C5 C6 C7 C7 C5 C5 C7 C7 C7 C7 C7 C7 C7 C7 C7 C7 C7 C7 C7	J185 B3 A2 A1 B4 J12 D23 C23 B23 A23 J193 A2 A1 B4 B4 B4 B4 B4 B4 B4 B4 B4 B4 B4 B4 B4	J185 A5 A4 A3 J12 D24 C24 B24 A24 A24 J193 A5 A4 A3 J16 D24 C24 C24 B24 A24 B24 A24 B24 A24 B24 A3 A3 A3 A3 A3 A3 A3 A3 A3 A3 A3 A3 A3	J186 B1 C2 C1 B5 C25 B25 A25 A25 A25 C1 B5 C25 C25 C25 C25 C25 C25 C25 C25 C25 C2	$ \begin{array}{c} J186 \\ B2 \\ C5 \\ C4 \\ C3 \\ J12 \\ D26 \\ C26 \\ B26 \\ A26 \\ C3 \\ C3 \\ J16 \\ D26 \\ C26 \\ G3 \\ J16 \\ D26 \\ G3 \\ G3 \\ J16 \\ D26 \\ G3 \\ G$	J186 B3 A2 A1 B4 J12 D27 C27 B27 A27 J194 A2 A1 B4 J16 D27 C27 C27 C27 C27 D27 C27 C27 C27 C27 C27 C27 C27 C27 C27 C	J186 A5 A4 A3 J12 D28 C28 B28 A28 J194 A5 A4 A3 J16 D28 C28 B28 C28 B28	J187 B1 C2 C1 B5 J12 D29 C29 B29 C29 B1 C2 C1 B5 C1 B5 C2 C1 B5 C2 C1 B5 B1 C2 C2 C1 B5 C2 C1 D29 C29 B29 C29 B29 C29 C29 C29 C29 C29 C2 C1 C1 C1 C2 C1 C1 C2 C1 C1 C2 C1 C1 C2 C2 C1 C1 C2 C1 C1 C2 C2 C1 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2	J187 B2 C5 C4 C3 J12 D30 C30 B30 A30 A30 T195 B2 C5 C5 C4 C3 C3 C3 C3 C3 C3 C3 C3 C3 C5 C5 C4 C3 C5 C5 C4 C3 C5 C5 C4 C3 C5 C5 C4 C3 C5 C5 C4 C3 C5 C5 C4 C3 C5 C5 C3 C5 C3 C5 C3 C3 C5 C3 C5 C3 C3 C5 C3 C3 C5 C3 C3 C5 C3 C3 C5 C3 C3 C5 C3 C3 C5 C3 C3 C5 C3 C5 C3 C5 C5 C4 C3 C5 C3 C5 C5 C4 C3 C5 C4 C3 C5 C5 C4 C3 C5 C5 C4 C3 C5 C5 C4 C3 C5 C5 C4 C3 C5 C5 C4 C3 C5 C5 C4 C3 C5 C5 C4 C3 C5 C5 C5 C5 C5 C4 C3 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5	J187 B3 A2 A1 B4 J12 D31 C31 B31 J195 A2 A1 B4 J16 D31 C31 B31 C31 B31	J187 A5 A4 A3 J12 D32 C32 B32 A32 J195 A5 A4 A3 J16 D32 C32 C32 B32 A3 A3 A3 A3 A3 A3 A3 A3 A3 A3 A3 A3 A3]
J180 B1 C2 C1 B5 J12 D1 C1 B1 C1 B1 C1 B1 C1 B1 C1 B1 C1 B1 C1 B1 C1 C1 B1 C1 C1 B1 C1 C1 B1 C1 C1 C1 B1 C1 C1 C1 B1 C1 C1 C1 B1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1	J180 B2 C5 C4 C3 J12 D2 C2 B2 A2 J188 B2 C5 C4 C3 C5 C4 C3 C5 C4 C3 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C3 C3 C2 C2 C2 C2 C2 C3 C2 C2 C2 C3 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2	J180 B3 A2 A1 B4 J12 D3 C3 B3 J188 A2 A1 B4 J16 D3 C3 B3	J180 A5 A4 A3 J12 D4 C4 B4 A4 A3 J188 A5 A4 A3 J16 D4 C4 B4 A4	J181 B1 C2 C1 B5 C5 B5 C5 B5 C1 B5 C1 B5 C1 B5 C1 B5 C1 B5 C1 B5 C1 B5 C1 B5 C1 B5 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1	$ \begin{array}{c} J181 \\ B2 \\ C5 \\ C4 \\ C3 \\ \hline 0 \\ C6 \\ B6 \\ A6 \\ \end{array} $	J181 B3 A2 A1 B4 J12 D7 C7 B7 A7 J189 A2 A1 B4 J16 D7 C7 B7 C7 B7 A7 C7	J181 A5 A4 A3 J12 D8 C8 B8 A8 A5 A4 A3 J16 D8 C8 B8 A4 A3 J16 D8 C8 C8 A8	J182 B1 C2 C1 B5 J12 D9 B9 A9 C9 B9 A9 C1 B5 C1 B5 C1 B5 C1 B5 C1 B5 C1 D9 C9 B9 A9 C9 C9 B9 A9 C9 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 D12 C1 D12 C1 D12 C1 D12 C1 C1 B5 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1	J182 B2 C5 C4 C3 J12 D10 C10 B10 A10 J190 B2 C5 C4 C3 C3 C4 C3 C3 C4 C3 C4 C3 C5 C4 C3 C5 C4 C3 C5 C4 C10 B10 A10 C5 C5 C4 C10 C10 B10 A10 C10 C10 C10 C10 C10 C10 C10 C10 C10 C	J182 B3 A2 A1 B4 J12 D11 C11 B11 A11 J190 A2 A1 B4 J16 D11 C11 B11 B11 A11 C11 B11 A11 C11 B11 A1 C11 B11 A1 C11 B11 A1 A1 C11 C11 C11 C11 C11 C11 C11 C11	J182 A5 A4 A3 J12 D12 C12 B12 A12 J190 A5 A4 A3 J16 D12 C12 B12 A12	J183 B1 C2 C1 B5 J12 D13 C13 B13 A13 C13 B13 A13 C13 B5 C1 B5 C13 B13 C13 B13 A13 C13 B13 A13 C13 C13 B13 A13 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1	Ol J183 B2 C5 C4 C3 C4 C14 E14 A14 C14 E14 A14 C14 E14 C14 C14 C14 C14 C14 C14 C14 C14 C14 C	UTPUTS 1 J183 B3 A2 A1 B4 J12 D15 C15 B15 A1 J191 A2 A1 B4 J12 D15 C15 B15 C15 B15 C15 B15 C15 B15 C15 B15 C15 B15 C15 B15 C15 B15 C15 B15 C15 B15 C15 B15 C15 B15 C15 B15 C15 B15 C15 B15 C15 C15 C15 C15 C15 C15 C15 C	J183 A5 A4 A3 J12 D16 C16 B16 A16 B16 A3 A4 A3 J191 A5 A4 A3 J16 D16 C16 B16 A16	NNEL #2 J184 B1 C2 C1 B5 J12 D17 C17 B17 A17 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 C1 C1 C1 C1 C2 C1 C1 C1 C2 C1 C1 C1 C1 C2 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1	2 J184 B2 C5 C4 C3 D18 C18 B18 A18 B2 C18 B18 A18 C18 B18 C18 B18 A18 C18 C18 C18 C18 C18 C18 C18 C	J184 B3 A2 A1 B4 J12 D19 C19 B19 A19 J192 A2 A1 B4 J16 D19 C19 B19 A19 J16 D19 C19 B19 A19 -	J184 A5 A4 A3 J12 D20 C20 B20 A20 A20 J192 A5 A4 A3 J16 D20 C20 E20 A20	J185 B1 C2 C1 B5 J12 D21 C21 B21 A21 C2 C1 B5 C1 B5 C1 B5 C1 B5 C1 B5 C1 B5 C1 B5 C1 C1 C1 B21 C2 C1 B5 C1 C1 B5 C1 C1 B5 C1 C1 B5 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1	J185 E2 C5 C4 C3 J12 D22 C22 A22 J193 E2 C5 C4 C3 C3 C3 C3 C22 A22 A22 A22 C22 C22 C5 C4 C3 C5 C5 C4 C3 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C4 C5 C5 C5 C4 C5 C5 C5 C5 C5 C4 C5 C5 C5 C5 C5 C5 C5 C5 C5 C5	J185 B3 A2 A1 B4 J12 D23 C23 B23 A23 A23 J193 A2 A1 B4 J16 D23 C23 B23 A23 A2 A1 B4	J185 A5 A4 A3 J12 D24 C24 B24 A24 J193 A5 A4 A3 J16 D24 C24 E24 A24	J186 B1 C2 C1 B5 J12 D25 C25 B25 A25 A25 C1 B5 C1 B5 C2 C1 B5 C2 C1 B5 C2 C1 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2	$ \begin{array}{c} J186 \\ B2 \\ C5 \\ C4 \\ C3 \\ \hline J12 \\ D26 \\ C26 \\ B26 \\ A26 \\ \hline C3 \\ \hline J194 \\ B2 \\ C5 \\ C4 \\ C3 \\ \hline J16 \\ D26 \\ C26 \\ C26 \\ B26 \\ A26 \\ \hline J16 \\ D26 \\ C26 \\ C26 \\ C26 \\ C26 \\ C26 \\ C26 \\ C26 \\ C26 \\ C26 \\ C26 \\ C26 \\ C26 \\ C26 \\ C26 \\ C26 \\ C26 \\ C26 \\ C26 \\ $	J186 B3 A2 A1 B4 J12 D27 C27 B27 A27 J194 A2 A1 B4 J16 D27 C27 C27 B27 A27 A27	J186 A5 A4 A3 J12 D28 C28 B28 A28 A28 J194 A5 A4 A3 J16 D28 C28 B28 A28 C28 A28 A28 C28 C28 C28 C28 C28 C28 C28 C28 C28 C	J187 B1 C2 C1 B5 J12 D29 C29 B29 C29 B29 C29 C29 C29 C29 C29 C29 C29 C29 C29 C	J187 B2 C5 C4 C3 J12 D30 C30 B30 A30 J195 B2 C5 C4 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3 C3	J187 B3 A2 A1 B4 J12 D31 C31 B31 J195 A2 A1 B31 J195 A2 A1 B4 J195 A2 A1 B31 C31 B31	J187 A5 A4 A3 J12 D32 C32 B32 A32 A32 J195 A5 A4 A3 J16 D32 C32 B32 A32 C32 A32	

