Section 4 – Backplane Connector Card Jumpers

Important: The Venus Switcher System backplane connector card contains jumpers that determine the card base address, level, and card configuration. These jumpers are set at the factory and should not be changed unless instructions to do so are given by a Thomson representative.

Overview

The Venus switcher system is a high density routing switcher system based on 16 input by 32 output video matrix cards. The audio matrix cards are twice this density as will be explained in detail below. Matrix and output card programming is done with backplane jumpers, negating the need for on-card programming except for some options which are selected on some output cards. This allows boards to be swapped in most cases without any programming of those cards.

Since Venus system architecture is based on multiples of 16 rather than multiples of 10 as in previous Philips switchers, matrix control is slightly different. A new crosspoint bus protocol referred to as “Binary Super Crosspoint Bus” is now required. This is very similar to Super Crosspoint Bus, but the units digits are now allowed to cover the range from 0 to F, rather than 0 to 9 as in previous switchers. Because of this change, a Jupiter or SC 400 control system is required for Venus switchers.

32 output backplane

Most Venus routing switchers are configured in 32 output groupings. (See Figures 4–2 and 4–3). This configuration will be explained first. For analog and digital video, a special 64 output grouping is also available and will be described later. Either type may be used with analog or digital audio.

Each pair of cards is programmed by jumpers on the backplane. The two slots are permanently encoded as a pair with the right most slot (as viewed from the rear of the chassis) being the *lower* and the left most being the *higher* of the two slots. This *High/Low* definition varies from card to card, depending on the card and system configuration. In a 32 output system, this usually means that the *low* card is at the address programmed by the jumpers and the *high* card is 16 inputs (matrix card) or 16 outputs (output card) higher than the base address. In this case, the input jumper programming progresses in increments of 32.

To illustrate this, the programming for a 352 by 64 video switcher is shown in Figures 4–2 and 4–3. Note that all matrix and output cards are on the same level. All matrix cards on a given ZIF board (rack frame in this case) are set to the same output number. The input numbers progress from right to left (rear view) in increments of 32. At the output card slots, the output number used is the output number for the output monitor. In larger, multi rack systems, all output cards are set to the same output number. By convention, this number should be the next output number range above the last real output in the system. On a 352 by 64 switcher system, the output numbers would be from 0 to 63. The output monitor would then be 64. The input number jumper setting for the output cards is the same binary number as the output number used on matrix card slots. This information is used two ways. It instructs the output monitor as to which output is to be monitored. On some boards it also directs additional switching control on the output card when a matrix card command is received.

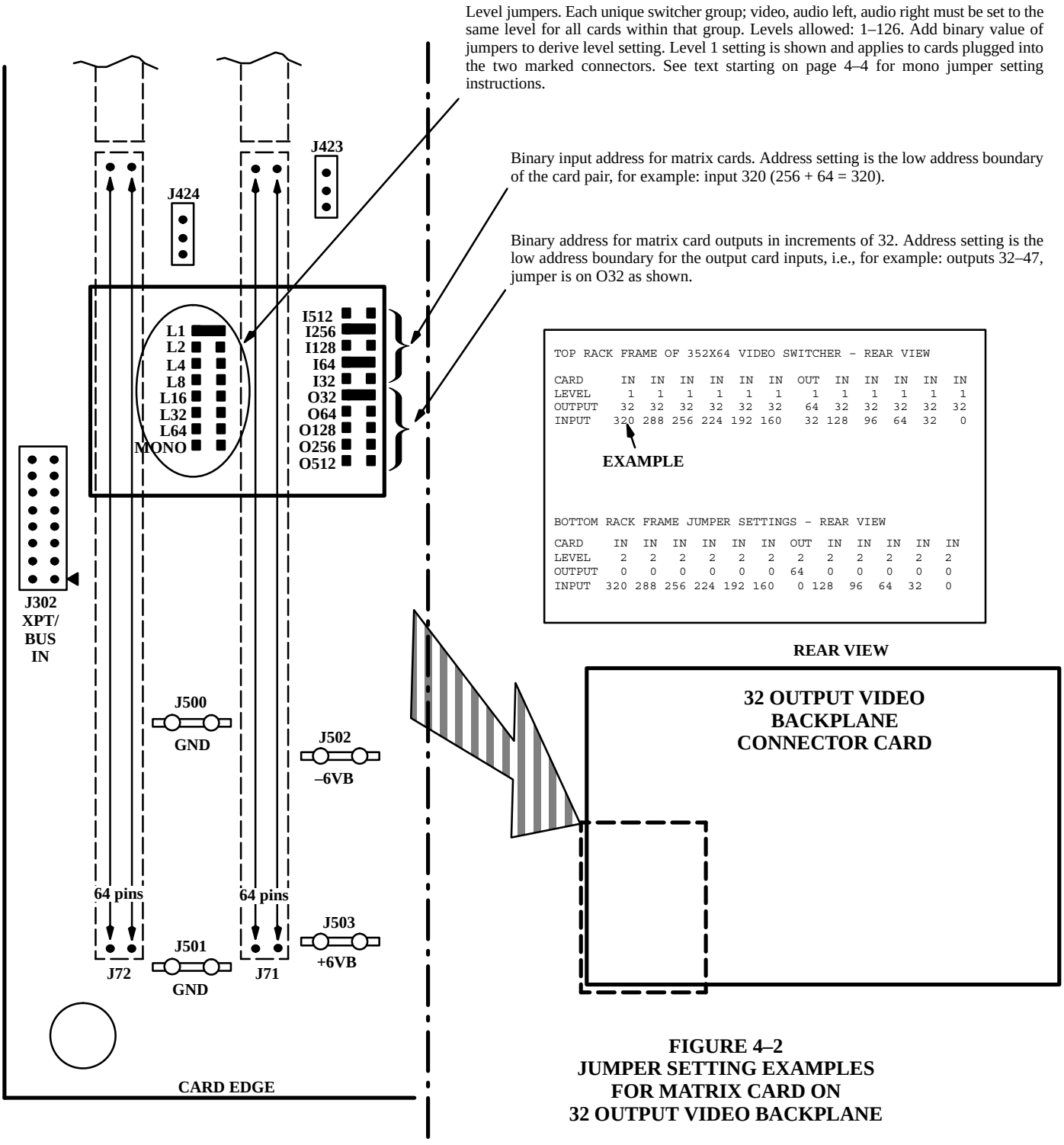
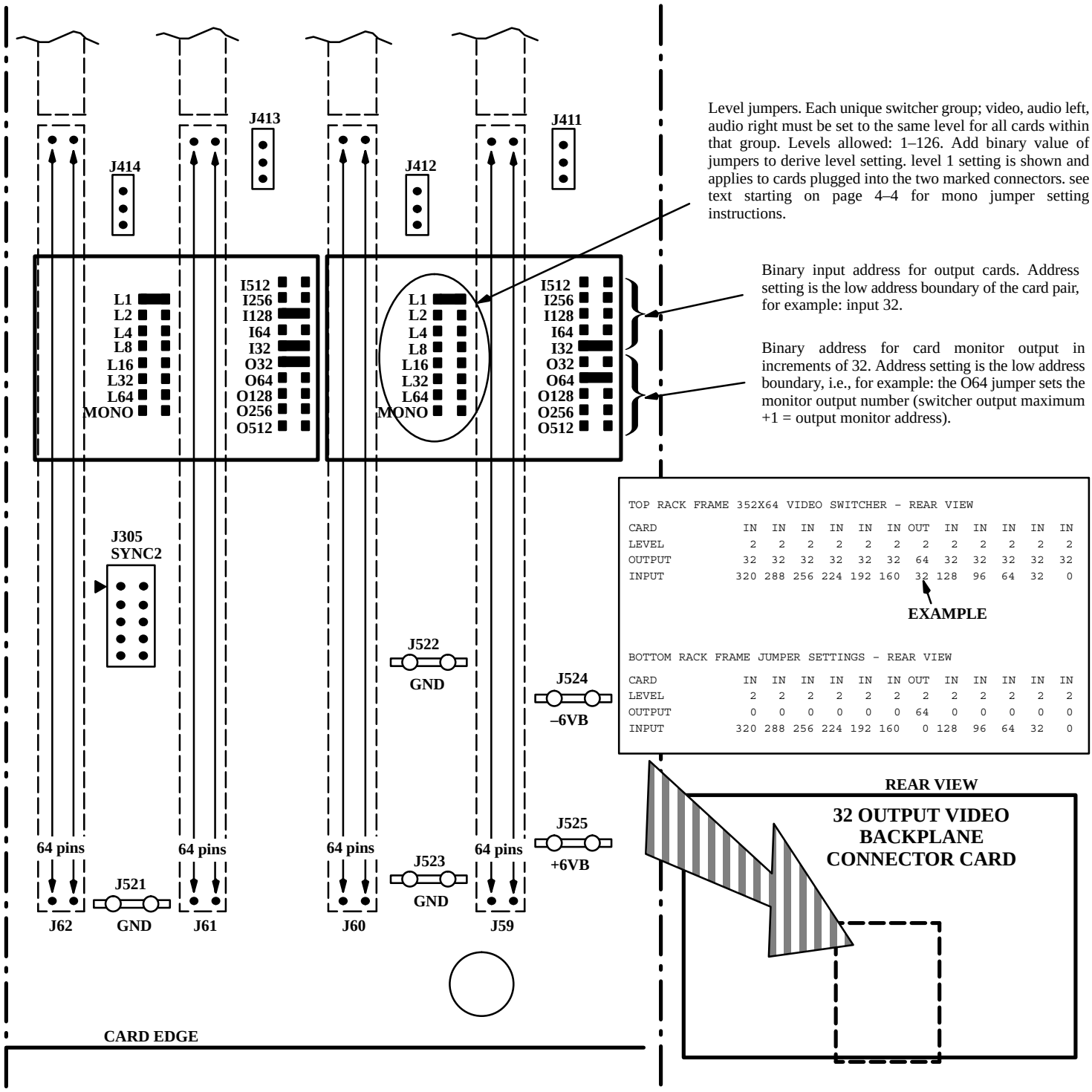


FIGURE 4–2
JUMPER SETTING EXAMPLES
FOR MATRIX CARD ON
32 OUTPUT VIDEO BACKPLANE



Level jumpers. Each unique switcher group; video, audio left, audio right must be set to the same level for all cards within that group. Levels allowed: 1–126. Add binary value of jumpers to derive level setting. level 1 setting is shown and applies to cards plugged into the two marked connectors. see text starting on page 4–4 for mono jumper setting instructions.

Binary input address for output cards. Address setting is the low address boundary of the card pair, for example: input 32.

Binary address for card monitor output in increments of 32. Address setting is the low address boundary, i.e., for example: the O64 jumper sets the monitor output number (switcher output maximum +1 = output monitor address).

