PESA Switching Systems

VDARS422

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Document No. 81-9059-0388-0 Rev. B

Manual Updates:

12/31/96	Released for initial printing as REV A.
03-05-01	Rev B: Deleted Printing Specification per ECO CE00113. GLT

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1.1 Manual Overview

This manual provides detailed instructions for installing and operating the PESA VDARS422 Frame. This manual is divided into seven sections as shown. Sections 3 and 4 contain in-depth operational and functional descriptions of the VDARS422 Frame and the associated VDARS422 Card.

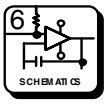
Section 1, **INTRODUCTION**, summarizes the manual, describes the product, presents a list of terms, and provides the panel specifications.

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 VDARS422 Frame is designed to convert RMS video signals into peak-to-peak signals (RS422 signals). Inversely, the VDARS422 can also convert peak-to-peak signals (RS422 signals) into RMS signals. Housed in a 2RU chassis with ten card slots, the VDARS422 Frame provides ten RMS to peak to peak inputs and outputs while also providing ten peak-to-peak to RMS inputs and outputs in a fully configured frame. Up to two power supply modules can be installed in the VDARS422 Frame to allow single frame power redundancy.

Developed as a modular frame, more VDARS422 Cards (up to ten) can be easily installed in the VDARS422 Mainframe as requirements in the field change. All plug-in modules and power supplies are installed and removed from the front.

Figure 1-1 VDARS422 Frame Front View

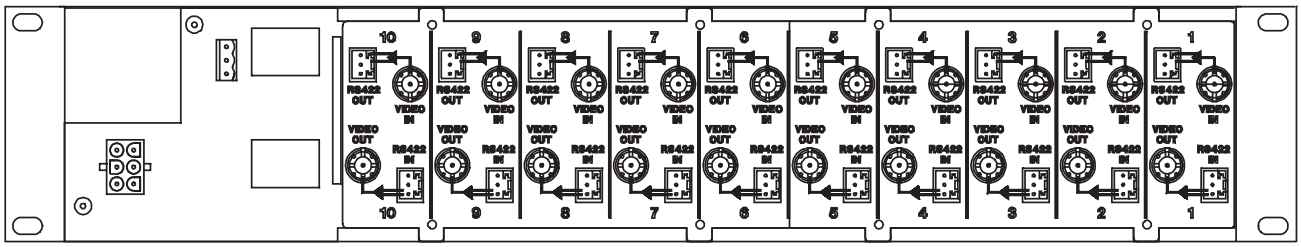


Figure 1-2 VDARS422 Frame Rear View

1.3 VDARS422 Frame Specifications

RS422 Input Section (Balanced Digital Input, Analog BNC Output)

INPUT CHARACTERISTICS

Level	Accepts all RS422A Standard Levels - 400mV p-p Minimum (Differential)
Impedance	100 Ohms
Coupling	Direct (DC)
Type	Balanced (Differential)
Number	One per VDARS422 Card, 3-Pin (Hi, Lo, Shield)

OUTPUT CHARACTERISTICS

Level	1VRMS, Symmetrical About Ground - 2.6V p-p Minimum
Impedance	75 Ohms
Type	BNC, Unbalanced
Coupling	Direct
Number	One per VDARS422 Card

ADJUSTMENTS

Output Level	2.6V p-p to 2.9V p-p
Output Position	Centers Output Signal About Ground

RS422 Output Section (Analog BNC Input, Balanced Digital Output)

INPUT CHARACTERISTICS

Level	3V p-p Maximum, 0.4V p-p Minimum
Impedance	75 Ohms
Coupling	Direct
Type	Unbalanced
Number	One per VDARS422 Card, BNC

OUTPUT CHARACTERISTICS

Level	RS422A Standard Levels For 5 Volt Drivers
Impedance	Low, Less Than 20 Ohms
Coupling	Direct
Number	One per VDARS422 Card, 3-Pin (Hi, Lo, Shield)

1.3 VDARS422 Frame Specifications Cont:

RS422 Output Section (BNC Input) Continued:

ADJUSTMENTS

Input Gain	Sets Proper Level to RS422 Driver IC
Input Level	Sets Proper DC Level for RS422 Driver IC

General Specifications

Frequency Range	20 MBit, Data or Clock
Power	±7.5VDC Input Minimum
	±12VDC Input Recommended Maximum
Current @ 20MBit	110mA Typical, +V
	25mA Typical, -V
Operating Temperature	0℃ to 40℃ Ambient
Operating Humidity	10% - 90% Non-Condensing

2.1 Introduction

This section details VDARS422 Frame installation procedures. The following topics are discussed:

- Receipt Inspection
- Unpacking
- Location
- Mounting
- Cabling
- VDARS422 Card Installation
- Power Supply Installation
- Front Panel Installation
- Rear Panel Connectors
- VDARS422 System Connections

NOTICE

THE VDARS422 CARDS CONTAIN STATIC SENSITIVE DEVICES. CARE SHOULD BE USED WHEN IT IS NECESSARY TO HANDLE THESE CARDS. IT IS RECOMMENDED THAT A GROUND WRIST STRAP AND GROUNDING MAT BE USED BEFORE ATTEMPTING ANY EQUIPMENT INSTALLATIONS AND ADJUSTMENTS.

2.2 Receipt Inspection

The VDARS422 Frame 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 VDARS422 Frame is comprised of a frame, a backplane, up to two video power supplies, and up to ten VDARS422 Cards. 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 VDARS422 Frame may be located anywhere power is available. However, units should be mounted as close as possible to their associated equipment to minimize cable runs. 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 VDARS422 Frame is rack mounted in a standard 19” equipment rack. Sufficient space must be provided behind the rack to allow for the video and power cables. All mounting holes should be utilized and mounting hardware tightened securely. As with all equipment installed in a rack, the bottom screw on each side should be installed before proceeding with the remainder of the screws. Then all screws should be securely tightened. Support the VDARS422 Frame's bottom while installing it in the rack. Figure 2-1 illustrates chassis installation in the equipment rack.

To install a VDARS422 Frame in an equipment rack follow these steps:

1. Align the chassis 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.

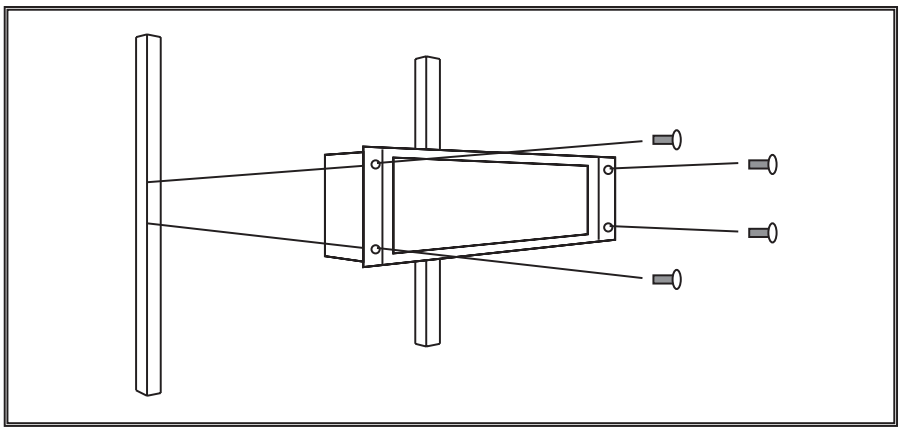


Figure 2-1 Chassis Installation

2.6 Cabling

Considerable weight will be added to the rear panel of the VDARS422 Frame by the video cables 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 VDARS422 Frame should be installed in the equipment rack prior to attaching cables.

It is **strongly** recommended that you utilize Belden 8281 (or equal) 75 ohm cable for all coaxial cabling and Belden 1800A (or equal) for all RS422 cabling. **NOTE: Do not use 50 ohm coxial cable, as this will produce standing waves and oscillations.**

Use the following rules when cabling the VDARS422 Frame:

1. Lay all cables in their intended positions, separating signal from power cables wherever possible.

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

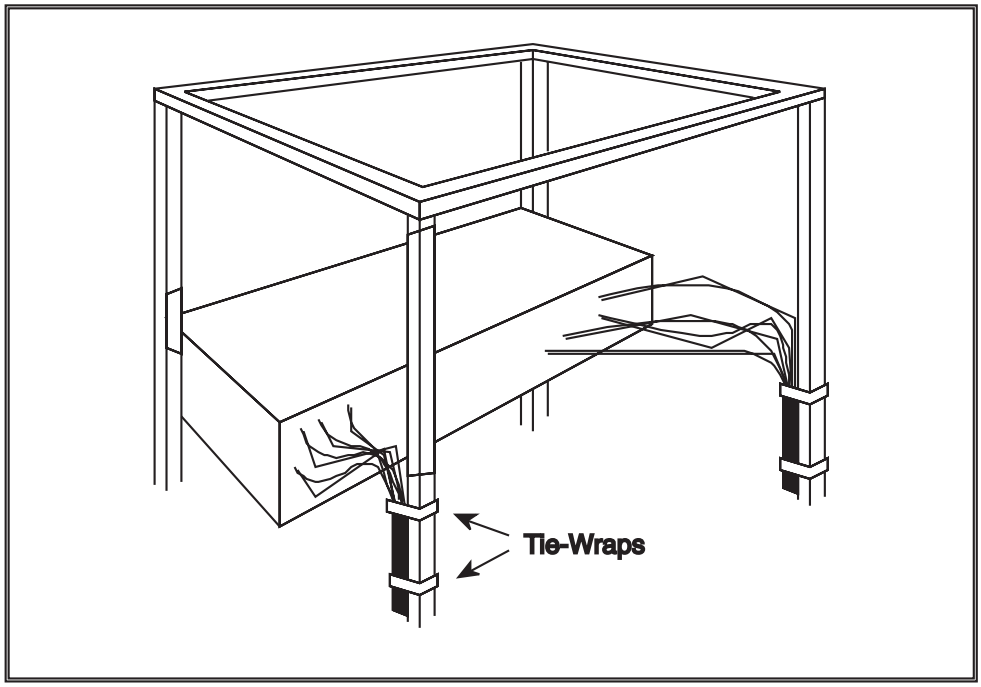


Figure 2-2 Cables Attached to Supports

2.7 VDARS422 Card Installation

To install a VDARS422 Card in the VDARS422 Frame take the following steps while referring to Figure 2-3:

1. Align the VDARS422 Card with a set of circuit card guides in either the center or left-hand compartment of the frame.

2. Carefully push the VDARS422 Card into the frame until the circuit card connector makes initial contact with the backplane connector. At this point, firmly but carefully push the VDARS422 Card into the frame while making sure the connectors are properly aligned. Continue pushing the VDARS422 Card until it is in place and the connectors are firmly mated.

3. Repeat instructions 1-2 for each VDARS422 Card to be installed.

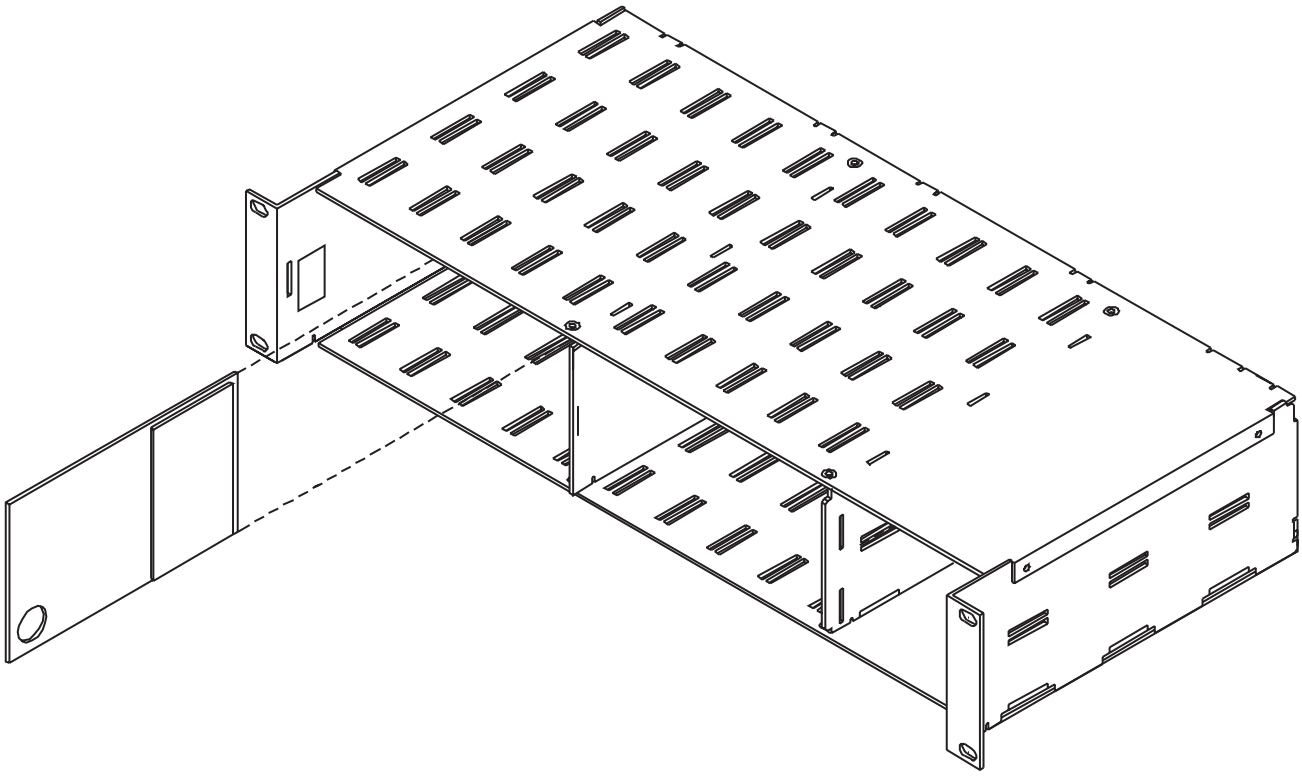


Figure 2-3 VDARS422 Card Installation

2.8 Power Supply Installation

Power is supplied to the VDARS422 Frame through an internally mounted PS45 Video Power Supply. Power can also be supplied by an internally mounted secondary power supply or from an external power supply through the external power supply connector. External power supplies must be diode isolated from the internal power supplies. An 1N5821 or equivalent type diode may be used for this purpose. See Figure 2-4 for an illustration of the isolation diode installation. Each PS45 Video Power Supply provides ±9-16 volts unregulated DC.

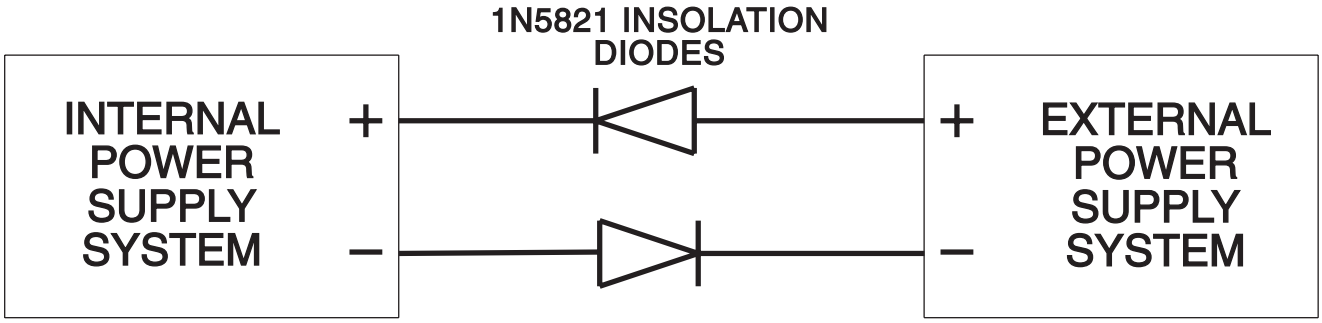


Figure 2-4 Isolation Diodes Installation

In a redundant external power configuration, it should be noted that the VDARS422 Frame does not differentiate between the supply intended as primary power and the supply intended as backup. Therefore, consideration should be given to avoid overloading the power supplies by having less than one supply per frame in multi-frame configurations.

To install a PS45 Power Supply in the VDARS422 Frame take the following steps while referring to Figure 2-5:

1. Align the shield plate attached to the primary PS45 Video Power Supply with the lower set of circuit card guides in the right-hand side of the frame.

2. Carefully push the PS45 Video Power Supply into the frame until the power supply connector makes initial contact with backplane power connector. At this point, firmly but carefully continue pushing the PS45V Power Supply into the frame while making sure the connectors are properly aligned. Continue pushing the PS45V Power Supply until it is in place and the connectors are firmly mated.

3. Install the AC power cord in the rear of the VDARS422 Frame and recheck the seating of the PS45 Video Power Supply.

2.8 Video Power Supply Installation Continued:

4. If a redundant video power supply is to be installed, al;ign the shield plate attached to it with the upper set of circuit card guides in the right-hand side of the frame and repeat steps 2 and 3.