Schematic (Sheet 4 of 6) • Jaguar Audio Backplane • SC33-1322





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- <d18< td=""><td>S4 116 BOUTCODE1</td><td>D18</td><td></td><td></td><td>(D18</td></d18<>	S4 116 BOUTCODE1	D18			(D18
A19	2 15 BOUTCODE2	(A19	A19 [A19	(A19
<d20< td=""><td>3 14 BOUTCODE3</td><td>(D20</td><td>(D20</td><td>(D20</td><td>(D20</td></d20<>	3 14 BOUTCODE3	(D20	(D20	(D20	(D20
-(A21	4 13 BOUTCODE4	(A21	A21	A21	(A21
- <d22< td=""><td>5 12 BOUTCODE5</td><td></td><td></td><td></td><td>(D22</td></d22<>	5 12 BOUTCODE5				(D22
- <a23< td=""><td>6 11 BOUTCODE6</td><td>(A23</td><td>A23</td><td>A23</td><td>(A23</td></a23<>	6 11 BOUTCODE6	(A23	A23	A23	(A23
- <d24< td=""><td>7 10 BOUTCODE7</td><td>D24</td><td></td><td></td><td>(D24</td></d24<>	7 10 BOUTCODE7	D24			(D24
	- ⁸ ⁹				
	S6 DI UL CODE1	J9	J13	J10	J14
D4			•	•	
	2 15 BLVLCODE2		A5	A5	A5
< D6	3 14 BLVLCODE3			●	
— <a7< td=""><td>4 13 BLVLCODE4</td><td></td><td>A7</td><td>•</td><td>A7</td></a7<>	4 13 BLVLCODE4		A7	•	A7
- <d8< td=""><td></td><td></td><td>D8</td><td>•</td><td></td></d8<>			D8	•	
			A1	A1	A1
			•	D2	D2
	• ~ • ~	•	•	•	


	COMBINER # 1			COMBINER #	2		COMBINER #	3 ———		COMBINER # 4	I
A1 > J203	B1 > J203	C1 > J203	A1>J202	B1 J202	C1 > J202	A1) J201	B1 > J201	c1>	A1 J200	B1 > J200	C1 J200
BMISO-A			BMISO-A			BMISO-A			BMISO-A		
BSCK-A			BSCK-A			BSCK-A			BSCK-A		
BMOSI-A			BMOSI-A			BMOSI-A			BMOSI-A		
A2 $>$ J203	B2 > J203	c2 > <u>J203</u>	A2>J202	B2 > J202	c2> <u>J202</u>	A2 $>$ J201	B2 > J201	C2 > J201	A2 > J200	B2 > <u>J200</u>	C2>J200
VREF1			VREF1			VREF1			VREF1		
VREF2			VREF2	<u> </u>		VREF2			VREF2	<u> </u>	
A3 > J203	B3 > J203	C3 > <u>J203</u>	A3 - J202	вз > <mark>J202</mark>	C3 > <u>J202</u>	A3 > J201	B3 > J201	C3 > J201	A3 > J200	вз > <mark>J200</mark>	C3>J200
BMISO-B			BMISO-B			BMISO-B			BMISO-B		
STR-A			STR-A			STR-A			STR-A		
BSCK-B	•		BSCK-B	•		BSCK-B	•		BSCK-B	•	
A4 > J203	B4 > J203	c4 > <u>J203</u>	A4 > J202	B4 > J202	c4 J202	A4 > J201	B4 > J201	C4 > J201	A4 > J200	B4 > J200	C4>J200
STR-B	+20V	-200	STR-B	+20V	-200	STR-B	+20V	-20V	STR-B	+20V	-20V
a5 > <mark>J203</mark>	B5) J203	C5 > J203	A5 - J202	в5] J202	C5)J202	A5)	B5 J201	C5 > J201	A5 J200	в5 _ J200	C5)J200
MONA+			MONA+			MONA+			MONA+		
SPARE			SPARE			SPARE			SPARE		
MONB+	•		MONB+	<u> </u>		MONB+	•		MONB+	•	
A6 $>$ J203	B6 > J203	C6 > J203	A6 > J202	B6 J202	C6 J202	A6 $>$ J201	B6 J201	C6 > J201	A6 J200	B6 J200	C6>J200
MONA-			MONA-			MONA-			MONA-		
MONTD	+V		MOND	-+V		MOND	+V		MONTD	-+V	



COMBINER # 5	COMBINER # 6	COMBINER # 7	COMBINER # 8	
A1 J199 B1 J199 C1 J199	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	A1>J197 B1>J197 C1>J197	$A1 > J196 \qquad B1 > J196 \qquad C1 >$	
BMISO-A	BMISO-A	BMISO-A	BMISO-A	
BSCK-A	BSCK-A	BSCK-A	BSCK-A	
BMUSI-A	BMUSI-A	BMUSI-A	BMUSI-A	
A2 > B133 B2 > B133 C2 >	$A2 \rightarrow B130$ $B2 \rightarrow B130$ $C2 \rightarrow B130$	A2 > 0157 $B2 > 0157$ $C2 > 0157$	$A2 \rightarrow B2 \rightarrow C2 \rightarrow C2 \rightarrow C2 \rightarrow C2 \rightarrow C2 \rightarrow C2 \rightarrow C$	
VREF1	VREF1	VREF1	VREF1	
VREF2	VREF2	VREF2	VREF2	
A3 J199 B3 J199 C3 J199	A3 J198 B3 J198 C3 J198	$A3 \rightarrow J197 \qquad B3 \rightarrow J197 \qquad C3 \rightarrow J197$	$A3 \rightarrow J196 B3 \rightarrow J196 C3 \rightarrow J196$	
BMISO-B	BMISO-B	BMISO-B	BMISO-B	
STR-A	STR-A	STR-A	STR-A	
BSCK-B	BSCK-B	BSCK-B	BSCK-B	
$A4 \rightarrow B4 \rightarrow B4 \rightarrow C4 \rightarrow C4 \rightarrow C4 \rightarrow C4 \rightarrow C4 \rightarrow C$	$A4 \rightarrow 1198 \qquad B4 \rightarrow 1198 \qquad C4 \rightarrow 1198$	$A4 \rightarrow 5197 B4 \rightarrow 5197 C4 \rightarrow 5197$	$A4 > \frac{J196}{B4} = B4 > \frac{J196}{C4} = C4 > \frac{J196}{C4}$	
STR-B +20V -20V	STR-B +20V -20V	STR-B +20V -20V	STR-B -20V -20V	
T199T199T199	T198T198T198	T197T197T197	-> J196 -> J196 -> J196	_
	$A5 \rightarrow B5 \rightarrow C5 \rightarrow C5 \rightarrow C5 \rightarrow C5 \rightarrow C5 \rightarrow C5 \rightarrow C$	$A5 \xrightarrow{B5} B5 \xrightarrow{C5} C5 \xrightarrow{C1}$		
MONA+	MONA+	MONA+	MONA+	_
SPARE	SPARE	SPARE	SPARE	
MONB+	MONB+ 1100 1100 1100 1100	MONB+	MONB+ 110C 110C	_
Ye Be D133 Ce D133	Ye Be Ce D188	A6 B6 B6 C6 D197 C6 D197	Ve Be Re Ce Re Ce	
MONA-	MONA-	MONA-	MONA-	
MONB-	MONB-	MONB-	MONB- +V	

Section 6

Schematic (Sheet 6 of 6) • Jaguar Audio Backplane • SC33-1322



SILKSCREEN COMPONENT SIDE





Schematics



Schematic (Sheet 1 of 2) • Dual Audio Reference Interface Card • SC33-1337





Schematic (Sheet 2 of 2) • Dual Audio Reference Interface Card • SC33-1337



Schematics





Schematics

SILKSCREEN SOLDER SIDE LAYER 10 OF 10







Schematic (Sheet 1 of 24) • 64X32 Analog Audio Matrix Card • SC33-1277



CONTROL BUS (PAGE 1)



Section 6









CONTROL BUS (PAGE 1) +5V • • • • • • • • • • • • • • • • 4.7k BUS17A0A 3 27 41 55 55 5V 91 5V 91 5V 91 5V 91 5V +5V +5V +5V +5V +5V +5V +5V +5V • BUS1A0 +5V 3 27 41 55 79 91 81 BUS17A1A BUS17A2A BUS1A1 BUS1A2 BUS17A3A BUS1A3 BUS17EN0A BUS1EN0 U199 U205 BUS17EN1A BUS1EN1 BUS18A0A BD7 BD6 BD5 BD4 BD3 BD2 BD1 BD0 A2 BD7 BD6 BD5 BD4 BD2 BD1 BD0 A2 A1 A0 81 D7 82 D6 5 D5 BUS2A0
 1
 2
 07