TOP RACK FRAME 352X64 VIDEO SWITCHER – REAR VIEW

CARD	IN	IN	IN	IN	IN	IN	OUT	IN	IN	IN	IN	IN
LEVEL	2	2	2	2	2	2	2	2	2	2	2	2
OUTPUT	32	32	32	32	32	32	64	32	32	32	32	32
INPUT	320	288	256	224	192	160	32	128	96	64	32	0

EXAMPLE

BOTTOM RACK FRAME JUMPER SETTINGS – REAR VIEW

CARD	IN	IN	IN	IN	IN	IN	OUT	IN	IN	IN	IN	IN
LEVEL	2	2	2	2	2	2	2	2	2	2	2	2
OUTPUT	0	0	0	0	0	0	64	0	0	0	0	0
INPUT	320	288	256	224	192	160	0	128	96	64	32	0

FIGURE 4–3
JUMPER SETTING EXAMPLE
FOR OUTPUT CARD IN
32 OUTPUT VIDEO BACKPLANE

ZIF connector cards

Actual configuration of the switcher system is controlled by the ZIF card(s). Analog and digital video must use the correct rear backplane card type that is compatible with the ZIF card. At present, there are 21 different styles of ZIF cards. ZIF cards come in 4, 6, 8, 12 or 24 slot increments making it possible to mix different sizes and types of switcher within the same rack frame. A brief description of each follows. The terms *left* and *right* mean as viewed from the front of the chassis. Analog Audio ZIF boards are unique, and are only used for that purpose. The Analog Video ZIF is also used for AES Digital Audio, and for Digital Video with ZIF bus terminations added.

			Available for:			
Size	**Slots**	**Card layout**	**AV**	**DV/DA**	**AA**	**Data**
32 x 32	4	2 matrix on left, 2 output on right	*	*	*	
64 x 32	6	2 matrix on left, 2 output in center, 2 matrix on right	*	*	*	
96 x 32	8	2 matrix on left, 2 output in center, 4 matrix on right	*	*	*	
160 x 32	12	4 matrix on left, 2 output in center, 6 matrix on right	*	*	*	
352 x 32	24	10 matrix on left, 2 output in center, 12 matrix on right	*	*	*	
64 x 64	12	4 matrix on left, 4 output in center, 4 matrix on right	*	*		
160 x 64	24	10 matrix on left, 4 output in center, 10 matrix on right	*	*		
64 port	4	N/A (all cards identical)				*
192 port	12	N/A (all cards identical)				*

AV = Analog Video **DV/DA** = Digital Video and Digital Audio **AA** = Analog Audio

Slot encoding jumpers

The Venus Switcher System backplane connector card contains jumpers that determine the card base address, level and card configuration. The jumpers provide system interconneections that physically tie the switcher together. (See Figure 4–4.)

IMPORTANT

The backplane jumpers are set at the factory and should not be changed unless instructions to do so are given by the Thomson Customer Service Department. Access to the jumpers on the backplane card is severely limited by the input and output cabling. Changes should be made only by persons who are familiar with the Venus Switcher operation and jumper setup. (Details of factory jumpers are shown starting on page 4–8.)

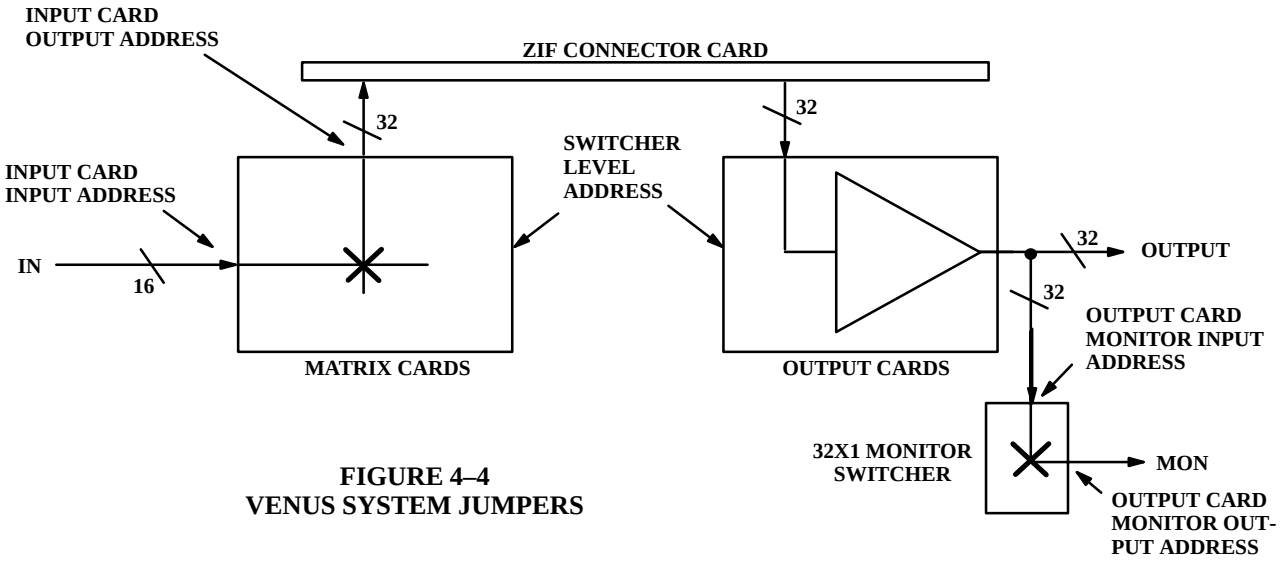


FIGURE 4–4
VENUS SYSTEM JUMPERS

JUMPER DEFINITIONS

L1
L2
L4
L8
L16
L32

Backplane jumpers represent a seven bit binary number corresponding to the physical address level of the switcher. Switcher levels 0 and 127 are not permitted. Any level between 1 and 126 is allowable, except for certain restrictions for Analog Stereo Audio. The number following the L is the decimal equivalent of the binary value of that bit. (See Level Jumper Setting Figure 4–10 on page 4–20.)

MONO

Analog audio cards: analog audio matrix cards are inherently stereo in a 16 input by 32 output configuration. Installing MONO jumper in all audio matrix and output card locations changes them to a 32 by 32 mono configuration.
ES 401§ Digital AES cards: these cards are inherently stereo in a 32 input by 32 output configuration. Installing MONO jumper in all audio matrix and output card locations changes them to a 64 by 64 mono configuration. This jumper overrides switch S1–2 “Single Level Operation” on the EO 421 Digital Audio Output card (as described on page 3–22).
Other cards: MONO jumper is irrelevant.

I512
I256
I128
I64
I32

These 5 (or 6) mother board jumpers represent the binary input number base address range of each matrix or output card. 32 output configurations use 5 bits. Matrix cards in 64 output configurations need 6 bits because two adjacent cards are on the same input number, but different output numbers. This requires the input address to be decoded down to increments of 16. (See Card Base Number Jumper Setting Figure 4–9 on page 4–19.)

O32

The jumper position, O32, should be labeled **O32/I16**, but due to space restrictions could only be labeled as shown. The double label results from the need to designate the bit as a dual output/input bit, depending on the use of the card affected by the jumper. This jumper is utilized as an I16 jumper on matrix cards in a 64-output configuration. (See Figure 4–6.)

O64
O128
O256
O512

These 5 (or 4) mother board jumpers represent the binary output number base address range of each matrix or output card. 32 output configurations use 5 bits. Matrix cards in 64 output configurations only need 4 bits because two adjacent cards are on different outputs covering a range of 64. In this case, the HIGH/LOW encoding acts to distinguish between the lower 32 and upper 32 outputs. Video matrix cards receive a signal from the ZIF connector which programs them for either the 32 or 64 output mode. (See Card Base Number Jumper Setting Figure 4–9 on page 4–19.)

64 output backplane

Note: The following discussion applies to analog and digital video switchers only.

The 64 output configuration exists because it reduces external cabling on some switchers. (See page 4–23.) Each input signal feeds two adjacent matrix cards negating the need for looping cables to the second card. This places the two adjacent matrix cards on the same 16 inputs, but on 64 outputs instead of the normal 32. The HIGH/LOW slot encoding then selects between the lower 32 outputs and the upper 32 outputs. The O32 bit is not needed in this case. However, since the inputs to the two slots are limited to just 16 inputs, the input number needs to be decoded to a 16 input range. **Venus 64 output configurations use the O32 bit as an *I16* bit.**

§ In this manual, “ES 401 switcher” refers to the new AES11 synchronous/asychronous version of the digital audio switcher matrix board and its associated components.

Note: There is no way to determine which backplane slots will use the 64 output configuration, and there is not enough physical room on the backplane for a dual label. Therefore, the substitution of O32 to I16 must be known by the technician setting the jumpers.

In the 64 output mode, input numbers advance in increments of 16 and output jumper settings advance in increments of 64. Output cards do not need an I16 bit and thus program in the same manner as in the 32 output configuration with one exception. The input number of the first pair (right) of outputs is the same as the output base number set for the matrix cards. However, the left pair of output cards need to be 32 inputs higher. Each output card controls 16 outputs. The first two cards are 0-15 and 16-31, respectively. The remaining two cards are for outputs 32-47 and 48-63, thus the need for the input number to be 32 higher.

To illustrate this, the programming for a 160 by 128 video switcher is shown in Figure 4–6. Note that all matrix and output cards are on the same level. All matrix cards are set to the same output number. The input numbers progress from right to left in increments of 16. At the output card slots, the output number used is the output number for the output monitor. In larger, multi-rack systems, all output cards are set to the same output number. By convention, this number should be the next output number range above the last real output in the system. On a 160 by 128 switcher system, the output numbers would be from 0 to 127. The output monitor would then be 128. The input number setting for the first pair of output cards is the same number as the output number used on matrix card slots. The second pair of output cards is 32 higher than this.

Analog audio switcher - special rules

Analog Audio cards are inherently 16 by 32 Stereo. Analog Audio switchers are always configured in 32 output blocks, and all of the rules for the 32 output configuration apply. The left and right channels are on the same input and output numbers, but are on different levels. **The VENUS cards are permanently programmed such that the right channel is always 4 physical level numbers higher than the left channel.** The jumper settings are those for the left channel and are restricted to using only those level numbers where the L4 jumper is NOT installed. This means that levels 1, 2, and 3; 10, 11, etc., may be used, but levels 4, 5, 6, 7; 12, 13,14, 15, etc., cannot. If level 2 were chosen as the base level for the left channel, the right channel automatically becomes level 6. If the L4 jumper is installed at any time in the stereo mode, the card will not operate.

Analog Audio cards have the ability to do left-to-right, and right-to-left conversions as well as mono mix operations. (See Figure 4–17.) These new functions required additional control bits. The I512 bit in the Crosspoint Bus protocol was used as one of these control bits. It is therefore not possible to use input numbers larger than 511, and the I512 jumper will have no effect.

The MONO jumper puts the Analog Audio cards to be used as a 32 by 32 mono level configuration. In this mode, any switcher level is allowable. The numbers programmed by the input jumpers will advance in increments of 64 and the I32 jumper is ignored.

