



Cougar Video

PESA Switching Systems
330A Wynn Drive
Huntsville, AL 35805

Document No. 81-9059-0342-0 Rev. C

Manual Updates:

10/31/95	Manual released for initial printing.
04/30/96	Updated manual to incorporate ECO changes.
11/15/97	Updated manual to incorporate ECO changes and addendums.
3/24/98	Updated manual to incorporate ECO changes.
03-02-01	Rev C: Deleted Printing Specification per ECO CE00113. GLT

Ordering Assistance, Service & Inquiries

Service and Ordering Assistance

PESA Switching Systems, Inc.

330A Wynn Drive
Huntsville, AL 35805

Main Numbers:

Tel: (256) 726-9200

Fax: (256) 726-9271

Service Department Numbers:

Tel: (256) 726-9222

Fax: (256) 726-9268

Sales Office

National Sales Office

PESA Switching Systems, Inc.
35 Pinelawn Road, Suite 99E
Melville, NY 11747

Tel: (800) 328-1008

Fax: (516) 845-5023



NOTE

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

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

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



ATTENTION

ATTENTION

**ALL EQUIPMENT ITEMS
MANUFACTURED BY OR SOLD BY
PESA SWITCHING SYSTEMS, INC.
SHOULD BE SERVICED BY
QUALIFIED SERVICE PERSONNEL
OR BY QUALIFIED SERVICE
TECHNICANS ONLY.**



Table of Contents

Cougar Video

Section 1. Introduction

1.1	Manual Overview	1.1
1.2	General Description	1.2
1.3	Specifications.....	1.4

Figures

Figure 1-1	Cougar Video Routing Switcher Front and Rear Views.....	1.3
------------	---	-----

Section 2. Installation

2.1	Introduction	2.1
	General	2.1
2.2	Receipt Inspection	2.1
2.3	Unpacking	2.2
2.4	Location	2.2
2.5	Mounting	2.2
2.6	Cabling.....	2.3
2.7	Level Code (Strobe) Selection	2.4
2.8	Output/Input Code Selection.....	2.5
	Output Code	2.6
	Input Code	2.7
2.9	3300 Controller Card Installation	2.8
2.10	PS70V Setting Line Voltage	2.9
2.11	PS70V Power Supply Installation	2.9
2.12	16X16 Crosspoint Card Installation	2.10
2.13	32X32 Video Matrix Card Installation.....	2.12
2.14	Rear Panel Connectors	2.12
	RCP Panel Connectors (J9-J12)	2.12
	Serial (CPU Link) Connectors (J13 and J14)	2.13
	Control (PRC) Connectors (J15 and J93)	2.13
	CPU Alarm Connector (J16)	2.14
	Matrix Card Alarm Connector (J17)	2.14
	Power In/Out Connector (J18)	2.14
	Power Supply Alarm Connectors (J23 and J24)	2.15
	Reference (Sync) Connectors (1 and 2)	2.15
	Video Input and Output Connectors	2.15
2.15	System Connections	2.15
	Connection Guide	2.15

Table of Contents

Cougar Video

Section 2. Installation Continued:

Figures

Figure 2-1 Chassis Installation	2.3
Figure 2-2 Cables Attached to Supports	2.4
Figure 2-3 Level Code Selection	2.4
Figure 2-4 Coding Switch Locations	2.5
Figure 2-5 Output Code Selection	2.6
Figure 2-6 Input Code Selection	2.7
Figure 2-7 Inputs and Outputs	2.11
Figure 2-8 Cougar Video Routing Switcher Rear View	2.12

Section 3. Operation

3.1	Operation of the Cougar Video Routing Switcher	3.1
	General	3.1
3.2	Regulator Fault LED (Red)	3.1
3.3	CPU Fault LED (Red)	3.1
3.4	Power OK LED (Green)	3.1
3.5	32X32 Video Matrix Card Adjustments	3.2
	Voltage Adjustment	3.2
	Common Mode Rejection Ratio (CMRR)	3.2
	DC Offset	3.3
	Gain	3.4

Section 4. Functional

4.1	Introduction	4.1
	General	4.1
4.2	32X32 Video Matrix Card	4.1
	Control	4.1
	32X8 Crosspoint	4.2
	Input	4.2
	16X16 Crosspoint Interface	4.2
	Output	4.3
	Power	4.3
4.3	16X16 Crosspoint Card	4.3
	Input	4.4
	16X1 Crosspoint	4.4
	Control Logic	4.4

Table of Contents

Cougar Video

Section 4. Functional Continued:

4.4 PS70V Power Supply	4.4
Circuit Description	4.5

Section 5. Maintenance

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

Section 6. Schematics

6.1	Schematics		6.1
	General		6.1
	Cougar Mainframe	CD63-0758	6.2
	Cougar Chassis	CD63-0759	6.3
	32X32 Video Backplane	CA25-1281	6.4
		SC33-1281	6.6
	32X32 Video Matrix Card	CA25-1276	6.8
		SC33-1276	6.10
	16X16 Crosspoint Card	CA25-1284	6.25
		SC33-1284	6.27
	Power Supply Assembly	CD63-0683	6.33
	Power Supply Card	CA25-1162	6.34
		SC33-1162	6.35

Table of Contents

Cougar Video

Section 7. Parts List

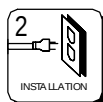
7.1	Parts List	7.1
	General	7.1
	Cougar Mainframe Assembly 81906517410	7.2
	Cougar Chassis 81906517510	7.3
	32X32 Video Backplane 81906517520	7.4
	32X32 Video Matrix Assembly 81906518480	7.5
	32X32 Video Matrix Card 81906517460	7.6
	16X16 Crosspoint Card 81906517550	7.15
	Power Supply Assembly 81906514550	7.17
	Power Supply Card 81906514540	7.18

1.1 Manual Overview

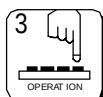
This manual provides detailed instructions for installing and operating the PESA Cougar Video Switcher. This manual is divided into seven sections as shown. Sections 3 and 4 contain operational and functional descriptions of the Cougar Video Routing Switcher and the associated 32X32 Video Matrix Card.



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



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



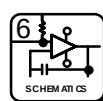
Section 3, **OPERATION**, describes system operation procedures.



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



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



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



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



1.2 General Description

The PESA Cougar Video Routing Switcher offers a reliable low cost answer to your video routing needs. The Cougar Video Routing Switcher is housed in a 3RU frame providing a small profile for space efficient installations. The Cougar Frame can be equipped with either a single System Controller or dual 3300 Controllers. The option of dual controllers provides seamless transfer of system control in case control change-over is required. The Cougar Frame can also be equipped with redundant power supplies for maximum reliability and fail safe operation.

The Cougar Video Routing Switcher is designed with small to mid-range size routing matrix applications in mind. This cost efficient router is expandable to a 64X64 size matrix utilizing four Cougar Video Routing Switchers and two MVDA Combiners. The main matrix components use plug-in circuit cards for ease of maintenance and component replacement. The Cougar Video Routing Switcher can be serviced hot, allowing circuit card removal and insertion without powering down the matrix.

The Cougar Video Matrix Card features easily visible LED indicators for quick view of critical voltage and circuit conditions. The Cougar Frame comes equipped with one control port, two RS232 ports, four RS485 control panel ports, and external alarm connectors for audible monitoring of the operation of the internal power and controller circuits. Please note that the control port, the RS232 port, and the four RS485 ports are only active when a controller card is installed in the Cougar Frame. The Cougar Frame utilizes RS485 looping interfaces for system connection to remote control panels using standard twisted pair cables.

The Cougar Video Routing Switcher utilizes the PESA System Controller for system control. The System Controller provides a user friendly graphical interface; operating in a Windows™ personal computer environment. The System Controller can be installed internal to the Cougar Frame, allowing better rack space utilization. The Cougar Video Routing Switcher working in conjunction with the System Controller utilizes PESA's low cost RCP line of control panels for remote system operation. The internal System Controller can also control other frames (i.e. audio frames, digital frames, and etc).

The Cougar Video Matrix Card working in conjunction with the 16X16 Crosspoint Cards provides wide bandwidth performance for conventional NTSC/PAL analog video signals. The Cougar Video Matrix Card can accommodate video signal amplitude levels up to 2V peak-to-peak. All the Cougar Video Matrix Card's inputs are terminated into 75 ohms.

1.2 General Description Continued:

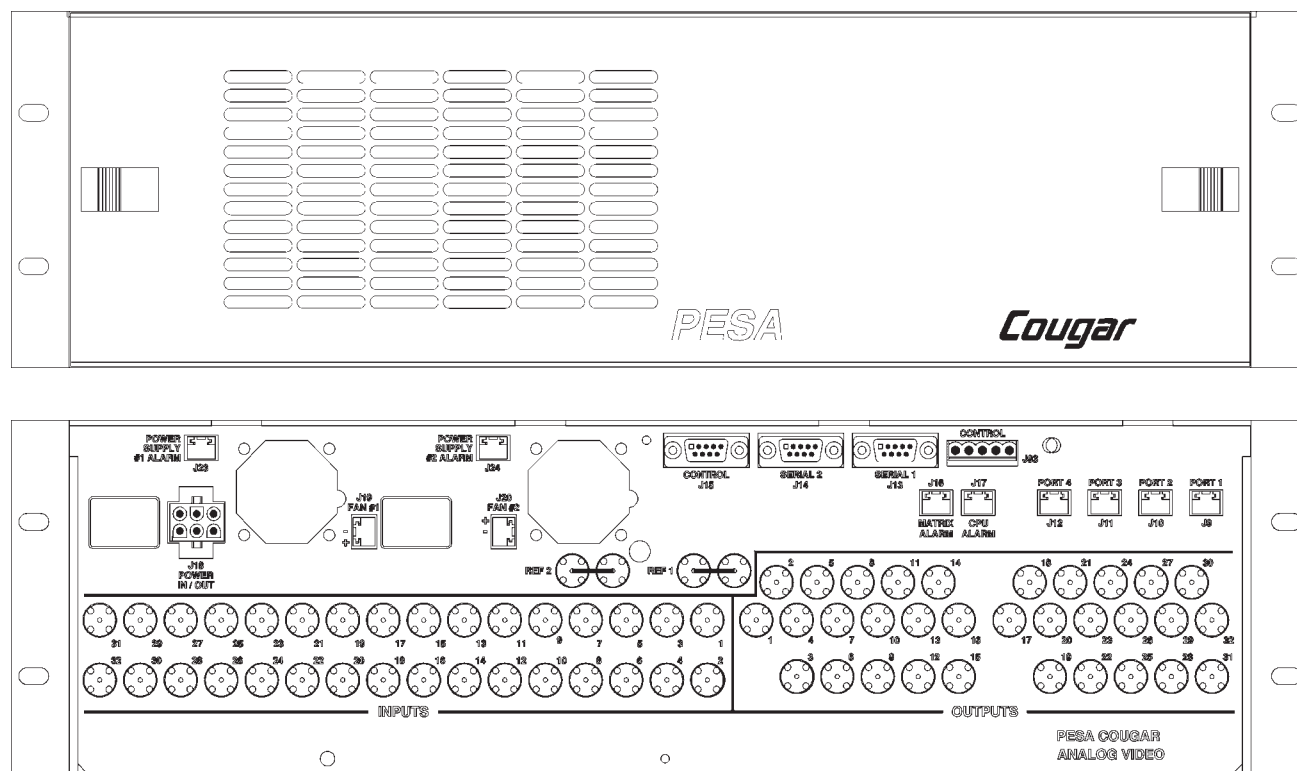


Figure 1-1 Cougar Video Routing Switcher Front and Rear Views

1.3 Specifications

INPUT CHARACTERISTICS

Level	1V P-P Nominal 2V P-P Max (without obvious distortion)
Impedance	Single, 75 Ohm Terminated
Return Loss	>40dB to 5MHz >15dB to 100MHz
Coupling	Direct (DC)
Connector Type	BNC

OUTPUT CHARACTERISTICS

Level	1V P-P Nominal 2V P-P Max (without obvious distortion)
Impedance	75 Ohms
Return Loss	>40dB to 5MHz >15dB to 100MHz
Coupling	Direct (DC)
DC on Outputs	0V DC $\pm$ 10mV DC Max
Connector Type	BNC
Number	Single
Slew Rate	>200V/ μ S

GAIN CHARACTERISTICS

Gain	Unity
Gain Stability	< $\pm$ 0.1dB Max
Gain Adjust Range	$\pm$ 0.5dB

LINEAR DISTORTIONS

Frequency Response	< $\pm$ 0.1dB @ 10MHz < $\pm$ 0.5dB @ 35MHz < $\pm$ 1.0dB @ 75MHz +1.5dB, -3dB @ 125MHz
Vertical Tilt	0.25% (50Hz Square Wave)
Horizontal Tilt	0.25%
Low Frequency	+0.2%/ms Max With 10% Overshoot (10% - 90% or 90% - 10% Change)

PULSE AND BAR RESPONSES

(Factor 2T)	
Bar Slope	0.2%
Pulse/Bar Ratio	0.2%
Pulse Shape	0.2%

1.3 Specifications Continued:

CHROMINANCE / LUMINANCE

Gain Inequality	±1% Max
Delay Inequality	±1nS

NON-LINEAR DISTORTIONS

(All Tests Assume 10% - 90%, 3.58MHz or 12.5% - 87.5%, 4.43MHz)

Differential Gain	0.1% @ 4.43MHz
Envelop Delay	<2nS, 50MHz to 85 MHz
Differential Phase	0.10° @ 4.43MHz
Line Time Non-Linearity	0.2%
Transient Gain	1% (Luminance, Chrominance, or Sync)

CROSSTALK

(All Inputs and Outputs Hostile)

Video to Video	<-60dB to 5MHz
	<-35dB @ 35MHz
	<-15dB @ 125MHz

SWITCHING CHARACTERISTICS

Switching Time	<1μS
Switching Transient	22mV (30 IRE Units)
Differential Delay	
Input to Input, Same Output	±1° @ 4.43MHz
Output to Output, Same Input	±1.5° @ 4.43MHz

SIGNAL TO NOISE

Video Filter	-73dB
	(Low Pass to 5MHz STD B, C, G, H, I, or 4.2MHz STD M)
Luminance Weighting Filter	-81dB
	(STD A, B, D, G, H, K, and L)



2.1 Introduction

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

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

General

If specified when ordered, the Cougar Video 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.

NOTICE

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

2.2 Receipt Inspection

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



2.3 Unpacking

The Cougar Video Matrix Switcher is comprised of a frame, backplane, a 32X32 Video Matrix Card, up to four 16X16 Crosspoint Cards, up to two System Controller Cards, and up to two PS70V Power Supplies. Prior to discarding packing material compare the parts received against the packing list. Carefully inspect the layers of packing material for any components which may have been overlooked during the initial unpacking.

2.4 Location

The Cougar Video 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 small fans located at the back of the unit. Care should be taken not to block airflow around these fans. Installation should be in an area where the ambient temperature does not exceed 40°C (104°F) inside the equipment rack.

2.5 Mounting

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

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

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

2.5 Mounting Continued:

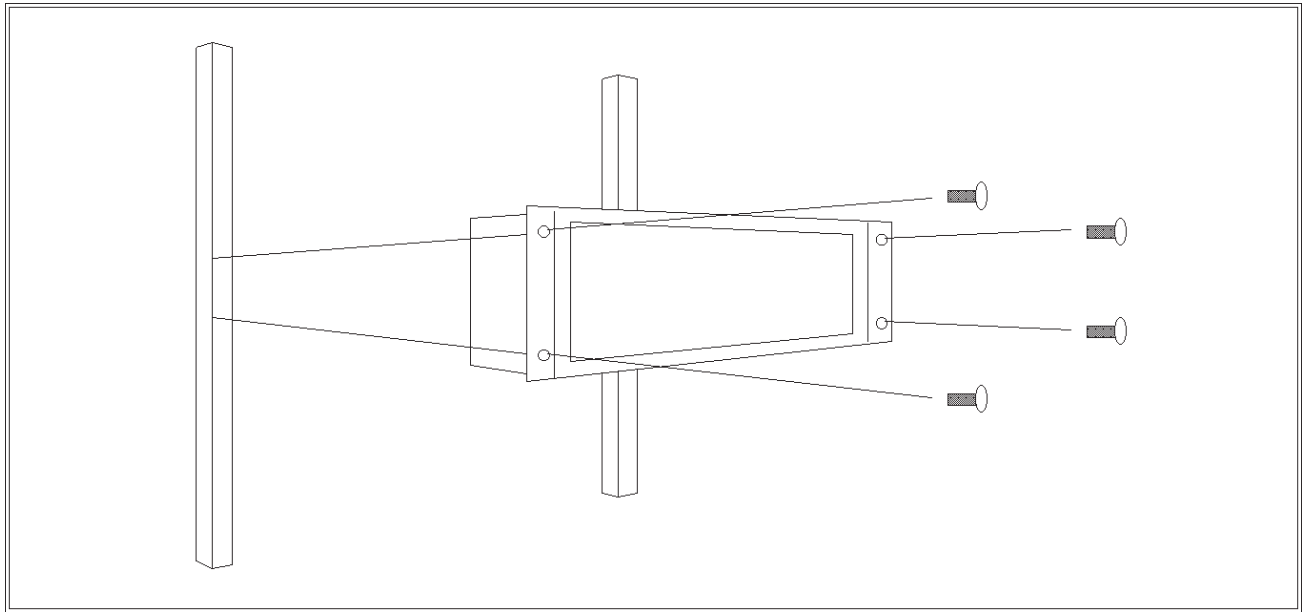


Figure 2-1 Chassis Installation

2.6 Cabling

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

Use the following rules when cabling the Cougar Video Routing Switcher:

1. Lay all cables in their intended positions, separating control, video, and power cables wherever possible.
2. Provide proper support for each cable during the cabling process. The use of tie-wraps is recommended as shown in Figure 2-2.

2.6 Cabling Continued:

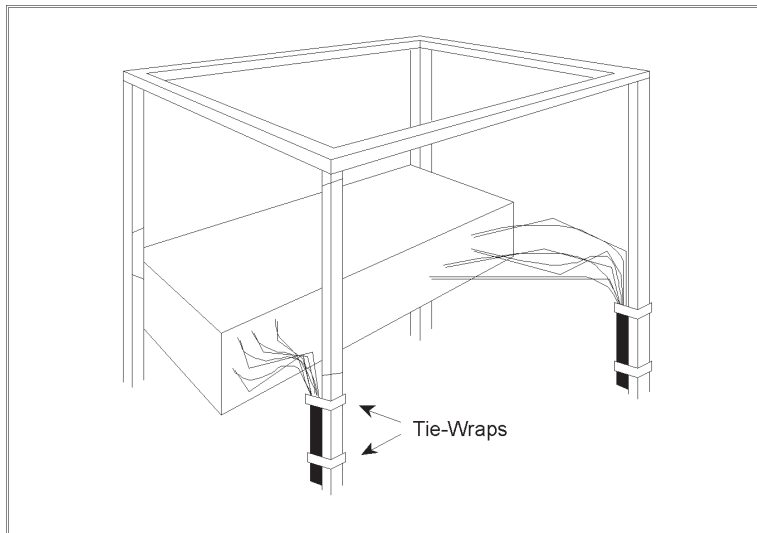
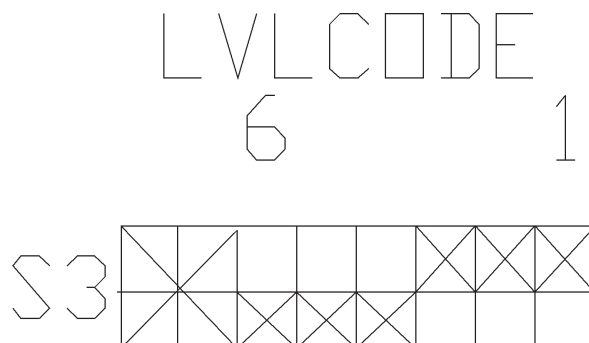


Figure 2-2 Cables Attached to Supports

2.7 Level Code (Strobe) Selection

The level (strobe) select switch, S3, (a binary coded switch) is located on the inside of the Cougar Video Routing Switcher on lower left-hand side of the backplane. Switch numbers are 1 through 8 right to left. Switches 1-6 select level codes 0 through 62. **Switches 7 and 8 are not used – their position is unimportant.** Refer to Figure 2-3 for an example of level code selection and see Figure 2-4 for the physical location of the level code switch.



SHOWN WITH LEVEL CODE 7 SELECTED

Figure 2-3 Level Code Selection

2.7 Level Code (Strobe) Selection Continued:

Physical 0 (Logical 1) = OFF (UP)

Physical 1 (Logical 0) = ON (DOWN)

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

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

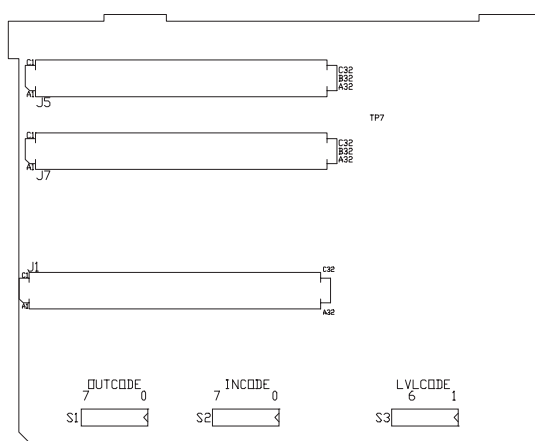


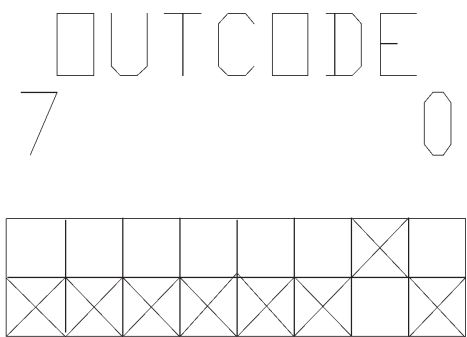
Figure 2-4 Coding Switch Locations

2.8 Output/Input Code Selection

Input and output coding switches are located on the inside of the Cougar Video Routing Switcher on the lower left corner of the backplane. The input and output switch numbers run 0 to 7, right to left. Switch S1 (out-code switch) selects output codes 0-255 and switch S2 (incode switch) selects input codes 0-255. Refer to Figures 2-5 and 2-6 for examples of input and output code selection and see Figure 2-4 for the physical location of the output and input code switches.

2.8 Input/Output Code Selection Continued:

Output Code



SHOWN WITH OUTPUT CODE 2 SELECTED

Figure 2-5 Output Code Selection

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

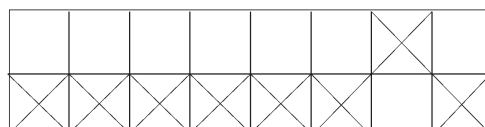
NOTE: The following are logical selections. Output code 0 is all switches on (down) or all switches in the physical 1 position.

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

2.8 Input/Output Code Selection Continued:

Input Code

7 I N C O D E 0



SHOWN WITH INPUT CODE 2 SELECTED

Figure 2-6 Input Code Selection

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.

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

2.9 System Controller Card Installation

The System Controller Card(s) are installed in the upper left-hand portion of the Cougar Video Routing Switcher . The Cougar Video Routing Switcher is designed for the installation of up to two System Controller Cards. If only one System Controller Card is to be installed in the Cougar Video Routing Switcher, install it in the upper card slot.

To install the System Controller Card(s) in the Cougar Video Routing Switcher take the following steps while referring to the Cougar Video Mainframe configuration drawing on page 6.2:

1. Align the first (primary) System Controller Card with the upper set of circuit card guides in the upper left-hand portion of the Cougar Video Routing Switcher.
2. Carefully push the System Controller Card into the Cougar Video Routing Switcher until the circuit card connectors make initial contact with backplane connectors. At this point, firmly but carefully continue pushing the controller card into the frame while making sure the connectors are properly aligned. Continue pushing the controller card until it is in place and the connectors are firmly mated.
3. Align the second (redundant) System Controller Card with the lower set of circuit card guides in the upper left-hand portion of the Cougar Video Routing Switcher and repeat step 2.
4. Once the System Controller Card(s) are installed in the Cougar Video Routing Switcher, install the controller card locking brace and secure it with a twist nut to hold the controller card(s) in place. **NOTE:** The controller locking brace may be removed after shipment to ease the replacement of System Controller Card(s) if necessary.

2.10 PS70V Setting Line Voltage

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

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

2.11 PS70V Power Supply Installation

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

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

1. Align the primary power supply with the left-hand set of circuit card guides in the upper right-hand side of the Cougar Video Routing Switcher.
2. Carefully push the power supply into the switcher until the power supply connector makes initial contact with backplane power connector. At this point, firmly but carefully continue pushing the power supply into the switcher while making sure the connectors are properly aligned. Continue pushing the power supply until it is in place and the connectors are firmly mated.

2.11 PS70V Power Supply Installation Continued:

3. Align the secondary (redundant) power supply with the right-hand set of circuit card guides in the upper right-hand side of the Cougar Video Routing Switcher.
4. Repeat step two.
5. If the Cougar Video Routing Switcher is being shipped, install the two power supply retainer screws through the top of the Cougar Video Routing Switcher.

2.12 16X16 Crosspoint Card Installation

Up to four 16X16 Crosspoint Cards can be installed on each 32X32 Video Matrix Card. For the inputs and outputs controlled by each crosspoint card refer to Figure 2-7. To install the crosspoint cards on the 32X32 Video Matrix Card take the following steps while referring to the Cougar Video Mainframe configuration drawing on page 6.2:

1. Place the video matrix card on solid flat surface.
2. Align the connectors on the lower side (connectors are along the left, right, and top sides) of the 16X16 Crosspoint Card with a set of crosspoint connectors on the right-hand side of the 32X32 Video Matrix Card. Make sure the orientation of the 16X16 Crosspoint Card is correct.
3. Carefully mate the connectors on the 16X16 Crosspoint Card with the selected set of connectors on the 32X32 Video Matrix Card. As the connectors are being mated make sure no connector pins are bent or misaligned.
4. Carefully but firmly push the 16X16 Crosspoint Card down until the connectors on the 16X16 Crosspoint Card are firmly mated with the selected set of connectors on the 32X32 Video Matrix Card.
5. Repeat steps 1-3 until all of the 16X16 Crosspoint Cards are installed on the 32X32 Video Matrix Card.

2.12 16X16 Crosspoint Card Installation Continued:

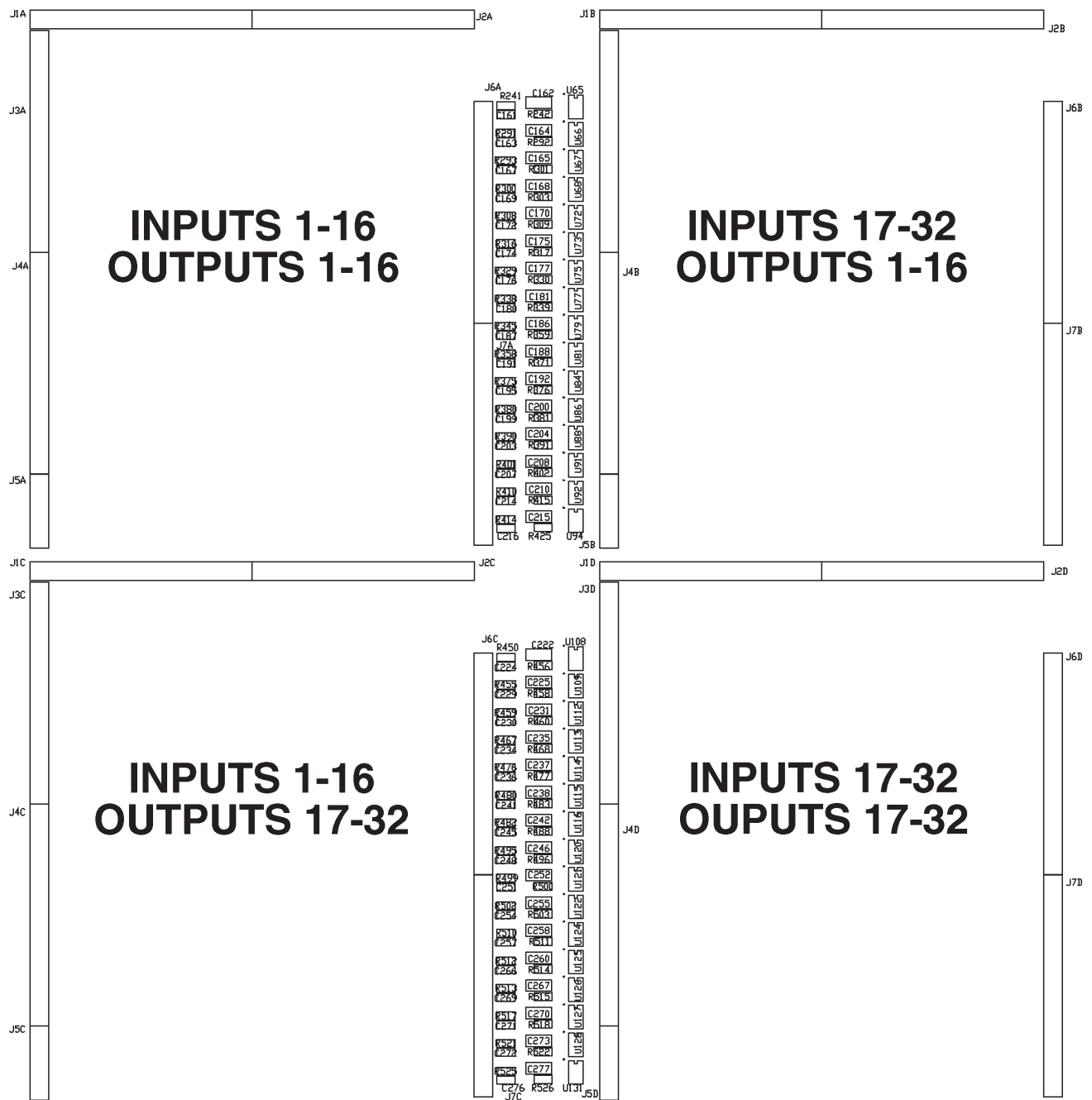


Figure 2-7 Inputs and Outputs

2.13 32X32 Video Matrix Card Installation

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

1. Align the shield plate of the matrix card with the set of circuit card guides in the lower portion of the Cougar Video Routing Switcher.
2. Carefully push the matrix board into the switcher until the circuit card connectors make initial contact with backplane connectors. At this point, firmly but carefully continue pushing the matrix card into the switcher while making sure the connectors are properly aligned. Continue pushing the card until it is in place and the connectors are firmly mated.

2.14 Rear Panel Connectors

The manual subsections discuss the various system connectors found on the rear backplane (rear panel) of the Cougar Video Routing Switcher. Refer to the 32X32 Video Backplane component assembly drawing on page 6.4 and to Figure 2-8 for a visual references.

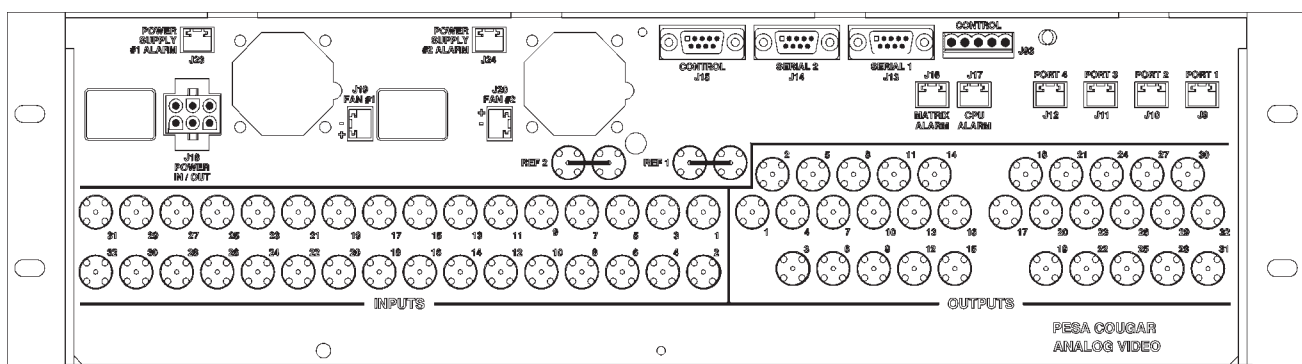


Figure 2-8 Cougar Video Routing Switcher Rear View

RCP Panel Connectors (J9-J12)

The RS485 panel port connectors allow the daisy-chained connection of up to 64 remote control panels to the Cougar Video Routing Switcher. Bidirectional communications between the internally installed System Controller(s) and the various models of PESA's low cost RCP control panels are sent and received over RS485 buss.

2.14 Rear Panel Connectors Continued:

Serial (CPU Link) Connectors (J13 and J14)

The CPU Link connectors allow serial communications between the internally installed System Controller(s) and up to two external computers. The System Controller supports asynchronous, bidirectional communications, at 9600 baud. The protocol used in communication via these ports is a proprietary protocol developed by PESA for switcher control. The pinout for CPU link connector is as follows:

PIN NO.	DESCRIPTION
1	CD
2	RX DATA
3	TX DATA
4	DTR
5	GROUND
6	DSR
7	RTS
8	CTS
9	N/C

Control (PRC) Connectors (J15 and J93)

J15 provides for the connection of an optional external controller to the Cougar Video Routing Switcher. J93 provides for the connection of additional Cougar Video Routing Switchers to form up to a 64X64 switching matrix. Both of the control connectors allow for the bi-directional transmission of data.

The pinout of control connector J15 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



2.14 Rear Panel Connectors Continued:

Control (PRC) Connectors (J15 and J93) Continued:

The pinout of control connector J93 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 System Controller and the peripheral equipment. DO NOT use a "NULL MODEM" cable.

Matrix Card Alarm Connector (J16)

An alarm circuit has been provided in the 32X32 Video Matrix Card's circuitry. This circuit acts as a switch to trigger an optional external alarm in the event of a controller fault or failure. The controller alarm circuit supplies a "contact" closure but does not provide a voltage to the external alarm. The alarm circuit has 10mA current limit. The Matrix Card Alarm Connector, located on the backplane, allows connection of the Matrix Card Alarm.

CPU Alarm Connector (J17)

Not used.

Power In/Out Connector (J18)

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

2.14 Rear Panel Connectors Continued:

Power Supply Alarm Connectors (J23 and J24)

An alarm circuit has been provided in the PS70V Power Supply's circuitry. This circuit acts as a switch to trigger an optional external alarm in the event of a failure in the power supply or of the external 110VAC (220VAC for the international version) source. The alarm circuit supplies a contact closure but does not provide a voltage to the external alarm and has a 10mA current limit. The alarm connectors, located on the backplane, allow connection of external power supply alarms.

Reference (Sync) Connectors (1 and 2)

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

Video Input and Output Connectors

There are 32 BNC video input connectors and 32 BNC video output connectors located on the Cougar Video Routing Switcher's rear panel. These connectors allow the connection of the video sources (input connectors) and video destinations (output connectors) to the Cougar Video Routing Switcher. The video input connectors are internally terminated into 75 ohms.

2.15 System Connections

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

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.

2.15 System Connections Continued:

Connection Guide Continued:

2. Connect the primary external computer to the Serial 1 Connector using a 9-pin RS232 cable. Please note that this connection has to be made in order to configure the internal System Controller using the WinSystem Control System software package. If a secondary external computer is to be used, connect it to the Serial 2 connector.
3. If additional Cougar Video Routing Switchers are to be utilized as part of the switching matrix, connect J93 on the primary Cougar Video Routing Switcher to J93 on the other Cougar Video Routing Switchers using 5-pin ribbon cables.
4. If an external controller is to be utilized to control the Cougar Video Routing Switcher, connect the external controller to J15 using 9-pin RS232 cable.
5. Connect the RCP control panels to the RS485 ports (J9-J12) using twisted pair cables. The connect to the control panel may be daisy chained.
6. If desired, connect an external alarm to the Matrix Board Alarm Connector (J17).
7. If desired, connect an external alarm to the power supply #1 alarm connector (primary power supply). If a secondary (redundant) power supply is installed in the Cougar Video Routing Switcher, connect an external alarm to the power supply #2 alarm connector, if desired. The alarm connectors may be wired in parallel if desired.
8. Connect the video sources to the video inputs using Belden 8281 coaxial cable or equivalent 75 ohm coaxial cable.
9. Connect the video outputs to the video destinations using Belden 8281 coaxial cable or equivalent.

3.1 Operation of the Cougar Video Routing Switcher

General

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

3.2 Regulator Fault LED (Red)

The Regulator Fault LED (CR17) is utilized to visually indicate a regulator problem on the matrix card. A problem with the power supply or regulator circuits will cause this LED to light. However, in the event of a total power outage this LED will be rendered inoperable.

3.3 CPU Fault LED (Red)

The CPU Fault LED (CR6) is utilized to visually indicate a microprocessor problem on the matrix card. A problem with the CPU or controller circuits will cause this LED to light.

3.4 Power OK LED (Green)

The Power OK LED (CR7) on the front edge of the matrix card is utilized to visually indicate that the proper power supply voltage is being supplied to the card. A decrease in the brightness of this LED indicates an approximate 12% drop in voltage and should be checked. A 25% drop in voltage will cause the LED to extinguish.

3.5 32X32 Video Matrix Card Adjustments

The 32X32 Video Matrix Card is adjusted at the PESA factory prior to shipment and should only have to be readjusted if equipment repairs are made or if the equipment configuration changes. The adjustment of the 32X32 Video Matrix Card consists of adjusting the common mode rejection ratio for each input and adjusting the DC offset and gain for each output. The following calibrated test equipment items or their equivalent is needed to accurately adjust the 32X32 Video Matrix Card:

Audio Generator
Distortion Analyzer
High Frequency Generator
Spectrum Analyzer
Oscilloscope
Digital Voltmeter
75 Ohm Termination

Voltage Adjustment

The voltage adjustment provides the means to adjust the output of the 32X32 Video Matrix Card's power regulator circuits. To adjust the voltage adjustment on the 32X32 Video Matrix Card take the following steps while referring to the matrix card's component assemblies and schematics found in Section 6 of this manual for the adjustment location:

1. Set the digital voltmeter to a range of approximately 10V DC.
2. Connect the digital voltmeter's high input to TP1 (+5.6V DC) and low input to TP3 (ground).
3. Adjust the voltage adjustment for a +5.6V DC ± 0.1 reading on the digital voltmeter.
4. Move the digital voltmeter's high input to TP2 (-5.6V DC). The reading on the digital voltmeter should be -5.6V DC $\pm 5\%$.
4. Disconnect the digital voltmeter from the test points.

Common Mode Rejection Ratio (CMRR)

The input common mode rejection ratio adjustments provide the means to eliminate unwanted common mode noise and hum on the 32X32 Video Matrix Card's outputs. To set the common mode rejection ratio adjustments on the 32X32 Video Matrix Card take the following steps while referring to the matrix card's component assemblies and schematics found in Section 6 of this manual for adjustment locations:



3.5 32X32 Video Matrix Card Adjustments Continued:

Common Mode Rejection Ratio (CMRR) Continued:

1. Short the high side (center pin) of the selected video input to the low side (shield) of the same input.
2. Connect the audio generator to the distortion analyzer.
3. Adjust the audio generator for a 60Hz at +8.0dB output as displayed on the distortion analyzer.
4. Disconnect the audio generator from the distortion analyzer.
5. Connect the high side of the audio generator's output to the short between the high side and low side of the selected video input. Connect the low side of the audio generator's output to ground.
6. Connect the distortion analyzer to the one of the video outputs.
7. Switch the selected video input to the selected video output.
8. Adjust the CMRR adjustment for the selected video input for a null (lowest) reading on the distortion analyzer. The null reading should be at least -80dB below the input of +8.0dB.
9. Repeat steps 1-8 for each video input. Once all of the CMRR adjustments have been completed, disconnect all test equipment.

DC Offset

The output DC offset adjustments provide the means to eliminate the unwanted DC voltage level on the 32X32 Video Matrix Card's outputs. To adjust the DC offset adjustments on the 32X32 Video Matrix Card take the following steps while referring to the matrix card's component assemblies and schematics found in Section 6 of this manual for adjustment locations:

1. **Do not** apply any input signals to the 32X32 Video Matrix Card while adjusting the matrix card's DC offset adjustments.
2. Connect the digital voltmeter to a video output.
3. Set the digital voltmeter to low DC range (approximately 100mV).



3.5 32X32 Video Matrix Card Adjustments Continued:

DC Offset Continued:

4. Adjust the DC offset correlating to the selected video output the lowest reading on the digital voltmeter. The lowest reading should be $0 \pm 10\text{mV DC}$.
5. Repeat steps 2-4 for each video output. Once all of the DC offset adjustments have been completed, disconnect all test equipment.

Gain

The output gain adjustments provide the means to adjust the 32X32 Video Matrix Card's outputs for unity gain (outputs equal to inputs). To adjust the gain adjustments on the 32X32 Video Matrix Card take the following steps while referring to the matrix card's component assemblies and schematics found in Section 6 of this manual for adjustment locations:

1. Connect the high frequency sweep generator to the spectrum analyzer. Be sure to terminate the high frequency generator's output into 75 ohms.
2. Adjust the sweep generator for a 1KHz to 10MHz at 0dB display on the spectrum analyzer.
3. Disconnect the sweep generator from the spectrum analyzer. Be sure to leave the spectrum analyzer's input terminated with 75 ohms.
4. Connect the sweep generator to one of the video matrix card's inputs.
5. Connect the spectrum analyzer to one of the video matrix card's outputs.
6. Switch the selected input to the selected output.
7. Adjust the gain correlating to the selected output for a $0\text{dB} \pm 0.1\text{dB}$ display on the spectrum analyzer at 100KHz. A vertical display of $\pm 0.1\text{dB}$ per deviation is recommended.
8. Repeat steps 5-7 until all of the video matrix card's gain adjustments have been completed. Once all of the gain adjustments have been completed, disconnect all test equipment.

4.1 Introduction

General

The 32X32 Video Matrix Card working in conjunction with the 16X16 Crosspoint Cards provides wide bandwidth performance for conventional NTSC/PAL analog video signals. The 32X32 Video Matrix Card can accommodate video signal amplitude levels up to 2V peak-to-peak. All the 32X32 Video Matrix Card's inputs are terminated into 75 ohms.

4.2 32X32 Video Matrix Card

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

Control

The microprocessor controller (U97) is used to interface switch commands from the PRCI control port (U166) to the switch matrix and return status information to the controller. Communications to and from the system controller are through U69, a RS485 receiver and transmitter. System timing is provided to the microprocessor by U102, a 7.3728MHz oscillator. The microprocessor divides the timing signal from the oscillator by a factor of four to form the system clock signal. Reset for the microprocessor is provided by U85.

U89, a power supply monitor, monitors the output of the 32X32 Video Matrix Card's power circuits and reports power fault conditions to the microprocessor. CR17 is utilized by power supply monitor circuit to provide a visual indication of power supply fault conditions.

Matrix output, input, and level coding is read from the backplane through U76, U82, and U87 respectively. U95, U98, and U99 provide address decoding for the 32X32 Video Matrix Card.

U104 and U110 comprise the nonvolatile RAM for the processor. C250 provides memory backup voltage for approximately seven days as long as the matrix card is not removed from the Cougar Frame. CR6 is utilized by the processor on the 32X32 Video Matrix Card to indicate a CPU fault condition. An external alarm connection is provided by U165. The external connection can be utilized to audibly indicate CPU fault conditions.

4.2 32X32 Video Matrix Card Continued:

Control Continued:

Two external sync signals are used for timing switches as set by S1. The external sync can be color black or composite sync. U78 and U83 decode the composite signal to an even/odd field signal which is used by the microprocessor.

32X8 Control ICs

The 32X8 control ICs (U74, U90, U107, and U118) are responsible for the control and switching of 32 inputs to 8 outputs. The control of the crosspoints is accomplished by signals sent over the control bus by the microprocessor. The crosspoints interpret the signals and provide control signals to the 16X16 Crosspoint Cards and the BUSEN to the 16X16 interface circuits. U105 and U106 provide the reset, data, and clock signals for the 32X8 crosspoints.

Input

The input circuits on the 32X32 Video Matrix Card provide the initial conditioning and termination of the video input signals. Common mode rejection ratio adjustments in each input circuit provide the means to eliminate unwanted hum and noise on the input video signals. The input circuits also provide the connection of the video input signals to the 16X16 Crosspoint Cards.

16X16 Crosspoint Interface

The 16X16 crosspoint interface circuits are responsible for providing the 16X16 Crosspoint Cards their interface with the 32X32 Video Matrix Card's video output circuits. The crosspoint interface circuits consists of two buffer amplifiers connected output to output and their associated components. When the BUSEN line corresponding to a buffer amplifier is active high and a video signal is applied to pin 7 of the same buffer amplifier by the 16X16 Crosspoint Card, the video signal will be passed through the buffer amplifier to the corresponding video output circuit.

4.2 32X32 Video Matrix Card Continued:

Output

The output circuits on the 32X32 Video Matrix Card are responsible for driving the output lines. The output circuits are comprised of an operational amplifier, a transistor, and their associated components. The operational amplifier is responsible for conditioning the output video signal and driving the video output line through precision 75 ohm resistors. When the BUSOFF signal, connected to the base of the transistor, is active high the transistor will conduct collector to emitter and will shunt any unwanted crosstalk noise to ground. An adjustment is provided in each output circuit to adjust the output for unity gain.

Power

The power regulator circuits on the 32X32 Video Matrix Card are responsible for producing all of the regulated operational voltages required by the matrix card's electronic circuits. The power regulator circuits are also responsible for providing regulated power to the 16X16 Crosspoint Cards.

The heart of the power supply circuit on the video matrix card is a switching regulator (U117) which produces the +5.6V DC, -5.6V DC, and +5V DC. Adjustment of the output of the regulator is provided by R479, a variable resistor. CR7 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 circuit cards from overload damage. The power circuits also contain a fan speed regulator circuit which works in conjunction with fan regulator in the PS70V Power Supply to control the speed of the associated chassis fans. As the temperature of the matrix card's circuits increase the fan speed will increase. Inversely as the matrix card's circuits decrease in temperature the fan speed will slow down dependent upon the temperature of the associated PS70V Power Supply's circuits.

4.3 16X16 Crosspoint Card

The 16X16 Crosspoint Card contains a 16X16 matrix consisting of several main circuits. This discussion will be broken down to the main circuits as they are found on the schematics in Section 6 (Schematics).

4.3 16X16 Crosspoint Card Continued:

Input

The input circuits on the 16X16 Crosspoint Card are responsible for buffering the inputs to the crosspoint card from the 32X32 Video Matrix Card. The input circuits are comprised of a buffer and its associated components.

16X1 Crosspoint

The 16X1 crosspoint switches on the 16X16 Crosspoint Card are responsible for switching one of sixteen inputs to an output. The 16X1 crosspoint switches are comprised of four 4X1 crosspoints which form a 16X1 matrix, a output buffer, and their associated components. The switching of the input signals to the output buffer by 4X1 crosspoint is controlled by the state of their associated BUS and BUSEN data lines. The activation of the output buffer, in turn, is controlled by the state of the its associated OUTEN data line. The 16X1 crosspoint output buffers are also responsible for providing the selected output to the associated output circuit on the 32X32 Video Matrix Card.

Control Logic

The control logic circuits on the 16X16 Crosspoint Card are comprised of a two to four line decoder and an inverter. The control logic circuits are responsible for decoding control signals from the 32X32 Video Matrix Card and producing the BUSEN data signals utilized for the activation of the 4X1 crosspoint switches.

4.4 PS70V Power Supply

The PS70V Power Supply is an unregulated power source that supplies $\pm$ voltages to the Cougar Video Frame.

The PS70V Power Supply has an AC Select Switch that allows you to select the required voltage range. This switch is accessed by removing the plug-in supply. Insure that power is off before changing the switch setting. A separate jumper, located under the plastic safety cover surrounding the switch is used to add 15 volts to each switch setting. Using only the switch, the nominal ($\pm 10\%$) AC line voltages available are 100, 120, 140, 200, 220, and 240. If the jumper is also moved, these voltages become 115, 135, 155, 215, 235, and 255.

4.4 PS70V Power Supply Continued:

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

Circuit Description

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

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

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

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

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

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

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

5.1 Introduction

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

NOTICE

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

5.2 General

The Cougar Video Routing Switcher is designed to produce the proper video levels throughout the frame. There is no need to perform periodic adjustments on the 32X32 Video Matrix Card and the need for regular maintenance is minimal.

5.3 Test Equipment

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

Audio Generator
Distortion Analyzer
High Frequency Generator
Spectrum Analyzer
Oscilloscope
Digital Voltmeter
75 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 compressed air, an antistatic cloth, or a gentle vacuum to clean the frame and internal components.



5.4 Preventive Maintenance Continued:

- Observe proper procedures for preventing electrostatic discharge when cleaning the units, and when inserting and removing cards. Ensure that all tools and personnel handling individual components are properly grounded.
- Avoid covering the front grille for any extended period. Blocking the front grille will block the air flow through the fan and may overheat the internal circuit cards.

5.5 Maintenance

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

5.6 Corrective Maintenance

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

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.

5.6 Corrective Maintenance Continued:

Factory Repair Service Continued:

NOTE

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

Troubleshooting

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

- If a problem is suspected with an individual circuit card 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 EQUIPMENT IS OUT OF WARRANTY. REPAIRING EQUIPMENT COVERED BY A WARRANTY WILL VOID THE WARRANTY.



5.6 Corrective Maintenance Continued:

System Checks

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

1. Verify the AC circuit condition. Ensure the unit is receiving the correct voltage from the main AC power source.
2. Check all line fuses and power cords.
3. Ensure that all circuit cards are firmly seated
4. Ensure all interconnecting cables and connectors are plugged in or firmly seated.
5. If applicable, ensure main power switch is turned on.

Replacement Parts

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

5.7 Filter Cleaning

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

5.8 PS70V Power Supply

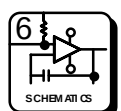
Replacement of the two power supply fuses is accomplished by disconnecting power to the unit, removing the power supply and disassembling the fuse holder on the rear of the supply. The replacement value of the power supply fuses is 1.5 Amp (5x20mm) for a line voltage of 115VAC and 0.8 Amp for a line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

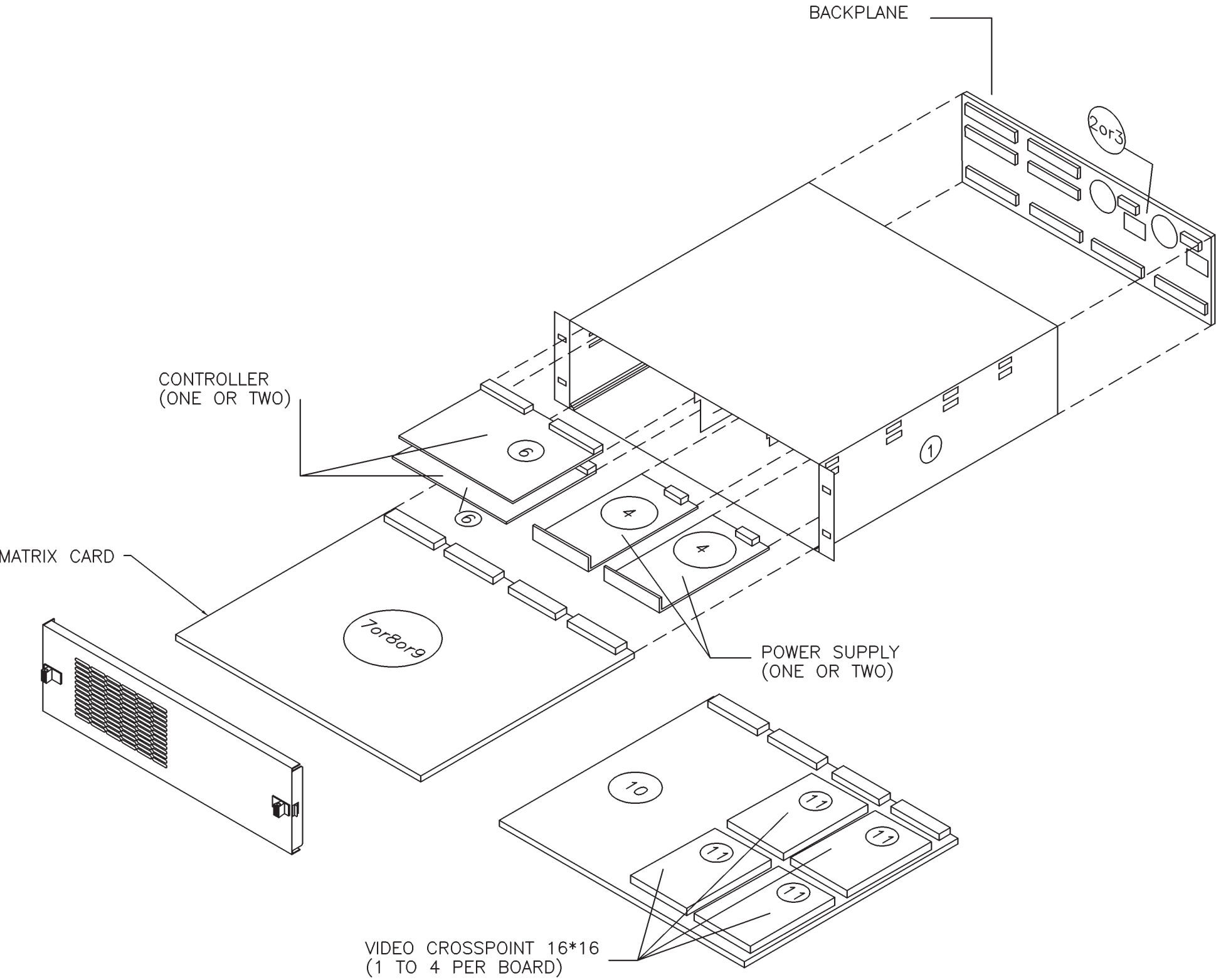
6.1 Schematics

General

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

<u>Description</u>	<u>Dwg No.</u>	<u>Page No.</u>
Cougar Mainframe	CD63-0758	6.2
Cougar Chassis	CD63-0759	6.3
32X32 Video Backplane	CA25-1281	6.4
	SC33-1281	6.6
32X32 Video Matrix Card	CA25-1276	6.8
	SC33-1276	6.10
16X16 Crosspoint Card	CA25-1284	6.25
	SC33-1284	6.27
Power Supply Assembly	CD63-0683	6.33
Power Supply Card	CA25-1162	6.34
	SC33-1162	6.35

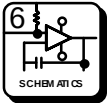


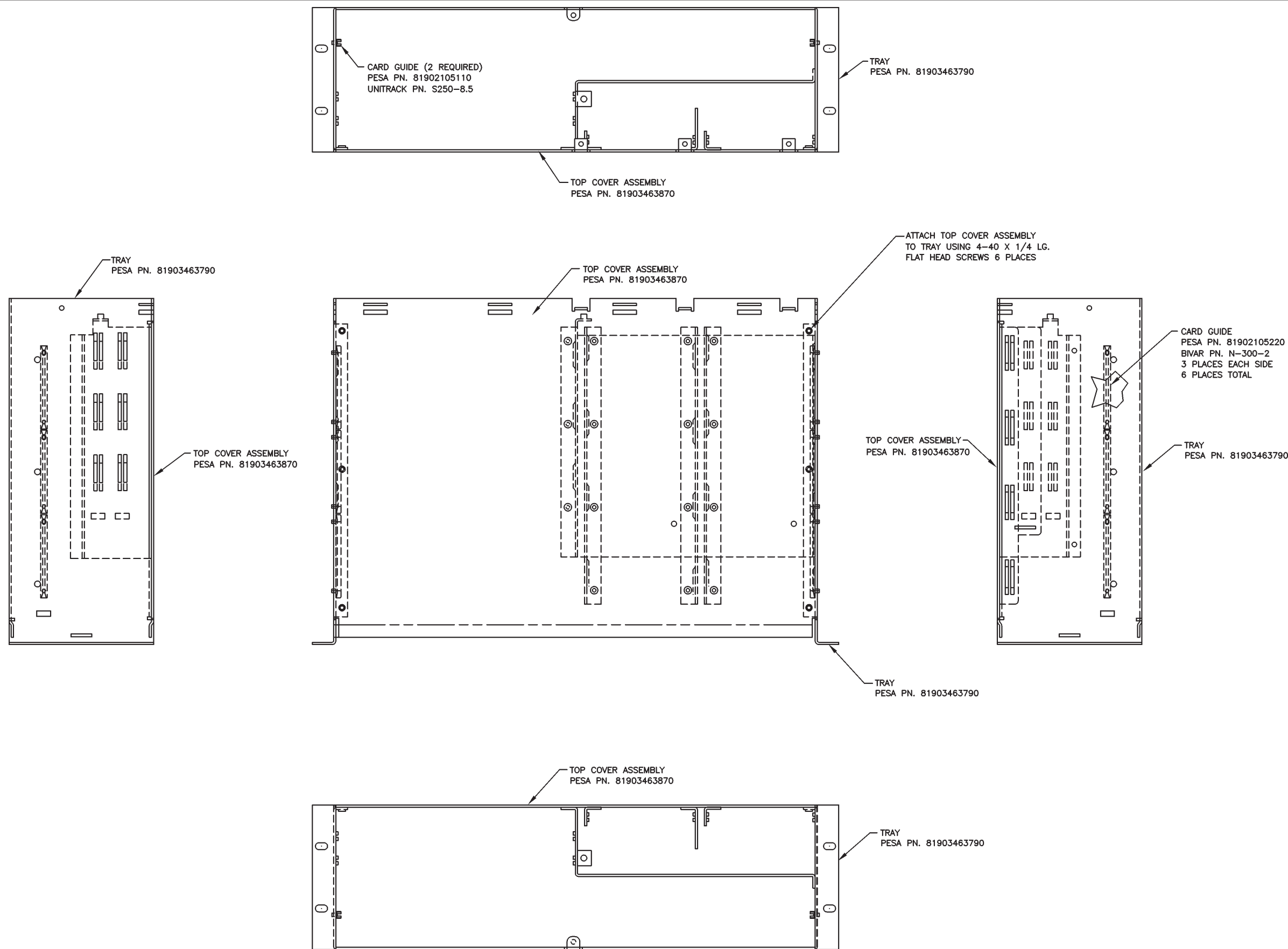


COUGAR CONFIGURATION

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

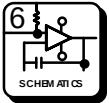
①	CHASSIS	81906517510
②	VIDEO BACKPLANE	81906517520
③	AUDIO BACKPLANE	81906517530
④	POWER SUPPLY	81906514550
⑤	VOID	81906515680
⑥	CONTROLLER	81906517030
⑦	DIGITAL VIDEO MATRIX	81906517480
⑧	DIGITAL AUDIO MATRIX	81906517490
⑨	ANALOG AUDIO MATRIX	81906517470
⑩	ANALOG VIDEO MATRIX	81906517460
⑪	VIDEO CROSSPOINT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

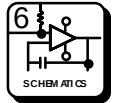
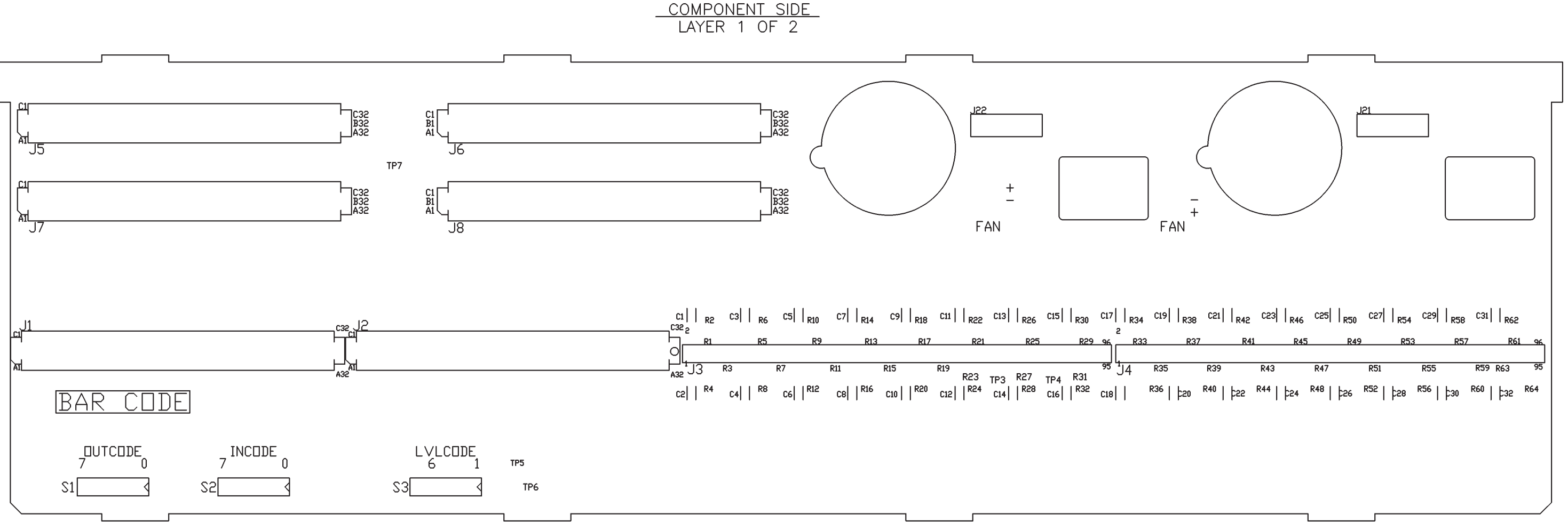


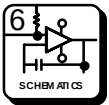
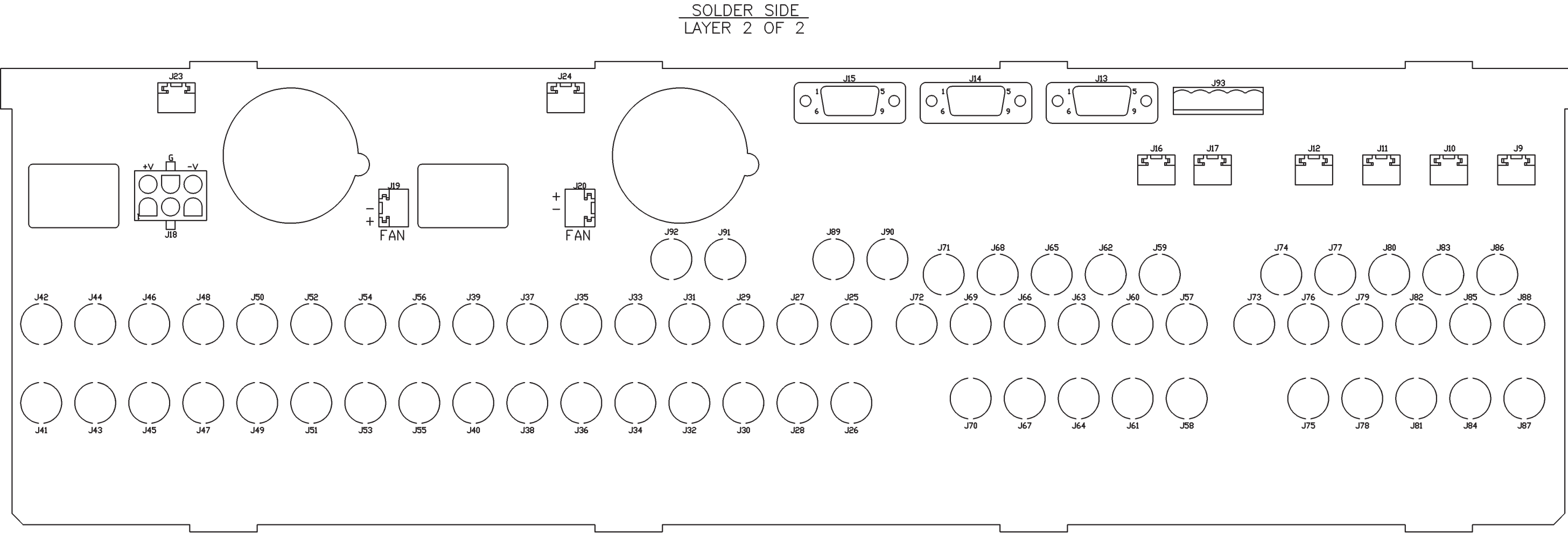


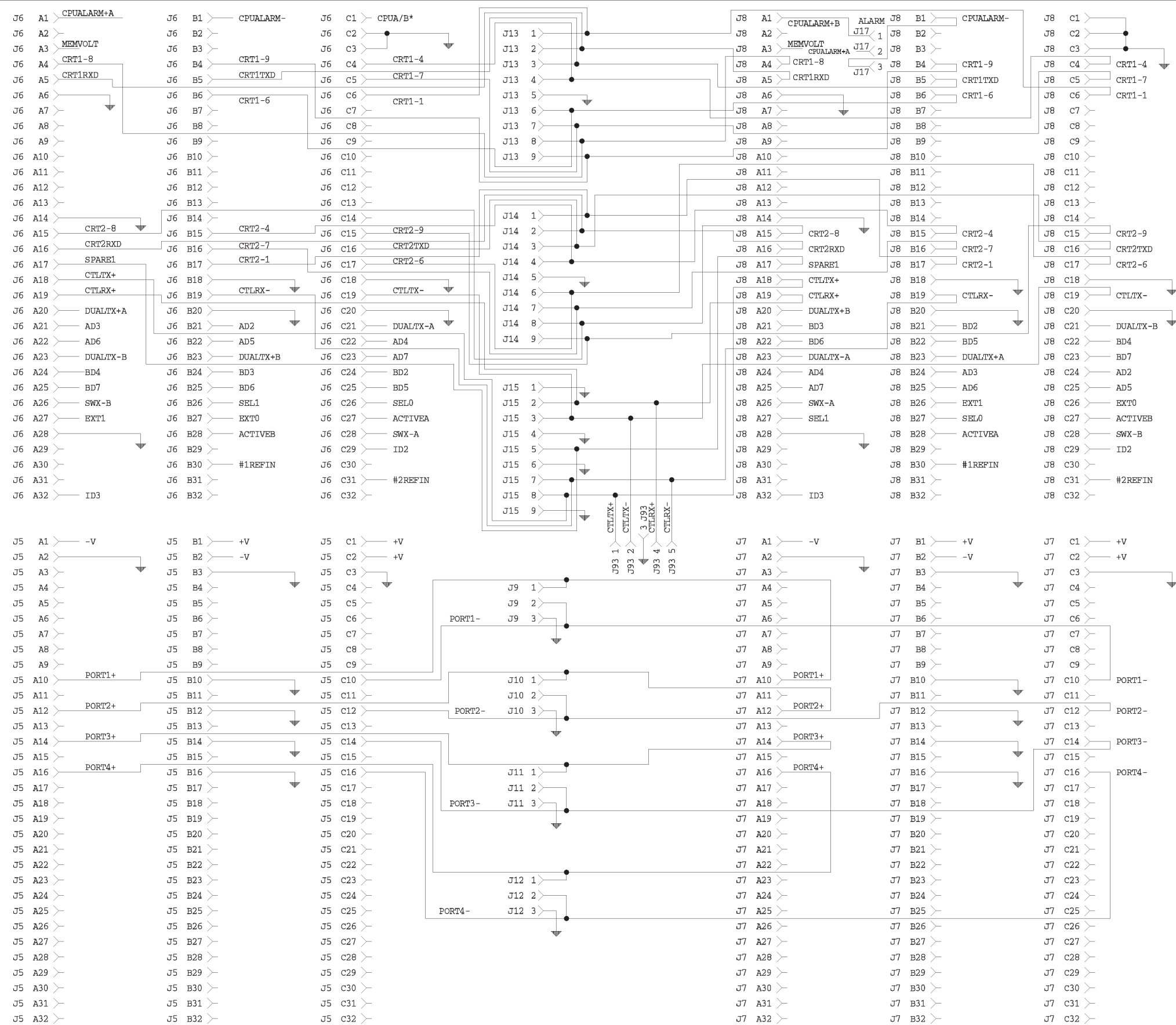
NOTES: (UNLESS OTHERWISE SPECIFIED)
1. MATERIAL: SEE BODY OF DRAWING.
2. ASSEMBLY: ASSEMBLE PER INSTRUCTIONS IN BODY OF DRAWING.

Configuration Drawing • Cougar Chassis • CD63-0759



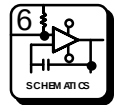


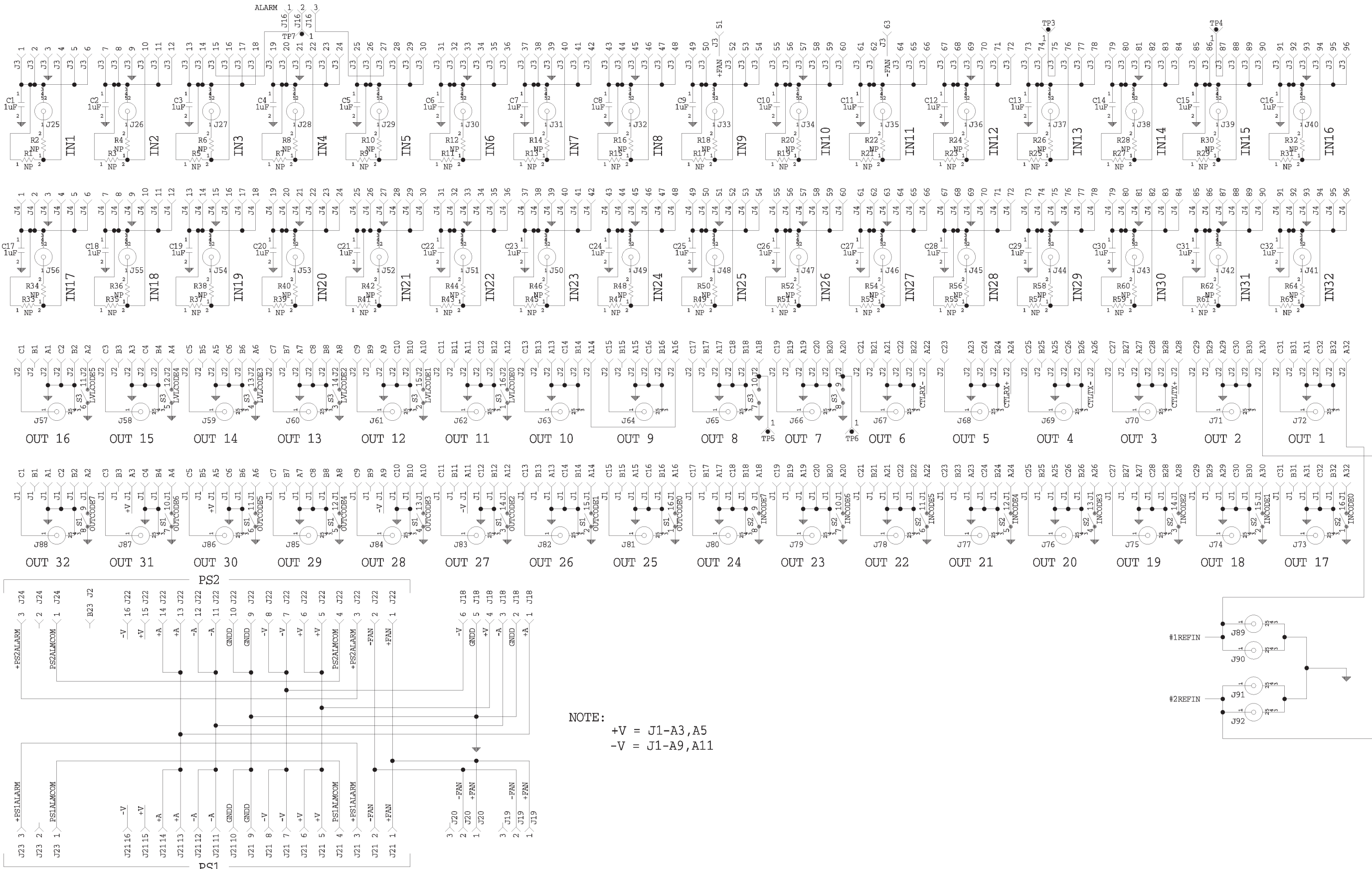




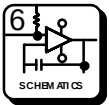
NOTES:
ID0 - ID3 ARE USED TO IDENTIFY
THE FRAME TO THE CPU.
ID0,2,3 = OPEN ID1 = GND.