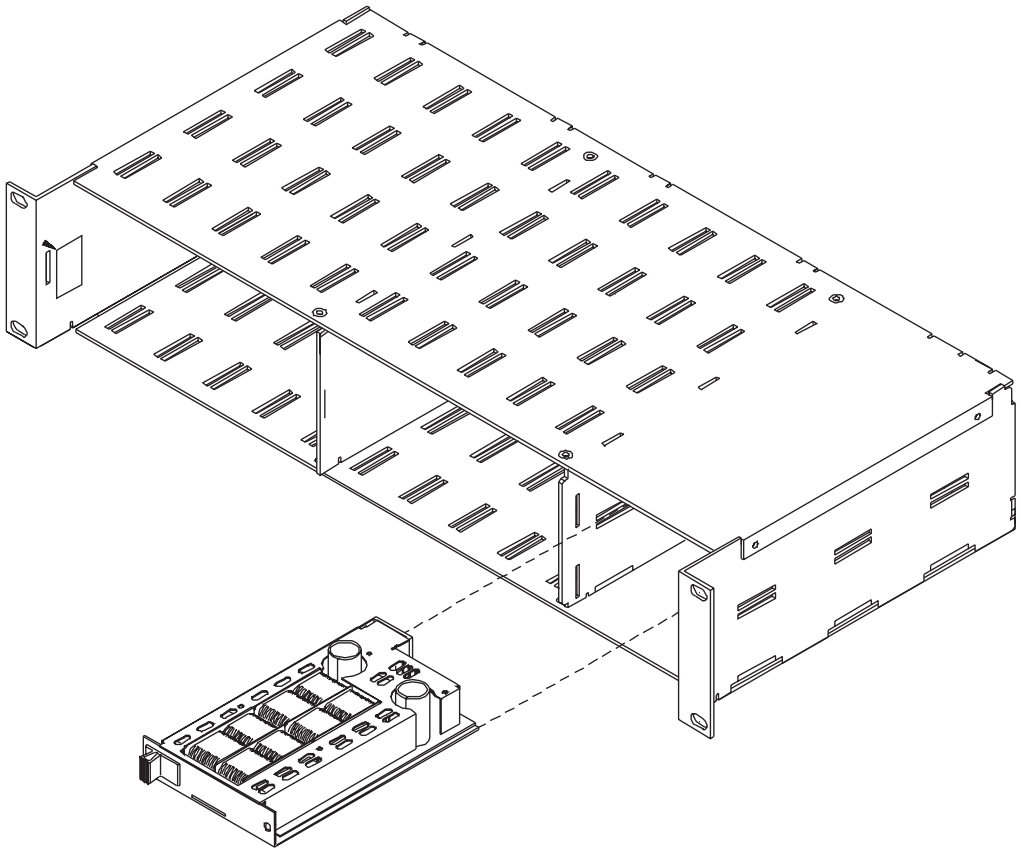


Figure 2-5 Video Power Supply Installation

2.9 Front Panel Installation

To install the access door (front panel) of the VDARS422 Frame refer to Figure 2-6 and take the following steps:

1. Align the front panel to the front of the VDARS422 Frame.

2. Now slide the front panel onto the frame assembly until the slide locks snap into place.

2.9 Front Panel Installation Continued:

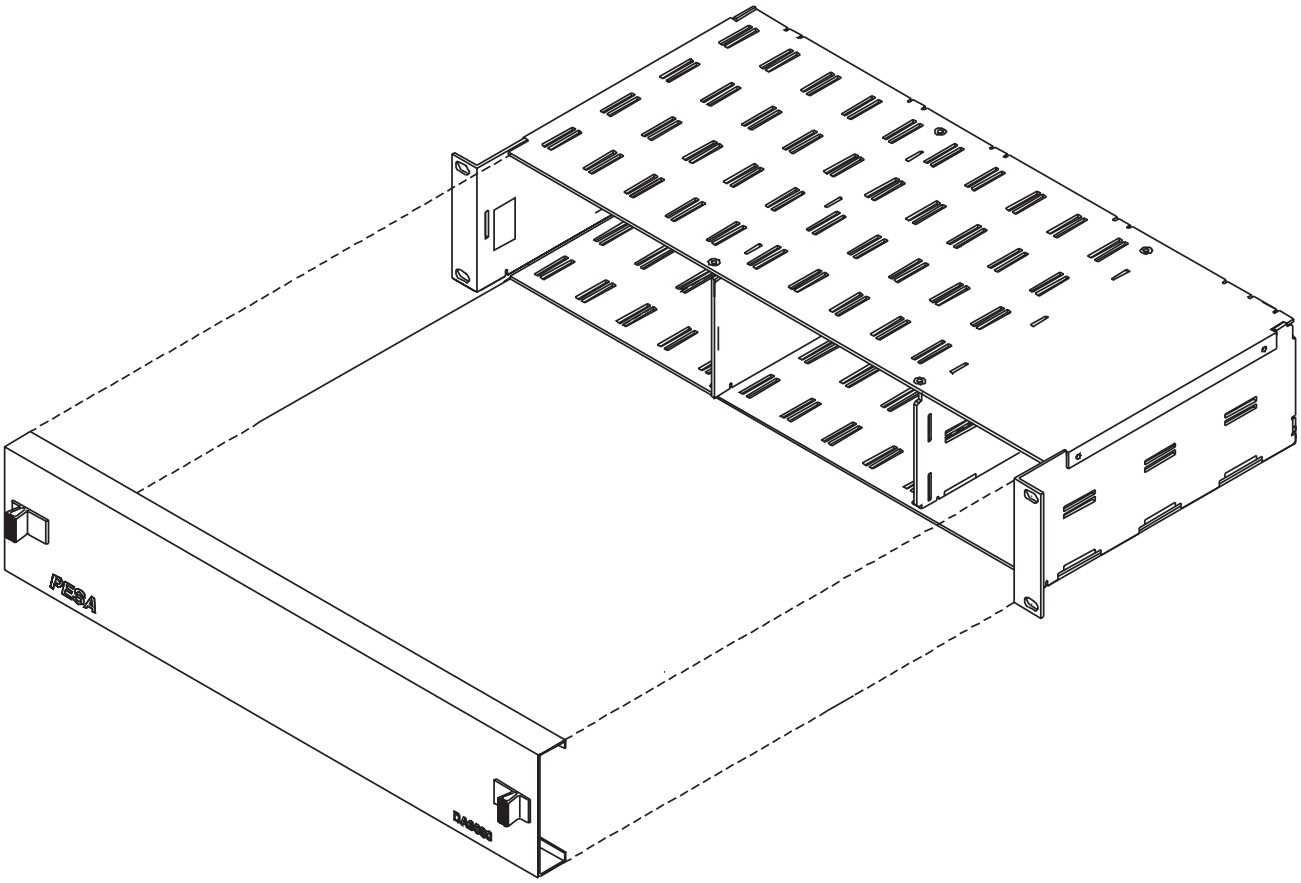


Figure 2-6 Front Panel Installation

2.10 Rear Panel Connectors

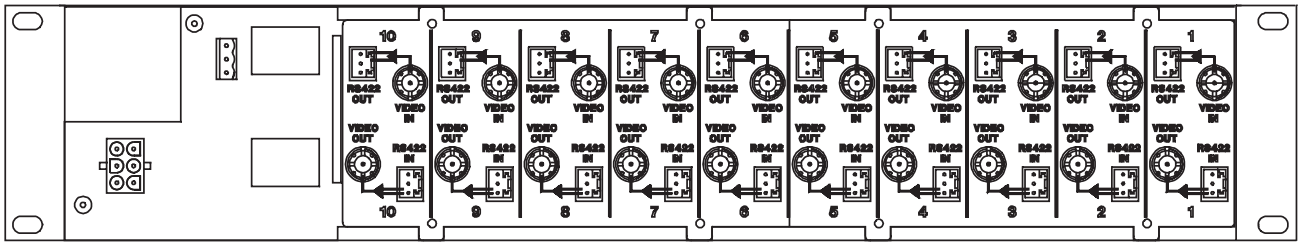


Figure 2-7 VDARS422 Frame Rear Panel

2.10 Rear Panel Connectors Continued:

Alarm Connector

The alarm connector is disabled when PS45 Video Power Supplies are utilized to power the VDARS422 Frame (standard configuration). The fan circuit is also disabled. When PS130 Power Supplies are utilized to power the VDARS422 Frame (optional configuration) the fan circuit is enabled and the alarm circuit, contained in the optional power supply's circuitry, 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 circuits supply a contact closure but do not provide an operational voltage for the external alarm. The alarm connector, located on the backplane, allows connection of the external alarm.

DC Power Connector

Power can be supplied to the VDARS422 Frame through an externally mounted power supply or from internal power supplies. The DC Power Connector can be used as DC power input (external power supply) or as DC power output (internal power supplies) to allow the mainframe to power additional equipment items.

RS422 Inputs to 75 Ohm BNC Outputs

There are ten sets of RS422 inputs to 75 ohm outputs on the rear panel of a fully configured VDARS422 Frame, one per VDARS422 Card.

75 Ohm BNC Inputs to RS422 Outputs

There are ten sets of 75 ohm inputs to RS422 outputs on the rear panel of a fully configured VDARS422 Frame, one per VDARS422 Card.

RS422 Connector Pinout

The pinout of the RS422 connectors on the rear panel of the VDARS422 Video is as shown in Figure 2-8.

2.10 Rear Panel Connectors Continued:

RS422 Connector Pinout Continued:

Figure 2-8 RS422 Connector Pinout

2.11 VDARS422 Frame System Connections

Once the VDARS422 Frames are installed in the equipment racks, system connections can be made. Use the following guide and the sample system connections illustration, Figure 2-9, to insure that system connections are configured correctly.

Connection Guide

1. Connect the RS422 sources to the RS422 inputs.
2. Connect the RS422 outputs to the RS422 destinations.
3. Connect the 75 ohm sources to the 75 ohm BNC inputs.
4. Connect the 75 ohm BNC outputs to the 75 ohm destinations.
5. Connect the primary power supply to the AC line.
6. If a redundant internal AC power supply is utilized, connect it to the AC line.

2.11 VDARS422 Frame System Conn. Cont:

Connection Guide Continued:

7. If a backup power supply is to be included in the system configuration, connect it to the DC input/output connector and then connect it to the AC line.

The VDARS422 Frame should now be powered up and ready for operation.

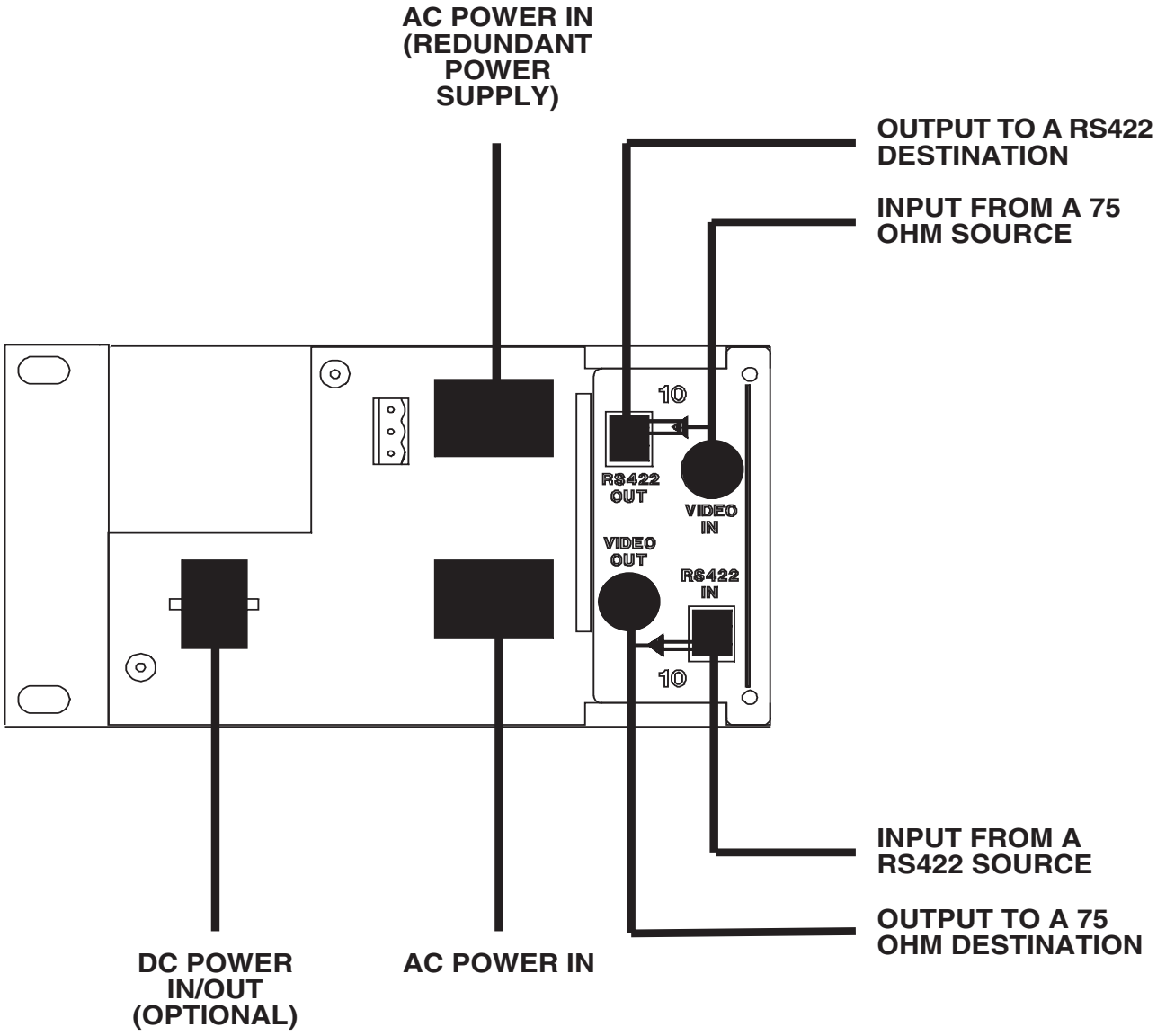


Figure 2-9 VDARS422 Frame System Connections

3.1 Introduction

The operation of the VDARS422 Frame consists of applying power to the chassis and monitoring the associated VDARS422 Cards and power supplies. This section describes the operation and adjustment of the VDARS422 Frame.

3.2 VDARS422 Card Operation

The operation of the VDARS422 Card consists of plugging the card into the VDARS422 Frame, powering the frame up, and then periodically monitoring the VDARS422 Card Power LED and the PS45 Power Supplies LEDs.

VDARS422 Card Power LED

The function of the power LED is to provide an easily visible method of monitoring the health and operation of the VDARS422 Card's voltage regulators. The power LED should be illuminated during normal operation. If power LED dims or extinguishes during operation check the operation of the VDARS422 Frame's power supply system. If the amplifier power supply system is operating correctly and the other VDARS422 Cards in the amplifier frame are operating correctly check the output of the voltage regulators on the malfunctioning board.

3.3 VDARS422 Card Adjustment

Though the VDARS422 Cards are tested and adjusted before shipment from the factory readjustment may be necessary when parts are replaced or equipment configuration changes. Refer to Component Assembly, VDARS422 Card, page 6.9 for VDARS422 Card adjustment and test-point locations.

3.3 VDARS422 Card Adjustment Continued:

The following test equipment or equivalent test equipment is required to properly test and adjust the VDARS422 Card:

Hewlett Packard 8165A Programmable Signal Source
Fluke 23 Multimeter
Tektronix 2445 Oscilloscope w/X10 Probe and Ground Lead
75 Ohm BNC Terminator
BNC T Connector (2)
Belden 1800A Test Cable (150' Test Cable Utilized at Factory)
Coaxial Cables (As Required)
Insulated Adjustment Tool

Equipment Setup

1. Turn on test equipment and allow thirty minutes warm-up time.

2. Connect the Belden 1800A test cable (a 150' test cable is recommended) from the RS422 Input Connector to the RS422 Output Connector corresponding to the VDARS422 Card being tested.

3. Connect the test equipment as shown in Figure 3-1.

4. Connect the coax cable from **CH 3** of the oscilloscope to the Video Input Connector corresponding to the VDARS422 Card being tested.

5. Connect the coax cable from **CH 2** of the oscilloscope to the Video Output Connector corresponding to the VDARS422 Card being tested.

3.3 VDARS422 Card Adjustment Continued:

Equipment Setup Continued:

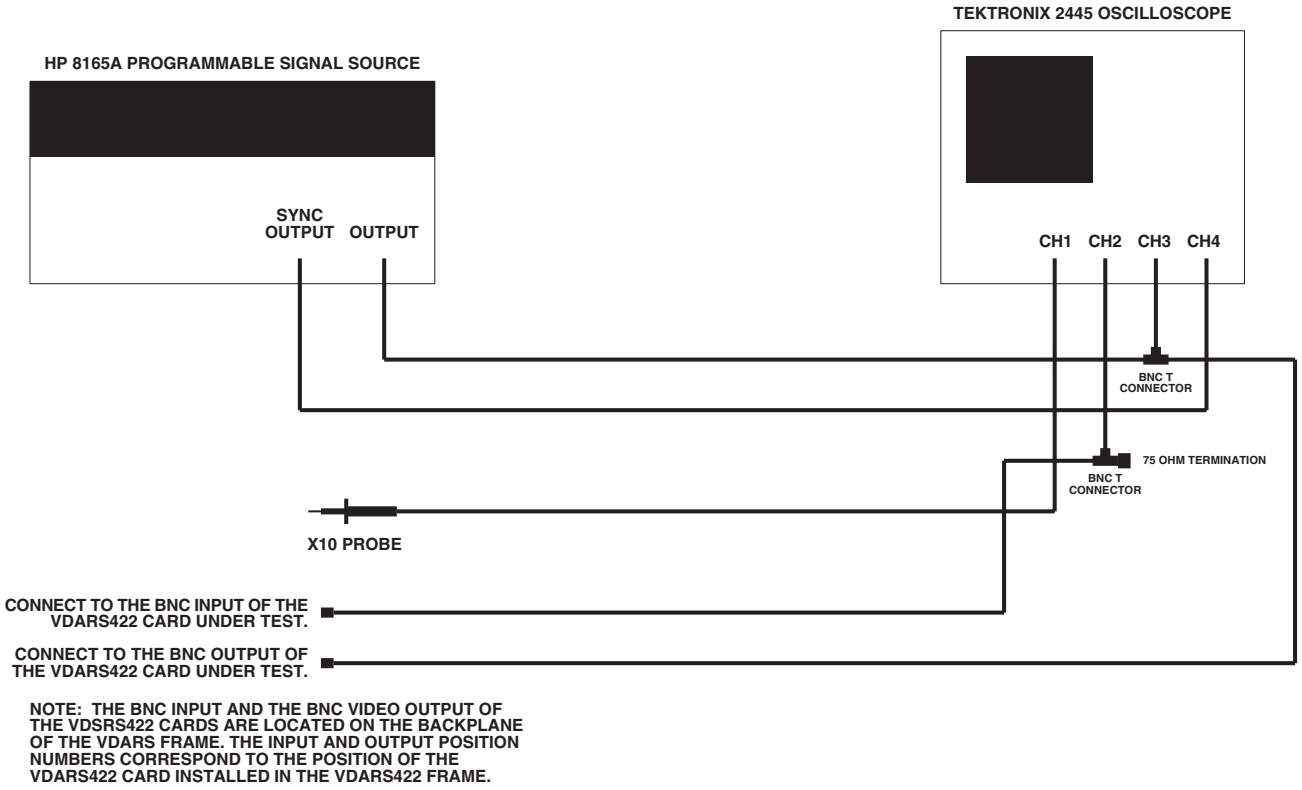


Figure 3-1 Test Equipment Connections

Programmable Signal Source Settings

1. Press the **SQUARE WAVE** Key in the **FUNCTION** Section. (The **SQUARE WAVE** LED should light.)

2. Press the **50%** Key in the **DUTY CYCLE** Section. (The **50%** LED should light.)

3. Press the **NORM** Key in the **INPUT MODE** Section. (The **NORM** LED should light.)

4. Press the **FRQ** Key in the **PARAMETER** Section, then enter **1** in the **DATA** Section, followed by pressing the **MHz** Key in the **ENTRY** Section. (The **FRQ** LED should light and the display should read 1MHz.