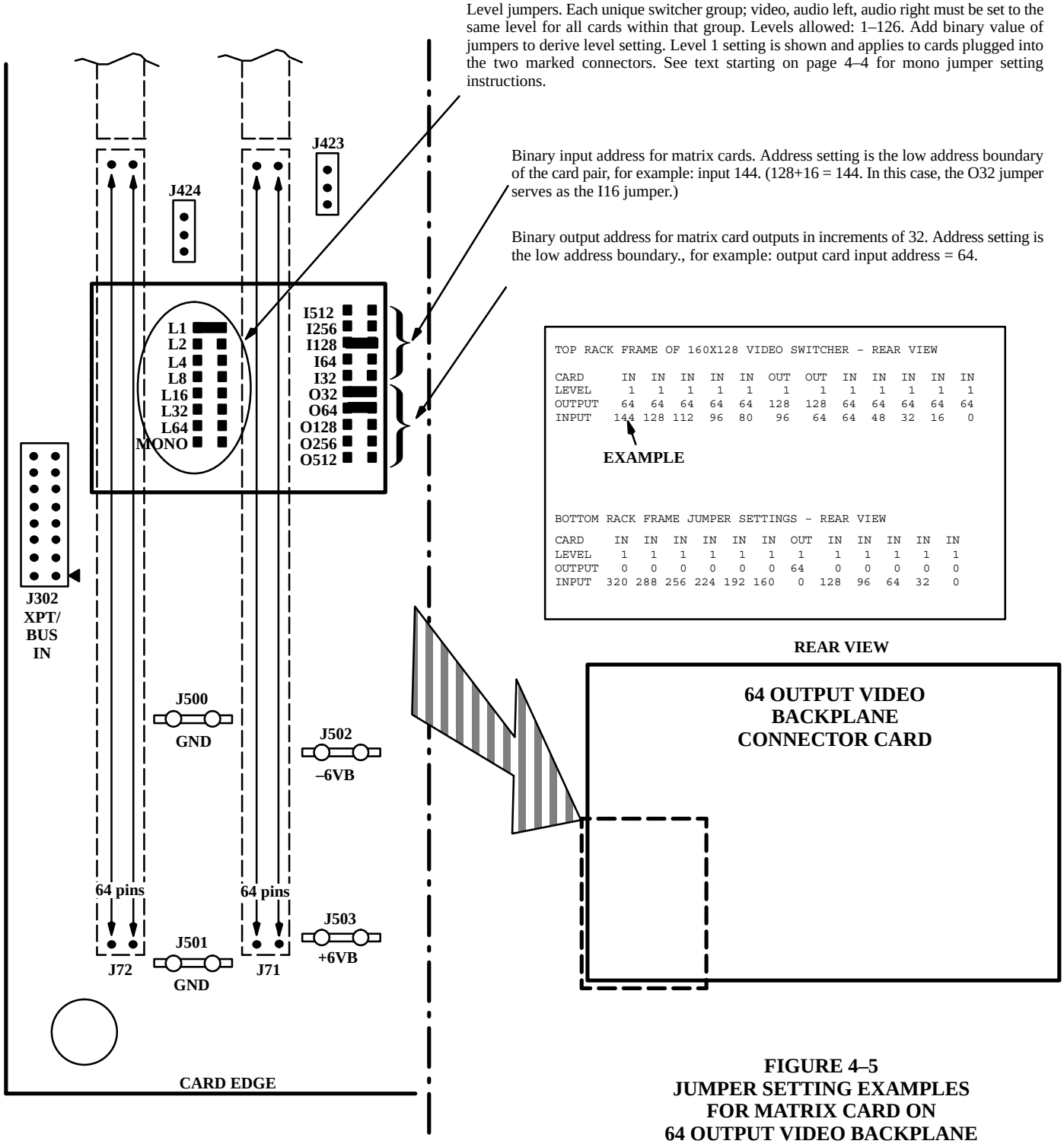
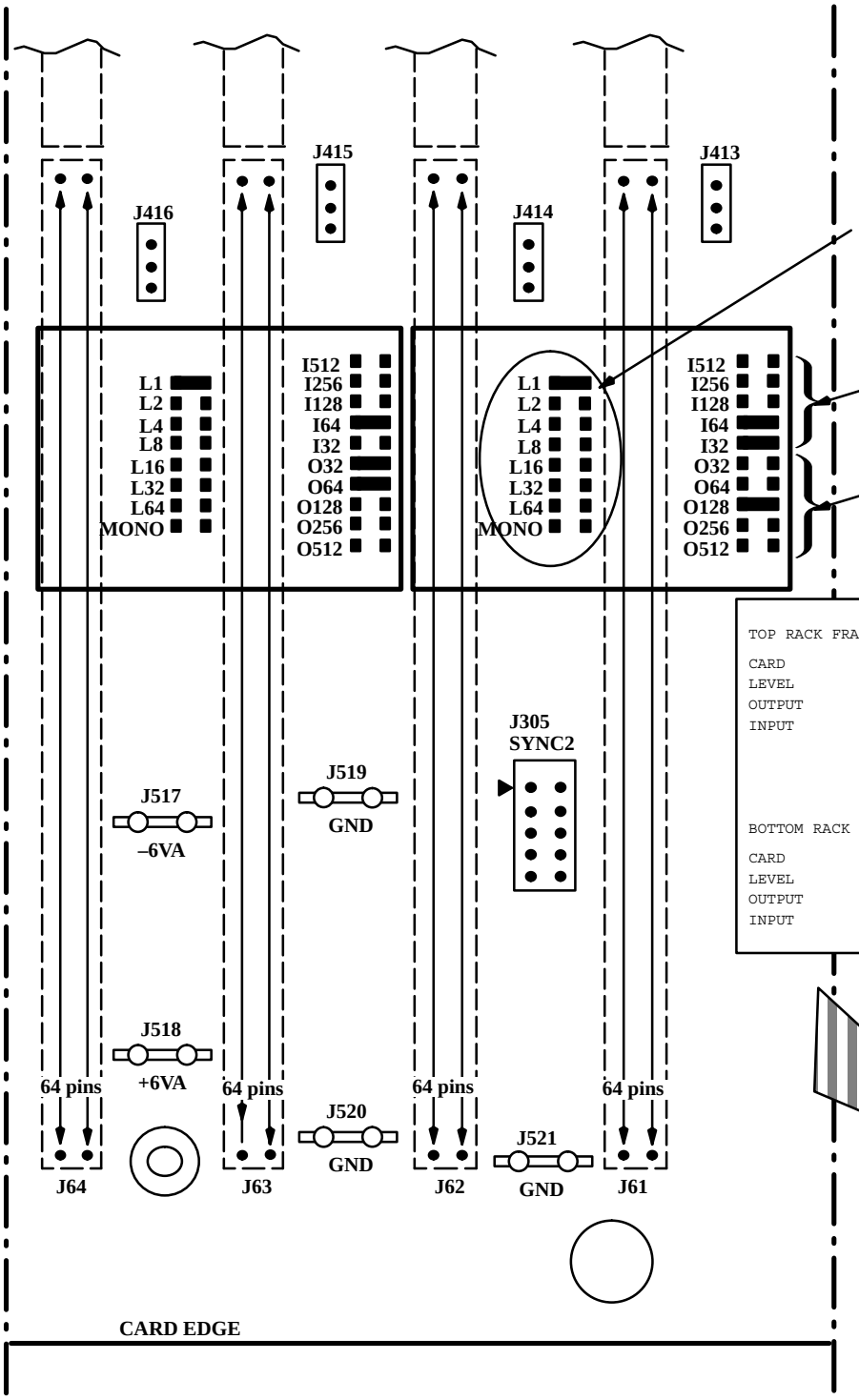


FIGURE 4–5
JUMPER SETTING EXAMPLES
FOR MATRIX CARD ON
64 OUTPUT VIDEO BACKPLANE



Level jumpers. Each unique switcher group; video, audio left, audio right must be set to the same level for all cards within that group. Levels allowed: 1–126. Add binary value of jumpers to derive level setting. level 1 setting is shown and applies to cards plugged into the two marked connectors. see text starting on page 4–4 for mono jumper setting instructions.

Binary input address for output cards. Address setting is the low address boundary of the card pair, for example: input 96.

Binary output address for monitor output in increments of 32. Address setting is the low address boundary, for example: monitor output address O128.

TOP RACK FRAME 160 X 128 VIDEO SWITCHER – REAR VIEW

CARD	IN	IN	IN	IN	IN	OUT	OUT	IN	IN	IN	IN	IN
LEVEL	1	1	1	1	1	1	1	1	1	1	1	1
OUTPUT	64	64	64	64	64	128	128	64	64	64	64	64
INPUT	144	128	112	96	80	96	64	64	48	32	16	0

EXAMPLE

BOTTOM RACK FRAME JUMPER SETTINGS – REAR VIEW

CARD	IN	IN	IN	IN	IN	OUT	OUT	IN	IN	IN	IN	IN
LEVEL	1	1	1	1	1	1	1	1	1	1	1	1
OUTPUT	0	0	0	0	0	128	128	0	0	0	0	0
INPUT	144	128	112	96	80	32	0	64	48	32	16	0

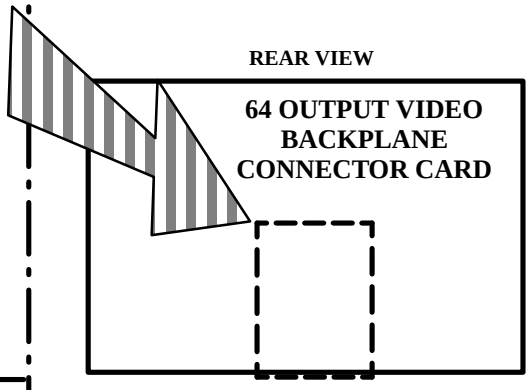
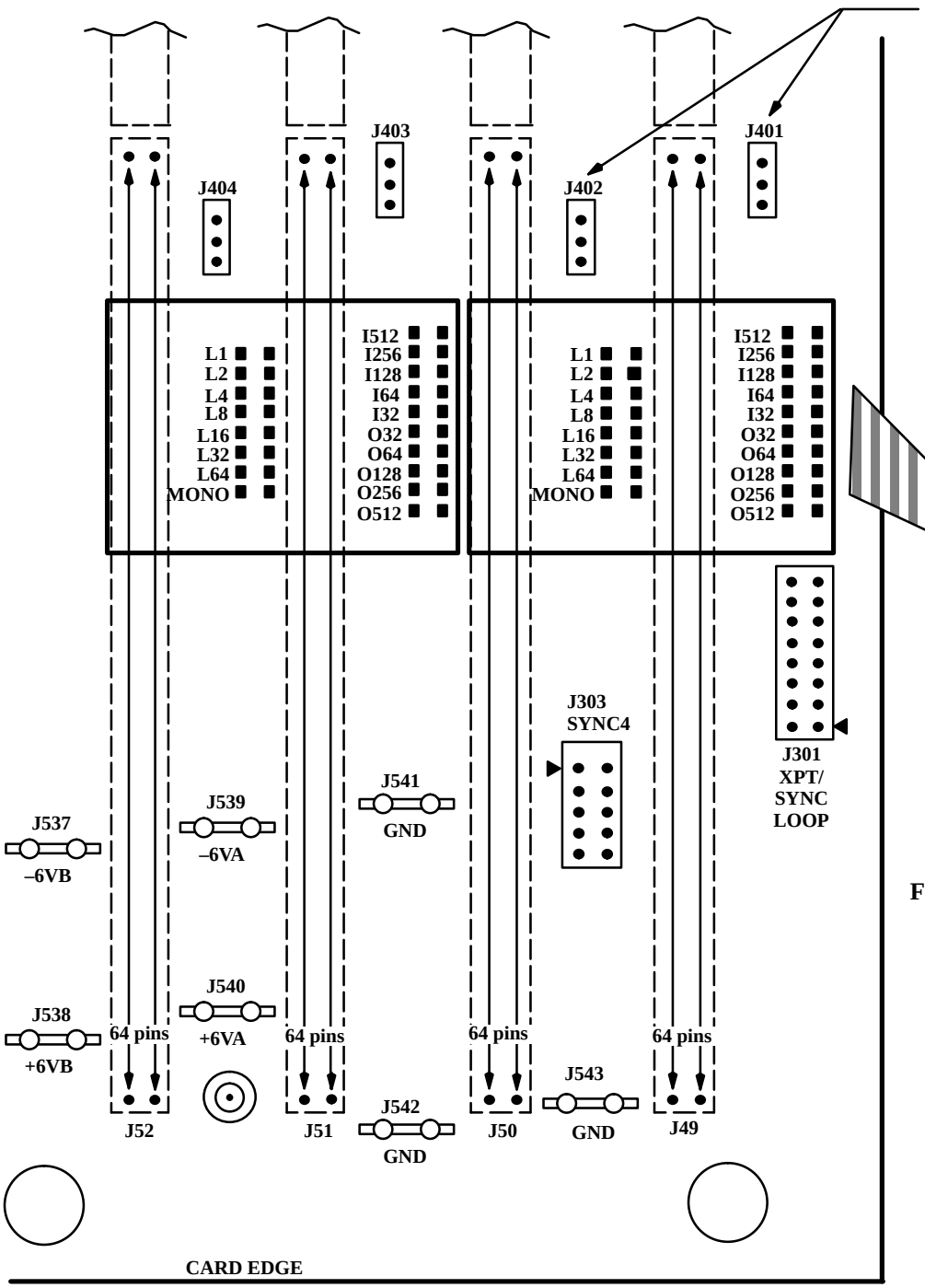