Schematic (Sheet 1 of 2) • 32X32 Video Backplane • SC33-1281

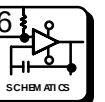


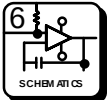
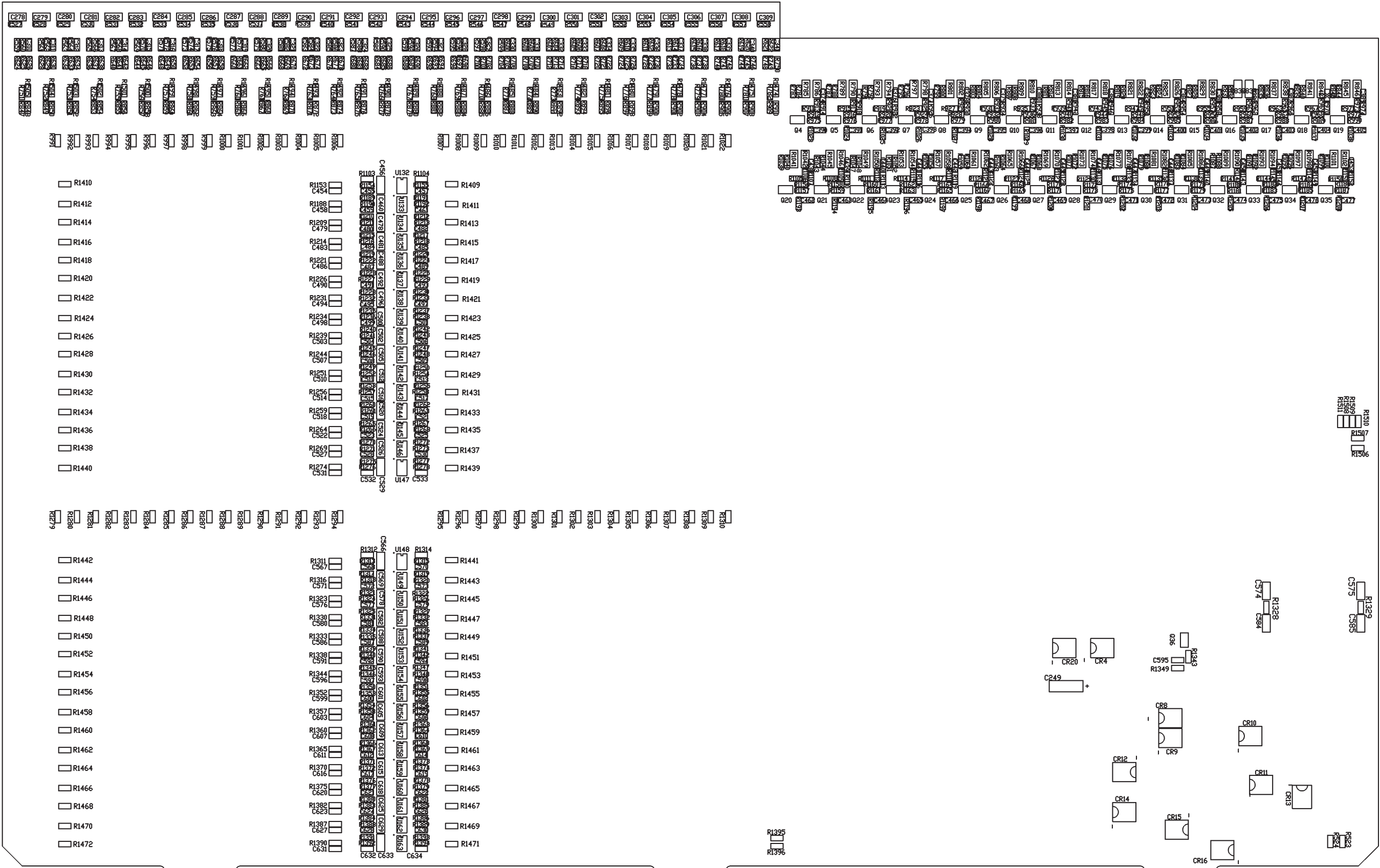


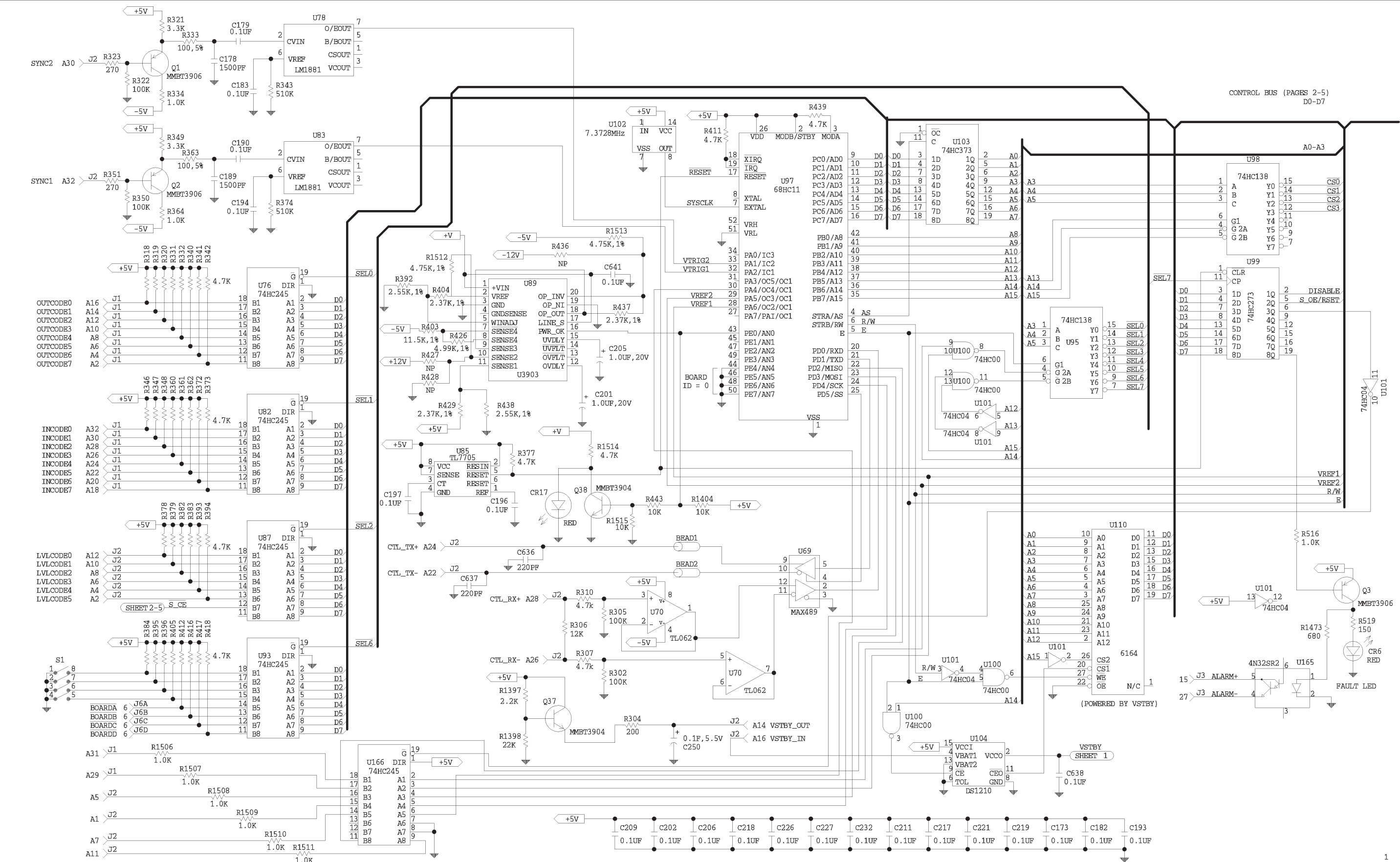
Schematic (Sheet 2 of 2) • 32X32 Video Backplane • SC33-1281²



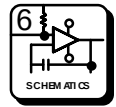
Component Assembly (Sheet 1 of 2) • 32X32 Video Matrix Card • CA25-1276



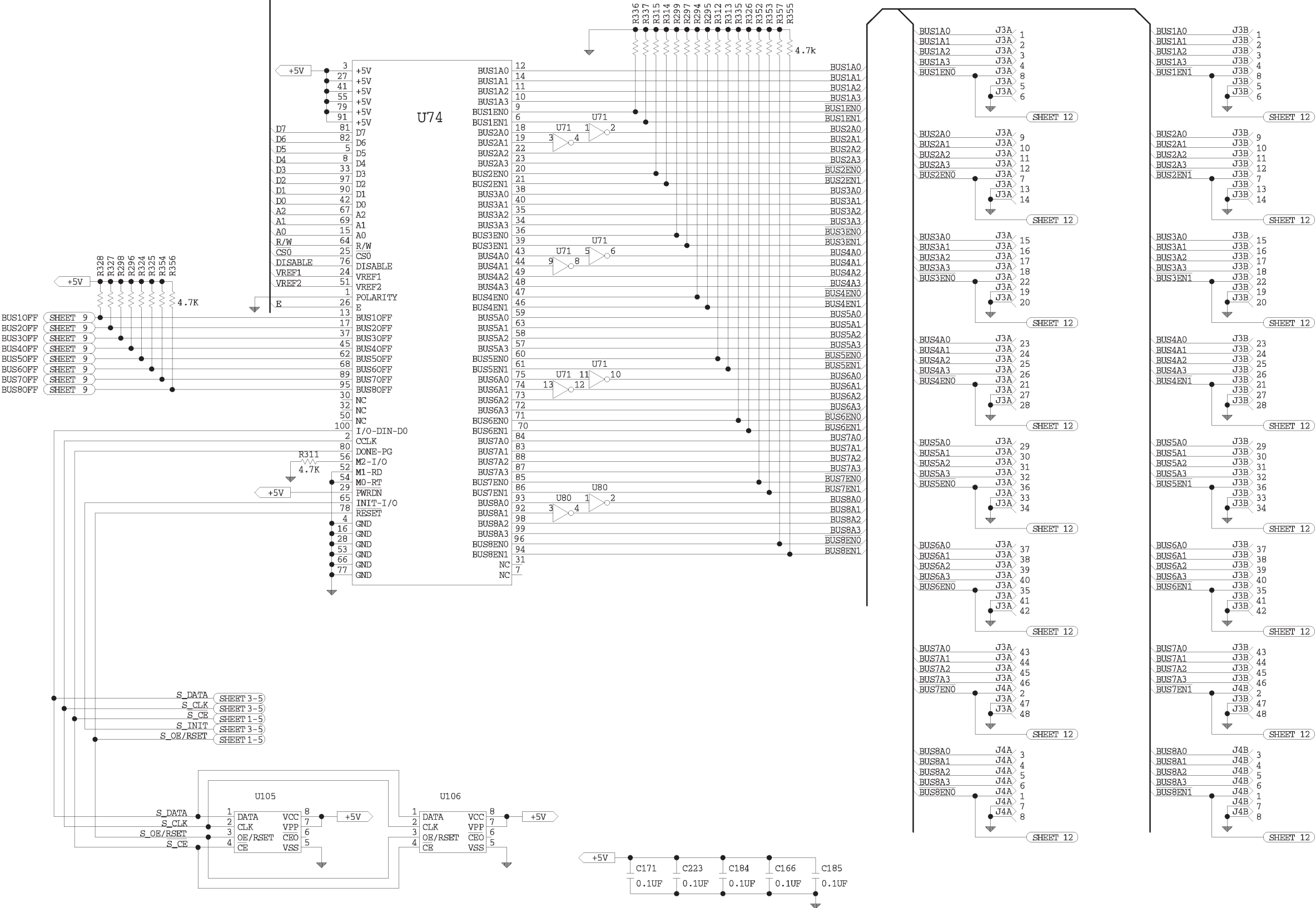




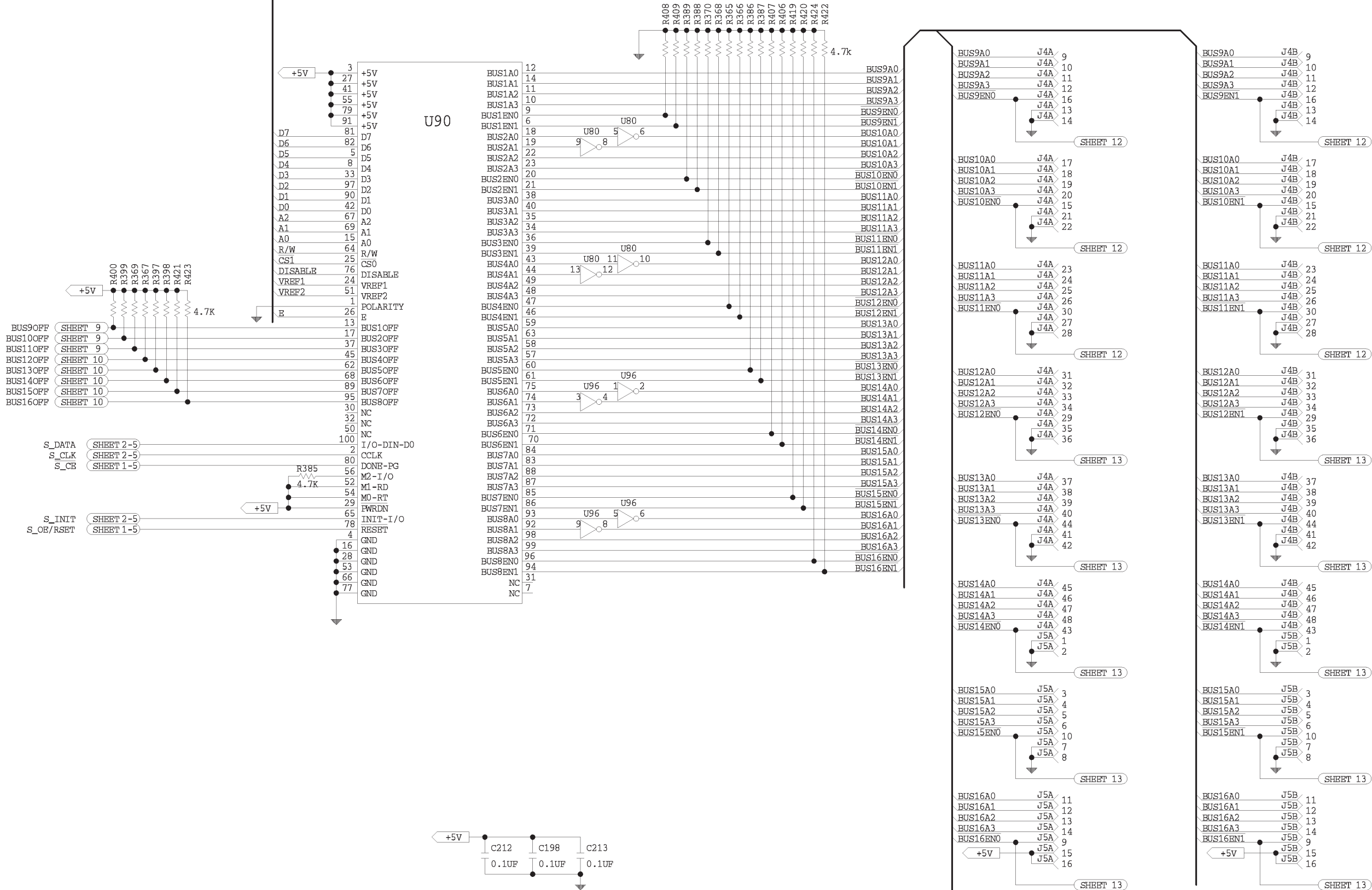
Schematic (Sheet 1 of 15) • 32X32 Video Matrix Card • SC33-1276



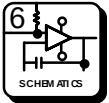
CONTROL BUS (PAGE 1)

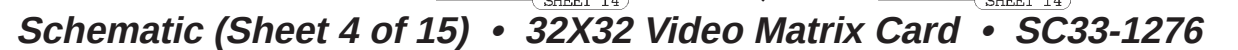


CONTROL BUS (PAGE 1)

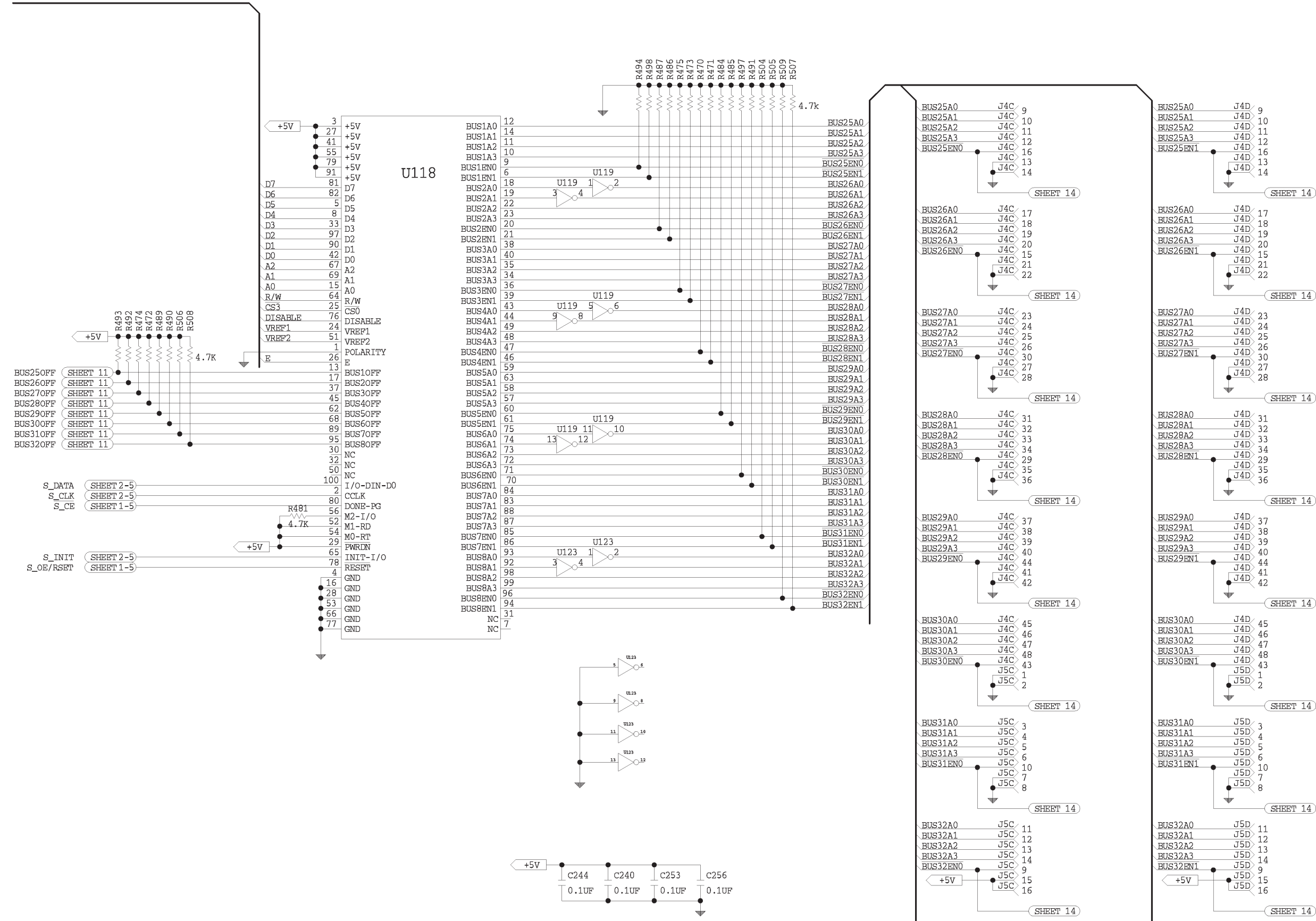


Schematic (Sheet 3 of 15) • 32X32 Video Matrix Card • SC33-1276

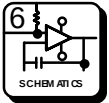


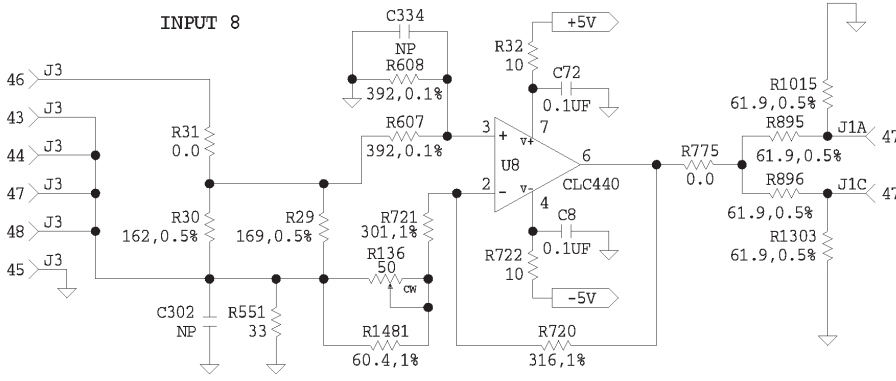
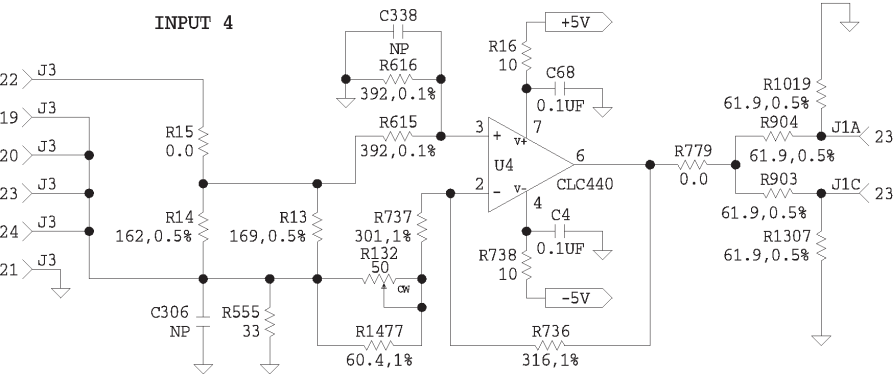
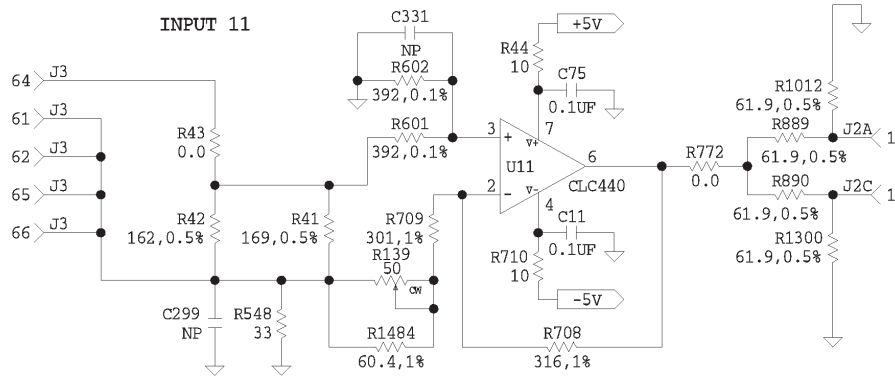
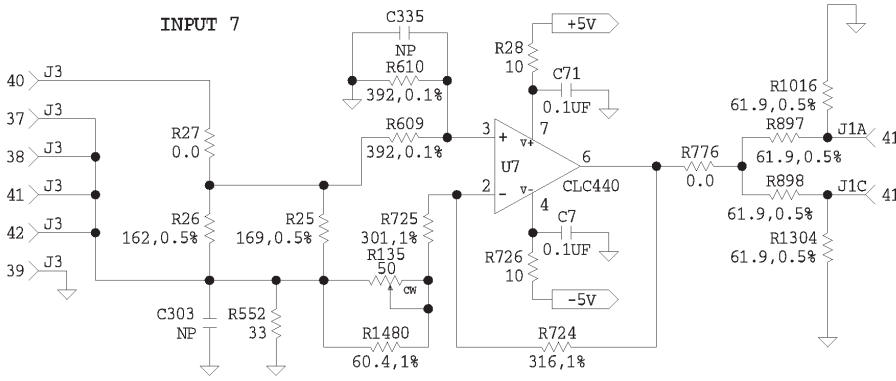
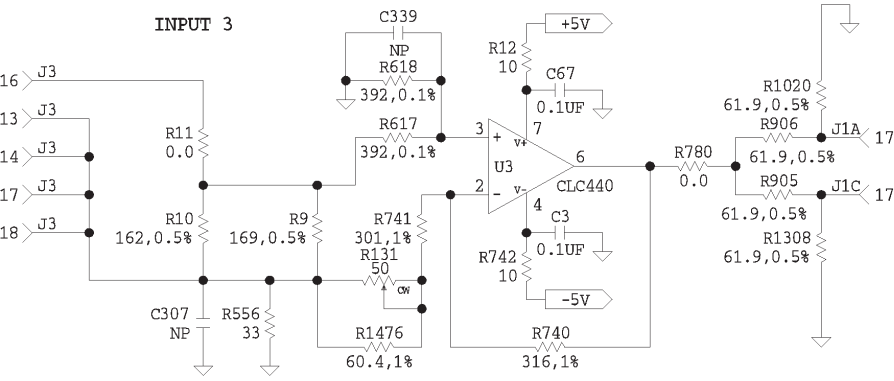
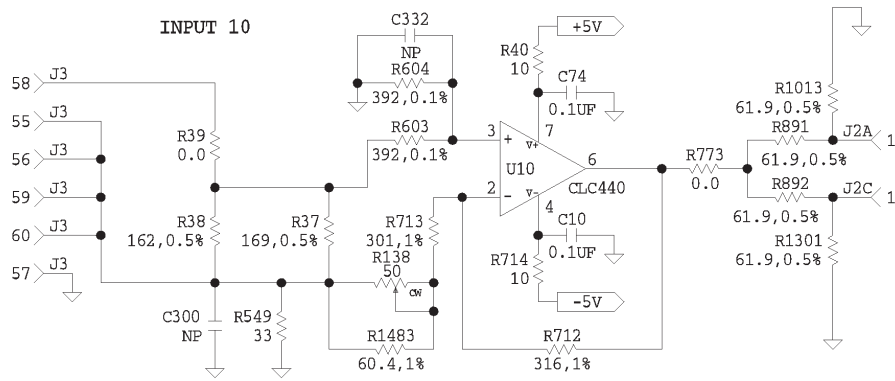
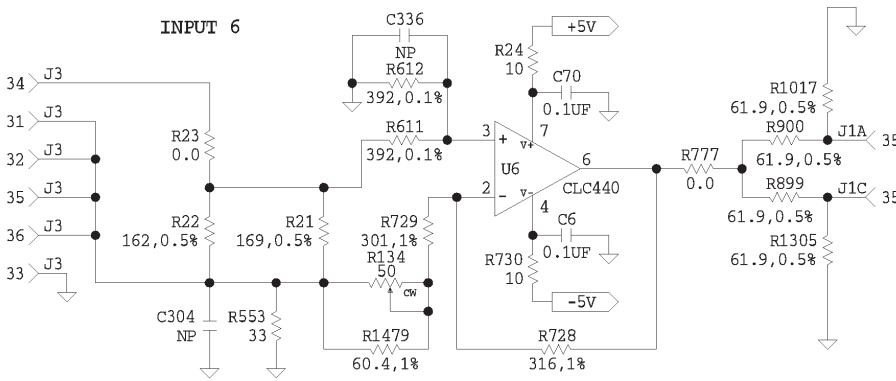
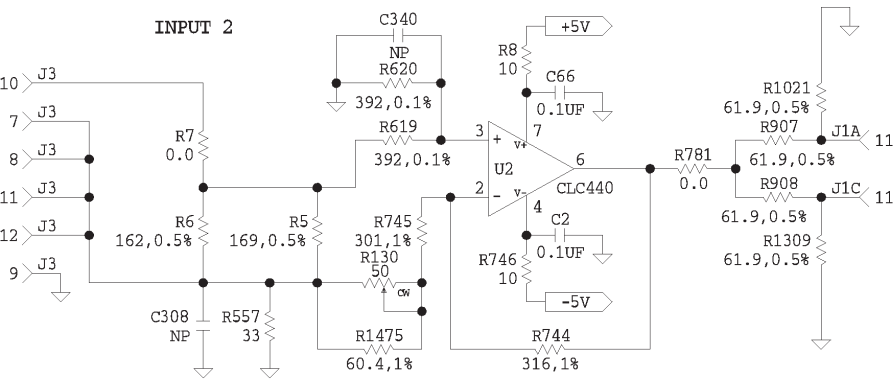
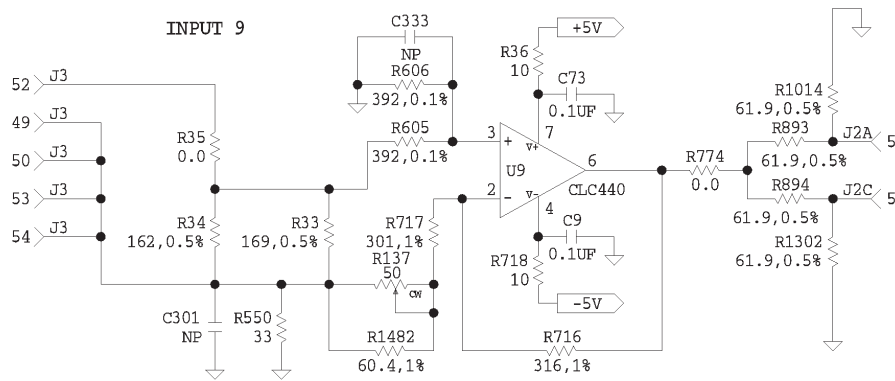
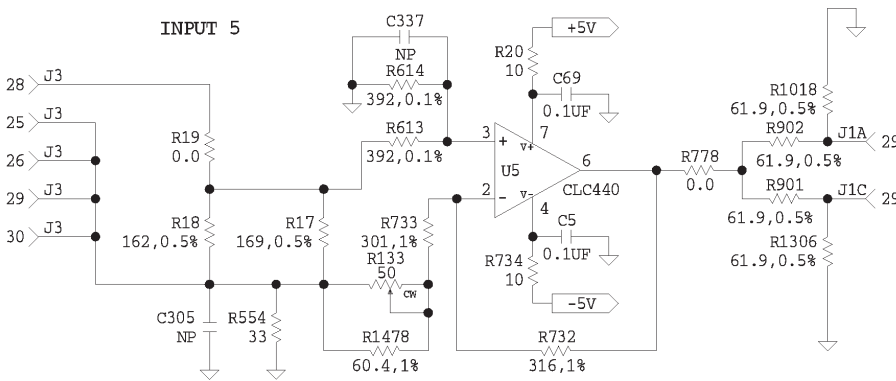
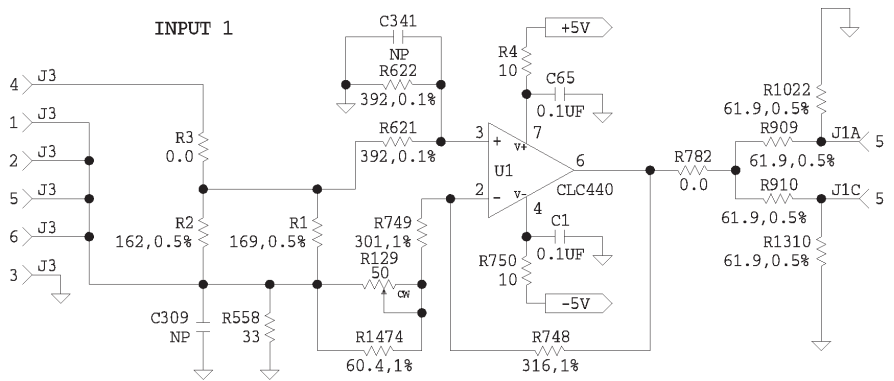


CONTROL BUS (PAGE 1)

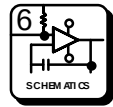


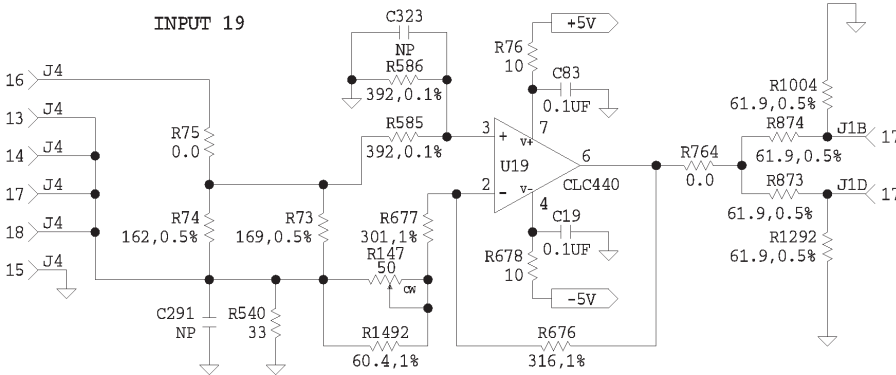
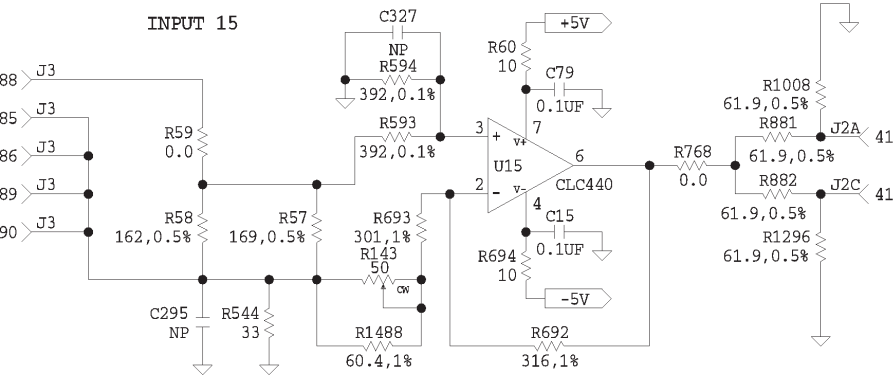
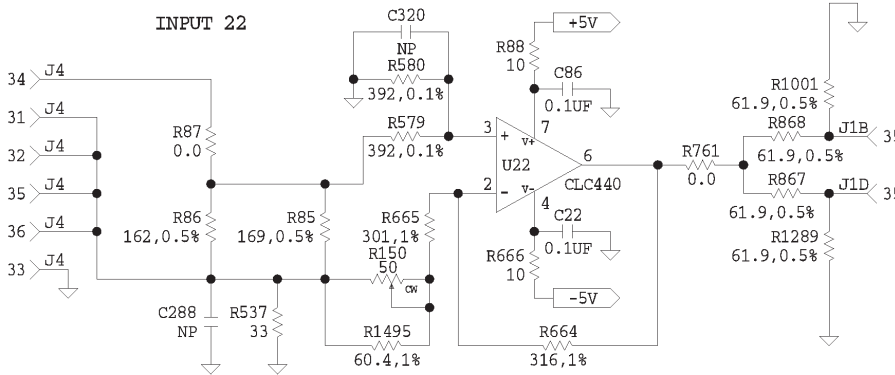
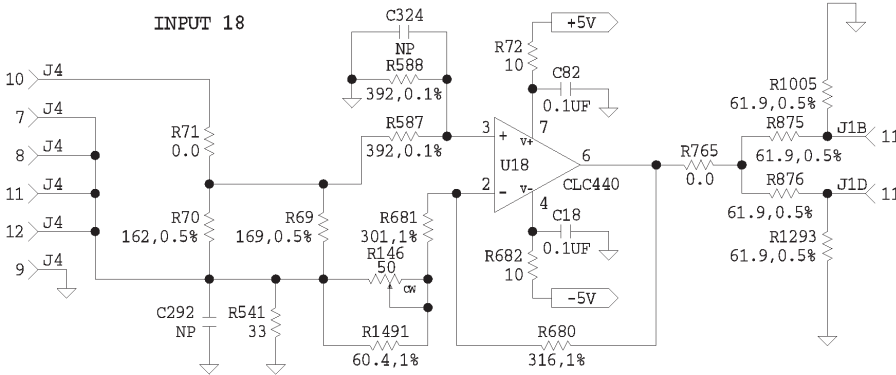
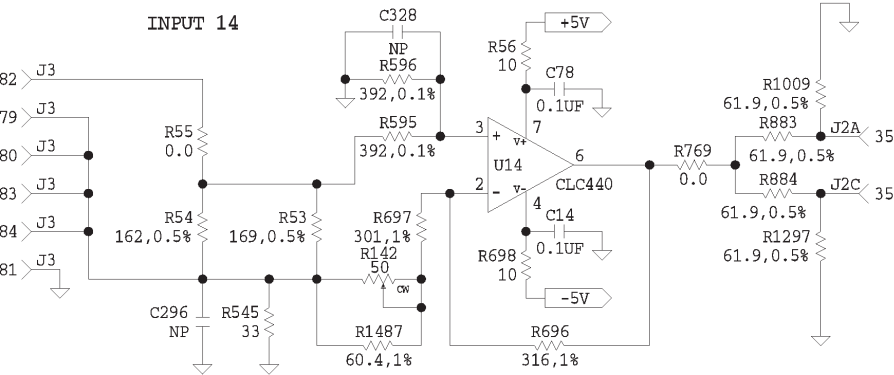
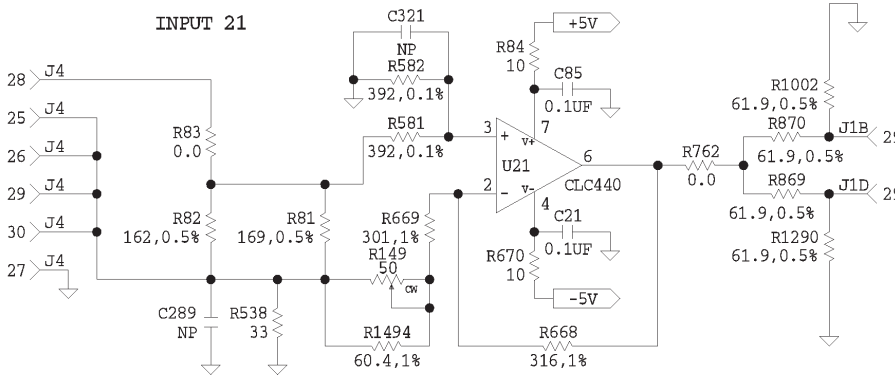
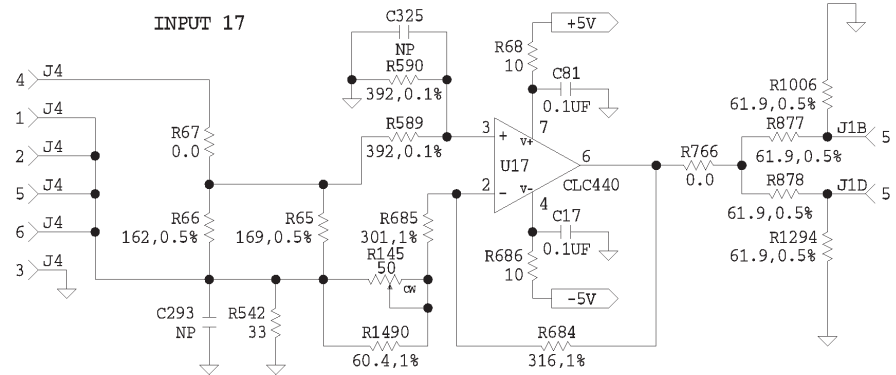
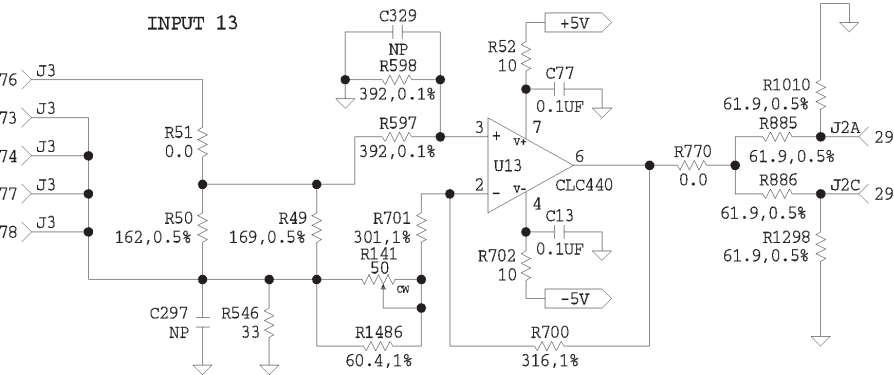
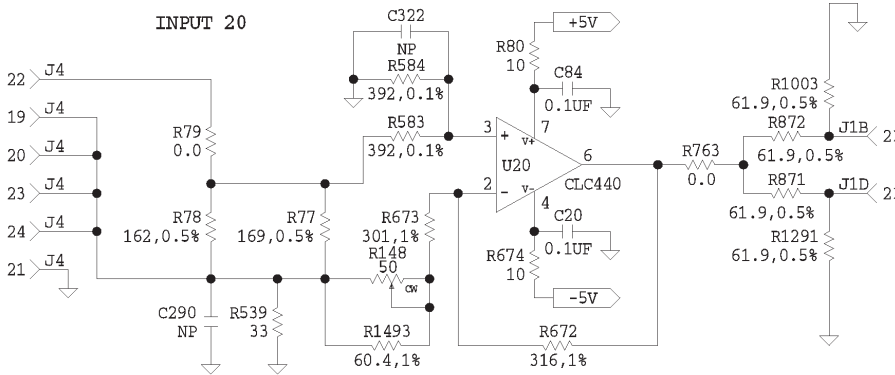
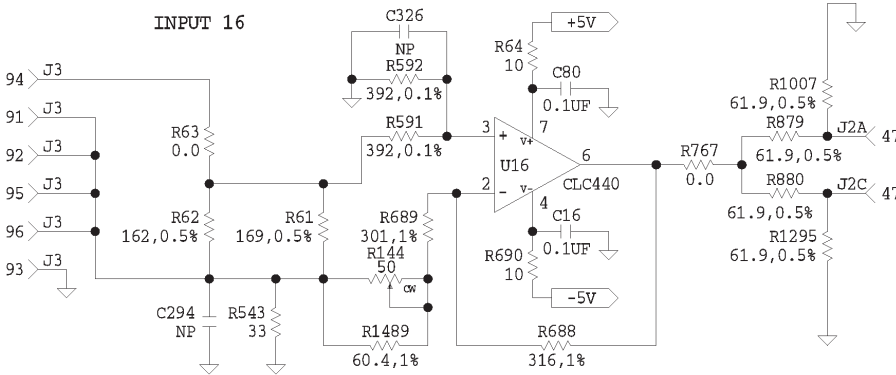
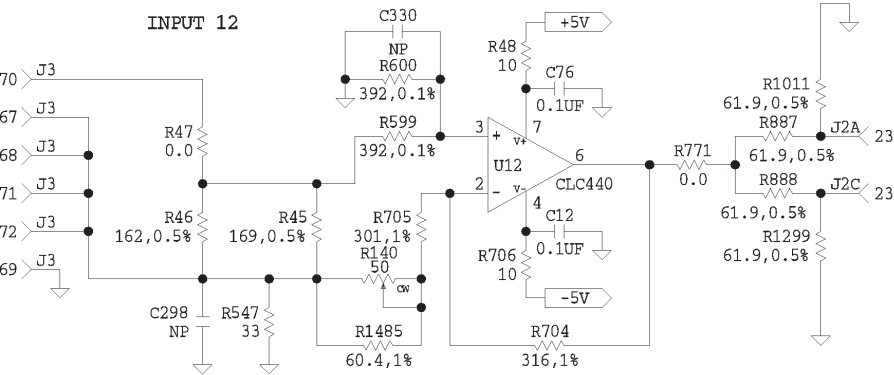
Schematic (Sheet 5 of 15) • 32X32 Video Matrix Card • SC33-1276



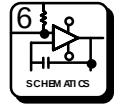


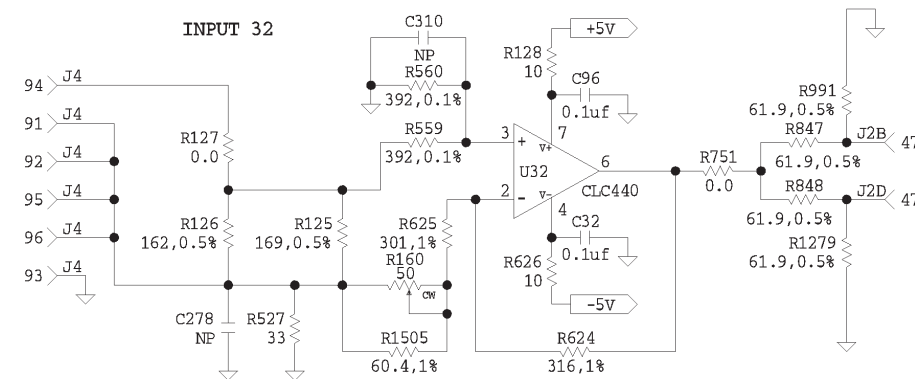
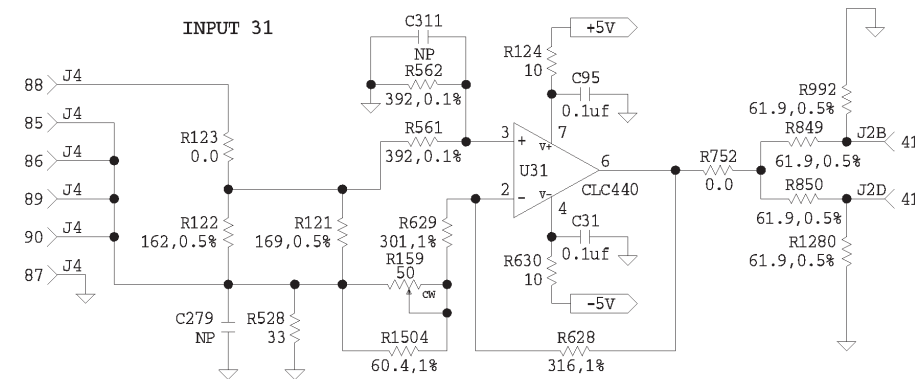
Schematic (Sheet 6 of 15) • 32X32 Video Matrix Card • SC33-1276



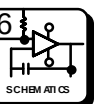


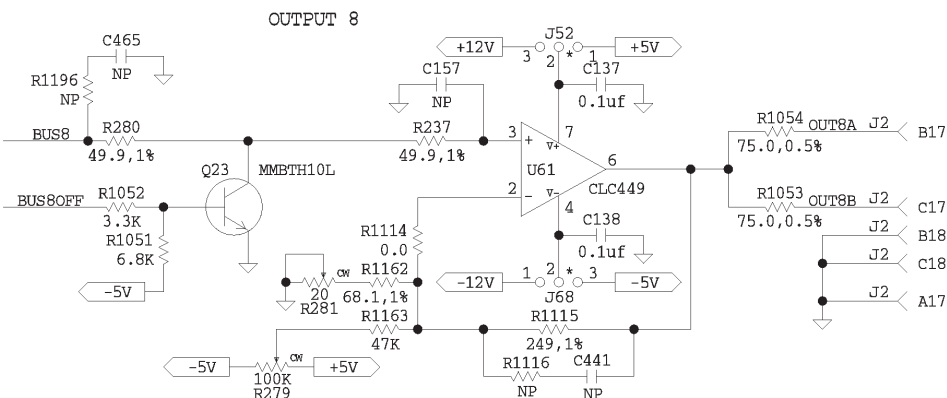
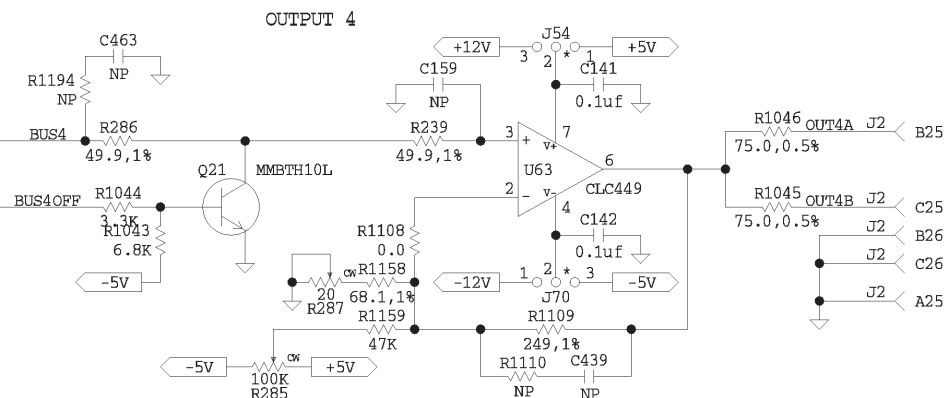
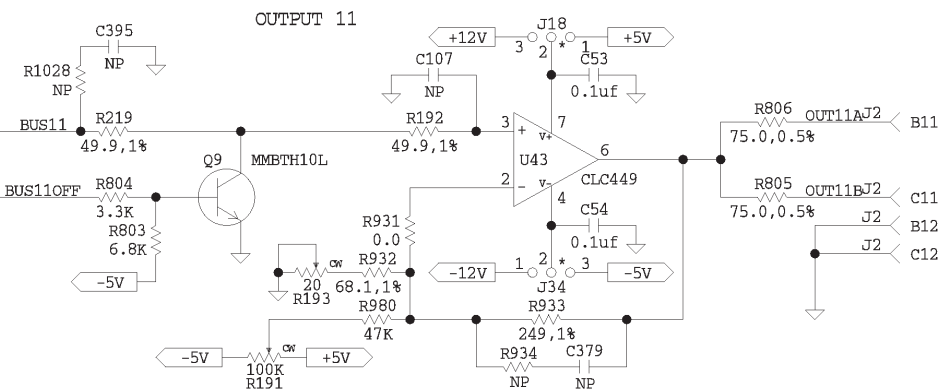
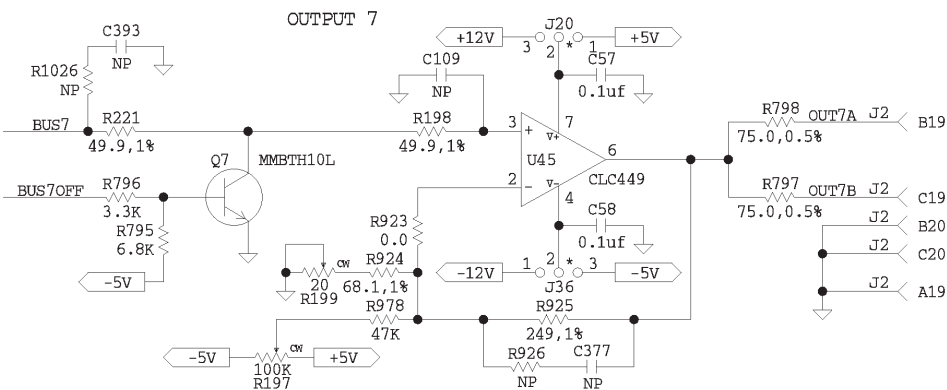
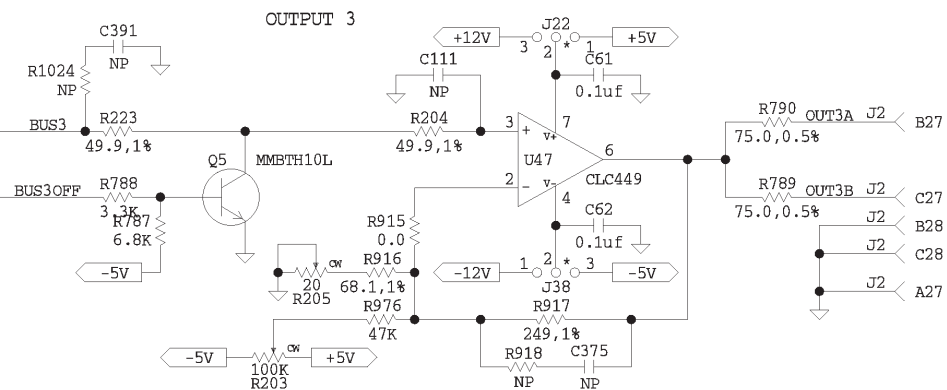
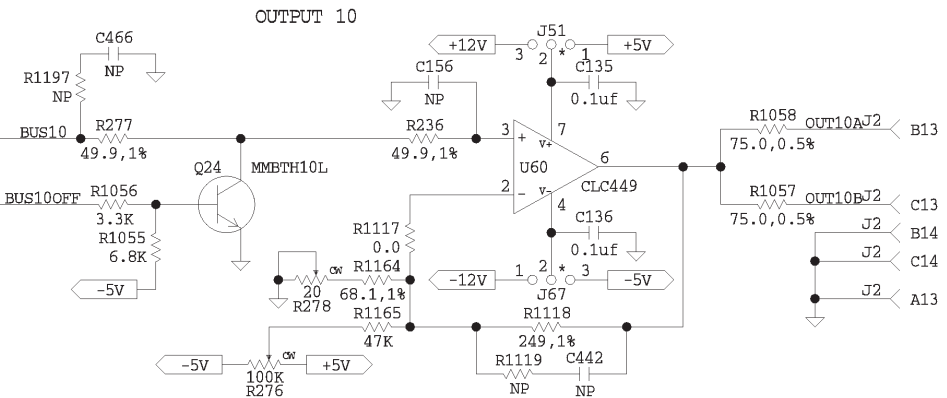
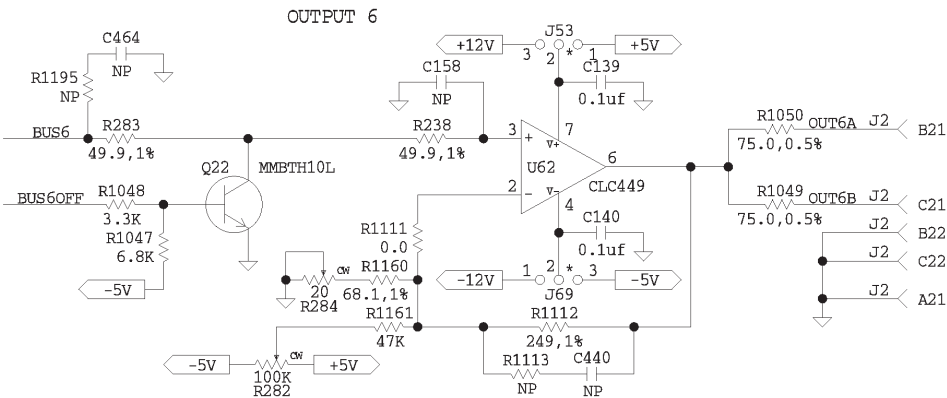
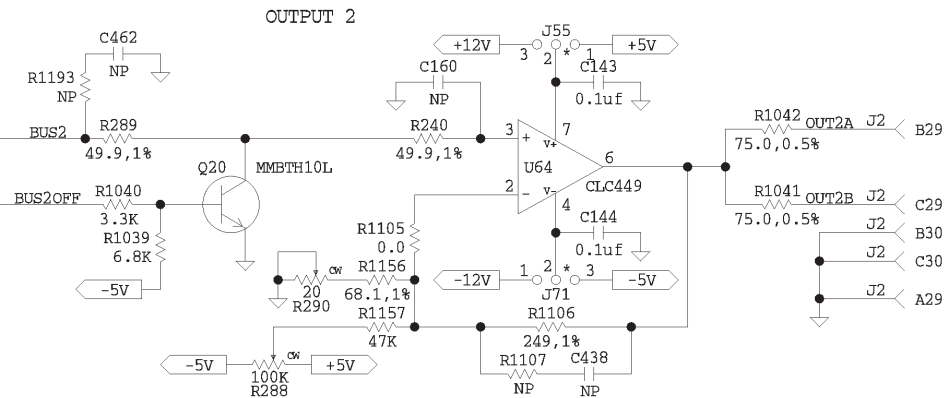
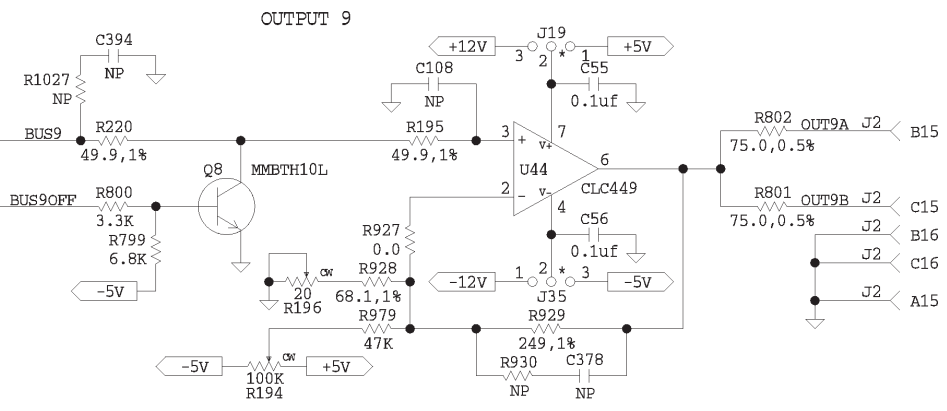
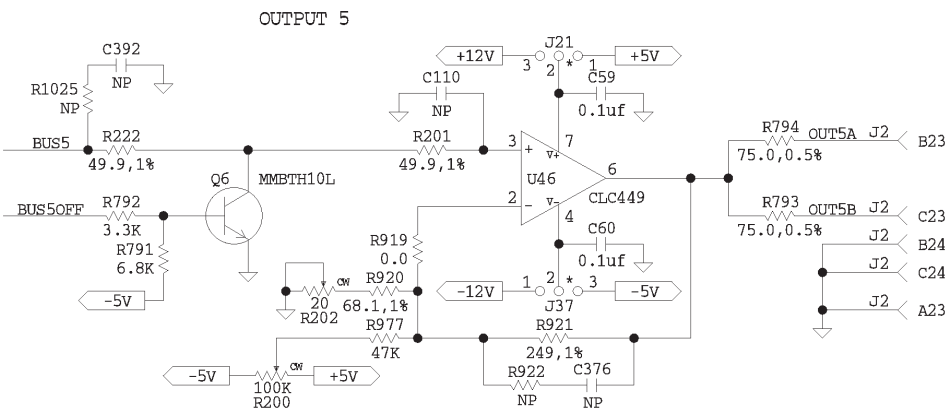
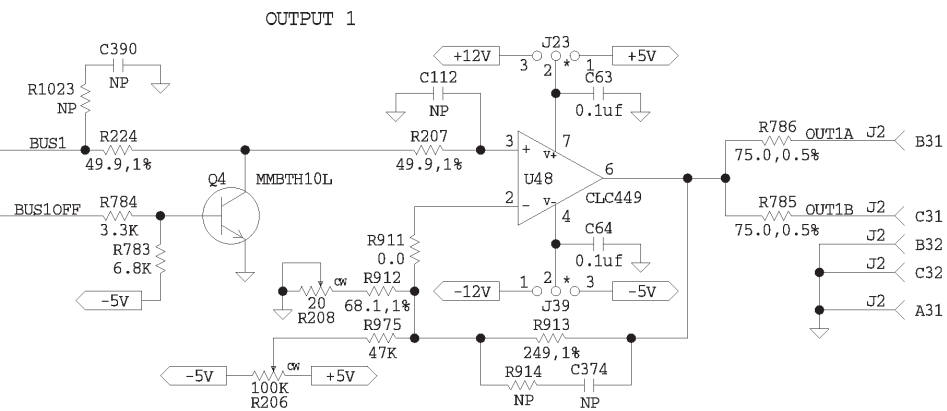
Schematic (Sheet 7 of 15) • 32X32 Video Matrix Card • SC33-1276



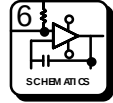


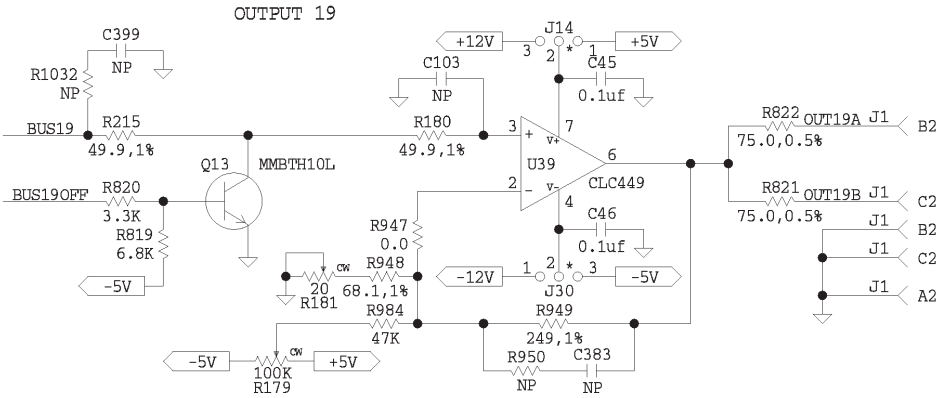
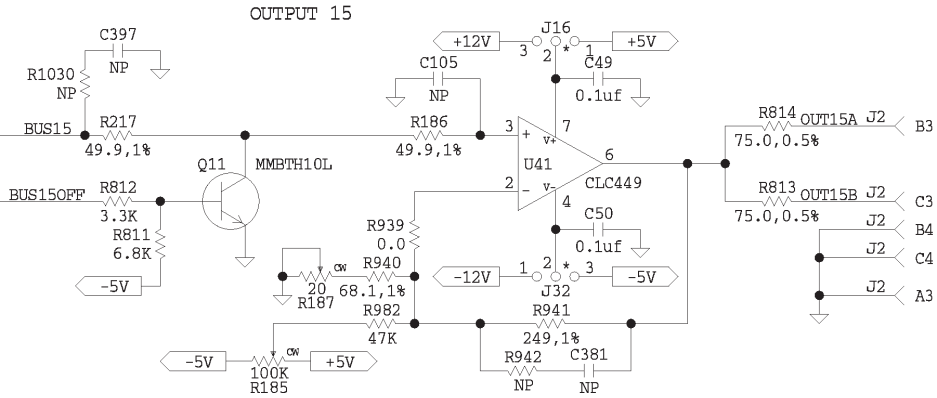
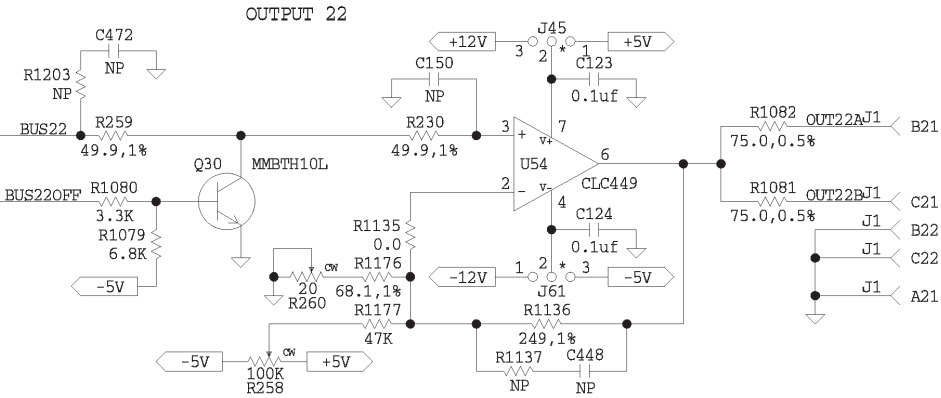
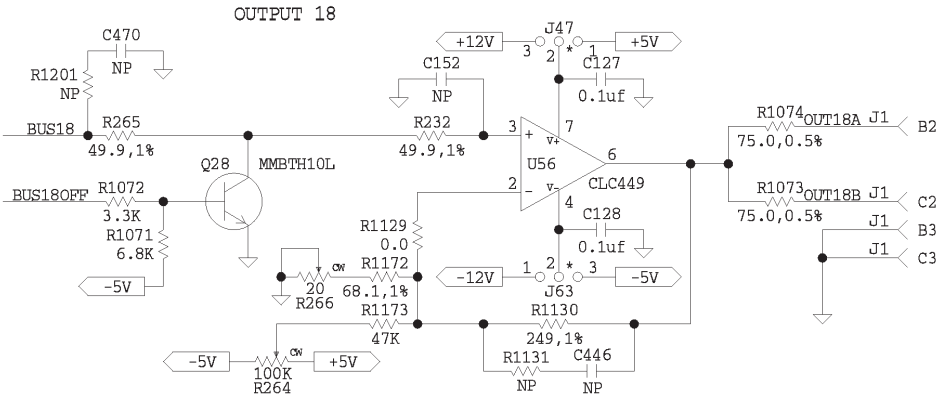
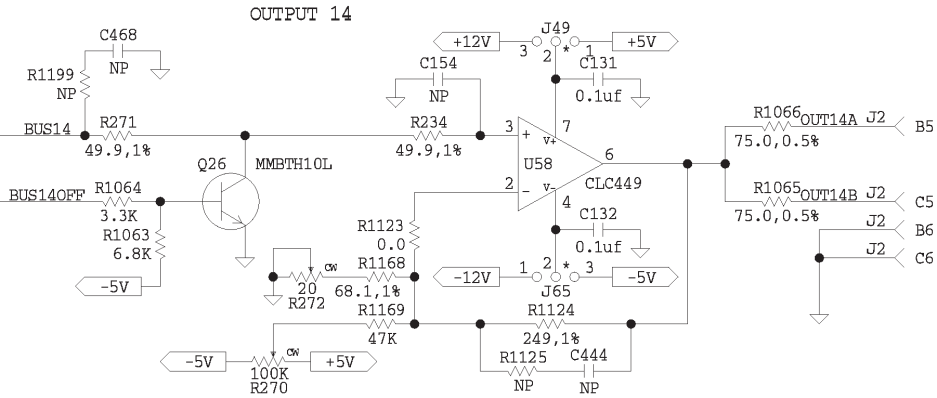
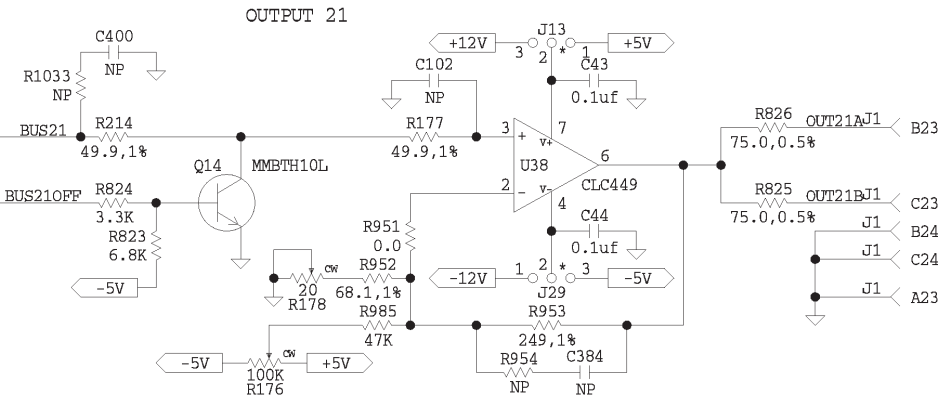
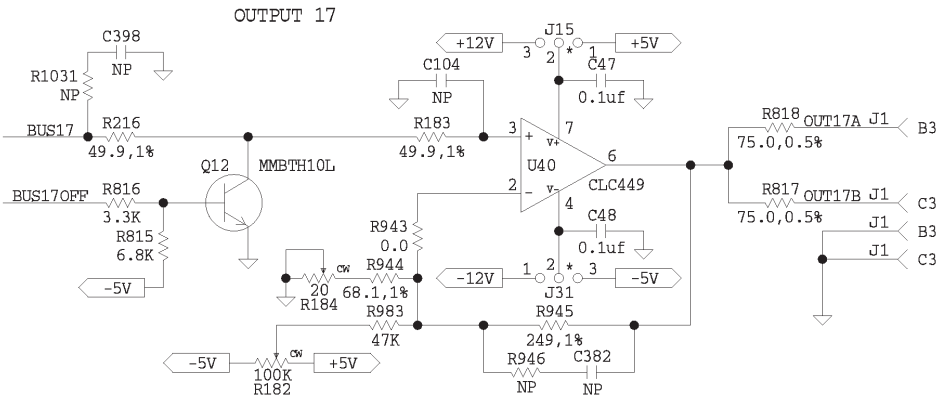
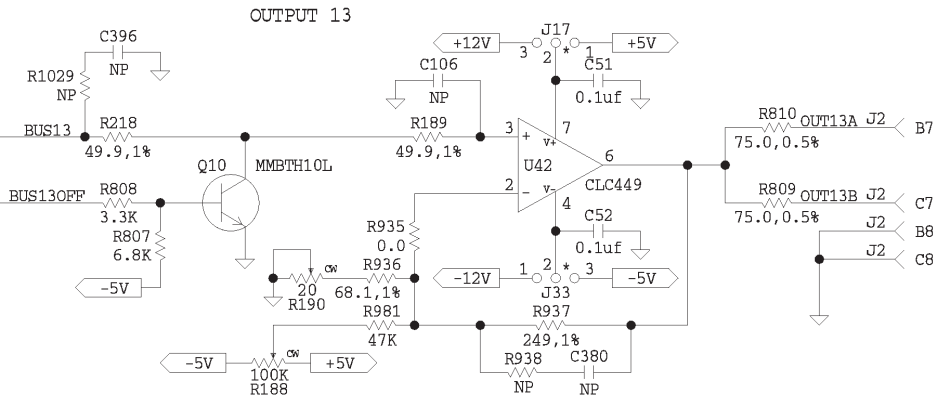
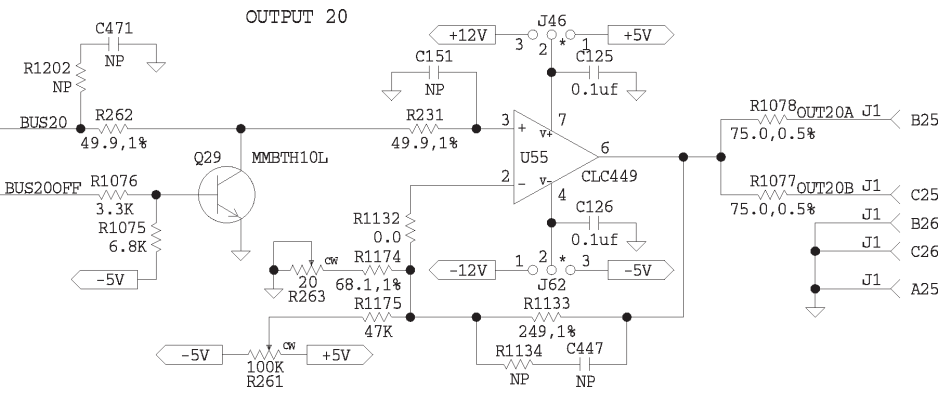
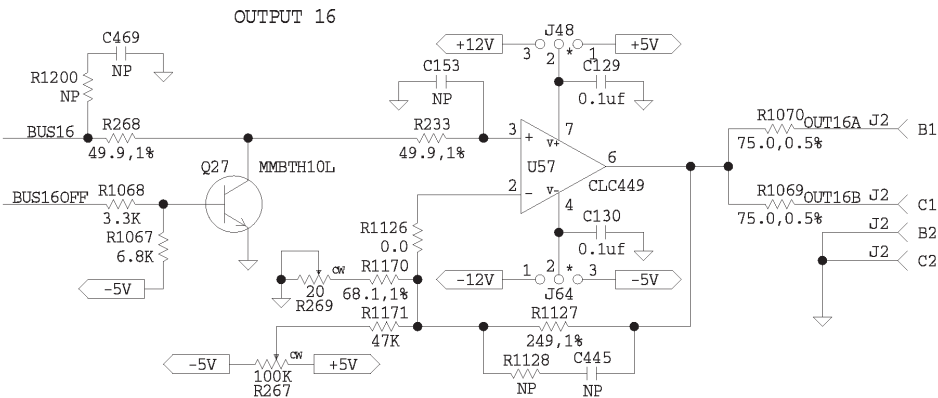
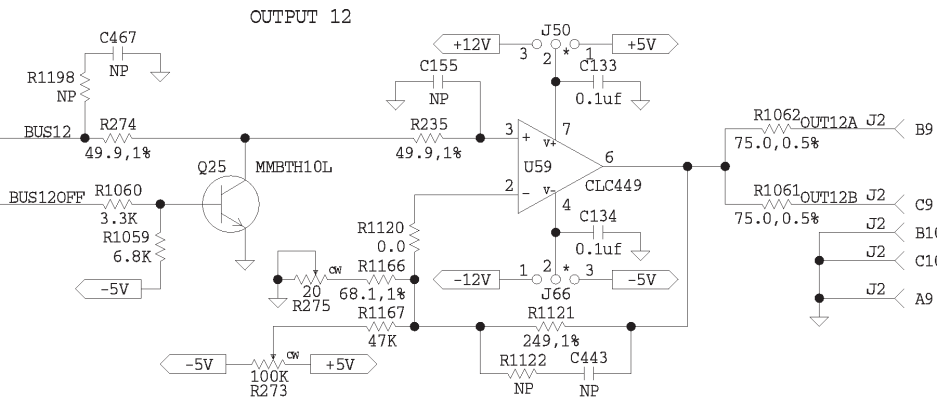
11/97
P/N 81905903420



