

PESA Switching Systems 330A Wynn Drive Huntsville, AL 35805

Document No. 81-9059-0218-0 Rev. B

Manual Updates:

- 10/15/93 Manual released for initial printing as REV A.
- 03-01-01 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 Video Summing Combiner. This manual is divided into seven sections as shown.

Section 1, **INTRODUCTION**, summarizes the manual, describes the Video Summing Combiner, 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 Video Summing Combiner 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 Video Summing Combiner is a support device used in conjunction with video matrix switchers. It provides a convenient way to increase routing switcher *inputs* by linking together common matrix *outputs*. The combiner can link up to three switchers (eg. 48X96) for a maximum of 144 inputs to one output.

The Video Summing Combiner consists of a chassis, compact backplane with power and video connectors, and up to 12 Video Combiner modules. Each combiner module contains 4 channels, a full frame will contain 48, 3x1 combiner channels. The module assembly contains a green LED visible from the front of the unit. It will be illuminated when the module is plugged into a frame that is powered up. Each module also contains test points for +V, -V, and outputs for all four signal channels.

Because the Video Summing Combiner uses a summing configuration rather than a switch, it can only be used on systems that contain an "off crosspoint" feature. Only one of the three inputs can contain a signal at any given time. The 3X1 summing combiner can be used to combine signals from any matrix frame (or other 75ý source). The signals from all three inputs are resistively added. Normally there will only be a signal on one input at a time. Because these inputs are not buffered before they are mixed, all three inputs must be terminated by a 75ý device. If the third input is not connected to any device, it must be terminated with a 75ý terminator.

The resulting signal goes to an equalizer stage, which is user adjusted by a pot accessible from the front of the unit. Then the signal enters an adjustable gain device and on to the output stage which drives two 75ý BNC's. The output stage contains adjustments for setting the frequency response.

Power is supplied to the Video Summing Combiner by an external power supply which attaches to the rear of the switchers. A second supply may be used for redundancy.

Key features of the Video Summing Combiner are:

- 150' of cable equalization
- dual outputs
- wide bandwidth
- low power consumption

1.2 General Description Continued:



Figure 1–1 Front View of the Video Summing Combiner



Figure 1–2 Rear View of the Video Summing Combiner

1.3 Specifications

INPUT	
Input Number	3 per channel, terminated in 75ý
Level	1V p-p nominal, 2V p-p w/o gross distortion
Impedance	75Ohm
Coupling	DC
Connector	BNC
OUTPUT	
Output Number	2 per channel
Level	1V p-p, 2V p-p w/o gross distortion
Impedance	75Ohm
Coupling	DC
Connector	BNC
DC Offset	±20 Mv
Return Loss	40dB to 5MHz
GAIN	
Gain (nominal)	Unity
Adjustment	±0.5dB
Stability	±.05dB
FREQUENCY RESPONSE	
0-5 MHz	±.05dB
5-100 MHz	±.5dB
100-200 MHz	+0.5dB - 1.5dB
CROSSTALK	
0-10 MHz	<-68dB
10-100 MHz	<-40 dB
10-90% APL	<.05 to SIMHZ
DIFFERENTIAL PHASE	
10-90% APL	<.05° to 5MHz
SIGNAL TO NOISE	
Luminance Weighted	<-81 dB

1.3 Specifications Continued:

Electrial Path Length Slew Rate

POWER

Per Module Full Frame (12 modules)

MECHANICAL

Channels per Module Modules per Frame Channels per Full Frame Dimensions

Rack Units

ENVIRONMENTAL

Temperature Humidity 5 nS (nominal) >250V/µS

±8-12 VDC @ 200mA ±8-12 VDC @ 2.5A

4

. 1 to 12 48 19"w x 7"h x 10" d (482.6mm x 177.8mm x 254mm) 4RU

0°C to 40°C 20% to 90% Non-Condensing

2.1 Introduction

This section details Video Summing Combiner installation procedures. The following topics are discussed:

- Receipt Inspection
- Location and Mounting
- Power Connections
- Cabling
- Inserting Video Combiner Modules
- Power-Up Sequence

2.2 Receipt Inspection

The Video Summing Combiner was inspected and tested prior to leaving the PESA factory. Upon receipt, please inspect the unit for shipping damage. If damage is detected, notify the carrier immediately and hold all packing material for inspection. If assistance is required, please contact PESA Customer Service at the telephone number listed in the front of this manual.

After unpacking, compare all parts received against the packing list. If the unit is undamaged and all components have been received, proceed with installation.