 2
 06
 05

 3
 04

 7
 02

 01
 00

 2
 01

 00
 A2

 A1
 A0

 R/W
 CS0
BUS18A1A BUS2A1 BUS18A2A BUS2A2 8 D3 33 D4 97 D3 90 D2 90 D1 42 D0 67 A2 69 A1 15 A0 64 D/ BUS18A3A BUS2A3 BUS18EN0A BUS2EN0 BUS18EN1A BUS2EN1 BUS19A0A BUS3A0 BUS19A1A 43 BUS3A1 BUS19A2A BUS3A2 A1 A0 BUS19A3A BUS3A3 BUS19EN0A BUS3EN0 R/W CS2 BUS19EN1A R/W CS6 R/W CS0 BUS3EN1 BUS20A0A BUS4A0 R265 R264 R297 R318 R318 R354 R355 R355 R321 R321 R299 R286 R285 R305 R330 R332 R333 R333 R333 R333 R333 DISABLE BUS20A1A DISABLE DISABLE VREF1 DISABLE VREF1 BUS4A1 VREF1 BUS20A2A VREF1 BUS4A2 +5V • • • • • • VREF2 +5V +5V VREF2 BUS20A3A VREF2 BUS4A3 VREF2 R268 R289 BUS20EN0A POLARITY BUS4EN0 POLARITY E 34.7k ≥4.7ĸ E 4.7ĸ BUS20EN1A 4.7K BUS4EN1 BUS21A0A BUS170FFA BUS180FFA BUS10FF BUS5A0 BUS170FFB BUS10FF SHEET SHEET BUS21A1A BUS180FFB SHEET BUS2OFF BUS5A1 SHEET BUS2OFF BUS21A2A BUS190FFA SHEET BUS3OFF BUS5A2 BUS190FFB SHEET BUS3OFF BUS21A3A BUS200FFA SHEET BUS40FF BUS5A3 BUS200FFB SHEET BUS40FF BUS21EN0A BUS210FFA SHEET BUS5OFF BUS5EN0 BUS210FFB SHEET BUS5OFF BUS21EN1A BUS220FFA SHEET BUS60FF BUS5EN1 BUS220FFB SHEET BUS60FF BUS22A0A BUS7OFF BUS7OFF BUS8OFF BUS23OFFA SHEET BUS6A0 BUS230FFB SHEED BUS22A1A BUS80FF BUS6A1 BUS240FFA BUS240FFB SHEET 11 SHEET 11 BUS22A2A NC NC NC I/O-DIN-D0 BUS6A2 NC NC BUS22A3A BUS6A3 BUS22EN0A BUS6EN0 NC BUS22EN1A BUS23A0A S_DATA SHEET 2-S_CLK SHEET 2-S_CE SHEET 1-S_DATA SHEET 2-S_CLK SHEET 2-S_CE SHEET 1-BUS6EN1 I/O-DIN-D0 CCLK BUS7A0 CCLK BUS23A1A DONE-PG BUS7A1 DONE-PG R351 R387 BUS23A2A M2-I/0 M2-I/O BUS7A2 4.7ĸ 4.7K BUS23A3A M1-RD M0-RT PWRDN BUS7A3 M1-RD BUS23ENOA MO-RT PWRDN BUS7EN0 BUS23EN1A +5V <u>+5v</u> BUS7EN1 BUS24A0A S_INIT SHEET 2-5 BUS8A0 S_INIT (SHEET 2-5 INIT-I/O BUS24A1A RESET S_OE/RSET SHEET 1-5 BUS8A1 S_OE/RSET SHEET 1-BUS24A2A BUS8A2 GND 16 28 53 66 77 BUS24A3A BUS8A3 - GND - GND - GND BUS24EN0A BUS8EN0 BUS24EN1A BUS8EN1 GND GND NC NC GND GND



Section 6













Schematic (Sheet 6 of 24) • 64X32 Analog Audio Matrix Card • SC33-1277







Schematic (Sheet 7 of 24) • 64X32 Analog Audio Matrix Card • SC33-1277







Schematic (Sheet 8 of 24) • 64X32 Analog Audio Matrix Card • SC33-1277







Schematic (Sheet 9 of 24) • 64X32 Analog Audio Matrix Card • SC33-1277







Schematic (Sheet 10 of 24) • 64X32 Analog Audio Matrix Card • SC33-1277





Schematic (Sheet 11 of 24) • 64X32 Analog Audio Matrix Card • SC33-1277







Schematic (Sheet 12 of 24) • 64X32 Analog Audio Matrix Card • SC33-1277





Schematic (Sheet 13 of 24) • 64X32 Analog Audio Matrix Card • SC33-1277





Schematics

OUTPUT1A



OUTPUT2A



OUTPUT3A







OUTPUT5A





3/98 P/N 81905903730

OUTPUT7A









OUTPUT10A



OUTPUT11A

OUTPUT9A



OUTPUT12A



Schematic (Sheet 15 of 24) • 64X32 Analog Audio Matrix Card • SC33-1277

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Section 6



R1214

BOUT14

NP

*

OUTPUT13A



OUTPUT14A



OUTPUT15A



OUTPUT16A



OUTPUT17A



OUTPUT18A



R1009

C104

NP

Schematic (Sheet 16 of 24) • 64X32 Analog Audio Matrix Card • SC33-1277







OUTPUT19A







OUTPUT22A











OUTPUT24A



Schematic (Sheet 17 of 24) • 64X32 Analog Audio Matrix Card • SC33-1277

Section 6





OUTPUT25A







OUTPUT28A



OUTPUT27A



OUTPUT29A



OUTPUT30A



Schematic (Sheet 18 of 24) • 64X32 Analog Audio Matrix Card • SC33-1277



R537

33.2,1%

R649

33.2,1%

+20V

<u>1</u>

-20V

3 + 8 TLE2062CD

4

U16

2 _ V-

C218

🔶 0.1UF

_____(B3

_____D3

OUTPUT31A

U64

2 - v- 4

R745

511,1%

C362

NP

3 + v+ 8 TLE2062CD

-20V

 \sim 1

R794

470

R1280

*

300к 🔶

R713

CW

R160

5.0K

1.96K,1%

AOUT31 -

R1233 (NP

BOUT31



C458 0.1UF 3

U156 ~ 1

R1081

511,1%

C490

NP

R240 5.0K

2 _ v- 4

3 + 8 TLE2062CD

-20V

R1129

470

R1281

300к 🔶

R1033

+

1.96K,1%

AOUT32 -

BOUT32

 $\mathbb{R}^{1246} \underset{\mathbb{NP}}{\stackrel{\diamond}{\geq}} *$



OUTPUT1B



5+

6

R793

16.9K,.5%

U16

U64

TLE2062CD

5 + TLE2062CD

R681

16.9K,.5%

C48

NP

OUTPUT2B



OUTPUT3B



OUTPUT4B



Schematic (Sheet 19 of 24) • 64X32 Analog Audio Matrix Card • SC33-1277







OUTPUT5B

OUTPUT6B





OUTPUT7B



OUTPUT8B



OUTPUT9B



OUTPUT10B



Schematic (Sheet 20 of 24) • 64X32 Analog Audio Matrix Card • SC33-1277



OUTPUT11B



OUTPUT12B



OUTPUT13B



OUTPUT14B



OUTPUT15B



OUTPUT16B



Schematic (Sheet 21 of 24) • 64X32 Analog Audio Matrix Card • SC33-1277





OUTPUT17B

OUTPUT18B





OUTPUT19B



OUTPUT20B



OUTPUT21B



OUTPUT22B



Schematic (Sheet 22 of 24) • 64X32 Analog Audio Matrix Card • SC33-1277





OUTPUT23B

OUTPUT24B





OUTPUT25B



OUTPUT26B



OUTPUT27B



OUTPUT28B



Schematic (Sheet 23 of 24) • 64X32 Analog Audio Matrix Card • SC33-1277





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Schematic (Sheet 24 of 24) • 64X32 Analog Audio Matrix Card • SC33-1277

Section 6



Schematics





Schematics



Schematic (Sheet 1 of 10) • 64X32 Digital Audio Matrix Card • SC33-1279

Section 6



Schematics



3/98 P/N 81905903730

Section 6



Schematics



3/98 P/N 81905903730

Section 6



Schematics



Schematic (Sheet 4 of 10) • 64X32 Digital Audio Matrix Card • SC33-1279

Section 6

OUTPUT	AUDIO	BUS	(A1-A16)	
				٢







Schematic (Sheet 5 of 10) • 64X32 Digital Audio Matrix Card • SC33-1279

Section 6




Schematic (Sheet 6 of 10) • 64X32 Digital Audio Matrix Card • SC33-1279

Section 6

OUTPUT	AUDIO	BUS	(B1-B16
--------	-------	-----	---------



)						
+5V	• 3	+5V	XC3030	INPUT1	6	AUDB1
	27	+5V		INPUT2	8	AUDB2
	<u>41</u> 55	+5V		INPUT3	11	AUDB3
	70	+5V		INPUT4	12	AUDB4
	91	+5V	1186	INPUT5	14	AUDBS
BD7	81	+5V	000	INPUT6	15	AUDB7
BD6	35	1/081		INPUT7	17	AUDB8
BD5	40	D6		INPUT8	18	AUDB9
BD4	38	D2 D4		TNDUUD10	19	AUDB10
BD3	34	D4 D3		TNPUP11	21	AUDB11
BD2	20	D2		TNPUTT12	22	AUDB12
BD1	13	D1		INPUT13	23	AUDB13
BDO	92	DO		INPUT14	24	AUDB14
BA2	87	A2		INPUT15	20	AUDB15
BAI	90	A1		INPUT16	20	AUDB16
BAU DD (W	50	A0		INPUT17	73	AUDB17
BR/W	88	R/W		INPUT18	74	AUDB18
CSS	10	CS0		INPUT19	70	AUDB19
BVREF1	45	I/010		INPUT20	69	AUDB20
BVREF2	39	VREF1		INPUT21	68	AUDB22
DVILLE 2	73	VREF2		INPUT22	67	AUDB23
BE	82	1/0/3		INPUT23	64	AUDB24
	49	E T (049		INPUT24	63	AUDB25
	5	1/049 T/05		TNDUD25	62	AUDB26
	33	T/033		TNPUT20	61	AUDB27
	97	T/097		TNPUT28	60	AUDB28
	76	I/076		INPUT29	59	AUDB29
	12	I/072		INPUT30	58	AUDB30
	45	I/01		INPUT31	51	AUDB31
	30	I/095		INPUT32	37	
	32	NC		OUTPUT1	43	
	50	NC		B10FF	44	OUTB14
	100	NC		OUTPUT2	47	OUTB140FE
	2	1/O-DIN-DU		DZOFF OT INDIANS	42	OUTB15
-001	80	DONE-DG		BOFF	36	OUTB150FH
R281	56	M2-T/O		OT TTPUTT4	46	OUTB1
4.7K	52	M1-RD		B40FF	48	OUTB160FI
	54	MO-RT		I/084	84	
+5V		PWRDN		I/083	83	
	00	INIT-I/O		I/085	00	
	10	RESET		I/086	98	
	16	GND		I/098	99	
	28	GND		I/099	96	
	1 53	GND		I/096	94	
	1 66	GND		I/094	31	
	1 77	GND		NC	7	
	-	GND		NC		
	•	NP2 SHEET	7			
	חפ	ΔTTA				
	u_د_ B	CLK SHEET				
	B	CE CHEET	$\frac{1}{7}$			
		- SHEET	$\frac{1}{1}$			
	B_I	NIT SHEET	1			
E	OE/R	SET SHEET	7 4			
T		SHEET	$\frac{1}{1}$			