FIGURE 4–6
JUMPER SETTING EXAMPLE
FOR OUTPUT CARD IN
64 OUTPUT VIDEO BACKPLANE



Video/audio monitor connectors are located across the card. Monitor outputs can be paralleled for audio due to tri–state drivers on the audio output cards. Switcher configuration and ZIF connectors determine connector placement. Odd number connectors = left channel audio, or video monitor. Even number connectors = right channel audio-only monitor.

J401–j424 Monitor Output Connectors

Pin	Video	Audio
1	Common	Mon –
2	Mon	Mon +
3	N.C.	Gnd

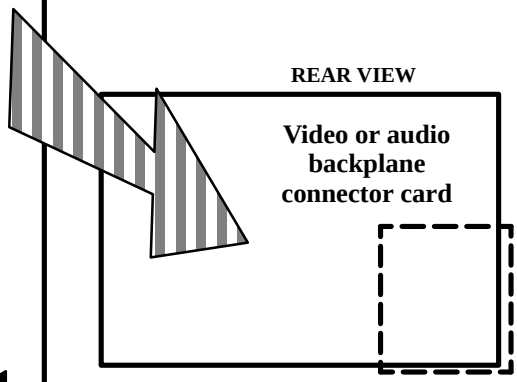


FIGURE 4–7
MONITOR CONNECTORS
FOR VIDEO OR AUDIO BACKPLANES

Other jumper setting examples

352 X 64 STEREO AUDIO SWITCHER

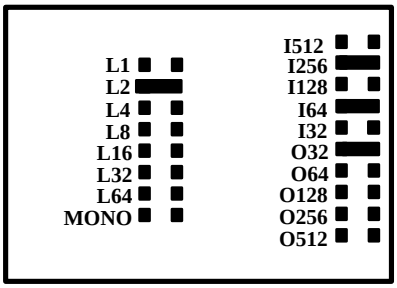
TOP RACK FRAME JUMPER SETTINGS - REAR VIEW

CARD	IN	IN	IN	IN	IN	IN	OUT	IN	IN	IN	IN	IN
LEVEL	2	2	2	2	2	2	2	2	2	2	2	2
OUTPUT	32	32	32	32	32	32	64	32	32	32	32	32
INPUT	320	288	256	224	192	160	32	128	96	64	32	0
	|						|				
	Example 1						Example 2					

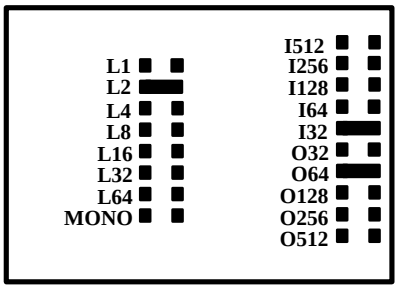
BOTTOM RACK FRAME JUMPER SETTINGS - REAR VIEW

CARD	IN	IN	IN	IN	IN	IN	OUT	IN	IN	IN	IN	IN
LEVEL	2	2	2	2	2	2	2	2	2	2	2	2
OUTPUT	0	0	0	0	0	0	64	0	0	0	0	0
INPUT	320	288	256	224	192	160	0	128	96	64	32	0

Example 1 - Matrix Card: Level 2, Output 32, Input 320



Example 2 - Output Card: Level 2, Output 64, Input 32



704 X 64 ANALOG MONO AUDIO SWITCHER

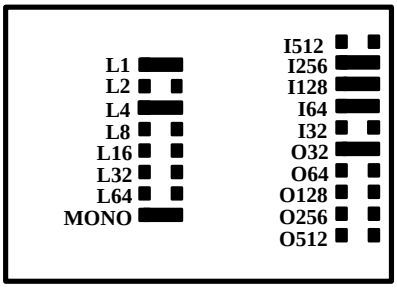
TOP RACK FRAME JUMPER SETTINGS - REAR VIEW

CARD	IN	IN	IN	IN	IN	IN	OUT	IN	IN	IN	IN	IN
LEVEL	5	5	5	5	5	5	5	5	5	5	5	5
OUTPUT	32	32	32	32	32	32	64	32	32	32	32	32
INPUT	640	576	512	448	384	320	32	256	192	128	64	0
				|			|					
				Example 3			Example 4					

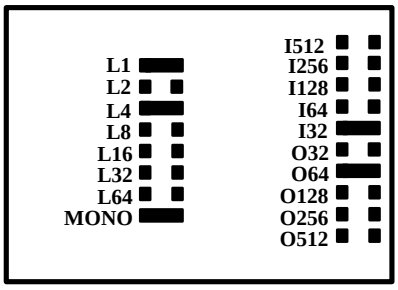
BOTTOM RACK FRAME JUMPER SETTINGS - REAR VIEW

CARD	IN	IN	IN	IN	IN	IN	OUT	IN	IN	IN	IN	IN
LEVEL	5	5	5	5	5	5	5	5	5	5	5	5
OUTPUT	0	0	0	0	0	0	64	0	0	0	0	0
INPUT	640	576	512	448	384	320	0	256	192	128	64	0

Example 3 - Matrix Card: Level 5, Output 32, Input 448



Example 4 - Output Card: Level 5, Output 64, Input 32



ES 401 AES digital audio switcher - special rules

1. When operated in the one–level stereo or two–level stereo mode, the ES 401§ backplane settings are the same as those for the ES 400 just described.

   However, when operated in the one–level mono mode, the cards are 64 x 64 so you must count in blocks of 64. I16 and I32 do not function. I64 is slot–selected. Only I128 and above are used. The same is true for the outputs.

2. When using the extra output slot for a matrix card, then that slot has jumpers set for the next highest matrix card, and front–edge DIP switches on the Output card are used for setting the output monitor address.

§ In this manual, “ES 401 switcher” refers to the AES11 synchronous/asychronous version of the digital audio switcher matrix board and its associated components.

System configuration

Configuration of cards and interconnection of cards within the Venus rack frame is represented starting with Figure 4–13 for a Venus 64X64 video switcher and including 64X32 and 32X32 switcher configurations, along with the 64X32 Analog Stereo Audio Switching system.

Analog Stereo Audio Mode Switching is illustrated in Figure 4–17. Note that any combination of stereo or monaural channel configuration is possible with the switching facilities available on the output card. For MONO applications (time code, etc.), the output card can be jumpered (see also Figure 4–8) for MONO operation without a -6 dB gain reduction. If used in this manner, a 16X32 stereo switcher matrix becomes a 32X32 mono matrix.

CARD SLOT ASSIGNMENTS

32 x 32 VIDEO OR AUDIO SLOT ASSIGNMENTS - REAR VIEW

OUTPUT 16	OUTPUT 0	INPUT 16	INPUT 0

64 x 32 AUDIO SLOT ASSIGNMENTS - REAR VIEW

OUTPUT 16	OUTPUT 0	INPUT 48	INPUT 32	INPUT 16	INPUT 0

64 x 32 VIDEO SLOT ASSIGNMENTS - REAR VIEW

INPUT 48	INPUT 32	OUTPUT 16	OUTPUT 0	INPUT 16	INPUT 0

160 x 32 AUDIO SLOT ASSIGNMENTS - REAR VIEW

INPUT 144	INPUT 128	INPUT 112	INPUT 96	OUTPUT 16	OUTPUT 0	INPUT 80	INPUT 64	INPUT 48	INPUT 32	INPUT 16	INPUT 0

352 x 32 VIDEO OR AUDIO SLOT ASSIGNMENTS - REAR VIEW

IN336	IN320	IN304	IN288	IN272	IN256	IN240	IN224	IN208	IN192	IN176	IN160	OUT144	OUT160	IN144	IN128	IN112	IN096	IN080	IN064	IN048	IN032	IN016	IN000

64 x 64 VIDEO SLOT ASSIGNMENTS - REAR VIEW

IN048	IN032	IN016	IN000	OUT144	OUT128	OUT112	OUT096	IN080	IN064	IN048	IN032	IN016	IN000

160 x 64 VIDEO SLOT ASSIGNMENTS - REAR VIEW

IN144	IN128	IN112	IN096	IN080	IN064	IN048	IN032	IN016	IN000	OUT144	OUT128	OUT112	OUT096	IN080	IN064	IN048	IN032	IN016	IN000