5. Press the **AMPL** Key in the **PARAMETER** Section, then **2.45** in the **DATA** Section, followed by pressing the **Hz or V** Key in the **ENTRY** Section.

3.3 VDARS422 Card Adjustment Continued:

Programmable Signal Source Settings Continued:

6. Press the **OFFSET** Key in the **PARAMETER** Section, then enter **0** in the **DATA** Section, followed by pressing the **Hz or V** Key in the **ENTRY** Section.

7. Press the **DISABLE/ENABLE** Key in the **OUTPUT MODE** Section to enable the output. (The **DISABLE/ENABLE** LED should turn off.)

Oscilloscope Settings

1. Control Settings:

MODE	**CH 1, CHOP**
VOLTS/DIV	**.1** (CH 1), **.5** (CH 2), **.5** (CH 3)
INPUT COUPLING	**GND** (CH 1), **GND** (CH 2)
TRIG MODE	**AUTO**
TRIG SOURCE	**CH 4**
TRIG COUPLING	**DC**
A and B SEC/DIV	**.1uS**

All other push-buttons **out.**

2. Adjust the **CH 1 POSITION** Control to position the trace on the center horizontal graticule line of the CRT display. This is the zero (ground) reference for channel 1.

3. Press and release the **CH 1** Push-Button in the **MODE** Section of the oscilloscope. Press the **CH 2** Push-Button to select channel 2. Repeat step 2 for channel 2.

4. Repeat steps 2 and 3 for channel 3.

5. Place both channel 1 and channel 2 input coupling switches in the **1M OHM DC** Position.

3.3 VDARS422 Card Adjustment Continued:

DC Voltage Test

1. Verify that **CR4** (green power OK LED) is on.

2. Set the multimeter to measure volts DC.

3. Connect the multimeter between pin 3 of U1 and ground (mounting hole next to R1). Verify a measurement of **+5.6V DC ±0.25V.**

4. Disconnect the multimeter from pin 3 of U1 and connect it to pin 3 of U6. Leave the ground lead connected. Verify a measurement of **-5.6V DC ±0.25V.**

5. Disconnect the multimeter.

Gain and DC Level Adjustments

1. Observe the oscilloscope CRT display. Verify that a 2.82V p-p centered at 0V (ground reference) square wave signal is displayed on the CRT. Press the **DELTA V** Push-Button to activate the delta volts measurement function. Two horizontal cursors should be superimposed on the CRT display. The CRT readout displays the equivalent voltage represented by the separation between the cursors. The position of one cursor is set by the **DELTA REF or DLY POS** Control and the position of the other is set by the **DELTA** Control.

2. Set the oscilloscope probe to **X10**. Place the probe tip on **TP2** of the VDARS422 Card. Connect the probe ground lead to ground on the VDARS422 Card. Adjust **R18** (Gain Adjust) to obtain a 6.0V p-p centered at 0V (ground reference) square wave signal.

3. Remove the probe from **TP2** and place it on **TP1**. Leave the ground lead connected. Adjust **R3** (DC Level Adjust) to obtain a -0.5V to +3.7V square wave signal on the CRT display. **NOTE:** R18 (Gain Adjust) may have to readjusted as the adjustment of R3 (DC Level Adjust) interacts with the gain adjustment.

4. Remove the probe from **TP1**.

5. Press and release the **CH 1** Push-Button in the **MODE** Section of the oscilloscope. Press the **CH 2** Push-Button to select channel 2.

3.3 VDARS422 Card Adjustment Continued:

Gain and DC Level Adjustments Continued:

6. Observe the oscilloscope CRT display. Adjust **R20** (Gain Adjust) and **R21** (DC Level Adjust) to obtain a 2.84V p-p centered at 0V (ground reference) square wave on the CRT display.

7. At the programmable signal source, press the **FRQ** Key in the **PARAMETER** Section, then enter **40** in the **DATA** Section, followed by pressing the **MHz** Key in the **ENTRY** Section. (The **FRQ** LED should light.) The programmable signal source's display should now read 40MHz.

8. At the oscilloscope, press and release the 20MHz bandwidth limit push-button and set the **A and B SEC/DIV** Controls to **10nS**. Verify a 2.84V p-p centered at 0V (ground reference) square wave signal is displayed on the CRT.

9. Verify that the rise and fall times are less than **9 nS**. Rise and fall times are measured between the proximal and distal voltage levels, which are 10% and 90% of the base-line to top-line voltages. First adjust the **DELTA** Control (top cursor) until the voltage reading on the display indicates **2.56V**, then adjust the **DELTA REF or DLY POS** Control (bottom cursor) until the voltage reading on the display indicates **2.27V**. Note the point where the signal trace crosses the top and bottom cursors. Next, press the **DELTAt** Push-Button to activate the delta time measurement function. Two vertical cursors should now be superimposed on the CRT display. The CRT readout displays the equivalent time represented by the separation between the two cursors. Position the **DELTA REF or DLY POS** Control and the **DELTA** Control on the falling edge at the crossing noted above. Read the time measurement on the CRT display. Position the **DELTA REF or DLY POS** Control and the **DELTA** Control on the rising edge at the crossing noted above. Read the time measurement on the CRT display. Both the rise and fall times should be less than 9 nS.

10. Press and release the **CH 2** Push-Button in the **MODE** Section of the oscilloscope. Press the **CH 3** Push-Button to select channel 3. Press the **DELTAt** Push-Button to cancel the time measurement function and return the **A and B SEC/DIV** Control to **.1uS**.

11. Set the programmable signal source for a **1MHz** output.

12. Disconnect all test equipment and test cables.

4.1 Introduction

This section contains the functional descriptions of the VDARS422 Frame's electronic circuits. Included in this section are the functional descriptions of the VDARS422 Backplane, the VDARS422 Card, and the PS45 Power Supply. This manual section is divided into the following major topics:

- VDARS422 Backplane
- VDARS422 Card
- PS45 Video Power Supply

4.2 VDARS422 Backplane

The VDARS422 Backplane's electronic circuitry is divided into the input/output circuits and the power distribution circuits. The backplane's function is to provide the passive inputs to the VDARS422 Cards, passive outputs from the VDARS422 Cards, and to route power and ground to the individual VDARS422 Cards. The RS422 input/output circuits and 75 ohm BNC input/output circuits are repeated ten times on the VDARS422 Backplane so only one set of input/output circuits is described.

RS422 Input/Output

The RS422 input signal is routed through the RS422 input connector's pins 1 (HI), 2 (LO), and 3 (SHIELD) to pins 16 (HI), 32 (LO), 15 (SHIELD), and 31 (SHIELD) of the 32-pin circuit card connector. The RS422 output signal is tied from pins 1 (HI), 17 (LO), 2 (SHIELD), and 18 (SHIELD) of the 32-pin circuit card connector to pins 1 (HI), 2 (LO), and (SHIELD) of the RS422 output connector. Refer to Figure 4-1.

75 Ohm BNC Input/Output

The 75 ohm input signal is routed through the center pin of input BNC to pins 3 and 9 of the 32-pin circuit card connector. Shielding for the 75 ohm input connector is tied to pins 4 and 20 of the 32-pin circuit card connector. The 75 ohm output signal is tied from pins 14 and 30 of the 32-pin circuit card connector to the center pin of the 75 ohm output BNC. Shielding for 75 ohm output connector is tied to pins 13 and 29 of the 32-pin circuit card connector. Refer to Figure 4-1.

4.2 VDARS422 Backplane Continued:

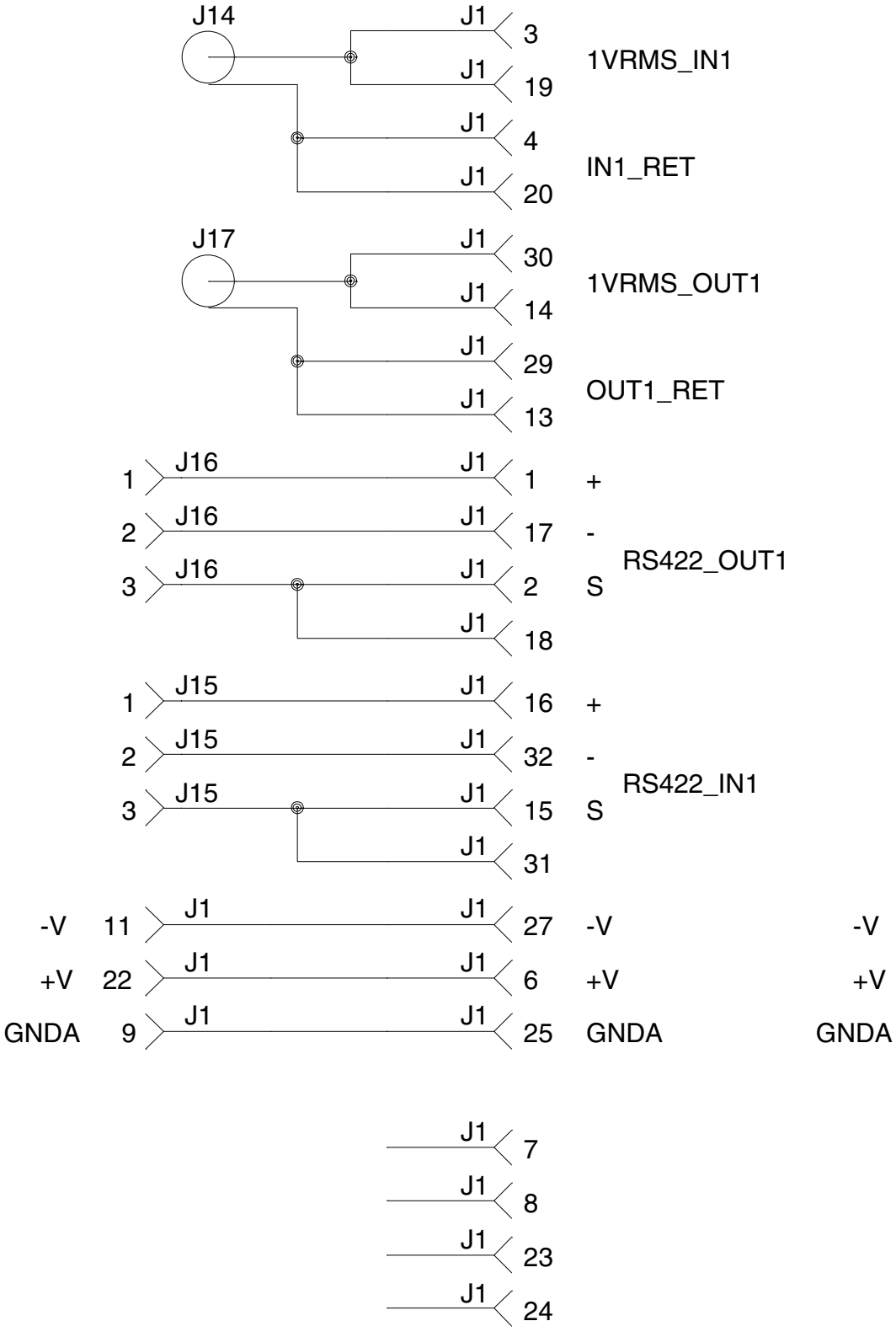


Figure 4-1 VDARS422 Backplane Inputs and Outputs

4.2 VDARS422 Backplane Continued:

Power Distribution

The power distribution circuits, located on the backplane, route the power supply plus and minus voltages to the associated VDARS422 Cards. Included are the routing of fan and alarm circuits. Refer to Figure 4-2.

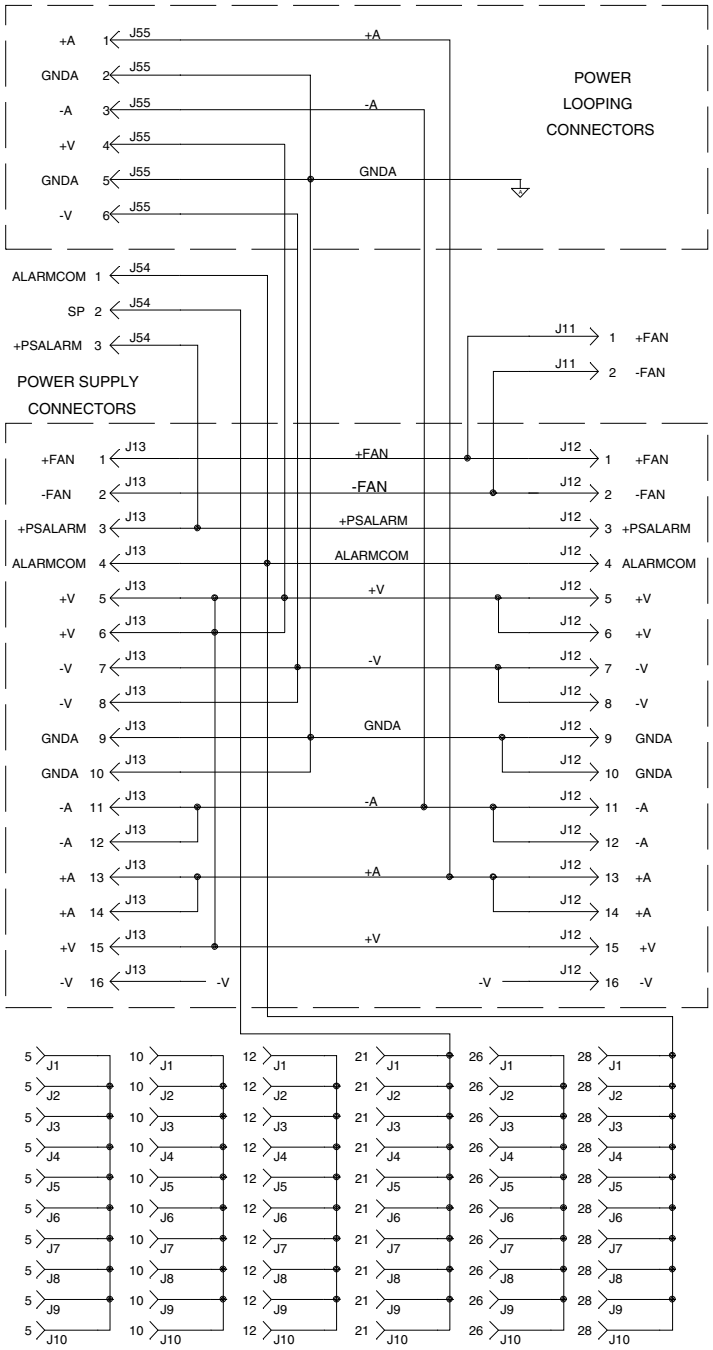


Figure 4-2 VDARS422 Backplane Power Distribution

4.3 VDARS422 Card

The electronic circuitry of the VDARS422 Card is divided into the power, and the 75 ohm input to RS422 output, the RS422 input to 75 ohm output electronic circuits. These circuits are described in the following paragraphs.

Power

The power circuit consists of voltage regulators U1 (+5.6 volts) and U6 (-5.6 volts) and their associated components. Positive unregulated DC is feed into U1 through pins 6 and 22 of the 32-pin connector (J1). The input surge current is reduced by R33 and filtered by C4. The output voltage level is controlled by U1 working in conjunction with CR3. The positive output voltage level is filtered by C5 and other 0.1uf capacitors located throughout the VDARS422 Card's electronic circuits. Negative unregulated DC is feed into U6 through pins 11 and 27 of the 32-pin connector (J1). The input surge current is reduced by R35 and filtered by C8. The output voltage level is controlled by U6 working in conjunction with CR6. The negative output voltage level is filtered by C7 and other 0.1uf capacitors located throughout the VDARS422 Card's electronic circuits. Refer to Figure 4-3.