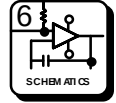


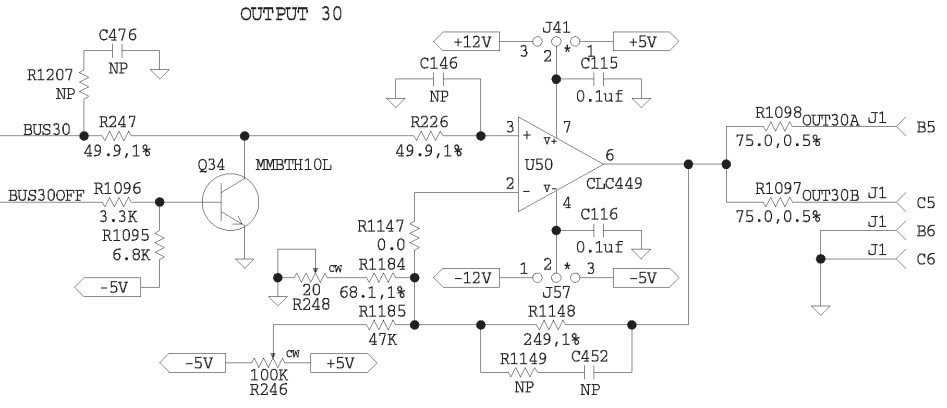
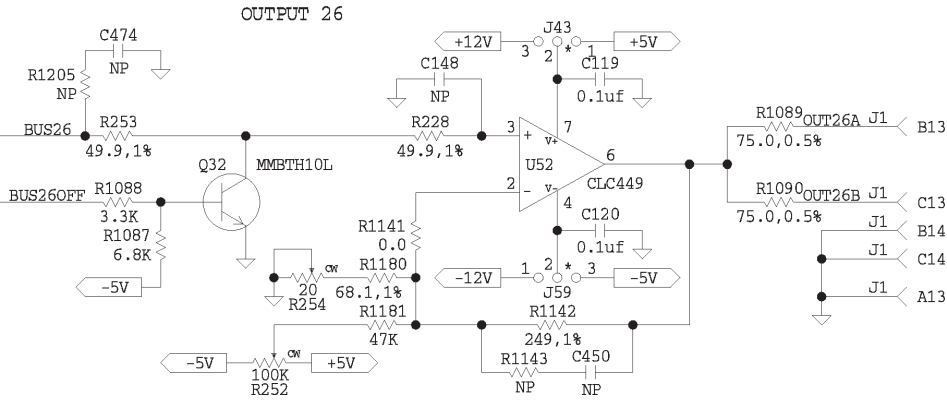
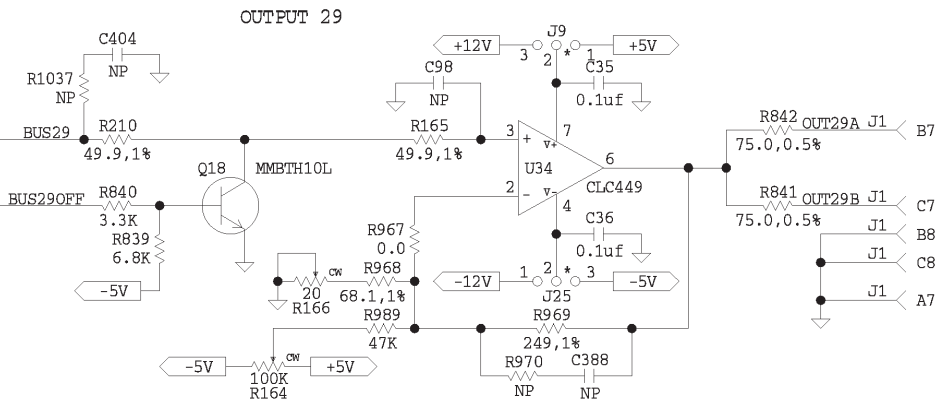
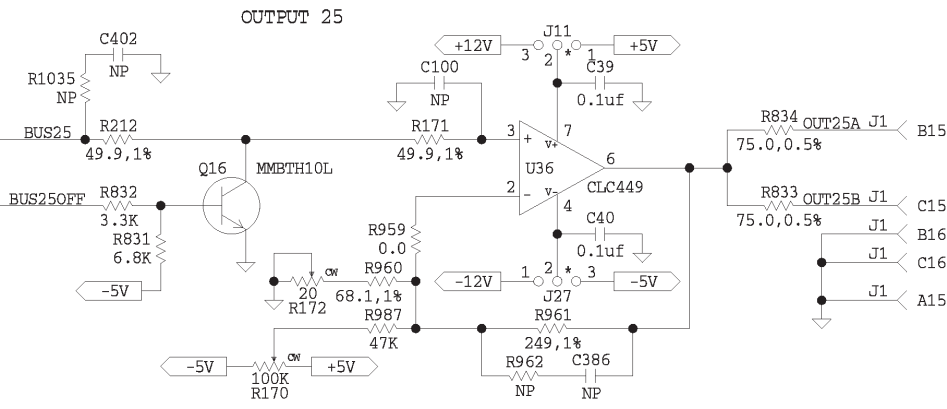
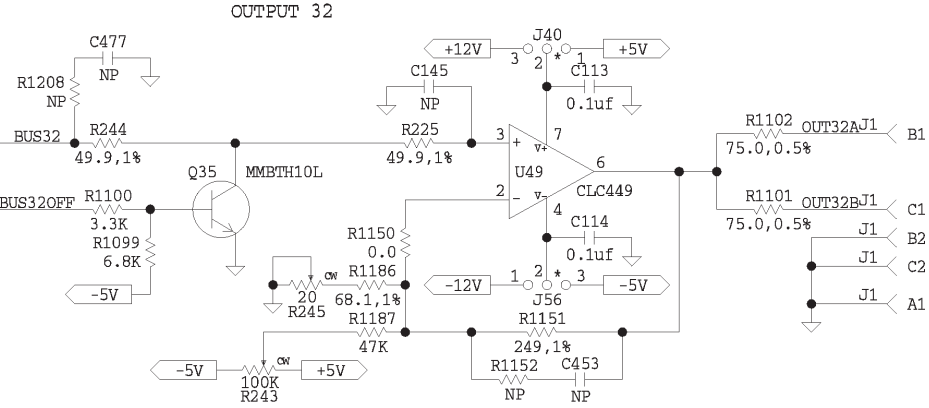
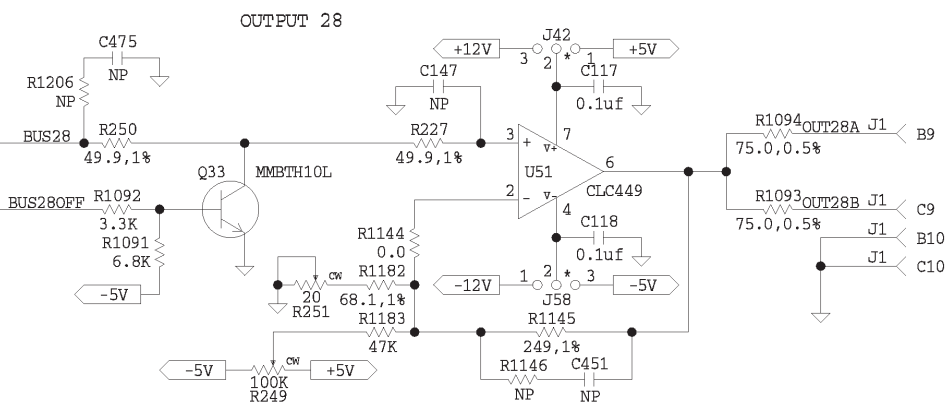
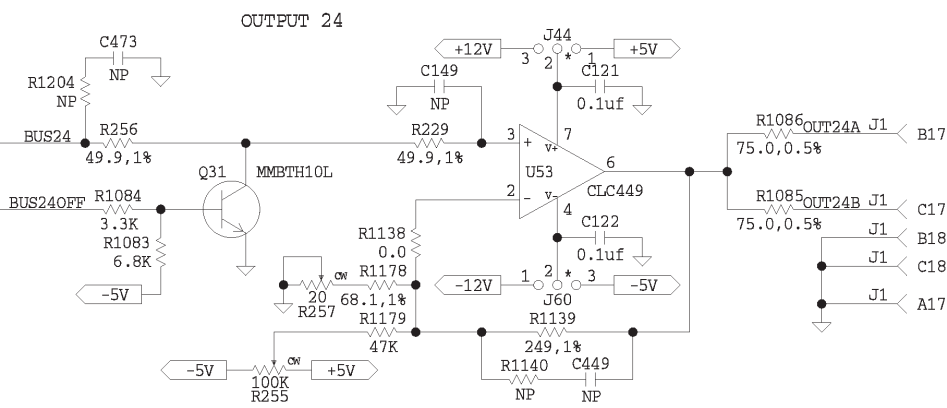
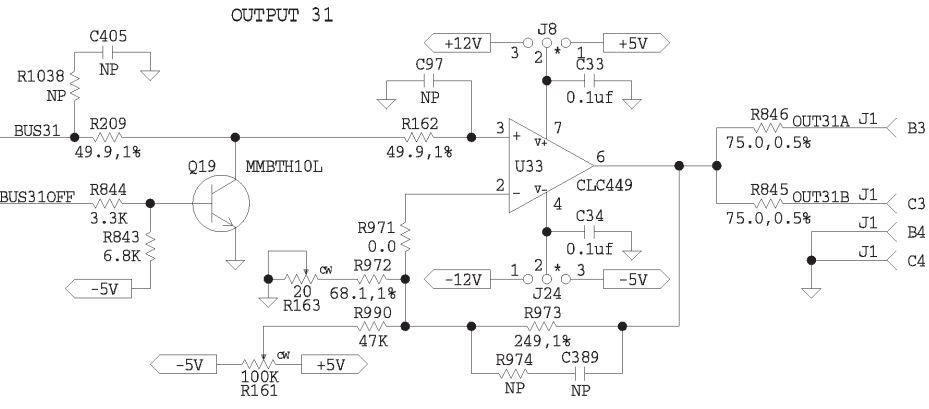
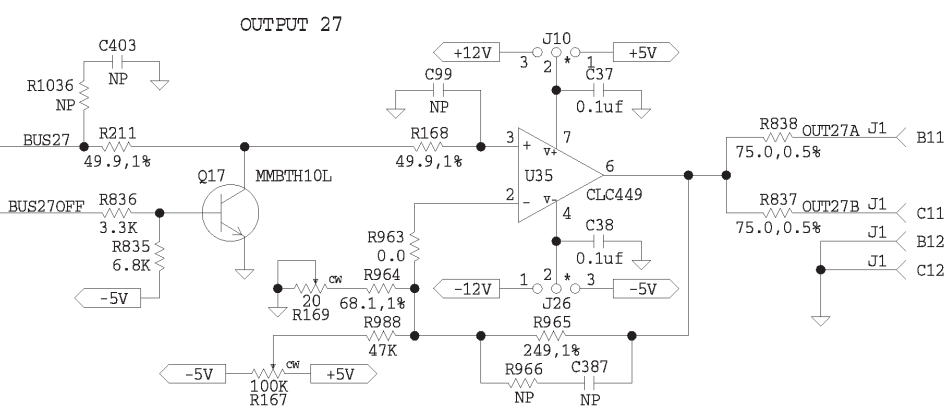
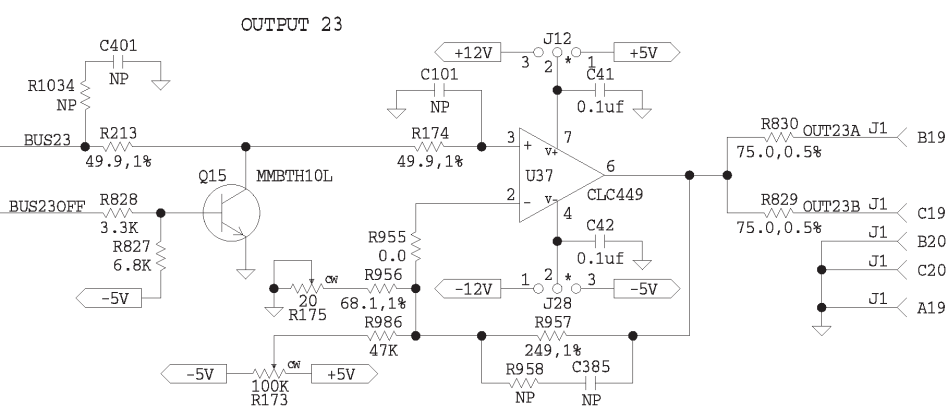
NOTE: * - A 10 OHM 0805 RESISTOR WILL BE INSTALLED FOR VOLTAGE SELECTION.





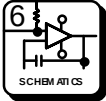
NOTE: * - A 10 OHM 0805 RESISTOR WILL BE INSTALLED FOR VOLTAGE SELECTION.

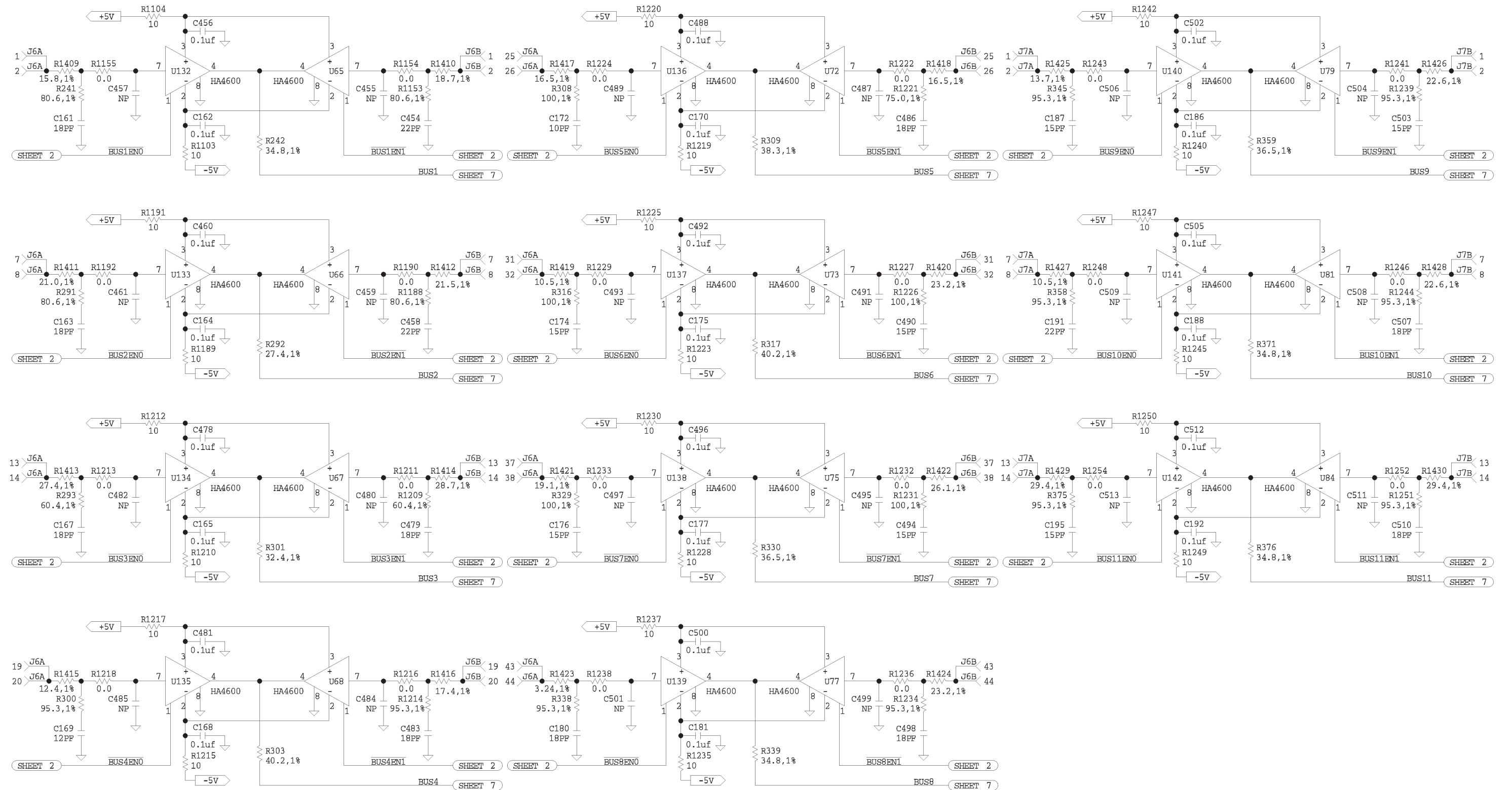




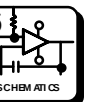
NOTE: * - A 10 OHM 0805 RESISTOR WILL BE INSTALLED FOR VOLTAGE SELECTION.

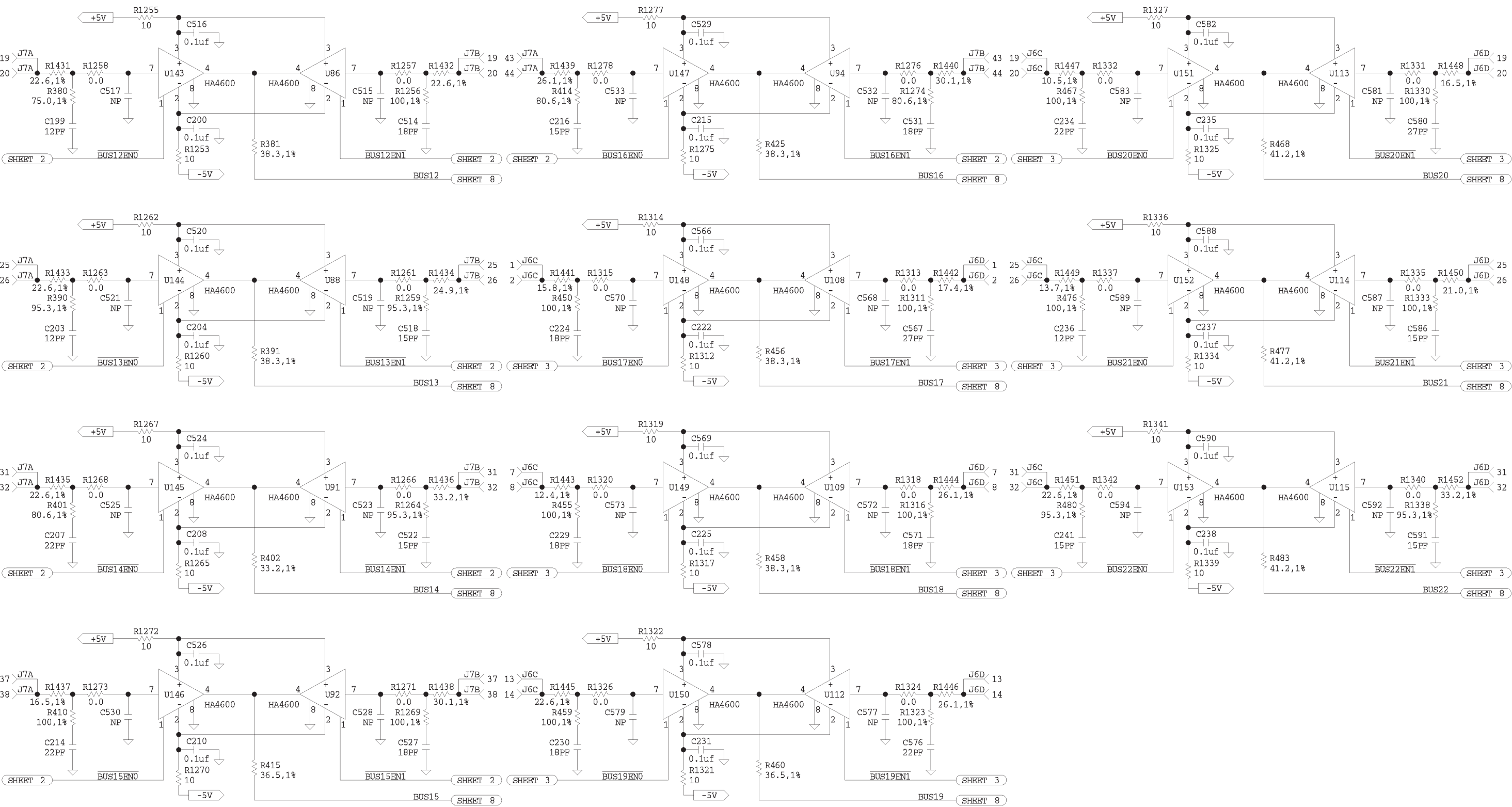
Schematic (Sheet 11 of 15) • 32X32 Video Matrix Card • SC33-1276



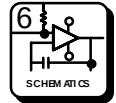


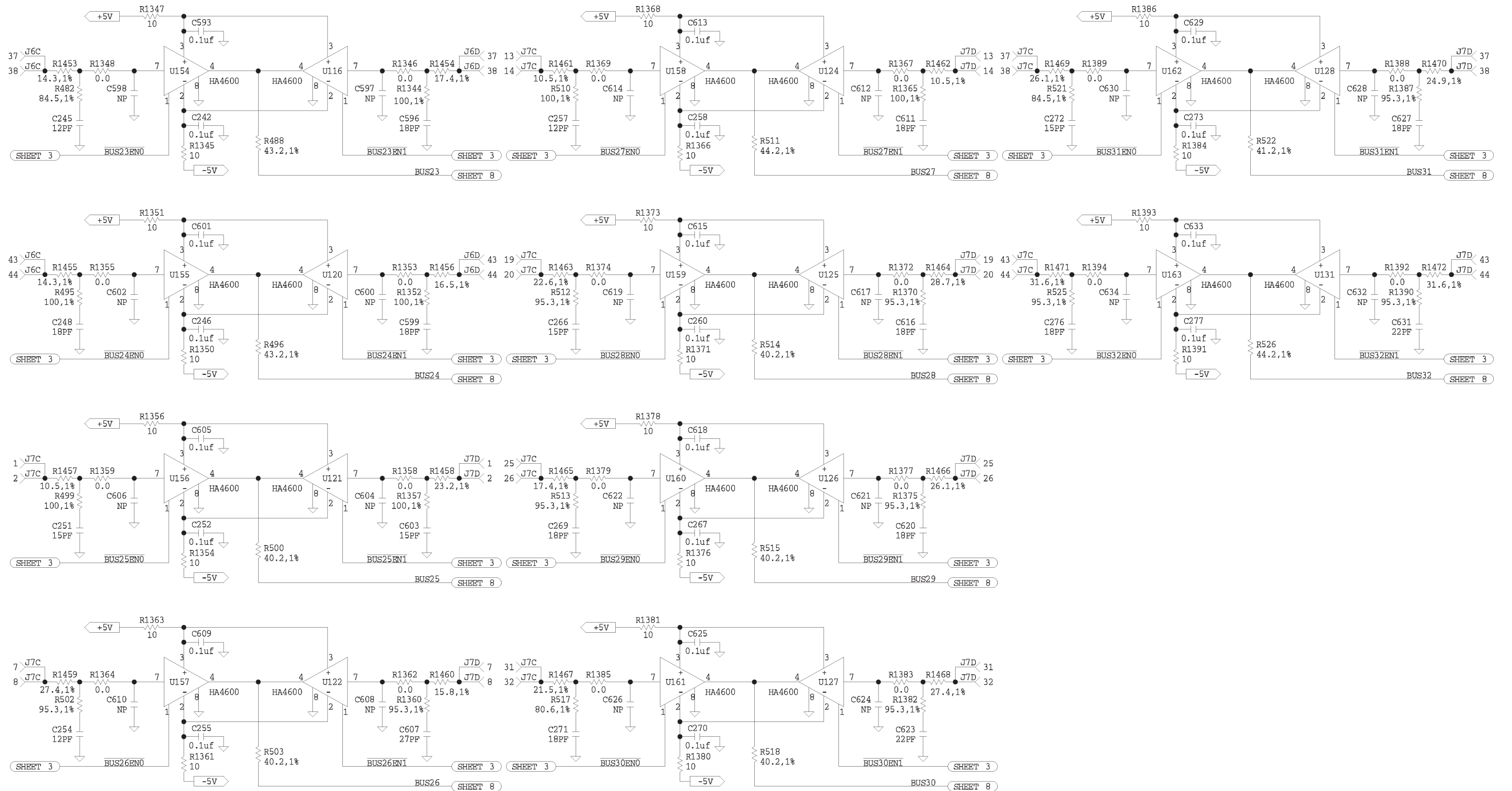
Schematic (Sheet 12 of 15) • 32X32 Video Matrix Card • SC33-1276



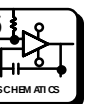


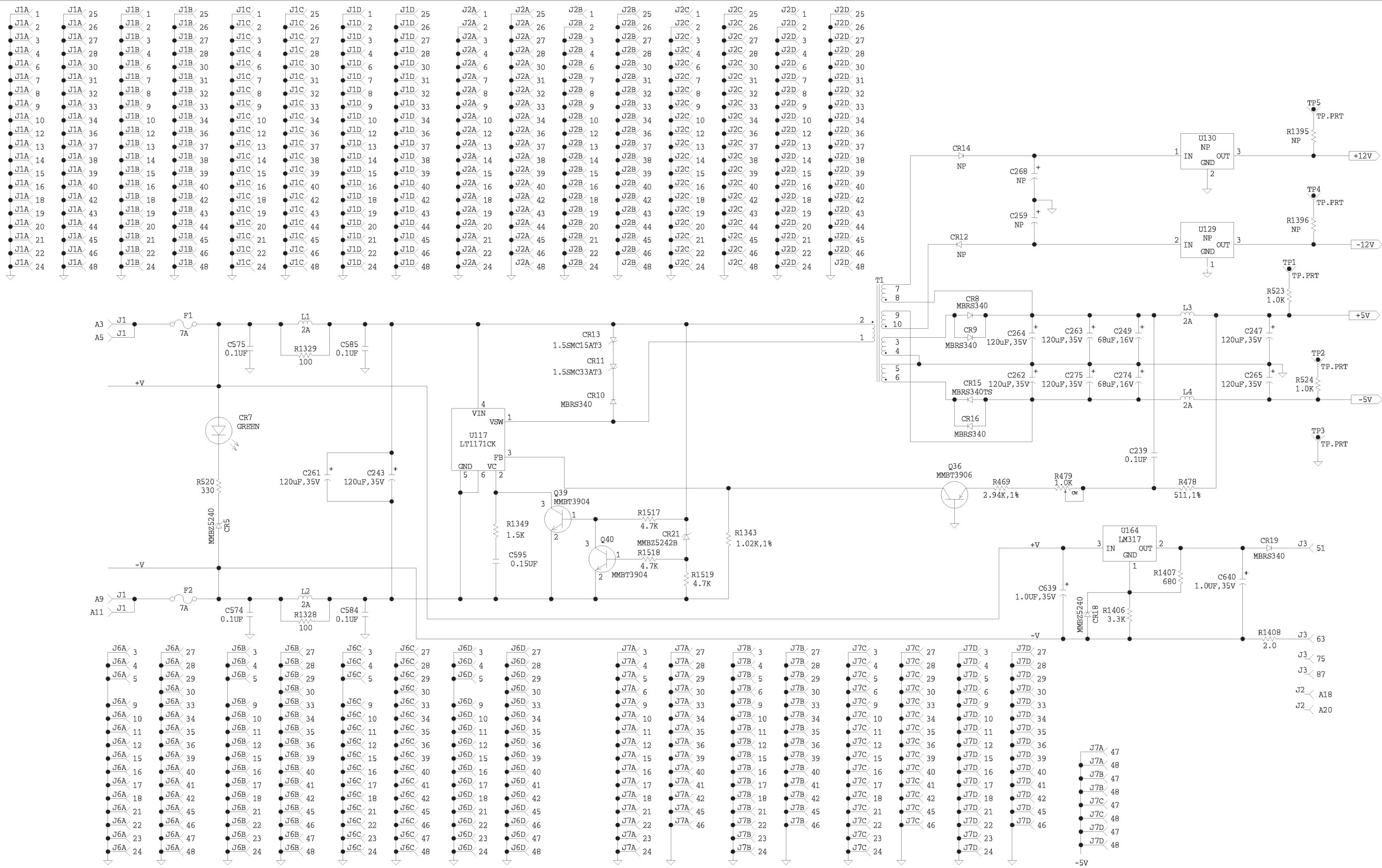
Schematic (Sheet 13 of 15) • 32X32 Video Matrix Card • SC33-1276



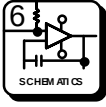


Schematic (Sheet 14 of 15) • 32X32 Video Matrix Card • SC33-1276

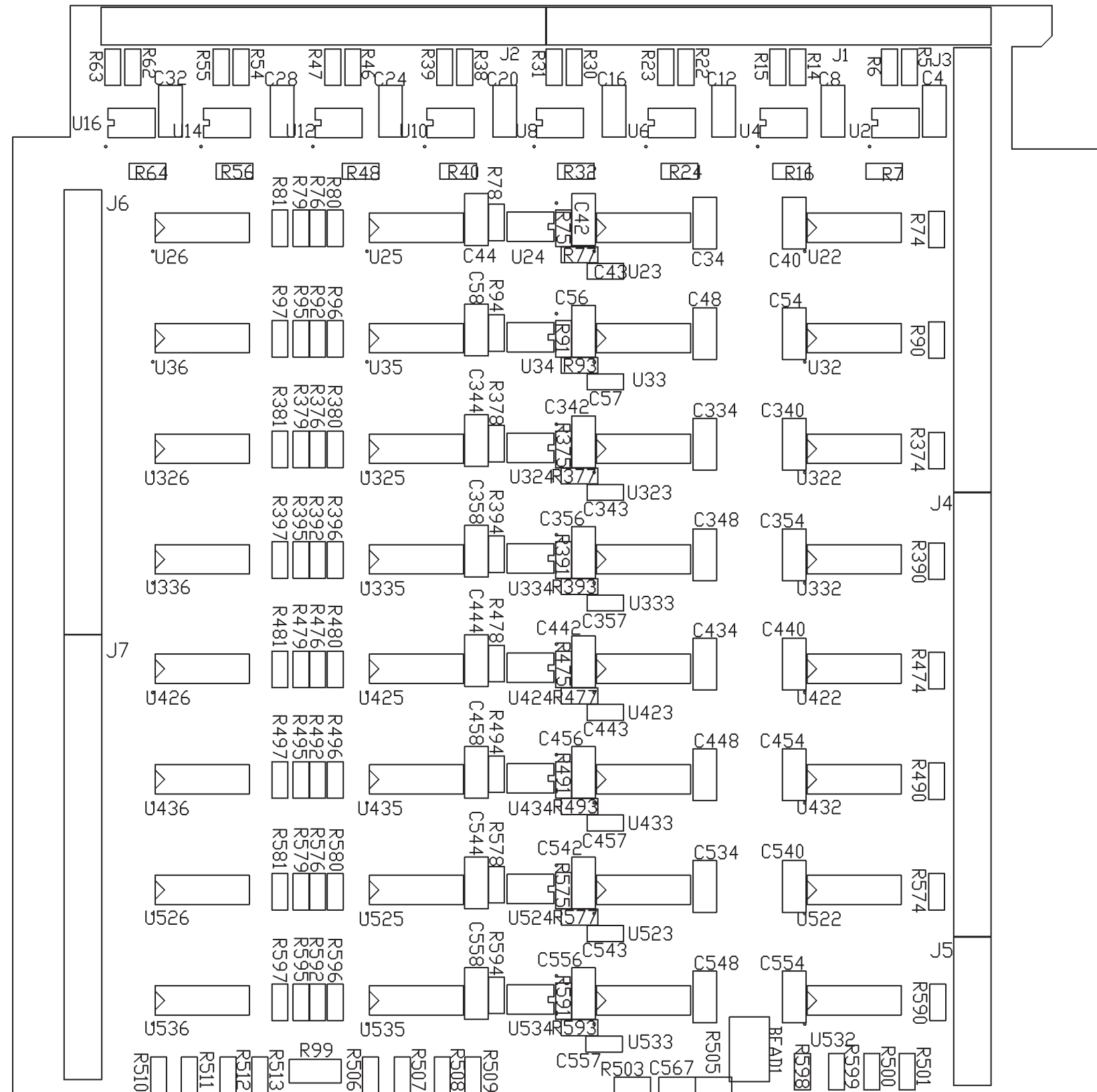




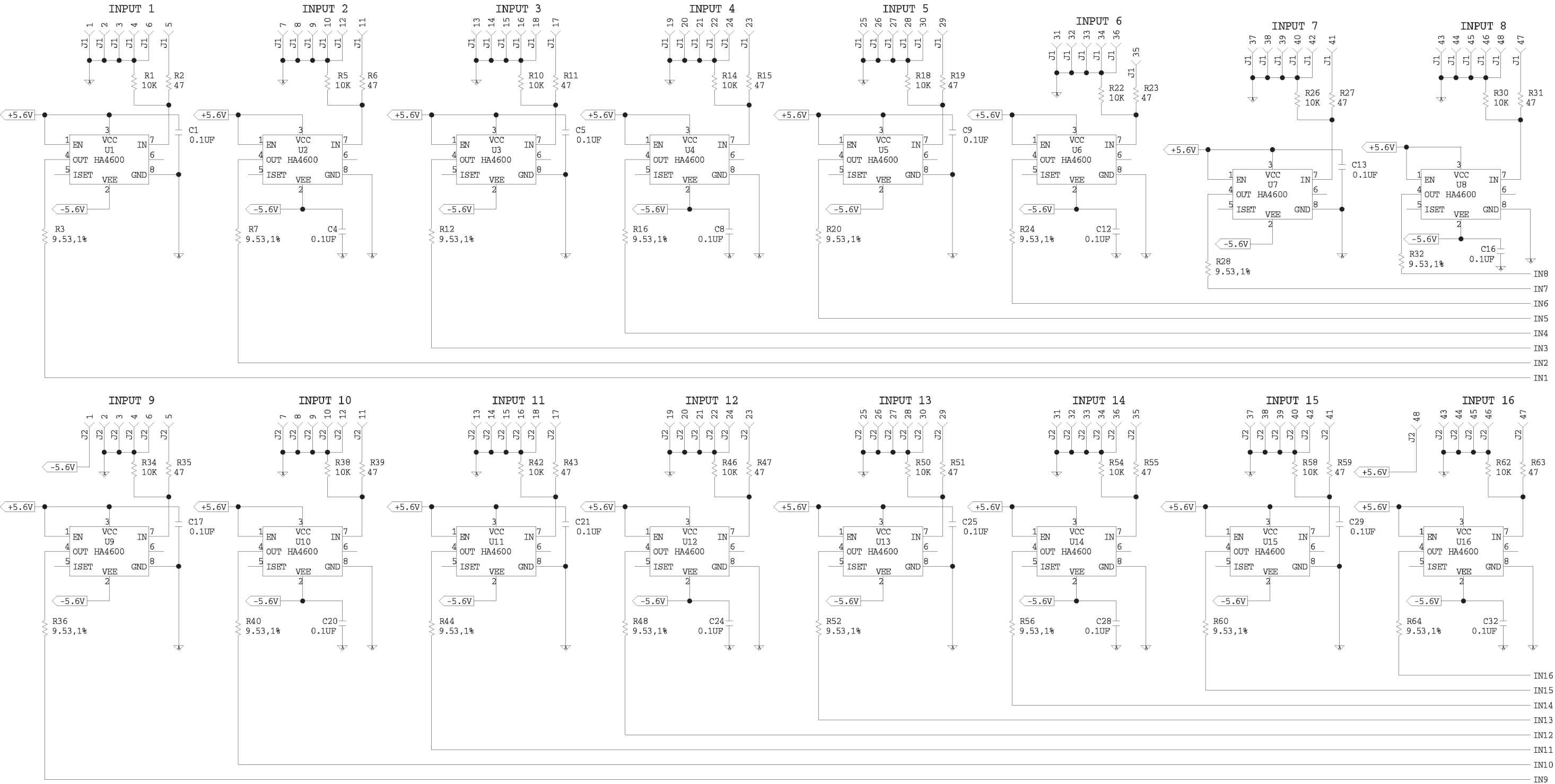
Schematic (Sheet 15 of 15) • 32X32 Video Matrix Card • SC33-1276



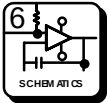
SOLDER SIDE LAYER 10 OF 10

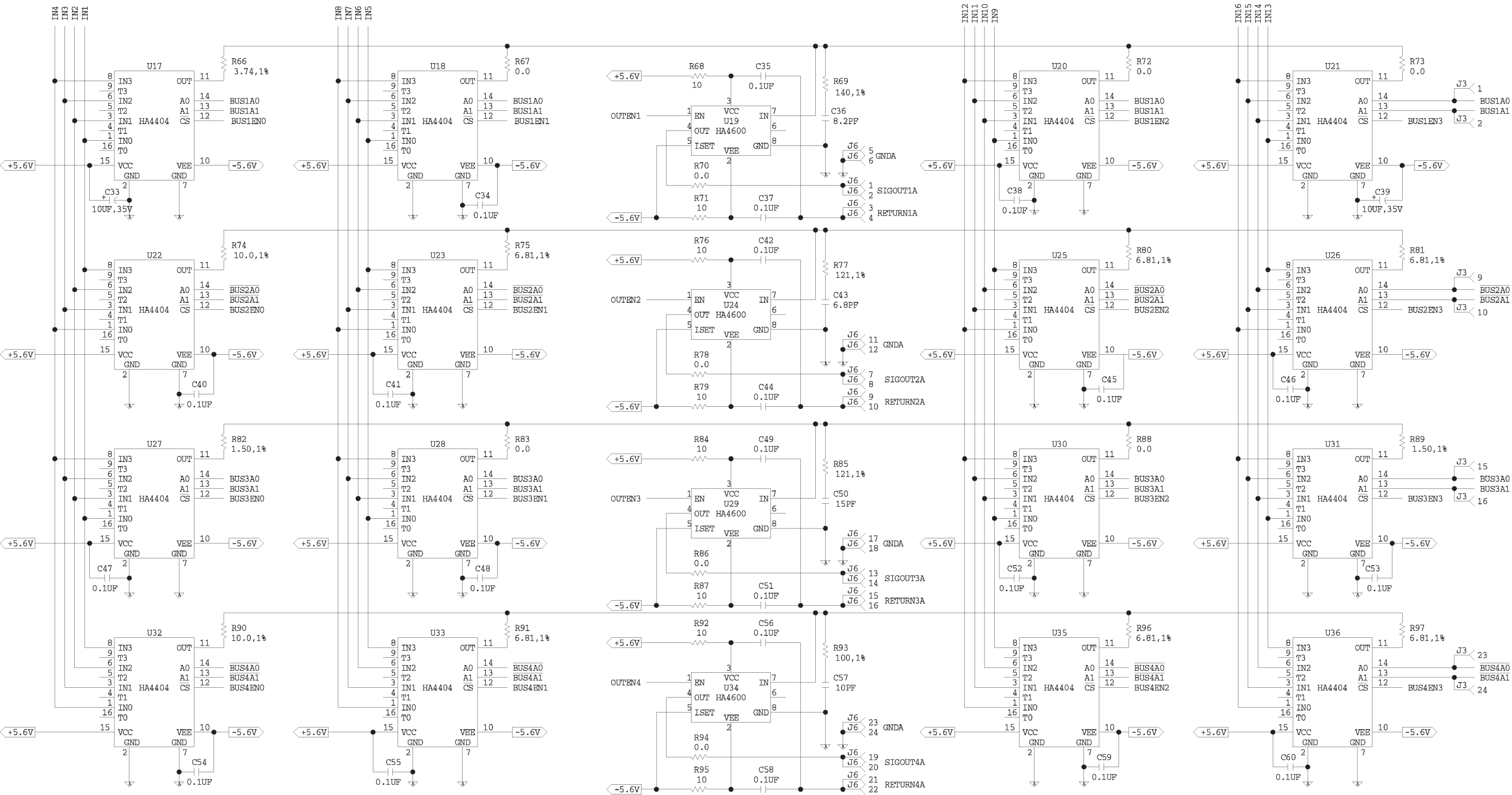


Component Assembly (Sheet 2 of 2) • 16X16 Crosspoint Card • CA25-1284

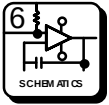


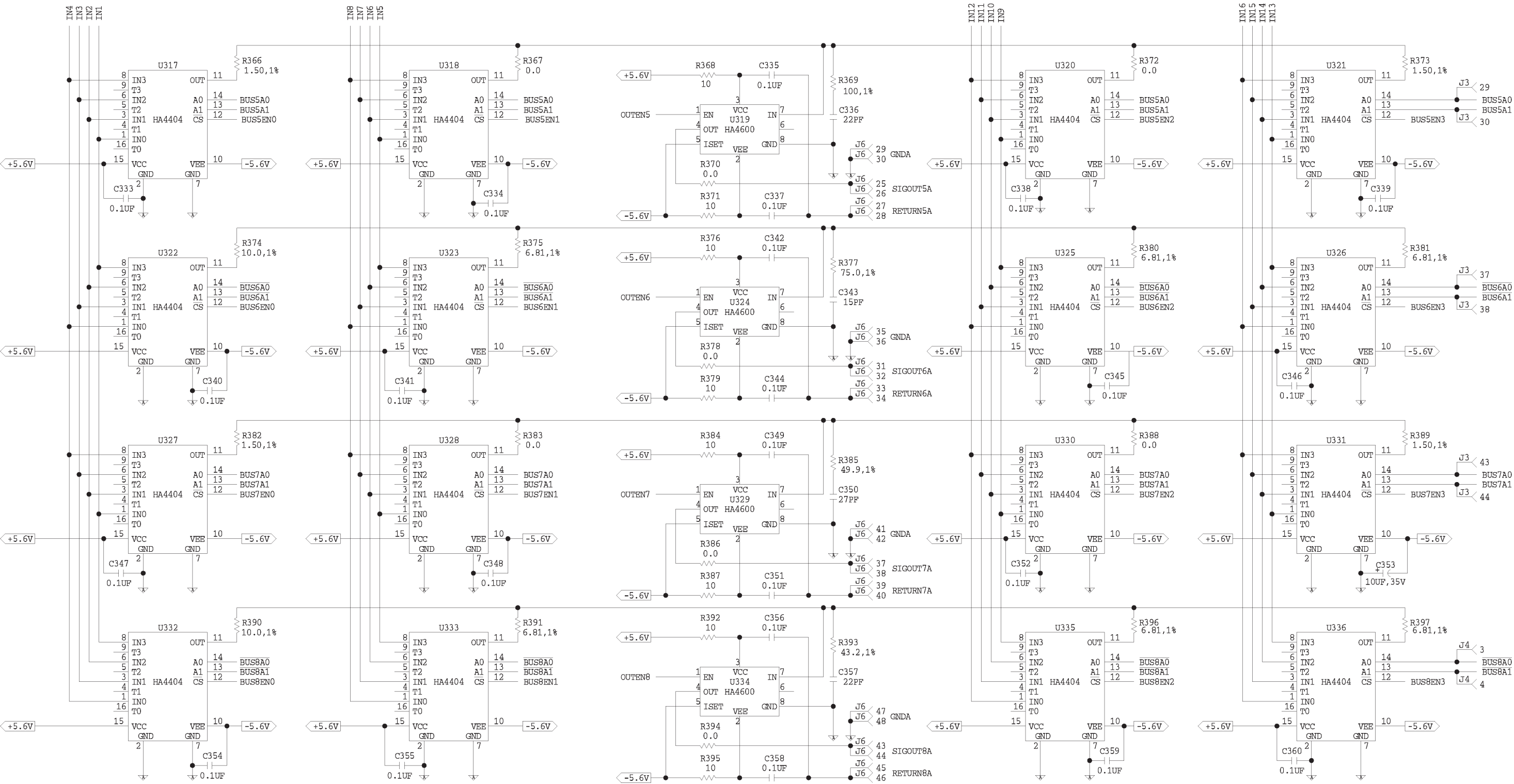
Schematic (Sheet 1 of 6) • 16X16 Crosspoint Card • SC33-1284



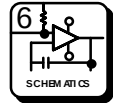


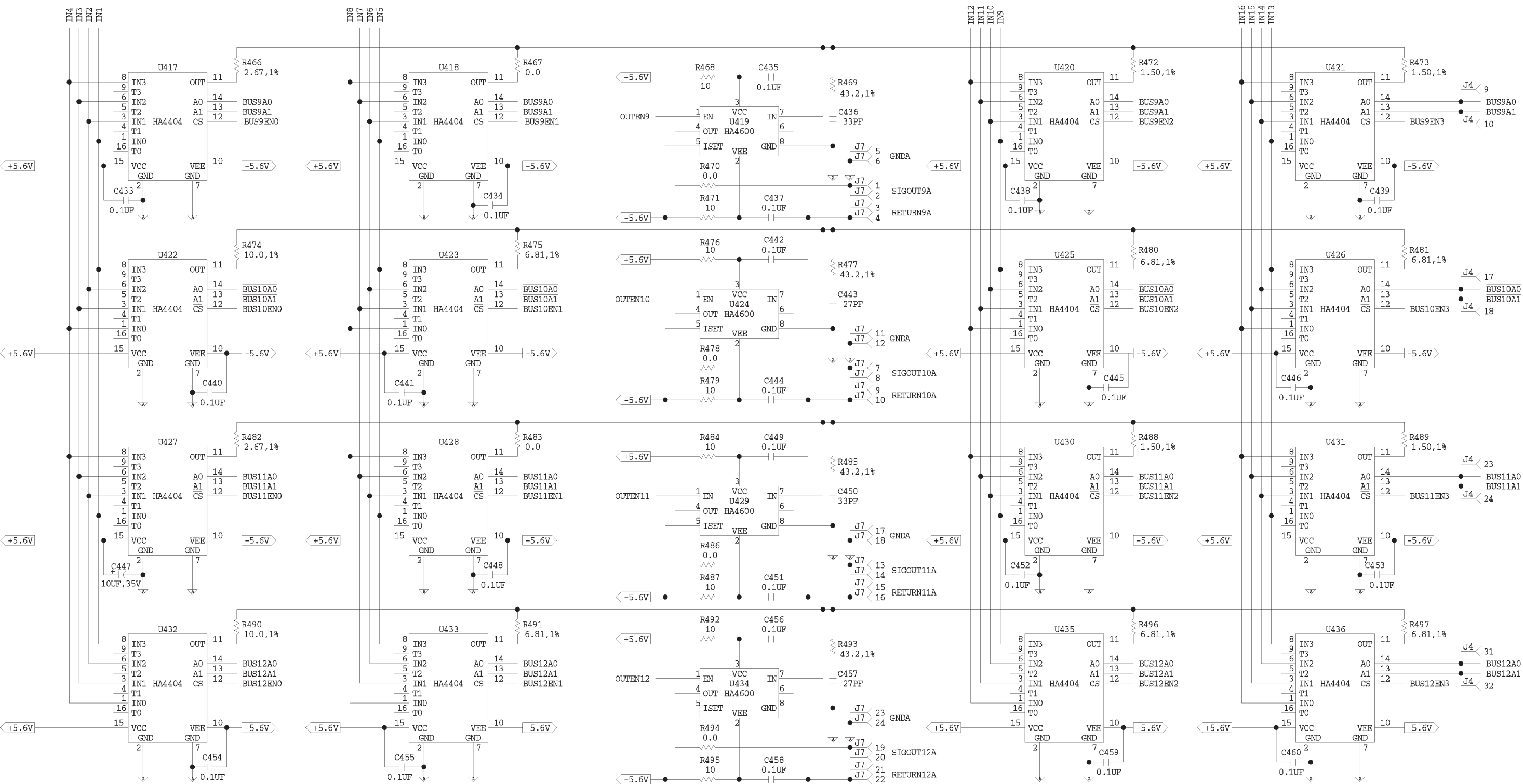
Schematic (Sheet 2 of 6) • 16X16 Crosspoint Card • SC33-1284



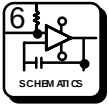


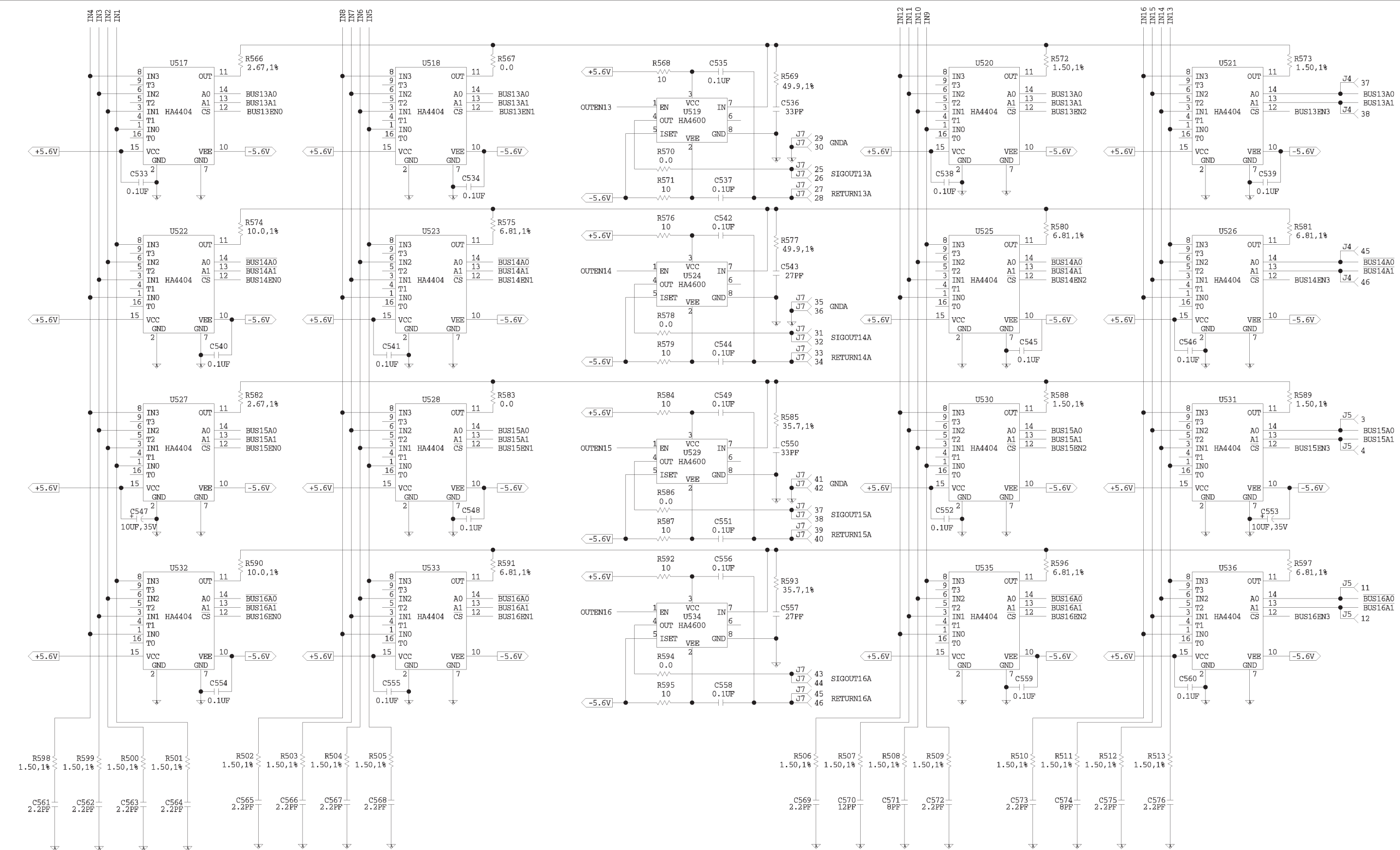
Schematic (Sheet 3 of 6) • 16X16 Crosspoint Card • SC33-1284



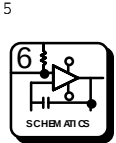


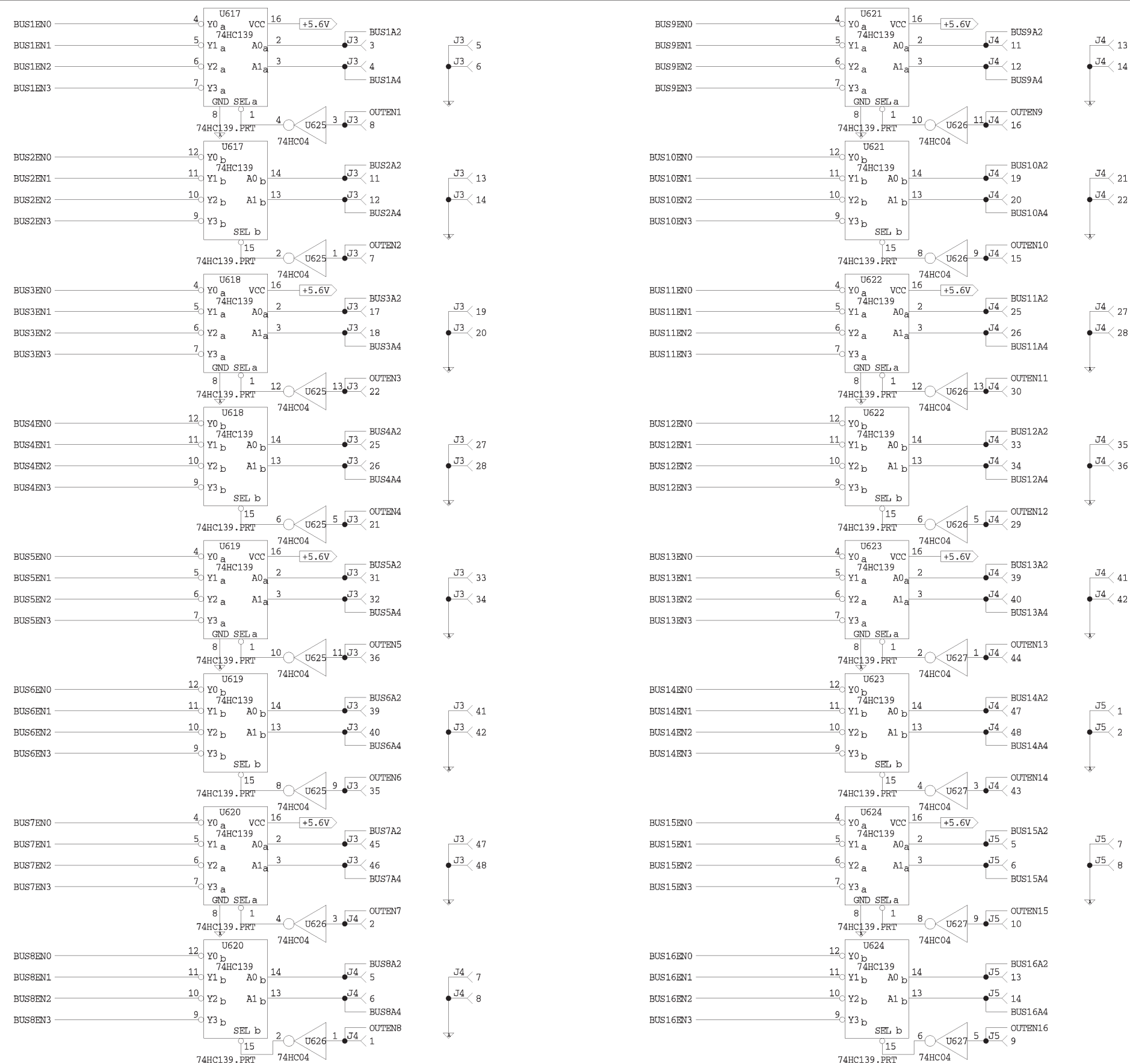
Schematic (Sheet 4 of 6) • 16X16 Crosspoint Card • SC33-1284



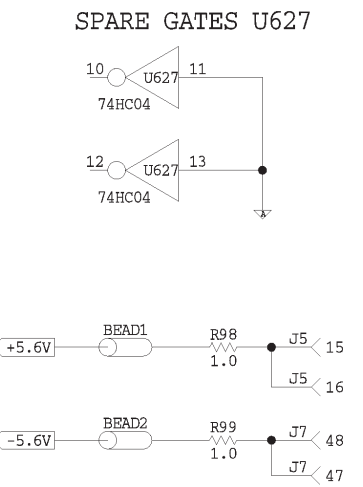


Schematic (Sheet 5 of 6) • 16X16 Crosspoint Card • SC33-1284

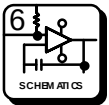




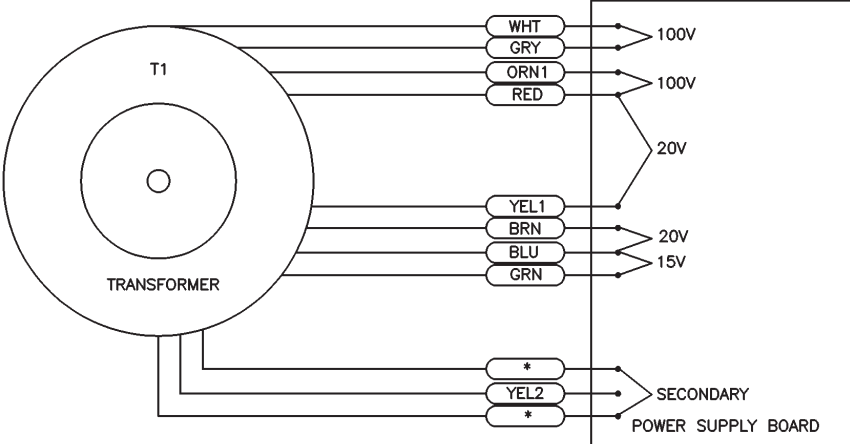
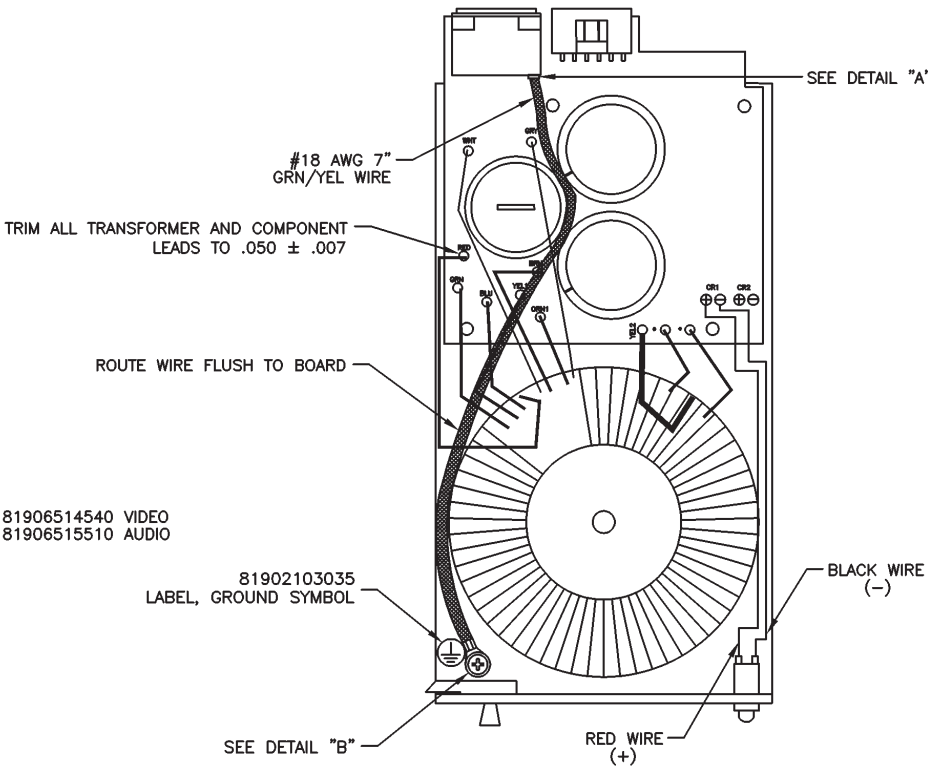
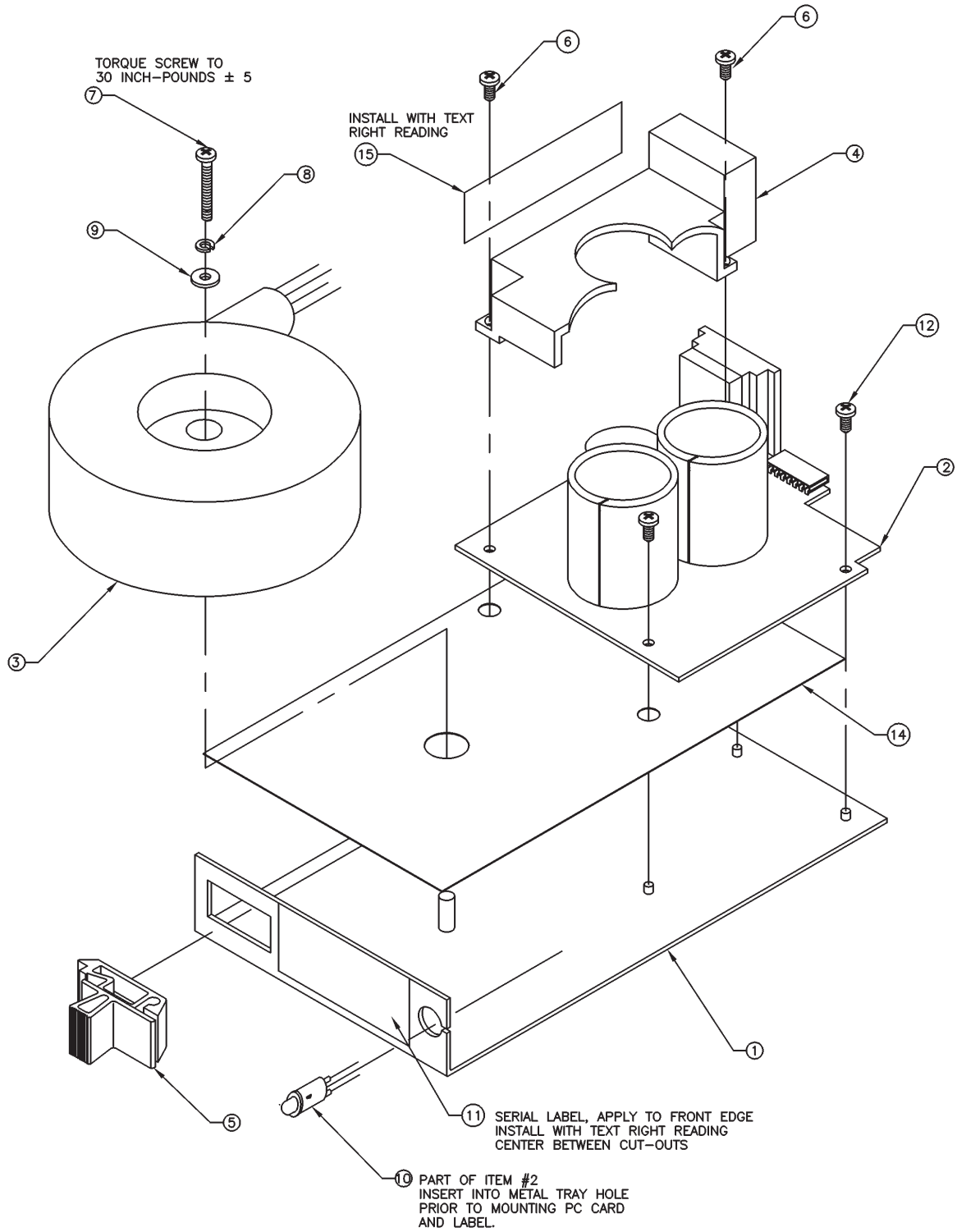
NOTE:
74HC04 PARTS SHOULD HAVE
+5.6V ON PIN 14.
INTERNAL ATTRIBUTE WILL
NOT ACCEPT DECIMAL POINT
ATTRIBUTE.