Schematic (Sheet 7 of 10) • 64X32 Digital Audio Matrix Card • SC33-1279

Section 6



Schematics





Schematic (Sheet 8 of 10) • 64X32 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) • 64X32 Digital Audio Matrix Card • SC33-1279

Section 6



Schematics



Section 6



Schematics



6 CHEM ATI CS

Section 6

Schematics



$c_2 \succ_{\Box}$	C5 >	a2 /	A5 /		C5 /		A5 /		C5 >+		A5 /		C5 >		<i>F</i>
c1)	C4>	A1>	A4)	c1>	c4	A1)	A4)	c1>	c4>	A1)	A4 >	c1>	C4	a1>	ק א
в5)	• c3>	в4>	• A3 >	в5 >	• c3≻•	в4>	• A3 >	в5>	• C3>	в4>	A3 >	в5 >	• c3 >	в4>	⊣ ∳
J45	J33 1		J37 1>	$\begin{array}{c} J46 \\ 1 \end{array}$	J34 1		J38	J J47	J35		J39 1	$\begin{array}{c c} J48 \\ 1 \end{array}$	J36	$\begin{array}{c} J44 \\ 1 \end{array}$	
2	2	2		2		2		2				2		2	
3	3	3	3	3 >	→ 3 →	3	→ 3 →	3	3	3	3	3	3	3 >	_
,		,		,	· ·			<i>,</i>		<i>,</i>	ŕ	/		,	
ч	w w	ų	w w	•	w w	•	w w		• •		w w	v	w w		W



3/98 P/N 81905903730



Schematic • Standard Audio Output Card • SC33-1323



NOT AVAILABLE AT TIME OF PRINTING

Configuration Drawing • Card Cage • CD63-0767





Component Assembly • 128X64 Analog Audio Output Combiner Card • CA25-1324

RL Y1









Schematics



3/98 P/N 81905903730 Schematic (Sheet 1 of 3) • 128X64 Analog Audio Output Combiner Card • SC33-1324



Schematics





+5V +5V +5V +5V +5V +5V

BOUTM2 BOUTB2 D5 D4 D3

bouta0 D1

BOUTM7 BOUTM4

BUS4_OFF

ADD2 REF1 CS0 DISABLE

VREF1

≞ MSTB

MMOSI

BUS6_OFF POLARITY

BUS1A0

MSCK BUS1A2

M_OVER LATCH

BUS1EN1

BUS2A0

BUS2A2

BUS2A3

BUS2EN0

BUS3A1

BUS3A2

BUS3A3

BUS3EN0 MOSI

BOUTB7

BOUTM6

BUS4EN1 BUS5A0

BOUTA5

CLR

SCK

BUS7 OFF

add0 over

ADD1

U25

4.7K

R64

SHEET 2 SHEET 2

SHEET 2 BOUTM6







Section 6



BUS1_OFF BOUTB1 BOUTM1 BOFF

+20V* A4

-20V* c4

47K

_____ R63

BOUTB7 BUS7_OFF

TP3 TP2

4.7ĸ

R81

4.7K

R85

4.7K

R96

4.7K

R100

4.7K

BUS0_OFF BOUTM0





Component Assembly • Digital Audio Output Combiner Card • CA25-1327



Schematics

















Schematic (Sheet 1 of 2) • Digital Audio Output Combiner Card • SC33-1327

3/98 P/N 81905903730



Schematics



Schematic (Sheet 2 of 2) • Digital Audio Output Combiner Card • SC33-1327

	SHEET	1)	BOUTA5
	SHEET	1)	BOUTA6
	SHEET	1)	BOUTM5
	SHEET	1)	BOUTB5
	SHEET	1)	BOUTA3
	SHEET	1)	BUS3_OFF
	SHEET	1)	BOUTB3
	SHEET	1)	BOUTM3
	SHEET	1)	BOUTA4
	SHEET	1)	BOUTA2
	SHEET	1)	BUS2_OFF
	SHEET	1)	BUS1_OFF
	SHEET	1)	BOUTB1
	SHEET	1)	BOUTM1
-	SHEET	2)	BOFF
	SHEET	1)	BUS0_OFF
	SHEET	1)	BOUTM0



SILKSCREEN COMPONENT SIDE LAYER 1 OF 4





SILKSCREEN SOLDER SIDE LAYER 4 OF 4

Component Assembly • Output Monitor Control Card • CA25-1334



Schematics



3/98 P/N 81905903730



7.1 Parts List

General

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

Part	Part Number	Page
Jaguar Audio Mainframe Assembly	81906518280	7.2
Jaguar Audio Chassis	81906518340	7.3
Jaguar Audio Backplane	81906518290	7.4
Dual Audio Reference Interface	81906518550	7.5
64X32 Analog Audio Matrix Assembly	81906518560	7.6
64X32 Analog Audio Matrix Card	81906517470	7.7
64X32 Digutal Audio Matrix Assembly	81906519000	7.11
64X32 Digital Audio Matrix Card	81906517490	7.12
Standard Audio Output Card	81906518300	7.15
Option Card Cage	81906518350	7.16
128X64 Standard A/A Output Combiner Card	81906518310	7.17
128X64 A/A Output Comb. Card with Monitor	81906518430	7.18
128X64 A/A Output Card with Monitor (X-Off)	81906518440	7.19
Digital Audio Output Combiner Card	81906518360	7.20
Output Monitor Control Card	81906518460	7.21



Jaguar Audio Mainframe Assembly - 81906518280

81901701110	FAN 12VDC 18.7CFM 60X25MM	3	ΕA
81901702740	AIR FLTR 6 7/16"x9 11/16"	1	ΕA
81902003151	FINGER GUARD 50MM CENTERS	3	ΕA
81902100288	CABLE TIE 4" R/A SST1M-MP	3	ΕA
81902200799	SCREW 8-32x1.25 PN HD PHI	12	ΕA
81902202647	SCREW 4-40x1/4 SIMM PANHD	6	ΕA
81902202980	#6 WING NUT	2	ΕA
81902202990	SCREW 8-32x1/2 WING HEAD	1	ΕA
81902908110	CONN 3 PIN F STRAIN RELF	8	ΕA
81906518290	BACKPLANE AUDIO ASSY JAG	1	ΕA
81906518340	CHASSIS AUDIO JAGUAR	1	ΕA
81906518550	DUAL AUDIO REF INTRFCE	1	ΕA
CD63-0768	DOC MAINFRAME AUDIO JAG	0	ΕA



Jaguar Audio Chassis - 81906518340

81902003235	LATCH ADJUST GRIP ARROWHD	1	ΕA
81902104810	HINGE LIFTOFF 10-24 NYLON	1	ΕA
81902105210	CIR-O-GUIDE .324x.078 THK	16	ΕA
81902105220	CARD GUIDE PLASTIC 3"	24	ΕA
81902200138	SCREW 4-40x5/16 PN HD PHI	16	ΕA
81902201409	SCREW 4-40x1/4 FLT HD PHI	14	ΕA
81902203060	SCREW 10-32x5/16 UCFH PHI	8	ΕA
81903464280	HINGE SPACER, JAGUAR	2	ΕA
81903464320	TRAY CHASSIS AUDIO JAGUAR	1	ΕA
81903464330	COVER TOP AUDIO JAGUAR	1	ΕA
81903464340	DOOR FRONT AUDIO JAGUAR	1	ΕA
81903464350	PLATE HORIZONTAL AUD JAG	1	ΕA
81903464360	PLATE RIGHT VERT AUD JAG	1	ΕA
81903464370	PLATE VERT LEFT AUD JAG	1	ΕA
81903464380	PLATE REAR AUDIO JAGUAR	1	ΕA
81903464390	COVER STD OUTPUT AUD JAG	1	ΕA
81903464450	BRACKET SHIP AUD PS JAG	1	ΕA
CD63-0766	DOC CHASSIS AUDIO JAGUAR	0	ΕA
SS49-0834	DOC FRONT DOOR SCREEN	0	ΕA
SS49-0835	DOC REAR PLATE SCREEN	0	ΕA
SS49-0836	DOC STD OUTPUT COVER	0	ΕA



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Jaguar Audio Backplane - 81906518290