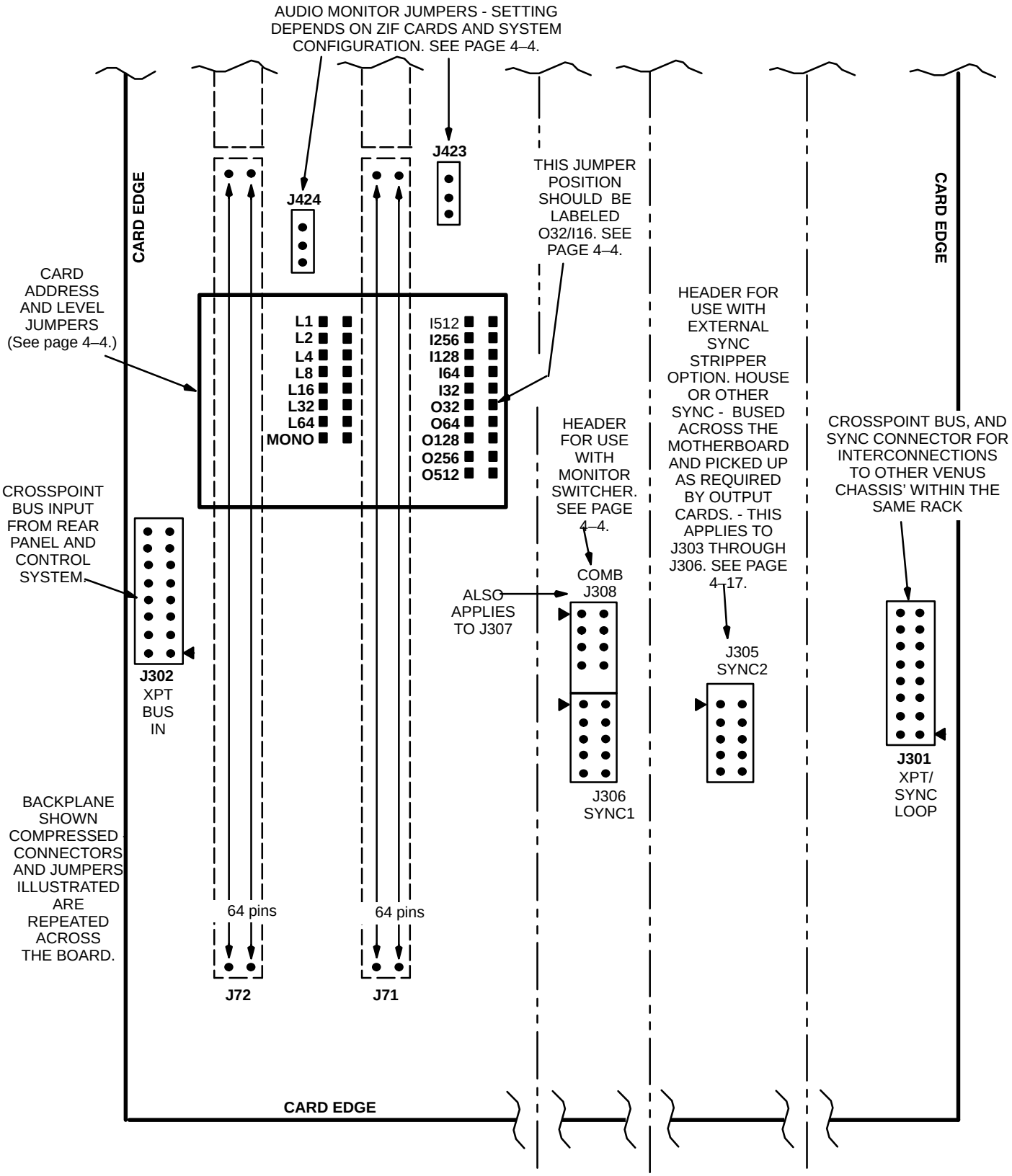


Figure 4–8. *32/64 Output backplane connector card details.*

32 and 64 output backplane connectors

J301 XPT / SYNC LOOP CONNECTOR

This connector contains Crosspoint Bus and the four SYNC signals. The purpose of this connector is to loop these signals via internal ribbon cable to additional chassis within the same equipment rack. In this way, only one sync separator is required for the entire stack of chassis. It also reduces external cabling. This connector is NOT interchangeable with J302 which has a different pinout.

J302 CROSSPOINT BUS INPUT CONNECTOR

This connector connects Crosspoint Bus from the D connectors on the chassis rear panel to each backplane. If J301 is used to connect several chassis together as described above, the external cabling only needs to connect to one of the external D connectors. This connector is NOT interchangeable with J301 which has a different pinout. Switchers larger than one equipment rack (four VENUS chassis - 96 cards) will require a Crosspoint Bus buffer.

J303-J306 SYNC CONNECTORS

These 10-pin ribbon connectors are provided for connection to optional sync strippers used to make true vertical interval switches in multi standard systems. These connectors provide power to the external circuit card (rear chassis mounted), receive the timed switch pulse from the card and distribute it to all cards in the VENUS chassis.

J307-J308 MONITOR COMBINER CONNECTORS

Some large switchers require a monitor combiner to select between multiple switcher sections. This is a secondary switcher that selects up to eight 32 or 64 output groups (depending on switcher configuration). It is connected to the combiner card via a 20-pin ribbon cable. J307 is really the combination of J307 and J304 SYNC3 so that power can be provided to the external card. J308 and J306 SYNC1 are likewise used in tandem.

J401-J424 MONITOR OUTPUTS

PIN	VIDEO	AUDIO
1	Common	MON -
2	MON	MON +
3	N.C.	GND

The upper, odd numbered connectors are used for video and left channel audio. The slightly lower, even numbered monitor connectors are used only for right channel analog audio.

J500-J549 POWER FASTON CONNECTORS

J500	P.S. B GND	Power Supply B Ground
J501	RPNL GND	Connects to Rear Panel TE Ground
J502	-6VB	-6 volts from Power Supply B
J503	+6VB	+6 volts from Power Supply B
J504	-6VA	-6 volts from Power Supply A
J505	+6VA	+6 volts from Power Supply A
J506	P.S. A GND	Power Supply A Ground
J507	+21VB	+21 volts from Power Supply B
J508	M.B. GND	Connects to J544 on next lower Mother Board
J509	+21VA	+21 volts from Power Supply A
J510	ALARM B	Common alarm to Power Supply B
J511	-21VB	-21 volts from Power Supply B

J512	P.S. B GND	Power Supply B Ground
J513	-21VA	-21 volts from Power Supply A
J514	RPNL GND	Connects to Rear Panel TE Ground
J515	-6VB	-6 volts from Power Supply B
J516	+6VB	+6 volts from Power Supply B
J517	-6VA	-6 volts from Power Supply A
J518	+6VA	+6 volts from Power Supply A
J519	P.S. A GND	Power Supply A Ground
J520	RPNL GND	Connects to Rear Panel TE Ground
J521	M.B. GND	Connects to J545 on next lower Mother Board
J522	P.S. B GND	Power Supply B Ground
J523	RPNL GND	Connects to Rear Panel TE Ground
J524	-6VB	-6 volts from Power Supply B
J525	+6VB	+6 volts from Power Supply B
J526	-6VA	-6 volts from Power Supply A
J527	+6VA	+6 volts from Power Supply A
J528	P.S. A GND	Power Supply A Ground
J529	+21VB	+21 volts from Power Supply B
J530	M.B. GND	Connects to J546 on next lower Mother Board
J531	+21VA	+21 volts from Power Supply A
J532	ALARM A	Common alarm to Power Supply A
J533	-21VB	-6 volts from Power Supply B
J534	P.S. B GND	Power Supply B Ground
J535	-21VA	-6 volts from Power Supply A
J536	RPNL GND	Connects to Rear Panel TE Ground
J537	-6VB	-6 volts from Power Supply B
J538	+6VB	+6 volts from Power Supply B
J539	-6VA	-6 volts from Power Supply A
J540	+6VA	+6 volts from Power Supply A
J541	P.S. A GND	Power Supply A Ground
J542	M.B. GND	Connects to J547 on next lower Mother Board
J543	RPNL GND	Connects to Rear Panel TE Ground
J544	M.B. GND	Connects to J508 on next higher Mother Board
J545	M.B. GND	Connects to J521 on next higher Mother Board
J546	M.B. GND	Connects to J530 on next higher Mother Board
J547	M.B. GND	Connects to J542 on next higher Mother Board
J548	T.E. GND	Connects to TE jumper on Chassis

Figure 4–9.
Card Base Number
Jumper Setting

X = JUMPER SET
- = NO JUMPER

BASE NUMBER	I 5 1 2	I 2 6	I 1 8	I 2 4	I 3 2	O 3 2	O 6 4	O 1 2 8	O 2 5 6	O 5 1 2	BASE NUMBER	I 5 1 2	I 2 6	I 2 8	I 1 4	I 3 2	O 3 2 (I16)
000	-	-	-	-	-	-	-	-	-	-	016	-	-	-	-	-	X
032	-	-	-	-	X	X	-	-	-	-	048	-	-	-	-	X	X
064	-	-	-	X	-	-	X	-	-	-	080	-	-	-	X	-	X
096	-	-	-	X	X	X	X	-	-	-	112	-	-	-	X	X	X
128	-	-	X	-	-	-	-	X	-	-	144	-	-	X	-	-	X
160	-	-	X	-	X	X	-	X	-	-	176	-	-	X	-	X	X
192	-	-	X	X	-	-	X	X	-	-	208	-	-	X	X	-	X
224	-	-	X	X	X	X	X	X	-	-	240	-	-	X	X	X	X
256	-	X	-	-	-	-	-	-	X	-	272	-	X	-	-	-	X
288	-	X	-	-	X	X	-	-	X	-	304	-	X	-	-	X	X
320	-	X	-	X	-	-	X	-	X	-	336	-	X	-	X	-	X
352	-	X	-	X	X	X	X	-	X	-	368	-	X	-	X	X	X
384	-	X	X	-	-	-	-	X	X	-	400	-	X	X	-	-	X
416	-	X	X	-	X	X	-	X	X	-	432	-	X	X	-	X	X
448	-	X	X	X	-	-	X	X	X	-	464	-	X	X	X	-	X
480	-	X	X	X	X	X	X	X	X	-	496	-	X	X	X	X	X
512	X	-	-	-	-	-	-	-	-	X	528	X	-	-	-	-	X
544	X	-	-	-	X	X	-	-	-	X	560	X	-	-	-	X	X
576	X	-	-	X	-	-	X	-	-	X	592	X	-	-	X	-	X
608	X	-	-	X	X	X	X	-	-	X	624	X	-	-	X	X	X
640	X	-	X	-	-	-	-	X	-	X	656	X	-	X	-	-	X
672	X	-	X	-	X	X	-	X	-	X	688	X	-	X	-	X	X
704	X	-	X	X	-	-	X	X	-	X	720	X	-	X	X	-	X
736	X	-	X	X	X	X	X	X	-	X	752	X	-	X	X	X	X
768	X	X	-	-	-	-	-	-	X	X	784	X	X	-	-	-	X
800	X	X	-	-	X	X	-	-	X	X	816	X	X	-	-	X	X
832	X	X	-	X	-	-	X	-	X	X	848	X	X	-	X	-	X
864	X	X	-	X	X	X	X	-	X	X	880	X	X	-	X	X	X
896	X	X	X	-	-	-	-	X	X	X	912	X	X	X	-	-	X
928	X	X	X	-	X	X	-	X	X	X	944	X	X	X	-	X	X
960	X	X	X	X	-	-	X	X	X	X	976	X	X	X	X	-	X
992	X	X	X	X	X	X	X	X	X	X	1008	X	X	X	X	X	X