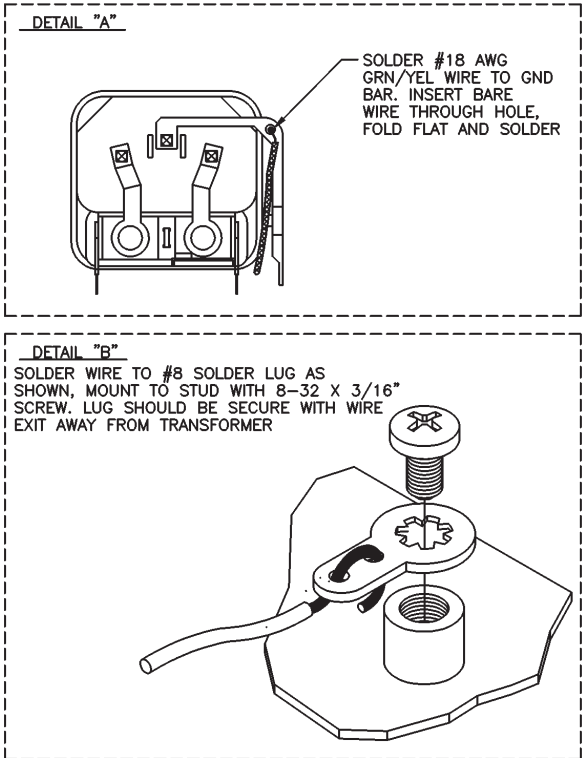
Schematic (Sheet 6 of 6) • 16X16 Crosspoint Card • SC33-1284



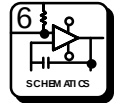
15	81902105140	LABEL, UL, VIDEO	1.0	EA
14	81902105040	INSULATOR	1.0	EA
13	SEE DETAIL A	LABEL	1.0	EA
12	81902200112	4-40 X 3/16 SCREW	2.0	EA
11	81902105120	SERIAL LABEL	1.0	EA
10	81903200570	LED INDICATOR LIGHT	REF	
9	81902200906	#10 FLAT WASHER	1.0	EA
8	81902200898	#10 SPLIT LOCKWASHER	1.0	EA
7	81902201011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

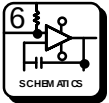
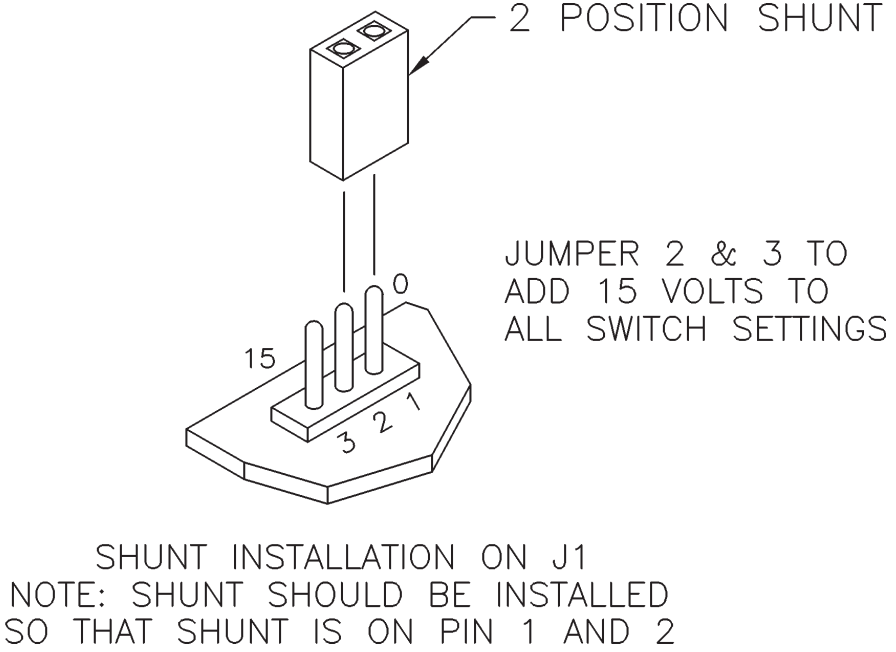
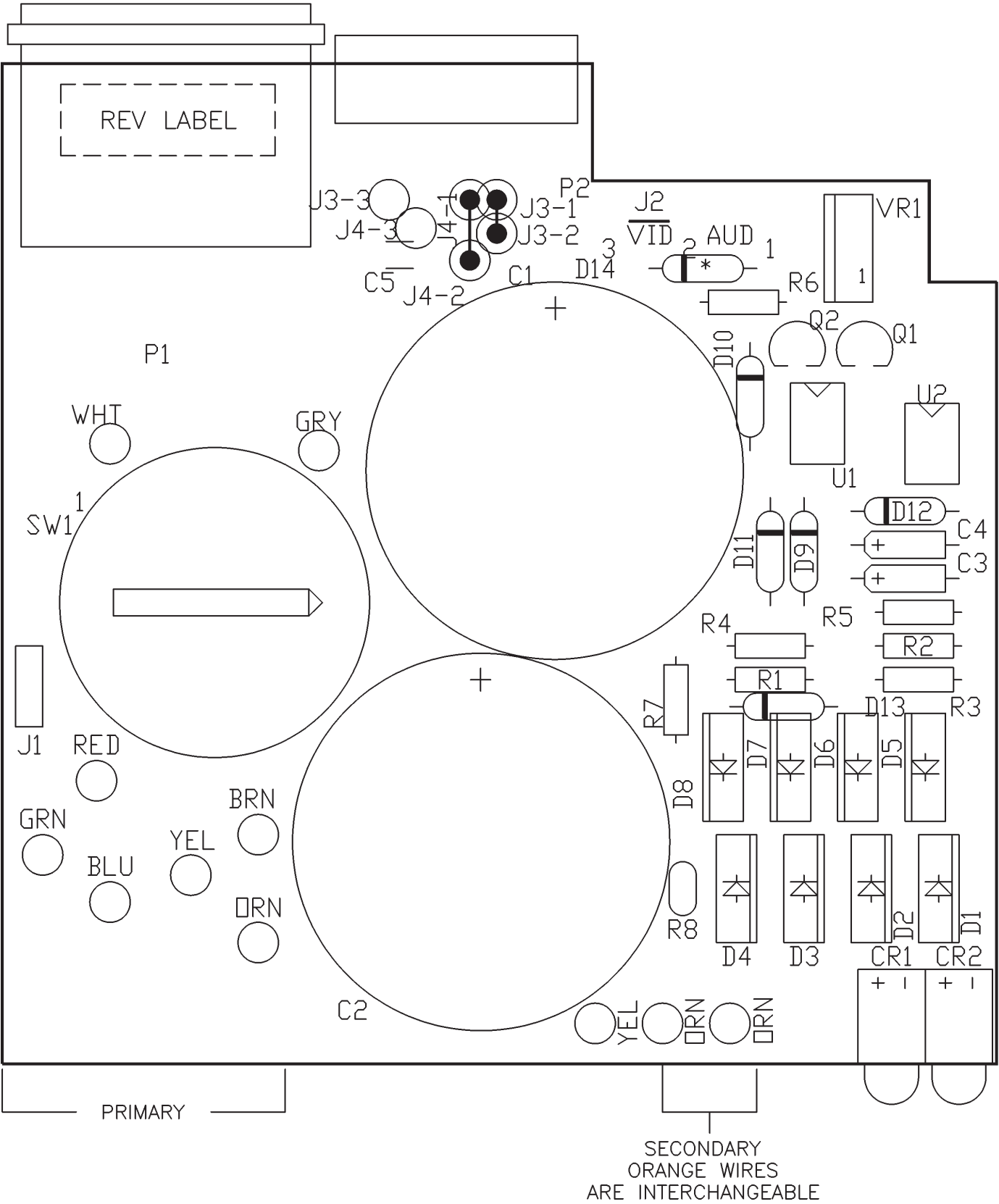


NOTE: WHEN USING THIS CONFIGURATION WITH THE INTERNATIONAL VERSIONS - CHANGES SHOULD BE MADE PER SPECIFICATION NO. 81906202860



Configuration Drawing • Power Supply Assembly • CD63-0683







7.1 Parts List

General

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

<u>Part</u>	<u>Part Number</u>	<u>Page</u>
Cougar Mainframe Assembly	81906517410	7.2
Cougar Chassis	81906517510	7.3
32X32 Video Backplane	81906517520	7.4
32X32 Video Matrix Assembly	81906518480	7.5
32X32 Video Matrix Card	81906517460	7.6
16X16 Crosspoint Card	81906517550	7.15
Power Supply Assembly	81906514550	7.17
Power Supply Card	81906514540	7.18



Cougar Mainframe Assembly - 81906517410

81901701730	FAN 12V 10.8cfm 40x28mm	2	EA	
81901702700	AIR FILTER 7" x 4.5"	1	EA	
81902003227	LATCH SLIDE BLK TAB CEI	2	EA	
81902200146	SCREW 4-40x3/8 PN HD PHIL	3	EA	
81902200237	SCREW 4-40x1.25 PN HD PHI	8	EA	REF:FAN
81902202647	SCREW 4-40x1/4 SIMM PANHD	4	EA	
81902202980	#6 WING NUT	2	EA	REF:AIR FILTER
81902202990	SCREW 8-32x1/2 WING HEAD	3	EA	REF: P.S. SHIPPING SCREWS
81902908110	CONN 3 PIN F STRAIN RELF	10	EA	REF: FANS, ALARMS, CPU
81903463810	DOOR 32x32 CHASSIS	1	EA	
81903463820	VID REAR PLATE 32x32 CHAS	1	EA	
81903463890	CPU SHIPPING SUPT 32x32	1	EA	
81906517510	CHASSIS 32x32	1	EA	
81906517520	32x32 VIDEO BACKPLANE	1	EA	
CD63-0758	DOC MAINFRAME 32x32	0	EA	

Cougar Chassis - 81906517510

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



32X32 Video Backplane - 81906517520

81900700774	CAP 1MF 50V CERAMIC RADIL	32	EA	C1-C32
81902003530	PIN GUIDE VIDEO MATRIX	1	EA	
81902105050	LABEL BARCODE 1.5"x0.25"	1	EA	
81902200070	NUT 4-40 HEX	1	EA	
81902202696	SCREW 4-40x7/16 SIMM PANH	6	EA	REF J13-J15
81902412810	PCB 32x32 VID BACKPLANE	1	EA	
81902600436	SWITCH 8 POS DIP 16-PIN	3	EA	S1 S2 S3
81902903061	CONN 6-POS MNL FEMALE RED	1	EA	J18
81902906486	CONN BNC PRESS-IN 75 OHM	68	EA	J25-J92
81902906908	CONN 96-PIN MALE PRESS-IN	6	EA	J1 J2 J5 J6 J7 J8
81902906932	CONN 9-PIN MALE D SOLDER	3	EA	J13 J14 J15
81902907200	CONN 16-POS PC MT FEMALE	2	EA	J21 J22
81902907980	CONN 2x12 PST PRESS .1x.1	8	EA	J3 J4
81902908010	CONN 5 PIN 5.08mm VT MALE	1	EA	J93
81902908100	CONN 3 PIN PC MNT VERTCL	10	EA	J9 J10 J11 J12 J16 J17 J23 J24 J19 J20
CA25-1281	DOC 32x32 VIDEO BCKPLNE	0	EA	
NOT-PLACED	ITEMS NOT PLACED ON EBOM	0	EA	R1-R64
SC33-1281	DOC 32x32 VIDEO BCKPLNE	0	EA	

32X32 Video Matrix Assembly - 81906518480

81902203050	SCREW 4-40x1/2 SIMM PN HD	5	EA
81903464290	SHIELD VIDEO MATRX JAGUAR	1	EA
81906517460	32x32 VIDEO MATRIX-BASIC	1	EA
CA25-1276	DOC 32x32 VIDEO MATRIX	0	EA
SC33-1276	DOC 32x32 VIDEO MATRIX	0	EA



32X32 Video Matrix Card - 81906517460

81900601022	THERMISTOR 680 OHM 5%	1	EA	R1407
81901000720	CAP SWX REG 35V 1.7A RAD	8	EA	C243 C247 C261 C265 C262 C263 C264 C275
81901000840	CAP 0.1F 5.5V	1	EA	C250
81901603738	REG LM317T 1.2V-37V ADJST	1	EA	U164
81901606830	IC 7.3728 MHZ OSCILLATOR	1	EA	U102
81901606980	REG LT1170 5A SWXING 60V	1	EA	U117
81902003580	STANDOFF 2-56 PC BD MNTD	8	EA	
81902105050	LABEL BARCODE 1.5"x0.25"	1	EA	
81902200039	SCREW 2-56X1/4 PAN HD PHI	8	EA	
81902200070	NUT 4-40 HEX	2	EA	REF: U117
81902202696	SCREW 4-40x7/16 SIMM PANH	2	EA	REF: U117
81902301080	INDUCTOR 20uH 2A TOROIDAL	4	EA	L1 L2 L3 L4
81902301370	TRANSFORMER ANALOG VIDEO	1	EA	T1
81902412760	PCB 32x32 VIDEO MATRIX	1	EA	
81902700749	FUSE PICO, 7 AMP, LEADED	2	EA	F1 F2
81902901479	SOCKET 8 PIN LOW PROF IC	1	EA	REF: U105
81902906668	CONN RA,FEMALE,96POS,3ROW	2	EA	J1 J2
81902907960	CONN 2x8 POST 2MM .1 PCB	4	EA	J5A J5B J5C J5D
81902907970	CONN 2x24 POST 2MM .1 PCB	24	EA	J1A J1B J1C J1D J2A J2B J2C J2D J3A J3B J3C J3D J4A J4B J4C J4D J6A J6B J6C J6D J7A J7B J7C J7D
81902908000	CONN 2x48 RECPT RA .1x.1	2	EA	J3 J4
81902908060	SPLIT TERMINAL	4	EA	REF: F1 F2
81903200541	LED GREEN RT/A HI-EFF PCB	1	EA	CR7
81903200558	LED RED RT/A HI-EFF PC MT	2	EA	CR6 CR17
81903462740	HEATSINK 24x16 VID MATRIX	1	EA	REF: U117
81906517730	SOFT 32x8 CNTRL CHIP	0	EA	REF: U105
81906517980	SOFT COUGAR BIOS	0	EA	REF: U97

32X32 Video Matrix Card - 81906517460 Continued:

81906600184	RESISTOR 10 OHM 5% 0805	192	EA	R4 R8 R12 R16 R20 R24 R28 R32 R36 R40 R44 R48 R52 R56 R60 R64 R68 R72 R76 R80 R84 R88 R92 R96 R100 R104 R108 R112 R116 R120 R124 R128 R626 R630 R634 R638 R642 R646 R650 R654 R658 R662 R666 R670 R674 R678 R682 R686 R690 R694 R698 R702 R706 R710 R714 R718 R722 R726 R730 R734 R738 R742 R746 R750 R1103 R1104 R1189 R1191 R1210 R1212 R1215 R1217 R1219 R1220 R1223 R1225 R1228 R1230 R1235 R1237 R1240 R1242 R1245 R1247 R1249 R1250 R1253 R1255 R1260 R1262 R1265 R1267 R1270 R1272 R1275 R1277 R1312 R1314 R1317 R1319 R1321 R1322 R1325 R1327 R1334 R1336 R1339 R1341 R1345 R1347 R1350 R1351 R1354 R1356 R1361 R1363 R1366 R1368 R1371 R1373 R1376 R1378 R1380 R1381 R1384 R1386 R1391 R1393 J8 THRU J71
81906600309	RESISTOR 33 OHM 5% 0805	32	EA	R527 THRU R558
81906600424	RESISTOR 100 OHM 5% 0805	4	EA	R1328 R1329 R333 R363
81906600465	RESISTOR 150 OHM 5% 0805	1	EA	R519
81906600499	RESISTOR 200 OHM 5% 0805	1	EA	R304
81906600520	RESISTOR 270 OHM 5% 0805	2	EA	R323 R351
81906600549	RESISTOR 330 OHM 5% 0805	1	EA	R520
81906600620	RESISTOR 680 OHM 5% 0805	1	EA	R1473
81906600663	RESISTOR 1K OHM 5% 0805	11	EA	R334 R364 R516 R523 R524 R1506 THRU R1511
81906600700	RESISTOR 1.5K 5% 0805	1	EA	R1349
81906600747	RESISTOR 2.2K 5% 0805	1	EA	R1397
81906600783	RESISTOR 3.3K 5% 0805 SMT	35	EA	R321 R349 R784 R788 R792 R796 R800 R804 R808 R812 R816 R820 R824 R828 R832 R836 R840 R844 R1040 R1044 R1048 R1052 R1056 R1060 R1064 R1068 R1072 R1076 R1080 R1084 R1088 R1092 R1096 R1100 R1406



32X32 Video Matrix Card - 81906517460 Continued:

81906600820 RESISTOR 4.7K 5% 0805 SMT	139	EA	R294-R299 R307 R310-R315 R318-R320 R324-R328 R331 R332 R335 R336 R337 R340 R341 R342 R346 R347 R348 R352-R357 R360 R361 R362 R365-R370 R372 R373 R377 R378 R379 R382-R389 R393-R400 R405-R409 R411 R412 R416-R424 R430-R435 R439-R442 R444-R449 R451-R454 R461-R466 R470-R475 R481 R484-R487 R489-R494 R497 R498 R504-R509 R1514 R1517 R1518 R1519
81906600866 RESISTOR 6.8K 5% 0805 SMT	32	EA	R783 R787 R791 R795 R799 R803 R807 R811 R815 R819 R823 R827 R831 R835 R839 R843 R1039 R1043 R1047 R1051 R1055 R1059 R1063 R1067 R1071 R1075 R1079 R1083 R1087 R1091 R1095 R1099
81906600903 RESISTOR 10K 5% 0805 SMT	3	EA	R1404 R443 R1515
81906600920 RESISTOR 12K OHM 5% 0805	1	EA	R306
81906600986 RESISTOR 22K 5% 0805 SMT	1	EA	R1398
81906601067 RESISTOR 47K 5% 0805 SMT	32	EA	R975-R990 R1157 R1159 R1161 R1163 R1165 R1167 R1169 R1171 R1173 R1175 R1177 R1179 R1181 R1183 R1185 R1187
81906601133 RESISTOR 100K 5% 0805 SMT	4	EA	R302 R305 R322 R350
81906601307 RESISTOR 510K 5% 0805 SMT	2	EA	R343 R374

32X32 Video Matrix Card - 81906517460 Continued:

81906601521	RESISTOR 0.0 OHM 5% 0805	160	EA	R3 R7 R11 R15 R19 R23 R27 R31 R35 R39 R43 R47 R51 R55 R59 R63 R67 R71 R75 R79 R83 R87 R91 R95 R99 R103 R107 R111 R115 R119 R123 R127 R751-R782 R911 R915 R919 R923 R927 R931 R935 R939 R943 R947 R951 R955 R959 R963 R967 R971 R1105 R1108 R1111 R1114 R1117 R1120 R1123 R1126 R1129 R1132 R1135 R1138 R1141 R1144 R1147 R1150 R1154 R1155 R1190 R1192 R1211 R1213 R1216 R1218 R1222 R1224 R1227 R1229 R1232 R1233 R1236 R1238 R1241 R1243 R1246 R1248 R1252 R1254 R1257 R1258 R1261 R1263 R1266 R1268 R1271 R1273 R1276 R1278 R1313 R1315 R1318 R1320 R1324 R1326 R1331 R1332 R1335 R1337 R1340 R1342 R1346 R1348 R1353 R1355 R1358 R1359 R1362 R1364 R1367 R1369 R1372 R1374 R1377 R1379 R1383 R1385 R1388 R1389 R1392 R1394
81906610035	RESISTOR 10.5 OHM 1% 0805	6	EA	R1419 R1427 R1447 R1457 R1461 R1462
81906610100	RESISTOR 12.4 OHM 1% 0805	2	EA	R1415 R1443
81906610140	RESISTOR 13.7 OHM 1% 0805	2	EA	R1449 R1425
81906610160	RESISTOR 14.3 OHM 1% 0805	2	EA	R1455 R1453
81906610200	RESISTOR 15.8 OHM 1% 0805	3	EA	R1409 R1441 R1460
81906610220	RESISTOR 16.5 OHM 1% 0805	5	EA	R1417 R1448 R1418 R1437 R1456
81906610241	RESISTOR 17.4 OHM 1% 0805	4	EA	R1442 R1454 R1416 R1465
81906610274	RESISTOR 18.7 OHM 1% 0805	1	EA	R1410
81906610280	RESISTOR 19.1 OHM 1% 0805	1	EA	R1421
81906610320	RESISTOR 21.0 OHM 1% 0805	2	EA	R1411 R1450
81906610332	RESISTOR 21.5 OHM 1% 0805	2	EA	R1412 R1467
81906610357	RESISTOR 22.6 OHM 1% 0805	9	EA	R1431 R1433 R1451 R1445 R1463 R1426 R1428 R1432 R1435
81906610365	RESISTOR 23.2 OHM 1% 0805	3	EA	R1458 R1420 R1424
81906610399	RESISTOR 24.9 OHM 1% 0805	2	EA	R1470 R1434
81906610415	RESISTOR 26.1 OHM 1% 0805	6	EA	R1439 R1444 R1446 R1466 R1422 R1469
81906610431	RESISTOR 27.4 OHM 1% 0805	4	EA	R1413 R1459 R292 R1468
81906610456	RESISTOR 28.7 OHM 1% 0805	2	EA	R1414 R1464
81906610464	RESISTOR 29.4 OHM 1% 0805	2	EA	R1429 R1430
81906610472	RESISTOR 30.1 OHM 1% 0805	2	EA	R1438 R1440
81906610498	RESISTOR 31.6 OHM 1% 0805	2	EA	R1471 R1472



32X32 Video Matrix Card - 81906517460 Continued:

81906610506	RESISTOR 32.4 OHM 1% 0805	1	EA	R301
81906610514	RESISTOR 33.2 OHM 1% 0805	3	EA	R1452 R402 R1436
81906610530	RESISTOR 34.8 OHM 1% 0805	4	EA	R339 R371 R376 R242
81906610555	RESISTOR 36.5 OHM 1% 0805	4	EA	R415 R330 R359 R460
81906610571	RESISTOR 38.3 OHM 1% 0805	6	EA	R391 R309 R381 R425 R456 R458
81906610597	RESISTOR 40.2 OHM 1% 0805	7	EA	R500 R514 R503 R303 R317 R515 R518
81906610605	RESISTOR 41.2 OHM 1% 0805	4	EA	R468 R477 R483 R522
81906610621	RESISTOR 43.2 OHM 1% 0805	2	EA	R488 R496
81906610630	RESISTOR 44.2 OHM 1% 0805	2	EA	R526 R511
81906610680	RESISTOR 49.9 OHM 1% 0805	64	EA	R162 R165 R168 R171 R174 R177 R180 R183 R186 R189 R192 R195 R198 R201 R204 R207 R209-R240 R244 R247 R250 R253 R256 R259 R262 R265 R268 R271 R274 R277 R280
81906610680	RESISTOR 49.9 OHM 1% 0805	64	EA	R283 R286 R289
81906610761	RESISTOR 60.4 OHM 1% 0805	34	EA	R293 R1209 R1474-R1505
81906610810	RESISTOR 68.1 OHM 1% 0805	32	EA	R912 R916 R920 R924 R928 R932 R936 R940 R944 R948 R952 R956 R960 R964 R968 R972 R1156 R1158 R1160 R1162 R1164 R1166 R1168 R1170 R1172 R1174 R1176 R1178 R1180 R1182 R1184 R1186
81906610852	RESISTOR 75.0 OHM 1% 0805	2	EA	R380 R1221
81906610880	RESISTOR 80.6 OHM 1% 0805	8	EA	R241 R291 R1153 R1188 R1274 R401 R414 R517
81906610900	RESISTOR 84.5 OHM 1% 0805	2	EA	R521 R482
81906610950	RESISTOR 95.3 OHM 1% 0805	25	EA	R338 R345 R358 R375 R480 R1214 R1234 R1259 R1239 R1338 R1370 R1375 R1387 R1244 R502 R1360 R512 R300 R513 R390 R525 R1251 R1264 R1382 R1390
81906610977	RESISTOR 100 OHM 1% 0805	25	EA	R308 R316 R329 R450 R455 R467 R476 R495 R459 R499 R510 R1311 R1323 R1333 R1344 R1352 R1365 R1256 R1269 R1330 R1316 R410 R1226 R1231 R1357
81906611357	RESISTOR 249 OHM 1% 0805	32	EA	R913 R917 R921 R925 R929 R933 R937 R941 R945 R949 R953 R957 R961 R965 R969 R973 R1106 R1109 R1112 R1115 R1118 R1121 R1124 R1127 R1130 R1133 R1136 R1139 R1142 R1145 R1148 R1151

32X32 Video Matrix Card - 81906517460 Continued:

81906611431 RESISTOR 301 OHM 1% 0805	32	EA	R625 R629 R633 R637 R641 R645 R649 R653 R657 R661 R665 R669 R673 R677 R681 R685 R689 R693 R697 R701 R705 R709 R713 R717 R721 R725 R729 R733 R737 R741 R745 R749
81906611454 RESISTOR 316 OHM 1% 0805	32	EA	R624 R628 R632 R636 R640 R644 R648 R652 R656 R660 R664 R668 R672 R676 R680 R684 R688 R692 R696 R700 R704 R708
81906611454 RESISTOR 316 OHM 1% 0805	32	EA	R712 R716 R720 R724 R728 R732 R736 R740 R744 R748
81906611652 RESISTOR 511 OHM 1% 0805	1	EA	R478
81906611942 RESISTOR 1.02K 1% 0805	1	EA	R1343
81906612296 RESISTOR 2.37K 1% 0805	3	EA	R404 R429 R437
81906612320 RESISTOR 2.55K 1% 0805	2	EA	R392 R438
81906612380 RESISTOR 2.94K 1% 0805	1	EA	R469
81906612570 RESISTOR 4.75K 1% 0805	2	EA	R1512 R1513
81906612593 RESISTOR 4.99K 1% 0805	1	EA	R426
81906612940 RESISTOR 11.5K 1% 0805	1	EA	R403
81906614750 RESISTOR 3.24 OHM 1% 0805	1	EA	R1423
81906640024 RESISTOR 2.0 OHM 5% 1210	1	EA	R1408
81906640073 RESISTOR 75 OHM 0.5% 1206	64	EA	R785 R786 R789 R790 R793 R794 R797 R798 R801 R802 R805 R806 R809 R810 R813 R814 R817 R818 R821 R822 R825 R826 R829 R830 R833 R834 R837 R838 R841 R842 R845 R846 R1041 R1042 R1045 R1046 R1049 R1050 R1053 R1054 R1057 R1058 R1061 R1062 R1065 R1066 R1069 R1070 R1073 R1074 R1077 R1078 R1081 R1082 R1085 R1086 R1089 R1090 R1093 R1094 R1097 R1098 R1101 R1102
81906640270 RESISTOR 162 OHM .5% 0805	32	EA	R2 R6 R10 R14 R18 R22 R26 R30 R34 R38 R42 R46 R50 R54 R58 R62 R66 R70 R74 R78 R82 R86 R90 R94 R98 R102 R106 R114 R118 R122 R126 R110
81906640280 RESISTOR 169 OHM .5% 0805	32	EA	R1 R5 R9 R13 R17 R21 R29 R33 R37 R41 R45 R49 R53 R57 R25 R61 R65 R69 R73 R77 R81 R85 R89 R93 R97 R101 R105 R109 R113 R117 R121 R125
81906640580 RESISTOR 392 OHM .1% 0805	64	EA	R559-R622
81906640610 RESISTOR 61.9ohm .5% 0805	128	EA	R847-R910 R991-R1022 R1279-R1310



32X32 Video Matrix Card - 81906517460 Continued:

81906650049	POT 50 OHM 1-TRN VERTL SM	32	EA	R129-R160
81906650210	POT 1K VERT 1T 20% 4MM	1	EA	R479
81906650250	POT 20 OHMS R/A 1T 4mm SQ	32	EA	R163 R166 R169 R172 R175 R178 R181 R184 R187 R190 R193 R196 R199 R202 R205 R208 R245 R248 R251 R254 R257 R260 R263 R266 R269 R272 R275 R278 R281 R284 R287 R290
81906650260	POT 100K OHM 20% VERT 1T	32	EA	R161 R164 R167 R170 R173 R176 R179 R182 R185 R188 R191 R194 R197 R200 R203 R206 R243 R246 R249 R252 R255 R258 R261 R264 R267 R270 R273 R276 R279 R282 R285 R288
81906700018	CAP 12PF 50V CERAMIC SMT	7	EA	C169 C254 C257 C199 C203 C245 C236
81906700109	CAP 10PF 50V CERAM 0805	1	EA	C172
81906700117	CAP 15PF 50V CERAM 0805	17	EA	C174 C176 C241 C195 C187 C586 C591 C266 C603 C216 C251 C272 C490 C494 C503 C518 C522
81906700320	CAP 220PF NPO 0805 CERAMC	2	EA	C636 C637
81906700350	CAP 22PF CERAMIC 0805 NPO	9	EA	C191 C207 C214 C234 C576 C454 C458 C623 C631
81906700360	CAP 18PF 50V CERAMIC 0805	27	EA	C180 C230 C269 C271 C276 C479 C498 C571 C596 C531 C627 C248 C483 C510 C229 C599 C507 C514 C527 C611 C616 C224 C161 C163 C167 C486 C620
81906700550	CAP 27PF NPO 0805 CERAMIC	3	EA	C580 C607 C567
81906710110	CAP 0.15MF 50V CERAM 1206	1	EA	C595
81906730015	CAP 0.1MF 50V CERMIC 1206	233	EA	C1-C96 C113-C144 C162 C164 C165 C166 C168 C170 C171 C173 C175 C177 C179 C181 C182 C183 C184 C185 C186 C188 C190 C192 C193 C194 C196 C197 C198 C200 C202
81906730015	CAP 0.1MF 50V CERMIC 1206	233	EA	C204 C206 C208-C213 C215 C217-C223 C225-C228 C231 C232 C233 C235 C237 C238 C240 C242 C244 C246 C252 C253 C255 C256 C258 C260 C267 C270 C273 C277 C456 C460 C478 C481 C488 C492 C496 C500 C502 C505 C512 C516 C520 C524 C526 C529 C566 C569 C574 C575 C578 C582 C584 C585 C588 C590 C593 C601 C605 C609 C613 C615 C618 C625 C629 C633 C638 C641



32X32 Video Matrix Card - 81906517460 Continued:

81906760160	CAP 1500PF 50V CERAM 1206	2	EA	C178 C189
81906770052	CAP 1MF 20V TANLUM SIZE A	3	EA	C201 C205 C239
81906770090	CAP 68uf 16V TANT D CASE	2	EA	C249 C274
81906770100	CAP 1mf 35 VOLTS TANTALUM	2	EA	C639 C640
81906800016	TRANS SMT,MMBT3904LT1	4	EA	Q37-Q40
81906800073	DIODE ZENER SMT,MMBZ5240B	2	EA	CR5 CR18
81906800099	TRANS SMT, MMBTH10L	32	EA	Q4 THRU Q35
81906800107	TRANS SMT,MMBT3906L	4	EA	Q1 Q2 Q3 Q36
81906800230	DIODE MBR340 40V 3A SHTTK	6	EA	CR8 CR9 CR10 CR15 CR19 CR16
81906800390	ZENER MC15 15V 1.5W SMT	1	EA	CR13
81906800410	TRANSIENT SUPPRESSOR 33V	1	EA	CR11
81906800580	ZENER MBZ5242 12V SOT23	1	EA	CR21
81906810072	IC 3903 QUAD SPLY MONITOR	1	EA	U89
81906810106	IC LM1881 VID SYNC SEPART	2	EA	U78 U83
81906810171	IC SMT,74HC04 (SOIC-14)	7	EA	U71 U80 U96 U101 U111 U119 U123
81906810340	IC 74HC00 QUAD AND SO SMT	1	EA	U100
81906810510	IC 6264 8Kx8 SRAM 100ns	1	EA	U110
81906810550	IC 74HC245 OCTL TRANSCEVR	5	EA	U76 U82 U87 U93 U166
81906810570	IC 74HC373 OCTAL LATCH SO	1	EA	U103
81906810690	IC TL062 DUAL JFET OP S08	1	EA	U70
81906810890	IC RS485 RECVR/TRANSMITTR	1	EA	U69
81906810930	IC TL7705 MICRO SUPERVISR	1	EA	U85
81906810960	IC OPTOCOUPLER SMT 4N32	1	EA	U165
81906810990	IC BUFFER HA4600 SO-8	64	EA	U65 THRU U68 U72 U73 U75 U77 U79 U81 U84 U86 U88 U91 U92 U94 U108 U109 U112 U113 U114 U115 U116 U120 U121 U122 U124-U128 U131-U163
81906811030	IC 74HC273 OACTAL REGISTR	1	EA	U99
81906811040	IC 74HC138 3 TO 8 DECODER	2	EA	U95 U98
81906811060	IC XC3030A LCA	4	EA	U74 U90 U107 U118
81906811080	IC DS1210 NONVOL CNTL CHP	1	EA	U104
81906811120	IC CLC449 IFB 1.2GHZ OP	32	EA	U33-U64
81906811160	IC CLC440AJE VFB S08	32	EA	U1-U32
81906920030	SWITCH DIP 4 POS GULLWING	1	EA	S1
81906940040	SOCKET 52 PIN PLCC SMT	1	EA	REF: U97
81906950040	BEAD INDUCTOR SMT	2	EA	BEAD1 BEAD2



32X32 Video Matrix Card - 81906517460 Continued:

CA25-1276	DOC 32x32 VIDEO MATRIX	0	EA	
NOT-PLACED	ITEMS NOT PLACED ON EBOM	0	EA	R914 R918 R922 R926 R930 R934 R938 R942 R946 R950 R954 R958 R962 R966 R970 R974 R1023-R1038 R1107 R1110 R1113 R1116 R1119 R1122 R1125 R1128 R1131 R1134 R1137 R1140 R1143 R1146 R1149 R1152 R1193-R1208 C97-C112 C145-C160 C310-C341 C374-C405 C438-C453 C455 C457 C459 C461-C477 C480 C482 C484 C485 C487 C489 C491 C493 C495 C497 C499 C501 C504 C506 C508 C509 C511 C513 C515 C517 C519 C521 C523 C525 C528 C530 C532 C533 C568 C570 C572 C573 C577 C579 C581 C583 C587 C589 C592 C594 C597 C598 C600 C602 C604 C606 C608 C610 C612 C614 C617 C619 C621 C622 C624 C626 C628 C630 C632 C634 C278-C309 TP1 TP2 TP3 TP4 TP5 R427 R428 CR12 CR14 C259 C268 U129 U130 R1395 R1396 R436 U106
SC33-1276	DOC 32x32 VIDEO MATRIX	0	EA	

16X16 Crosspoint Card - 81906517550

81902105050 LABEL BARCODE 1.5"x0.25"	1	EA	
81902412840 PCB 16x16 CROSSPOINT	1	EA	
81902907940 CONN 2x8 2MM RECEPTACLE	1	EA	J5
81902907950 CONN 2x24 2MM RECEPTACLE	6	EA	J1-J7
81906600184 RESISTOR 10 OHM 5% 0805	32	EA	R68 R71 R76 R79 R84 R87 R92 R95 R368 R371 R376 R379 R384 R387 R392 R395 R468 R471 R476 R479 R484 R487 R492 R495 R568 R571 R576 R579 R584 R587 R592 R595
81906600341 RESISTOR 47 OHM 5% 0805	16	EA	R2 R6 R11 R15 R19 R23 R27 R31 R35 R39 R43 R47 R51 R55 R59 R63
81906600903 RESISTOR 10K 5% 0805 SMT	16	EA	R1 R5 R10 R14 R18 R22 R26 R30 R34 R38 R42 R46 R50 R54 R58 R62
81906601521 RESISTOR 0.0 OHM 5% 0805	29	EA	R67 R70 R72 R73 R78 R83 R86 R88 R94 R367 R370 R372 R378 R383 R386 R388 R394 R467 R470 R478 R483 R486 R494 R567 R570 R578 R583 R586 R594
81906610019 RESISTOR 10.0 OHM 1% 0805	8	EA	R74 R90 R374 R390 R474 R490 R574 R590
81906610548 RESISTOR 35.7 OHM 1% 0805	2	EA	R585 R593
81906610621 RESISTOR 43.2 OHM 1% 0805	5	EA	R393 R469 R477 R485 R493
81906610680 RESISTOR 49.9 OHM 1% 0805	3	EA	R385 R569 R577
81906610852 RESISTOR 75.0 OHM 1% 0805	1	EA	R377
81906610977 RESISTOR 100 OHM 1% 0805	2	EA	R93 R369
81906611058 RESISTOR 121 OHM 1% 0805	2	EA	R77 R85
81906611116 RESISTOR 140 OHM 1% 0805	1	EA	R69
81906614631 RESISTOR 9.53 OHM 1% 0805	16	EA	R3 R7 R12 R16 R20 R24 R28 R32 R36 R40 R44 R48 R52 R56 R60 R64
81906614640 RESISTOR 2.67 OHM 1% 0805	4	EA	R466 R482 R566 R582
81906614660 RESISTOR 6.81 OHM 1% 0805	24	EA	R75 R80 R81 R91 R96 R97 R375 R380 R381 R391 R396 R397 R475 R480 R481 R491 R496 R497 R575 R580 R581 R591 R596 R597
81906614740 RESISTOR 1.50 OHM 1% 0805	30	EA	R82 R89 R366 R373 R382 R389 R472 R473 R488 R489 R500 R501 R503 R504 R505 R506 R507 R508 R509 R510 R511 R512 R513 R572 R573 R588 R589 R598 R599 R502
81906614760 RESISTOR 3.74 OHM 1% 0805	1	EA	R66
81906621513 RESISTOR 1 OHM 5% 1206	2	EA	R98 R99
81906700018 CAP 12PF 50V CERAMIC SMT	1	EA	C570
81906700042 CAP SMT,33PF,50V,0805,CER	4	EA	C436 C450 C536 C550



16X16 Crosspoint Card - 81906517550 Continued:

81906700059	CAP 6.8PFD 50V CERAM,0805	1	EA	C43
81906700109	CAP 10PF 50V CERAM 0805	1	EA	C57
81906700117	CAP 15PF 50V CERAM 0805	2	EA	C50 C343
81906700125	CAP 2.2PF CERAM 50V 0805	13	EA	C561-C569 C573 C575 C572 C576
81906700158	CAP 8.2PF 50V CERAM 0805	1	EA	C36
81906700232	CAP 8PF CERAMIC 2% 0805	2	EA	C571 C574
81906700350	CAP 22PF CERAMIC 0805 NPO	2	EA	C336 C357
81906700550	CAP 27PF NPO 0805 CERAMIC	5	EA	C350 C443 C457 C543 C557
81906730015	CAP 0.1MF 50V CERMIC 1206	106	EA	C1 C4 C5 C8 C9 C12 C13 C16 C17 C20 C21 C24 C25 C28 C29 C32 C34 C35 C37 C38 C40 C41 C42 C44-C49 C51-C56 C58 C59 C60 C333 C334 C335 C337-C342 C344-C349 C351 C352 C354 C355 C356 C358-C360 C433-C435 C437-C442 C444 C445 C446 C448 C449
81906730015	CAP 0.1MF 50V CERMIC 1206	106	EA	C451-C456 C458-C460 C533-C535 C537-C542 C544 C545 C546 C548 C549 C551 C552 C554 C555 C556 C558 C559 C560
81906770060	CAP 10MF 6.3V TANT CASE B	6	EA	C33 C39 C353 C547 C447 C553
81906810171	IC SMT,74HC04 (SOIC-14)	3	EA	U625 U626 U627
81906810840	IC DUAL 2 TO 4 LINE DCODR	8	EA	U617-U624
81906810920	IC HA4404 4x1 CROSSPOINT	64	EA	U17 U18 U20 U21 U22 U23 U25 U26 U27 U28 U30 U31 U32 U33 U35 U36 U317 U318 U320 U321 U322 U323 U325 U326 U327 U328 U330 U331 U332 U333 U335 U336 U417 U418 U420 U421 U422 U423 U425 U426 U427 U428 U430 U431 U432 U433 U435 U436 U517 U518 U520 U521 U522 U523 U525 U526 U527 U528 U530 U531 U532 U533 U535 U536
81906810990	IC BUFFER HA4600 SO-8	32	EA	U1-U16 U19 U24 U29 U34 U319 U324 U329 U334 U419 U424 U429 U434 U519 U524 U529 U534
81906950040	BEAD INDUCTOR SMT	2	EA	BEAD1 BEAD2
CA25-1284	DOC 16x16 CROSSPOINT	0	EA	
SC33-1284	DOC 16x16 CROSSPOINT	0	EA	

Power Supply Assembly - 81906514550

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



Power Supply Card - 81906514540

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

Internal PS130 Power Supply Addendum

Introduction

CAUTION

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

CAUTION

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

NOTE

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

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

General

CAUTION

HIGH LEAKAGE CURRENT AT 230 VAC

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

Internal PS130 Power Supply Addendum

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

The PS130 Audio Power Supply is responsible for providing a regulated $\pm 24\text{VDC}$ @ 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 suggests returning the malfunctioning unit to the PESA Service Department for replacement. **PS130 Power Supplies contain lethal voltages when operating and should only be serviced by technicians qualified to service off-line switching regulators.** Please call the PESA Service Department for a RMA number before returning any units for replacement. The service department's phone number is listed on the Service and Ordering Assistance Page.

Power Connections

CAUTION

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

CAUTION

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

Internal PS130 Power Supply Addendum

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.

Internal PS130 Power Supply Addendum

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 PS130 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.

Cougar Video Frame Panel Connection

Cougar Video Frame RCP Port Addendum

This addendum is designed to be utilized as quick reference guide to the system interconnection between the Cougar Video Frame and the RCP Control Panels.

The pinout for the RCP Port Connectors on the rear panel of the Cougar Video Frame is as follows:

Pin 1	+DATA
Pin 2	-DATA
Pin 3	Shield

The pinout for the Control Port Connector on the rear panel of the RCP Control Panel is as follows:

Pin 1	-DATA
Pin 2	Shield
Pin 3	+DATA

The twisted-pair cables between the Cougar Video Frame RCP Port Connectors and the RCP Control Panels must be connected as shown in Figure 1. Please refer to Figures 2 and 3 also when making control panel connections to the Cougar Video Frame.

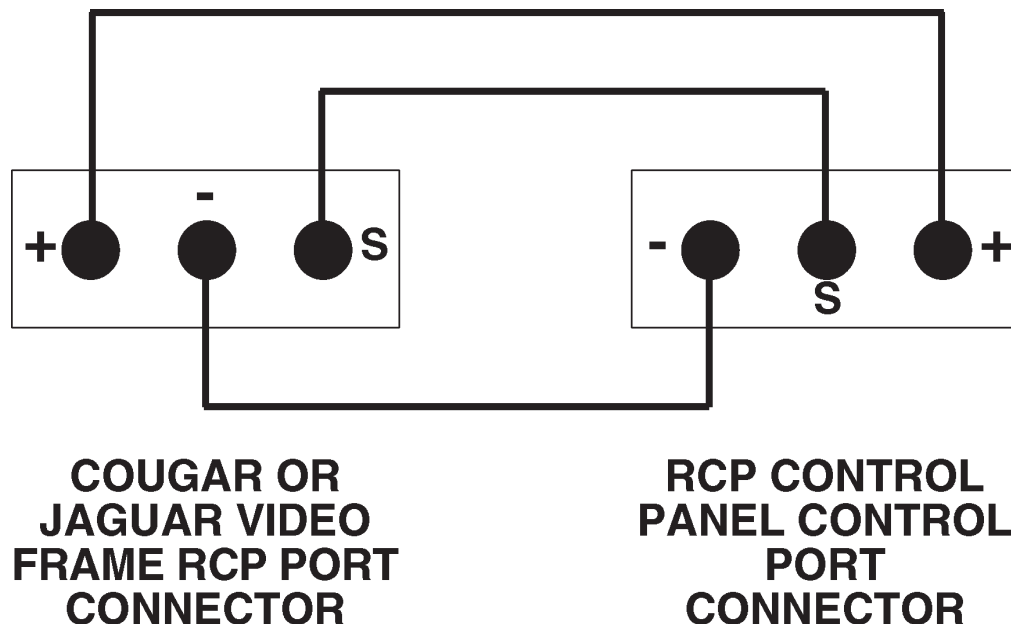
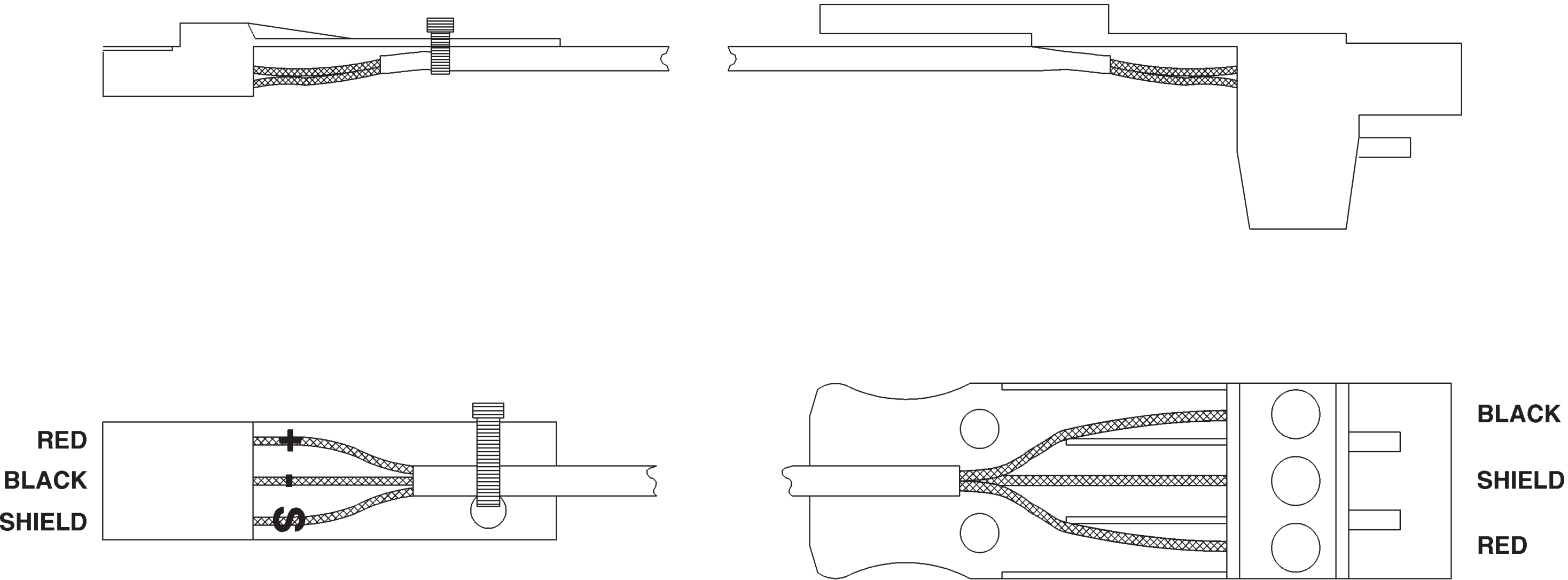


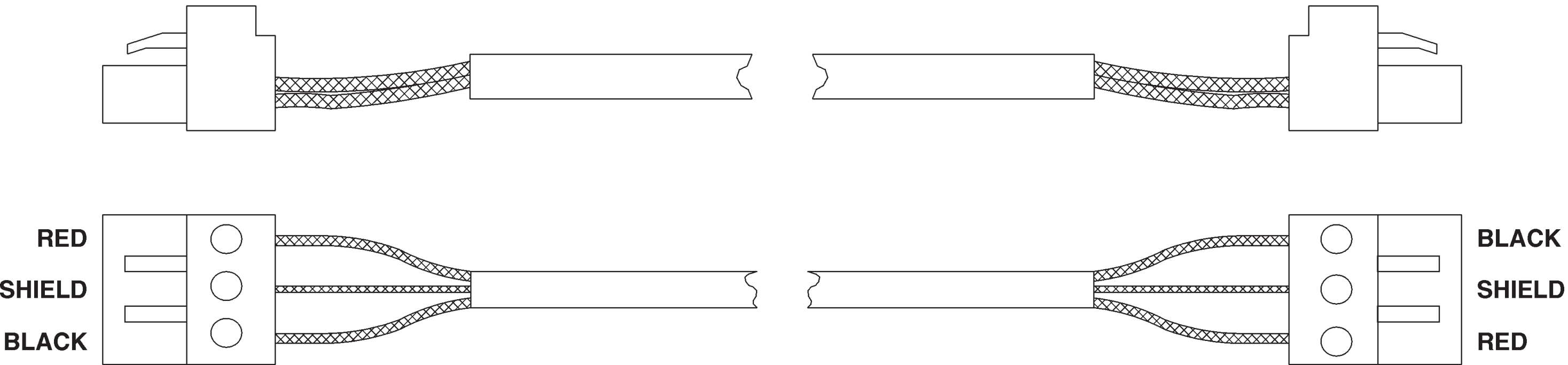
Figure 1 Cougar Video Frame and RCP Control Panel Interconnection

Cougar Video Frame Panel Connection



NOTE: THIS CABLE DIAGRAM REPRESENTS THE CONNECTION OF A COUGAR OR JAGUAR VIDEO FRAME CONTROL PANEL PORT TO THE FIRST CONTROL PANEL IN A CONTROL PANEL PORT CONNECTION DAISY-CHAIN.

Figure 2 Cougar or Jaguar Video Frame Control Panel Port to the First Control Panel in a Daisy-Chain Connection



NOTE: THIS CABLE DIAGRAM REPRESENTS THE CONNECTION OF A CONTROL PORT TO A CONTROL PORT IN CONTROL PORT CONNECTION DAISY-CHAIN.

Figure 3 Control Panel Port to Control Panel Port Connection

32X32 Wideband Analog Video Addendum

Introduction

This addendum contains the parts lists and schematics for the 32X32 Wideband Analog Video Card and for the associated 16X16 Wideband Crosspoint Cards. Please refer to this addendum and the Cougar Video Manual (P/N 81905903420) or to the Jaguar Video Manual (P/N 81905903690) when troubleshooting or replacing parts on the 32X32 Wideband Analog Video Card or on the associated 16X16 Wideband Crosspoint Cards.

Parts Lists

The Parts Lists in this section have been grouped according to each assembly associated with the 32X32 Analog Video Wideband Card and with the associated 16X16 Wideband Crosspoint Cards. Refer to each list by name of card, board, or section of the equipment requiring replacement parts.

<u>Part</u>	<u>Part Number</u>	<u>Page</u>
32X32 WB Analog Video Matrix Card	81906518120	2
16X16 WB Crosspoint Card	81906518110	12

32X32 Wideband Analog Video Addendum

32X32 WB Analog Video Matrix Card - 81906518120

81900601022	THERMISTOR 680 OHM 5%	1	EA	R531
81901000740	CAP SWXR REG OUT 35V ELEC	8	EA	C220 C223 C228 C229 C242 C243 C245 C246
81901000840	CAP 0.1F 5.5V	1	EA	C214
81901603738	REG LM317T 1.2V-37V ADJST	1	EA	U120
81901606830	IC 7.3728 MHZ OSCILLATOR	1	EA	U104
81901606980	REG LT1170 5A SWXING 60V	1	EA	U119
81902003580	STANDOFF 2-56 PC BD MNTD	8	EA	
81902105050	LABEL BARCODE 1.5"x0.25"	1	EA	
81902200039	SCREW 2-56X1/4 PAN HD PHI	8	EA	
81902200070	NUT 4-40 HEX	2	EA	REF U119
81902202696	SCREW 4-40x7/16 SIMM PANH	2	EA	REF U119
81902301080	INDUCTOR 20uH 2A TOROIDAL	4	EA	L1-L4
81902301370	TRANSFORMER ANALOG VIDEO	1	EA	T1
81902413080	PCB 32x32 WB VIDEO MATRIX	1	EA	
81902700749	FUSE PICO, 7 AMP, LEADED	2	EA	F1 F2
81902901479	SOCKET 8 PIN LOW PROF IC	1	EA	REF U107
81902906668	CONN RA,FEMALE,96POS,3ROW	2	EA	J1 J2
81902907960	CONN 2x8 POST 2MM .1 PCB	4	EA	J5A-J5D
81902907970	CONN 2x24 POST 2MM .1 PCB	24	EA	J1A-J1D J2A-J2D J3A-J3D J4A-J4D J6A-J6D J7A-J7D
81902908000	CONN 2x48 RECPT RA .1x.1	2	EA	J3 J4
81902908060	SPLIT TERMINAL	2	EA	REF F1 F2
81903200541	LED GREEN RT/A HI-EFF PCB	1	EA	CR5
81903200558	LED RED RT/A HI-EFF PC MT	2	EA	CR3 CR4
81903462740	HEATSINK 24x16 VID MATRIX	1	EA	REF U119
81906517730	SOFT 32x8 CNTRL CHIP	1	EA	REF U107
81906517980	SOFT COUGAR BIOS	1	EA	REF U98

32X32 Wideband Analog Video Addendum

32X32 WB Analog Video Matrix Card - 81906518120 Continued:

81906600184	RESISTOR 10 OHM 5% 0805	194	EA	R4 R8 R12 R16 R20 R24 R28 R32 R36 R40 R44 R48 R52 R56 R60 R64 R68 R72 R76 R80 R84 R88 R92 R96 R100 R104 R108 R112 R116 R120 R124 R128 R658 R661 R664 R667 R670 R673 R676 R679 R682 R685 R688 R691 R694 R697 R700 R703 R706 R709 R712 R715 R718 R721 R724 R727 R730 R733 R736 R739 R742 R745 R748 R751 R1158 R1229 R1230 R1254 R1260 R1261 R1266 R1267 R1275 R1283 R1284 R1291 R1292 R1299 R1300 R1308 R1311 R1312 R1320 R1321 R1329 R1337 R1338 R1344 R1345 R1353 R1354 R1365 R1371 R1372 R1380 R1381 R1421 R1422 R1430 R1431 R1439 R1447 R1448 R1456 R1457 R1464 R1472 R1473 R1479 R1480 R1488 R1489 R1496 R1497 R1504 R1505 R1512 R1513 R1521 R1525 R1526 R1534 R1535 R1544 R1550 R1551 R1559 R1560 R1568 R1569 R1575-R1638
81906600424	RESISTOR 100 OHM 5% 0805	2	EA	R1440 R1441
81906600465	RESISTOR 150 OHM 5% 0805	1	EA	R552
81906600499	RESISTOR 200 OHM 5% 0805	1	EA	R301
81906600520	RESISTOR 270 OHM 5% 0805	2	EA	R330 R361
81906600549	RESISTOR 330 OHM 5% 0805	1	EA	R556
81906600570	RESISTOR 430 OHM 5% 0805	2	EA	R341 R372
81906600620	RESISTOR 680 OHM 5% 0805	1	EA	R425
81906600663	RESISTOR 1K OHM 5% 0805	11	EA	R342 R373 R549 R1355-R1358 R1366 R1367 R1564 R1565
81906600700	RESISTOR 1.5K 5% 0805	1	EA	R1474
81906600747	RESISTOR 2.2K 5% 0805	1	EA	R300
81906600783	RESISTOR 3.3K 5% 0805 SMT	35	EA	R328 R359 R532 R817 R821 R825 R829 R833 R837 R841 R845 R849 R853 R857 R861 R865 R869 R873 R877 R1073 R1077 R1081 R1085 R1089 R1093 R1097 R1101 R1105 R1109 R1113 R1117 R1121 R1125 R1129 R1133

32X32 Wideband Analog Video Addendum

32X32 WB Analog Video Matrix Card - 81906518120 Continued:

81906600820 RESISTOR 4.7K 5% 0805 SMT	139	EA	R302-R307 R312 R317 R319-R323 R326 R327 R331-334 R338 R339 R340 R343-R346 R349-R351 R356-R358 R362-R367 R370 R371 R377-R379 R381-R386 R390 R391 R394-R400 R404-R413 R416-R420 R424 R428-R431 R434-R439 R445-R450 R455 R459 R460-R467 R470-R473 R482-R487 R492-R497 R508-R512 R515 R516-R519 R523-R525 R535-R540 R1570 R1640-R1642
81906600866 RESISTOR 6.8K 5% 0805 SMT	32	EA	R816 R820 R824 R828 R832 R836 R840 R844 R848 R852 R856 R860 R864 R868 R872 R876 R1072 R1076 R1080 R1084 R1088 R1092 R1096 R1100 R1104 R1108 R1112 R1116 R1120 R1124 R1128 R1132
81906600903 RESISTOR 10K 5% 0805 SMT	3	EA	R432 R433 R1571
81906600920 RESISTOR 12K OHM 5% 0805	1	EA	R318
81906600986 RESISTOR 22K 5% 0805 SMT	1	EA	R310
81906601133 RESISTOR 100K 5% 0805 SMT	4	EA	R311 R313 R329 R360
81906601307 RESISTOR 510K 5% 0805 SMT	2	EA	R352 R380
81906601521 RESISTOR 0.0 OHM 5% 0805	128	EA	R3 R7 R11 R16 R19 R23 R27 R31 R35 R39 R43 R47 R51 R55 R59 R63 R67 R71 R75 R79 R83 R87 R91 R95 R99 R103 R107 R111 R115 R119 R123 R127 R161 R163 R165 R167 R169 R171 R173 R175 R177 R179 R181 R182 R183 R184 R185 R186 R225
81906601521 RESISTOR 0.0 OHM 5% 0805	128	EA	R226-R241 R292 R295 R297 R308 R315 R335 R347 R353 R368 R375 R388 R401 R414 R421 R426 R468 R474 R477 R488 R498 R502 R505 R513 R521 R528 R533 R541 R544 R547 R553 R557 R1152 R1223 R1247 R1262 R1268 R1276 R1285 R1293 R1301 R1313 R1322 R1330 R1339 R1346 R1359 R1373 R1414 R1423 R1432 R1442 R1449 R1458 R1475 R1481 R1490 R1498 R1506 R1514 R1527 R1537 R1545 R1552

32X32 Wideband Analog Video Addendum

32X32 WB Analog Video Matrix Card - 81906518120 Continued:

81906607060 RESISTOR 4.7K OHM 5% 603	32	EA	R993 R995 R997 R999 R1001 R1003 R1005 R1007 R1009 R1011 R1013 R1015 R1017 R1019 R1021 R1023 R1161 R1165 R1169 R1173 R1177 R1181 R1185 R1189 R1193 R1197 R1201 R1205 R1209 R1213 R1217 R1221
81906610630 RESISTOR 44.2 OHM 1% 0805	32	EA	R1056-R1071 R1231-1246
81906610710 RESISTOR 53.6 OHM 1% 0805	32	EA	R243 R294 R299 R309 R316 R325 R337 R355 R369 R376 R389 R393 R403 R423 R427 R441 R475 R478 R480 R490 R500 R507 R514 R522 R527 R530 R543 R545 R548 R551 R555 R559
81906610852 RESISTOR 75.0 OHM 1% 0805	32	EA	R188 R190 R192 R194 R196 R198 R200 R202 R204 R206 R208 R211 R214 R217 R220 R223 R245 R248 R251 R254 R257 R260 R263 R266 R269 R272 R275 R278 R281 R284 R287 R290
81906610860 RESISTOR 76.8 Ohm 1% 0805	32	EA	R1228 R1253 R1259 R1265 R1274 R1282 R1298 R1307 R1310 R1319 R1328 R1336 R1352 R1364 R1370 R1379 R1420 R1429 R1438 R1455 R1463 R1471 R1478 R1487 R1495 R1511 R1520 R1524 R1533 R1543 R1558 R1567
81906611652 RESISTOR 511 OHM 1% 0805	1	EA	R501
81906611942 RESISTOR 1.02K 1% 0805	1	EA	R1465
81906612296 RESISTOR 2.37K 1% 0805	1	EA	R451
81906612320 RESISTOR 2.55K 1% 0805	3	EA	R444 R452 R456
81906612380 RESISTOR 2.94K 1% 0805	1	EA	R491
81906612593 RESISTOR 4.99K 1% 0805	1	EA	R457
81906612882 RESISTOR 10K 1% 0805 SMT	1	EA	R458
81906617000 RESISTOR 0.0 OHM 1% 0603	32	EA	R944 R947 R950 R953 R956 R959 R962 R965 R968 R971 R977 R980 R983 R986 R989 R1159 R1163 R1167 R1171 R1175 R1179 R1183 R1187 R1191 R1195 R1199 R1203 R1207 R1211 R1215 R1219 R1639
81906617370 RESISTOR 100 Ohm 1% 0603	32	EA	R1156 R1227 R1252 R1263 R1272 R1280 R1289 R1297 R1306 R1317 R1326 R1334 R1343 R1351 R1368 R1377 R1418 R1427 R1436 R1446 R1454 R1469 R1476 R1485 R1494 R1502 R1518 R1522 R1531 R1541 R1549 R1557

32X32 Wideband Analog Video Addendum

32X32 WB Analog Video Matrix Card - 81906518120 Continued:

81906617380 RESISTOR 150 Ohm 1% 0603	32	EA	R992 R994 R996 R998 R1000 R1002 R1004 R1006 R1008 R1010 R1012 R1014 R1016 R1018 R1020 R1022 R1160 R1164 R1168 R1172 R1176 R1180 R1184 R1188 R1192 R1196 R1200 R1204 R1208 R1212 R1216 R1220
81906617390 RESISTOR 249 Ohm 1% 0603	64	EA	R945 R948 R951 R954 R957 R960 R963 R966 R969 R972 R975 R978 R981 R984 R987 R990 R1136-R1151 R1157 R1251 R1258 R1264 R1273 R1281 R1290 R1305 R1309 R1318 R1327 R1335 R1350 R1363 R1369 R1378 R1419 R1428 R1437 R1453 R1462 R1470 R1477 R1486 R1503 R1510 R1519 R1523 R1532 R1542 R1556 R1566
81906630700 RESISTOR 52.3 OHM 1% 1206	32	EA	R560-R591
81906640024 RESISTOR 2.0 OHM 5% 1210	1	EA	R481
81906640073 RESISTOR 75 OHM 0.5% 1206	64	EA	R818 R819 R822 R823 R826 R827 R830 R831 R834 R835 R838 R839 R842 R843 R846 R847 R850 R851 R854 R855 R858 R859 R862 R863 R866 R867 R870 R871 R874 R875 R878 R879 R1074 R1075 R1078 R1079 R1082 R1083 R1086 R1087 R1090 R1091 R1094 R1095 R1098 R1099 R1102 R1103 R1106 R1107 R1110 R1111 R1114 R1115 R1118 R1119 R1122 R1123 R1126 R1127 R1130 R1131 R1134 R1135
81906640115 RESISTOR 100 OHM 0.1% O80	128	EA	R592-R655 R880 R882 R884 R886 R888 R890 R892 R894 R896 R898 R901 R903 R905 R907 R908 R910 R912 R914 R916 R918 R920 R922 R924 R926 R928 R930 R933 R935 R937 R939 R940 R942 R1024-R1055
81906640900 RESISTOR 52.3 Ohm .1% 805	32	EA	R1155 R1226 R1250 R1257 R1271 R1279 R1288 R1296 R1304 R1316 R1325 R1333 R1342 R1349 R1362 R1376 R1417 R1426 R1435 R1445 R1452 R1461 R1468 R1484 R1493 R1501 R1509 R1517 R1530 R1540 R1548 R1555

32X32 Wideband Analog Video Addendum

32X32 WB Analog Video Matrix Card - 81906518120 Continued:

81906640920	RESISTOR 56.2 Ohm .1% 805	64	EA	R242 R293 R296 R298 R314 R324 R336 R348 R354 R374 R387 R392 R402 R415 R422 R440 R469 R476 R479 R489 R499 R503 R506 R520 R526 R529 R534 R542 R546 R550 R554 R558 R1153 R1224 R1248 R1255 R1269 R1277 R1286 R1294 R1302 R1314 R1323 R1331 R1340 R1347 R1360 R1374 R1415 R1424 R1433 R1443 R1450 R1459 R1466 R1482 R1491 R1499 R1507 R1515 R1528 R1538 R1546 R1553
81906640930	RESISTOR 71.5 Ohm .1% 805	32	EA	R1154 R1225 R1249 R1256 R1270 R1278 R1287 R1295 R1303
81906640930	RESISTOR 71.5 Ohm .1% 805	32	EA	R1315 R1324 R1332 R1341 R1348 R1361 R1375 R1416 R1425 R1434 R1444 R1451 R1460 R1467 R1483 R1492 R1500 R1508 R1516 R1529 R1539 R1547 R1554
81906640940	RESISTOR 75.0 Ohm .1% 805	64	EA	R881 R883 R885 R887 R889 R891 R893 R895 R897 R899 R900 R902 R904 R906 R909 R911 R913 R915 R917 R919 R921 R923 R925 R927 R929 R931 R932 R934 R936 R938 R941 R943 R1382-R1413
81906640950	RESISTOR 121 OHM .1% 0805	32	EA	R2 R6 R10 R14 R18 R22 R26 R30 R34 R38 R42 R46 R50 R54 R58 R62 R66 R70 R74 R78 R82 R86 R90 R94 R98 R102 R106 R110 R114 R118 R122 R126
81906641160	RESISTOR 392 OHM .1% 0603	27	EA	R657 R663 R666 R672 R675 R678 R681 R684 R687 R690 R693 R696 R699 R702 R708 R711 R714 R717 R723 R726 R732 R735 R738 R741 R744 R747 R750
81906641170	RESISTOR 412 OHM .1% 0603	32	EA	R656 R660 R662 R665 R669 R671 R674 R677 R680 R683 R686 R689 R692 R695 R698 R701 R705 R707 R710 R713 R716 R720 R722 R725 R729 R731 R734 R737 R740 R743 R746 R749
81906641180	RESISTOR 432 OHM .1% 603	5	EA	R659 R668 R704 R719 R728
81906650049	POT 50 OHM 1-TRN VERTL SM	32	EA	R129-R160

32X32 Wideband Analog Video Addendum

32X32 WB Analog Video Matrix Card - 81906518120 Continued:

81906650064 POT 100 OHM R/A 10% SMT	32	EA	R162 R164 R166 R168 R170 R172 R174 R176 R178 R180 R209 R212 R215 R218 R221 R224 R246 R249 R252 R255 R258 R261 R264 R267 R270 R273 R276 R279 R282 R285 R288 R291
81906650210 POT 1K VERT 1T 20% 4MM	1	EA	R504
81906650220 POT 50K VERT 1T 20% 4MM	32	EA	R187 R189 R191 R193 R195 R197 R199 R201 R203 R205 R207 R210 R213 R216 R219 R222 R244 R247 R250 R253 R256 R259
81906650220 POT 50K VERT 1T 20% 4MM	32	EA	R262 R265 R268 R271 R274 R277 R280 R283 R286 R289
81906700059 CAP 6.8PFD 50V CERAM,0805	1	EA	C399
81906700125 CAP 2.2PF CERAM 50V 0805	9	EA	C347 C349 C376 C401 C403 C406 C419 C445 C467
81906700133 CAP 3.3PF CERAM 50V 0805	6	EA	C384 C389 C394 C424 C480 C501
81906700210 CAP 1PF CERAMIC 2% 0805	9	EA	C376 C397 C422 C432 C455 C475 C486 C491 C792
81906700224 CAP 3.9PF CERAMIC 2% 0805	7	EA	C378 C386 C397 C403 C416 C445 C492
81906700232 CAP 8PF CERAMIC 2% 0805	1	EA	C488
81906700320 CAP 220PF NPO 0805 CERAMC	2	EA	C169 C171
81906700340 CAP 1.8PF CERAMC 0805 NPO	3	EA	C408 C464 C504
81906700390 CAP 1.2PF 50V NPO 0805	4	EA	C364 C390 C399 C460
81906700400 CAP 1.5PF 50V NPO 0805	8	EA	C351 C363 C392 C428 C443 C453 C469 C473
81906700490 CAP 5.6PF 50V CERM5% 0805	8	EA	C390 C419 C429 C455 C464 C475 C496 C506
81906700510 CAP 2.7PF 50V CERMC 0805	11	EA	C353 C359 C361 C367 C369 C378 C414 C416 C418 C434 C509
81906700540 CAP 0.01mf 50V CERM 0805	2	EA	C472 C516
81906700600 CAP 4.7PF 50V CERAMC 0805	5	EA	C408 C424 C440 C469 C511
81906710110 CAP 0.15MF 50V CERAM 1206	1	EA	C462

32X32 Wideband Analog Video Addendum

32X32 WB Analog Video Matrix Card - 81906518120 Continued:

81906730015	CAP 0.1MF 50V CERMIC 1206	298	EA	C1-C96 C113-C144 C161-C168 C170 C172 C174-C181 C183 C184-C200 C203-C213 C215-C219 C221 C222 C224 C226 C227 C230-C234 C237 C238 C240 C241 C247 C248 C250 C348 C350 C352 C354-C358 C360 C362 C365 C366 C368 C370 C372 C374 C375 C377 C379-C383 C385 C387 C388 C391 C393 C395 C396 C398 C400 C402 C404 C405 C407 C409-C413 C415 C417 C420 C421 C423 C425 C426 C427 C430 C431 C433 C435 C436 C437 C439 C441 C442 C444 C446 C447 C448 C449 C450 C451 C452
81906730015	CAP 0.1MF 50V CERMIC 1206	298	EA	C454 C456 C457 C459 C461 C465 C468 C470 C471 C474 C477 C479 C481 C482 C483 C484 C485 C487 C489 C490 C493 C495 C497 C500 C502 C503 C505 C507 C508 C510 C512 C513 C515 C549 C550
81906760160	CAP 1500PF 50V CERAM 1206	2	EA	C173 C182
81906770052	CAP 1MF 20V TANLUM SIZE A	3	EA	C201 C202 C551
81906770090	CAP 68uf 16V TANT D CASE	2	EA	C249 C466
81906770100	CAP 1mf 35 VOLTS TANTALUM	2	EA	C235 C236
81906800016	TRANS SMT,MMBT3904LT1	4	EA	Q1 Q38 Q39 Q40
81906800073	DIODE ZENER SMT,MMBZ5240B	2	EA	CR1 CR2
81906800099	TRANS SMT, MMBTH10L	32	EA	Q5-Q36
81906800107	TRANS SMT,MMBT3906L	4	EA	Q2-Q4 Q37
81906800230	DIODE MBR340 40V 3A SHTTK	6	EA	CR8-CR11 CR15 CR16
81906800390	ZENER MC15 15V 1.5W SMT	2	EA	CR13 CR18
81906800410	TRANSIENT SUPPRESSOR 33V	1	EA	CR12
81906800580	ZENER MBZ5242 12V SOT23	1	EA	CR17
81906810072	IC 3903 QUAD SPLY MONITOR	1	EA	U101
81906810106	IC LM1881 VID SYNC SEPART	2	EA	U78 U83
81906810171	IC SMT,74HC04 (SOIC-14)	7	EA	U71 U80 U96 U103 U113 U122 U127
81906810340	IC 74HC00 QUAD AND SO SMT	1	EA	U102
81906810510	IC 6264 8Kx8 SRAM 100ns	1	EA	U112
81906810550	IC 74HC245 OCTL TRANSCEVR	5	EA	U76 U81 U87 U89 U94
81906810570	IC 74HC373 OCTAL LATCH SO	1	EA	U105
81906810690	IC TL062 DUAL JFET OP S08	1	EA	U70
81906810890	IC RS485 RECVR/TRANSMITTR	1	EA	U69
81906810930	IC TL7705 MICRO SUPERVISR	1	EA	U85
81906810960	IC OPTOCOUPLER SMT 4N32	1	EA	U90

32X32 Wideband Analog Video Addendum

32X32 WB Analog Video Matrix Card - 81906518120 Continued:

81906810990	IC BUFFER HA4600 SO-8	64	EA	U65-U68 U72 U73 U75 U77 U79 U82 U84 U86 U88 U92 U93 U97 U110 U111 U114-U118 U123-U126 U128-U131 U134-U166
81906811030	IC 74HC273 OACTAL REGISTR	1	EA	U100
81906811040	IC 74HC138 3 TO 8 DECODER	2	EA	U95 U99
81906811060	IC XC3030A LCA	4	EA	U74 U91 U109 U121
81906811080	IC DS1210 NONVOL CNTL CHP	1	EA	U106
81906811220	IC OPA 658U OP-AMP WIDEBD	96	EA	U1-U64 U167-U198
81906920030	SWITCH DIP 4 POS GULLWING	1	EA	S1
81906940040	SOCKET 52 PIN PLCC SMT	1	EA	REF U98
81906950030	INDUCT 0.022Uh 10% SMT	32	EA	L5-L36
81906950040	BEAD INDUCTOR SMT	2	EA	B1 B2
CA25-1308	DOC 32x32 WB VIDEO MATRIX	0	EA	
DD52-1308	DOC 32x32 WB VIDEO MATRIX	0	EA	
NOT-PLACED	ITEMS NOT PLACED ON EBOM	0	EA	R1 R5 R9 R13 R17 R21 R25 R29 R33 R37 R41 R45 R49 R53 R57 R61 R65 R69 R73 R77 R81 R85 R89 R93 R97 R101 R105 R109 R113 R117 R121 R125 R753 R755 R757 R759 R761 R763 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 C97-C112 C145-160 C251-C314 C371 C373 C429 C438 C440 C458 C463 C478 C488 C494 C496 C499 C506 C517 C518 C519 C520 C521 C522 C523 C524 C525 C526 C527 C528 C529 C530 C531 C532 C533 C534 C535 C536 C537 C538 C539 C540 C541 C542 C543 C544 C545 C546 C547 C548 TP1-TP3 U108
SC33-1308	DOC 32x32 WB VIDEO MATRIX	0	EA	

32X32 Wideband Analog Video Addendum

16X16 WB Crosspoint Card - 81906518110

81902105050 LABEL BARCODE 1.5"x0.25"	1	EA	
81902413070 PCB 16x16 WB CROSSPOINT	1	EA	
81902907940 CONN 2x8 2MM RECEPTACLE	1	EA	J5
81902907950 CONN 2x24 2MM RECEPTACLE	6	EA	J1-J4 J6 J7
81906600184 RESISTOR 10 OHM 5% 0805	24	EA	R208 R210 R226 R240 R242 R258 R308 R310 R326 R340 R342 R358 R408 R410 R426 R440 R442 R458 R508 R510 R526 R540 R542 R558
81906600903 RESISTOR 10K 5% 0805 SMT	72	EA	R201 R203 R213 R215 R217 R219 R222 R229 R231 R233 R235 R245 R247 R249 R251 R254 R261 R263 R301 R303 R313 R315 R317 R319 R322 R329 R331 R333 R335 R345 R347 R349 R351 R354 R361 R363 R401 R403 R413 R415 R417 R419 R422 R429 R431 R433 R435 R445 R447 R449 R451 R454 R461 R463 R501 R503 R513 R515 R517 R519 R522 R529 R531 R533 R535 R545 R547 R549 R551 R554 R561 R563
81906610472 RESISTOR 30.1 OHM 1% 0805	6	EA	R200 R216 R230 R232 R234 R532
81906610597 RESISTOR 40.2 OHM 1% 0805	2	EA	R300 R534
81906610680 RESISTOR 49.9 OHM 1% 0805	5	EA	R202 R302 R332 R348 R500
81906610761 RESISTOR 60.4 OHM 1% 0805	7	EA	R248 R316 R334 R400 R416 R432 R548
81906610830 RESISTOR 71.5 Ohm 1% 0805	7	EA	R262 R330 R448 R462 R502 R516 R562
81906610880 RESISTOR 80.6 OHM 1% 0805	4	EA	R362 R402 R430 R434
81906610940 RESISTOR 93.1 OHM 1% 0805	16	EA	R204 R220 R236 R252 R304 R320 R336 R352 R404 R420 R436 R452 R504 R520 R536 R552
81906610950 RESISTOR 95.3 OHM 1% 0805	1	EA	R530
81906617120 RESISTOR 10.0 OHM 1% 0603	24	EA	R207 R223 R224 R239 R255 R256 R307 R323 R324 R339 R355 R356 R407 R423 R424 R439 R455 R456 R507 R523 R524 R539 R555 R556
81906617350 RESISTOR 10.0K Ohm 1%0603	24	EA	R1 R5 R10 R14 R18 R22 R26 R30 R34 R38 R42 R46 R50 R54 R58 R62 R206 R238 R306 R338 R406 R438 R506 R538
81906617360 RESISTOR 47.5 Ohm 1% 0603	16	EA	R2 R6 R11 R15 R19 R23 R27 R31 R35 R39 R43 R47 R51 R55 R59 R63
81906630470 RESISTOR 30.1 Ohm 1% 1206	4	EA	R212 R228 R244 R246
81906630590 RESISTOR 40.2 Ohm 1% 1206	2	EA	R218 R544
81906630680 RESISTOR 49.9 OHM 1% 1206	1	EA	R546
81906630760 RESISTOR 60.4 Ohm 1% 1206	5	EA	R214 R250 R318 R350 R550
81906630830 RESISTOR 71.5 OHM 1% 1206	3	EA	R314 R346 R418

32X32 Wideband Analog Video Addendum

16X16 WB Crosspoint Card - 81906518110 Continued:

81906630880	RESISTOR 80.6 Ohm 1% 1206	5	EA	R414 R446 R450 R514 R518
81906630970	RESISTOR 100 Ohm 1% 1206	1	EA	R260
81906631010	RESISTOR 110 Ohm 1% 1206	1	EA	R460
81906631050	RESISTOR 121 Ohm 1% 1206	4	EA	R312 R328 R344 R360
81906631080	RESISTOR 130 Ohm 1% 1206	4	EA	R412 R428 R512 R560
81906631140	RESISTOR 150 Ohm 1% 1206	2	EA	R444 R528
81906640320	RESISTOR 1 OHM 5% 1210	2	EA	R580 R581
81906640770	RESISTOR 56.2 Ohm .1% 603	8	EA	R227 R259 R327 R359 R427 R459 R527 R559
81906640790	RESISTOR 169 Ohm .1% 0603	16	EA	R205 R221 R237 R253 R305 R321 R337 R353 R405 R421 R437 R453 R505 R521 R537 R553
81906640830	RESISTOR 357 Ohm .1% 0603	16	EA	R209 R225 R241 R257 R309 R325 R341 R357 R409 R425 R441 R457 R509 R525 R541 R557
81906640840	RESISTOR 25.5 Ohm .1% 805	3	EA	R567 R575 R579
81906640850	RESISTOR 26.1 Ohm .1% 805	5	EA	R564 R565 R568 R571 R576
81906640860	RESISTOR 27.4 Ohm .1% 805	6	EA	R566 R569 R570 R572 R574 R577
81906640870	RESISTOR 28.7 Ohm .1% 805	2	EA	R573 R578
81906640880	RESISTOR 49.9 Ohm .1% 805	3	EA	R3 R36 R52
81906640890	RESISTOR 51.1 Ohm .1% 805	5	EA	R12 R16 R20 R32 R64
81906640910	RESISTOR 53.6 Ohm .1% 805	6	EA	R7 R24 R28 R40 R48 R60
81906640920	RESISTOR 56.2 Ohm .1% 805	10	EA	R44 R56 R211 R243 R311 R343 R411 R443 R511 R543
81906641180	RESISTOR 432 OHM .1% 603	16	EA	R98 R100 R102 R104 R106 R108 R110 R112 R114 R116 R118 R120 R122 R124 R126 R128
81906641200	RESISTOR 261 OHM .1% 0603	16	EA	R99 R101 R103 R105 R107 R109 R111 R113 R115 R117 R119 R121 R123 R125 R127 R129
81906700117	CAP 15PF 50V CERAM 0805	16	EA	C202 C210 C218 C226 C302 C310 C318 C326 C402 C410 C418 C426 C502 C510 C518 C526
81906730015	CAP 0.1MF 50V CERMIC 1206	112	EA	C1 C4 C5 C8 C9 C12 C13 C16 C17 C20 C21 C24 C25 C28 C29 C32 C200 C201 C204-C209 C212-C215 C217 C220-C225 C228 C229-C231 C300 C301 C304-C307 C309 C312-C317 C320-C325 C328 C329-C331 C400 C401 C404-C407 C409 C420-C425 C428 C429-C431 C500 C501 C504-C507 C509 C512-C515 C517 C520 C521-C525 C528-C531 C412-C415 C417
81906770070	CAP 33MF 6.3V TANT SIZE C	6	EA	C216 C308 C408 C416 C508 C516
81906810171	IC SMT,74HC04 (SOIC-14)	3	EA	U625 U626 U627
81906810840	IC DUAL 2 TO 4 LINE DCODR	8	EA	U617-U624

32X32 Wideband Analog Video Addendum

16X16 WB Crosspoint Card - 81906518110 Continued:

81906810920 IC HA4404 4x1 CROSSPOINT	80	EA	U317 U318 U320 U322 U323 U417 U418 U420 U422 U423 U517 U518 U520 U522 U523 U200-U202 U204-U208 U210-U214 U216
81906810920 IC HA4404 4x1 CROSSPOINT	80	EA	U217-U220 U222 U223 U300-U302 U304-U308 U310-U314 U316 U319 U400-U402 U404-U408 U410-U414 U416 U419 U500-U502 U504-U508 U510-U514 U516 U519
81906811220 IC OPA 658U OP-AMP WIDEBD	32	EA	U1-U16 U203 U209 U215 U221 U303 U309 U315 U321 U403 U409 U415 U421 U503 U509 U515 U521
81906950050 INDUCTOR 1812 4.5x3.2x1.5	2	EA	BEAD1 BEAD2
CA25-1307 DOC 16x16 WB CROSSPOINT	0	EA	
DD52-1307 DOC 16x16 WB CROSSPOINT	0	EA	
NOT-PLACEDITEMS NOT PLACED ON EBOM	0	EA	C203 C211 C219 C227 C303 C311 C319 C327 C403 C411 C419 C427 C503 C511 C519 C527
SC33-1307 DOC 16x16 WB CROSSPOINT	0	EA	

32X32 Wideband Analog Video Addendum

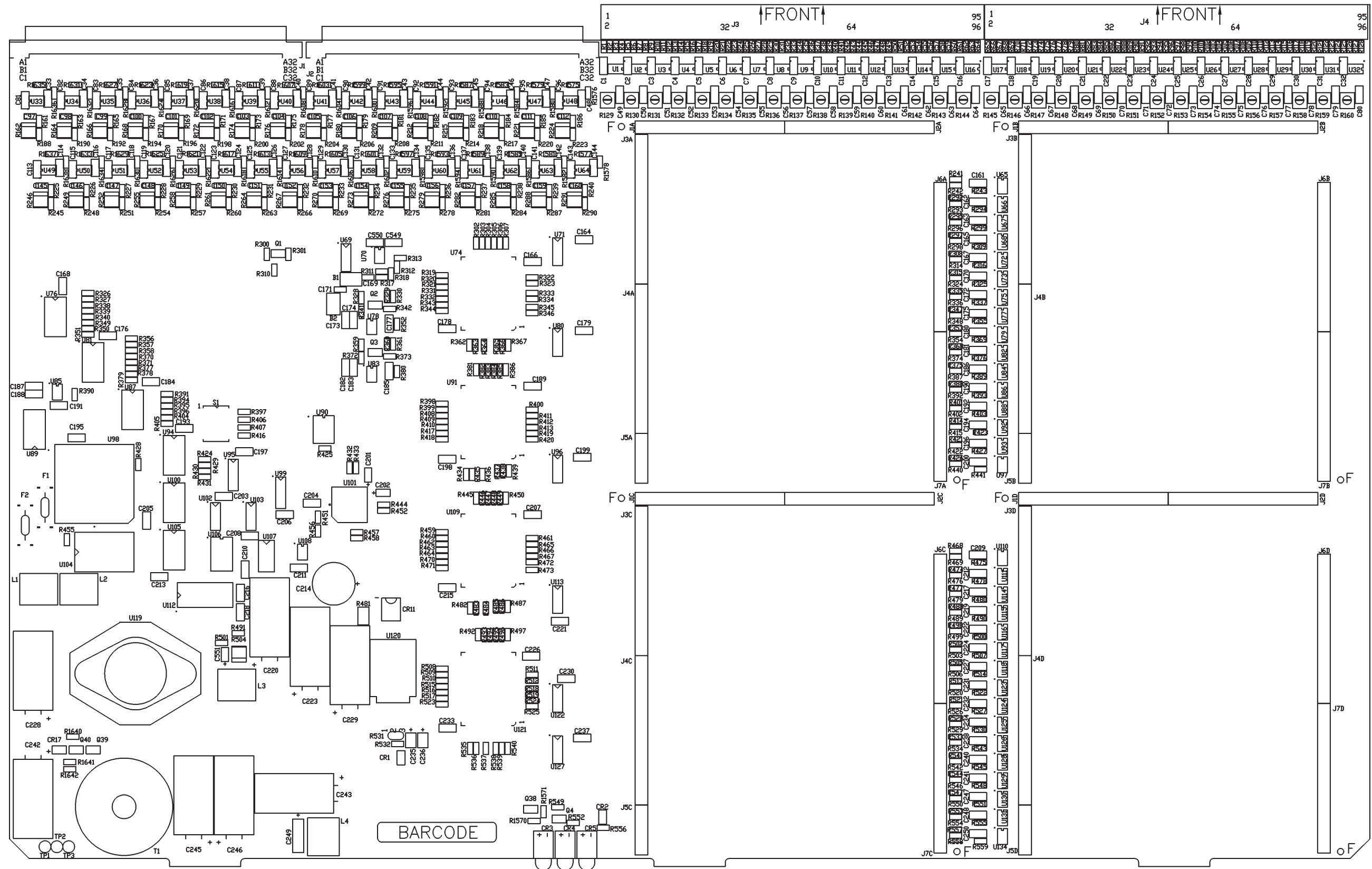
Schematics

This section contains the schematic diagrams and parts location diagrams for the 32X32 Wideband Analog Video Card and for the associated 16X16 Wideband Crosspoint Cards. Please refer to this section when troubleshooting the equipment or replacing defective parts.

<u>Description</u>	<u>Dwg No.</u>	<u>Page No.</u>
32X32 WB Analog Video Matrix Card	CA25-1308	15
	SC33-1308	17
16X16 WB Crosspoint Card	CA25-1307	33
	SC33-1307	35

32X32 Wideband Analog Video Addendum

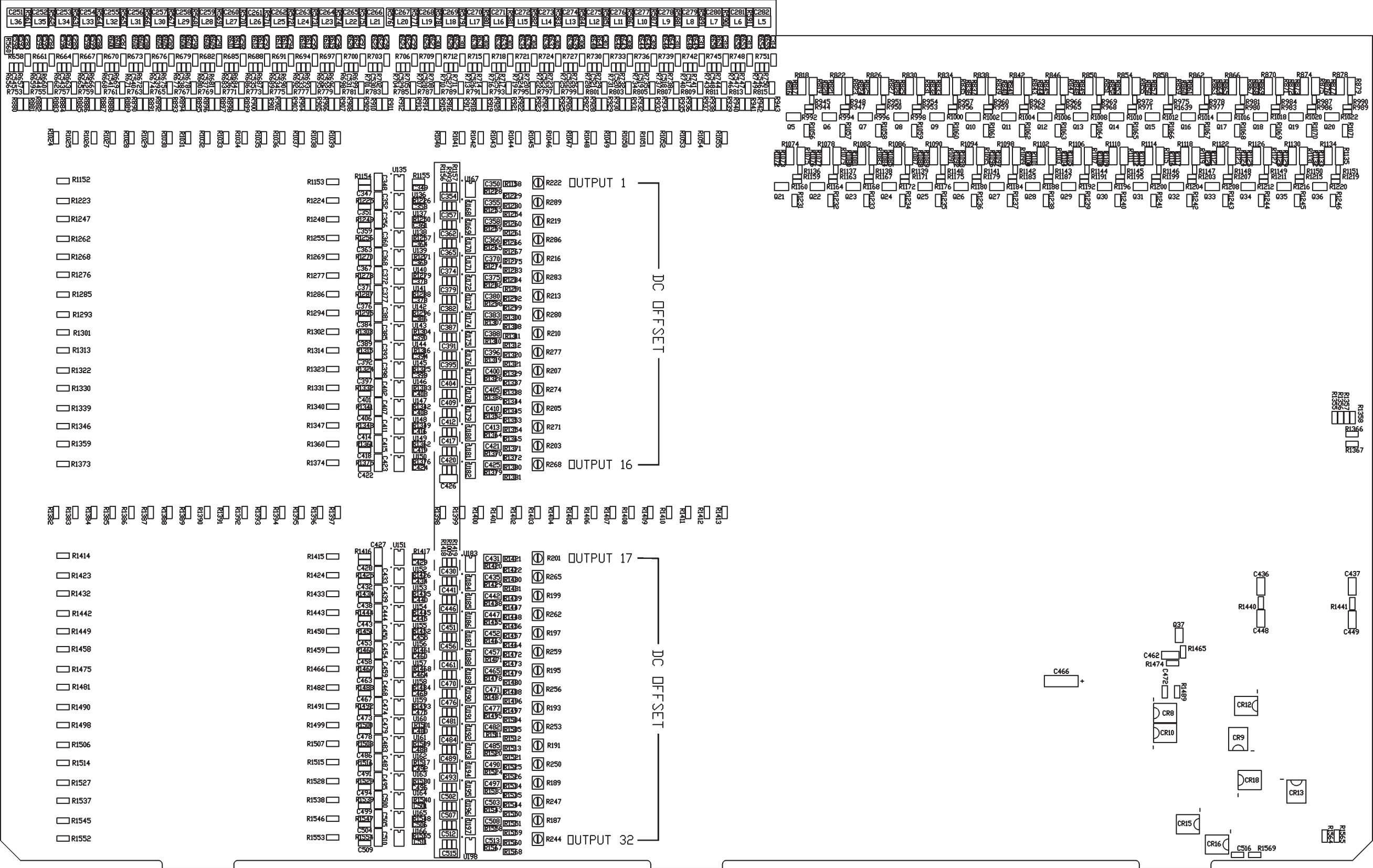
COMPONENT SIDE (LAYER 1 OF 10)



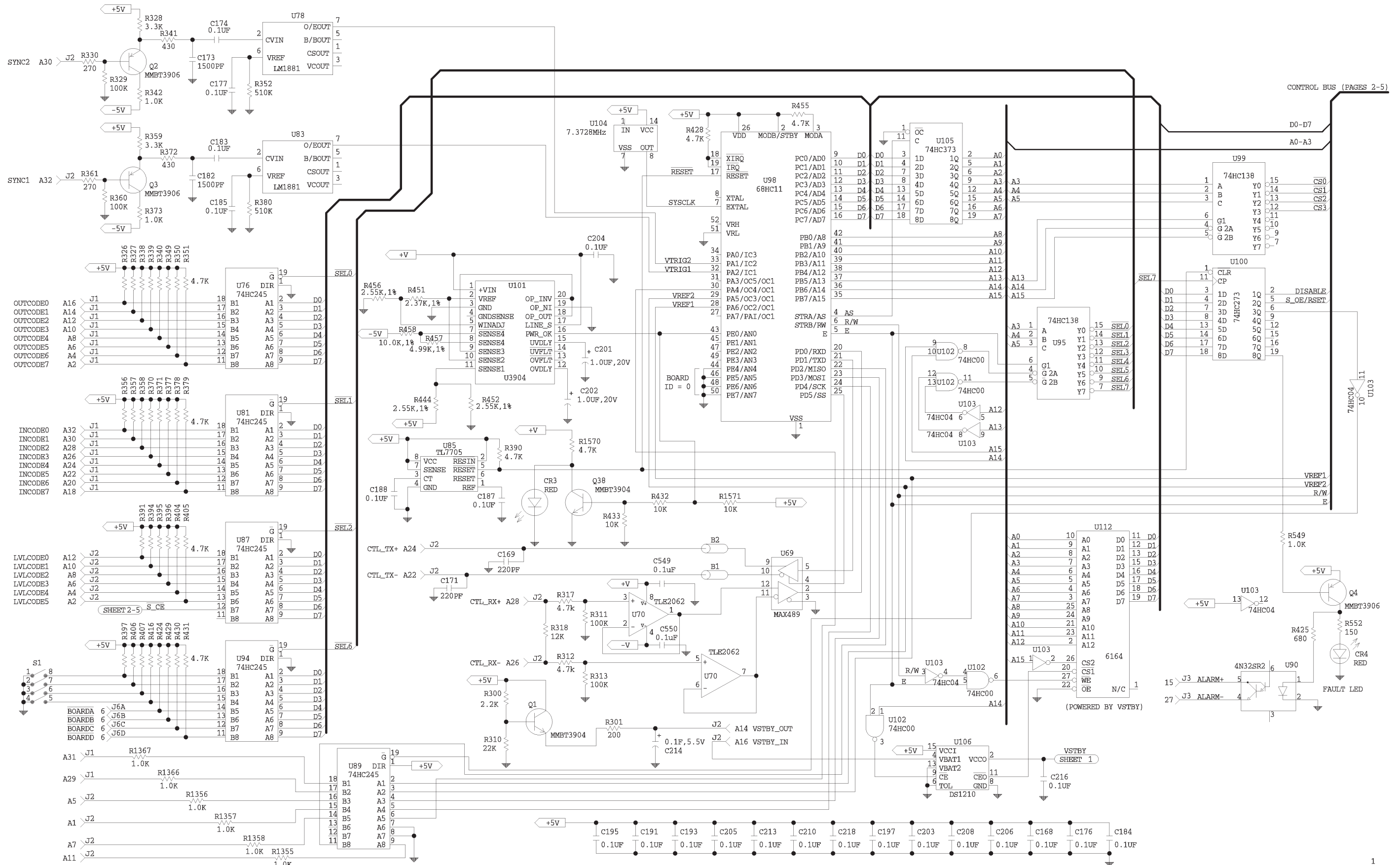
Component Assembly (Sheet 1 of 2) • 32X32 WB Analog Video Matrix Card • CA25-1308

32X32 Wideband Analog Video Addendum

SOLDER SIDE (LAYER 10 OF 10)



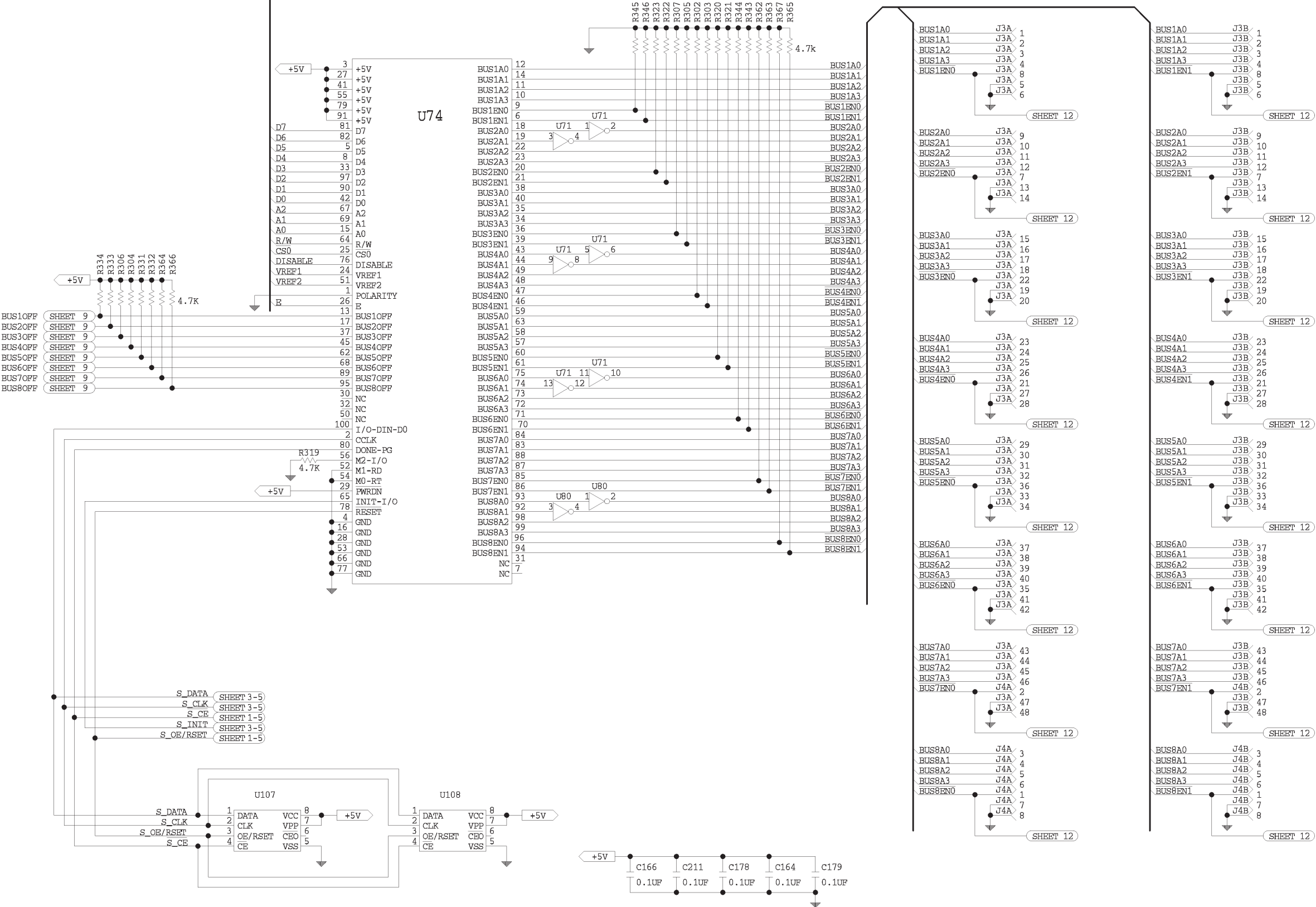
32X32 Wideband Analog Video Addendum



Schematic (Sheet 1 of 16) • 32X32 WB Analog Video Matrix Card • SC33-1308

32X32 Wideband Analog Video Addendum

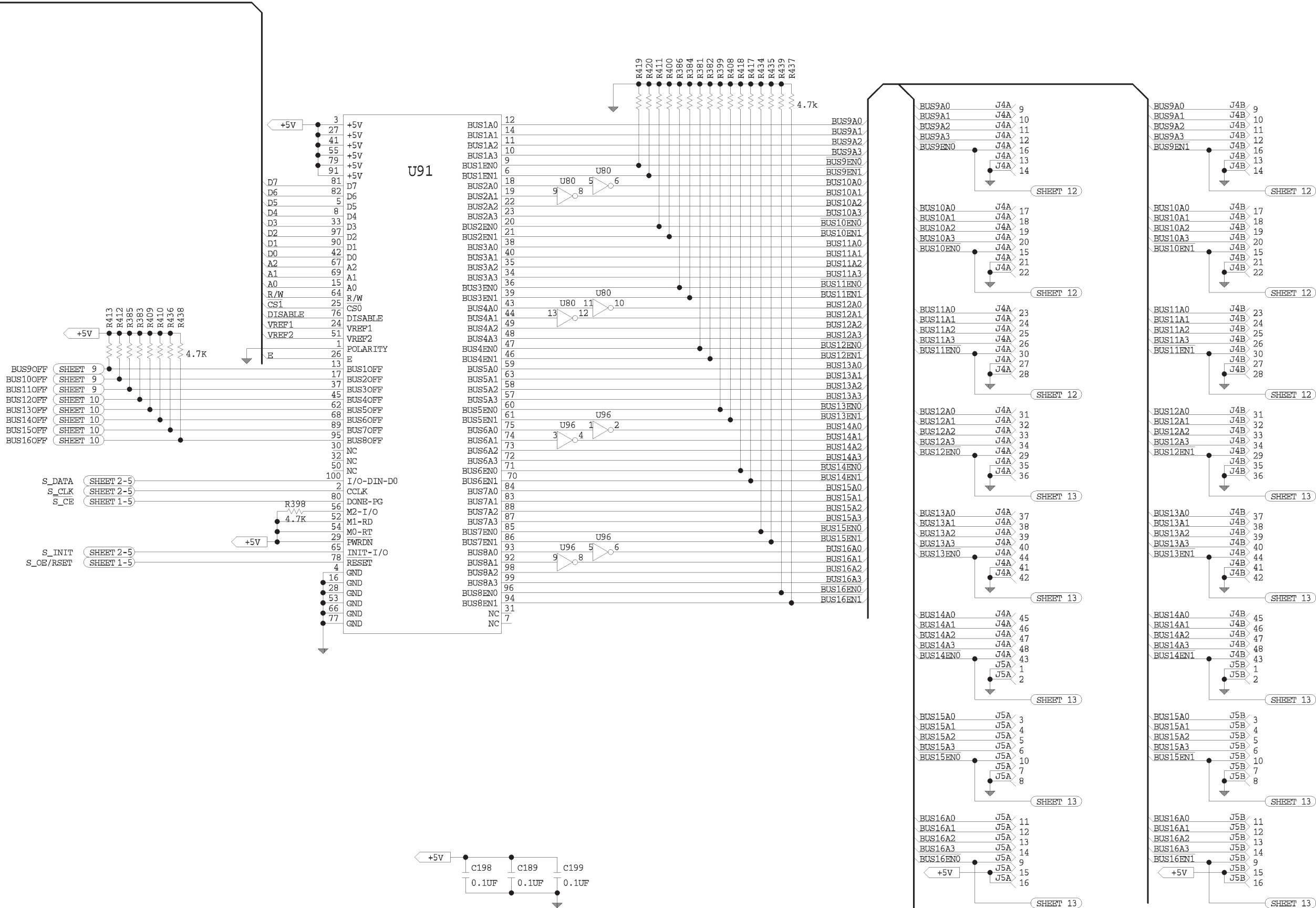
CONTROL BUS (PAGE 1)



Schematic (Sheet 2 of 16) • 32X32 WB Analog Video Matrix Card • SC33-1308

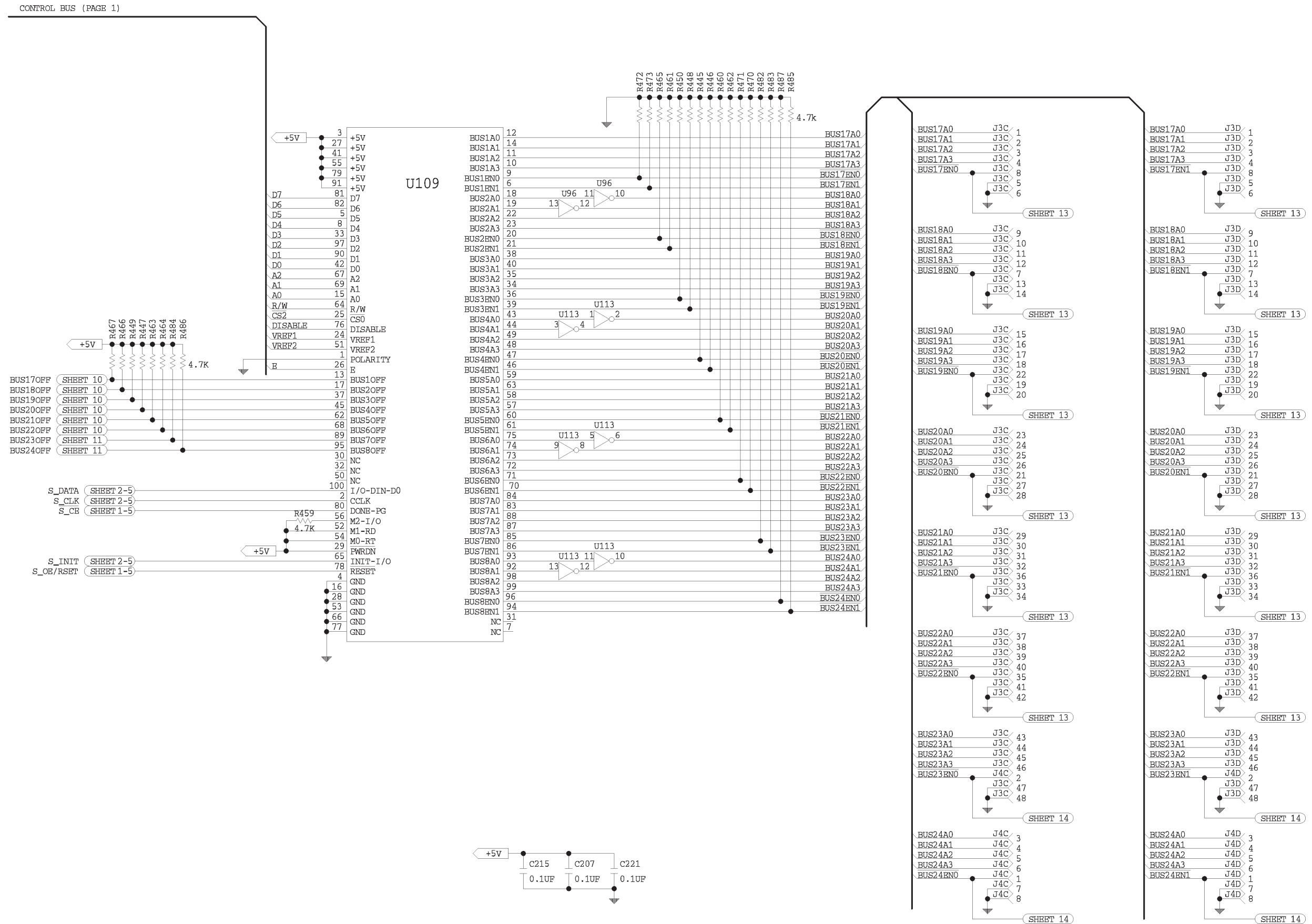
32X32 Wideband Analog Video Addendum

CONTROL BUS (PAGE 1)



Schematic (Sheet 3 of 16) • 32X32 WB Analog Video Matrix Card • SC33-1308

32X32 Wideband Analog Video Addendum

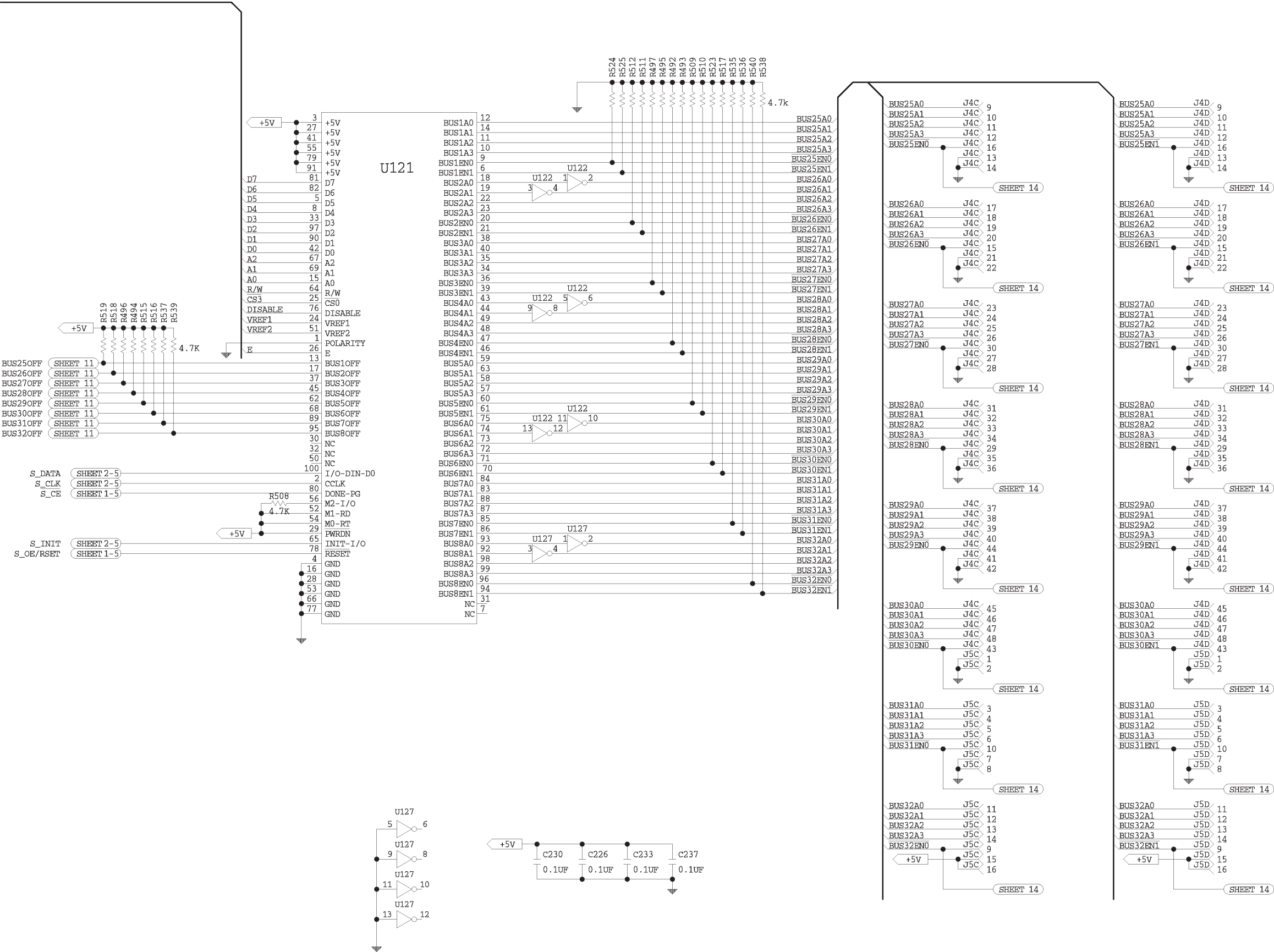


SHEET 14

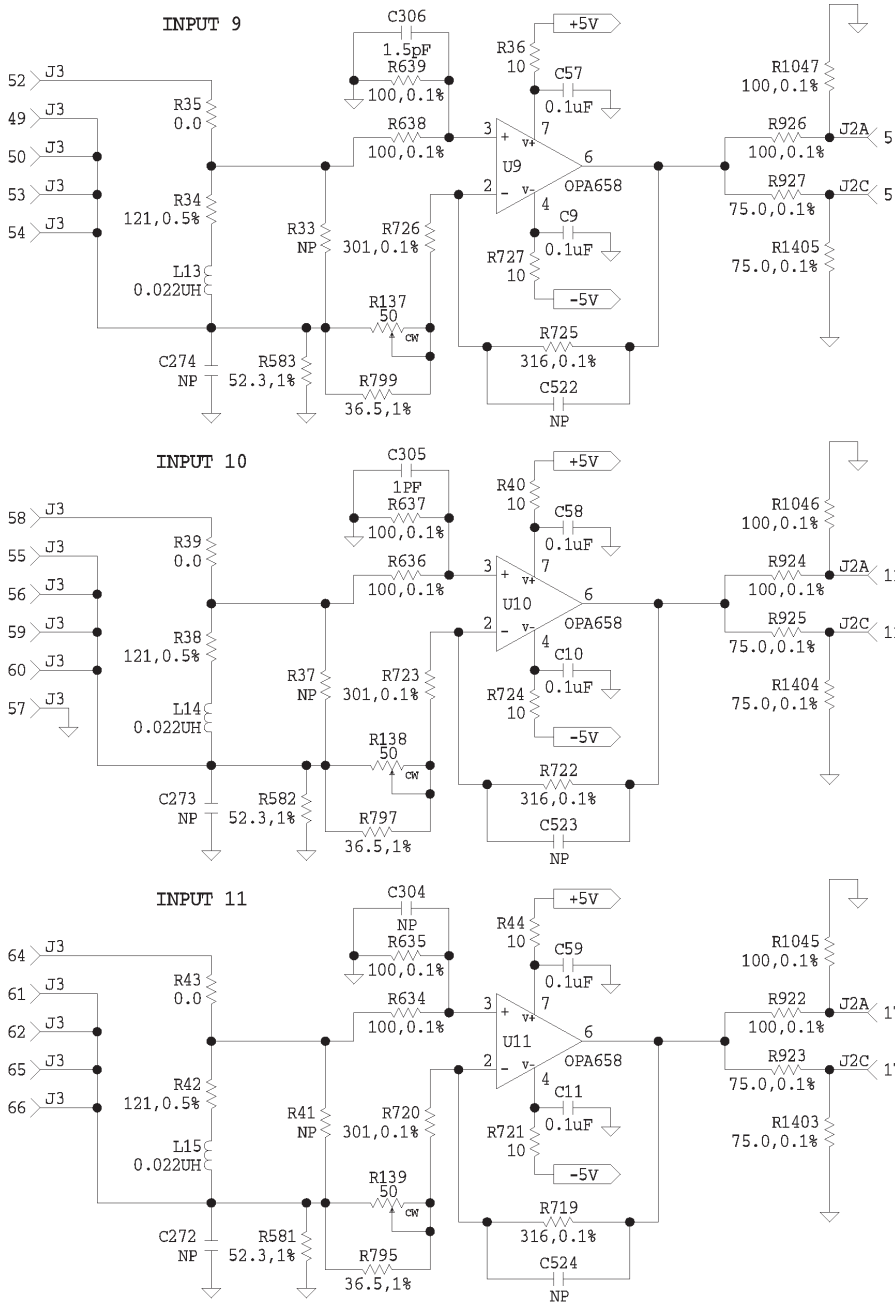
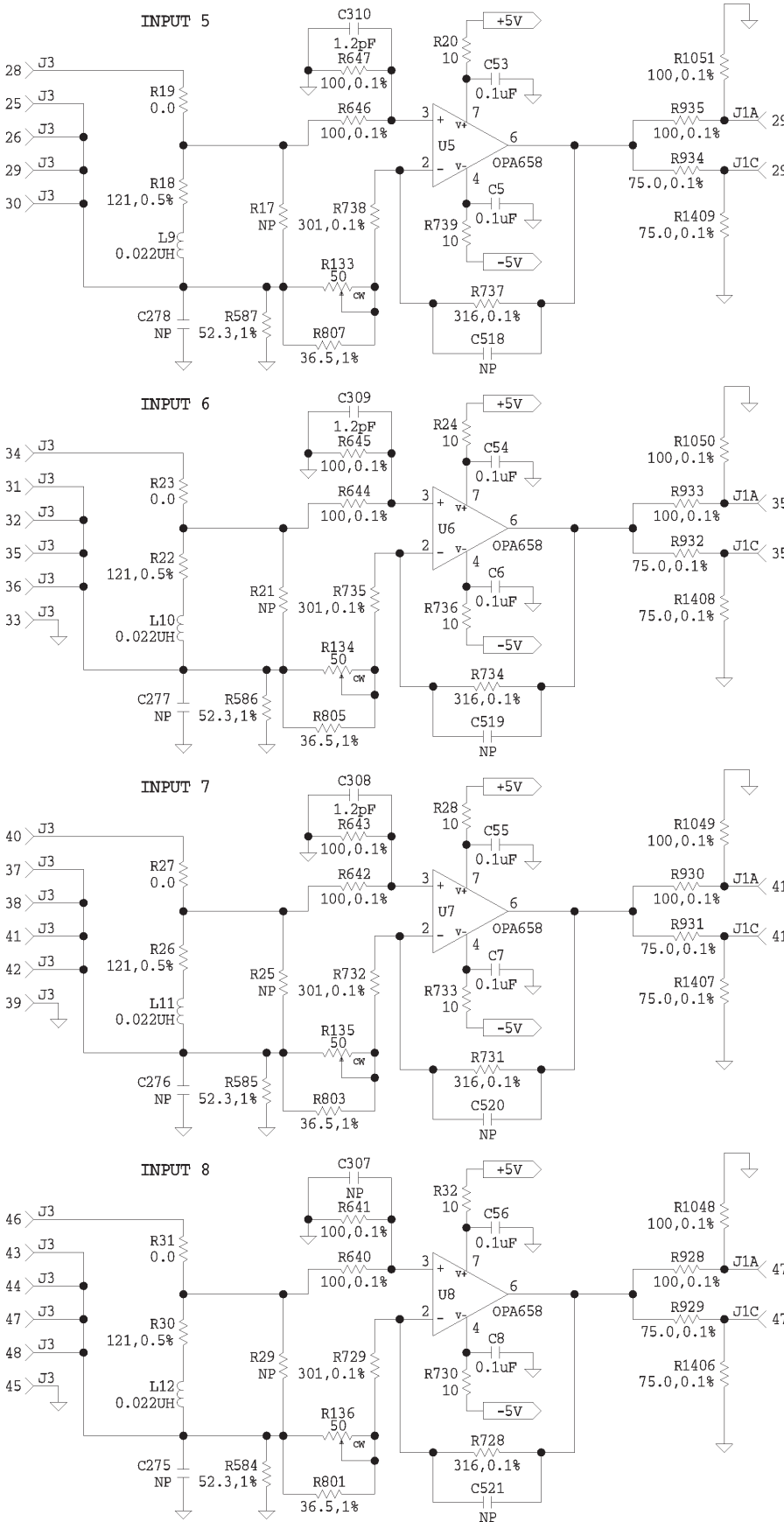
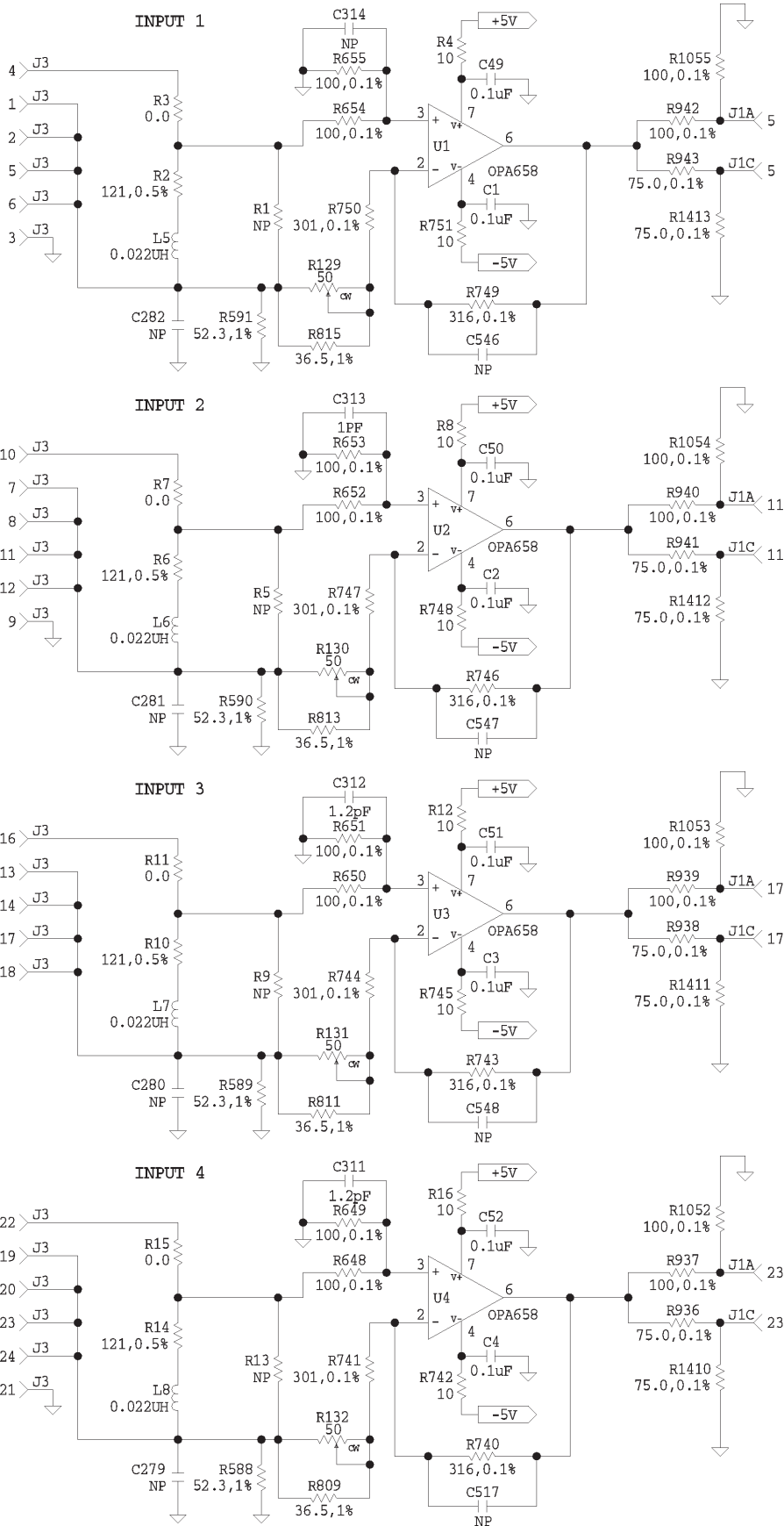
Schematic (Sheet 4 of 16) • 32X32 WB Analog Video Matrix Card • SC33-1308

32X32 Wideband Analog Video Addendum

CONTROL BUS (PAGE 1)

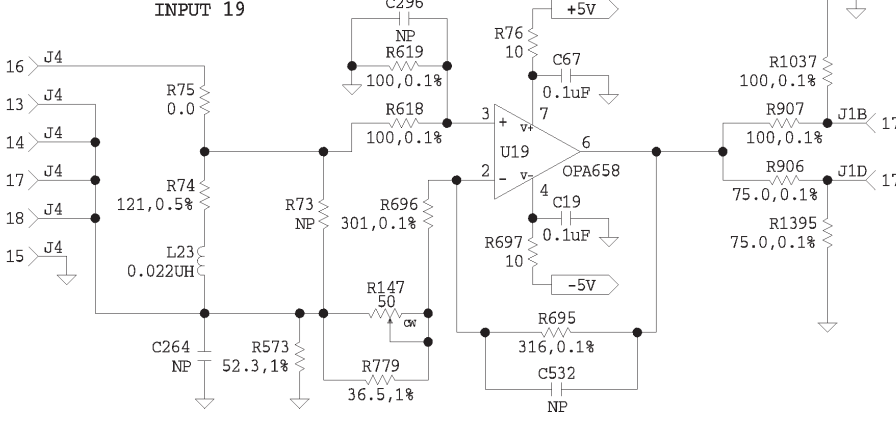
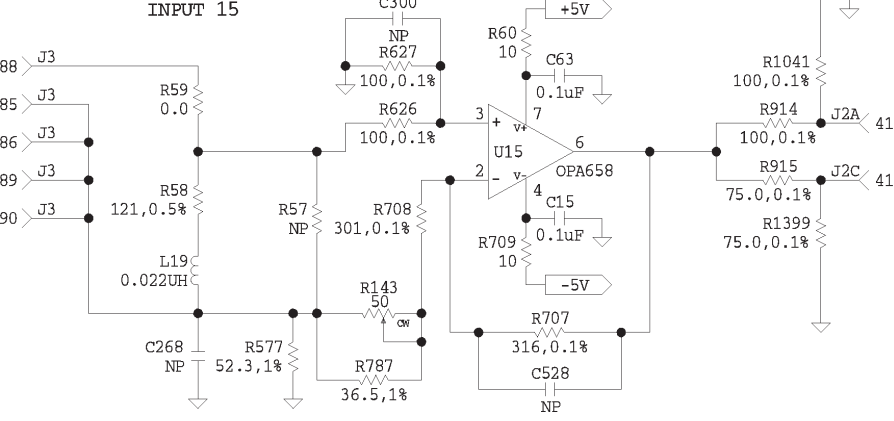
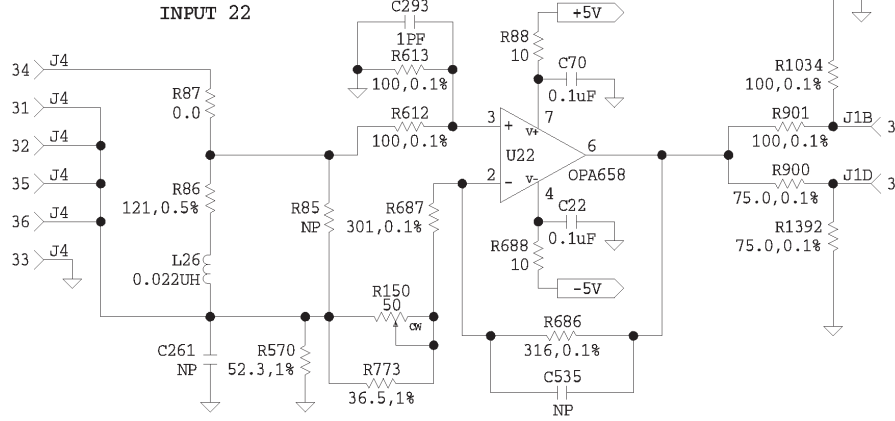
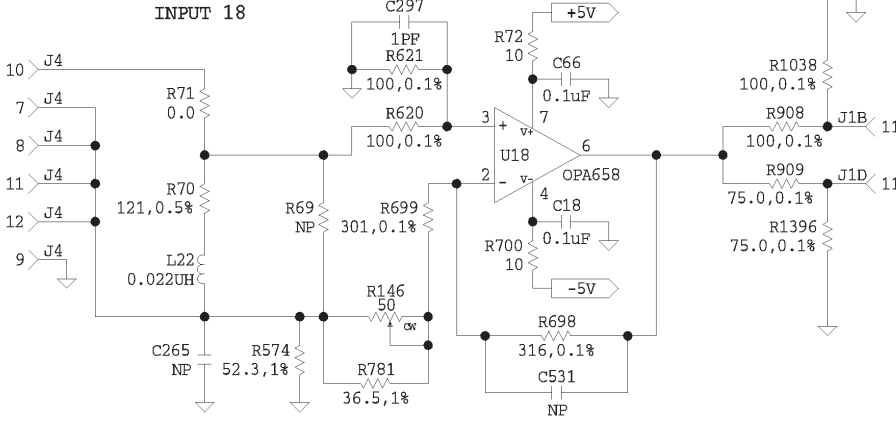
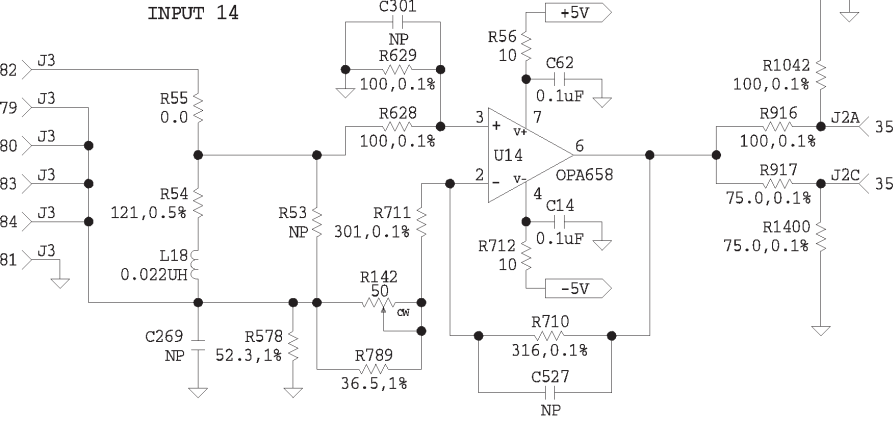
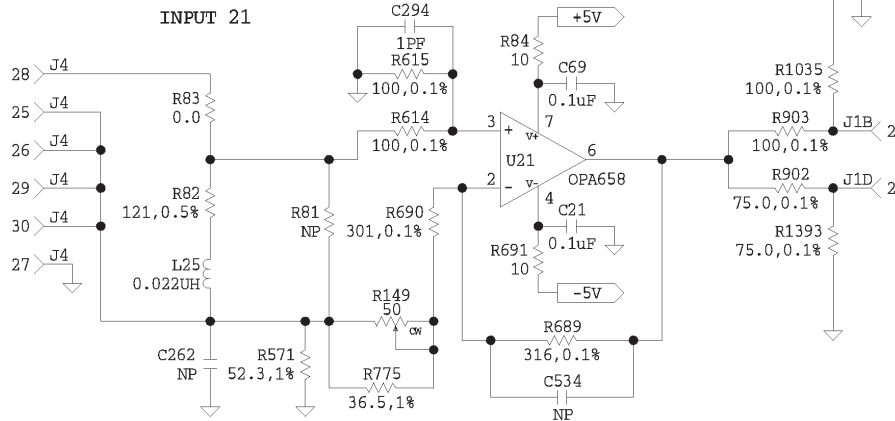
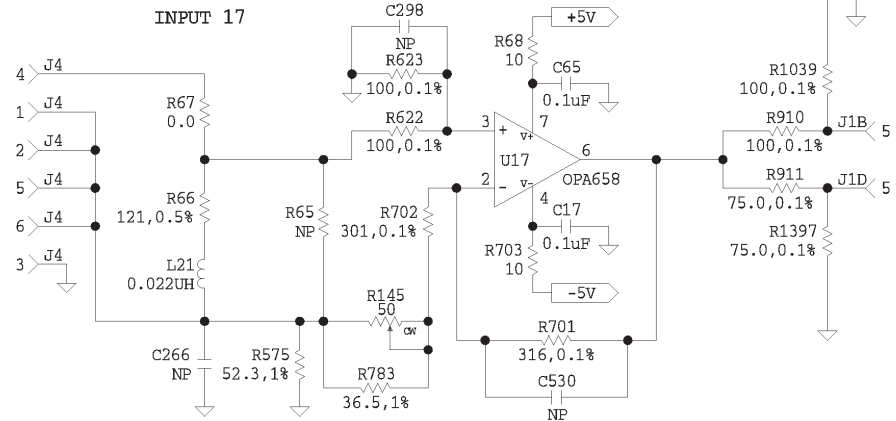
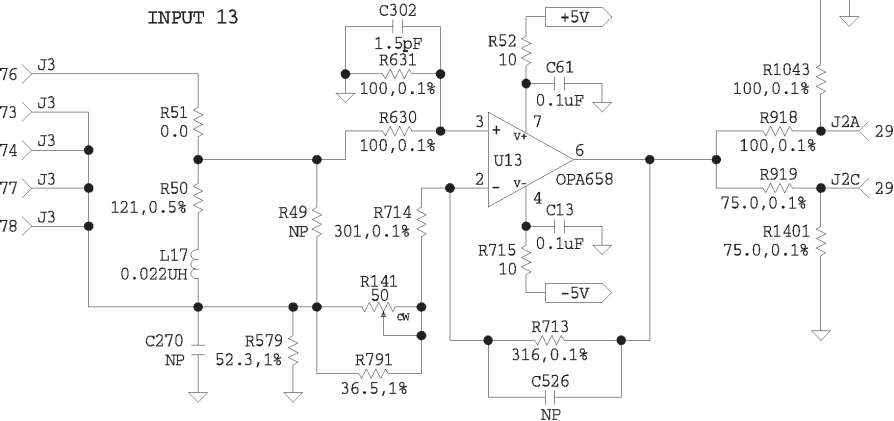
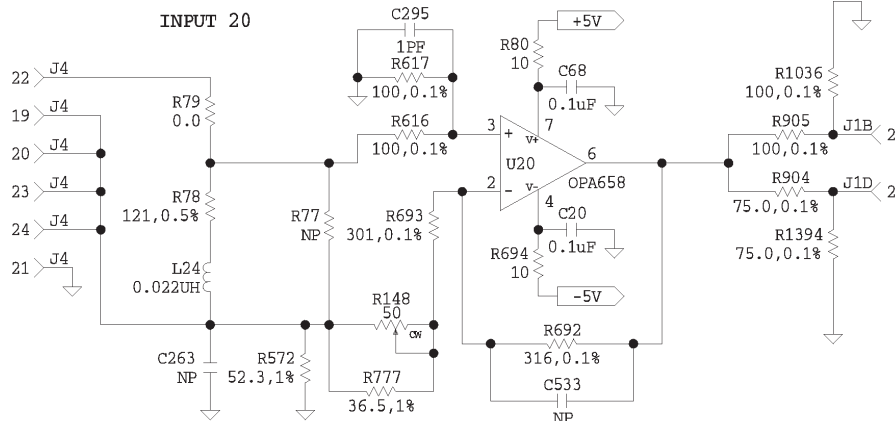
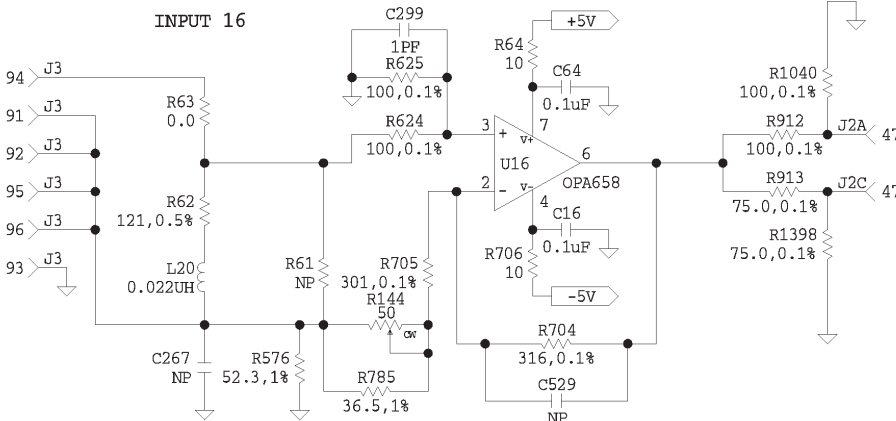
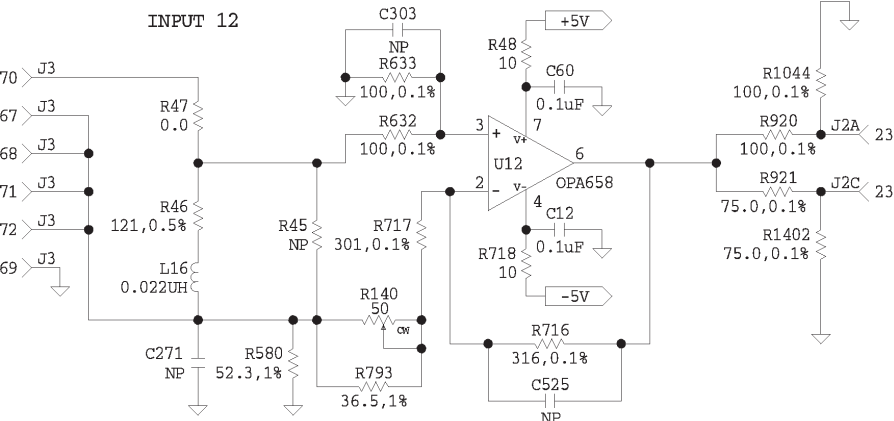


32X32 Wideband Analog Video Addendum



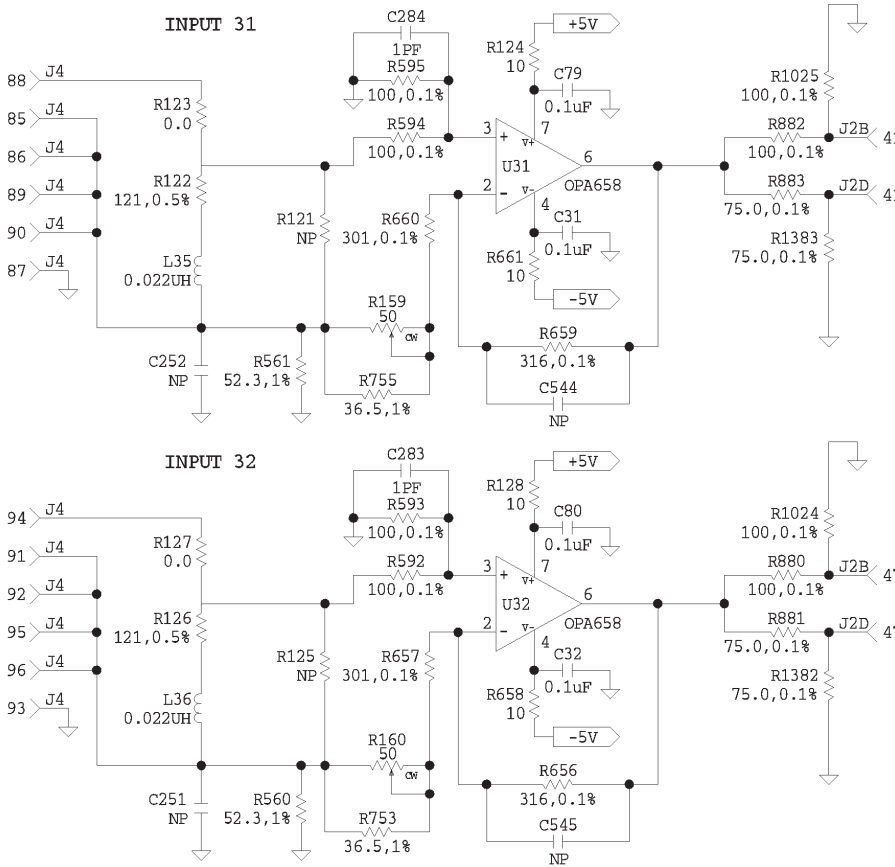
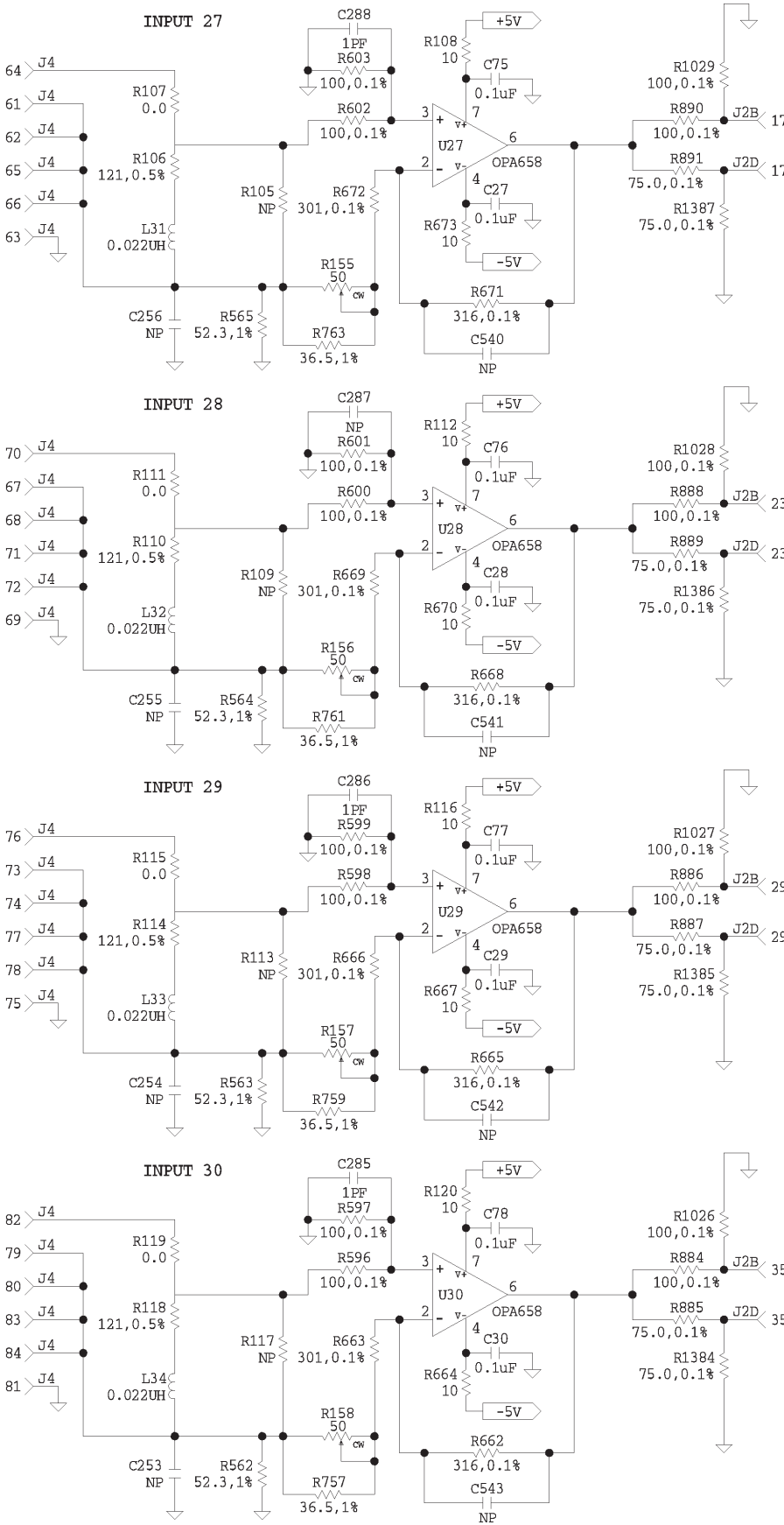
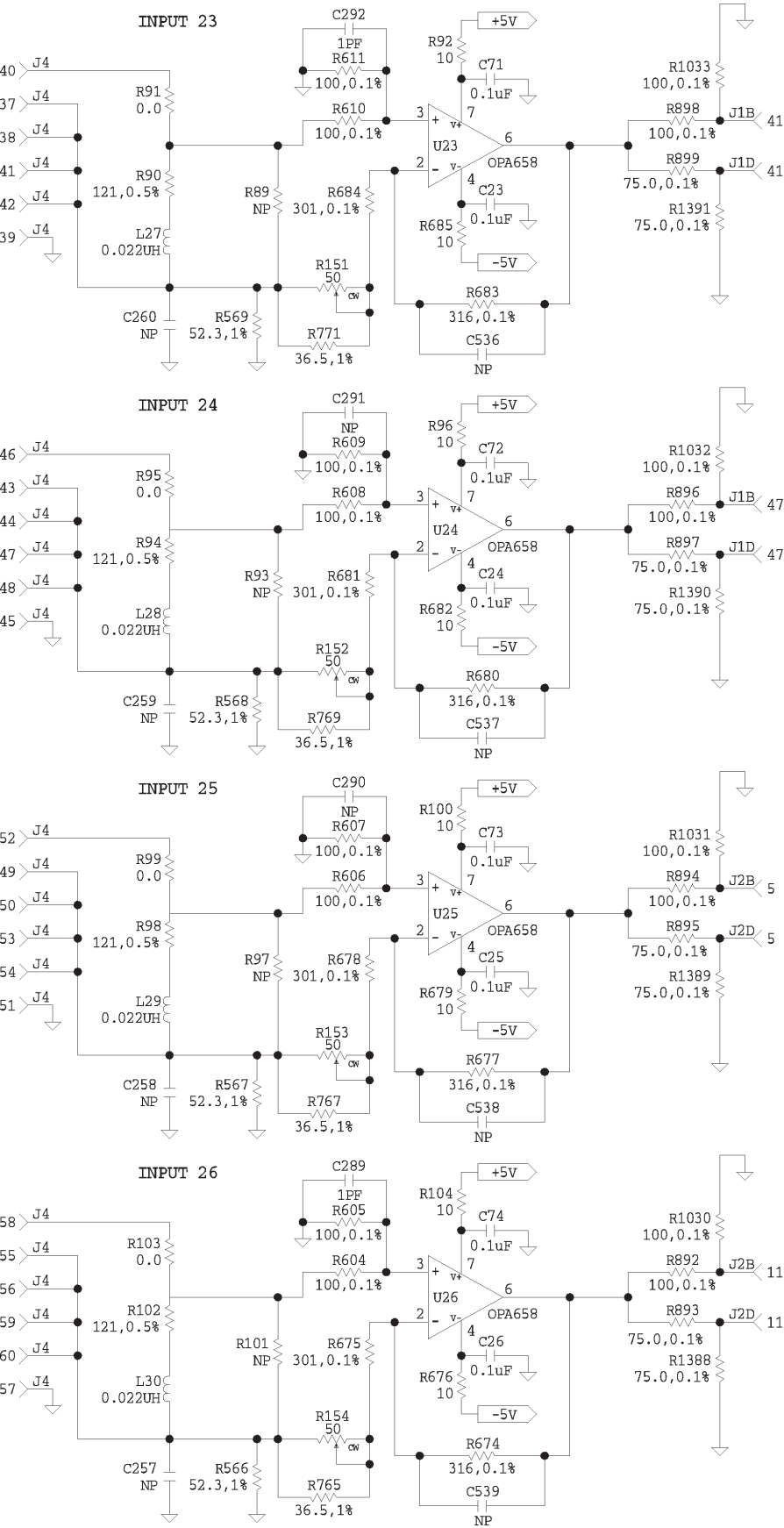
Schematic (Sheet 6 of 16) • 32X32 WB Analog Video Matrix Card • SC33-1308