2.3 Location and Mounting

The Video Summing Combiner has been designed to fit in a standard E.I.A. 19" equipment rack and uses 4 rack units of space (7"). An area should be selected where temperature does not exceed 40°C inside the equipment rack, and where air can circulate freely. The unit should be mounted in an area convenient to video and power connections. Sufficient space must be provided behind the rack to allow for the coaxial and power cables. When the Video Summing Combiner is supplied as part of a system including interconnecting cables, a rack layout drawing is usually provided. While adherence to this drawing is not required, it will ensure that the cables are of proper length. Support the frame from the bottom when installing in the rack. All mounting holes should be utilized and 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. Insure that no side-to-side pressure is applied, as warpage may occur. Even though the unit's weight is low, considerable weight may be added to the unit's rear panel by the various video cables.

2.3 Location and Mounting Continued:

Therefore, all cable 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.

Figure 2–1 illustrates chassis installation.

To install the Video Summing Combiner chassis follow these steps:

- 1. Align the chassis with the screw holes in the rack.
- 2. Install the bottom screws first.
- 3. Install the two top screws
- 4. Tighten all four screws securely.



Figure 2–1 Video Summing Combiner Chassis Installation

2.4 Power

Each Video Summing Combiner frame is equipped with two mate-n-lock connectors which permit several types of power configuration. Power can be connected directly, or looped from one chassis to another.

Figure 2–2 shows the location of power connectors P13 and P14 on the rear Combiner chassis panel:



Figure 2–2 Video Summing Combiner Power Connectors

Power for the Video Summing Combiner chassis is supplied from the power supply which connects to the rear of the routing switcher units, or from an external "standalone" supply.

Dual power connectors on the Combiner provide the capability of "N+1" backup, *up to the limits of the power supplies* feeding the system.

2.4 Power Continued:

Video Summing Combiner power connection depends on your individual system configuration, however, three basic choices are available:

• Direct Power

Figure 2–3 illustrates the direct method, connecting the power supply output to the power connector on the Video Summing Combiner chassis:



Figure 2–3 "Direct" Power Connection Method

• Redundant Power

Figure 2–4 illustrates the fully redundant power connection method:



Figure 2–4 "Redundant" Power Connection Method

2.4 Power Continued:

Using the redundant method, both the primary and backup power supply outputs are connected to the power loop on the routing switcher, and one power connection is made to the Video Summing Combiner chassis. Should either power supply fail, the other supply takes over.

• "N+1" Power

Figure 2–5 illustrates the "N+1" connection method:



Figure 2–5 "N+1" Power Connection Method

The "N+1" method places an extra power supply in the loop at the routing switcher frame, and also loops the Video Summing Combiner frames together. Should any supply fail *throughout* the system, an extra supply is available.

NOTE: Using t fail, be the fail

Using the "N+1" method, should any power supply in the loop fail, be sure to restore "N+1" status immediately by replacing the failed supply.

When choosing one of the three power connection methods, note the following important points:

2.4 Power Continued:

- Avoid overloading any single power supply by distributing the load evenly.
- Ensure that the removal of a primary or redundant supply does not overload the remaining supplies.

Connect all Video Summing Combiner modules before making connections to the power supply. Refer to Paragraph 2.9 for the proper system power-up sequence.

2.5 Cabling

Ensure that the Video Summing Combiner chassis is installed in the equipment rack prior to attaching cables.

For all video cabling, it is recommended that you utilize a 75 ohm cable such as Belden 8281 or RG59 throughout.



NOTE:

Do not use 50 Ohm Cable, as this may produce standing waves and oscillations.

Use the following steps to cable the Video Summing Combiner chassis:

- 1. Lay all cables in their intended positions, separating video cables from power cables wherever possible.
- Connect each cable to the Combiner chassis, and provide proper support for each cable during the connection process. The use of tie-wraps is recommended, as shown below in Figure 2–6:

2.5 Cabling Continued:



Figure 2–6 Cables Attached To Supports

Note that failure to provide cable support can result in cables separating from their connectors, or broken connectors on the Video Summing Combiner chassis.

The following connections should now be made:

- 1. **INPUT / OUTPUT**. Connect Routing Switcher outputs to the Video Summing Combiner's inputs as required.
- 2. Connect Video Summing Combiner outputs to their appropriate destinations, ensuring that all cables are secured with proper support to minimize strain, and cables are not placed in hazard-ous positions.

If cables are run under an elevated floor, ensure that they are tied to the racks as guides. If cables are run along the floor, ensure that they are clear of the main work area behind the racks. Stepping or tripping on cables can break wires inside the insulation and/or pull cables free from their connectors.