Figure 4–10.
Level Jumper Setting

X = JUMPER SET
- = NO JUMPER

LEVEL	L 1	L 2	L 4	L 8	L 16	L 32	L 64
000	NOT ALLOWED						
001	X	-	-	-	-	-	-
002	-	X	-	-	-	-	-
003	X	X	-	-	-	-	-
004	-	-	X	-	-	-	-
005	X	-	X	-	-	-	-
006	-	X	X	-	-	-	-
007	X	X	X	-	-	-	-
008	-	-	-	X	-	-	-
009	X	-	-	X	-	-	-
010	-	X	-	X	-	-	-
011	X	X	-	X	-	-	-
012	-	-	X	X	-	-	-
013	X	-	X	X	-	-	-
014	-	X	X	X	-	-	-
015	X	X	X	X	-	-	-
016	-	-	-	-	X	-	-
017	X	-	-	-	X	-	-
018	-	X	-	-	X	-	-
019	X	X	-	-	X	-	-
020	-	-	X	-	X	-	-
021	X	-	X	-	X	-	-
022	-	X	X	-	X	-	-
023	X	X	X	-	X	-	-
024	-	-	-	X	X	-	-
025	X	-	-	X	X	-	-
026	-	X	-	X	X	-	-
027	X	X	-	X	X	-	-
028	-	-	X	X	X	-	-
029	X	-	X	X	X	-	-
030	-	X	X	X	X	-	-
031	X	X	X	X	X	-	-
032	-	-	-	-	-	X	-
033	X	-	-	-	-	X	-
034	-	X	-	-	-	X	-
035	X	X	-	-	-	X	-
036	-	-	X	-	-	X	-
037	X	-	X	-	-	X	-
038	-	X	X	-	-	X	-
039	X	X	X	-	-	X	-
040	-	-	-	X	-	X	-
041	X	-	-	X	-	X	-
042	-	X	-	X	-	X	-
043	X	X	-	X	-	X	-
044	-	-	X	X	-	X	-
045	X	-	X	X	-	X	-
046	-	X	X	X	-	X	-
047	X	X	X	X	-	X	-
048	-	-	-	-	X	X	-
049	X	-	-	-	X	X	-
050	-	X	-	-	X	X	-
051	X	X	-	-	X	X	-
052	-	-	X	-	X	X	-
053	X	-	X	-	X	X	-
054	-	X	X	-	X	X	-
055	X	X	X	-	X	X	-
056	-	-	-	X	X	X	-
057	X	-	-	X	X	X	-
058	-	X	-	X	X	X	-
059	X	X	-	X	X	X	-
060	-	-	X	X	X	X	-
061	X	-	X	X	X	X	-
062	-	X	X	X	X	X	-
063	X	X	X	X	X	X	-
064	-	-	-	-	-	-	X
065	X	-	-	-	-	-	X
066	-	X	-	-	-	-	X
067	X	X	-	-	-	-	X
068	-	-	X	-	-	-	X
069	X	-	X	-	-	-	X
070	-	X	X	-	-	-	X
071	X	X	X	-	-	-	X
072	-	-	-	X	-	-	X
073	X	-	-	X	-	-	X
074	-	X	-	X	-	-	X
075	X	X	-	X	-	-	X
076	-	-	X	X	-	-	X
077	X	-	X	X	-	-	X
078	-	X	X	X	-	-	X
079	X	X	X	X	-	-	X
080	-	-	-	-	X	-	X
081	X	-	-	-	X	-	X
082	-	X	-	-	X	-	X
083	X	X	-	-	X	-	X
084	-	-	X	-	X	-	X
085	X	-	X	-	X	-	X
086	-	X	X	-	X	-	X
087	X	X	X	-	X	-	X
088	-	-	-	X	X	-	X
089	X	-	-	X	X	-	X
090	-	X	-	X	X	-	X
091	X	X	-	X	X	-	X
092	-	-	X	X	X	-	X
093	X	-	X	X	X	-	X
094	-	X	X	X	X	-	X
095	X	X	X	X	X	-	X
096	-	-	-	-	-	X	X
097	X	-	-	-	-	X	X
098	-	X	-	-	-	X	X
099	X	X	-	-	-	X	X
100	-	-	X	-	-	X	X
101	X	-	X	-	-	X	X
102	-	X	X	-	-	X	X
103	X	X	X	-	-	X	X
104	-	-	-	X	-	X	X
105	X	-	-	X	-	X	X
106	-	X	-	X	-	X	X
107	X	X	-	X	-	X	X
108	-	-	X	X	-	X	X
109	X	-	X	X	-	X	X
110	-	X	X	X	-	X	X
111	X	X	X	X	-	X	X
112	-	-	-	-	X	X	X
113	X	-	-	-	X	X	X
114	-	X	-	-	X	X	X
115	X	X	-	-	X	X	X
116	-	-	X	-	X	X	X
117	X	-	X	-	X	X	X
118	-	X	X	-	X	X	X
119	X	X	X	-	X	X	X
120	-	-	-	X	X	X	X
121	X	-	-	X	X	X	X
122	-	X	-	X	X	X	X
123	X	X	-	X	X	X	X
124	-	-	X	X	X	X	X
125	X	-	X	X	X	X	X
126	-	X	X	X	X	X	X
127	NOT ALLOWED						

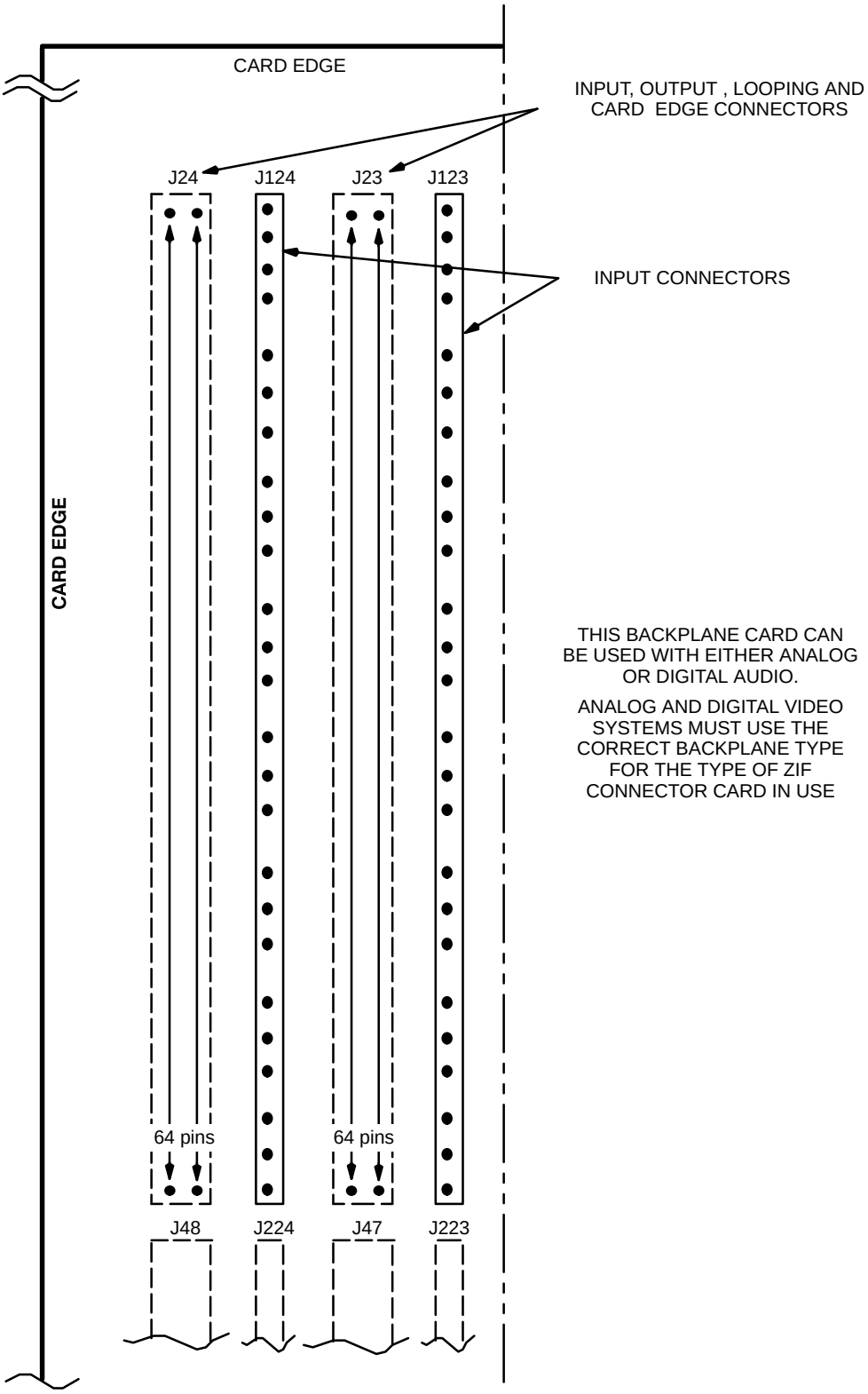
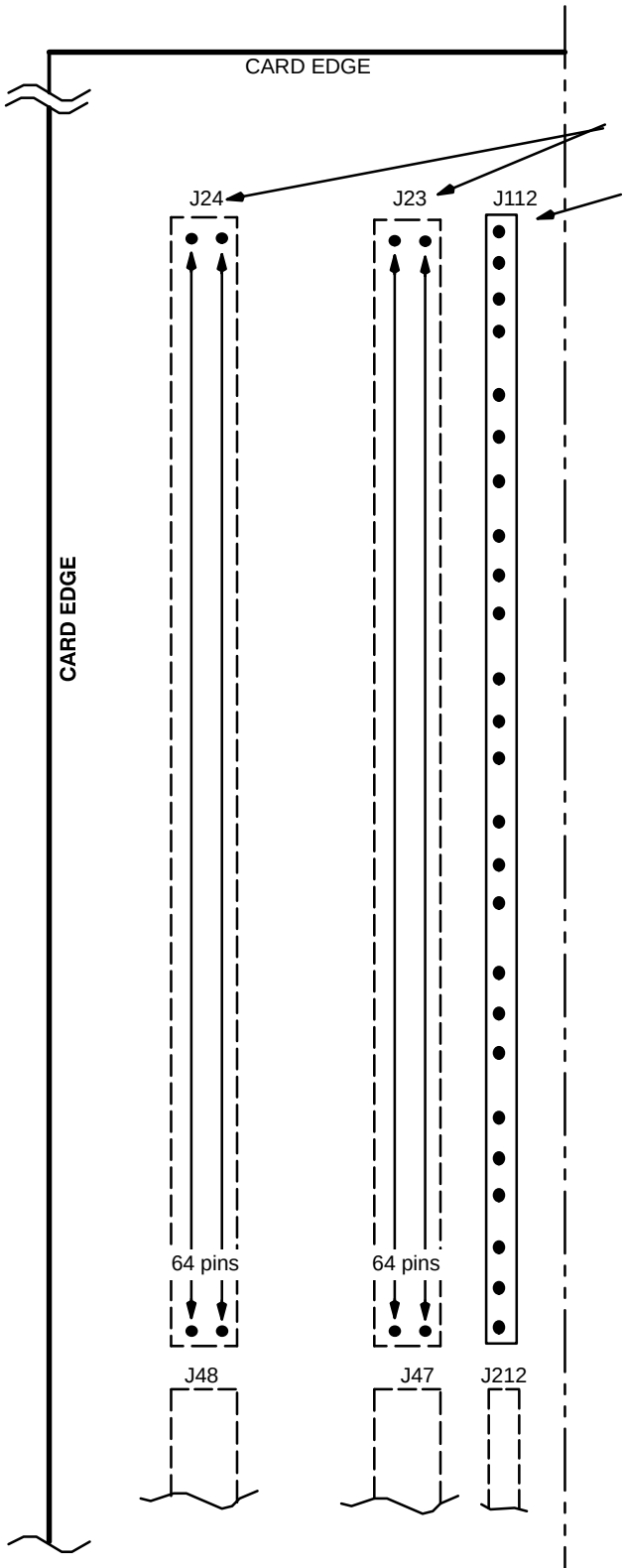


FIGURE 4–11
32 OUTPUT BACKPLANE
I/O CONNECTOR DETAILS



THIS BACKPLANE CARD CAN BE USED WITH EITHER ANALOG OR DIGITAL AUDIO.