32X32 Wideband Analog Video Addendum



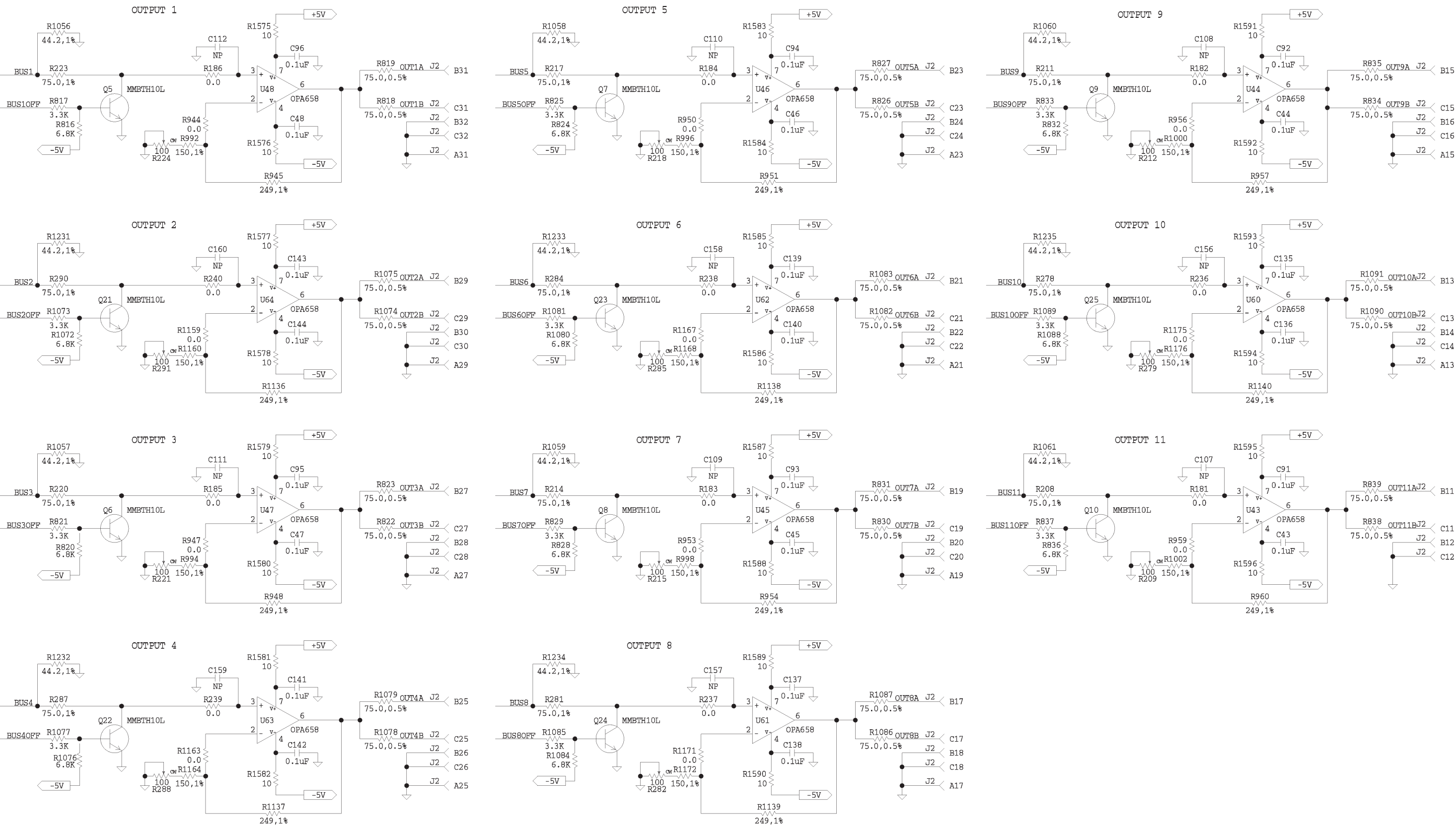
Schematic (Sheet 7 of 16) • 32X32 WB Analog Video Matrix Card • SC33-1308

32X32 Wideband Analog Video Addendum



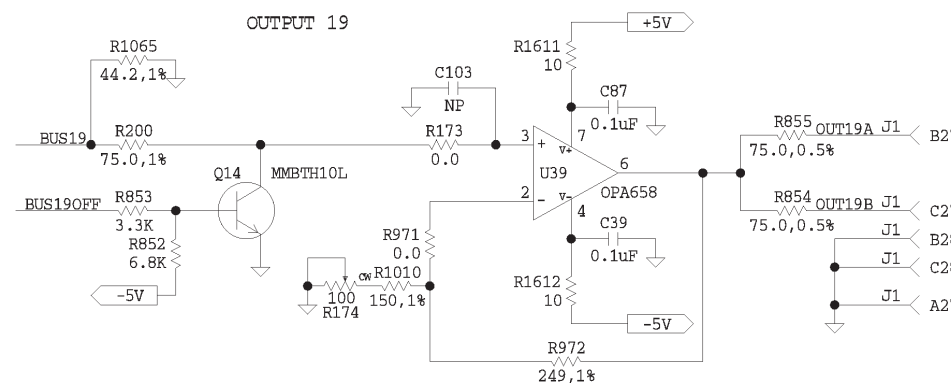
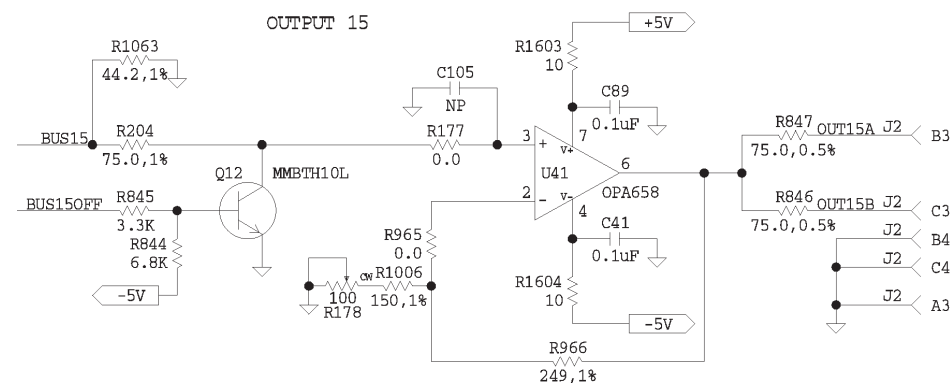
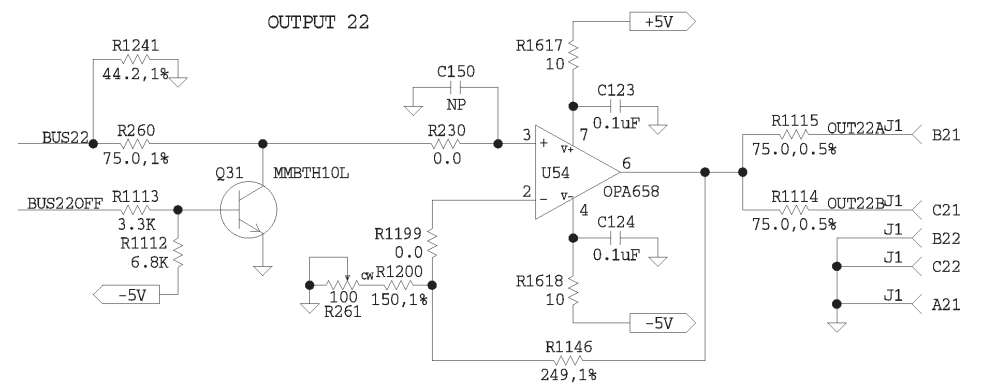
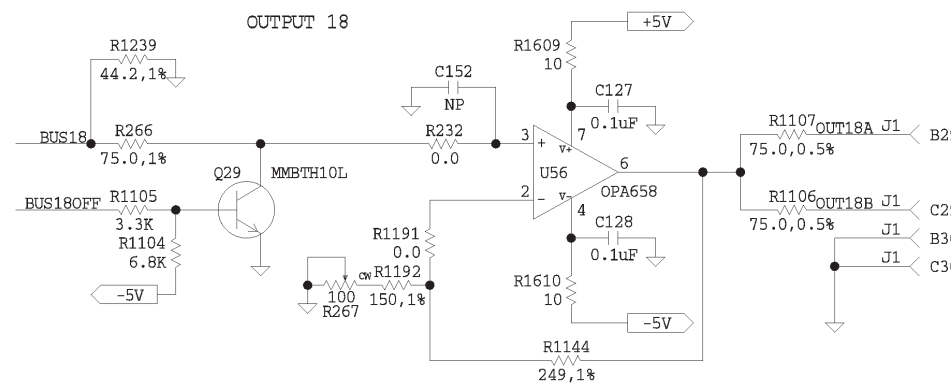
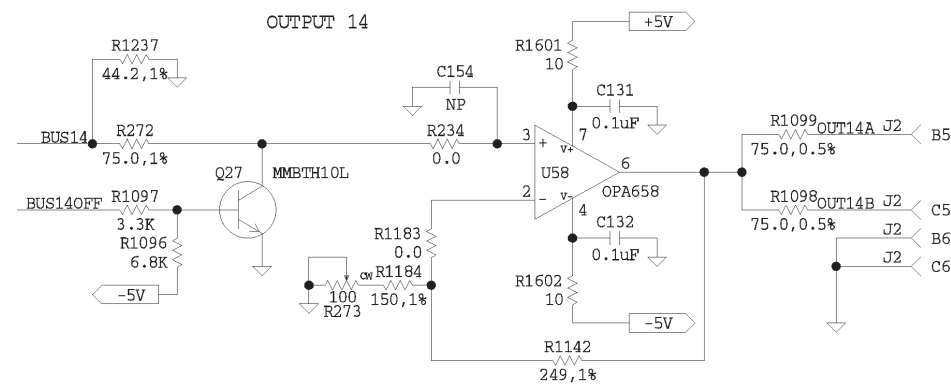
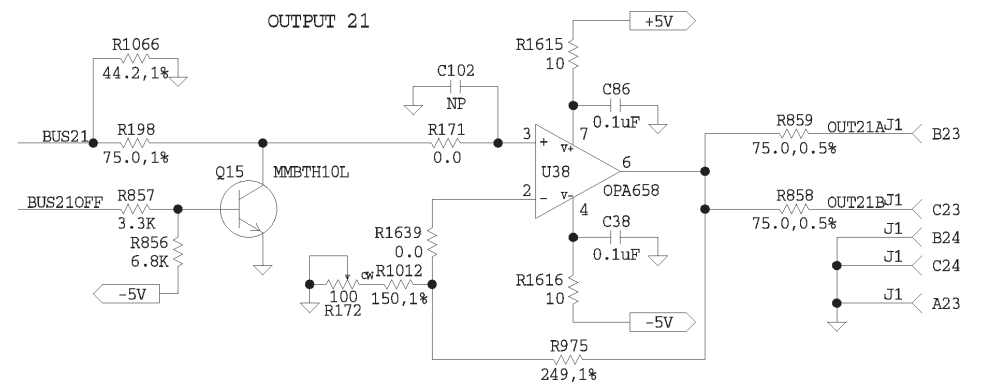
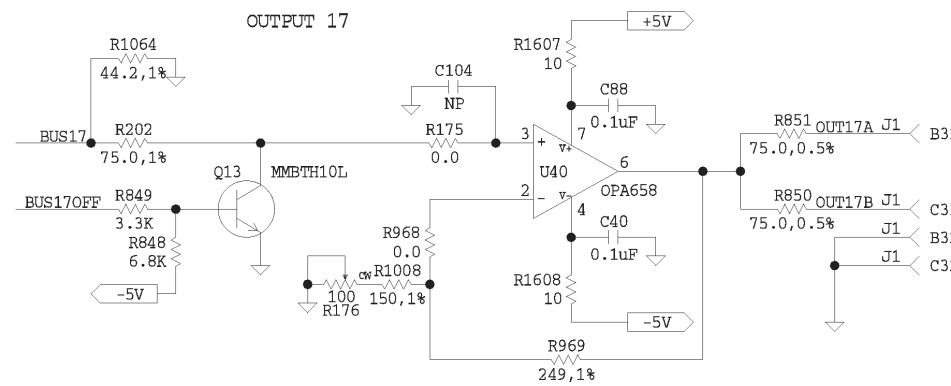
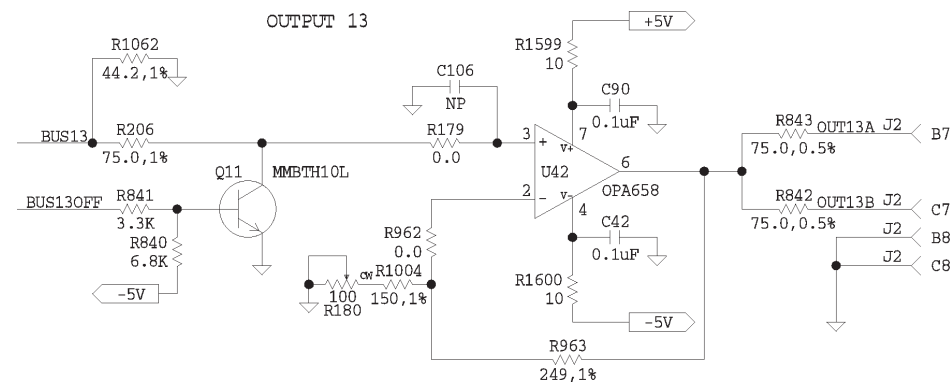
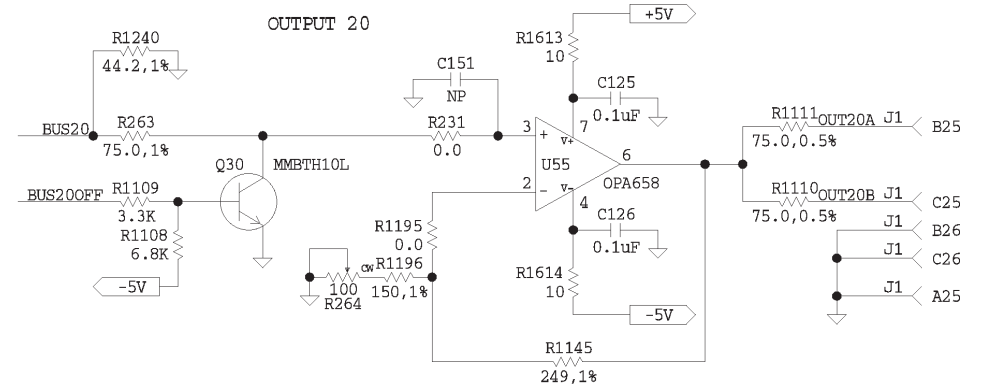
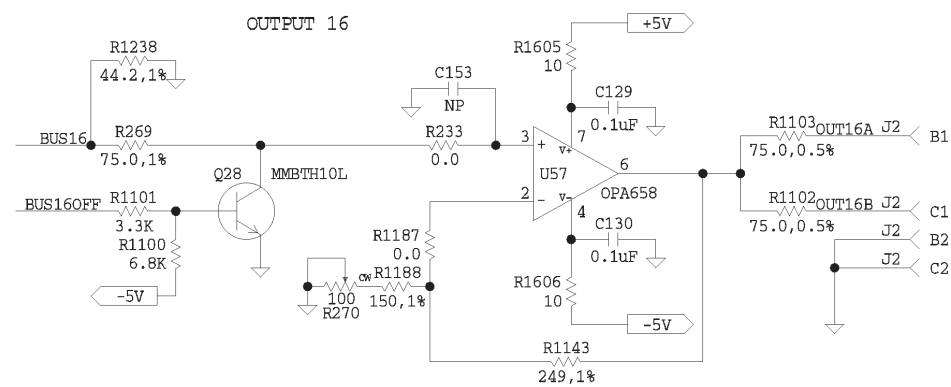
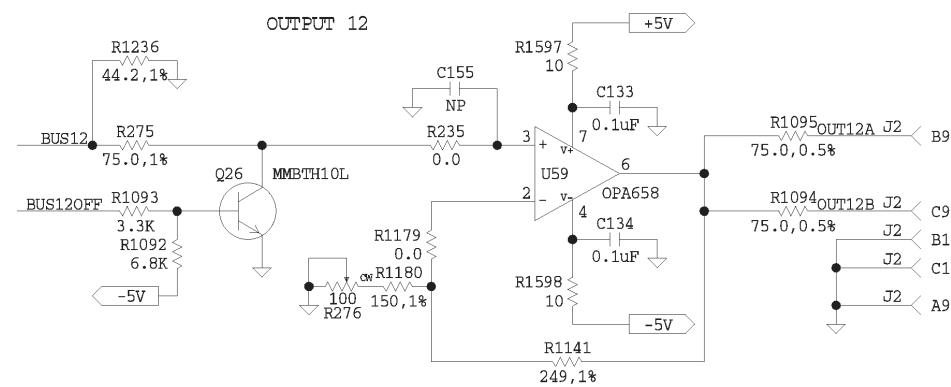
Schematic (Sheet 8 of 16) • 32X32 WB Analog Video Matrix Card • SC33-1308

32X32 Wideband Analog Video Addendum



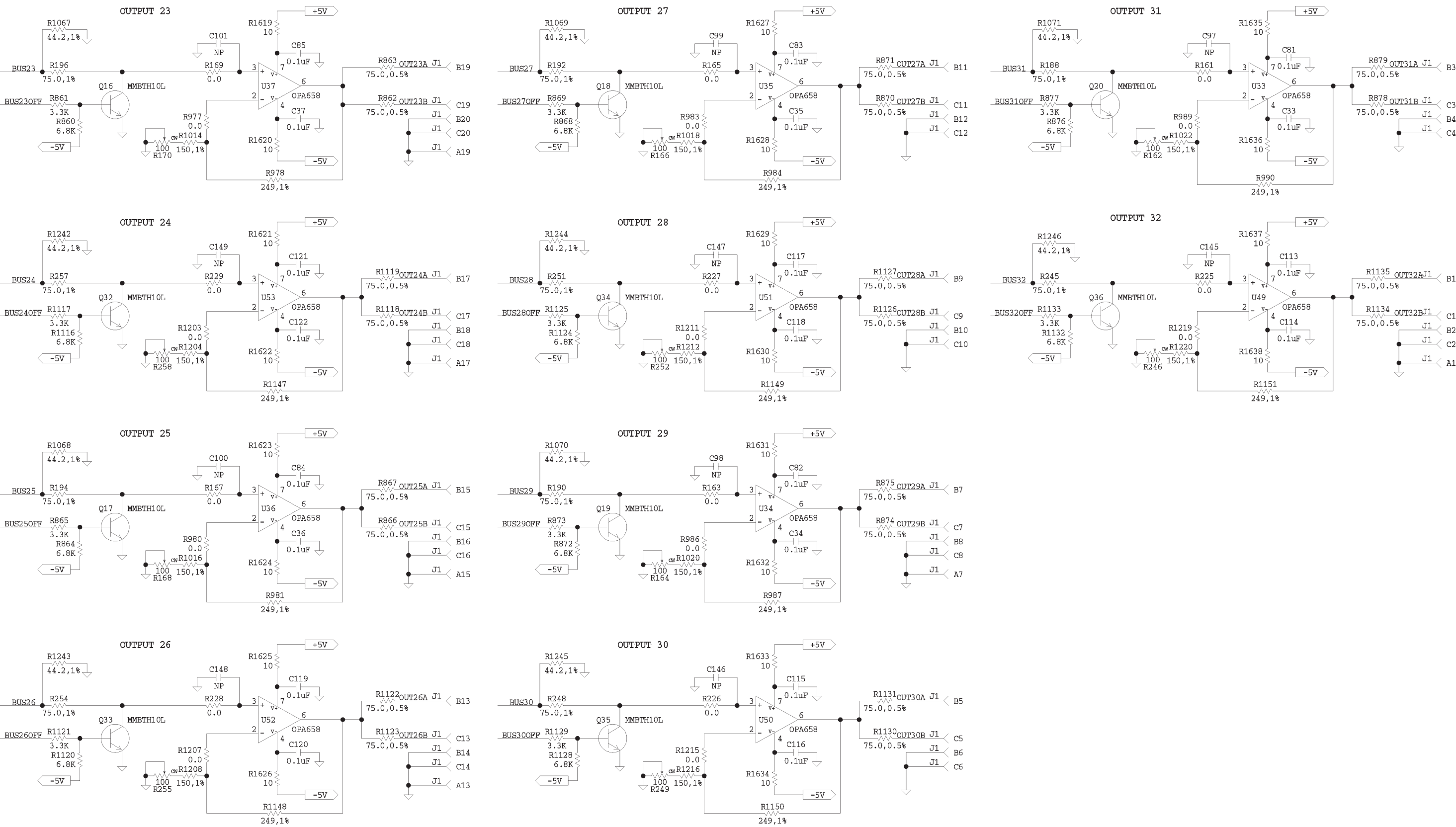
Schematic (Sheet 9 of 16) • 32X32 WB Analog Video Matrix Card • SC33-1308

32X32 Wideband Analog Video Addendum



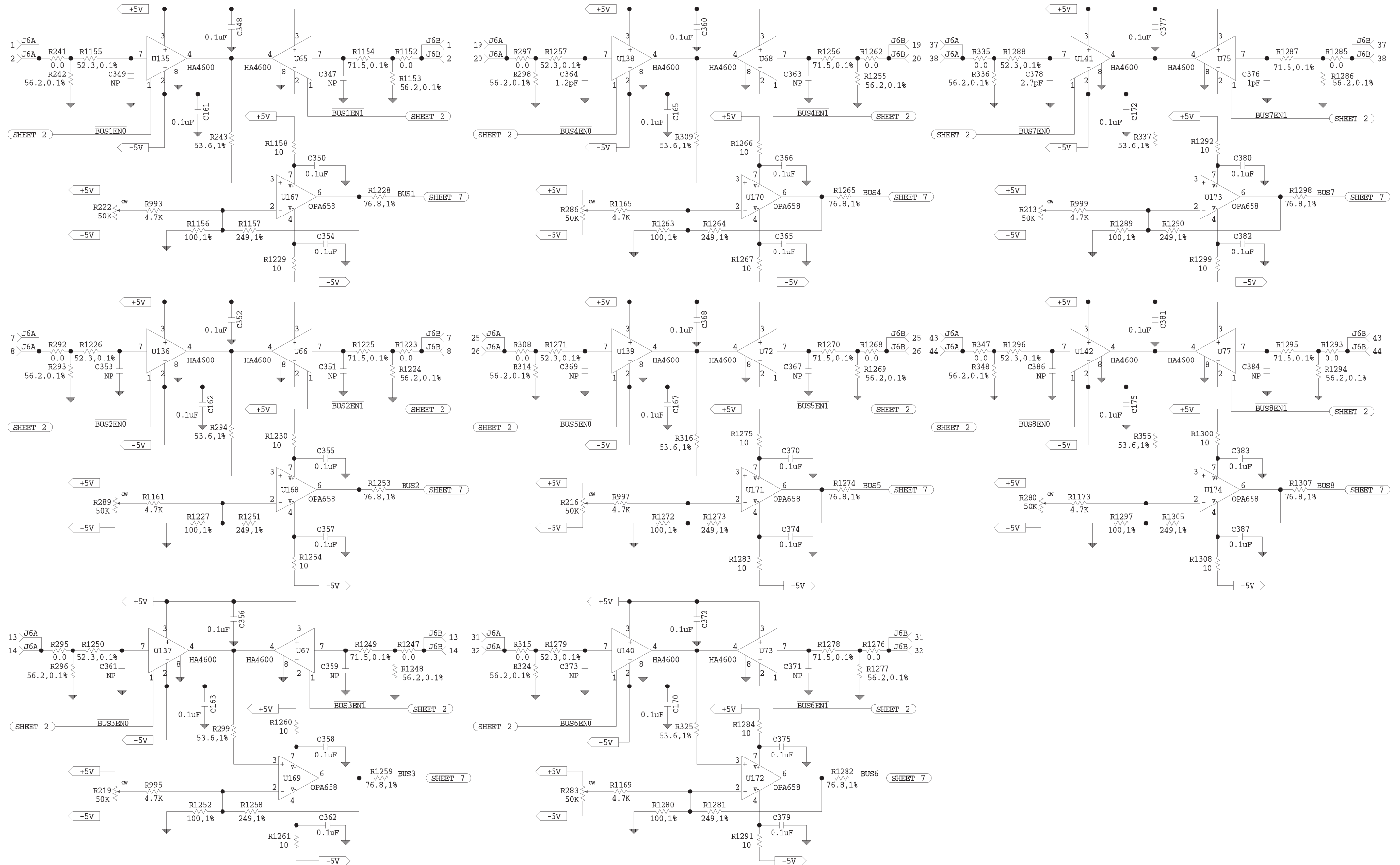
Schematic (Sheet 10 of 16) • 32X32 WB Analog Video Matrix Card • SC33-1308

32X32 Wideband Analog Video Addendum



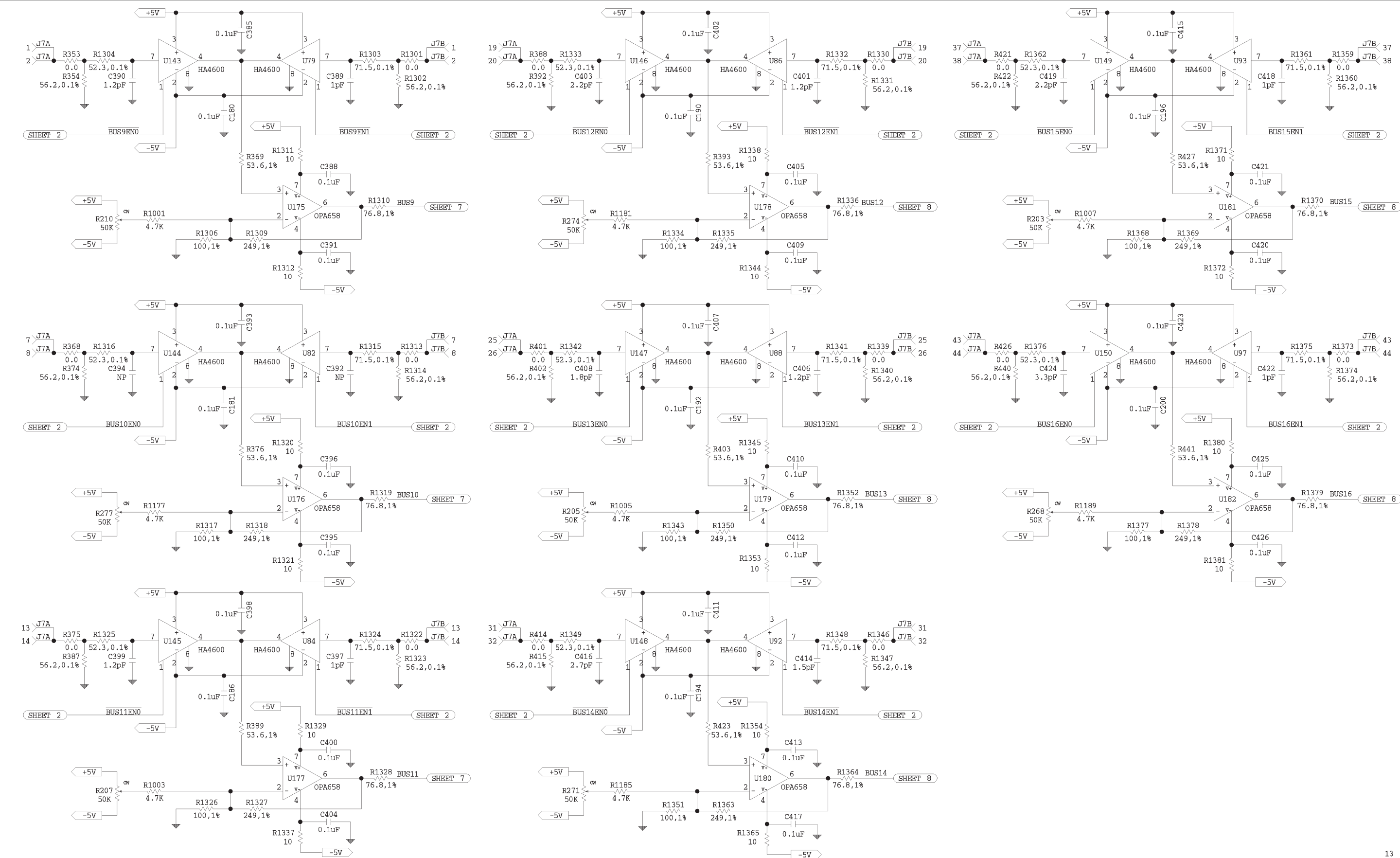
Schematic (Sheet 11 of 16) • 32X32 WB Analog Video Matrix Card • SC33-1308

32X32 Wideband Analog Video Addendum



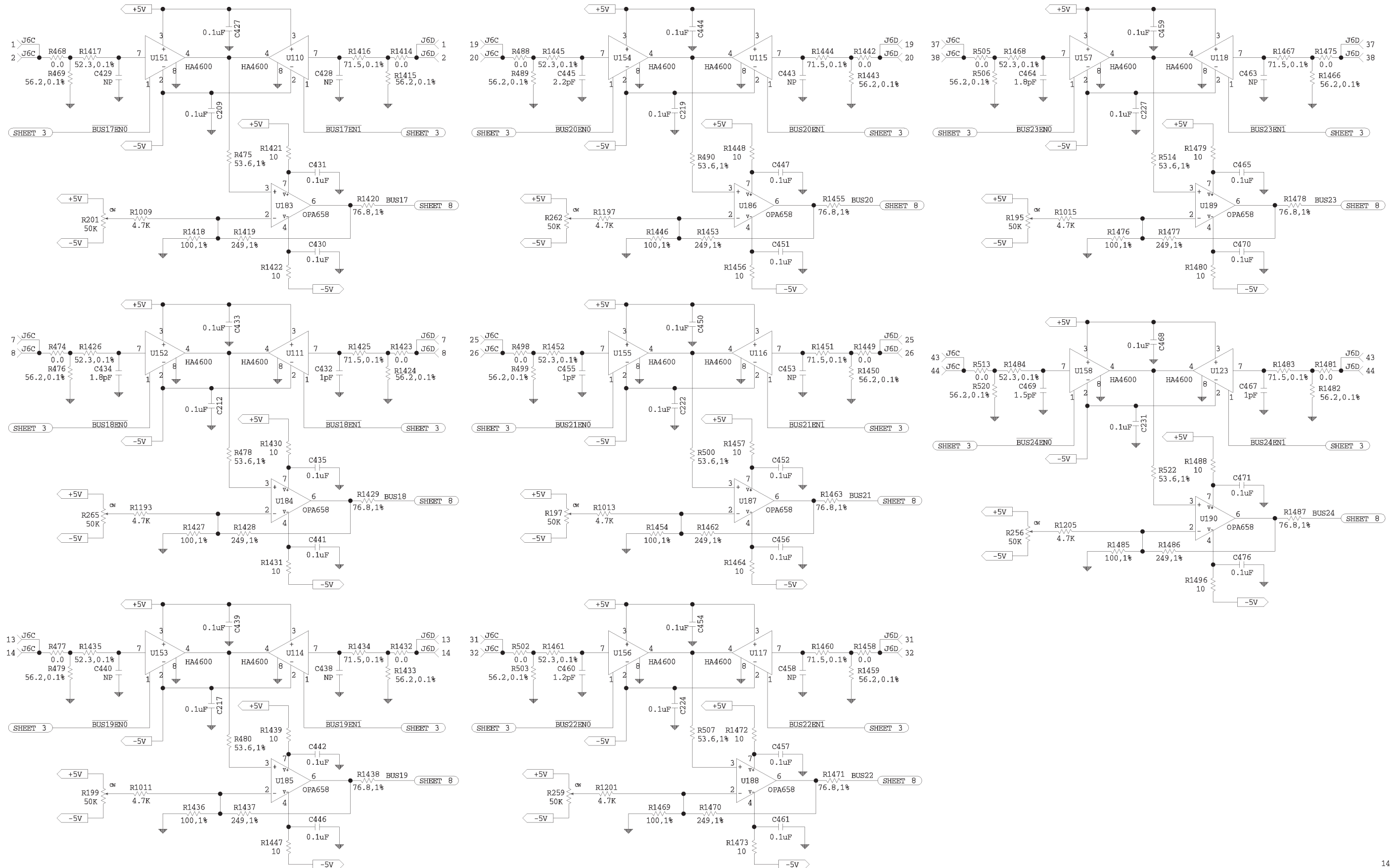
Schematic (Sheet 12 of 16) • 32X32 WB Analog Video Matrix Card • SC33-1308

32X32 Wideband Analog Video Addendum

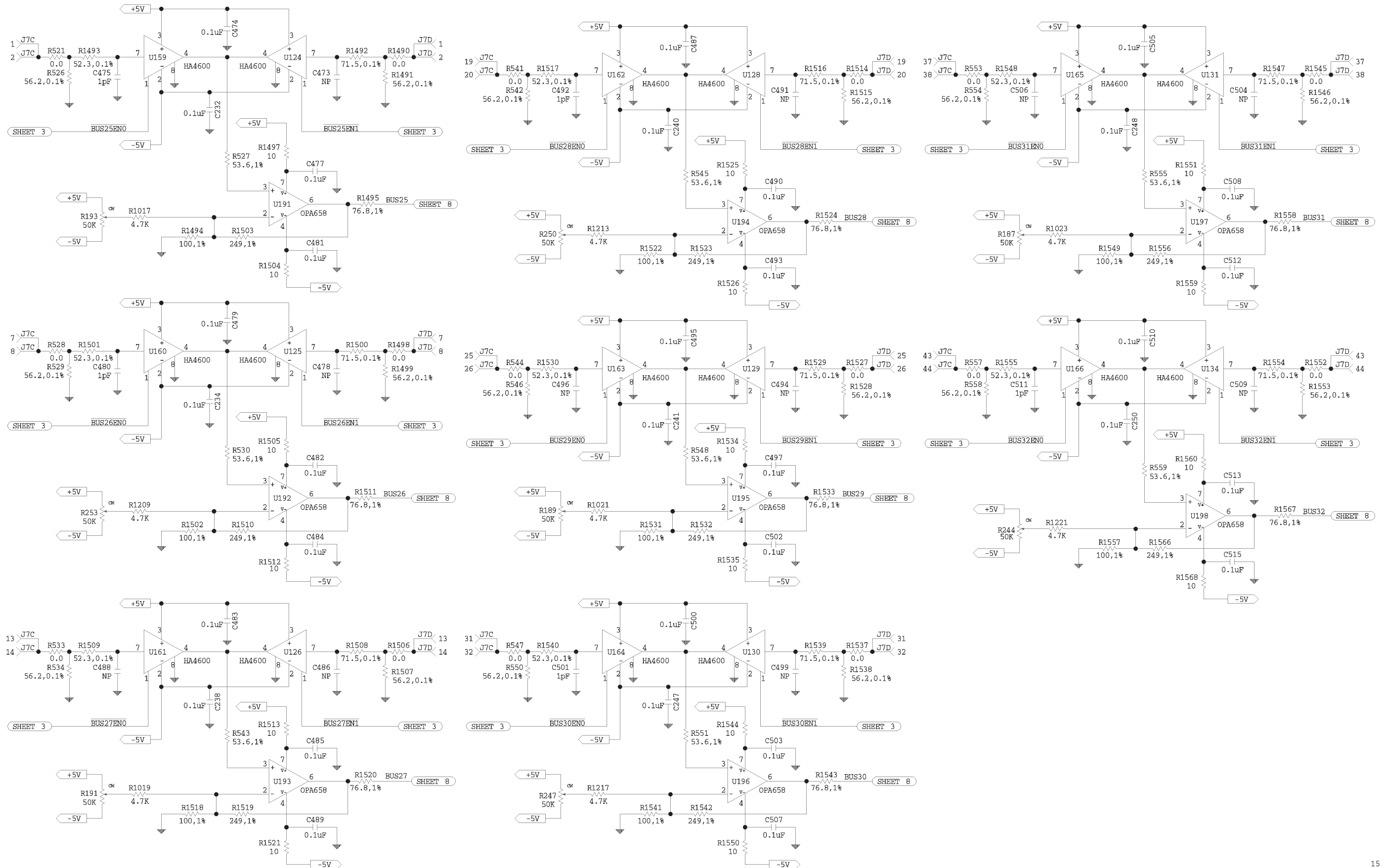


Schematic (Sheet 13 of 16) • 32X32 WB Analog Video Matrix Card • SC33-1308

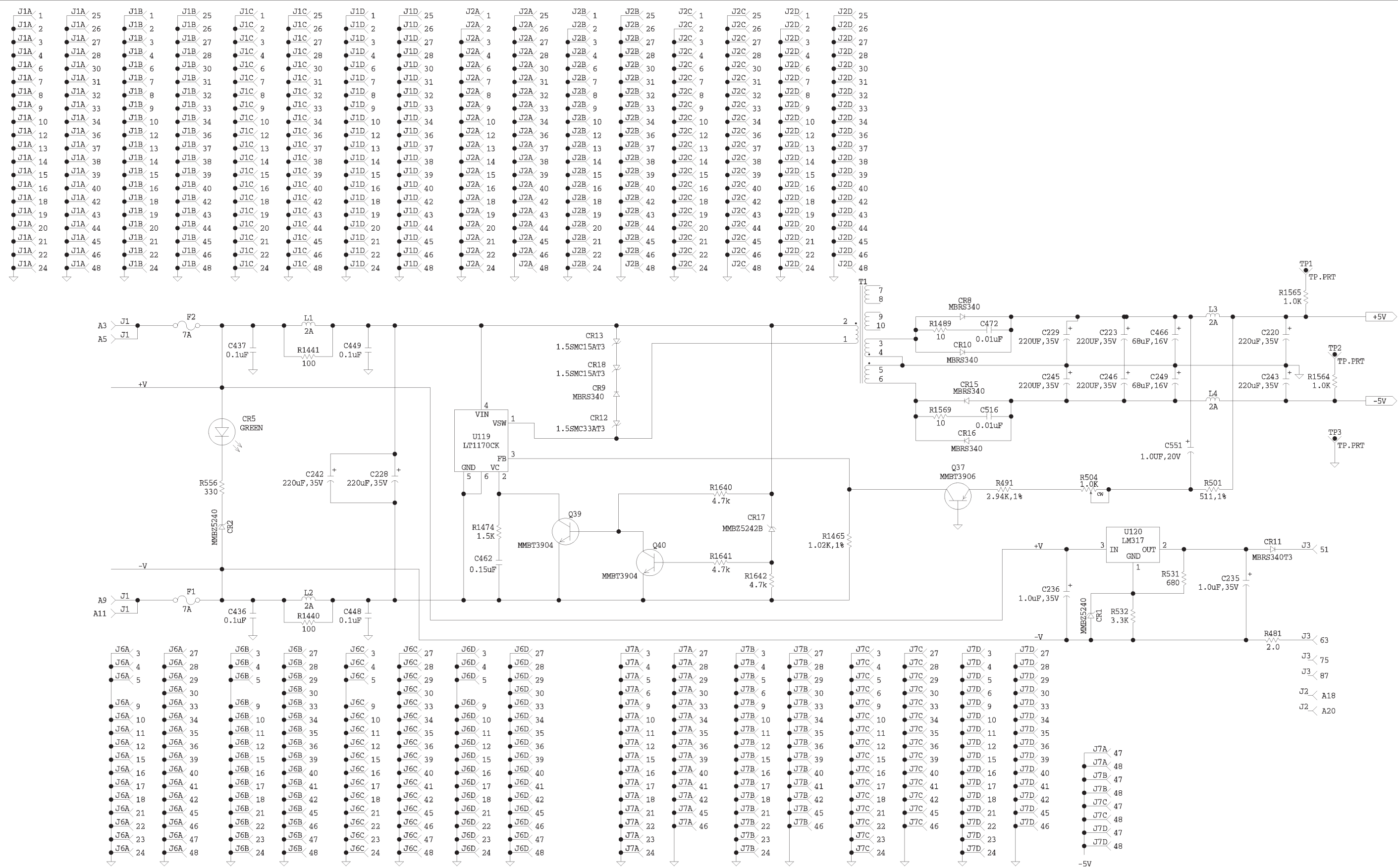
32X32 Wideband Analog Video Addendum



32X32 Wideband Analog Video Addendum

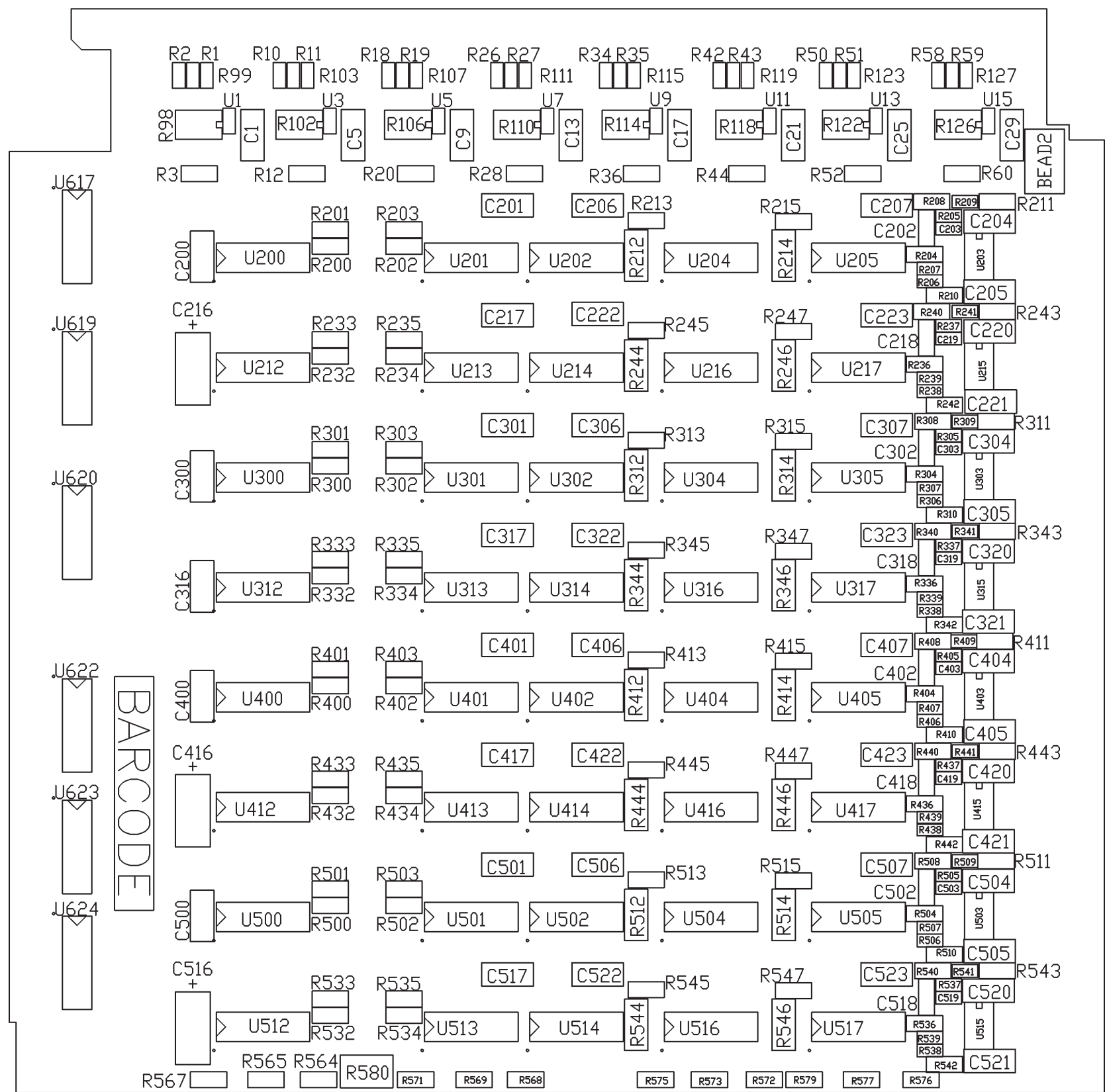


32X32 Wideband Analog Video Addendum



Schematic (Sheet 16 of 16) • 32X32 WB Analog Video Matrix Card • SC33-1308

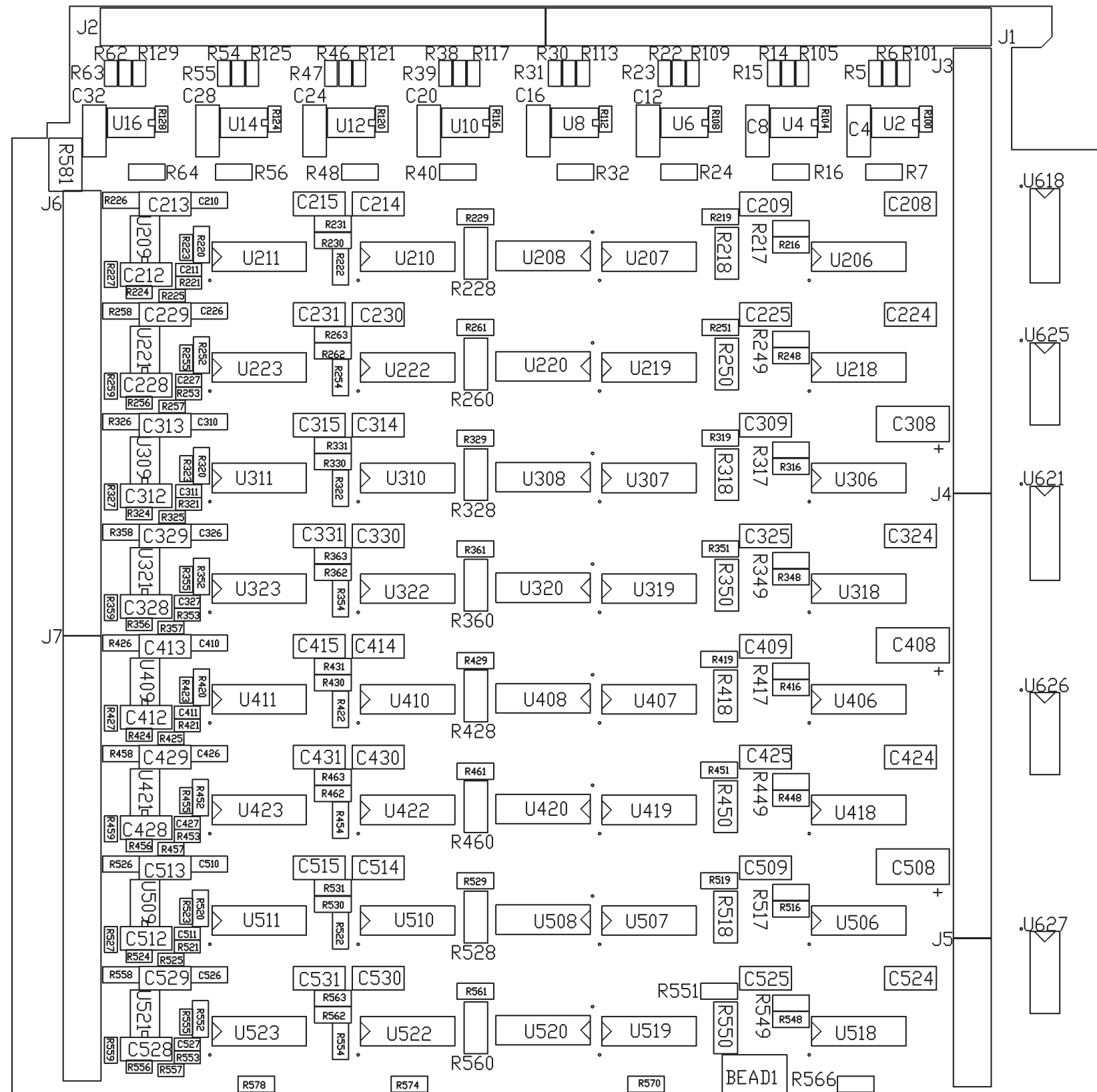
COMPONENT SIDE LAYER 1 OF 10



Component Assembly (Sheet 1 of 2) • 16X16 WB Crosspoint Card • CA25-1307

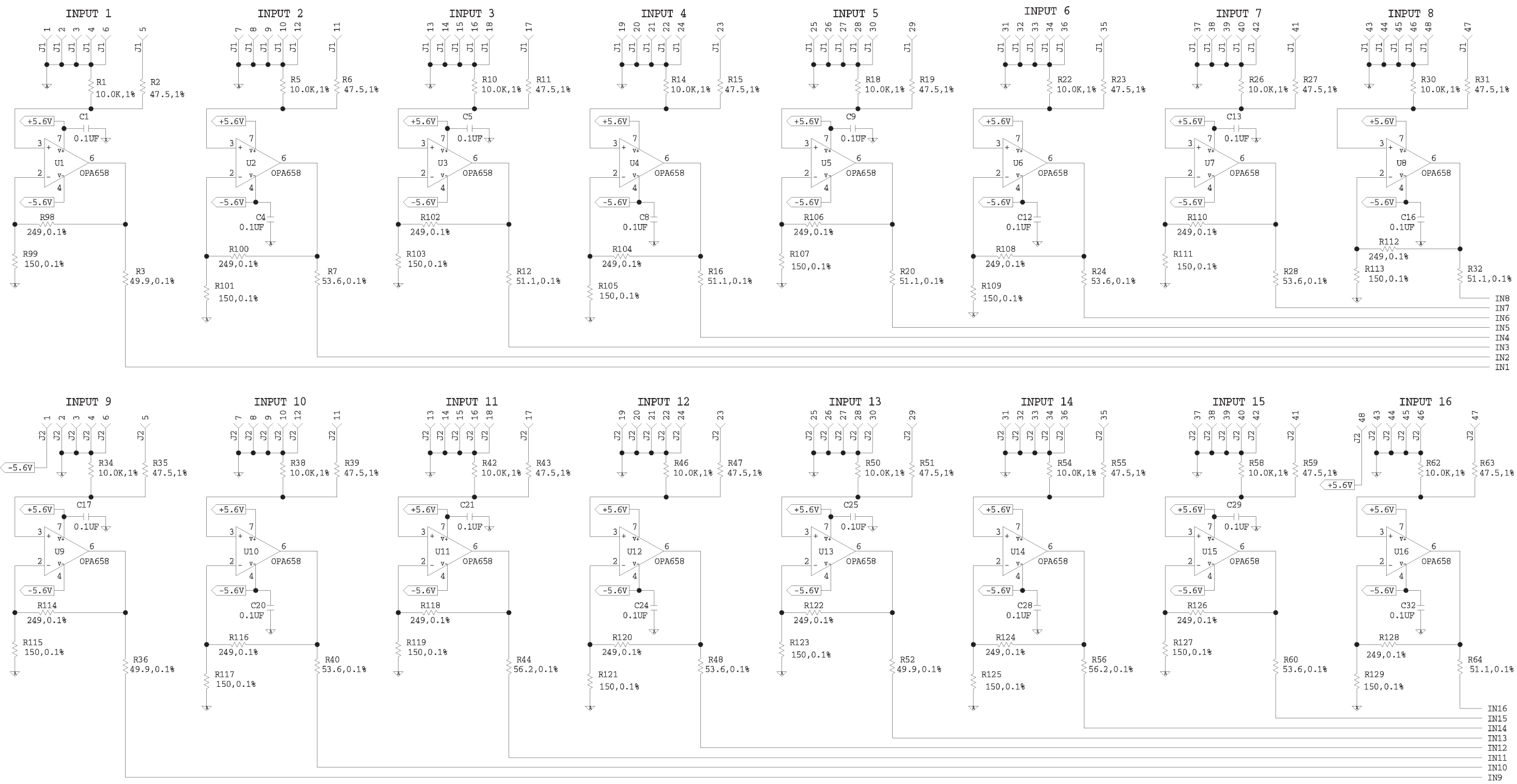
32X32 Wideband Analog Video Addendum

SOLDER SIDE LAYER 10 OF 10



Component Assembly (Sheet 2 of 2) • 16X16 WB Crosspoint Card • CA25-1307

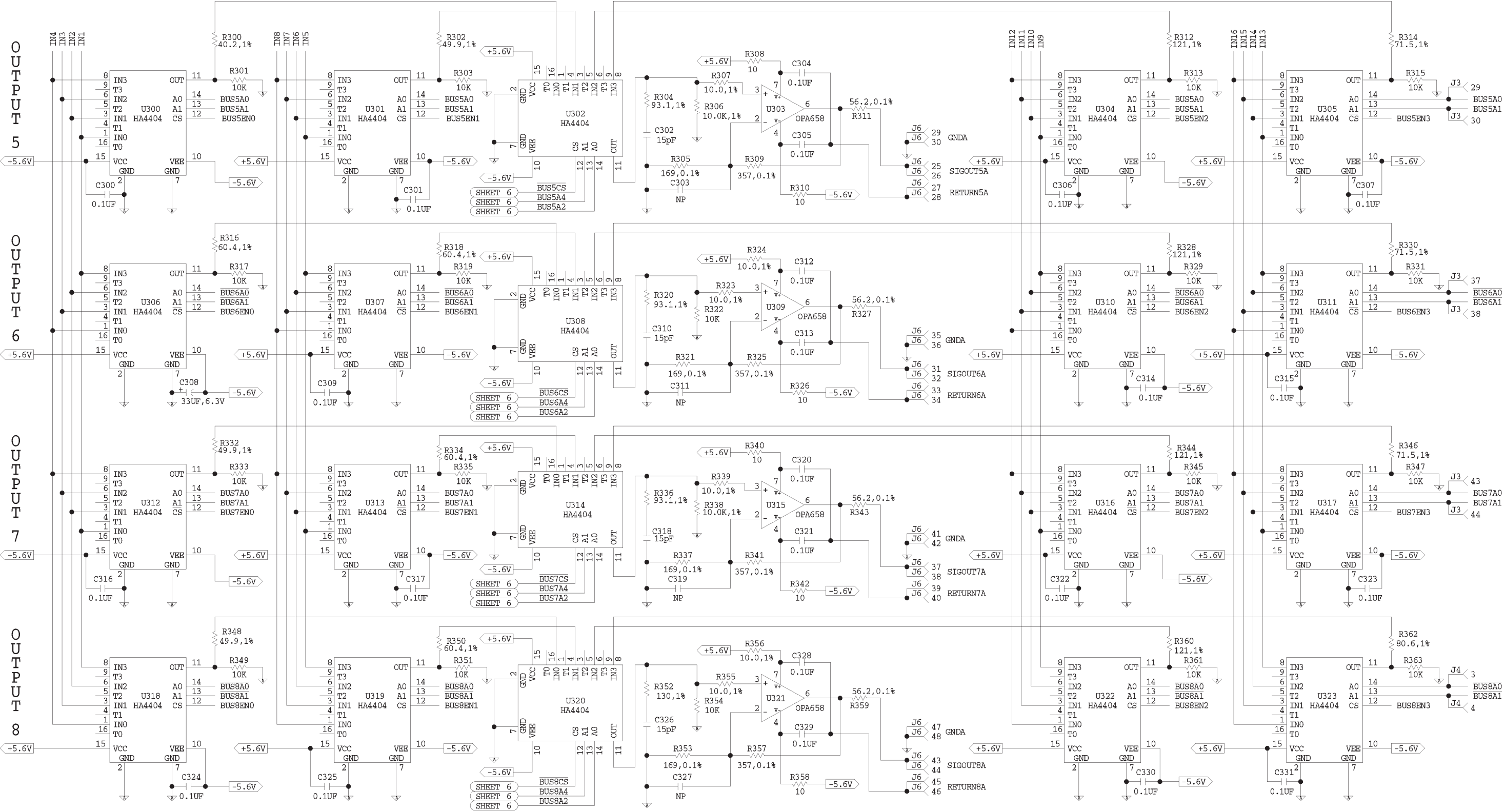
32X32 Wideband Analog Video Addendum



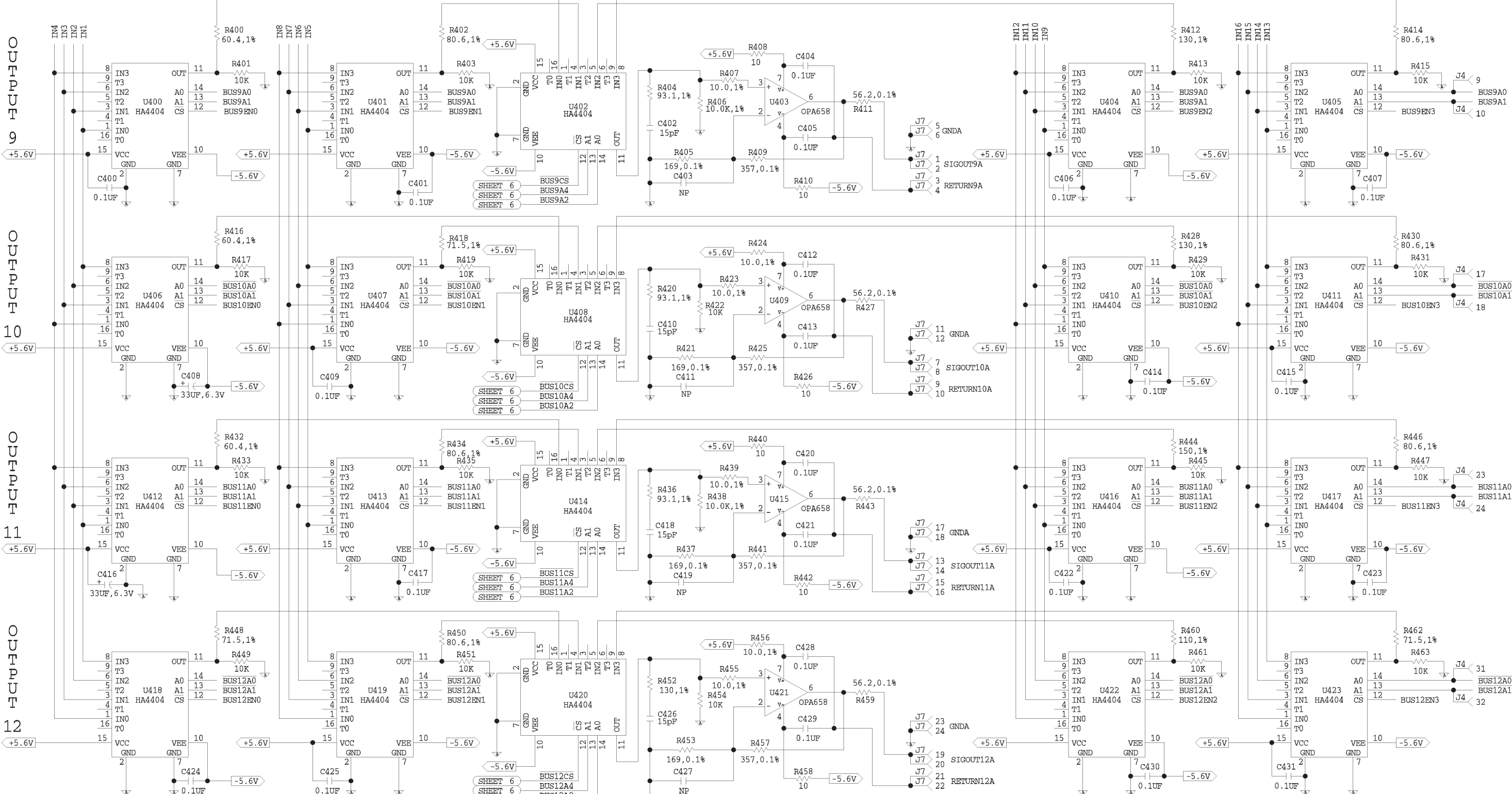
Schematic (Sheet 1 of 6) • 16X16 WB Crosspoint Card • SC33-1307



32X32 Wideband Analog Video Addendum

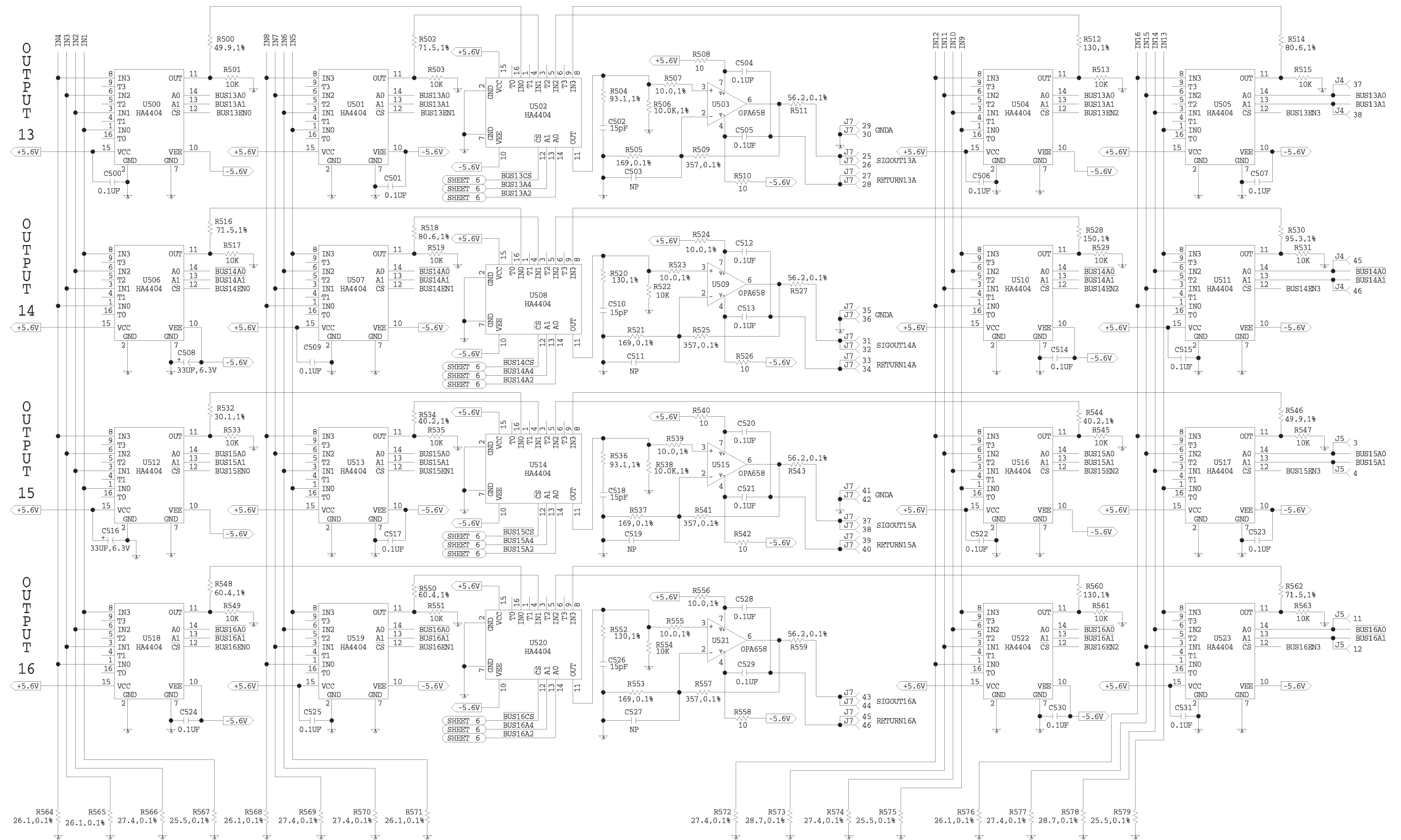


Schematic (Sheet 3 of 6) • 16X16 WB Crosspoint Card • SC33-1307



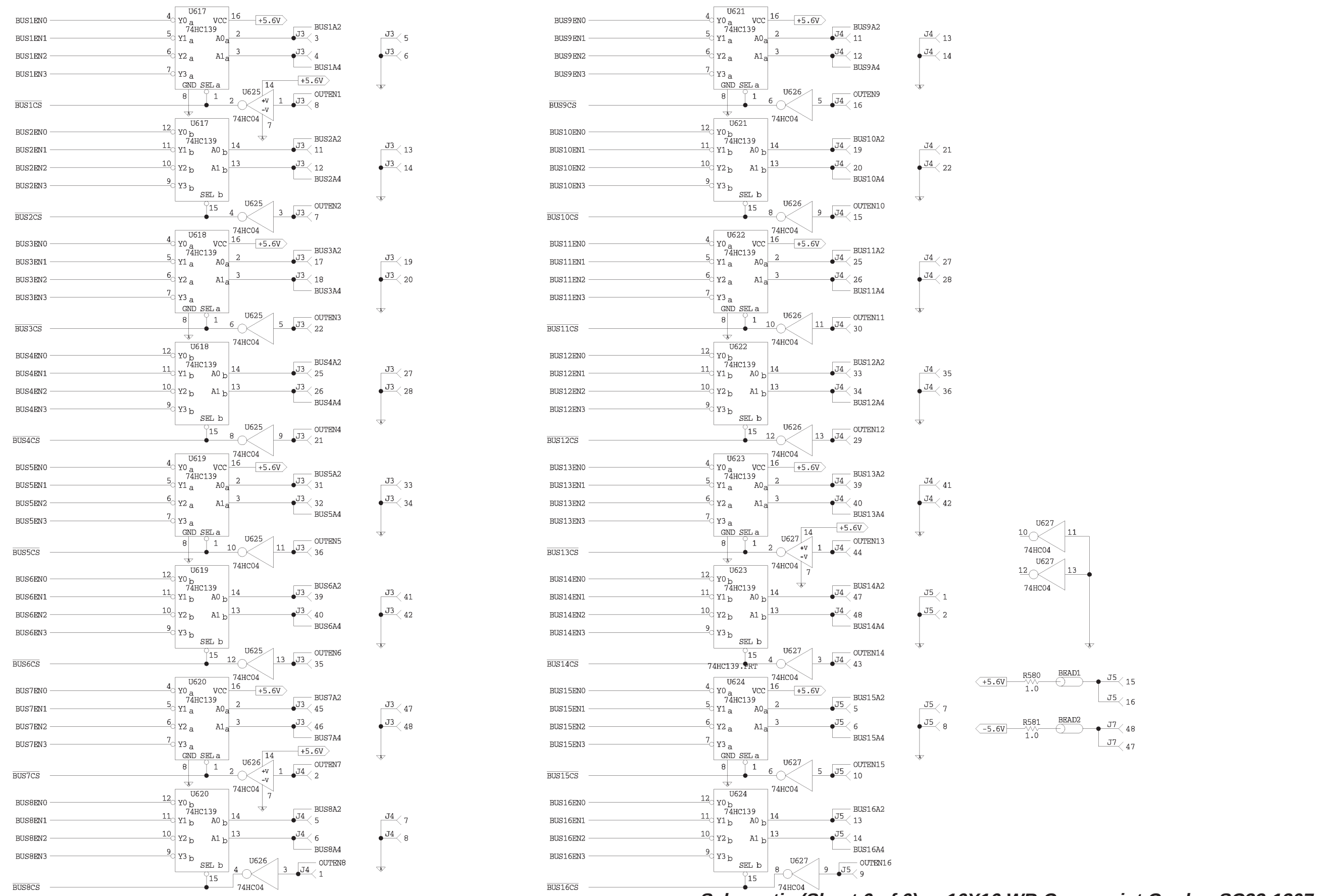
Schematic (Sheet 4 of 6) • 16X16 WB Crosspoint Card • SC33-1307

32X32 Wideband Analog Video Addendum



Schematic (Sheet 5 of 6) • 16X16 WB Crosspoint Card • SC33-1307

32X32 Wideband Analog Video Addendum



32X32 Sync Video Matrix Addendum

Introduction

This addendum contains the parts list and schematics for the 32X32 Sync Video Matrix Card. Please refer to this addendum and the associated manual when troubleshooting the 32X32 Sync Video Matrix Card or replacing parts on the 32X32 Sync Video Matrix Card.

Parts Lists

The Parts Lists in this section have been grouped according to each assembly associated with the 32X32 Sync Video Matrix Card. Refer to the name of sub-assembly or component requiring replacement.