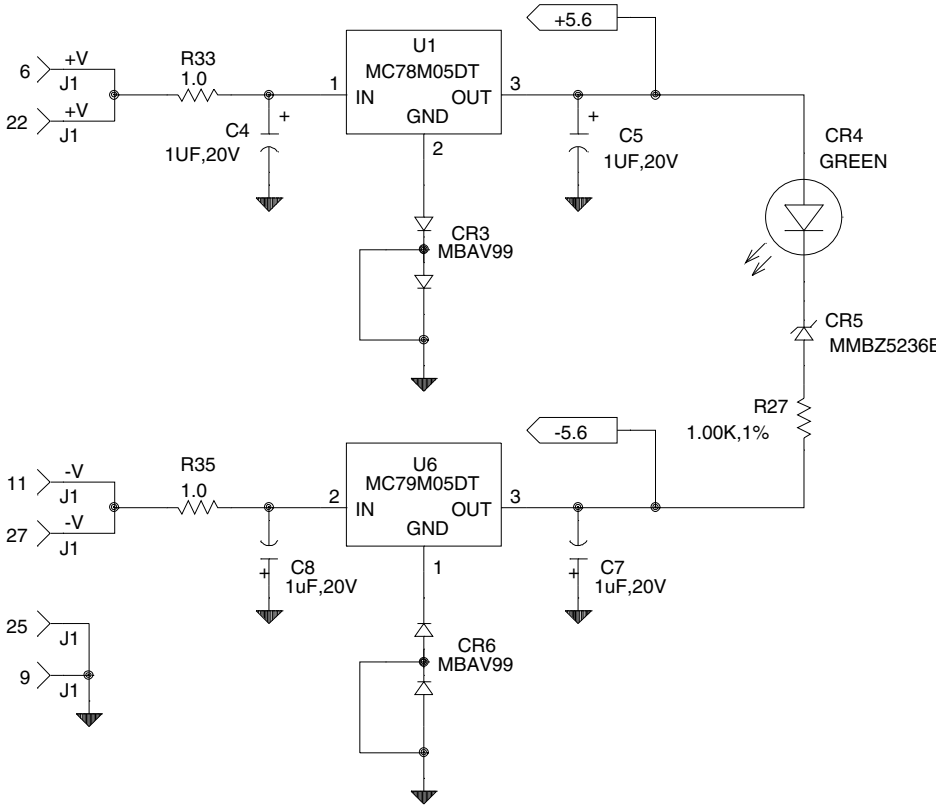


Figure 4-3 VDARS422 Card Power Circuits

4.3 VDARS422 Card Continued:

75 Ohm Input to RS422 Output

The groups of components in the 75 ohm input to RS422 output electronic circuit are divided into input, operational amplifier, level shifting line driver, and chip protect circuits. The input circuit provides 75 ohm of impedance to the input signal while functioning as a 2:1 divider. U3, an operational amplifier, working in conjunction with R2, R3, and R7 (level shifters) amplifies the input signal in order to provide the correct signal level to U2, a differential bus transceiver. R18, functioning in conjunction with R13 and R14, allows the adjustment of the gain of U3. R3 provides adjustment of the DC level of the input to U2. Pins 2 and 3 of U2 are high which forces U2 to function as a line driver. U2 sets the RS422 output signal to proper level and drives the RS422 output. CR1 and CR2 provide over-voltage protection for U2. Refer to Figure 4-4.

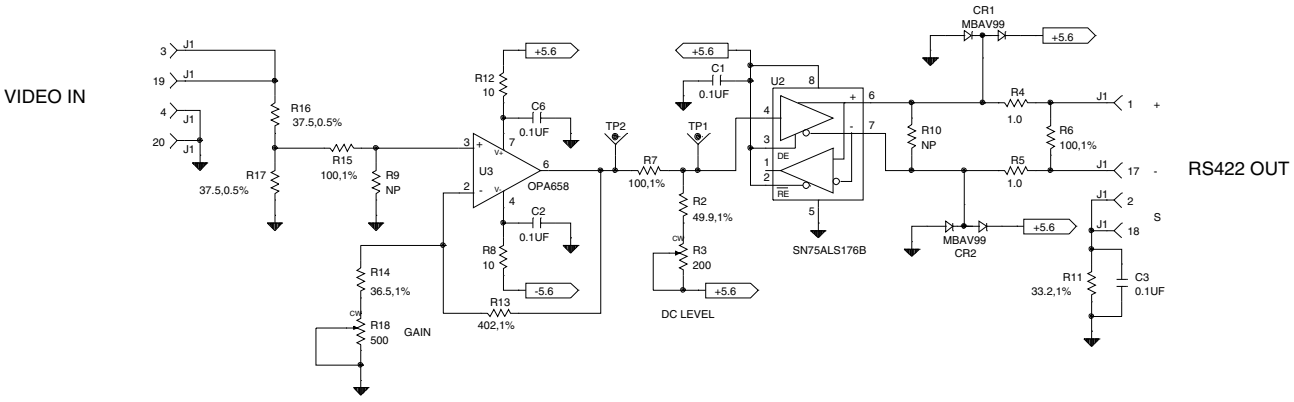


Figure 4-4 VDARS422 Card 75 Ohm Input to RS422 Output

RS422 Input to 75 Ohm Output

The groups of components in the RS422 input to 75 ohm output electronic circuit are divided into input, chip protect, level shifting receiver, and line driver (operational amplifier) circuits. Resistors R30 and R34 provide protection for U5 (a differential bus transceiver) against RS422 signal transients. CR7 and CR8 provide over-voltage protection for U5. Pins 2 and 3 of U5 are low (connected to ground) which forces U5 to function as a receiver. U5 conditions the RS422 input signal and provides the conditioned signal to the output line driver (U4). R21, R22, and R23 provide adjustment of the DC level of the input to U4 (an operational amplifier). U4 drives the output into 75 ohms. The adjustment of the gain of U4 is provided by R20 working in conjunction with R24 and R19. Refer to Figure 4-5.

4.3 VDARS422 Card Continued:

RS422 Input to 75 Ohm Output Continued:

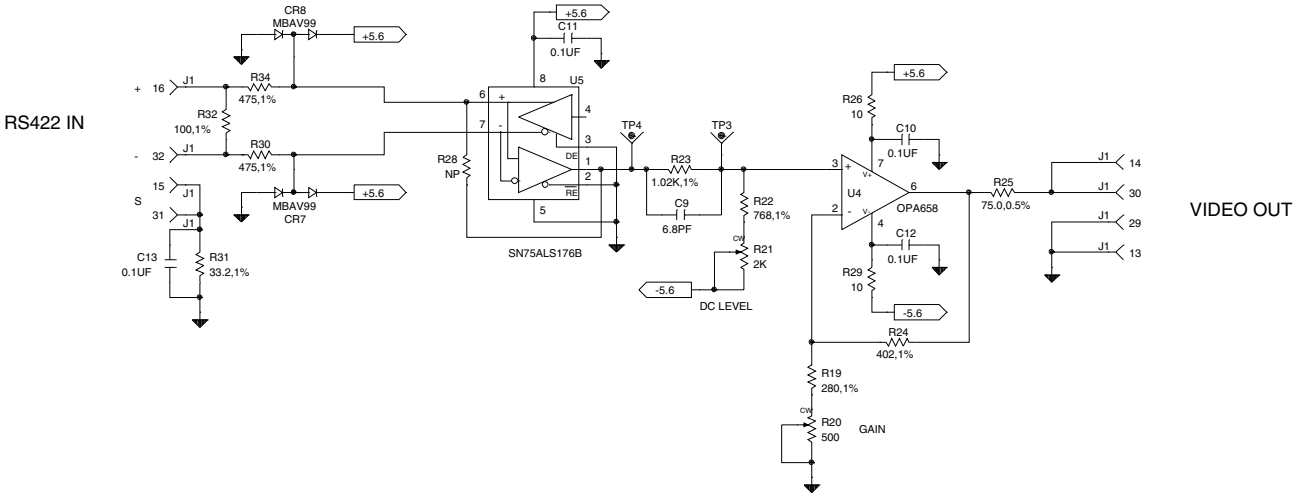
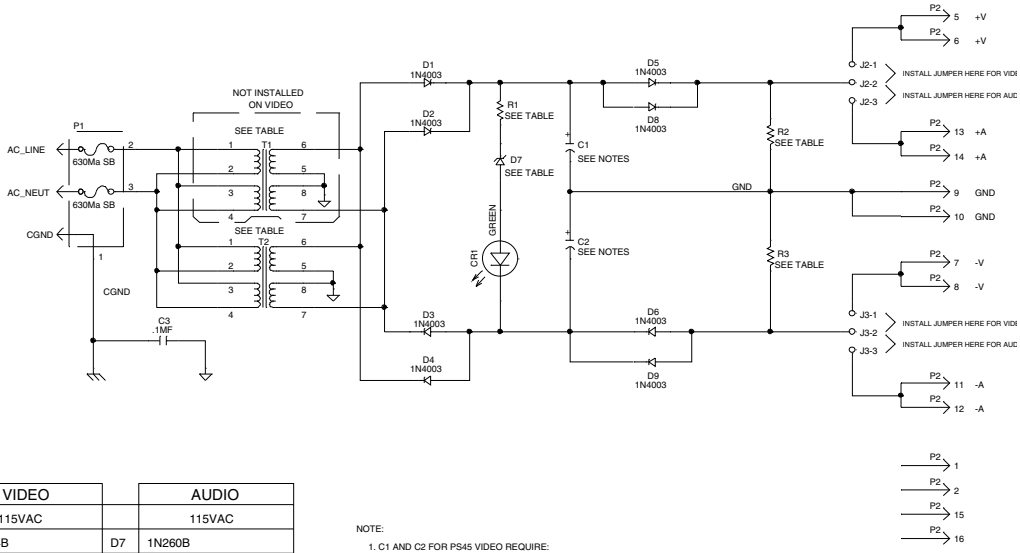


Figure 4-5 VDARS422 Card RS422 Input to 75 Ohm Output

4.4 PS45 Video Power Supply

The PS45 Video Power Supply is an unregulated power source that supplies plus and minus DC voltages to the VDARS422 Frame and associated circuit cards. Both the 115VAC (US) and 220VAC (OUS) models of the PS45 Video Power Supply are similar in design so only one model is discussed here. Refer to Figure 4-6, Power Supply PCB (US), and to Figure 4-7, Power Supply PCB (OUS).

4.4 PS45 Video Power Supply Continued:



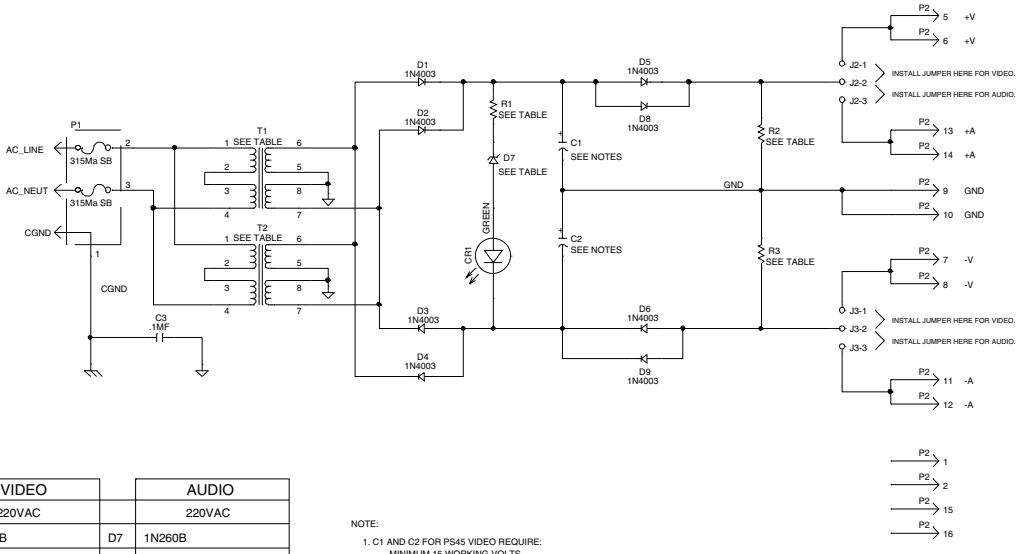
	VIDEO		AUDIO
	115VAC		115VAC
D7	1N5244B	D7	1N260B
R1	560 OHM 5% 1/4w	R1	1500 OHM 5% 1/4w
R2	560 OHM 5% 1/4w	R2	6800 OHM 5% 1/4w
R3	560 OHM 5% 1/4w	R3	6800 OHM 5% 1/4w
T1	NOT PLACED	T1	48VA 40V 1.2A
T2	48VA @ 2.4A 20V	T2	48VA 40V 1.2A

NOTE:

1. C1 AND C2 FOR PS45 VIDEO REQUIRE:
   MINIMUM 15 WORKING VOLTS
   NOMINAL 10,000uF OR GREATER
   MINIMUM 2.2 AMPS RIPPLE CURRENT
   MAXIMUM DIMENSION 25MM(D) X 35MM(L)

2. C1 AND C2 FOR PS45 AUDIO REQUIRE:
   MINIMUM 50 WORKING VOLTS
   NOMINAL 4700uF OR GREATER
   MINIMUM 2.2 AMPS RIPPLE CURRENT
   MAXIMUM DIMENSION 25MM(D) X 35MM(L)

Figure 4-6 Power Supply PCB (US)



	VIDEO		AUDIO
	220VAC		220VAC
D7	1N5244B	D7	1N260B
R1	560 OHM 5% 1/4w	R1	1500 OHM 5% 1/4w
R2	560 OHM 5% 1/4w	R2	6800 OHM 5% 1/4w
R3	560 OHM 5% 1/4w	R3	6800 OHM 5% 1/4w
T1	48VA @ 2.4A 20V	T1	48VA 40V 1.2A
T2	48VA @ 2.4A 20V	T2	48VA 40V 1.2A

NOTE:

1. C1 AND C2 FOR PS45 VIDEO REQUIRE:
   MINIMUM 15 WORKING VOLTS
   NOMINAL 10,000uF OR GREATER
   MINIMUM 2.2 AMPS RIPPLE CURRENT
   MAXIMUM DIMENSION 25MM(D) X 35MM(L)

2. C1 AND C2 FOR PS45 AUDIO REQUIRE:
   MINIMUM 50 WORKING VOLTS
   NOMINAL 4700uF OR GREATER
   MINIMUM 2.2 AMPS RIPPLE CURRENT
   MAXIMUM DIMENSION 25MM(D) X 35MM(L)

Figure 4-7 Power Supply PCB (OUS)

4.4 PS45 Video Power Supply Continued:

Circuit Description

The AC line and AC neutral are connected to T2 (a step down transformer) through input fuses. The signal ground is coupled to the chassis ground through C3. T1 and T2 decrease the AC line voltage and drive the full-wave rectifier composed of D1 through D4. The unregulated output of the full-wave rectifier is filtered by C1 and C2. R2 and R3 supply a minimum power supply load if the VDARS422 Mainframe is empty. After the filters, series diodes are used (D5, D6, D8, and D9) to allow the power supply to be paralleled for redundancy. The series diodes insure that one power supply cannot load the output of another power supply placed in parallel in case of a shorted power supply diode or filtering capacitor. A sensing circuit comprised of R1, D7 (a zener diode), and CR1 (a green light emitting diode) senses the voltages across the filter capacitors and output resistors. The green LED (CR1), located on the power supply front panel, serves as rough indicator of the power supply output voltage levels; it dims as the positive and negative output voltage levels decrease. If the combined outputs decrease by approximately 25% from nominal, the green LED will be extinguished. The PS45 Video Power Supply is unregulated and will follow input line changes and output load variations.

5.1 Maintenance

The VDARS422 Frame, the VDARS422 Cards, and the PS45V Power Supplies 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 VDARS422 Frame, the VDARS422 Cards, and the PS45V Power Supplies.

5.2 Preventive Maintenance

Use the following guidelines for general preventive maintenance:

NOTICE

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

- Keep the inside of the frame clean, especially if your facility is subject to dust or dirt in the atmosphere. Use anti-static compressed air, an antistatic cloth, or a antistatic vacuum to clean the frame and internal components.
- Observe proper procedures for preventing electrostatic discharge when cleaning the unit, and when inserting and removing cards. Ensure that all tools and personnel handling individual components are properly grounded.
- If a problem is suspected with an individual VDARS422 Card, first swap out the board and recheck the system for the problem.

5.3 Test Equipment

The test equipment recommended for servicing the VDARS422 Frame, the VDARS422 Cards, and the PS45V Power Supplies are listed below. Equivalent test equipment may be used.

Digital Multimeter
Video Generator
Oscilloscope
75 Ohm Termination

5.4 Corrective Maintenance

The following paragraphs provide information to assist the servicing technician in maintenance of the VDARS422 Frame, the VDARS422 Cards, and the PS45V Power Supplies.

Factory Repair Service

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

⟹ Pack the equipment securely and label with the correct address. Proper packaging saves money. Be sure to use antistatic packaging or wrap the board in aluminum foil. 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.

5.4 Corrective Maintenance Continued:

Troubleshooting

The best troubleshooting tool is a familiarity with the equipment and a through understanding of its operation. Before troubleshooting the VDARS422 Frame, the VDARS422 Cards, or the PS45V Power Supplies review sections 3 and 4 of this manual. Use the functional descriptions and adjustment procedures to quickly locate problems. If all of the outputs signals from a VDARS422 Frame are missing, check the PS45V Power Supply System and the power supply line fuses. See Section 5.5 for fuse replacement details. If some of the output signals from a VDARS422 Frame are missing, check the operation and adjustment of the individual VDARS422 Card whose outputs are missing. If the problem can be isolated to a VDARS422 Card, and your facility is equipped for component level repair, proceed with repairs using the schematics provided in Section 6 of this manual.

NOTE

Do not attempt to **repair** equipment that is **in warranty**. If the equipment is in warranty follow the procedures found under Factory Repair Service.

Replacement Parts

Only parts of the highest quality have been used in the design and manufacture of the VDARS422 Frame, the VDARS422 Cards, and the PS45V Power Supplies.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 same lead lengths (where applicable).

5.5 Power Supply Fuse Replacement

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 630mA time-delay (5x20mm) for a line voltage of 115VAC and 315 mA time-delay for a line voltage of 220VAC. Be sure to use the same voltage rating and type of fuses for replacements. See Figure 5-1.