ANALOG AND DIGITAL VIDEO SYSTEMS MUST USE THE CORRECT BACKPLANE TYPE FOR THE TYPE OF ZIF CONNECTOR CARD IN USE

FIGURE 4–12
64 OUTPUT BACKPLANE
I/O CONNECTOR DETAILS

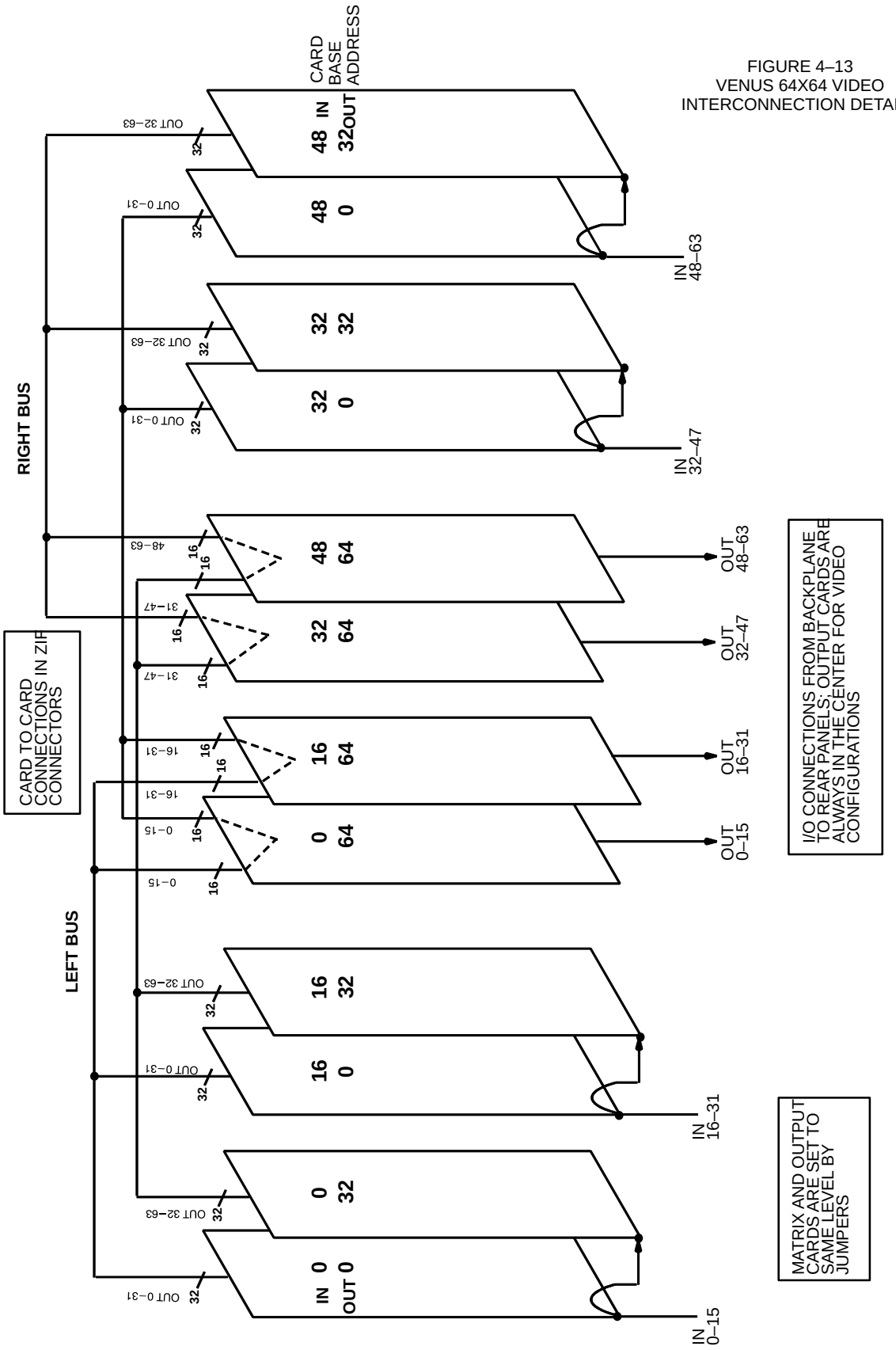


FIGURE 4–13
VENUS 64X64 VIDEO
INTERCONNECTION DETAILS

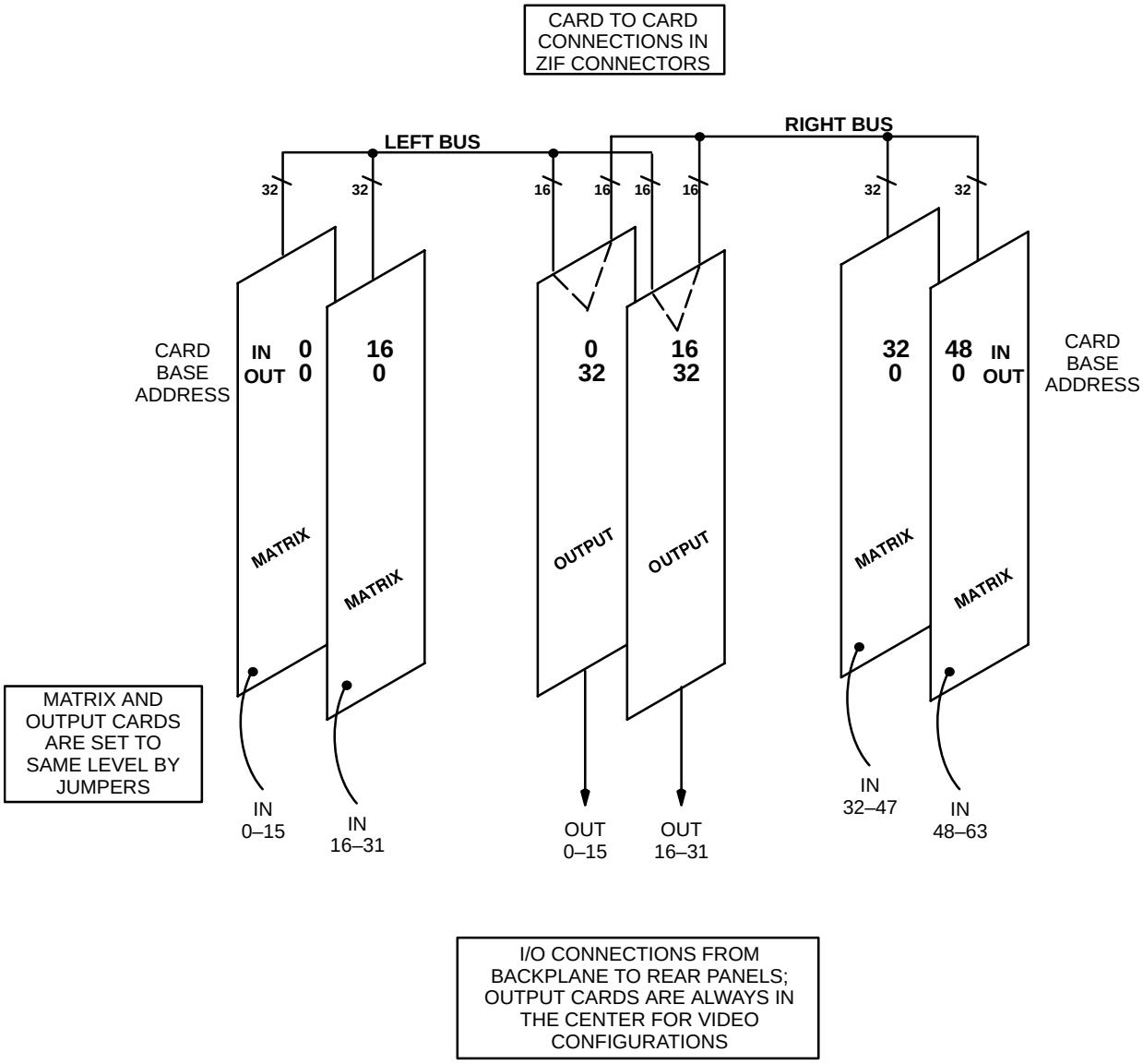


Figure 4–14. *Venus 64x32 video interconnection details.*

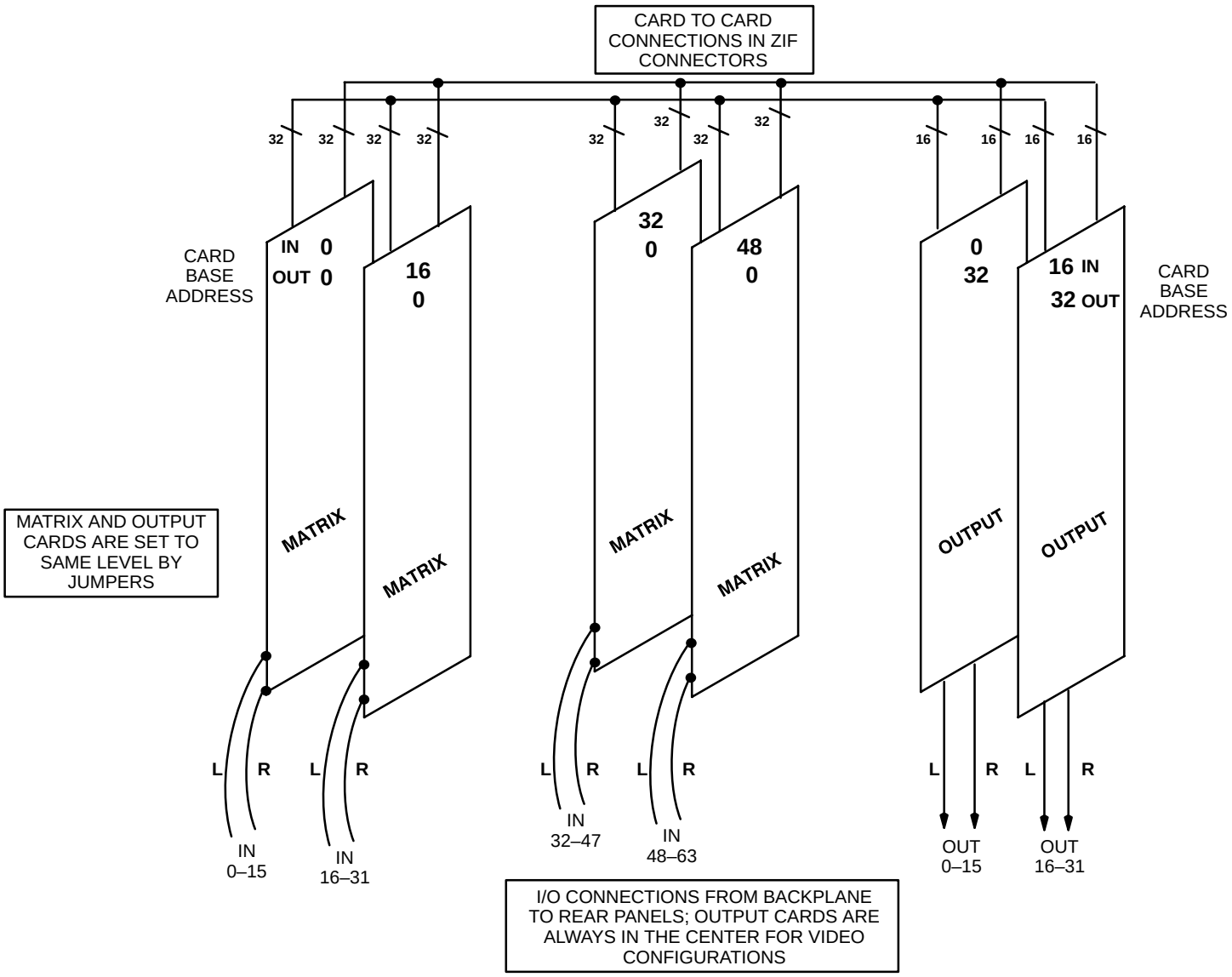


Figure 4–15. *Venus 64x32 analog stereo audio interconnection details.*