81902003480 STANDOFF 3/16 x 7/16 M-F 81902003490 NUT BROACHING 440 PC MNT 81902105050 LABEL BARCODE 1.5"x0.25" 81902202696 SCREW 4-40x7/16 SIMM PANH 81902413220 PCB BACKPLANE AUDIO JAG 81902600436 SWITCH 8 POS DIP 16-PIN 81902903061 CONN 6-POS MNL FEMALE RED 81902906486 CONN BNC PRESS-IN 75 OHM 81902906932 CONN 9-PIN MALE D SOLDER 81902907200 CONN 16-POS PC MT FEMALE 81902907230 CONN 32 POS FEMALE 16x2 81902907900 CONN 128 PIN 4 ROW VERT 81902907910 CONN 140 PIN 4 ROW VERT 81902908010 CONN 5 PIN 5.08mm VT MALE 81902908100 CONN 3 PIN PC MNT VERTCL 81902908270 CONN 3x5 RECPTCLE .10 CTR 81902908290 RECEPT 3x6 .1 CTR PC MT DOC BACKPLANE AUDIO JAG CA25-1322 DD52-1322 DOC BACKPLANE AUDIO JAG DOC BACKPLANE AUDIO JAG SC33-1322

- EA REF:PCB
- EA REF:PCB EA
- EA REF:J159
- EA
- EA S1-S6
- EA J160
- 4 EA J154-J157
- 1 EA J159
- 2 EA J19 J20
- 2 EA J17 J18
- 12 EA J1-J3 J5-J7 J9-J11 J13-J15
- 4 EA J4 J8 J12 J16
- 1 EA J158
- 136 EA J21-J153 J161 J162 J163
- 32 EA J164-J195
- 8 EA J196-J203
- 0 EA
- 0 EA
- 0 EA



Dual Audio Reference Interface - 81906518550

81901601187 REG MC7805C +5V 1A TO-220 81901606740 IC LMC555 CMOS TIMER 81901607100 IC CD22402E SYNC GENRATOR 81902105050 LABEL BARCODE 1.5"x0.25" 81902413370 PCB DUAL AUDIO REF INTRFC 81902907240 CONN 32 POS MALE R/A 16x2 81903200541 LED GREEN RT/A HI-EFF PCB 81903200558 LED RED RT/A HI-EFF PC MT 81906600424 RESISTOR 100 OHM 5% 0805 81906600549 RESISTOR 330 OHM 5% 0805 81906600663 RESISTOR 1K OHM 5% 0805 R46 R51 R56 R65 R66 R40 R41 R35 R37 81906600820 RESISTOR 4.7K 5% 0805 SMT 81906601133 RESISTOR 100K 5% 0805 SMT 81906601307 RESISTOR 510K 5% 0805 SMT 81906601331 RESISTOR 680K 5% 0805 SMT 81906612213 RESISTOR 1.96K 1% 0805 81906612397 RESISTOR 3.01K 1% 0805 81906640024 RESISTOR 2.0 OHM 5% 1210 81906700320 CAP 220PF NPO 0805 CERAMC 81906730015 CAP 0.1MF 50V CERMIC 1206 81906760160 CAP 1500PF 50V CERAM 1206 81906770037 CAP TANTLM, SMT, 2.2MFD/35V 81906770060 CAP 10MF 6.3V TANT CASE B 81906800016 TRANS SMT, MMBT3904LT1 81906800107 TRANS SMT, MMBT3906L

81906800164 DIODE BAV99 50ma SOT-23 81906810106 IC LM1881 VID SYNC SEPART 81906810340 IC 74HC00 QUAD AND SO SMT 81906810530 IC 74HC14 HEX INVERTER SO 81906810770 IC 74HC32 QUAD 2-INPUT OR CA25-1337 DOC DUAL AUD REF INTRFCE DD52-1337 DOC DUAL AUD REF INTRFCE NOT-PLACED ITEMS NOT PLACED ON EBOM

SC33-1337 DOC DUAL AUD REF INTRFCE 0

2 2 2 1	EA EA EA EA	U15 U16 U5 U6 U12 U13
1	EA	J1
2	EA	CR9 CR14
4	EA	CR10 - CR13
6 14	EA EA	R9 R15 R12 R18 R69 R70
14	LA	R57-R62
16	EA	R10 R13 R16 R19 R43 R44 R45
4	EA	R47-R50
4	ΕA	R11 R14 R17 R20
8	ΕA	R21 R22 R23 R26 R63 R64 R67 R68
4	EA	R24 R25 R29 R32
4	ΕA	R36 R38 R39 R42
2	ΕA	R33 R34
4	EA	R1 R2 R3 R4
2		
50	LA	C31-C34 C38 C39 C41 C42 C43
		C45 C47 C49 C51 C52 C53 C54
4	EA	C10 C11 C13 C14
2	EA	C46 C50
2	EA	C44 C48
4	EA	Q9-Q12
8 12		
1Z 4	EA FA	111-114
2	FA	U11 U14
3	EA	U7 U8 U17
2	EA	U9 U10
0	EA	
0	EA	
0	ΕA	C2 C3 C5 C6 C35 C36 C37 C40
		TP4

EA



64X32 Analog Audio Matrix Assembly - 81906518560

81906517470 32x32 AUDIO MATRIX 81906621520 RESISTOR 0.0 OHM 5% 1206 1 EA

32 EA R1145 R1147 R1149 R1151 R1153 R1155 R1157 R1159 R1162 R1164 R1167 R1172 R1197 R1214 R1226 R1240 R1146 R1148 R1150 R1152 R1154 R1156 R1158 R1160 R1163 R1165 R1171 R1173 R1212 R1219 R1233 R1246



64X32 Analog Audio Matrix Card - 81906517470

81900601022 THERMISTOR 680 OHM 5% 81901000720 CAP SWX REG 35V 1.7A RAD 81901000840 CAP 0.1F 5.5V 81901000850 CAP DA SWX REG 35V ELECT 81901601187 REG MC7805C +5V 1A TO-220 81901603738 REG LM317T 1.2V-37V ADJST 81901606830 IC 7.3728 MHZ OSCILLATOR 81901606980 REG LT1170 5A SWXING 60V 81902105050 LABEL BARCODE 1.5"x0.25" 81902200070 NUT 4-40 HEX 81902202712 SCREW 4-40x5/16 SIMM PNHD 81902301080 INDUCTOR 20uH 2A TOROIDAL 81902301350 TRANSFORMER 32X32 AUDIO 81902412770 PCB 32x32 AUDIO MATRIX 81902700749 FUSE PICO, 7 AMP, LEADED 81902901479 SOCKET 8 PIN LOW PROF IC 81902907920 CONN 128 RECPT R/A 4 ROW 81902907930 CONN 140 RECPT R/A 4 ROW 81902908060 SPLIT TERMINAL 81903200541 LED GREEN RT/A HI-EFF PCB 81903200558 LED RED RT/A HI-EFF PC MT 81903464030 SHIELD BOARD AUDIO 32x32 81903900700 INDUCT 20MH 1A TORIODAL 81906517730 SOFT 32x8 CNTRL CHIP 81906517980 SOFT COUGAR BIOS 81906600390 RESISTOR 75 OHM 5% 0805 81906600424 RESISTOR 100 OHM 5% 0805 81906600465 RESISTOR 150 OHM 5% 0805 81906600520 RESISTOR 270 OHM 5% 0805 81906600549 RESISTOR 330 OHM 5% 0805 81906600580 RESISTOR 470 OHM 5% 0805

81906600620 RESISTOR 680 OHM 5% 0805

81906600663 RESISTOR 1K OHM 5% 0805

81906600783 RESISTOR 3.3K 5% 0805 SMT

81906600700 RESISTOR 1.5K 5% 0805

1 EA R1168 EA C157 C159 C164 C177 4 1 ΕA C156 2 EA C158 C180 1 EA U281 EA 1 U251 EA U1411 1 1 ΕA U300 ΕA 1 2 ΕA U300 8 EA REF:BD SHLD/U300 2 EA L2 L4 1 ΕA T1 1 ΕA 2 EA F1 F2 1 **REF:U216** EA 3 EA J1 J2 J3 1 ΕA J4 EA REF:F1 F2 4 1 ΕA CR2 2 EA CR3 CR4 1 ΕA 2 ΕA L1 L3 0 ΕA **REF:U216** 0 EA REF:U316 1 ΕA R1318 EA R1218 R1232 R261 R312 4 1 ΕA R499 2 EA R258 R309 2 EΑ R495 R504 64 EA R762 R764 R766 R768 R770 R772 R774 R776 R778 R780 R782 R784 R786 R788 R790 R792 R794 R796 R798 R800 R802 R804 R806 R808 R810 R812 R814 R816 R818 R820 R822 R824 R1113-R1144 EA R1247 1 17 EA R259 R310 R496 R482 R483 R484 R485 R486 R489 R493 R497 R1170 R1161 R1211 R1213 R1217 R1231

- 1 EA R1317
 - ΕA R260 R311 R1169 3



64X32 Analog Audio Matrix Card - 81906517470 Continued:

81906600820 RESISTOR 4.7K 5% 0805 SMT	269	EA	R262-R289 R291-R307 R313-R357 R359-R428 R449 R450 R452 R453-R481 R488 R491 R494 R502 R1174-R1196 R1198-R1210 R1215 R1216 R1220-R1225 R1227-R1230 R1235-R1238 R430 R431-R447 P1214 P1216
81906600903 RESISTOR 10K 5% 0805 SMT	1	EA	R503
81906600920 RESISTOR 12K OHM 5% 0805	1	EA	R429
81906601067 RESISTOR 47K 5% 0805 SMT	1	EA	R487
81906601133 RESISTOR 100K 5% 0805 SMT	4	EA	R257 R308 R448 R451
81906601240 RESISTOR 300K 5% 0805	64 2	EA	R1250-R1313
81906611290 RESISTOR 215 OHM 1% 0805	2 64	ΕA FΔ	R290 R300 R569 R571 R573 R575 R577 R579
	04	LA	R581 R583 R585 R587 R589 R591
			R593 R595 R597 R599 R601 R603
			R605 R607 R609 R611 R613 R615
			R617 R619 R621 R623 R625 R627
			R629 R631 R841 R844 R847 R850
			R033 R030 R039 R002 R003 R000 R871 R874 R877 R880 R883 R886
			R905 R908 R911 R914 R917 R920
			R923 R926 R929 R932 R935 R938
			R941 R944 R947 R950
81906611652 RESISTOR 511 OHM 1% 0805	64	ΕA	R729-R760 R1049 R1051 R1053
			R1055 R1057 R1059 R1061 R1063
			R1065 R1067 R1069 R1071 R1073 R1075 R1077 R1079 R1081 R1083
			R1085 R1087 R1089 R1091 R1093
			R1095 R1097 R1099 R1101 R1105
			R1107 R1109 R1111 R1103
81906612213 RESISTOR 1.96K 1% 0805	64	EA	R697-R728 R1017-R1048
81906612296 RESISTOR 2.37K 1% 0805	1	EA	R1234
81906612320 RESISTOR 2.55K 1% 0805	5	EA	R501 R1241 R1243 R1244 R1245
81900013010 RESISTOR 13.7K 1% 0803	129	EA	R570 R572 R574 R576 R578 R580
			R582 R584 R586 R588 R590 R592
			R594 R596 R598 R600 R602 R604
			R606 R608 R610 R612 R614 R616
			R618 R620 R622 R624 R626 R628
			R630 R632 R842 R845 R848 R851
			R004 K007 K000 K003 K000 K009 R872 R875 R878 R881 R887 R897
			R906 R909 R912 R915 R918 R921
			R924 R927 R930 R933 R936 R939
			R942 R945 R948 R951 R1239
81906613110 RESISTOR 17.4K 1% 0805	1	ΕA	R500



64X32 Analog Audio Matrix Card - 81906517470 Continued:

81906613179 81906630510	RESISTOR 20K 1% 0805 RESISTOR 33.2 OHM 1% 1206	1 128	EA EA	R1242 R505-R520 R537-R552 R633-R664
81906630510 R984	RESISTOR 33.2 OHM 1% 1206	128	EA	R825-R840 R889-R904 R953-
81906640024 81906640240	RESISTOR 2.0 OHM 5% 1210 RESISTOR 16.9K OHM .5%	1 128	EA EA	R1166 R665-R696 R761 R463 R765 R767 R769 R771 R773 R775 R777 R779 R781 R783 R785 R787 R789 R791 R793 R795 R797 R799 R801 R803 R805 R807 R809 R811 R813 R815 R817 R819 R921 R823 R985-R1016 R1050 R1052 R1054 R1056 R1058 R1060 R1062 R1064 R1066 R1068 R1070 R1072 R1074 R1076 R1078 R1080 R1082 R1084 R1086 R1088 R1090 R1092 R1094 R1096 R1098 R1100 R1102 R1104 R1106 R1108 R1110 R1112
81906640250	RESISTOR 30.1K OHM .5%	128	EA	R1-R32 R193-R224 R521-R536 R553-R568 R843 R846 R849 R852 R855 R858 R861 R864 R867 R870 R873 R876 R879 R882 R885 R888 R907 R910 R913 R916 R919 R922 R925 R928 R931 R934 R937 R940 R943 R946 R949 R952
81906640320	RESISTOR 1 OHM 5% 1210	2	EA	R1248 R1249
81906650270		1	EA	R492
81906650280		64 64		
81906700059	CAP 6.8PFD 50V CERAM,0805	04 128	EA EA	C1-C32 C65-C96 C202-C217 C234-C249 C378-C409
81906700320	CAP 220PF NPO 0805 CERAMC	2	EA	C506 C507
81906700460	CAP 1500PF 50V CERM 0805	2	EA	C135 C139
81906720010	CAP 0.1MF 25V X7R 0805	1	EA	C517
81906730015	CAP 0.1MF 50V CERMIC 1206	245	EA	C130-C134 C136 C138 C140- C155
81906730015	CAP 0.1MF 50V CERMIC 1206	245	EA	C160-C163 C165-C171 C174 C175 C176 C178 C181 C184 C185 C509 C510 C512-C515 C129 C137 C186-C201 C218-C233 C250-C345 C410-C473 C516 C518 C520 C521
81906730090	CAP 0.22MF CERMC X7R 1206	1	ΕA	C511
81906770052	CAP 1MF 20V TANLUM SIZE A	2	EA	C182 C183
81906770100	CAP 1mf 35 VOLTS TANTALUM	2	EA	C179 C508
81906770120	CAP 4.7mf 16V TANT SIZE B	1	EA	C519
81906800016	TRANS SMT,MMBT3904LT1	3	ΕA	Q3 Q6 Q7



64X32 Analog Audio Matrix Card - 81906517470 Continued:

81906800073 DIODE ZENER SMT, MMBZ5240B 2 81906800107 TRANS SMT, MMBT3906L 4 81906800230 DIODE MBR340 40V 3A SHTTK 2 81906800410 TRANSIENT SUPPRESSOR 33V 1 81906800520 TRANS NPN SOT223 AUDIO 1 81906800570 DIODE MBR360 SCHTTKY 3A 4 81906800580 ZENER MBZ5242 12V SOT23 1 81906810072 IC 3903 QUAD SPLY MONITOR 1 81906810106 IC LM1881 VID SYNC SEPART 2 81906810171 IC SMT,74HC04 (SOIC-14) 1 81906810340 IC 74HC00 QUAD AND SO SMT 1 81906810510 IC 6264 8Kx8 SRAM 100ns 1 81906810550 IC 74HC245 OCTL TRANSCEVR 9 81906810570 IC 74HC373 OCTAL LATCH SO 1 81906810770 IC 74HC32 QUAD 2-INPUT OR 1 81906810890 IC RS485 RECVR/TRANSMITTR 1 81906810930 IC TL7705 MICRO SUPERVISR 1 81906810960 IC OPTOCOUPLER SMT 4N32 1 81906811010 IC DG406DY 16x1 MUX 44V 81906811030 IC 74HC273 OACTAL REGISTR 1 81906811040 IC 74HC138 3 TO 8 DECODER 2 81906811060 IC XC3030A LCA 8 81906811080 IC DS1210 NONVOL CNTL CHP 1 81906811100 IC DUAL AUDIO LO PWR 161 81906920030 SWITCH DIP 4 POS GULLWING 1 81906940040 SOCKET 52 PIN PLCC SMT 1 81906950040 BEAD INDUCTOR SMT 66 CA25-1277 DOC 32x32 AUDIO MATRIX 0 NOT-PLACEDITEMS NOT PLACED ON EBOM 0

SC33-1277 DOC 32x32 AUDIO MATRIX

- EA CR1 CR5 ΕA Q1 Q2 Q4 Q5 **CR6 CR10** EA ΕA CR9 EA Q8 ΕA CR7 CR8 CR11 CR12 EA CR13 EA U326 EA U185 U206 EA U259 ΕA U258 EA U279 EA U256 U290 U291 U292 U293 U294 U305 U306 U307 EA U280 ΕA U257 EA U246 EA U317 ΕA U327 128 EA U129-U140 U157-U160 U177-U184 U186-U197 U200-U203 U207-U214 U217-U224 U229-U236 U238-U245 U247-U250 U252-U255 U260-U275 U282-U289 U296-U299 U301-U304 U308-U315 U318-U325 U295 EA EA U276 U277 EA U198 U199 U204 U205 U225 U226 U227 U228 ΕA U278 EΑ U1-U128 U141-U156 U161-U176 U237 ΕA SW1 ΕA **REF: U316** ΕA B1-B66 ΕA
 - EA C33-C64 C97-C128 C346-C377 C474-C505 R1145-R1160 R1162-R1165 R490 R1167 R1171 R1172 R1173 R1197 R1212 R1214 R1219 R1226 R1233 R1240 R1246 TP1 TP2 TP3 U215

ΕA

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64X32 Digutal Audio Matrix Assembly - 81906519000

81906517490 32x	x32 AUD DIGTL 11	0 MATRX	1	EA	
81906600820 RE	SISTOR 4.7K 5% (0805 SMT	2	EA	R463 R465
81906601521 RE	SISTOR 0.0 OHM	5% 0805	32	EA	R467-R498
NOT-PLACEDITE	EMS NOT PLACED	ON EBOM	0	EA	REMOVE R464 R466