<u>Part</u>	<u>Part Number</u>	<u>Page</u>
32X32 Sync Video Matrix Card	81906520120	2

32X32 Sync Video Matrix Addendum

32X32 Sync Video Matrix Card - 81906520120

81900601022	THERMISTOR 680 OHM 5%	1	EA	R1407
81901000720	CAP SWX REG 35V 1.7A RAD	10	EA	C243 C247 C259 C261 C262 C263 C264 C265 268 C275
81901603738	REG LM317T 1.2V-37V ADJST	1	EA	U164
81901606830	IC 7.3728 MHZ OSCILLATOR	1	EA	U102
81901606980	REG LT1170 5A SWXING 60V	1	EA	U117
81902003580	STANDOFF 2-56 PC BD MNTD	8	EA	
81902105050	LABEL BARCODE 1.5"x0.25"	1	EA	
81902200039	SCREW 2-56X1/4 PAN HD PHI	8	EA	
81902200070	NUT 4-40 HEX	2	EA	REF: U117
81902202696	SCREW 4-40x7/16 SIMM PANH	2	EA	REF: U117
81902301080	INDUCTOR 20uH 2A TOROIDAL	4	EA	L1 L2 L3 L4
81902301340	TRANSFORMER 32X32 ANALOGV	1	EA	T1
81902412760	PCB 32x32 VIDEO MATRIX	1	EA	
81902700749	FUSE PICO, 7 AMP, LEADED	2	EA	F1 F2
81902800507	WIRE 22AWG BUSS	2	IN	
81902901479	SOCKET 8 PIN LOW PROF IC	1	EA	REF: U105
81902906668	CONN RA,FEMALE,96POS,3ROW	2	EA	J1 J2
81902907960	CONN 2x8 POST 2MM .1 PCB	4	EA	J5A J5B J5C J5D
81902907970	CONN 2x24 POST 2MM .1 PCB	24	EA	J1A J1B J1C J1D J2A J2B J2C J2D J3A J3B J3C J3D J4A J4B J4C J4D J6A J6B J6C J6D J7A J7B J7C J7D
81902908000	CONN 2x48 RECPT RA .1x.1	2	EA	J3 J4
81902908060	SPLIT TERMINAL	4	EA	REF: F1 F2
81903200541	LED GREEN RT/A HI-EFF PCB	1	EA	CR7
81903200558	LED RED RT/A HI-EFF PC MT	2	EA	CR6 CR17
81903462740	HEATSINK 24x16 VID MATRIX	1	EA	REF:U117
81906517730	SOFT 32x8 CNTRL CHIP	0	EA	REF: U105
81906517980	SOFT COUGAR BIOS	0	EA	REF: U97

32X32 Sync Video Matrix Addendum

32X32 Sync Video Matrix Card - 81906520120 Continued:

81906600184	RESISTOR 10 OHM 5% 0805	192	EA	R4 R8 R12 R16 R20 R24 R28 R32 R36 R40 R44 R48 R52 R56 R60 R64 R68 R72 R76 R80 R84 R88 R92 R96 R100 R104 R108 R112 R116 R120 R124 R128 R626 R630 R634 R638 R642 R646 R650 R654 R658 R662 R666 R670 R674 R678 R682 R686 R690 R694 R698 R702 R706 R710 R714 R718 R722 R726 R730 R734 R738 R742 R746 R750 R1103 R1104 R1189 R1191 R1210 R1212 R1215 R1217 R1219 R1220 R1223 R1225 R1228 R1230 R1235 R1237 R1240 R1242 R1245 R1247 R1249 R1250 R1253 R1255 R1260 R1262 R1265 R1267 R1270 R1272 R1275 R1277 R1312 R1314 R1317 R1319 R1321 R1322 R1325 R1327 R1334 R1336 R1339 R1341 R1345 R1347 R1350 R1351 R1354 R1356 R1361 R1363 R1366 R1368 R1371 R1373 R1376 R1378 R1380 R1381 R1384 R1386 R1391 R1393 J8 THRU J71
81906600309	RESISTOR 33 OHM 5% 0805	32	EA	R527 THRU R558
81906600424	RESISTOR 100 OHM 5% 0805	4	EA	R1328 R1329 R333 R363
81906600465	RESISTOR 150 OHM 5% 0805	1	EA	R519
81906600499	RESISTOR 200 OHM 5% 0805	1	EA	R304
81906600520	RESISTOR 270 OHM 5% 0805	2	EA	R323 R351
81906600549	RESISTOR 330 OHM 5% 0805	1	EA	R520
81906600620	RESISTOR 680 OHM 5% 0805	1	EA	R1473
81906600663	RESISTOR 1K OHM 5% 0805	13	EA	R334 R364 R516 R523 R524 R1395 R1396 R1506 THRU 1511
81906600700	RESISTOR 1.5K 5% 0805	1	EA	R1349
81906600747	RESISTOR 2.2K 5% 0805	1	EA	R1397
81906600783	RESISTOR 3.3K 5% 0805 SMT	35	EA	R321 R349 R784 R788 R792 R796 R800 R804 R808 R812 R816 R820 R824 R828 R832 R836 R840 R844 R1040 R1044 R1048 R1052 R1056 R1060 R1064 R1068 R1072 R1076 R1080 R1084 R1088 R1092 R1096 R1100 R1406

32X32 Sync Video Matrix Addendum

32X32 Sync Video Matrix Card - 81906520120 Continued:

81906600820	RESISTOR 4.7K 5% 0805 SMT	139	EA	R294 R295 R296 R297 R298 R299 R307 R310 R311 R312 R313 R314 R315 R318 R319 R320 R324 R325 R326 R327 R328 R331 R332 R335 R336 R337 R340 R341 R342 R346 R347 R348 R352 R353 R354 R355 R356 R357 R360 R361 R362 R365 R366 R367 R368 R369 R370 R372 R373 R377 R378 R379 R382 R383 R384 R385 R386 R387 R388 R389 R393 R394 R395 R396 R397 R398 R399 R400 R405 R406 R407 R408 R409 R411 R412 R416 R417 R418 R419 R420 R421 R422 R423 R424 R430 R431 R432 R433 R434 R435 R439 R440 R441 R442 R444 R445 R446 R447 R448 R449 R451 R452 R453 R454 R461 R462 R463 R464 R465 R466 R470 R471 R472 R473 R474 R475 R481 R484 R485 R486 R487 R489 R490 R491 R492 R493 R494 R497 R498 R504 R505 R506 R507 R508 R509 R1514 R1517 R1518 R1519
81906600866	RESISTOR 6.8K 5% 0805 SMT	32	EA	R783 R787 R798 R795 R799 R803 R807 R811 R815 R819 R823 R827 R831 R835 R839 R843 R1039 R1043 R1047 R1151 R1055 R1059 R1063 R1067 R1071 R1075 R1079 R1083 R1087 R1091 R1095 R1099
81906600903	RESISTOR 10K 5% 0805 SMT	3	EA	R1404 R443 R1515
81906600920	RESISTOR 12K OHM 5% 0805	1	EA	R306
81906600986	RESISTOR 22K 5% 0805 SMT	1	EA	R1398
81906601133	RESISTOR 100K 5% 0805 SMT	4	EA	R302 R305 R322 R350
81906601307	RESISTOR 510K 5% 0805 SMT	2	EA	R343 R374

32X32 Sync Video Matrix Addendum

32X32 Sync Video Matrix Card - 81906520120 Continued:

81906601521	RESISTOR 0.0 OHM 5% 0805	128	EA	R751 R752 R753 R754 R755 R756 R757 R758 R759 R760 R761 R762 R763 R764 R765 R766 R767 R768 R769 R770 R771 R772 R773 R774 R775 R776 R777 R778 R779 R780 R781 R782 R911 R915 R919 R923 R927 R931 R935 R939 R943 R947 R951 R955 R959 R963 R967 R971 R1105 R1108 R1111 R1114 R1117 R1120 R1123 R1126 R1129 R1132 R1135 R1138 R1141 R1144 R1147 R1150 R1154 R1155 R1190 R1192 R1211 R1213 R1216 R1218 R1222 R1224 R1227 R1229 R1232 R1233 R1236 R1238 R1241 R1243 R1246 R1248 R1252 R1254 R1257 R1258 R1261 R1263 R1266 R1268 R1271 R1273 R1276 R1278 R1313 R1325 R1318 R1320 R1324 R1326 R1331 R1332 R1335 R1335 R1340 R1342 R1346 R1348 R1353 R1355 R1358 R1359 R1362 R1364 R1367 R1369 R1372 R1374 R1377 R1379 R1383 R1385 R1388 R1389 R1392 R1394 R1419 R1427 R1447 R1457 R1461 R1462
81906610035	RESISTOR 10.5 OHM 1% 0805	6	EA	R1415 R1433
81906610100	RESISTOR 12.4 OHM 1% 0805	2	EA	R1449 R1425
81906610140	RESISTOR 13.7 OHM 1% 0805	2	EA	R1455 R1453
81906610160	RESISTOR 14.3 OHM 1% 0805	2	EA	R1409 R1441 R1460
81906610200	RESISTOR 15.8 OHM 1% 0805	3	EA	R1417 R1418 R1437 R1448 R1456
81906610220	RESISTOR 16.5 OHM 1% 0805	5	EA	R1416 R1442 R1454 R1465
81906610241	RESISTOR 17.4 OHM 1% 0805	4	EA	R1410
81906610274	RESISTOR 18.7 OHM 1% 0805	1	EA	R1421
81906610280	RESISTOR 19.1 OHM 1% 0805	1	EA	R1411 R1450
81906610320	RESISTOR 21.0 OHM 1% 0805	2	EA	R1412 R1467
81906610332	RESISTOR 21.5 OHM 1% 0805	2	EA	XE652012661035
81906610357	RESISTOR 22.6 OHM 1% 0805	9	EA	R1420 R1424 R1458 R912 R916 R920 R924 R928 R932 R936 R940 R944 R948 R952 R956 R960 R964 R968 R972 R1156 R1158 R1160 R1162 R1164 R1166 R1168 R1170 R1172 R1174 R1176 R1178 R1180 R1182 R1184 R1186
81906610365	RESISTOR 23.2 OHM 1% 0805	35	EA	R1470 R1434
81906610399	RESISTOR 24.9 OHM 1% 0805	2	EA	R1422 R1439 R1444 R1446 R1466 R1469
81906610415	RESISTOR 26.1 OHM 1% 0805	6	EA	R292 R1413 R1459 R1468
81906610431	RESISTOR 27.4 OHM 1% 0805	4	EA	

32X32 Sync Video Matrix Addendum

32X32 Sync Video Matrix Card - 81906520120 Continued:

81906610456	RESISTOR 28.7 OHM 1% 0805	2	EA	R1414 R1464
81906610464	RESISTOR 29.4 OHM 1% 0805	2	EA	R1429 R1430
81906610472	RESISTOR 30.1 OHM 1% 0805	2	EA	R1438 R1440
81906610498	RESISTOR 31.6 OHM 1% 0805	2	EA	R1471 R1472
81906610506	RESISTOR 32.4 OHM 1% 0805	1	EA	R301
81906610514	RESISTOR 33.2 OHM 1% 0805	3	EA	R402 R1436 R1452
81906610530	RESISTOR 34.8 OHM 1% 0805	4	EA	R242 R339 R371 R376
81906610555	RESISTOR 36.5 OHM 1% 0805	4	EA	R330 R359 R415 R460
81906610571	RESISTOR 38.3 OHM 1% 0805	6	EA	R309 R381 R391 R425 R456 R458
81906610597	RESISTOR 40.2 OHM 1% 0805	7	EA	R303 R317 R500 R503 R514 R515 R518
81906610621	RESISTOR 43.2 OHM 1% 0805	2	EA	R448 R496
81906610630	RESISTOR 44.2 OHM 1% 0805	2	EA	R526 R511
81906610680	RESISTOR 49.9 OHM 1% 0805	64	EA	R162 R165 R168 R171 R174 R177 R180 R183 R186 R189 R192 R195 R198 R201 R204 R207 R209 THRU R240 R244 R247 R250 R253 R256 R259 R262 R265 R268 R271 R274 R277 R280 R283 R286 R289
81906610761	RESISTOR 60.4 OHM 1% 0805	34	EA	R293 R1209 R1474 THRU R1505
81906610852	RESISTOR 75.0 OHM 1% 0805	2	EA	R380 R1221
81906610880	RESISTOR 80.6 OHM 1% 0805	6	EA	R241 R291 R401 R414 R517 R1153 R1188 R1274
81906610900	RESISTOR 84.5 OHM 1% 0805	2	EA	R521 R482
81906610950	RESISTOR 95.3 OHM 1% 0805	25	EA	R300 R338 R345 R358 R375 R390 R480 R502 R512 R513 R525 R1214 R1234 R1239 R1244 R1251 R1259 R1264 R1338 R1360 R1370 R1375 R1382 R1387 R1390
81906610977	RESISTOR 100 OHM 1% 0805	25	EA	R308 R316 R329 R410 R450 R455 R459 R467 R476 R495 R499 R510 R1226 R1231 R1256 R1269 R1311 R1316 R1323 R1330 R1333 R1344 R1352 R1357 R1365
81906611300	RESISTOR 221 OHM 1% 0805	32	EA	R913 R917 R921 R925 R929 R933 R937 R941 R945 R949 R953 R957 R961 R965 R969 R973 R1106 R1109 R1112 R1115 R1118 R1121 R1124 R1127 R1130 R1135 R1136 R1139 R1142 R1142 R1148 R1151
81906611440	RESISTOR 309 OHM 1% 0805	32	EA	R625 R629 R633 R637 R641 R645 R649 R653 R657 R661 R665 R669 R673 R677 R681 R685 R689 R693 R697 R701 R705 R709 R713 R717 R721 R725 R729 R733 R737 R741 R745 R749

32X32 Sync Video Matrix Addendum

32X32 Sync Video Matrix Card - 81906520120 Continued:

81906611454 RESISTOR 316 OHM 1% 0805	32	EA	R624 R628 R632 R636 R640 R644 R648 R652 R656 R660 R664 R668 R672 R676 R680 R684 R688 R692 R696 R700 R704 R708
81906611454 RESISTOR 316 OHM 1% 0805	32	EA	R712 R716 R720 R724 R728 R732 R736 R740 R744 R748
81906611652 RESISTOR 511 OHM 1% 0805	1	EA	R478
81906611942 RESISTOR 1.02K 1% 0805	1	EA	R1343
81906612296 RESISTOR 2.37K 1% 0805	3	EA	R404 R429 R437
81906612320 RESISTOR 2.55K 1% 0805	2	EA	R392 R438
81906612380 RESISTOR 2.94K 1% 0805	1	EA	R469
81906612570 RESISTOR 4.75K 1% 0805	2	EA	R1512 R1513
81906612593 RESISTOR 4.99K 1% 0805	1	EA	R426
81906612809 RESISTOR 8.25K 1% 0805	32	EA	R975-R990 R1157 R1159 R1161 R1163 R1165 R1167 R1169 R1171 R1173 R1175 R1177 R1179 R1181 R1183 R1185 R1187
81906612940 RESISTOR 11.5K 1% 0805	1	EA	R403
81906614750 RESISTOR 3.24 OHM 1% 0805	1	EA	R1423
81906630854 RESISTOR 75 OHM 1% 1206	32	EA	R785 R789 R793 R797 R801 R805 R809 R813 R817 R821 R825 R829 R833 R837 R841 R845 R1041 R1045 R1049 R1053 R1057 R1061 R1065 R1069 R1073 R1077 R1081 R1085 R1090 R1093 R1097 R1101
81906640024 RESISTOR 2.0 OHM 5% 1210	1	EA	R1408
81906640140 POT 50 OHM R/A 1-TURN 10%	32	EA	R163 R166 R169 R172 R175 R178 R181 R184 R187 R190 R193 R196 R199 R202 R205 R208 R245 R248 R251 R254 R257 R260 R263 R266 R269 R272 R275 R278 R281 R284 R287 R290
81906640210 RESISTOR 392 OHM .5% 0805	64	EA	R559 THRU R622
81906640610 RESISTOR 61.9ohm .5% 0805	128	EA	R487-R910 R991-R1022 R1279- R1310
81906640720 RES 41.2 OHM .5% 0805 SMT	32	EA	R3 R7 R11 R15 R19 R23 R31 R35 R39 R43 R47 R51 R55 R59 R63 R67 R71 R75 R79 R83 R87 R91 R95 R99 R103 R107 R111
81906640720 RES 41.2 OHM .5% 0805 SMT	32	EA	R115 R119 R123 R127
81906641120 RESISTOR 35.7 OHM .5%	32	EA	R2 R6 R10 R14 R18 R22 R26 R30 R34 R38 R42 R46 R50 R54 R58 R62 R66 R70 R74 R78 R82 R86 R90 R94 R98 R102 R106 R110 R114 R118 R122 R126
81906650049 POT 50 OHM 1-TRN VERTL SM	32	EA	R129 THRU R160
81906650210 POT 1K VERT 1T 20% 4MM	1	EA	R479

32X32 Sync Video Matrix Addendum

32X32 Sync Video Matrix Card - 81906520120 Continued:

81906650320 POT 20K VERT 1T 20% 3MM	32	EA	R161 R164 R167 R170 R173 R176 R179 R182 R185 R188 R191 R194 R197 R200 R203 R206 R243 R246 R249 R252 R255 R258 R261 R264 R267 R270 R273 R276 R279 R282 R285 R288
81906700018 CAP 12PF 50V CERAMIC SMT	7	EA	C169 C254 C257 C199 C203 C245 C236
81906700109 CAP 10PF 50V CERAM 0805	1	EA	C172
81906700117 CAP 15PF 50V CERAM 0805	17	EA	C174 C176 C187 C195 C216 C241 C251 C266 C272 C490 C494 C502 C518 C522 C586 C891 C603
81906700320 CAP 220PF NPO 0805 CERAMC	2	EA	C636 C637
81906700350 CAP 22PF CERAMIC 0805 NPO	9	EA	C191 C207 C214 C234 C454 C458 C576 C623 C631
81906700360 CAP 18PF 50V CERAMIC 0805	27	EA	C180 C161 C163 C167 C224 C229 C230 C248 C269 C271 C276 C479 C483 C486 C498 C507 C510 C514 C527 C531 C571 C596 C599 C611 C616 C620 C627
81906700550 CAP 27PF NPO 0805 CERAMIC	3	EA	C580 C607 C567
81906730015 CAP 0.1MF 50V CERMIC 1206	169	EA	C1-32 C65-C96 C162 C164 C168 C170 C171 C173 C175 C177 C179 C181 C182 C183 C184 C185 C186 C188 C190 C192 C193 C194 C196 C197 C198 C200 C202 C204 C206 C208 C209 C210 C211 C212 C213 C215 C217 C218 C219 C220 C221 C222 C223 C225 C226 C227 C228 C231 C232 C233 C235 C237 C238 C240
81906730015 CAP 0.1MF 50V CERMIC 1206	169	EA	C242 C244 C246 C252 C253 C255 C256 C258 C260 C267 C270 C273 C277 C456 C460 C478 C481 C488 C492 C496 C500 C502 C505 C512 C520 C524 C526 C529 C566 C569 C574 C575 C578 C582 C584 C585 C588 C590 C593 C601 C605 C609 C613 C615 C618 C625 C629 C633 C638 C641
81906730090 CAP 0.22MF CERMIC X7R 1206	1	EA	C595
81906760160 CAP 1500PF 50V CERAM 1206	2	EA	C178 C189
81906770052 CAP 1MF 20V TANLUM SIZE A	67	EA	C33 THRU C64 C113 THRU C144 C201 C205 C239
81906770090 CAP 68uf 16V TANT D CASE	2	EA	C249 C274
81906770100 CAP 1mf 35 VOLTS TANTALUM	2	EA	C639 C640
81906800016 TRANS SMT,MMBT3904LT1	4	EA	Q37 Q38 Q39 Q40
81906800073 DIODE ZENER SMT,MMBZ5240B	2	EA	CR5 CR18

32X32 Sync Video Matrix Addendum

32X32 Sync Video Matrix Card - 81906520120 Continued:

81906800099	TRANS SMT, MMBTH10L	32	EA	Q4 THRU Q35
81906800107	TRANS SMT,MMBT3906L	4	EA	Q1 Q2 Q3 Q6
81906800230	DIODE MBR340 40V 3A SHTTK	8	EA	CR8 CR9 CR10 CR12 CR14 CR15 CR16 CR19
81906800390	ZENER MC15 15V 1.5W SMT	1	EA	CR13
81906800410	TRANSIENT SUPPRESSOR 33V	1	EA	CR11
81906800580	ZENER MBZ5242 12V SOT23	1	EA	CR21
81906810072	IC 3903 QUAD SPLY MONITOR	1	EA	U89
81906810106	IC LM1881 VID SYNC SEPART	2	EA	U78 U83
81906810171	IC SMT,74HC04 (SOIC-14)	7	EA	U71 U80 U96 U101 U111 U119 U123
81906810340	IC 74HC00 QUAD AND SO SMT	1	EA	U100
81906810510	IC 6264 8Kx8 SRAM 100ns	1	EA	U110
81906810550	IC 74HC245 OCTL TRANSCEVR	5	EA	U76 U82 U87 U93 U166
81906810570	IC 74HC373 OCTAL LATCH SO	1	EA	U103
81906810690	IC TL062 DUAL JFET OP S08	1	EA	U70
81906810890	IC RS485 RECVR/TRANSMITTR	1	EA	U69
81906810930	IC TL7705 MICRO SUPERVISR	1	EA	U85
81906810960	IC OPTOCOUPLER SMT 4N32	1	EA	U165
81906810990	IC BUFFER HA4600 SO-8	64	EA	U65 U66 U67 U68 U72 U73 U75 U77 U79 U81 U84 U86 U88 U91 U92 U94 U108 U109 U112 U113 U114 U115 U116 U120 U121 U122 U124 U125 U126 U127 U128 U131 THRU U163
81906811030	IC 74HC273 OACTAL REGISTR	1	EA	U99
81906811040	IC 74HC138 3 TO 8 DECODER	2	EA	U95 U98
81906811060	IC XC3030A LCA	4	EA	U74 U90 U107 U118
81906811080	IC DS1210 NONVOL CNTL CHP	1	EA	U104
81906811160	IC CLC440AJE VFB S08	32	EA	U1 THRU U32
81906811290	IC CLC430 OP AMP 100MHz	32	EA	U33 THRU U64
81906920030	SWITCH DIP 4 POS GULLWING	1	EA	S1
81906940040	SOCKET 52 PIN PLCC SMT	1	EA	REF: U97
81906950040	BEAD INDUCTOR SMT	2	EA	BEAD1 BEAD2
CA25-1412	DOC COUGAR 32X32 SYNC	0	EA	

32X32 Sync Video Matrix Addendum

32X32 Sync Video Matrix Card - 81906520120 Continued:

NOT-PLACED	ITEMS NOT PLACED ON EBOM	0	EA	R1 R5 R9 R13 R17 R21 R29 R33 R37 R41 R45 R49 R53 R57 R25 R61 R65 R69 R73 R77 R81 R85 R89 R93 R97 R101 R105 R109 R113 R117 R121 R125 R914 R918 R922 R926 R930 R934 R938 R942 R946 R950 R954 R958 R962 R966 R970 R974 R1023 THRU R1038 R1107 R1110 R1113 R1116 R1119 R1122 R1125 R1128 R1131 R1134 R1137 R1140 R1143 R1146 R1149 R1152 R1193 THRU R1208 C97 TRHU C112 C145 THRU 160 C310 THRU 341 C374 THRU C405 C438 THRU C453 C455 C457 C459 C461 TRHU C477 C480 C482 C484 C485 C487 C489 C491 C493 C495 C497 C499 C501 C504 C506 C508 C509 C511 C513 C515 C517 C519 C521 C523 C525 C528 C530 C532 C533 C568 C570 C572 C573 C577 C579 C581 C583 C587 C589 C592 C594 C597 C598 C600 C602 C604 C606 C608 C610 C612 C614 C617 C619 C621 C622 C624 C626 C628 C630 C632 C634 C278 THRU C309 TP1 TP2 TP3 TP4 TP5 R427 R428 R436 R259 R268 U106 R786 R790 R794 R798 R802 R806 R810 R814 R818 R822 R826 R830 R834 R838 R842 R846 R1042 R1046 R1050 R1054 R1058 R1062 R1066 R1070 R1074 R1078 R1082 R1086 R1089 R1094 R1098 R1102
SC33-1412	DOC COUGAR 32X32 SYNC	0	EA	

32X32 Sync Video Matrix Addendum

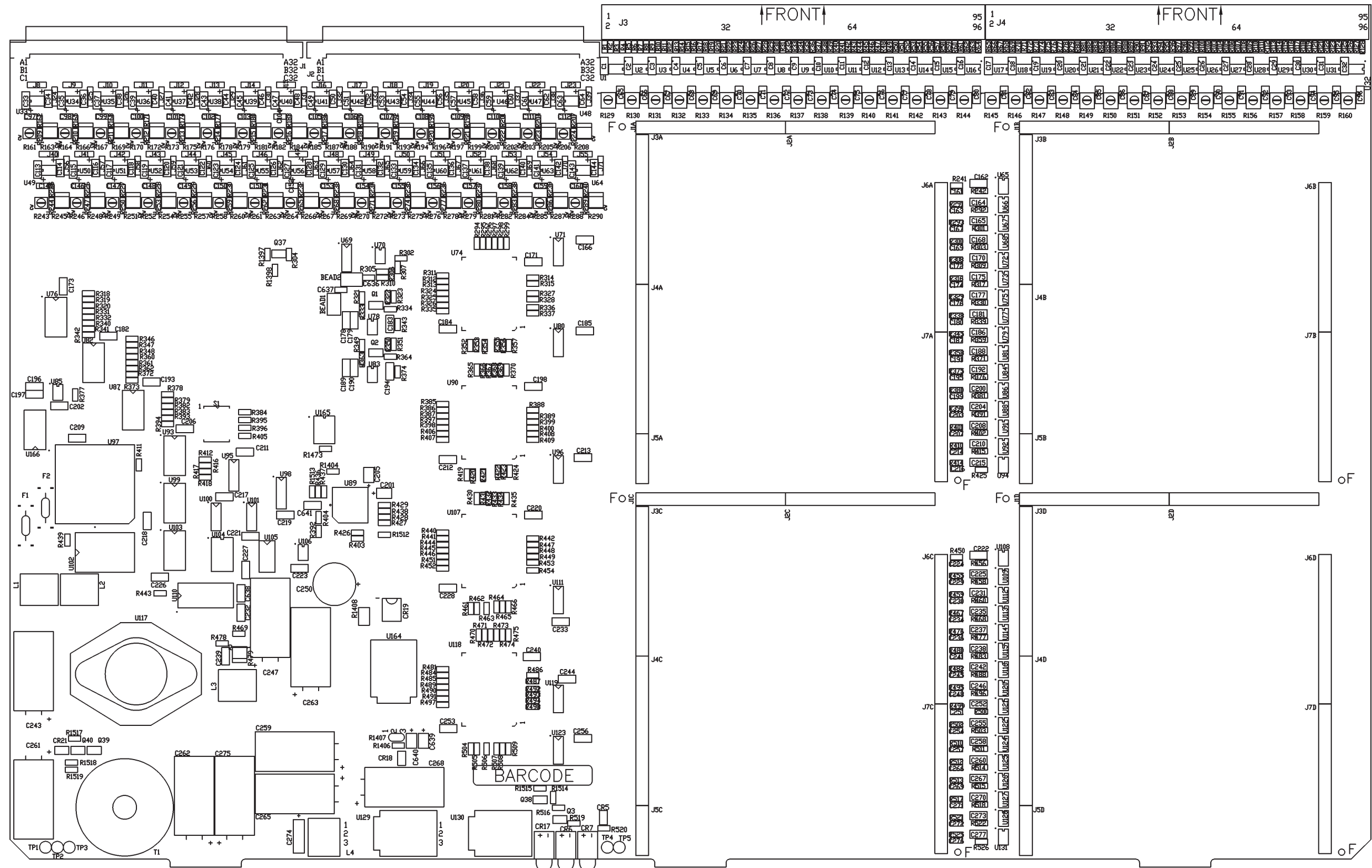
Schematics

This section contains the schematic diagrams and parts location diagrams for the 32X32 Sync Video Matrix Card. Please refer to this section when troubleshooting the equipment or replacing defective parts.

<u>Description</u>	<u>Dwg No.</u>	<u>Page No.</u>
32X32 Sync Video Matrix Card	CA25-1412	12
	SC33-1412	14

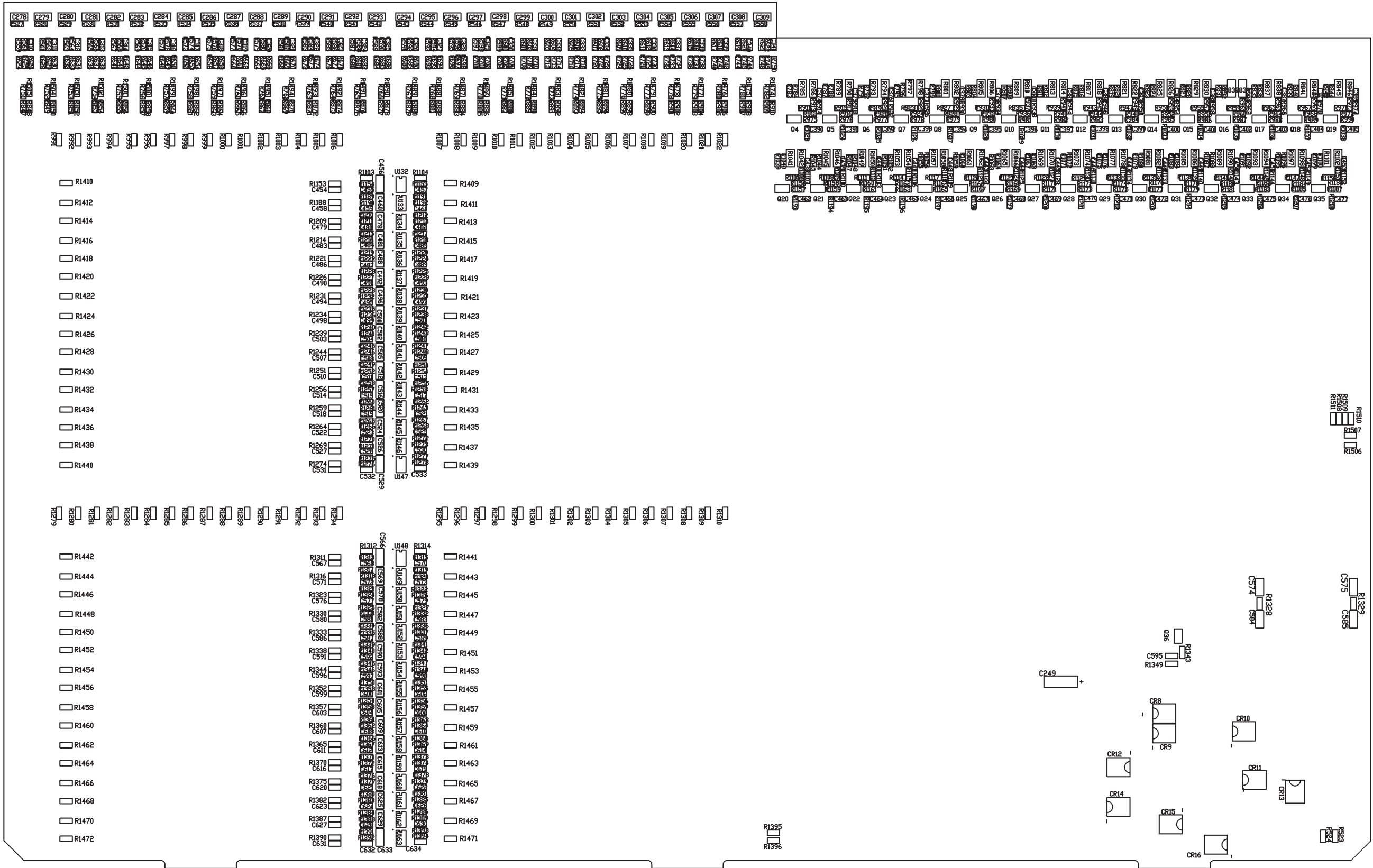
32X32 Sync Video Matrix Addendum

COMPONENT SIDE (LAYER 1 OF 10)



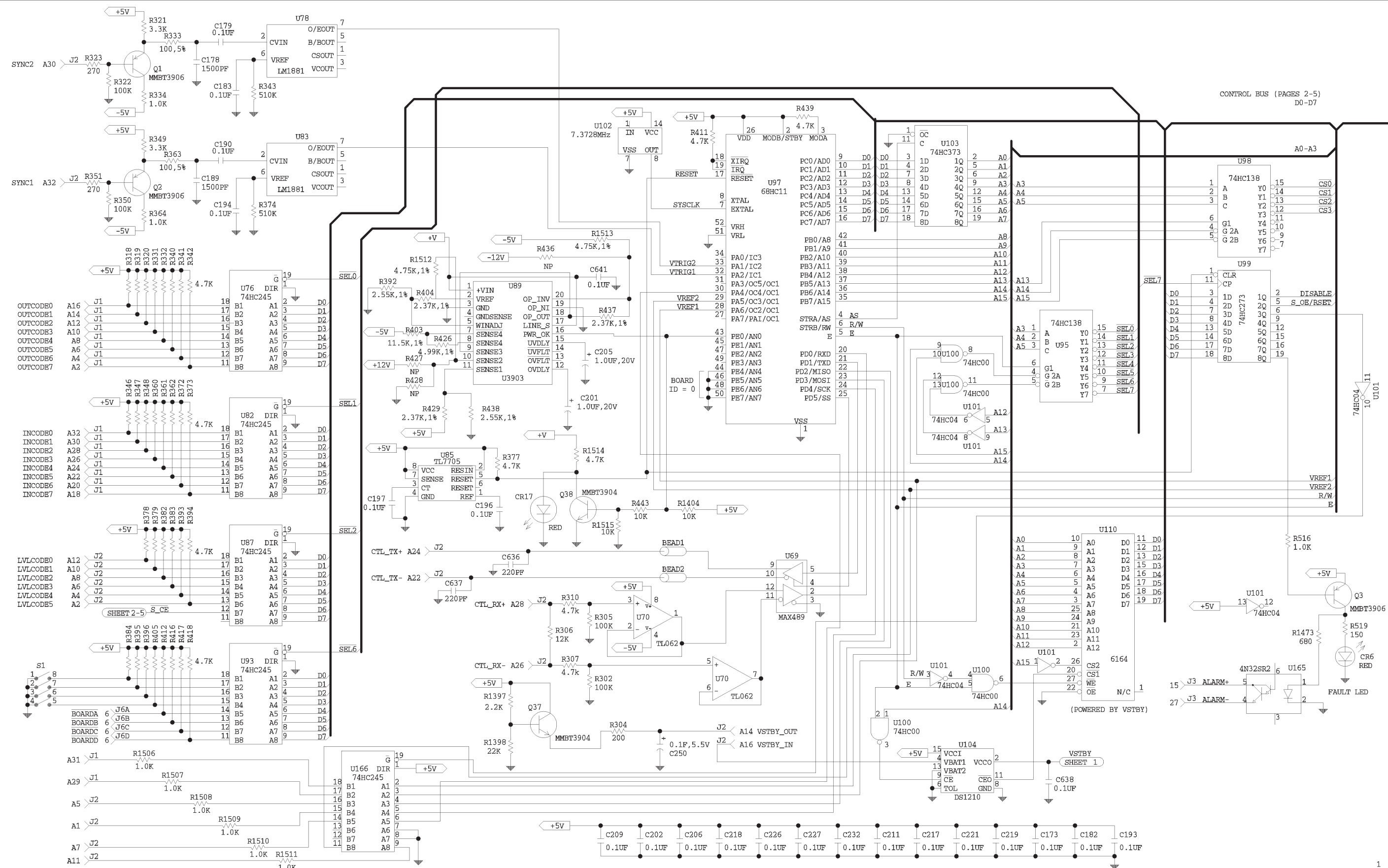
Component Assembly (Sheet 1 of 2) • 32X32 Sync Video Matrix Card • CA25-1412

32X32 Sync Video Matrix Addendum



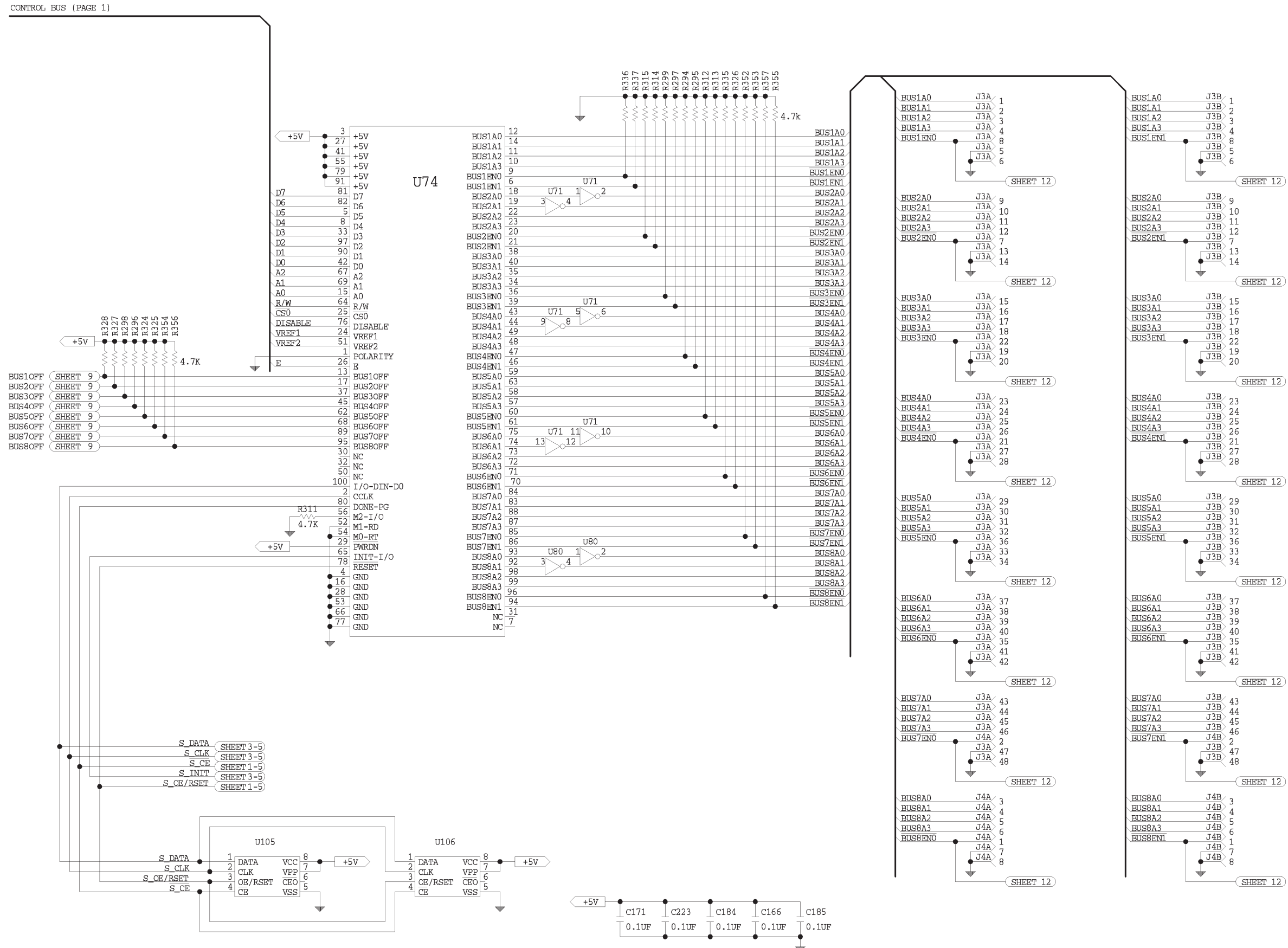
SOLDER SIDE (LAYER 10 OF 10)

32X32 Sync Video Matrix Addendum



Schematic (Sheet 1 of 15) • 32X32 Sync Video Matrix Card • SC33-1412

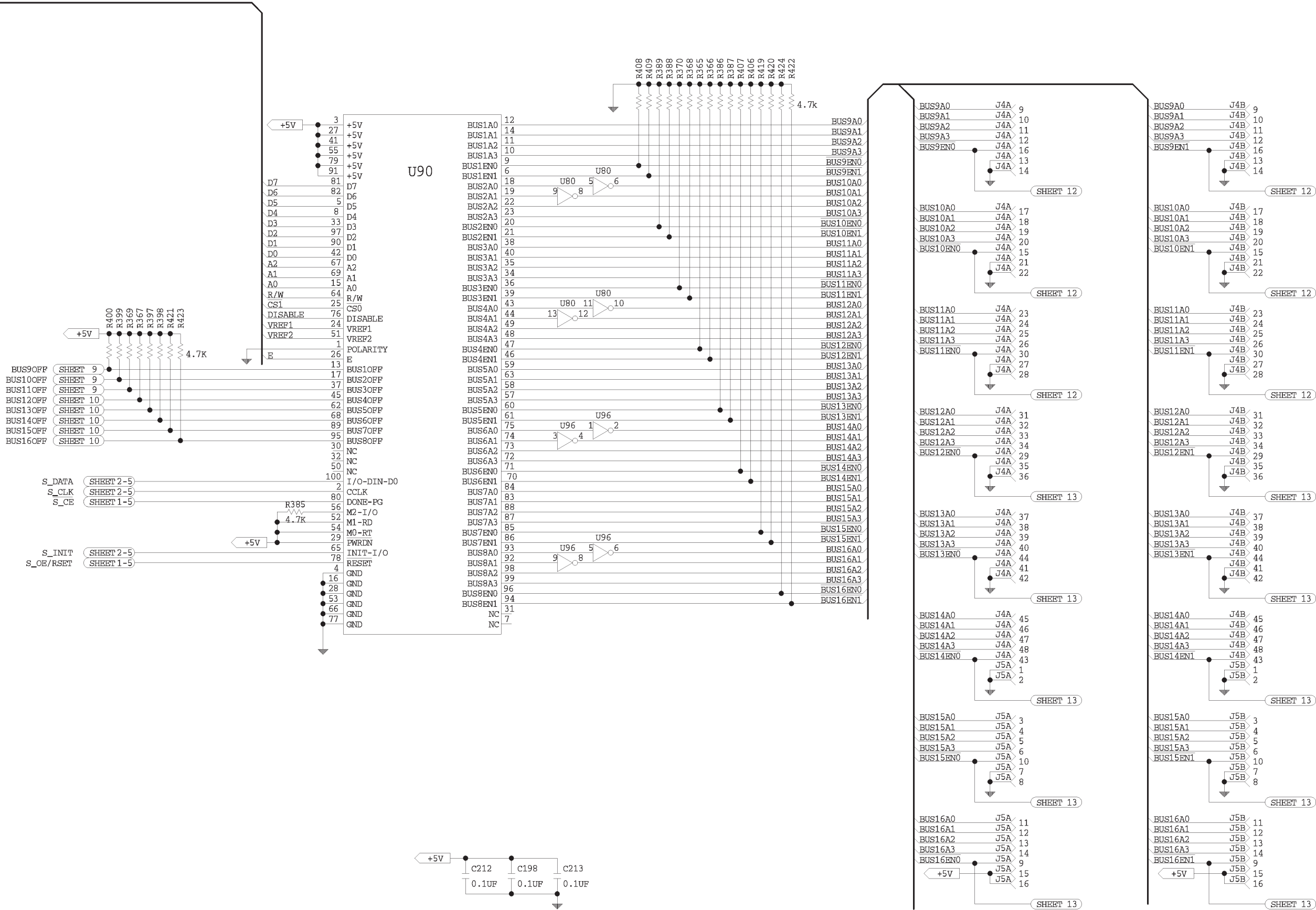
32X32 Sync Video Matrix Addendum



Schematic (Sheet 2 of 15) • 32X32 Sync Video Matrix Card • SC33-1412

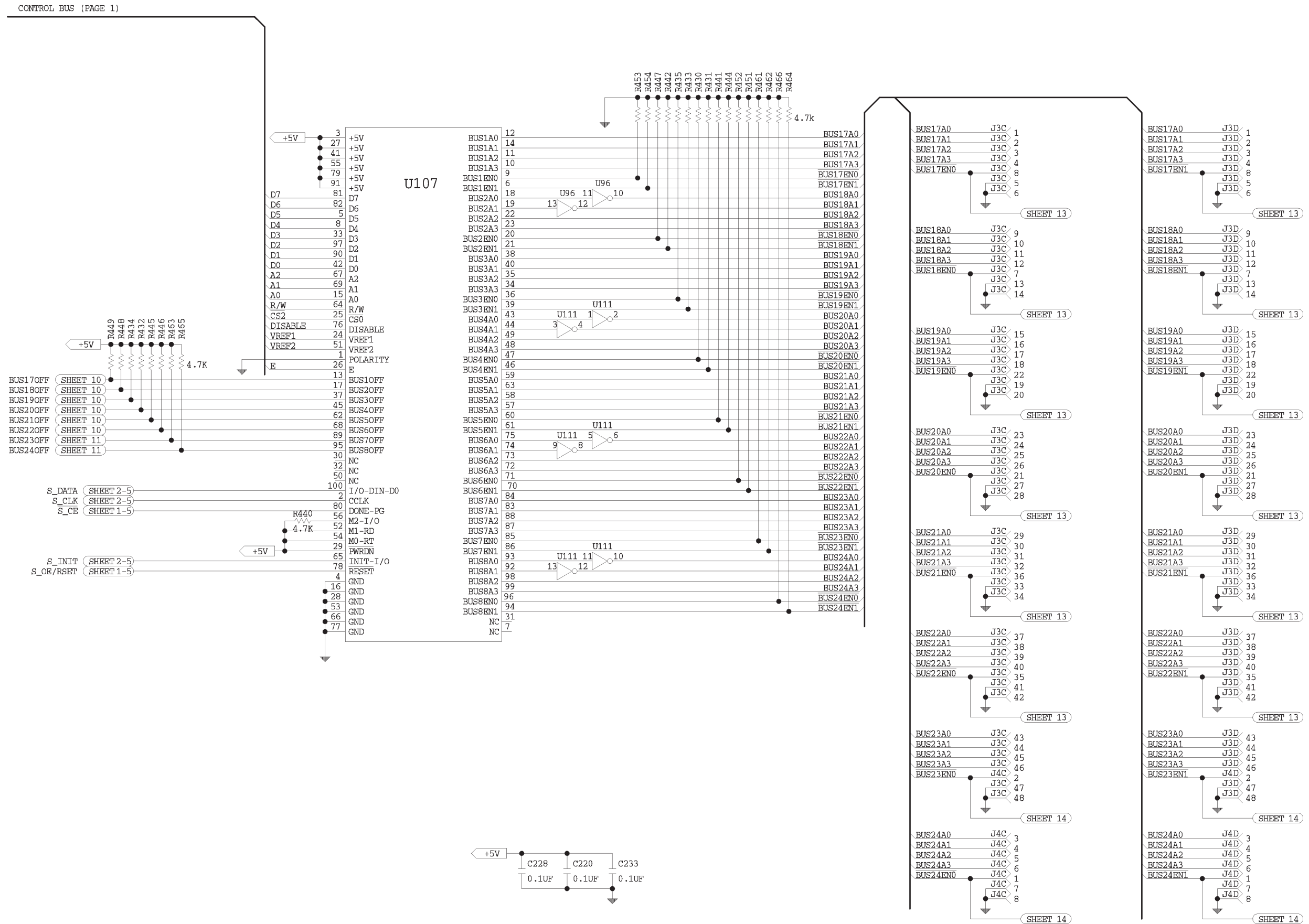
32X32 Sync Video Matrix Addendum

CONTROL BUS (PAGE 1)



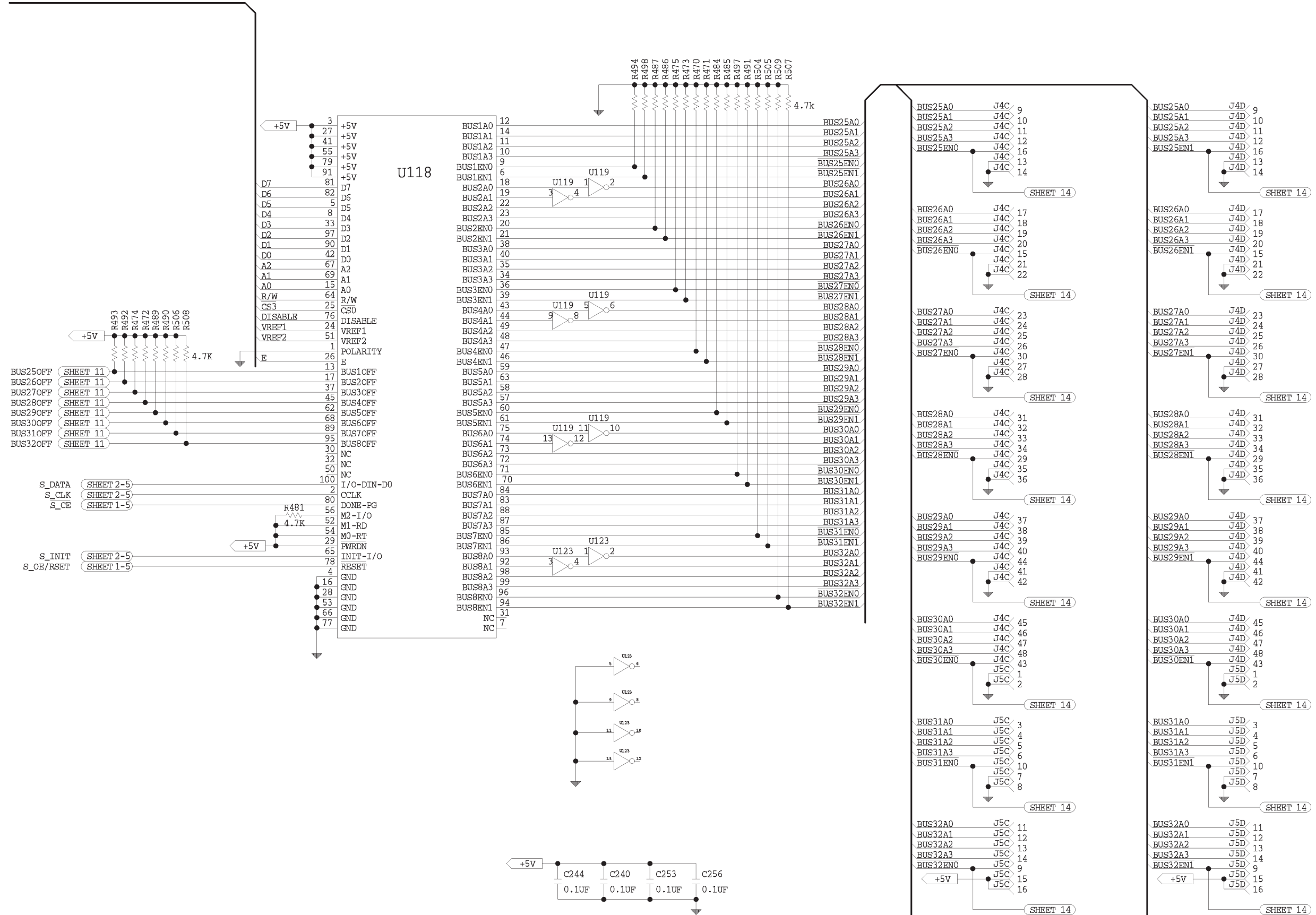
Schematic (Sheet 3 of 15) • 32X32 Sync Video Matrix Card • SC33-1412

32X32 Sync Video Matrix Addendum



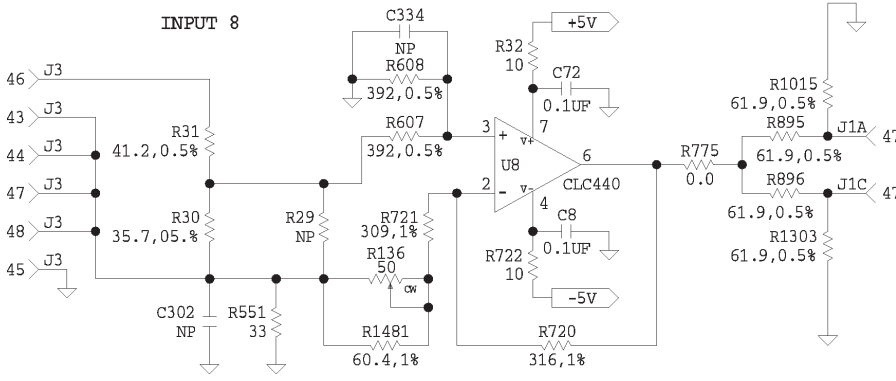
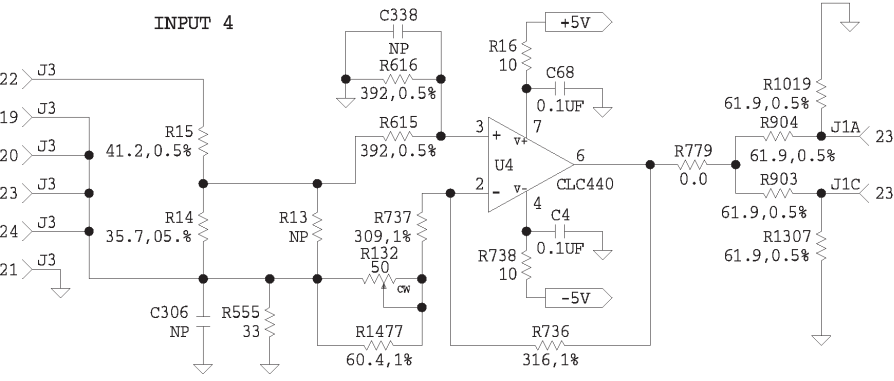
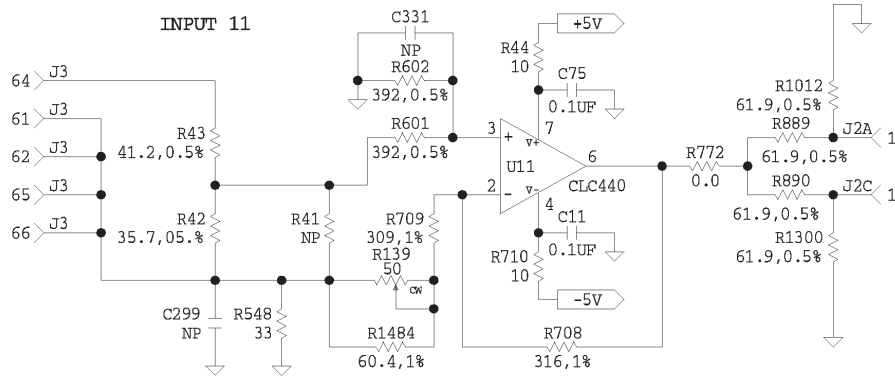
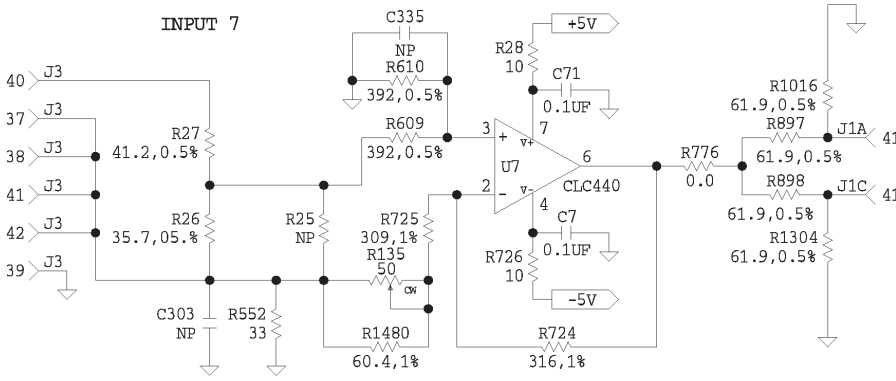
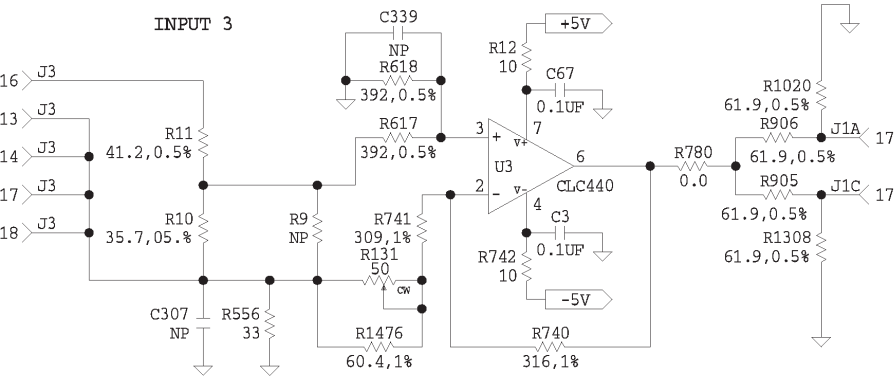
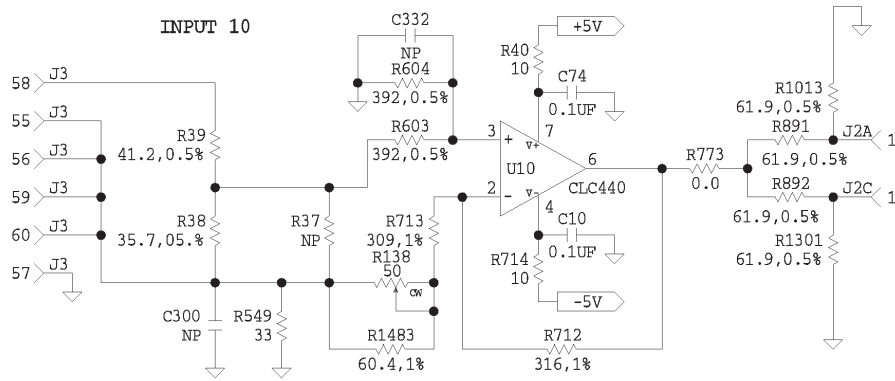
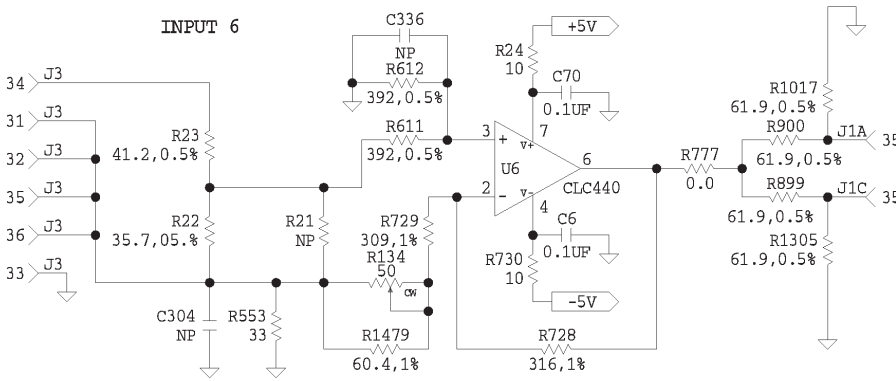
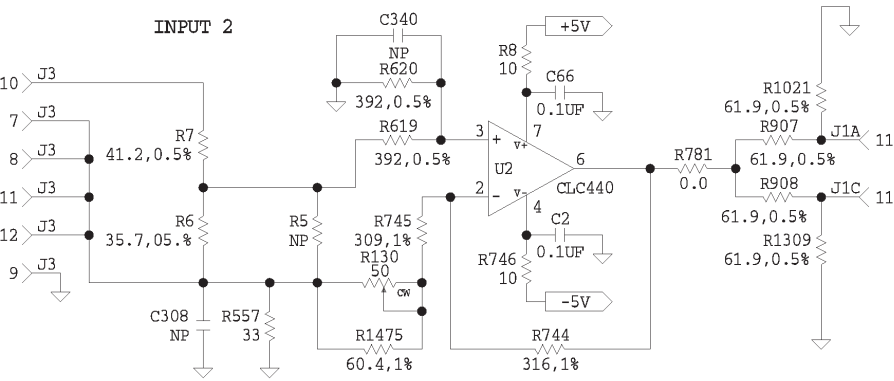
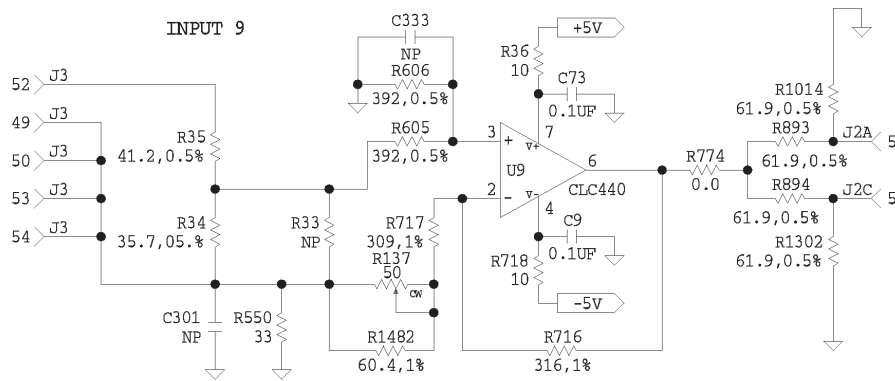
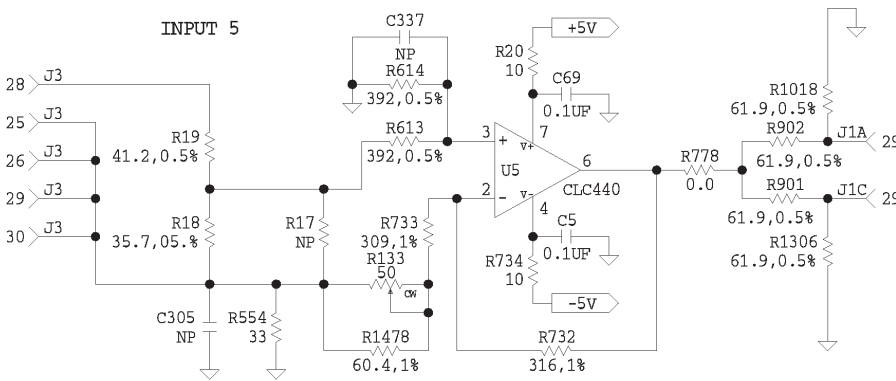
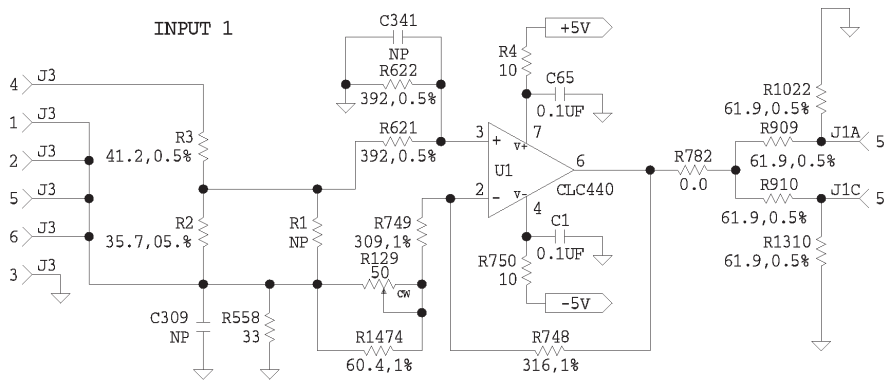
32X32 Sync Video Matrix Addendum

CONTROL BUS (PAGE 1)



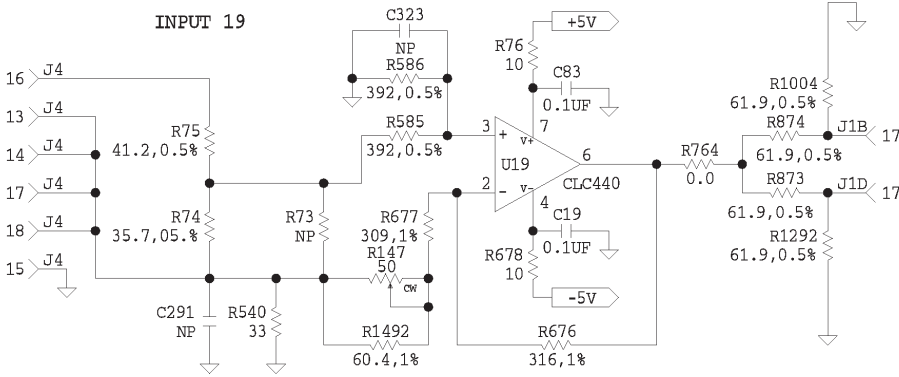
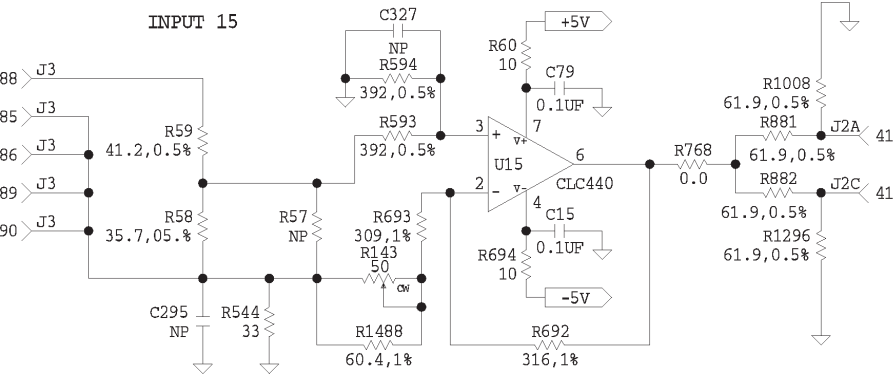
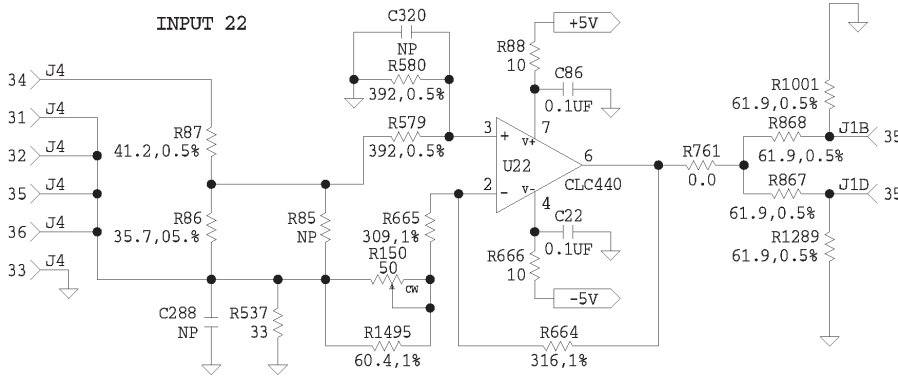
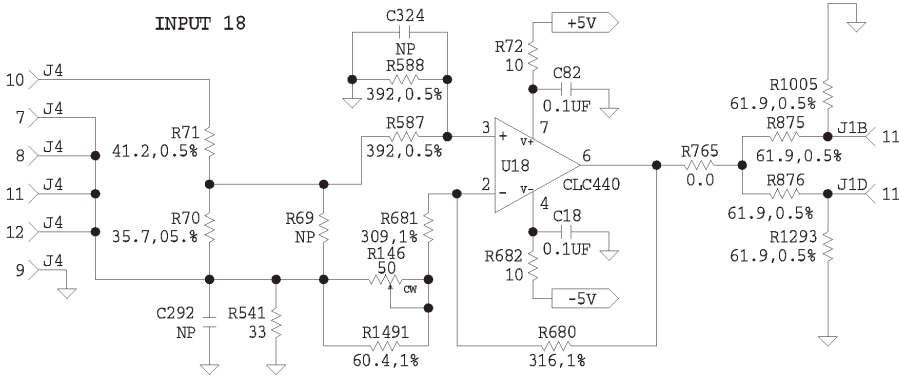
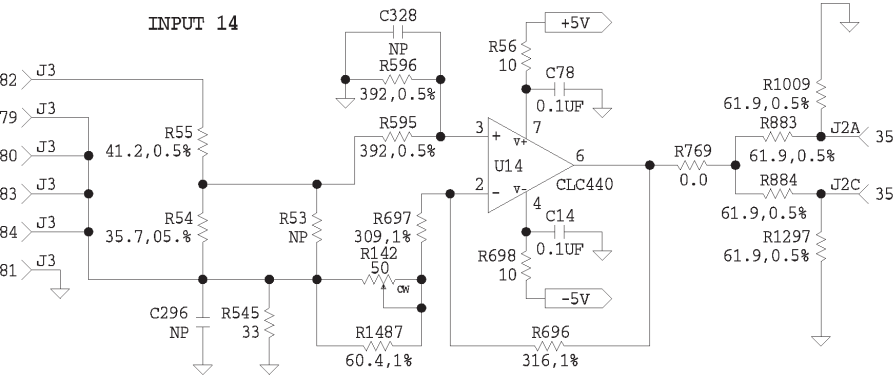
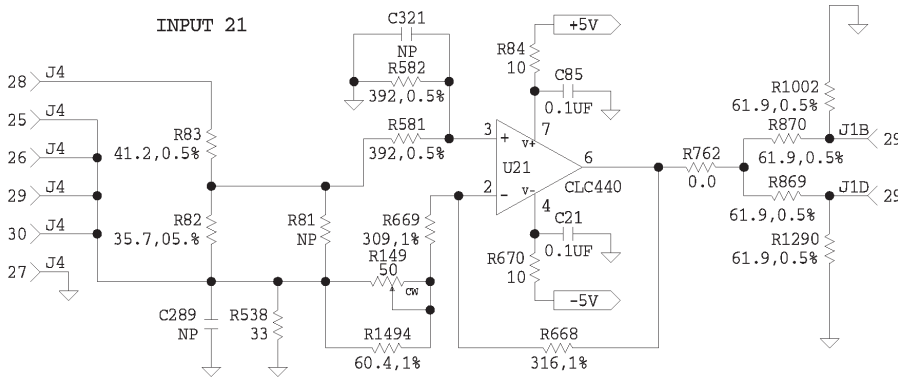
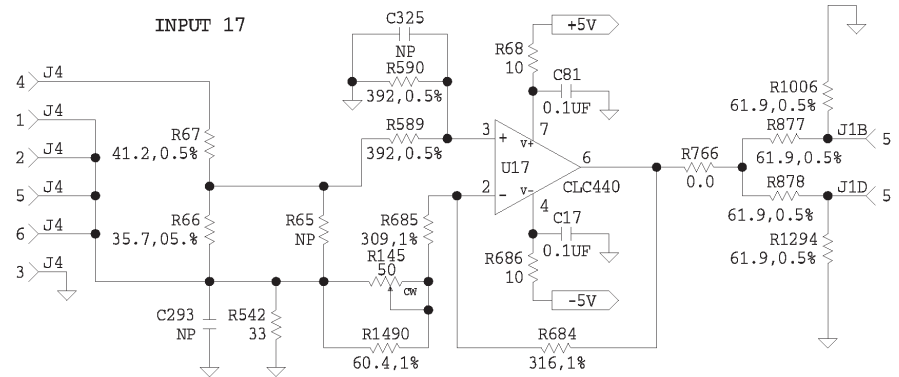
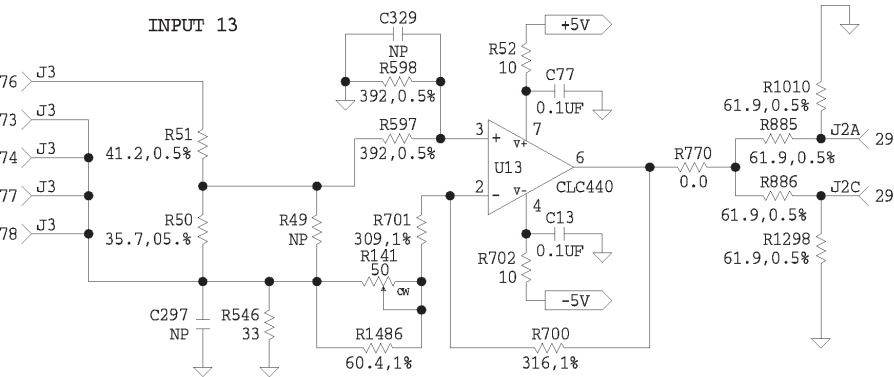
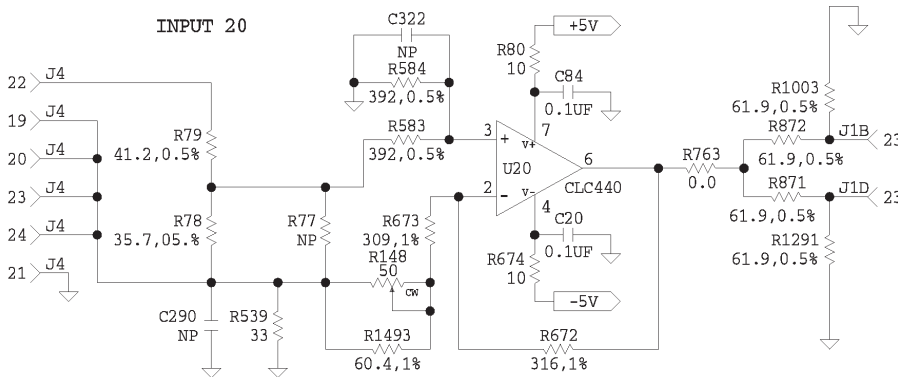
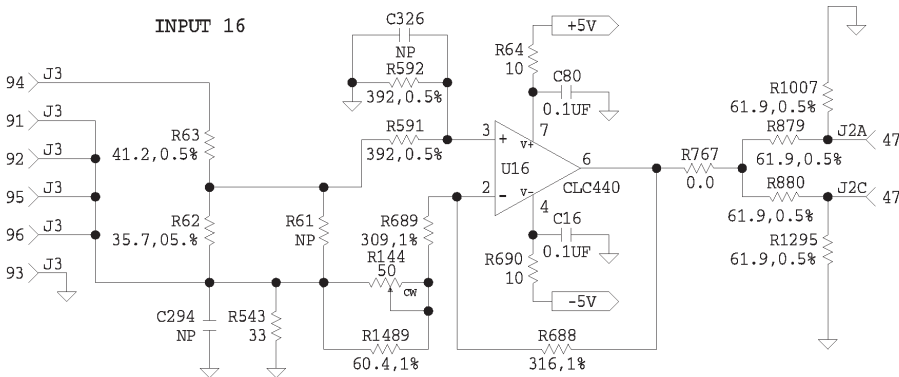
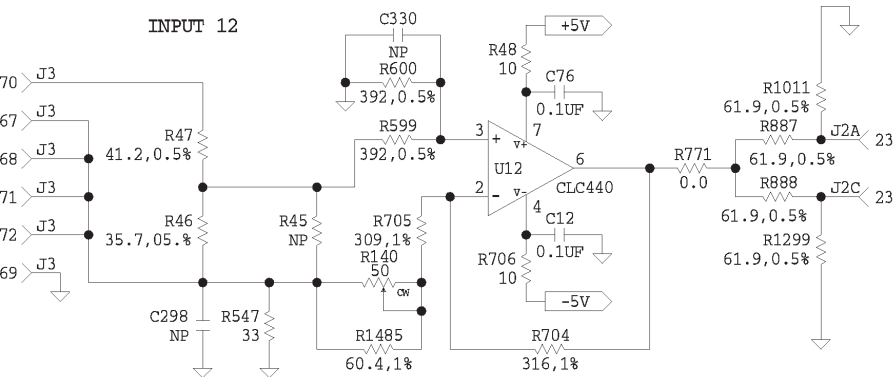
Schematic (Sheet 5 of 15) • 32X32 Sync Video Matrix Card • SC33-1412