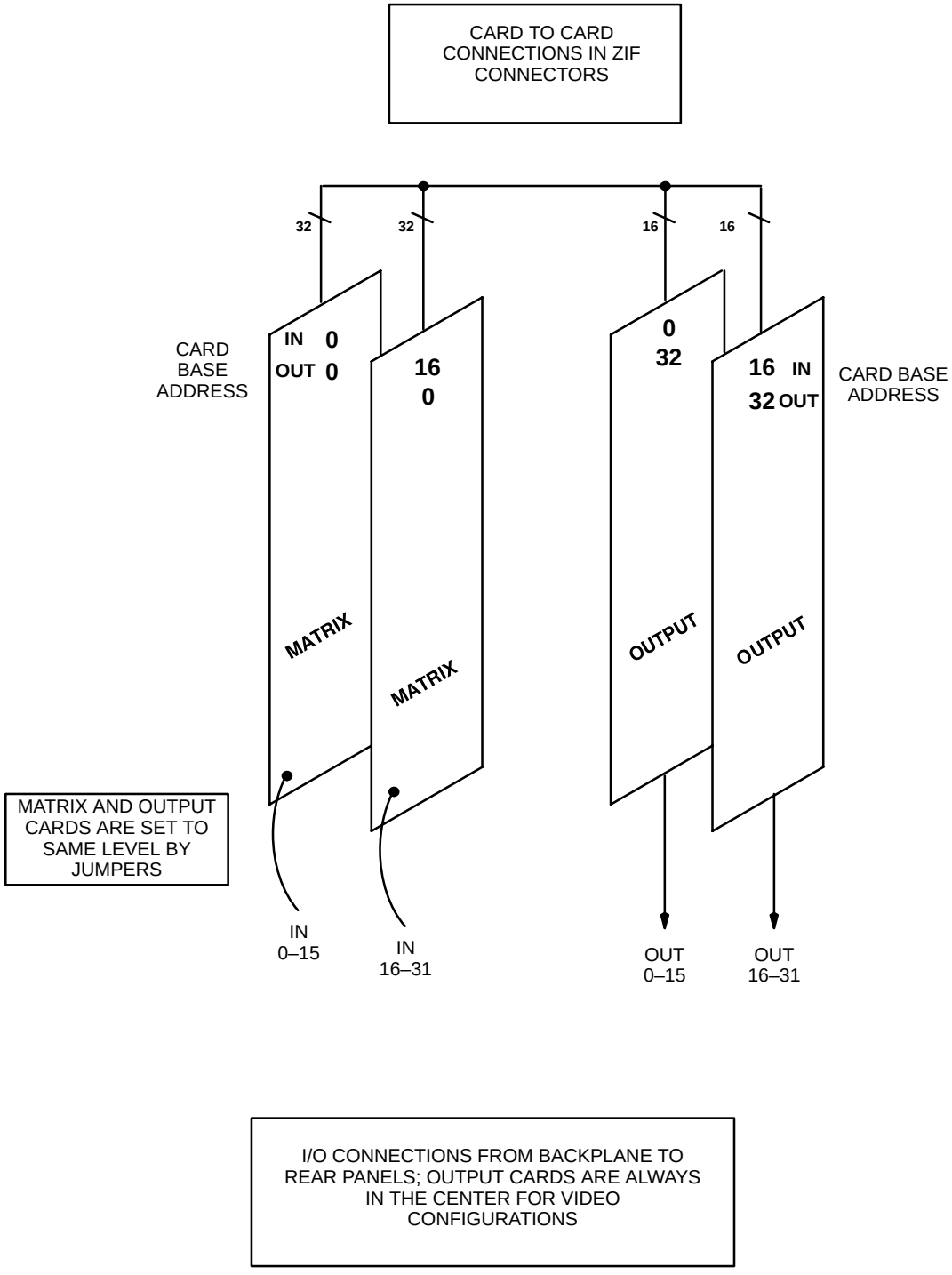
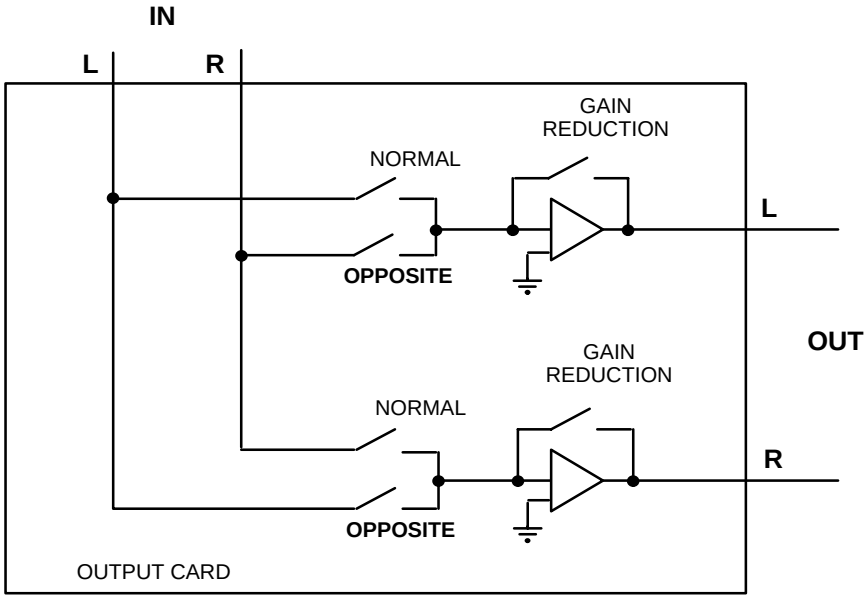


Figure 4–16. *Venus 32x32 video interconnection details.*



STEREO:
L!L
R!R

MONO TO STEREO:
L!L
L!R

OR
R!L
R!R

MIX WITH OR MONO W/O
GAIN REDUCTION:
(–6 dB Gain Reduction)
L+R!L
L+R!R

CROSS:
L!R
R!L

Figure 4–17. *Venus analog stereo audio mode switching.*

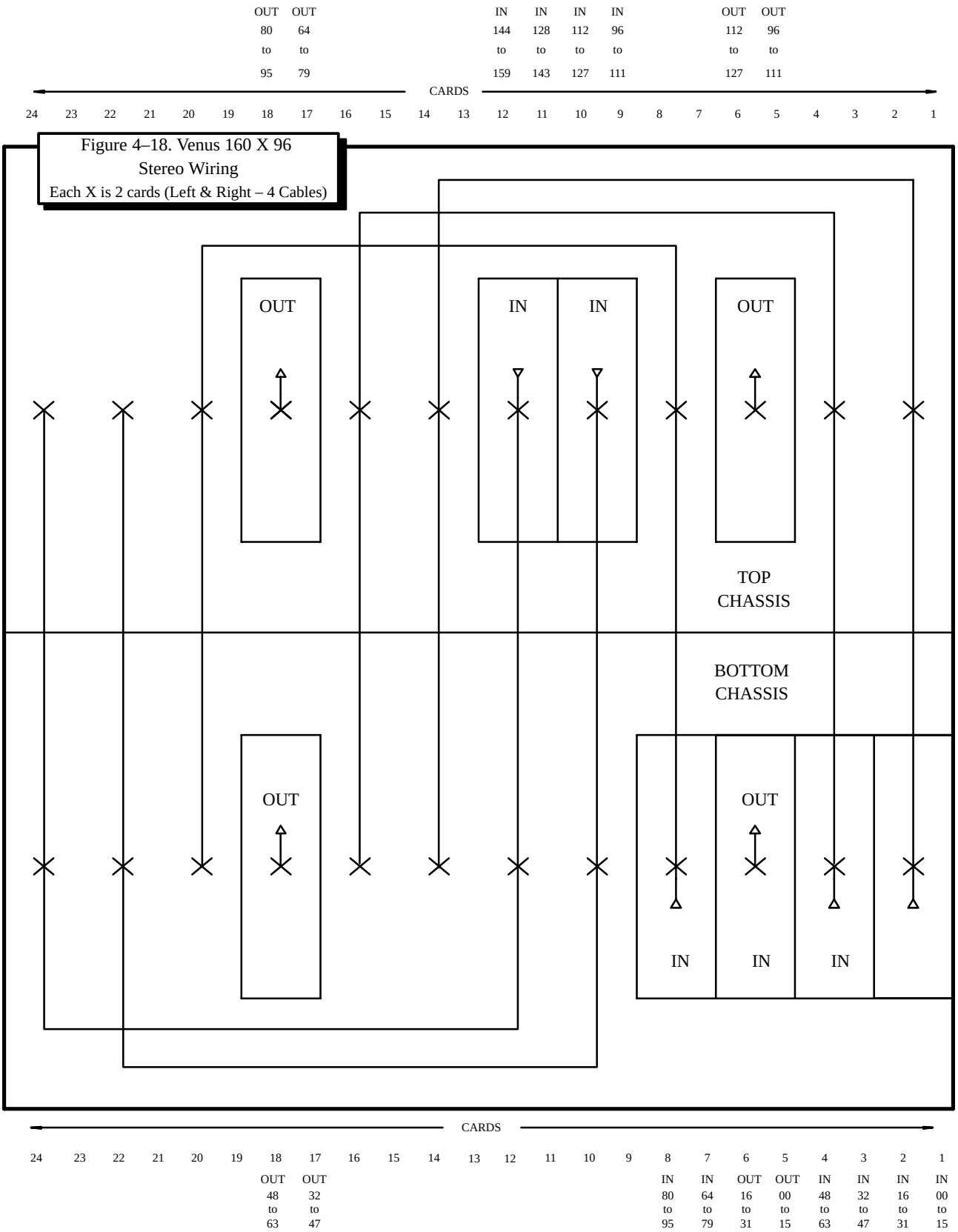


Figure 4–18. Venus 160 X 96
Stereo Wiring
Each X is 2 cards (Left & Right – 4 Cables)