64X32 Digital Audio Matrix Card - 81906517490

81900601022 THERMISTOR 680 OHM 5% EA R832 1 81901000740 CAP SWXR REG OUT 35V ELEC 1 EA C243 81901000760 CAP SWXR REG OUT 10V 12mm 3 C255 C231 C258 EA 81901000840 CAP 0.1F 5.5V 1 ΕA C218 81901500827 DIODE PACK MBR2045 1 U114 EA 81901603738 REG LM317T 1.2V-37V ADJST 1 EA U115 81901606830 IC 7.3728 MHZ OSCILLATOR ΕA XTAL1 1 81901606980 REG LT1170 5A SWXING 60V 1 EA U113 81901900280 HEATSINK LOW PROFILE 1 **REF:U114** EA 81902104512 INSERT/EXTRACTR NYLON 2 **REF:SHIELD PLATE** EA 81902105050 LABEL BARCODE 1.5"x0.25" 1 EA 81902200070 NUT 4-40 HEX EA REF:U113 U114 4 81902202647 SCREW 4-40x1/4 SIMM PANHD 6 EA **REF:SHIELD PLATE** 81902202712 SCREW 4-40x5/16 SIMM PNHD 4 ΕA REF:U113 U114 2 81902301080 INDUCTOR 20uH 2A TOROIDAL L1 L2 EA T1 81902301280 TRANSFORMER CUST SDV24x16 1 EA 81902301330 INDUCTOR 30 UH CUSTOM L3 1 EA 81902412790 PCB 32x32 AUD DIGTL 110 1 EA 81902700880 FUSE 5A PICO AXIAL 125V 2 ΕA F1 F2 81902901479 SOCKET 8 PIN LOW PROF IC 2 ΕA REF:U97 U99 81902907920 CONN 128 RECPT R/A 4 ROW 3 EA J1 J2 J3 81902907930 CONN 140 RECPT R/A 4 ROW 1 EA J4 81902908060 SPLIT TERMINAL 4 EA **REF: F1 F2** 81903200541 LED GREEN RT/A HI-EFF PCB 1 EA CR9 81903200558 LED RED RT/A HI-EFF PC MT 2 EA CR10 CR11 81903464030 SHIELD BOARD AUDIO 32x32 1 EA 81906517980 SOFT COUGAR BIOS 1 EA **REF:U126** 81906518020 SOFT 32x4 DIGITAL AUD XPT 2 U97 U99 EA 81906518600 HOLD OFF CIRCUIT L1170 1 ΕA 81906600341 RESISTOR 47 OHM 5% 0805 R9-R40 R53-R84 R155-R218 128 ΕA 81906600424 RESISTOR 100 OHM 5% 0805 EA R371 R366 R370 3 81906600432 RESISTOR 110 OHM 5% 0805 72 R1-R8 R41-R48 R87 R88 R105 EA R106 R123-R154 R253 R254 R256-R265 R267-R274 81906600520 RESISTOR 270 OHM 5% 0805 EA R49 R52 R373 R380 4 81906600549 RESISTOR 330 OHM 5% 0805 R440 R444 R445 R446 R447 R462 6 EA 81906600663 RESISTOR 1K OHM 5% 0805 13 EA R372 R374 R378 R379 R441 R85 R86 R456-R461 81906600713 RESISTOR 1.6K OHM 5% 0805 1 ΕA R439 81906600783 RESISTOR 3.3K 5% 0805 SMT ΕA R376 1 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 EA R363 1 81906600986 RESISTOR 22K 5% 0805 SMT R375 1 EA 81906601133 RESISTOR 100K 5% 0805 SMT 4 EA R50 R51 R361 R365 81906601307 RESISTOR 510K 5% 0805 SMT 2 EA R368 R377



64X32 Digital Audio Matrix Card - 81906517490 Continued:

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 2.67K 1% 0805 81906612900 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 CAP TANTLM,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 81906920030 SWITCH DIP 4 POS GULLWING

- 1 EA R437 EA R442 1 1 EA R451 1 EA R443 1 EA R453 4 ΕA R448 R449 R450 R452 EA 1 R383 1 EA R454 1 EA R455 1 EA R438 EA C203 C204 2 EA 1 C254 238 EA C1-C202 C205 C206 C208-C217 C219 C221 C222 C223 C225 C227 C228 C229 C233-C242 C245 C250 C252 C256 C257 C259 1 EA C247 EA C207 C220 2 8 EA C224 C226 C230 C232 C244 C246 C248 C249 2 EA C251 C253 2 EA Q3 Q5 2 EA CR1 CR5 5 EA Q1 Q2 Q4 Q6 Q7 2 EA CR2 CR6 2 EA CR7 CR8 EA CR4 1 1 EA CR3 1 EA U129 2 U102 U104 EA 1 ΕA U105 1 EA U106 1 EA U108 10 ΕA U109 U116-U122 U124 U130 1 EA U125 1 EA U107 1 EA U103 1 EA U101 1 ΕA 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 EA U123
- 2 EA U110 U111
- 16 EA U81-U96
- 1 EA U112
- 1 EA S1

64X32 Digital Audio Matrix Card - 81906517490 Continued:

81906940040	SOCKET 52 PIN PLCC SMT	1
81906950040	BEAD INDUCTOR SMT	2
CA25-1279	DOC 32x32 AUD DIGTL 110	0
NOT-PLACED	ITEMS NOT PLACED ON EBOM	0

- EA REF:U126
- EA BEAD1 BEAD2
- EA

ΕA

0

- EA R251 R252 R255 R266 R279 R284-R314 R327-R341 R343-R351 R353-R360 TP1 TP2 TP3 TP4 U98 U100 R463 R465 R467-R498
- SC33-1279 DOC 32x32 AUD DIGTL 110



Standard Audio Output Card - 81906518300

PCB OUTPUT CARD AUDIO JAG	1	EA	
CONN 3 PIN PC MNT VERTCL	64	EA	J1 - J64
CONN 5 PIN POST .025 SQ	48	ΕA	J65 - J80
DOC OUTPUT CARD AUDIO JAG	0	EA	
DOC OUTPUT CARD AUDIO JAG	0	ΕA	
DOC OUTPUT CARD AUDIO JAG	0	EA	
	PCB OUTPUT CARD AUDIO JAG CONN 3 PIN PC MNT VERTCL CONN 5 PIN POST .025 SQ DOC OUTPUT CARD AUDIO JAG DOC OUTPUT CARD AUDIO JAG DOC OUTPUT CARD AUDIO JAG	PCB OUTPUT CARD AUDIO JAG1CONN 3 PIN PC MNT VERTCL64CONN 5 PIN POST .025 SQ48DOC OUTPUT CARD AUDIO JAG0DOC OUTPUT CARD AUDIO JAG0DOC OUTPUT CARD AUDIO JAG0	PCB OUTPUT CARD AUDIO JAG1EACONN 3 PIN PC MNT VERTCL64EACONN 5 PIN POST .025 SQ48EADOC OUTPUT CARD AUDIO JAG0EADOC OUTPUT CARD AUDIO JAG0EADOC OUTPUT CARD AUDIO JAG0EA



Option Card Cage - 81906518350

81902202647	SCREW 4-40x1/4 SIMM PANHD
81903464400	COVER CAGE AUDIO JAGUAR
81903464410	CAGE CARD AUDIO JAGUAR
81903464420	CAGE,CARD,AUDIO JAG,SIDE
CD63-0767	DOC CARD CAGE AUDIO JAG
SS49-0839	DOC AUDIO CARD CAGE KIT
SS49-0843	DOC REAR PANEL - MONO

16 ΕA ST 1 SET = 8 PARTS 1 1 ΕA 1 ΕA 0 ΕA 1 KIT = 8 PLATES 0 ΕA 0 ΕA



128X64 Standard A/A Output Combiner Card - 81906518310

81901601187 81902105050	REG MC7805C +5V 1A TO-220 LABEL BARCODE 1.5"x0.25"	1 1	EA EA	U1
81902413240	PCB OUTPUT MONITR AUD JAG	1	EA	
81902901479	SOCKET 8 PIN LOW PROF IC	1	EA	U6
81902908300	CONN 3x5 PIN MALE RA .025	4	ΕA	J2 J5 J7 J10
81902908310	CONN 3x6 PIN MALE RA .025	1	EA	J12
81902908320	CONN 3 PIN PC MNT R/A	8	ΕA	J1 J3 J4 J6 J8 J9 J11 J13
81906518490	SOFT SERIAL PORT DECODER	1	EA	U6
81906600820	RESISTOR 4.7K 5% 0805 SMT	16	EA	R64 R70 R75-R77 R80-R82 R84
				R85 R87 R92 R96 R98 R100 R110
81906601067	RESISTOR 47K 5% 0805 SMT	24	ΕA	R2 R3 R11 R12 R20 R21 R31 R32
				R43 R44 R53 R54 R65 R66 R88
				R89 R63 R69 R74 R83 R86 R97
				R99 R101
81906621520	RESISTOR 0.0 OHM 5% 1206	16	EA	R7 R10 R18 R19 R27 R28 R40 R41
				R47 R50 R59 R62 R72 R79 R104
				R105
81906640024	RESISTOR 2.0 OHM 5% 1210	5	ΕA	R1 R95 R102 R108 R109
81906640200	RESISTOR 33.20hm 1% 1210	16	ΕA	R6 R9 R15 R17 R24 R26 R38 R39
				R46 R49 R58 R61 R71 R78 R93
				R103
81906730015	CAP 0.1MF 50V CERMIC 1206	20	ΕA	C1 C3 C5 C8 C9 C11 C12 C13 C16
				C20 C22 C23 C26 C27 C29 C30
				C32 C33 C35 C18
81906770037	CAP TANTLM,SMT,2.2MFD/35V	6	ΕA	C4 C21 C36 C37 C38 C39
81906770052	CAP 1MF 20V TANLUM SIZE A	2	ΕA	C2 C7
81906811060	IC XC3030A LCA	1	ΕA	U25
81906811100	IC DUAL AUDIO LO PWR	8	EA	U2 U5 U9 U13 U16 U19 U22 U26
81906811150	IC DG405DY SOIC-16 DUAL	8	EA	U3 U7 U10 U14 U17 U20 U23 U27
CA25-1324	DOC OUTPUT MONTOR AUD JAG	0	EA	
DD52-1324	DOC OUTPUT MONTOR AUD JAG	0	EA	
SC33-1324	DOC OUTPUT MONTOR AUD JAG	0	ĒΑ	