5.5 Power Supply Fuse Replacement Continued:

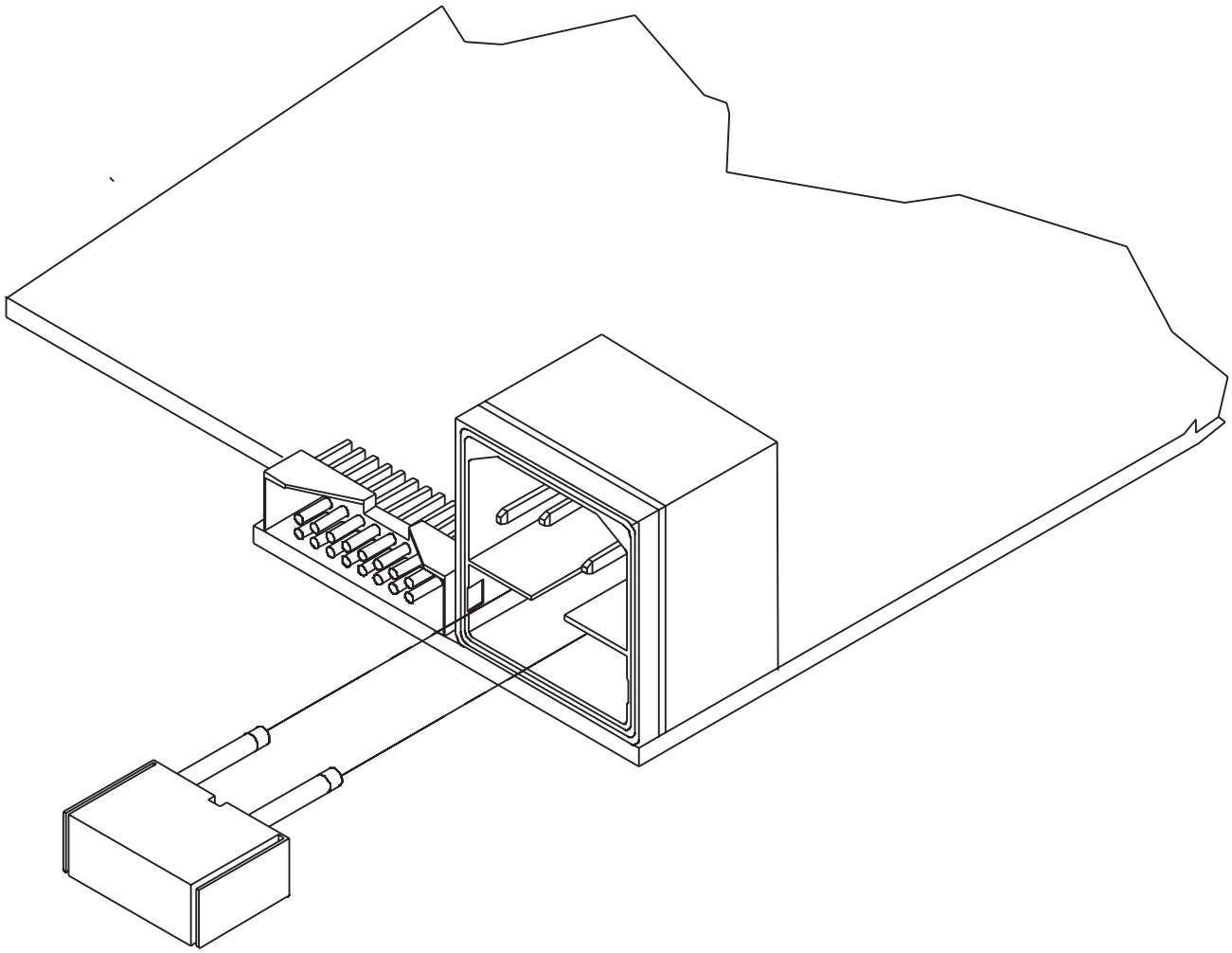


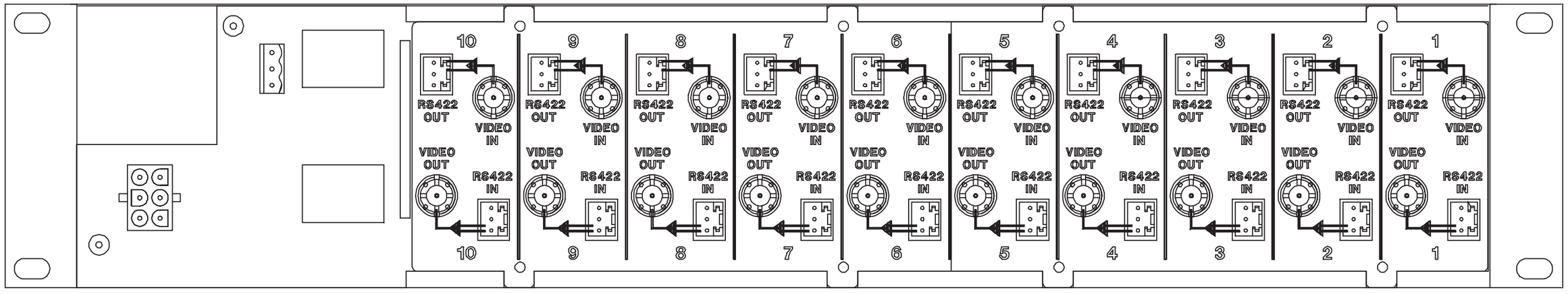
Figure 5-1 Fuse Location on the PS45V Power Supply

6.1 Schematics

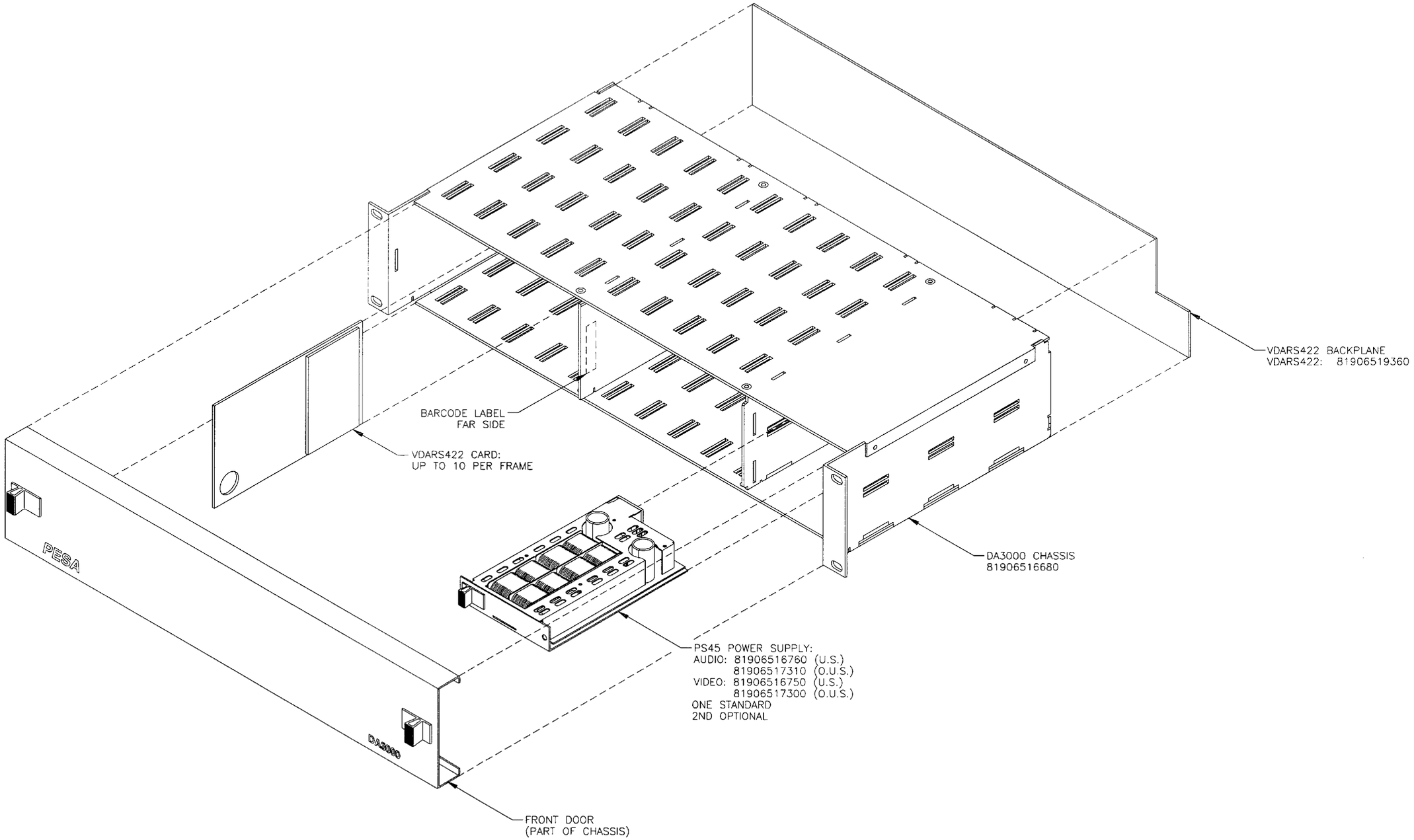
General

This section contains the schematic diagrams and parts location diagrams for the VDARS422 Frame. Please refer to this section when troubleshooting the equipment or replacing defective parts.

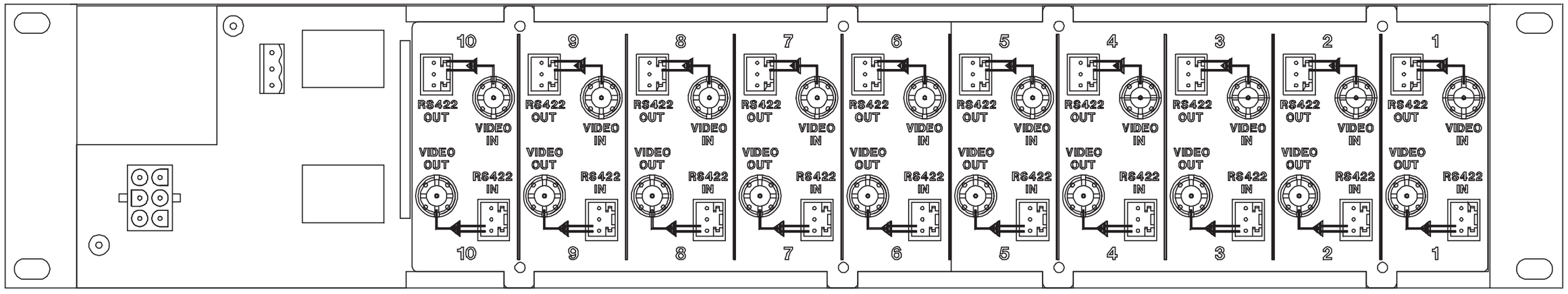
VDARS422 Frame Front View



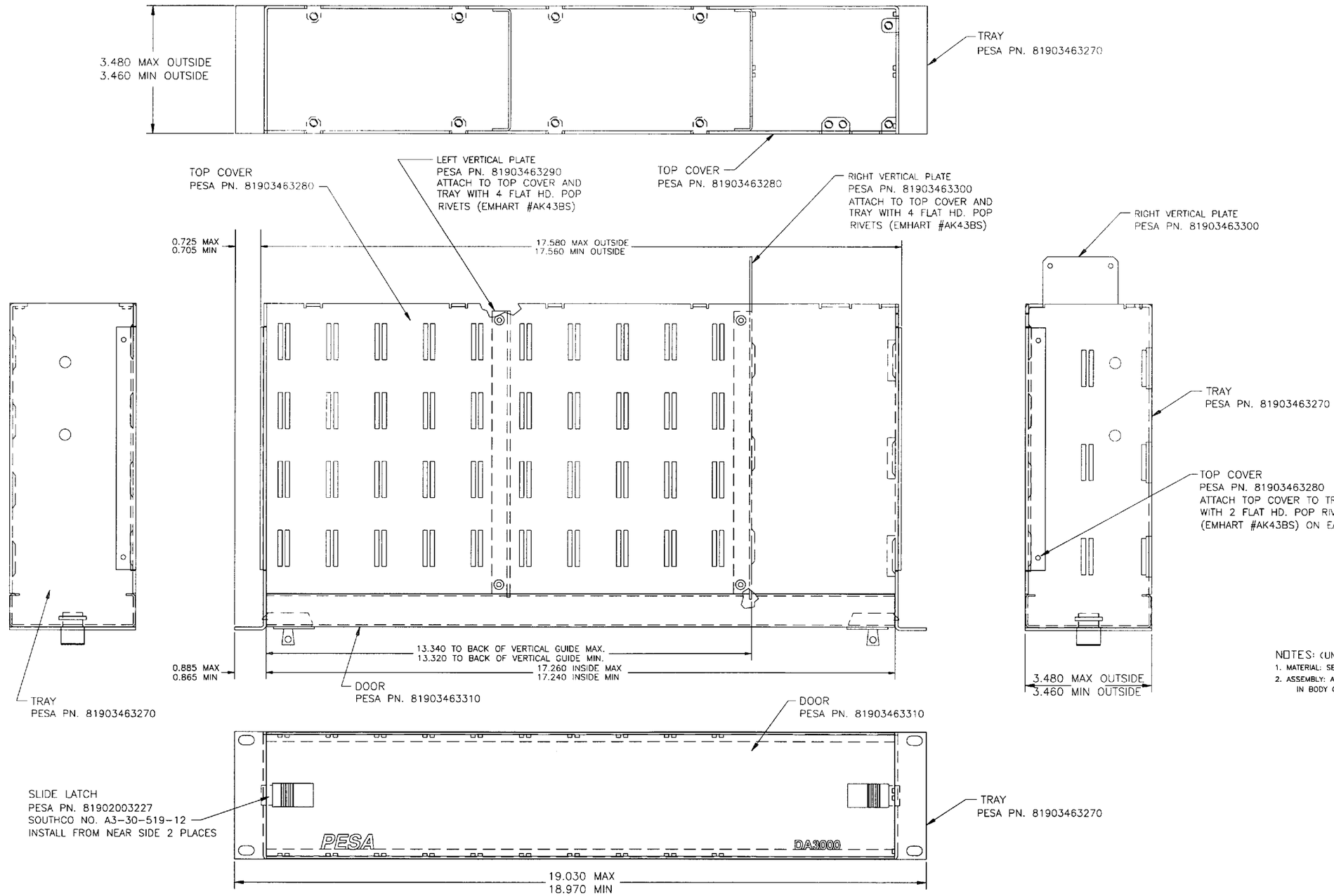
VDARS422 Frame Rear View



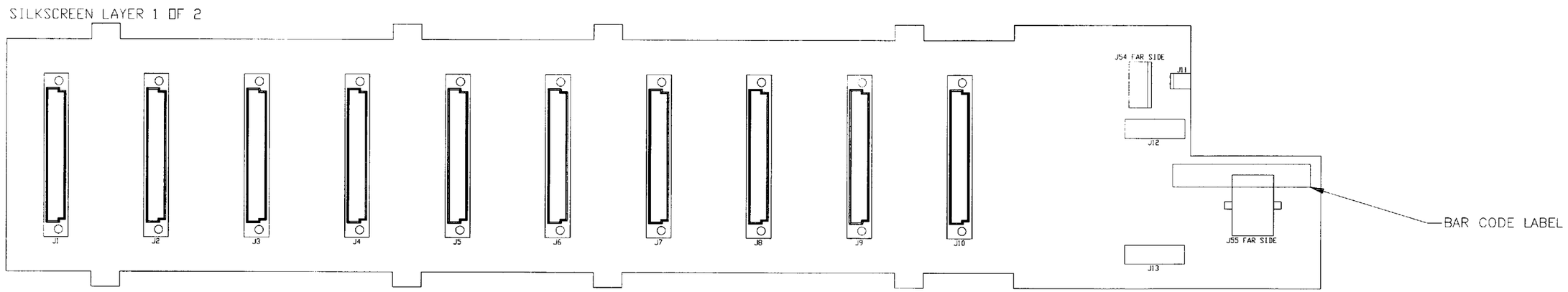
Configuration Drawing (Sheet 1 of 2) • VDARS422 Mainframe Assembly (Modified for Manual) • CD63-0738



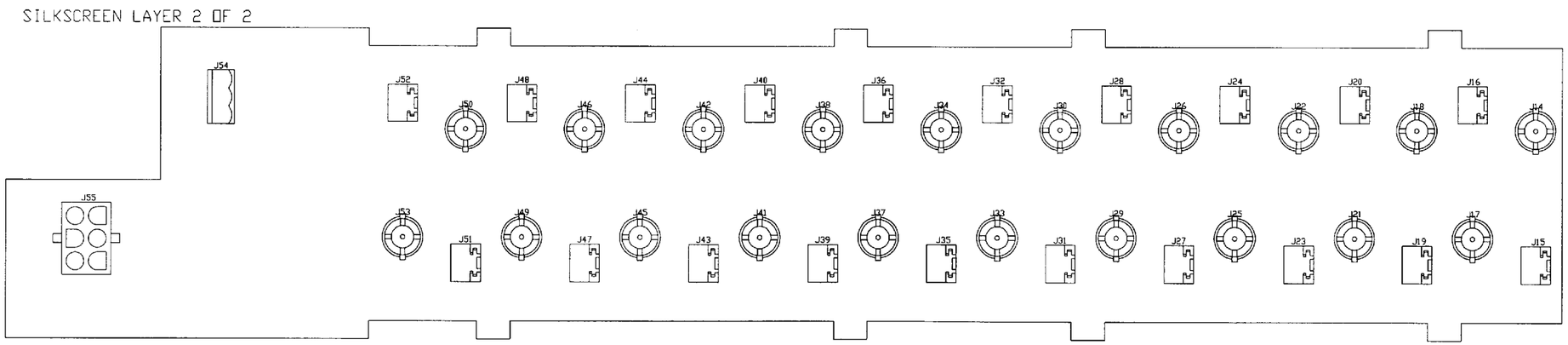
Configuration Drawing (Sheet 2 of 2) • VDARS422 Mainframe Assembly (Modified for Manual) • CD63-0738