32X32 Sync Video Matrix Addendum

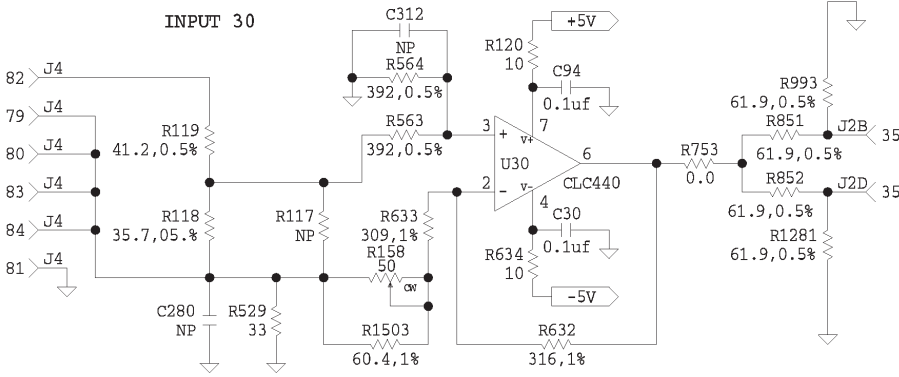
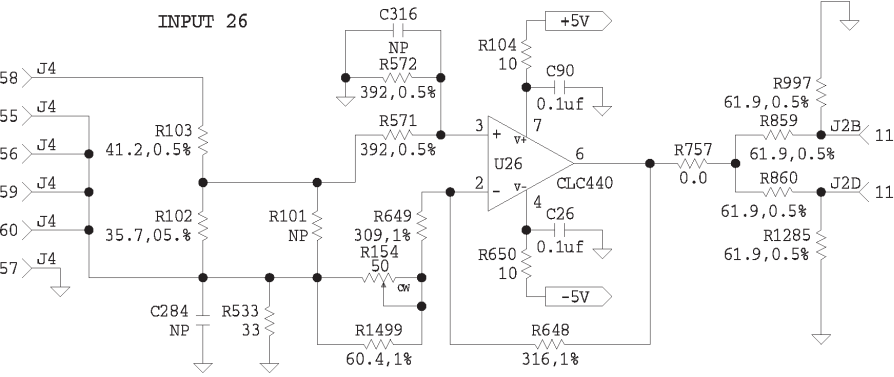
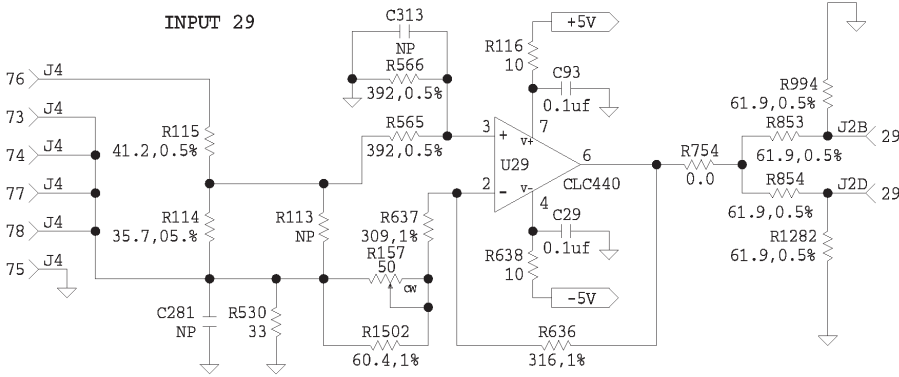
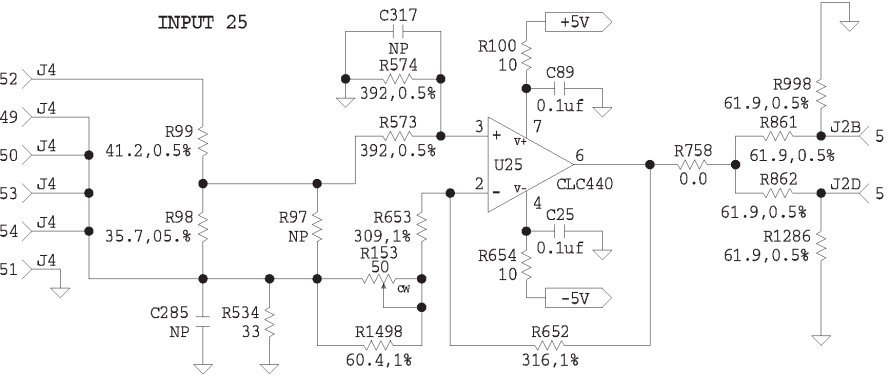
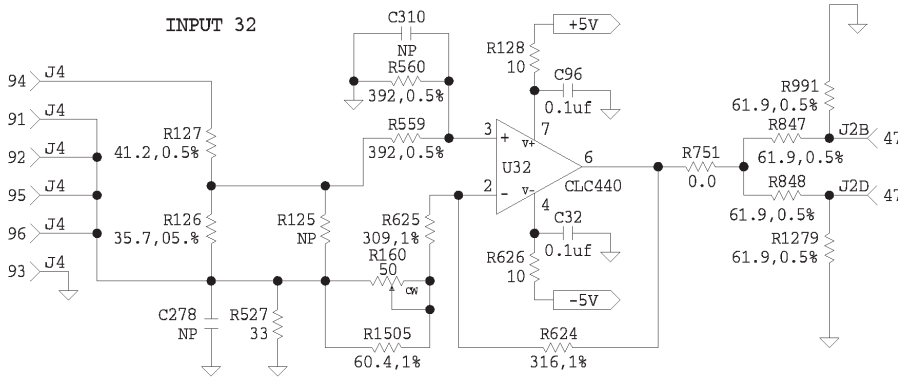
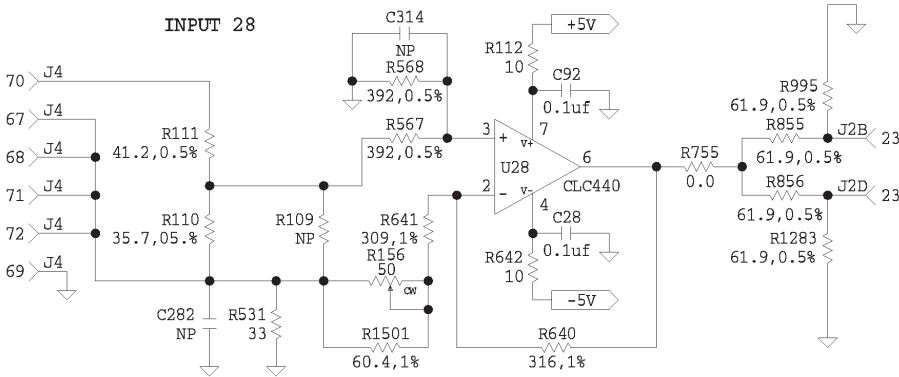
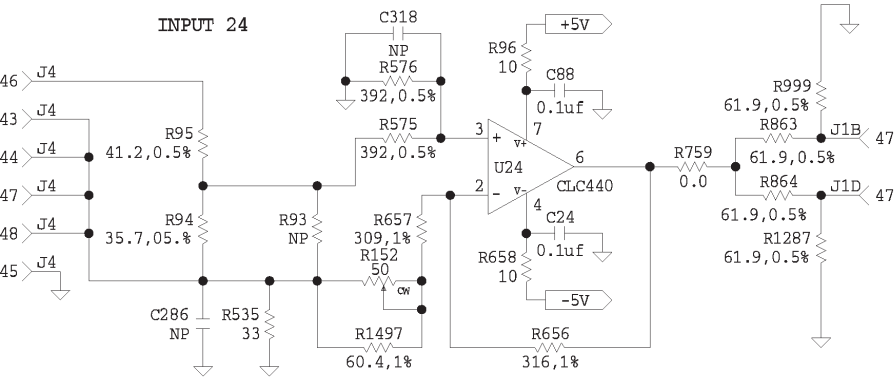
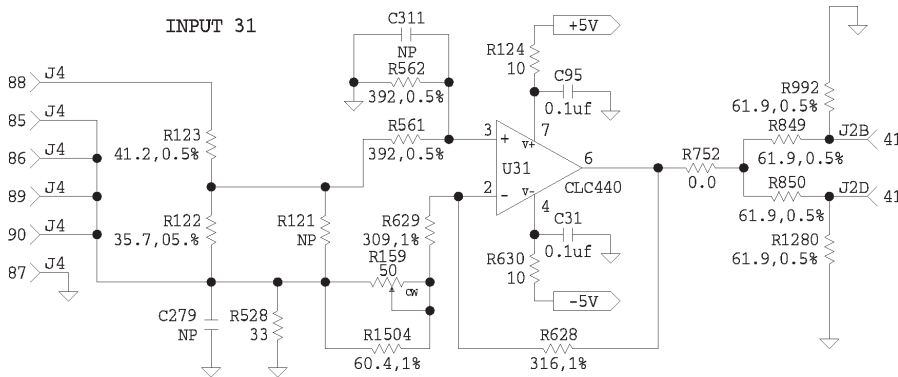
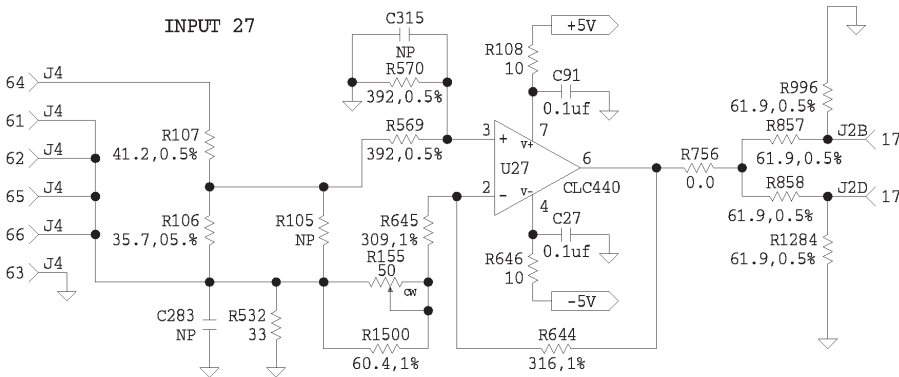
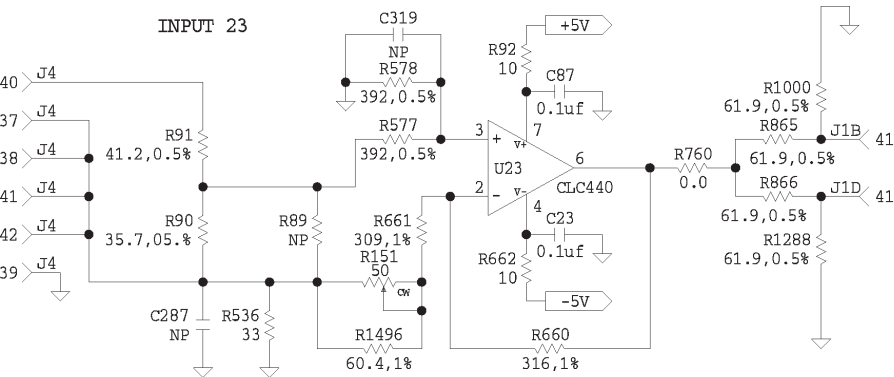


Schematic (Sheet 6 of 15) • 32X32 Sync Video Matrix Card • SC33-1412

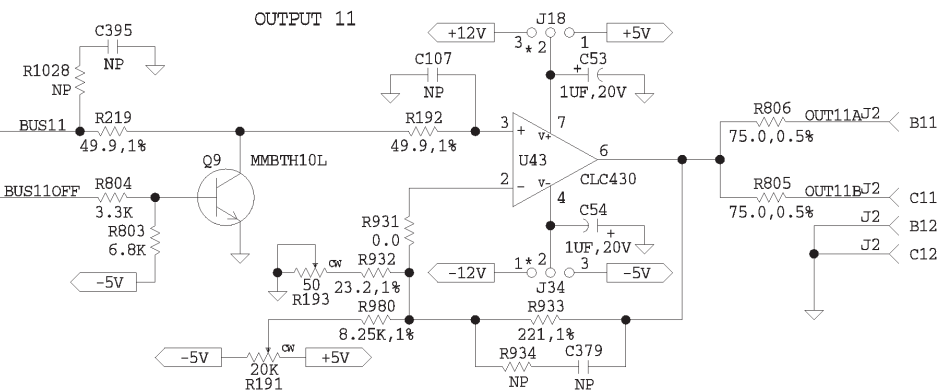
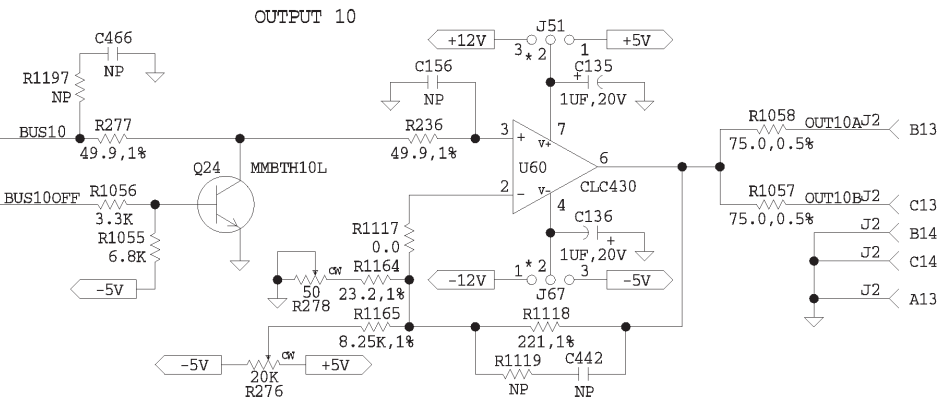
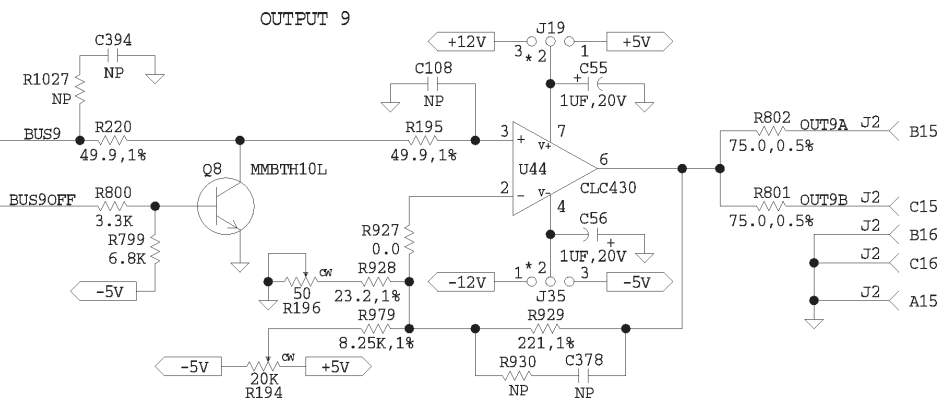
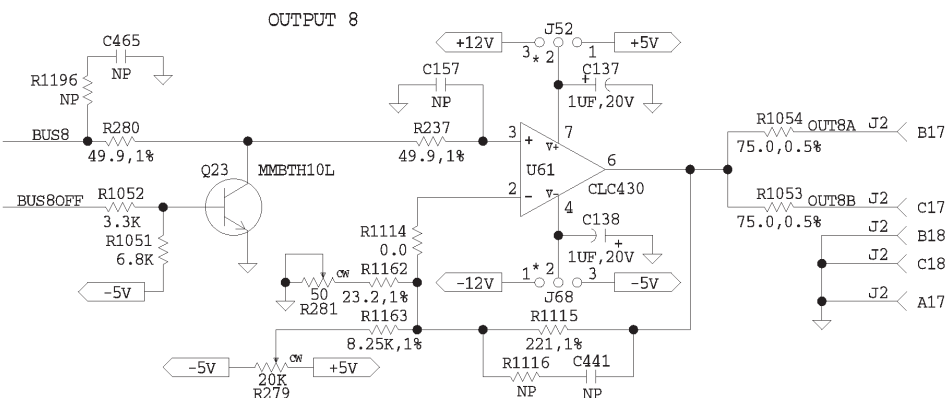
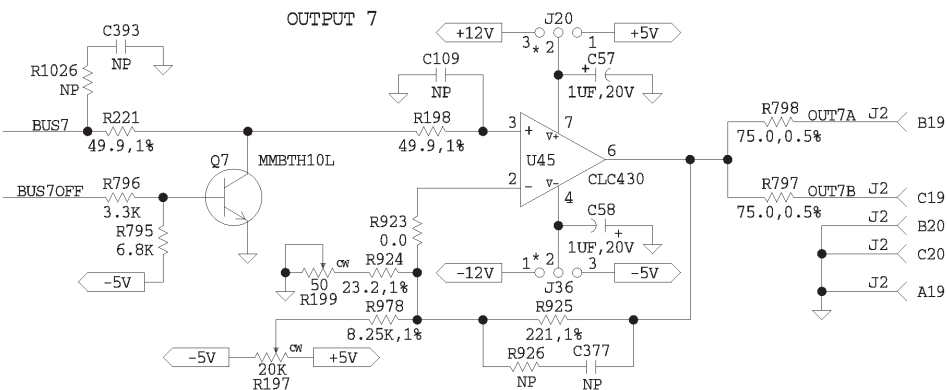
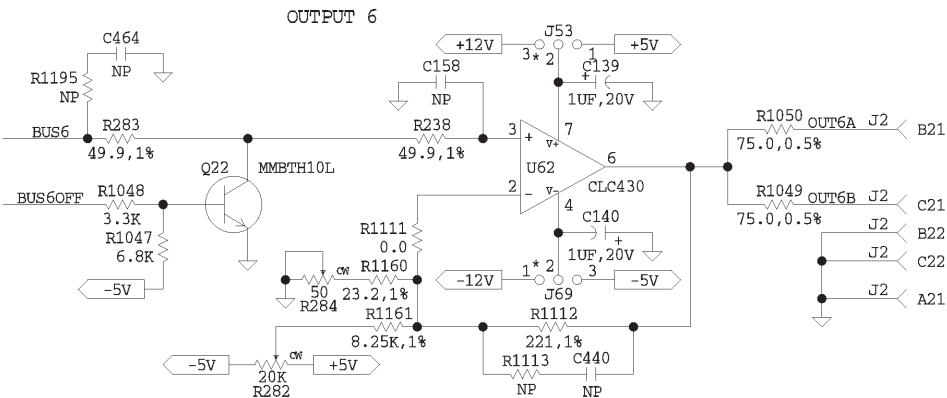
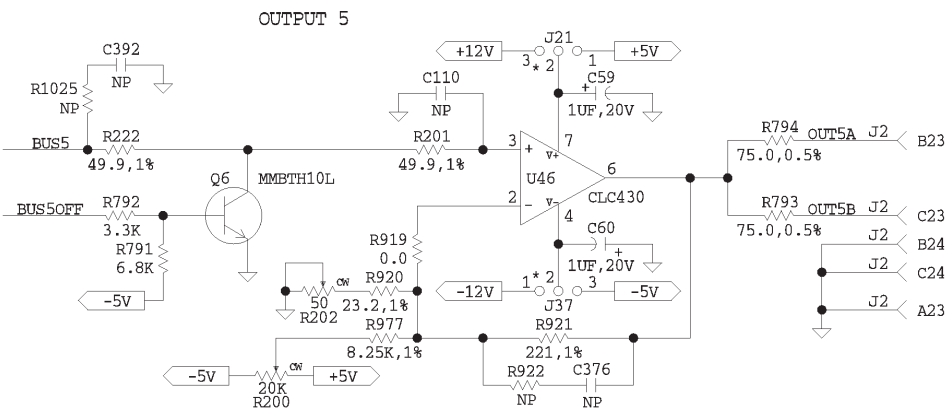
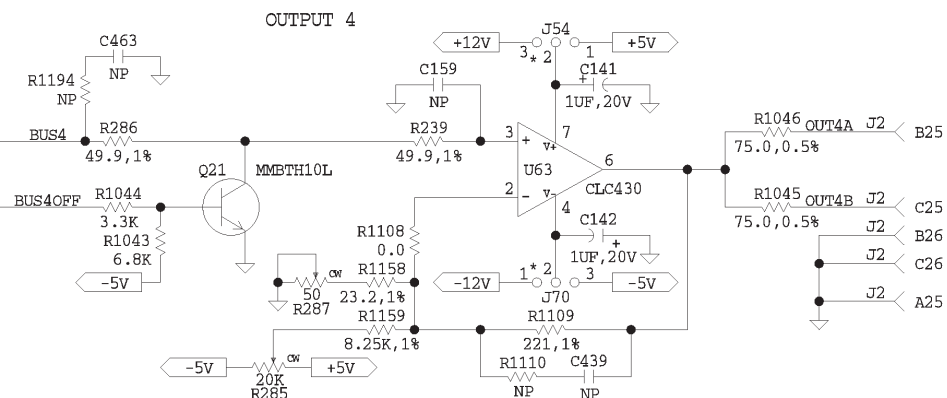
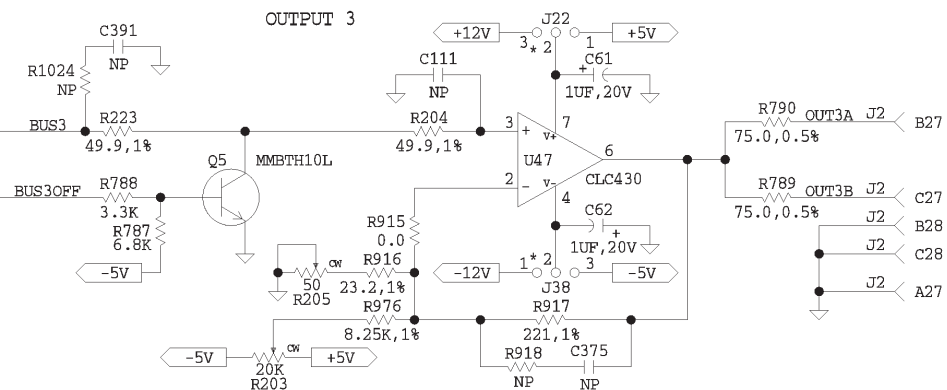
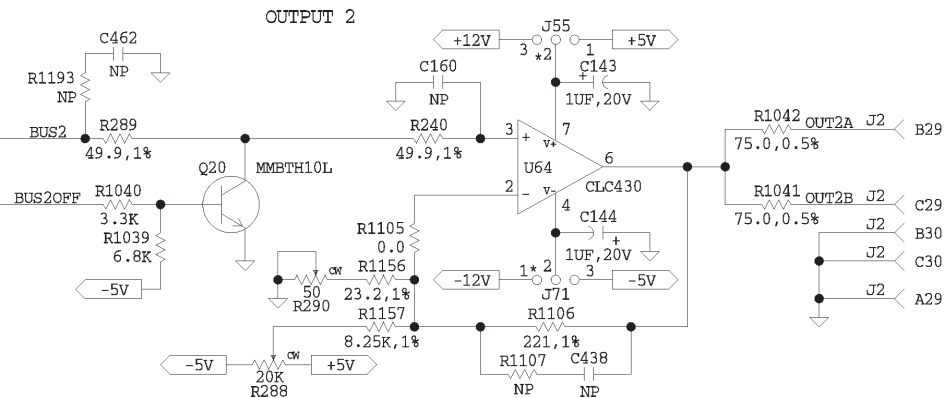
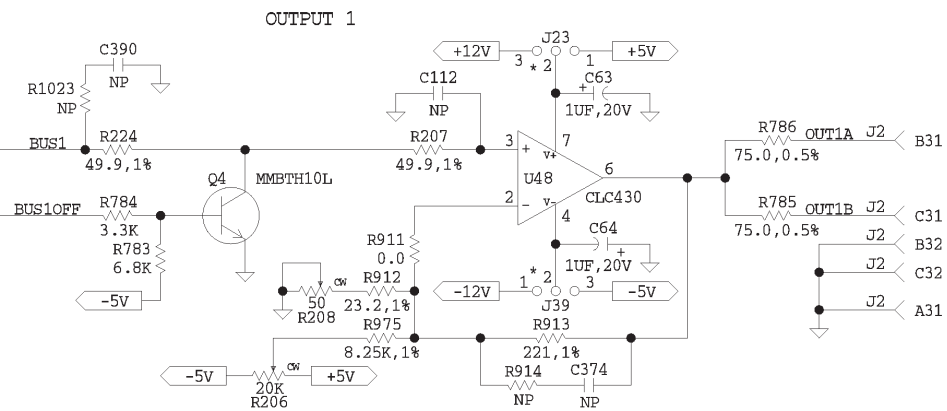
32X32 Sync Video Matrix Addendum



32X32 Sync Video Matrix Addendum

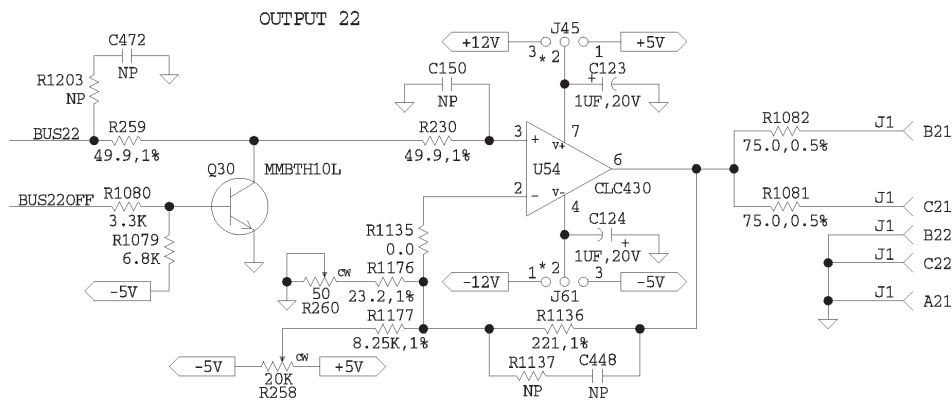
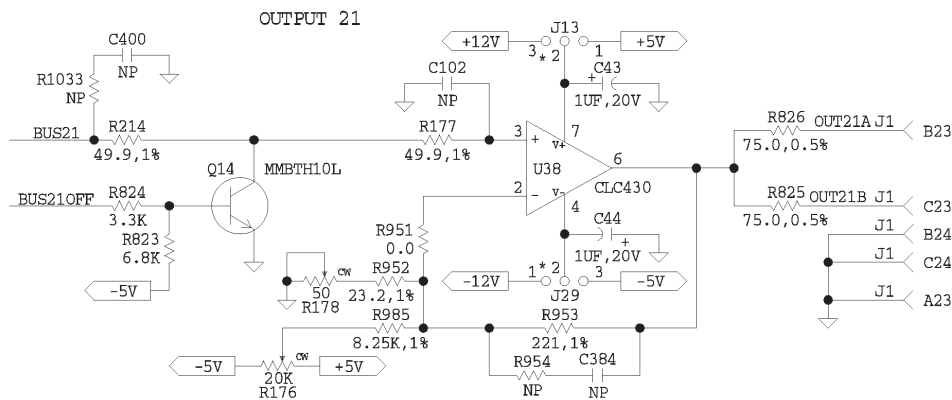
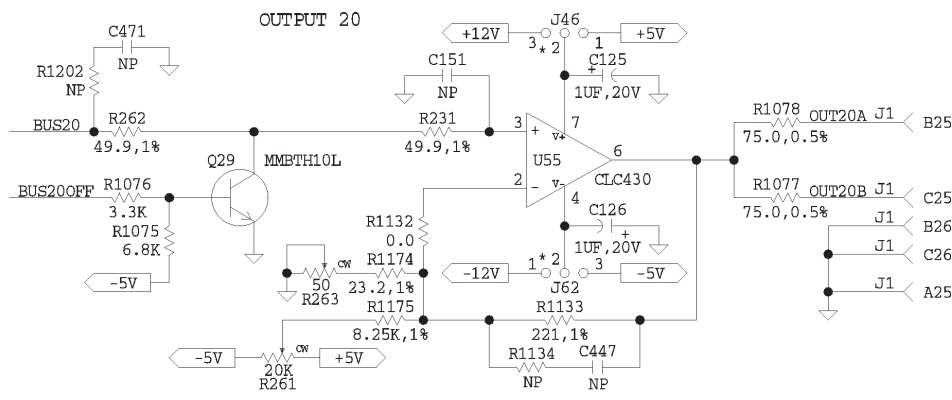
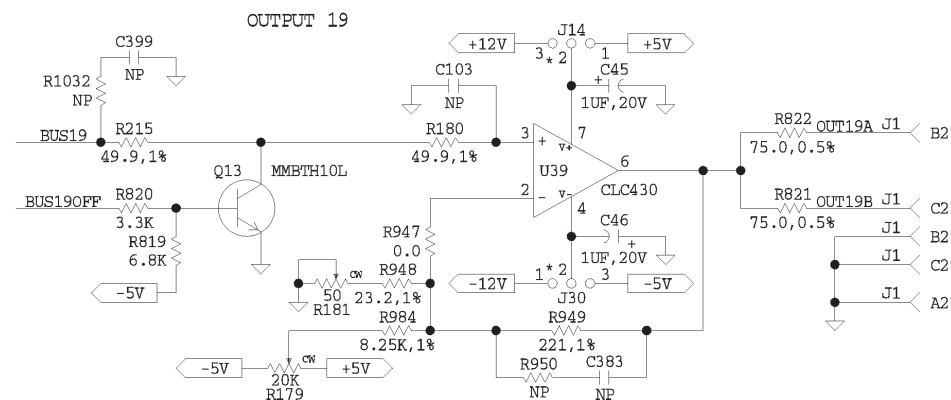
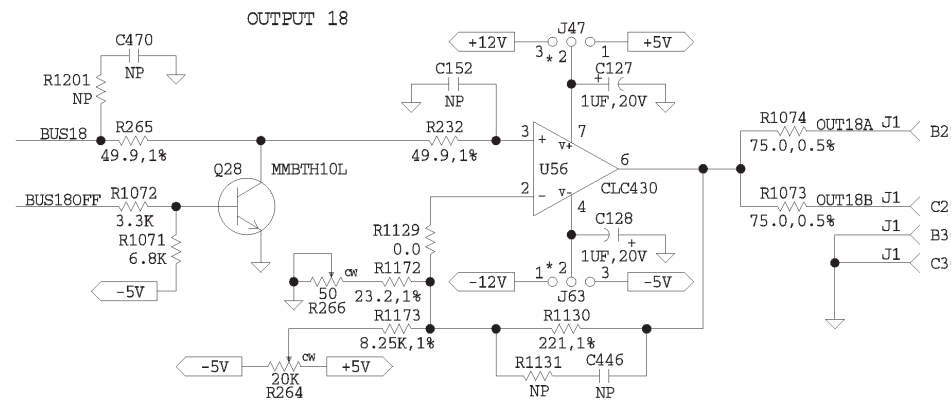
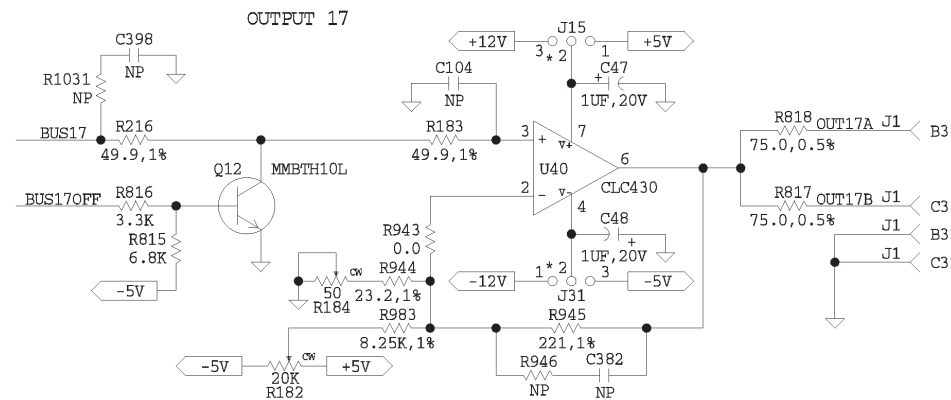
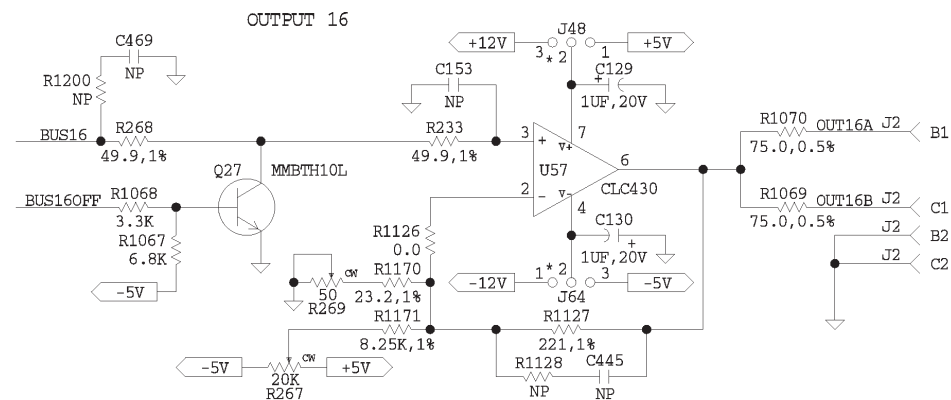
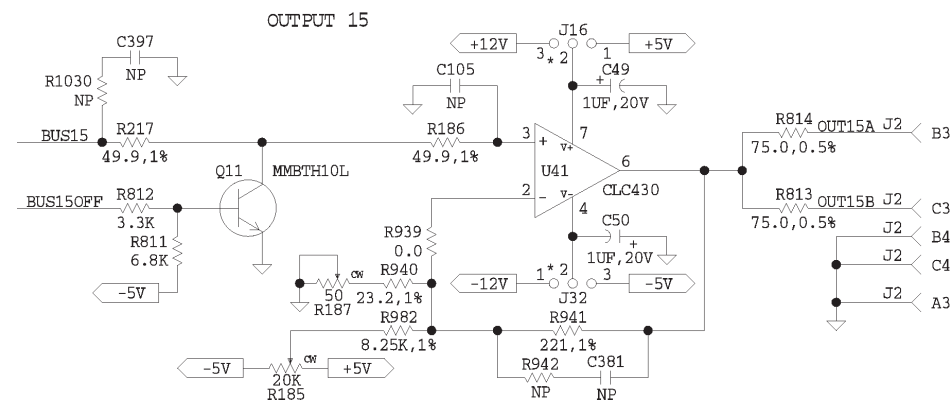
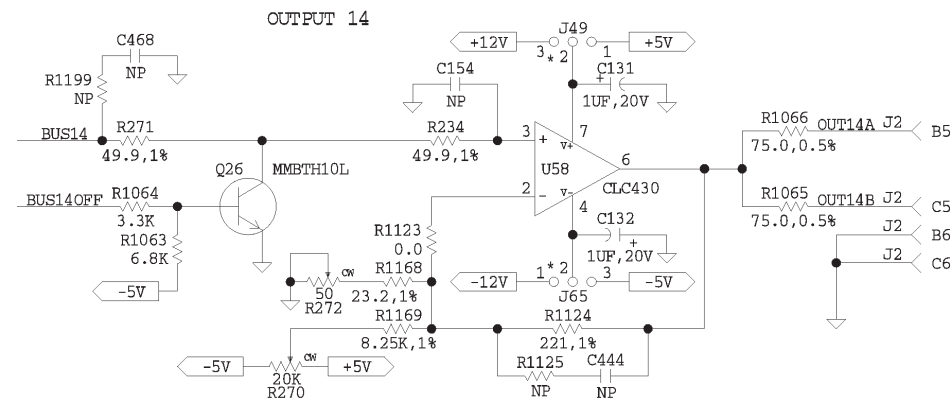
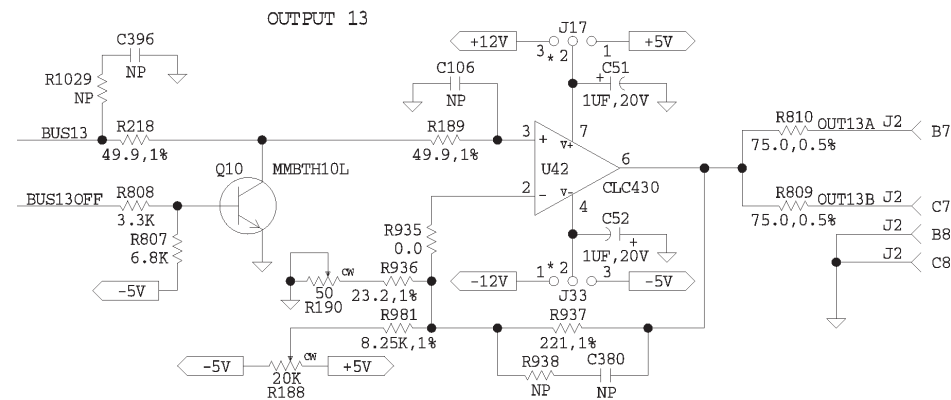
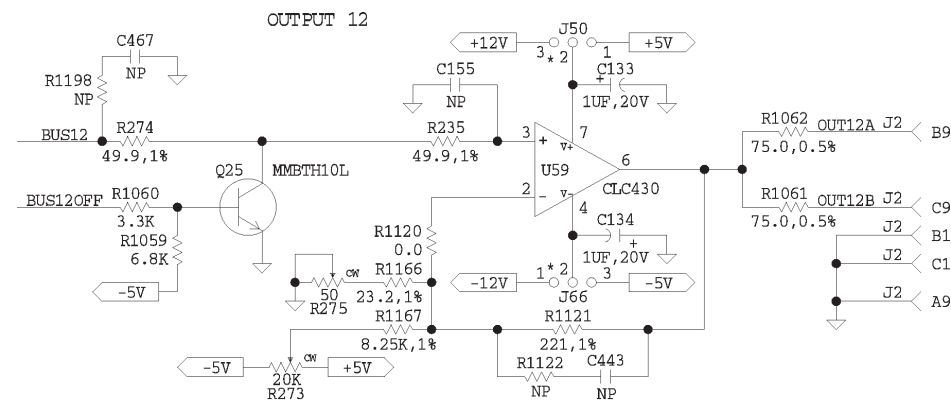


32X32 Sync Video Matrix Addendum



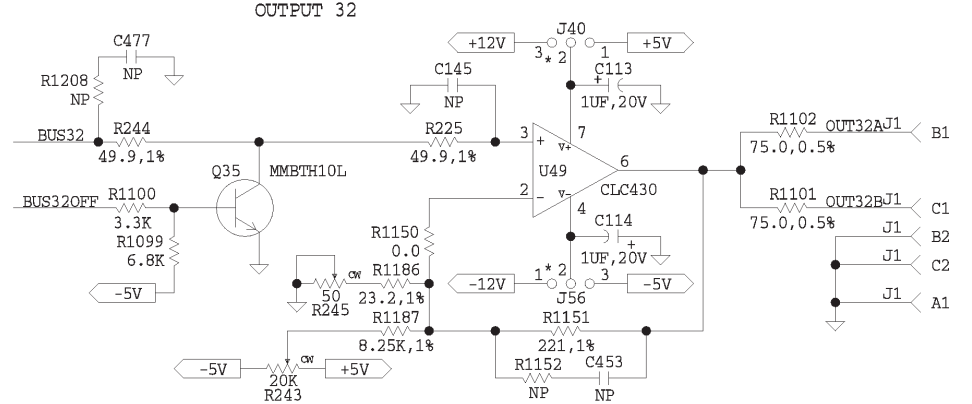
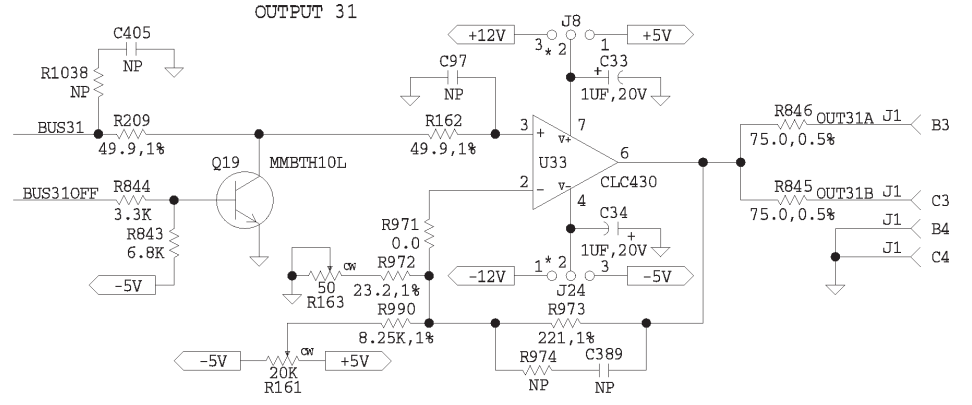
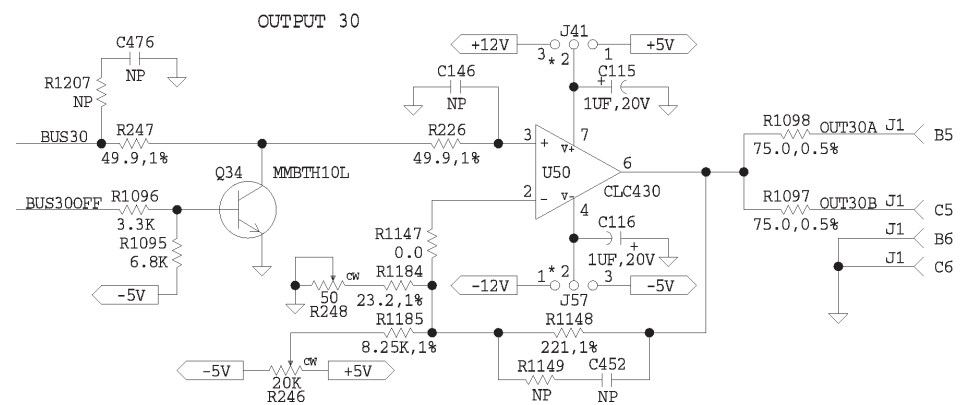
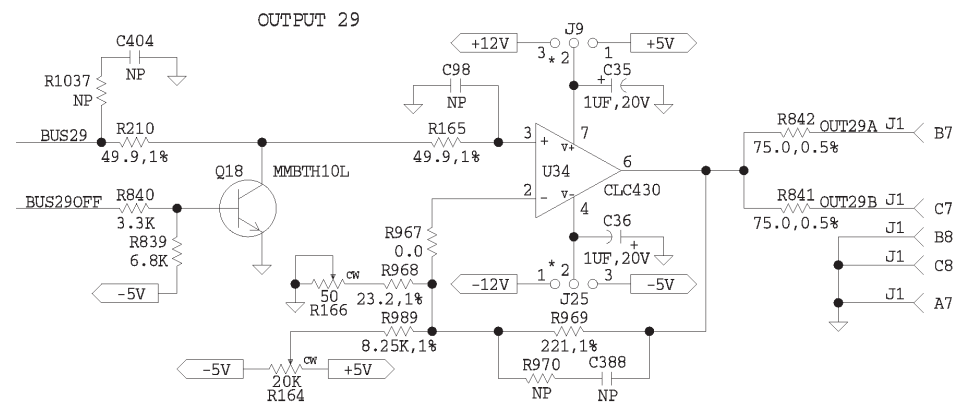
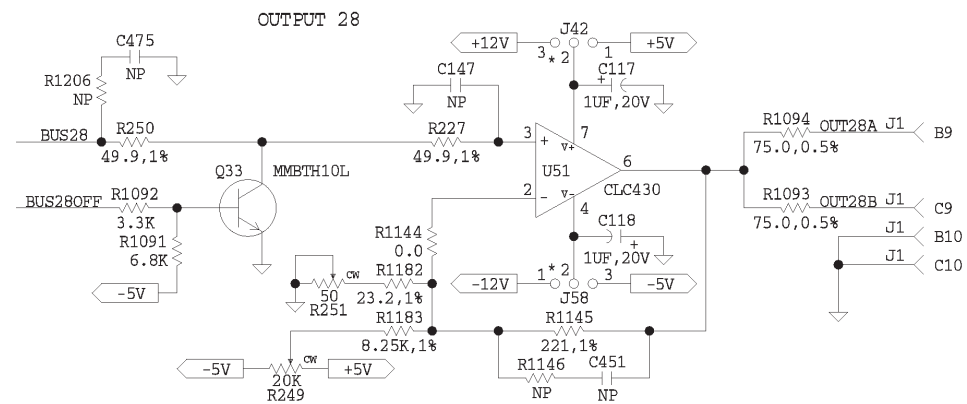
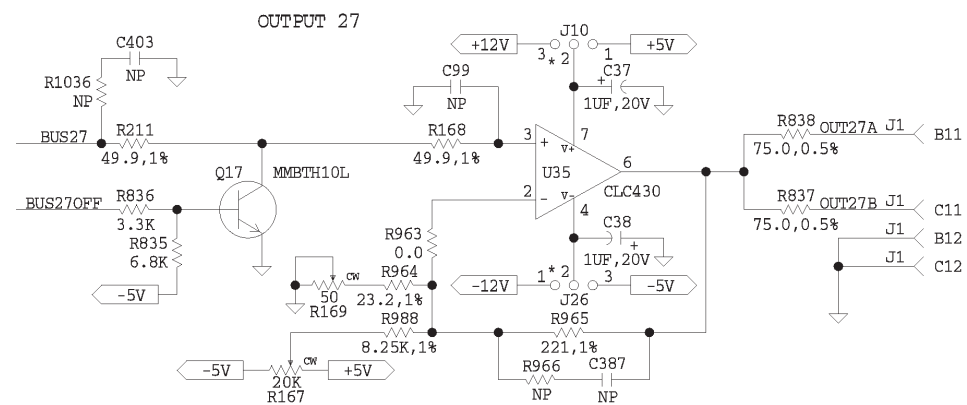
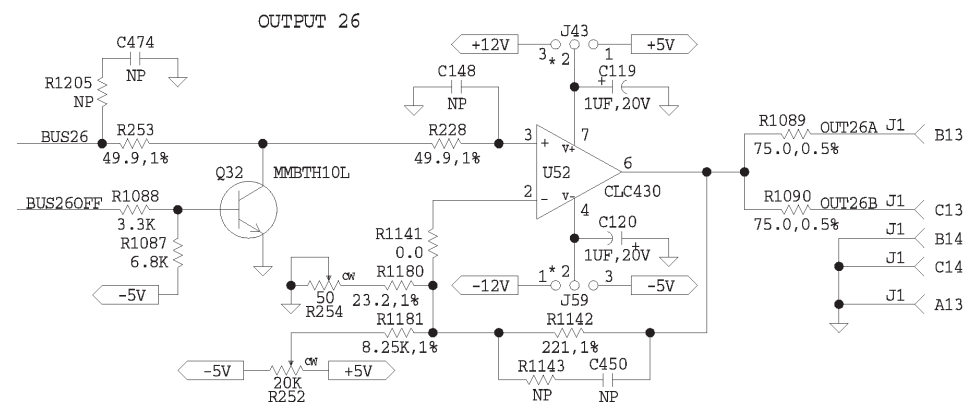
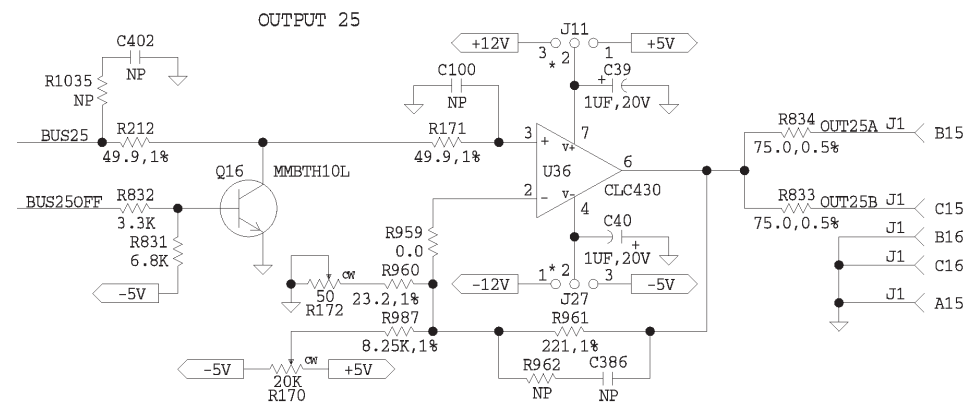
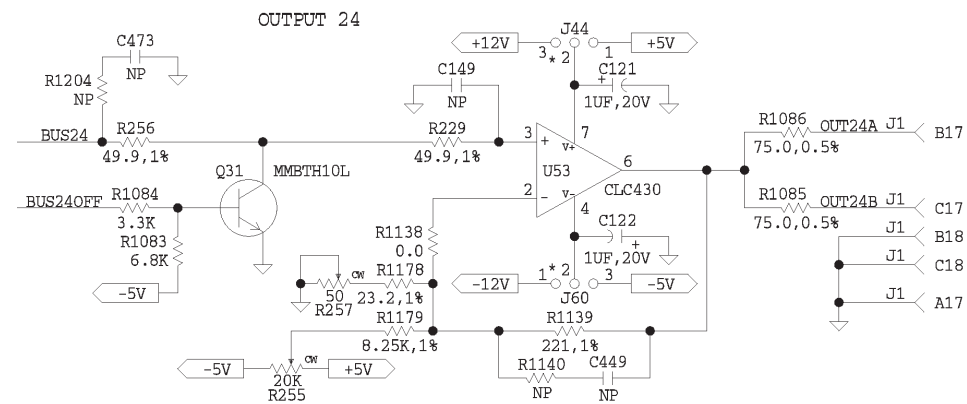
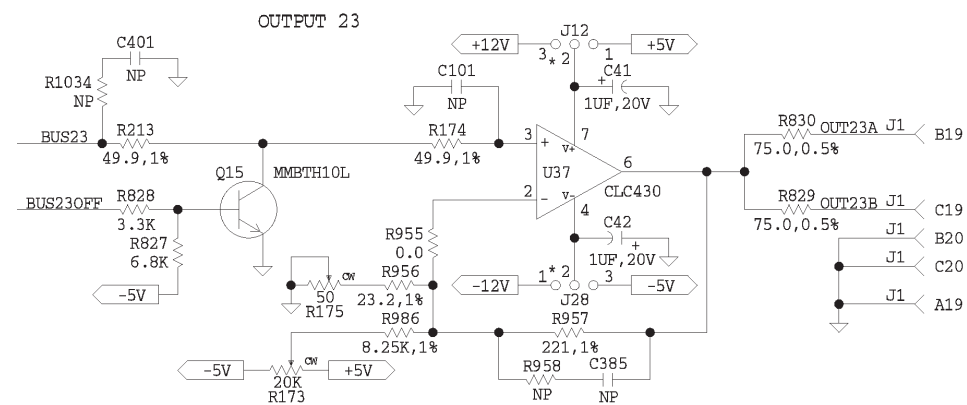
NOTE: * - A 10 OHM 0805 RESISTOR WILL BE INSTALLED FOR VOLTAGE SELECTION.

32X32 Sync Video Matrix Addendum



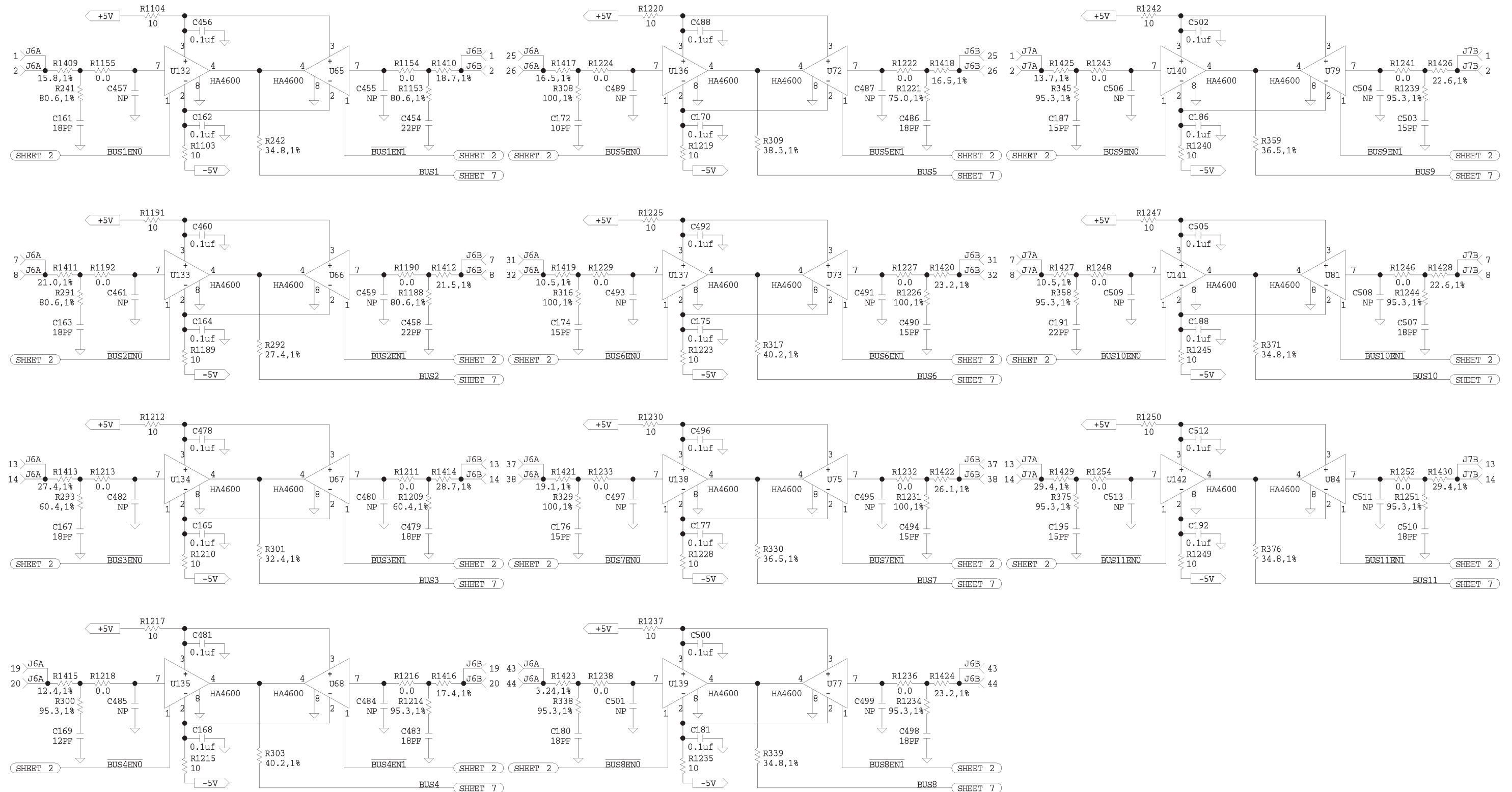
NOTE: * - A 10 OHM 0805 RESISTOR WILL BE INSTALLED FOR VOLTAGE SELECTION.

32X32 Sync Video Matrix Addendum

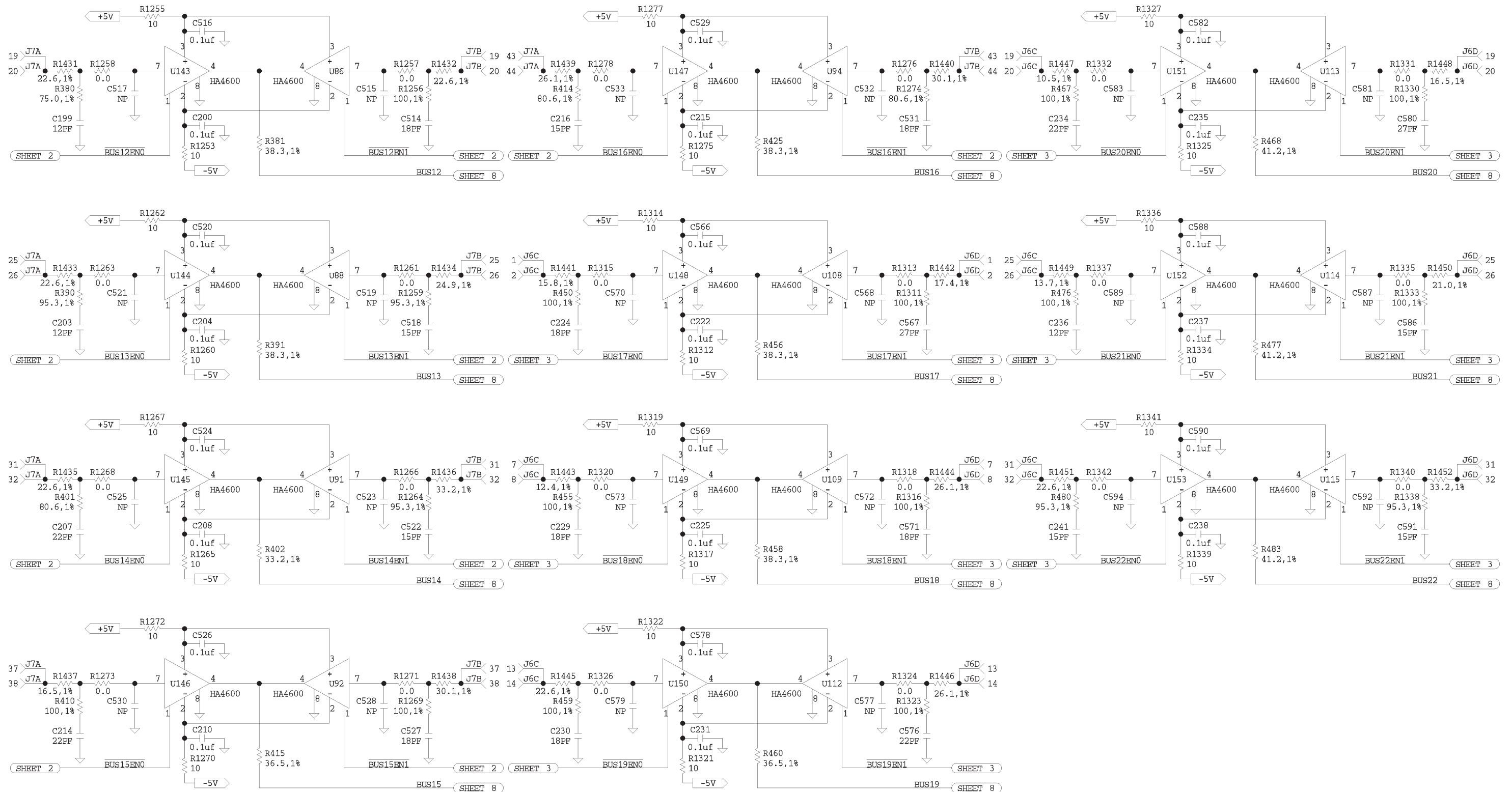


NOTE: * - A 10 OHM 0805 RESISTOR WILL BE INSTALLED FOR VOLTAGE SELECTION.

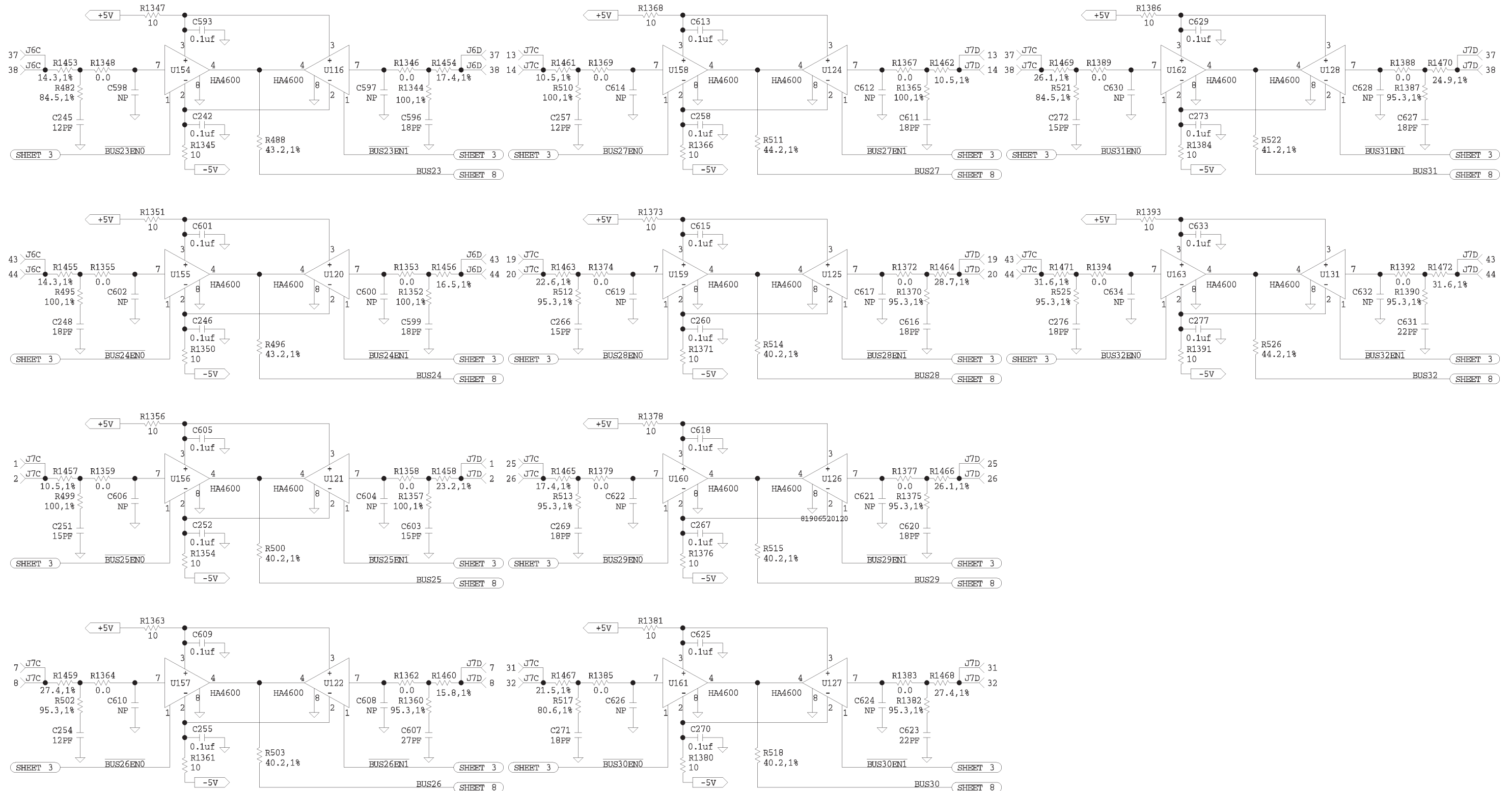
32X32 Sync Video Matrix Addendum



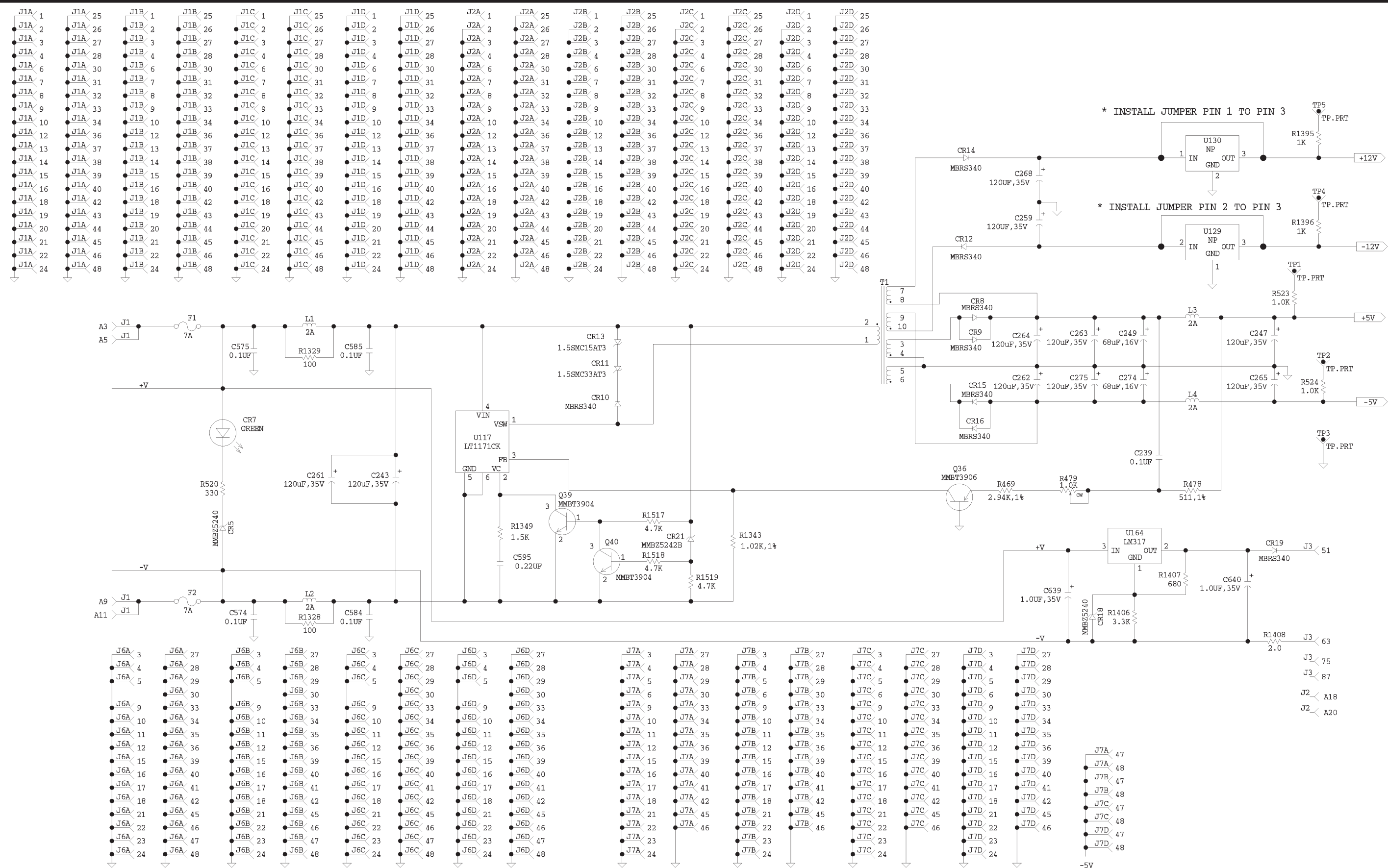
32X32 Sync Video Matrix Addendum



32X32 Sync Video Matrix Addendum



32X32 Sync Video Matrix Addendum



Schematic (Sheet 15 of 15) • 32X32 Sync Video Matrix Card • SC33-1412