128X64 A/A Output Comb. Card with Monitor - 81906518430

81901601187	REG MC7805C +5V 1A TO-220	1	ΕA	U1
81901800190	RELAY DIP 24V DPST (2A)	1	ΕA	RLY6
81902105050	LABEL BARCODE 1.5"x0.25"	1	ΕA	
81902413240	PCB OUTPUT MONITR AUD JAG	1	ΕA	
81902901479	SOCKET 8 PIN LOW PROF IC	1	ΕA	U6
81902908300	CONN 3x5 PIN MALE RA .025	4	ΕA	J2 J5 J7 J10
81902908310	CONN 3x6 PIN MALE RA .025	1	ΕA	J12
81902908320	CONN 3 PIN PC MNT R/A	8	ΕA	J1 J3 J4 J6 J8 J9 J11 J13
81906518490	SOFT SERIAL PORT DECODER	1	ΕA	U6
81906600820	RESISTOR 4.7K 5% 0805 SMT	18	ΕA	R52 R57 R64 R70 R75 R76 R77
				R80 R81 R82 R84 R85 R87 R92
				R96 R98 R100 R110
81906600986	RESISTOR 22K 5% 0805 SMT	1	ΕA	R51
81906601067	RESISTOR 47K 5% 0805 SMT	26	ΕA	R2 R3 R11 R12 R20 R21 R29 R30
				R31 R32 R43 R44 R53 R54 R65
				R66 R88 R89 R63 R69 R74 R83
				R86 R97 R99 R101
81906621520	RESISTOR 0.0 OHM 5% 1206	16	ΕA	R7 R10 R18 R19 R27 R28 R40 R41
				R47 R50 R59 R62 R72 R79 R104
				R105
81906640024	RESISTOR 2.0 OHM 5% 1210	6	ΕA	R1 R95 R102 R108 R109 R107
81906640200	RESISTOR 33.20hm 1% 1210	18	ΕA	R6 R9 R15 R17 R24 R26 R36 R37
				R38 R39 R46 R49 R58 R61 R71
				R78 R93 R103
81906730015	CAP 0.1MF 50V CERMIC 1206	22	ΕA	C1 C3 C5 C8 C9 C11 C12 C13 C15
				C16 C17 C20 C22 C23 C26 C27
		_		C29 C30 C32 C33 C35 C18
81906770037	CAP TANTLM,SMT,2.2MFD/35V	6	EA	C4 C21 C36 C37 C38 C39
81906770052	CAP 1MF 20V TANLUM SIZE A	4	EA	C2 C7 C25 C40
81906800016	TRANS SMT, MMBT3904LT1	1	EA	Q7
81906800156	ZENER 5239 9.1V SOT-23	1	EA	CR21
81906800164	DIODE BAV99 50ma SOT-23	2	EA	CR16 CR17
81906811060	IC XC3030A LCA	1	EA	U25
81906811100	IC DUAL AUDIO LO PWR	9	EA	U2 U5 U9 U13 U16 U19 U22 U26
		4.0		
81906811150	IC DG405DY SOIC-16 DUAL	16	ΕA	03 07 010 014 017 020 023 027
0405 4004		0	– ^	04 08 011 015 018 021 024 028
CA25-1324	DOC OUTPUT MONTOR AUD JAG	0	EA	
DD52-1324	DOC OUTPUT MONTOR AUD JAG	0	EA	
SC33-1324	DOC OUTPUT MONTOR AUD JAG	0	ΕA	



128X64 A/A Output Card with Monitor (X-Off) - 81906518440

81901800190	RELAY DIP 24V DPST (2A)	9	EA	RLY1-RLY9
81906518430	JAG AUD OUT SWX CRD W/MON	1	EA	
81906600820	RESISTOR 4.7K 5% 0805 SMT	41	EA	R4 R5 R13 R14 R22 R23 R33 R34
				R42 R45 R55 R56 R67 R68 R90
				R91 R52 R57 R63 R64 R69 R70
				R74 R75 R76 R77 R80 R81 R82
				R83 R84 R85 R86 R87 R92 R96
				R97 R98 R99 R100 R110
81906600986	RESISTOR 22K 5% 0805 SMT	9	EA	R8 R16 R25 R35 R48 R60 R73 R94
				R51
81906770052	CAP 1MF 20V TANLUM SIZE A	12	ΕA	C6 C10 C14 C19 C24 C28 C31 C34
				C25 C2 C7 C40
81906800016	TRANS SMT, MMBT3904LT1	9	ΕA	Q1-Q9
81906800156	ZENER 5239 9.1V SOT-23	9	ΕA	CR1 CR4 CR7 CR10 CR13 CR18
				CR22 CR25 CR21
81906800164	DIODE BAV99 50ma SOT-23	18	EA	CR2 CR3 CR5 CR6 CR8 CR9 CR11
				CR12 CR14 CR15 CR16 CR17
				CR19 CR20 CR23 CR24 CR26
				CR27
CA25-1324	DOC OUTPUT MONTOR AUD JAG	0	ΕA	
SC33-1324	DOC OUTPUT MONTOR AUD JAG	0	ΕA	


Digital Audio Output Combiner Card - 81906518360

81901601187 81902105050 81902413270 81902901479 81902908300 81902908310 81902908320 81906518490 81906600432	REG MC7805C +5V 1A TO-220 LABEL BARCODE 1.5"x0.25" PCB DIGTAL AUD OUTPUT MON SOCKET 8 PIN LOW PROF IC CONN 3x5 PIN MALE RA .025 CONN 3x6 PIN MALE RA .025 CONN 3 PIN PC MNT R/A SOFT SERIAL PORT DECODER RESISTOR 110 OHM 5% 0805	1 1 1 4 1 8 1 16
81906600820	RESISTOR 4.7K 5% 0805 SMT	16
81906601067	RESISTOR 47K 5% 0805 SMT	8
81906620180	RESISTOR 10 OHM 5% 1206	18
81906640024 81906730015 81906770052 81906800590 81906810340 81906810970	RESISTOR 2.0 OHM 5% 1210 CAP 0.1MF 50V CERMIC 1206 CAP 1MF 20V TANLUM SIZE A ZENER MMBZ5V6ALT1 SOT23 IC 74HC00 QUAD AND SO SMT IC DIFF BUS TRANSCEIVER	1 11 2 9 8 9
81906811060 CA25-1327 DD52-1327 SC33-1327	IC XC3030A LCA DOC DIGTAL AUD OUTPUT MON DOC DIGTAL AUD OUTPUT MON DOC DIGTAL AUD OUTPUT MON	1 0 0 0

ΕA ΕA REF U6 EA J1 J2 J3 J4 1 EA J5 EA J6-J13 3 EA REF U6 EA R4 R5 R6 R8 R13 R14 R17 R18 6 R24 R25 R30 R31 R34 R35 R36 R37 6 EA R7 R11 R16 R20 R21 R23 R26 R27 R43 R44 R48 R49 R53 R54 R57 R58

- EA R42 R45 R47 R50 R52 R55 R56 R59
- 8 EA R2 R3 R9 R10 R12 R15 R19 R22 R28 R29 R32 R33 R38-R41 R46 R51
- EA R1

EA

ΕA

U1

- 11 EA C2 C4-C13
- EA C1 C3
- EA CR1-CR9
 - EA U2 U4 U7 U10 U12 U14 U16 U19
 - EA U3 U5 U8 U11 U13 U15 U17 U18 U20
 - EA U9
 - EA
 - EA
 - EA



Output Monitor Control Card - 81906518460

81901000840 CAP 0.1F 5.5V 81901601187 REG MC7805C +5V 1A TO-220 81901606730 IC 68HC11E9 SINGLE CHIP 81901606830 IC 7.3728 MHZ OSCILLATOR 81902105050 LABEL BARCODE 1.5"x0.25" 81902413340 PCB AUDIO OUTPUT CONTROL 81902600436 SWITCH 8 POS DIP 16-PIN 81902907240 CONN 32 POS MALE R/A 16x2 81903200541 LED GREEN RT/A HI-EFF PCB 81903200558 LED RED RT/A HI-EFF PC MT 81906600424 RESISTOR 100 OHM 5% 0805 81906600549 RESISTOR 330 OHM 5% 0805 81906600783 RESISTOR 3.3K 5% 0805 SMT 81906600820 RESISTOR 4.7K 5% 0805 SMT

81906600945 RESISTOR 15K 5% 0805 SMT 81906600986 RESISTOR 22K 5% 0805 SMT 81906601067 RESISTOR 47K 5% 0805 SMT 81906601133 RESISTOR 100K 5% 0805 SMT 81906601307 RESISTOR 510K 5% 0805 SMT 81906640024 RESISTOR 2.0 OHM 5% 1210 81906700320 CAP 220PF NPO 0805 CERAMC 81906730015 CAP 0.1MF 50V CERMIC 1206

81906760160 CAP 1500PF 50V CERAM 1206 81906770037 CAP TANTLM,SMT,2.2MFD/35V 81906770060 CAP 10MF 6.3V TANT CASE B 81906800016 TRANS SMT, MMBT3904LT1 81906800107 TRANS SMT.MMBT3906L 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 81906810890 IC RS485 RECVR/TRANSMITTR 81906810930 IC TL7705 MICRO SUPERVISR 81906810960 IC OPTOCOUPLER SMT 4N32 81906811030 IC 74HC273 OACTAL REGISTR 81906811040 IC 74HC138 3 TO 8 DECODER 81906811080 IC DS1210 NONVOL CNTL CHP 81906811100 IC DUAL AUDIO LO PWR 81906920030 SWITCH DIP 4 POS GULLWING 81906940040 SOCKET 52 PIN PLCC SMT 81906950040 BEAD INDUCTOR SMT

1 1 1 1	EA EA EA	C2 U3 U13 XTAL1
1 3 1 1	EA EA EA EA	S1 S2 S3 J1 CR1
1 1 8 5 3	EA EA EA EA EA	CR2 R1 R4 R9 R16 R19 R22 R28 R35 R36 R5-R7 R65 R34 R2 R15 R20
38	EA	R13 R18 R21 R25 R27 R29-R33 R37-R64
1 1 1	EA EA EA	R12 R3 R23
4 2 1	EA EA EA	R24 R26 R11
2 27	EA EA	C20 C22 C1 C3-C19 C23-C26 C28 C29 C32 C33 C34
2 1	EA EA	C21 C31 C30 C27
1 3	EA EA EA	Q1 Q2 Q3 Q4
2 1 1	EA EA EA	U8 U14 U10 U11
1 5	EA EA	U5 U15 U17-U20
1 1 1	EA EA EA	U9 U6 U7
1 1 1	EA EA EA	U2 U16 U12
1	EA EA	U4 U1
1	EA EA	54 REF: U13





Output Monitor Control Card - 81906518460 Continued:

CA25-1334 DD52-1334	DOC AUDIO OUTPUT MON CTRL	0	EA FA	
NOT-PLACED	ITEMS NOT PLACED ON EBOM	0	EA	TP1 TP2
SC33-1334 SP57-0373	DOC AUDIO OUTPUT MON CTRL DOC PANLZTION AUD OUT MON	0	EA EA	



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 ± 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 ± 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.