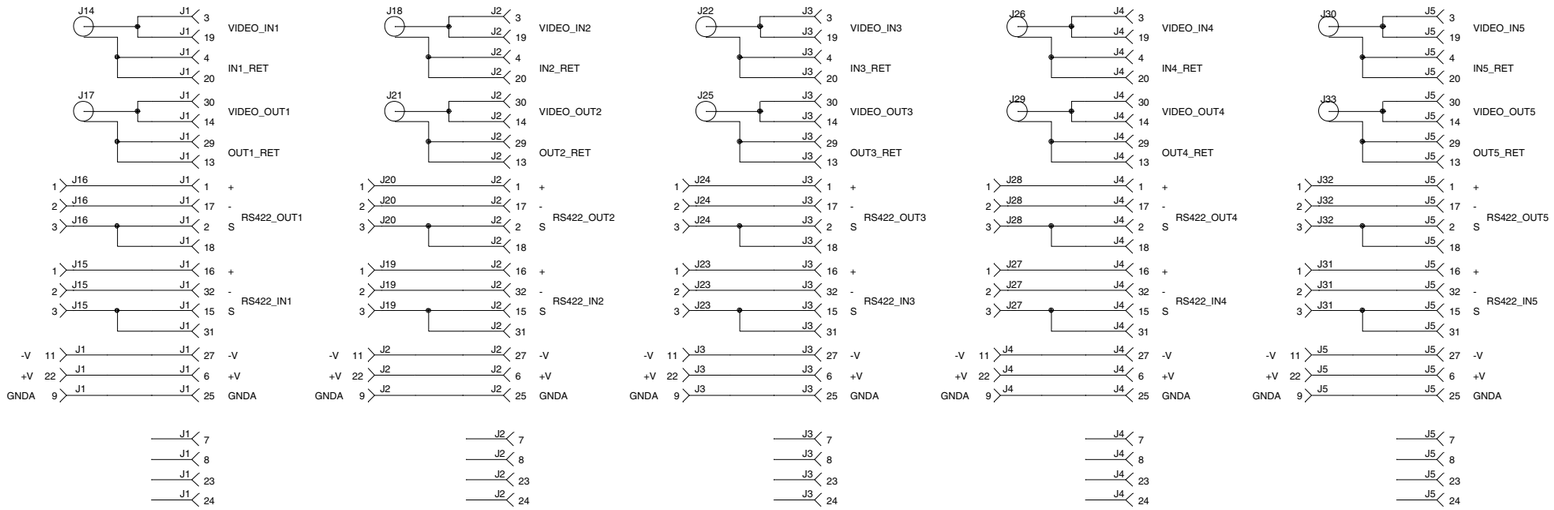
Configuration Drawing • DA3000 Chassis Assembly (REV A) • CD63-0739

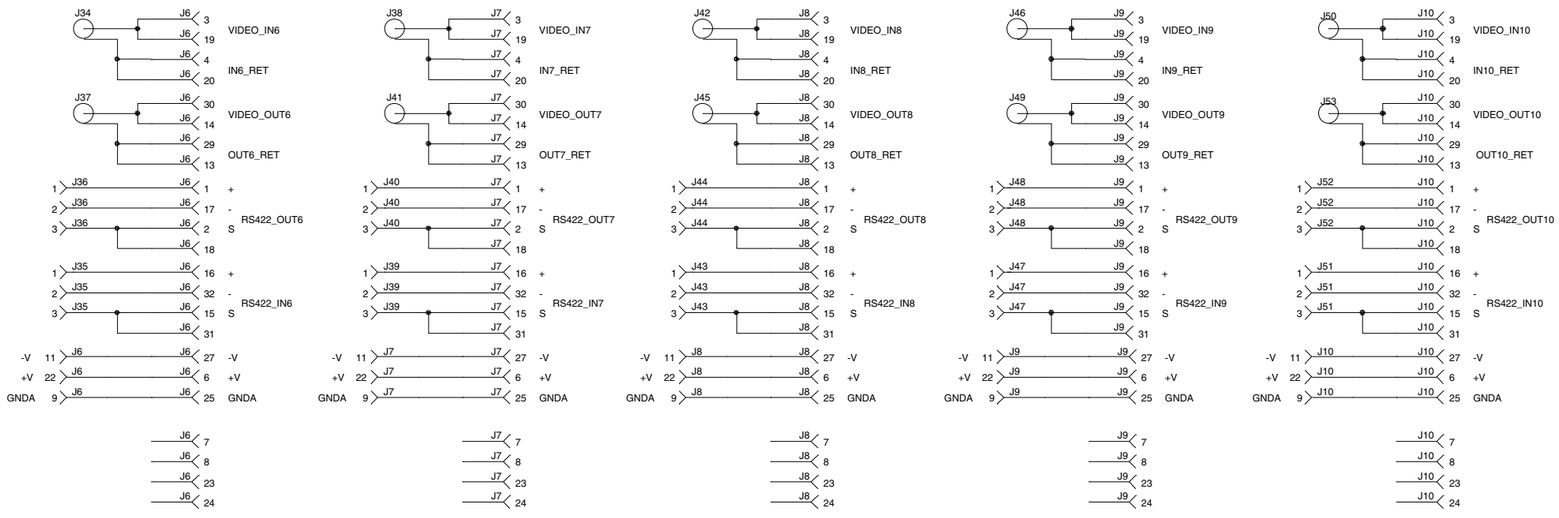


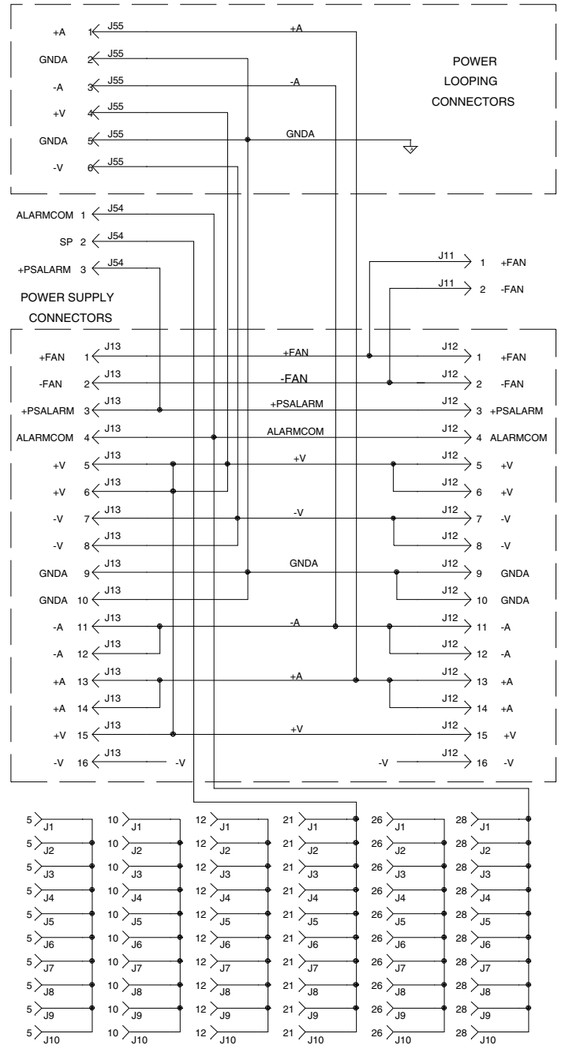
COMPONENT SIDE (1 OF 2)

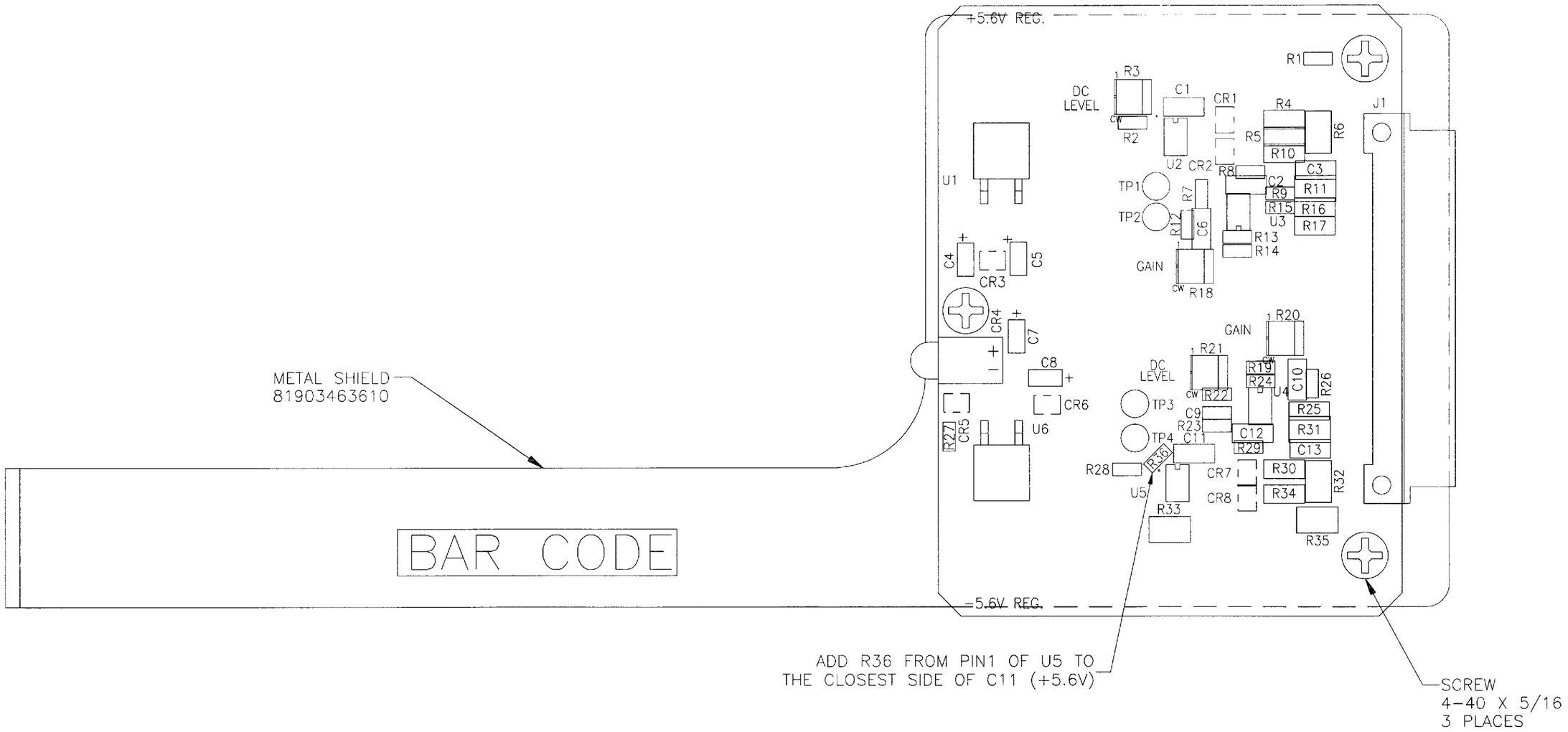


SOLDER SIDE (2 OF 2)

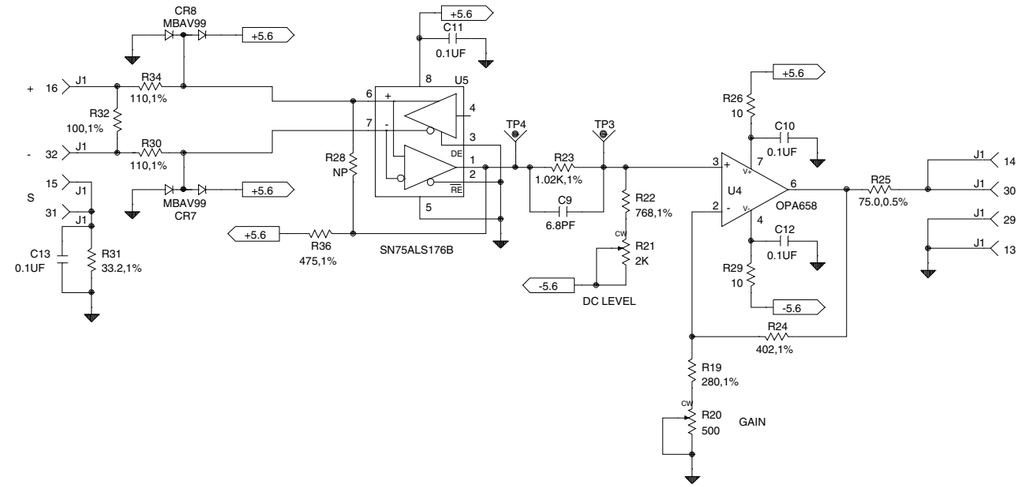

J14
J17
VIDEO_IN1
IN1_RET
VIDEO_OUT1
OUT1_RET
RS422_OUT1
RS422_IN1
J18
J21
VIDEO_IN2
IN2_RET
VIDEO_OUT2
OUT2_RET
RS422_OUT2
RS422_IN2
J22
J25
VIDEO_IN3
IN3_RET
VIDEO_OUT3
OUT3_RET
RS422_OUT3
RS422_IN3
J26
J29
VIDEO_IN4
IN4_RET
VIDEO_OUT4
OUT4_RET
RS422_OUT4
RS422_IN4
J30
J33
VIDEO_IN5
IN5_RET
VIDEO_OUT5
OUT5_RET
RS422_OUT5
RS422_IN5
-V
+V
GNDA


J34
J37
VIDEO_IN6
IN6_RET
VIDEO_OUT6
OUT6_RET
RS422_OUT6
RS422_IN6
J38
J41
VIDEO_IN7
IN7_RET
VIDEO_OUT7
OUT7_RET
RS422_OUT7
RS422_IN7
J42
J45
VIDEO_IN8
IN8_RET
VIDEO_OUT8
OUT8_RET
RS422_OUT8
RS422_IN8
J46
J49
VIDEO_IN9
IN9_RET
VIDEO_OUT9
OUT9_RET
RS422_OUT9
RS422_IN9
J50
J53
VIDEO_IN10
IN10_RET
VIDEO_OUT10
OUT10_RET
RS422_OUT10
RS422_IN10
-V
+V
GNDA

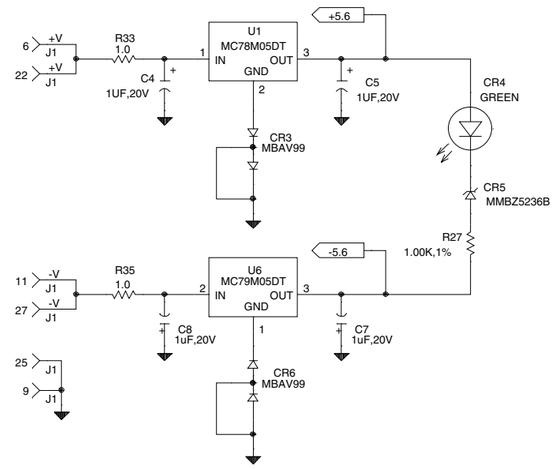

POWER
LOOPING
CONNECTORS
+A
GNDA
-A
+V
GNDA
-V
ALARMCOM
SP
+PSALARM
POWER SUPPLY
CONNECTORS
+FAN
-FAN
+PSALARM
ALARMCOM
+V
-V
GNDA
-A
+A


+5.6V REG.
R1
R3
DC LEVEL
C1
CR1
R4
J1
R2
R5
R6
R10
U2
CR2
R8
C3
C2
R9
R11
U1
TP1
R7
R15
R16
TP2
R12
C6
U3
R13
R14
C4
C5
GAIN
CR3
R18
CR4
C7
R20
GAIN
C8
R21
DC LEVEL
R19
R24
C10
R26
CR6
TP3
R22
U4
C9
R25
R23
C12
R31
TP4
C11
R29
C13
R27
CR5
U6
R28
R36
CR7
R30
R32
U5
CR8
R34
R33
R35
-5.6V REG.
METAL SHIELD
81903463610
BAR CODE
ADD R36 FROM PIN1 OF U5 TO
THE CLOSEST SIDE OF C11 (+5.6V)
SCREW
4-40 X 5/16
3 PLACES

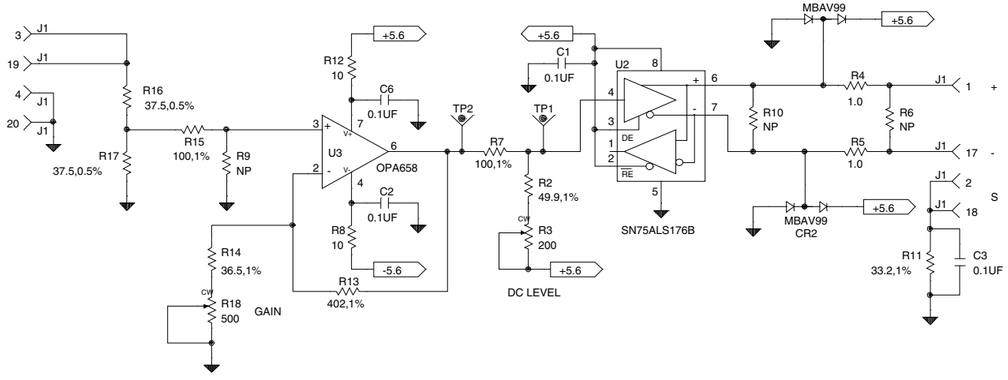
RS422 IN



VIDEO OUT



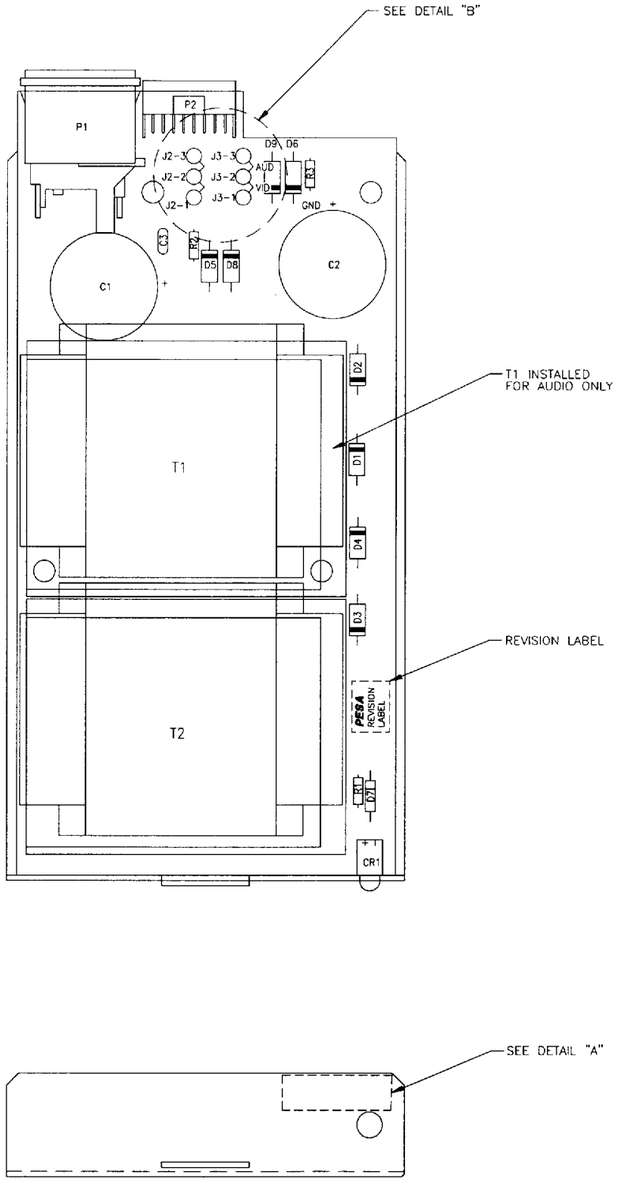
VIDEO IN

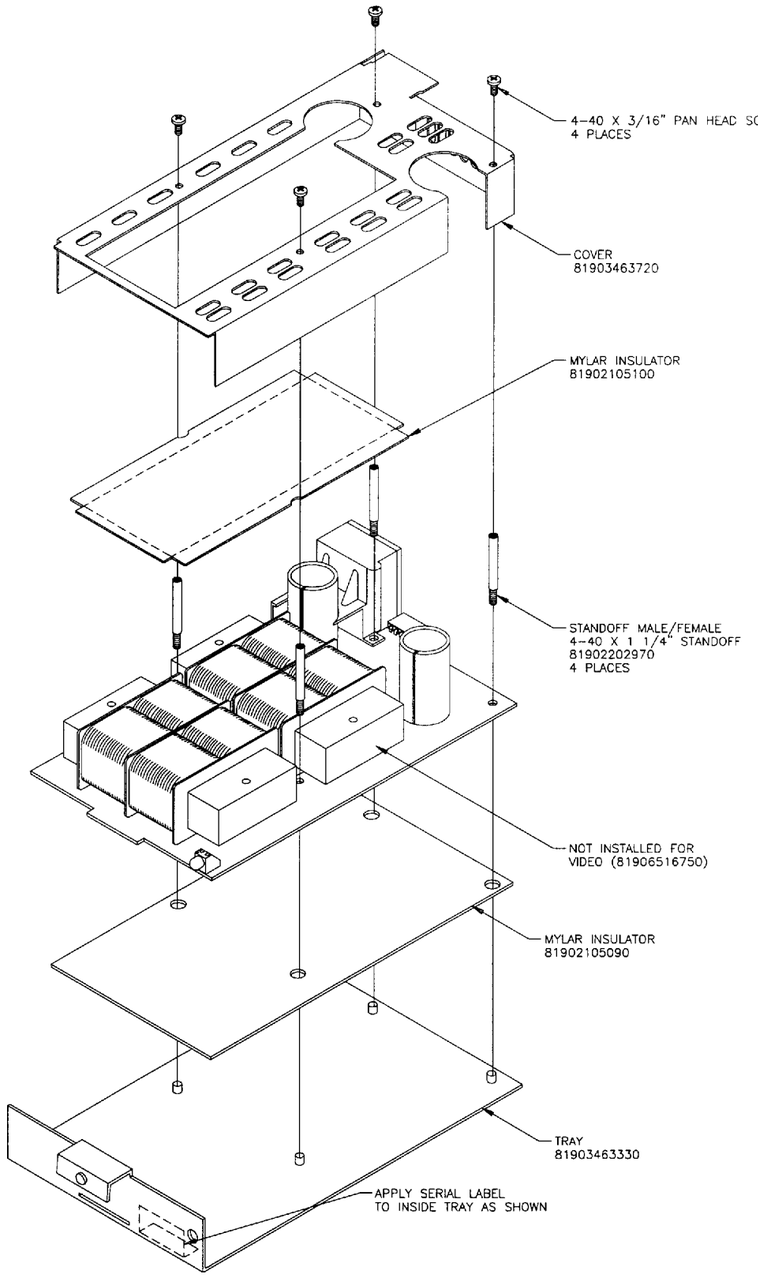


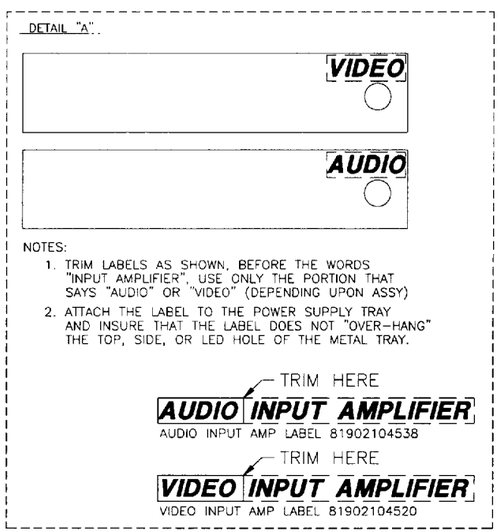
RS422 OUT

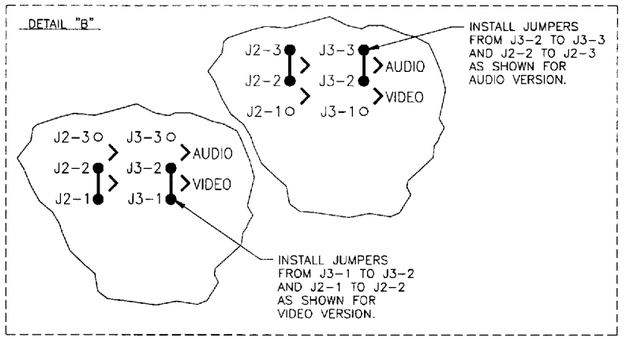
J1 5
J1 7
J1 8
J1 10
J1 12
J1 21
J1 23
J1 24
J1 26
J1 28

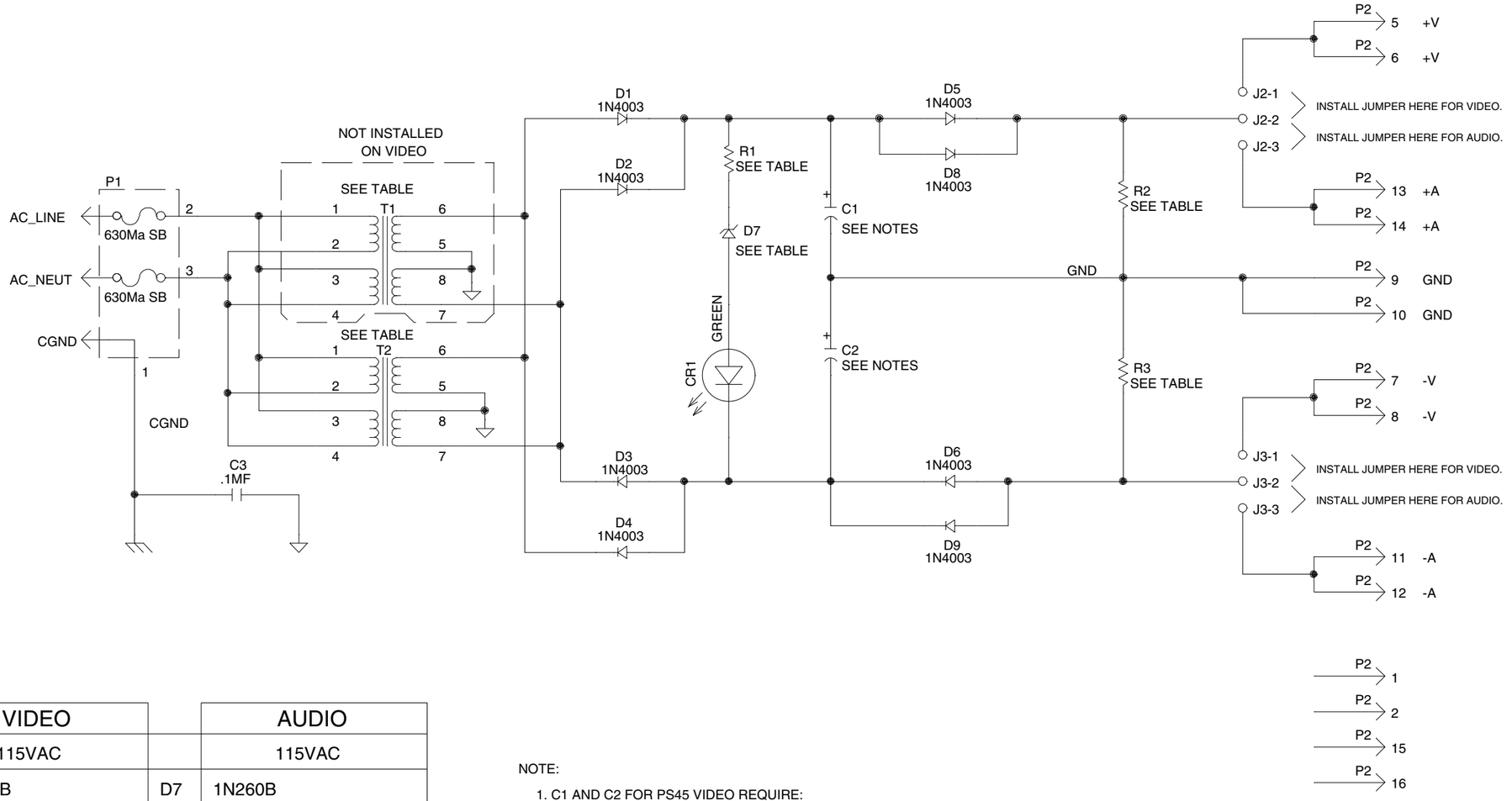
Schematic • VDARS422 Card (REV 04) • SC33-1380


SEE DETAIL "B"
P1
P2
J2-3
J2-2
J2-1
J3-3
J3-2
J3-1
AUD
VID
D6
D7
GND
C1
C2
C3
R2
D5
D8
T1
T2
D2
D1
D4
D3
D9
R3
R4
D7
CR1
PESA REVISION LABEL
T1 INSTALLED FOR AUDIO ONLY
REVISION LABEL
SEE DETAIL "A"


4-40 X 3/16" PAN HEAD SCREW
4 PLACES
COVER
81903463720
MYLAR INSULATOR
81902105100
STANDOFF MALE/FEMALE
4-40 X 1 1/4" STANDOFF
81902202970
4 PLACES
NOT INSTALLED FOR
VIDEO (81906516750)
MYLAR INSULATOR
81902105090
TRAY
81903463330
APPLY SERIAL LABEL
TO INSIDE TRAY AS SHOWN


DETAIL "A"
VIDEO
AUDIO
NOTES:
1. TRIM LABELS AS SHOWN, BEFORE THE WORDS "INPUT AMPLIFIER", USE ONLY THE PORTION THAT SAYS "AUDIO" OR "VIDEO" (DEPENDING UPON ASSY)
2. ATTACH THE LABEL TO THE POWER SUPPLY TRAY AND INSURE THAT THE LABEL DOES NOT "OVER-HANG" THE TOP, SIDE, OR LED HOLE OF THE METAL TRAY.
TRIM HERE
AUDIO INPUT AMPLIFIER
AUDIO INPUT AMP LABEL 81902104538
TRIM HERE
VIDEO INPUT AMPLIFIER
VIDEO INPUT AMP LABEL 81902104520


DETAIL "B"
J2-3
J2-2
J2-1
J3-3
J3-2
J3-1
AUDIO
VIDEO
INSTALL JUMPERS FROM J3-2 TO J3-3 AND J2-2 TO J2-3 AS SHOWN FOR AUDIO VERSION.
INSTALL JUMPERS FROM J3-1 TO J3-2 AND J2-1 TO J2-2 AS SHOWN FOR VIDEO VERSION.

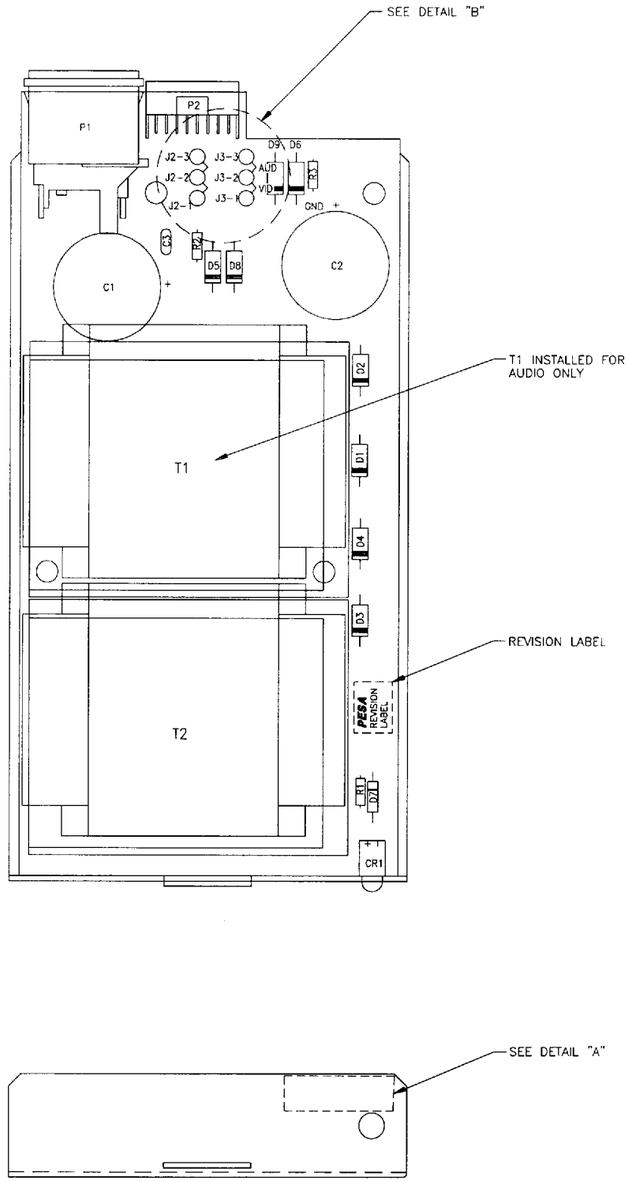


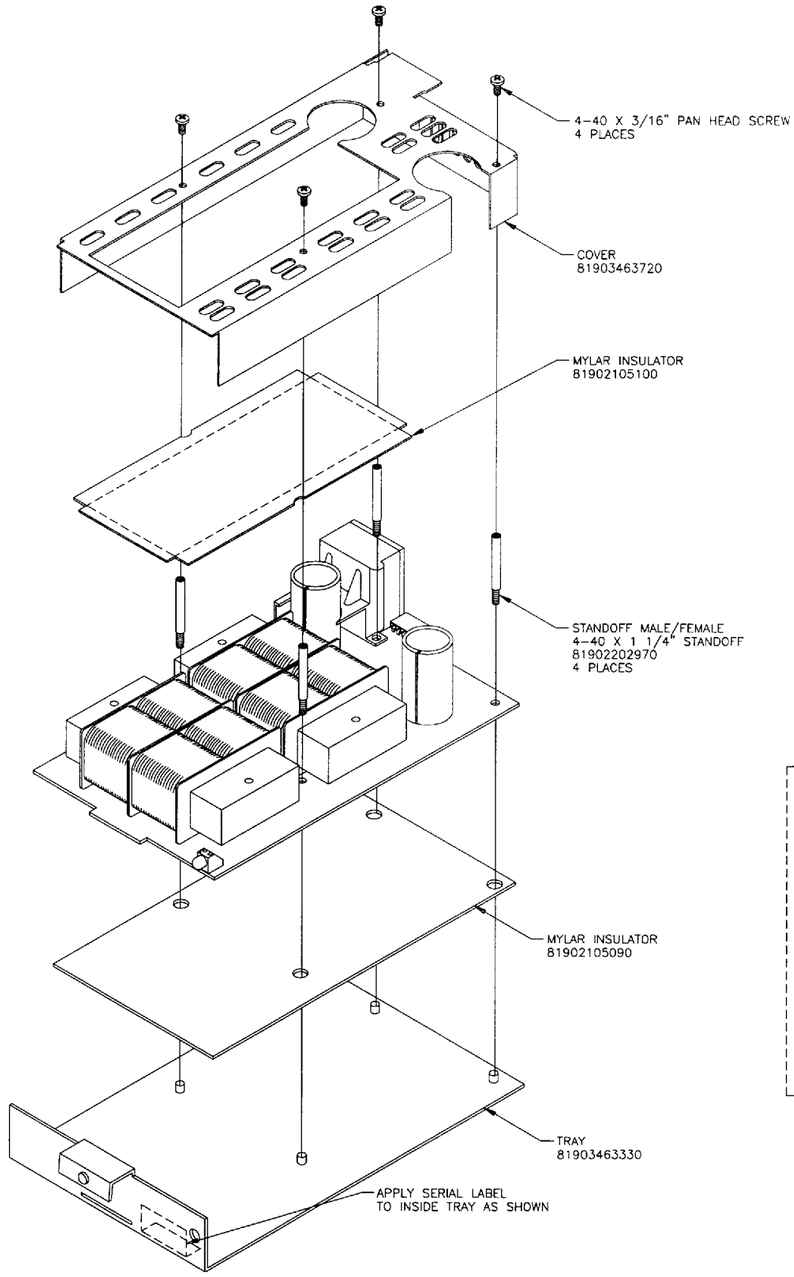
	VIDEO		AUDIO
	115VAC		115VAC
D7	1N5244B	D7	1N260B
R1	560 OHM 5% 1/4w	R1	1500 OHM 5% 1/4w
R2	560 OHM 5% 1/4w	R2	6800 OHM 5% 1/4w
R3	560 OHM 5% 1/4w	R3	6800 OHM 5% 1/4w
T1	NOT PLACED	T1	48VA 40V 1.2A
T2	48VA @ 2.4A 20V	T2	48VA 40V 1.2A

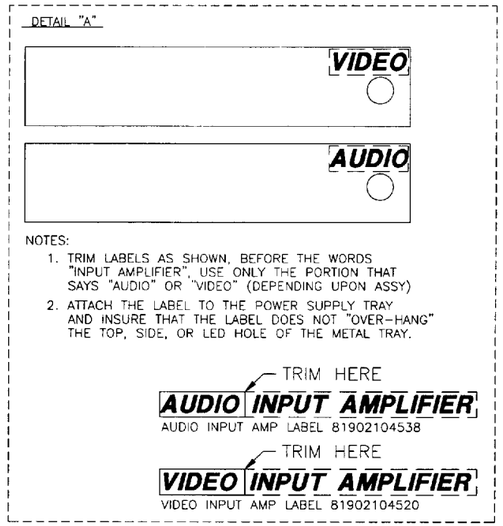
NOTE:

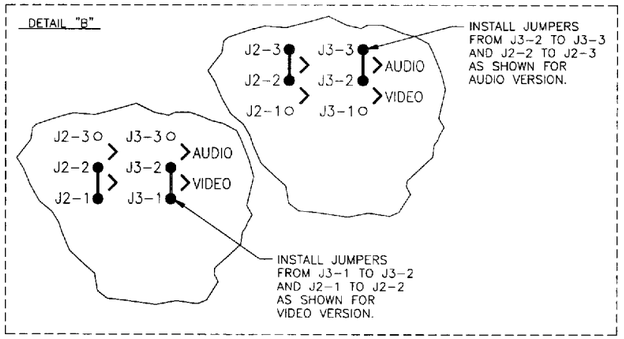
1. C1 AND C2 FOR PS45 VIDEO REQUIRE:
   MINIMUM 15 WORKING VOLTS
   NOMINAL 10,000uF OR GREATER
   MINIMUM 2.2 AMPS RIPPLE CURRENT
   MAXIMUM DIMENSION 25MM(D) X 35MM(L)

2. C1 AND C2 FOR PS45 AUDIO REQUIRE:
   MINIMUM 50 WORKING VOLTS
   NOMINAL 4700uF OR GREATER
   MINIMUM 2.2 AMPS RIPPLE CURRENT
   MAXIMUM DIMENSION 25MM(D) X 35MM(L)

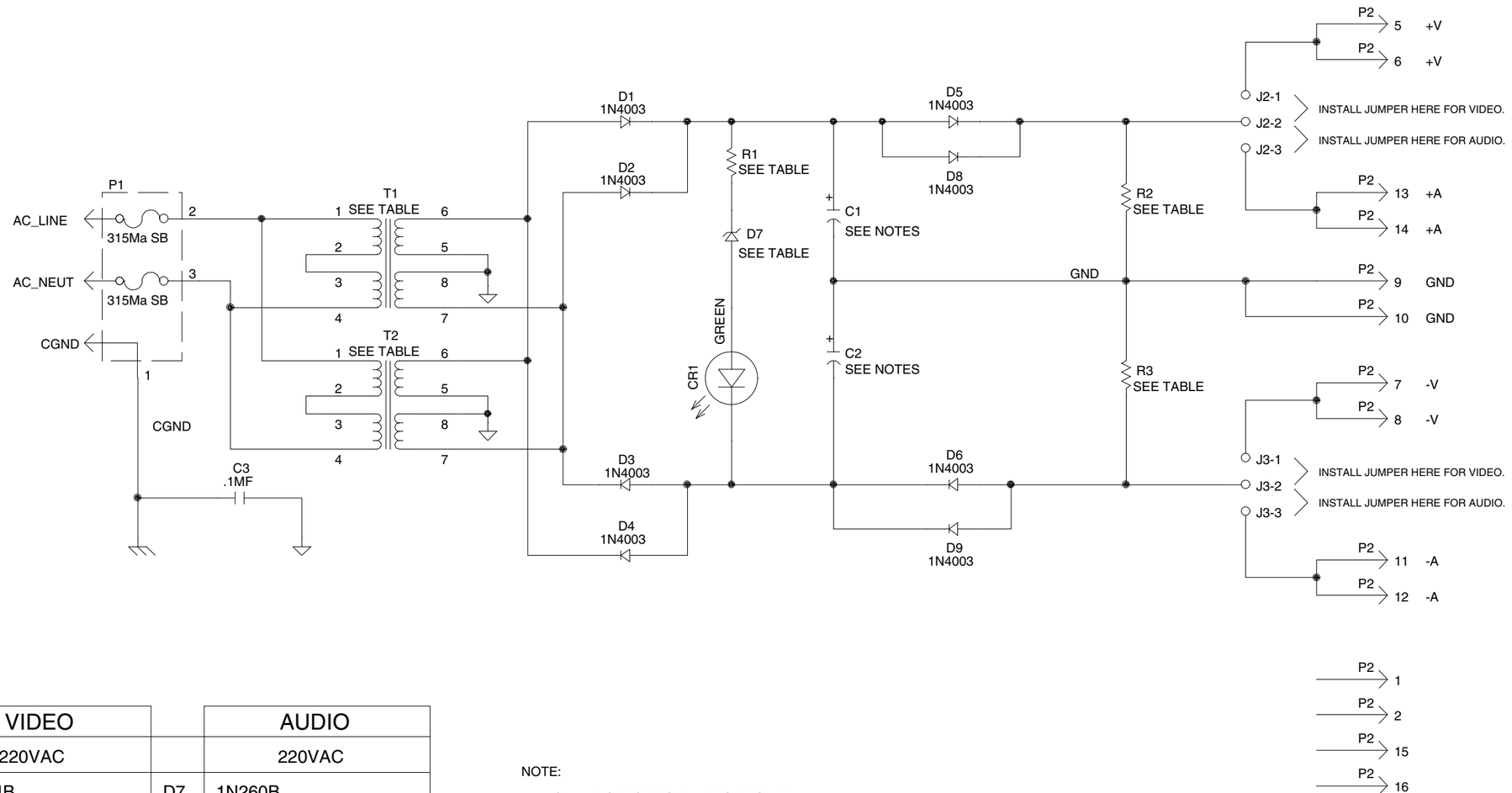








Component Assembly • Power Supply PCB (OUS) (REV 03) • CA25-1272



	VIDEO		AUDIO
	220VAC		220VAC
D7	1N5244B	D7	1N260B
R1	560 OHM 5% 1/4w	R1	1500 OHM 5% 1/4w
R2	560 OHM 5% 1/4w	R2	6800 OHM 5% 1/4w
R3	560 OHM 5% 1/4w	R3	6800 OHM 5% 1/4w
T1	48VA @ 2.4A 20V	T1	48VA 40V 1.2A
T2	48VA @ 2.4A 20V	T2	48VA 40V 1.2A

NOTE:

1. C1 AND C2 FOR PS45 VIDEO REQUIRE:
   MINIMUM 15 WORKING VOLTS
   NOMINAL 10,000uF OR GREATER
   MINIMUM 2.2 AMPS RIPPLE CURRENT
   MAXIMUM DIMENSION 25MM(D) X 35MM(L)

2. C1 AND C2 FOR PS45 AUDIO REQUIRE:
   MINIMUM 50 WORKING VOLTS
   NOMINAL 4700uF OR GREATER
   MINIMUM 2.2 AMPS RIPPLE CURRENT
   MAXIMUM DIMENSION 25MM(D) X 35MM(L)

7.1 Parts List

General

The Parts List in this section have been grouped according to each assembly associated with the VDARS422 Frame. Refer to each list by name of card, board, or section of the equipment requiring replacement parts.

VDARS422 Mainframe (REV 02) - 81906519410

81902003300	FAN GUARD DA3000 MAINFRAME	1	EA
81902101468	LABEL EQUIP SERIALIZATION	1	EA
81902104720	COVER BACKPLANE PWR BLK PLAS	1	EA
81902200088	WASHER #4 FLAT	2	EA
81902202704	SCREW 4-40X3/8 PAN HEAD SIMM	2	EA
81902202795	SCREW 4-40X3/16 EXT TOOTH	8	EA
81902202950	SCREW 4-40X9/16 PAN HEAD PHIL	2	EA
81902900265	SCREW HEX FEMALE	4	EA
81902906072	CONN PLUG 3-PIN ORANGE	1	EA
81902907800	CONN 3-POS W/STRAIN RELIEF	1	EA
81902908110	CONN 3-POS W/STRAIN RELIEF	20	EA
81903465050	REAR PANEL VDARS422 FRAME	1	EA
81906516680	CHASSIS ASSEMBLY DA3000	1	EA
81906519360	VDARS422 BACKPLANE ASSEMBLY	1	EA

DA3000 Chassis Assembly (REV D) - 81906516680

81902003227	LATCH SLIDE BLACK TAB CEI	2	EA
81902202940	RIVET 120 DEG COUNTER-SINK	12	EA
81903463270	TRAY DA3000	1	EA
81903463280	TOP PANEL DA3000	1	EA
81903463290	VERTICAL PLATE LEFT DA3000	1	EA
81903463300	VERTICAL PLATE RIGHT DA3000	1	EA
81903463310	DOOR DA3000	1	EA
CD63-0739	DOC CHASSIS ASSEMBLY DA3000	REF	

VDARS422 Backplane Assembly (REV 01) - 81906519360

81902105050	LABEL BARCODE 1.5"X0.25"		1	EA
81902413810	PCB VDARS422 BACKPLANE		1	EA
81902901594	CONN M-N-L 6-POS FEMALE	J55	1	EA
81902903160	HEADER 2-PIN MTA LOCKING	J11	1	EA
81902906353	CONN 3-POS MALE POLAR STAR	J54	1	EA
81902906486	CONN BNC PRESS-IN 75 OHM	J14 J17 J18 J21 J22 J25 J26 J29 J30 J33 J34 J37 J38 J41 J42 J45 J46 J49 J50 J53	20	EA
81902907200	CONN 16-POS PC MT FEMALE	J12 J13	2	EA
81902907230	CONN 32-POS FEMALE 16X2	J1-J10	10	EA
81902908100	CONN 3-PIN PC MT VERTICAL	J15 J16 J19 J20 J23 J24 J27 J28 J31 J32 J35 J36 J39 J40 J43 J44 J47 J48 J51 J52	20	EA
81902908110	CONN 3-PIN F STRAIN RELIEF	REF: J15 J16 J19 J20 J23 J24 J27 J28 J31 J32 J35 J36 J39 J40 J43 J44 J47 J48 J51 J52	20	EA
CA25-1381	DOC VDARS422 BACKPLANE		REF	
DD52-1381	DOC VDARS422 BACKPLANE		REF	
SC33-1381	DOC VDARS422 BACKPLANE		REF	

VDARS422 Carrd (REV 04) - 81906519350

81902105050	LABEL BARCODE 1.5"X0.25"		1	EA
81902202712	SCREW 4-40X5/16 SIMM PANHEAD		3	EA
81902413800	PCB VDARS422 ASSEMBLY		1	EA
81902907240	CONN 32-POS MALE R/A 16X2	J1	1	EA
81903200541	LED GREEN RT/A HI-EFF PCB	CR4	1	EA
81903463610	SHIELD DA3000 AUD/VID		1	EA
81906600184	RESISTOR 10 OHM 5% 0805	R1 R8 R12 R26 R29	5	EA
81906610555	RESISTOR 36.5 OHM 1% 0805	R14	1	EA
81906610680	RESISTOR 49.9 OHM 1% 0805	R2	1	EA
81906610977	RESISTOR 100 OHM 1% 0805	R7 R15	2	EA
81906611400	RESISTOR 280 OHM 1% 0805	R19	1	EA
81906611550	RESISTOR 402 OHM 1% 0805	R13 R24	2	EA
81906611827	RESISTOR 768 OHM 1% 0805	R22	1	EA
81906611930	RESISTOR 1.0K 1% 0805	R27	1	EA
81906611942	RESISTOR 1.02K 1% 0805	R23	1	EA
81906621513	RESISTOR 1 OHM 5% 1206	R4 R5	2	EA
81906631010	RESISTOR 110 OHM 1% 1206	R30 R34	2	EA
81906631620	RESISTOR 475 OHM 1% 1206	R36	1	EA
81906640065	RESISTOR 37.5 OHM 0.5% 1206	R16 R17	2	EA
81906640073	RESISTOR 75 OHM 0.5% 1206	R25	1	EA
81906640200	RESISTOR 33.2 OHM 1% 1210	R11 R31	2	EA
81906640320	RESISTOR 1 OHM 5% 1210	R33 R35	2	EA
81906640740	RESISTOR 100 OHM 1% 1210	R32	1	EA
81906650072	POT 500 OHM SST RT/A SM	R18 R20	2	EA
81906650080	POT 200 OHM RT/A 1-TURN 10%	R3	1	EA
81906650330	POT 2K RT/A 4MM 1-TURN 20%	R21	1	EA
81906700059	CAP 6.8PFD 50V CERAMIC 0805	C9	1	EA
81906730015	CAP 0.1MF 50V CERAMIC 1206	C1-C3 C6 C10-C13	8	EA
81906770052	CAP 1MF 20V TANLUM SIZE A	C4 C5 C7 C8	4	EA
81906800164	DIODE BAV99 50MA SOT-23	CR1-CR3 CR6-CR8	6	EA
81906800430	ZENER MZB5236 7.5V SOT-23	CR5	1	EA
81906810239	REG 79M050 -5V DPAK SMT	U6	1	EA
81906810247	REG 78M050 +5V DPAK SMT	U1	1	EA
81906811220	IC OPA 658U OP-AMP WIDEBAND	U3 U4	2	EA
81906811340	IC 75ALS176B RS485 TRANSCEIVER	U2 U5	2	EA
CA25-1380	DOC VDARS422 ASSEMBLY		REF	
DD52-1380	DOC VDARS422 ASSEMBLY		REF	
NOT-PLACED	ITEMS NOT PLACED ON EBOM	R9 R9 R10 R28 TP1-TP4	REF	
SC33-1380	DOC VDARS422 ASSEMBLY		REF	

PS45 Video Power Supply (US) (REV 06) - 81906516750

81900200601	RESISTOR 560 OHM 5% 1/4W	R1 R2 R3	3	EA
81900700055	CAP 0.1MF 50V CERAMIC RADIAL	C3	1	EA
81901000830	CAP ELECTRO 10000UF 16V	C1 C2	2	EA
81901500140	DIODE 1N4003 200V PIV 1A	D1 D2 D3 D4 D5 D6 D8 D9	8	EA
81901500173	ZENER 1N5244 14V 9MA	D7	1	EA
81902101468	LABEL EQUIP SERIALIZATION		1	EA
81902104131	RUBBER BUMBER 0.5X0.25 BLACK		1	EA
81902104520	LABEL VIA SHIELD RM5000		1	EA
81902105090	INSULATOR PS45 TRAY		1	EA
81902105100	INSULATOR PS45 TRANSFORMER		1	EA
81902200112	SCREW 4-40X3/16 PAN HEAD PHIL		4	EA
81902202970	STANDOFF 4-40X1.25 M/F HEX		4	EA
81902301360	TRANSFORMER PS45V 48VA PC	T2	1	EA
81902412450	PCB ASSY PS45 POWER SUPPLY		1	EA
81902700920	FUSE 5X20 630MA TIME-DELAY	F1 F2	2	EA
81902804030	CORD POWER 3 CND 18AWG 7'6"		1	EA
81902907190	CONN AC W/FUSE PC MT 10A	P1	1	EA
81902907210	CONN 16-PIN HEADER R/A MA	P2	1	EA
81902907590	FUSE DRAWER 2 POLE PC MT		1	EA
81903200541	LED GREEN RT/A HI-EFF PCB	CR1	1	EA
81903463330	SUPPORT PLATE PS45 POWER		1	EA
81903463720	COVER PS45 POWER SUPPLY		1	EA
CA25-1245	DOC ASSY PS45 VIDEO PWR SUP		REF	
DD52-1245	DOC ASSY PS45 VIDEO PWR SUP		REF	
NOT-PLACED	ITEMS NOT PLACED ON EBOM	T1	REF	
SC33-1245	DOC ASSY PS45 VIDEO PWR SUP		REF	

PS45 Video Power Supply (OUS) (REV 05) - 81906517300

81900200601	RESISTOR 560 OHM 5% 1/4W	R1 R2 R3	3	EA
81900700055	CAP 0.1MF 50V CERAMIC RADIAL	C3	1	EA
81901000830	CAP ELECTRO 10000UF 16V	C1 C2	2	EA
81901500140	DIODE 1N4003 200V PIV 1A	D1 D2 D3 D4 D5 D6 D8 D9	8	EA
81901500173	ZENER 1N5244 14V 9MA	D7	1	EA
81902101468	LABEL EQUIP SERIALIZATION		1	EA
81902104231	RUBBER BUMBER 0.5X0.25 BLACK		1	EA
81902104520	LABEL VIA SHIELD RM5000		1	EA
81902105090	INSULATOR PS45 TRAY		1	EA
81902105100	INSULATOR PS45 TRANSFORMER		1	EA
81902200112	SCREW 4-40X3/16 PAN HEAD PHIL		4	EA
81902202970	STANSOFF 4-40X1.25 M/F HEX		4	EA
81902301360	TRANSFORMER PS45V 48VA PC	T2	1	EA
81902412720	PCB PS45 POWER SUPPLY		1	EA
81902700930	FUSE 5X20 315MA TIME-DELAY	F1 F2	2	EA
81902804030	CORD POWER 3 CND 18AWG 7'6"		1	EA
81902907190	CONN AC W/FUSE PC MT 10A	P1	1	EA
81902907210	CONN 16-PIN HEADER R/A MA	P2	1	EA
81902907590	FUSE DRAWER 2 POLE PC MNT		1	EA
81903200541	LED GREEN RT/A HI-EFF PCB	CR1	1	EA
81903463330	SUPPORT PLATE PS45 PWR		1	EA
81903463720	COVER PS45 POWER SUPPLY		1	EA
CA25-1272	DOC PCB PS45 POWER SUPPLY		REF	
DD52-1272	DOC PCB PS45 POWER SUPPLY		REF	
SC33-1272	DOC PCB PS45 POWER SUPPLY		REF	