2.5 Cabling Continued:



NOTE:

Do not attach power cables from the Video Summing Combiner to the power supply until you have completed installation and run the power-up sequence. Refer to Paragraph 2.7 for details.

2.6 Inserting Video Combiner Modules

If required, insert Video Summing Combiner modules into the chassis at this time. Ensure that all module pins line up with the socket prior to applying insertion pressure. If the modules were shipped already installed in the chassis, ensure that all packing material is removed, and that each Combiner module is properly seated.

2.7 Power-Up Sequence

Use the following check list to perform the Video Summing Combiner's power-up sequence:

- 1. Ensure that each Video Summing Combiner module is properly seated.
- 2. Check all video and control cable connections. Each should be secure and without strain.
- 3. Apply power to the Video Matrix Switchers.
- 4. Connect power cables from the Combiner to the power supply per your specific power configuration requirements. Refer to Paragraph 2.4 for examples of power configurations.

NOTE: The no

The normal operating condition of the Video Summing Combiner is "ON." There is no ON / OFF switch in the unit.

When the above power-up sequence is complete, the green power LED on each Video Summing Combiner module's front edge will light. This LED is labelled "**PWR**."

3.1 Basic Operation and Adjustments

Operation of the Video Summing Combiner is completely transparent to the user once the unit is installed, cabled and powered.

Module Indicators

Figure 3–1 illustrates the front of each Video Summing Combiner Module.

Each Summing Combiner Module contains a green LED visible from the front of the unit. It will be illuminated when the module is plugged into a frame that is powered up.

Adjustments

All adjustments have been made at the factory. Cable equalization can be adjusted to compensate for cable on the output side of the system for up to 150' of Belden 8281.



Figure 3–1 Front Edge, Video Summing Combiner Module

3.1 Basic Operation and Adjustments Continued:



Figure 3–2 Video Summing Combiner Module Adjustments

3.1 Basic Operation and Adjustments Continued:

Gain Adjustment

Use the following procedure to adjust module gain. Verify that the combiner gain is in error before adjusting.

- 1. Ensure that your scope is calibrated.
- 2. Attach a 1v p-p signal such as multi-burst or sweep to the scope's channel A input, and using a BNC "T" connector, bring the signal to the input of the desired combiner module.
- 3. Connect the combiner module output to the scope's channel B input, and terminate at the scope.
- 4. Terminate the other two inputs on the channel under adjustment.
- 5. Adjust the gain potentiometers (R19, R49, R79, R109) for a 1v p-p output.

Equalization

Use the following procedure to equalize the cable from the switching system:

- 1. Use an appropriate signal (i.e. sweep signal with markers).
- 2. Adjust the equalization pots (R14, R44, R74, R104) for flat response at the destination of each output. Up to 150' of Belden 8781 cable can be compensated.

The Video Summing Combiner can be used to combine signals from any matrix frame (or other 75 ohm source), provided the signal is only present on one channel at a time.

The signals from all three inputs are resistively added. Normally, there will only be a signal on one input at a time. Because these inputs are not buffered before they are mixed, all three inputs must be terminated by a 75ohm device. If the third input is not connected to any device, it must be terminated with a 75ohm terminator.

The resulting signal goes to an equalizer stage, which is user adjusted by a pot accessible from the front of the unit. Then the signal enters an adjustable gain device (also user adjustable by a pot accessible from the front of the unit). The signal then goes to the output stage, which drives the two 75 ohm output BNC's.

Each Video Summing Combiner module assembly contains a green LED visible from the front of the unit. It will be illuminated when the module is plugged into a frame that is powered up. Each module also contains test points for +V, -V, and outputs for all four signal channels.

Figure 4–1 illustrates the Video Summing Combiner functional operation.



Figure 4–1 Video Summing Combiner Functional Diagram

4.2 Power Supplies

PS140V Functional Description

The PS140V is an unregulated power source that supplies \pm voltages to the Video Summing Combiner.

Separate power supply units are available for the 115V and 230V versions. Voltage range selection is implemented in the same manner by changing the position of an AC Select Card inside the unit. There are three types of AC Select Cards: 100-130V range, 220-250V range, and 200-210V range. One AC Select Card is supplied for 115V units; two cards are supplied for the 230V. Voltage ranges can be selected in increments of 10V to comply with most US and International requirements.

	NOMINAL	
PART NUMBER	VOLTAGE RANGES	
81902406982	100 - 110 - 120 - 130	
81902406990	220 - 230 - 240 - 250	
81902407000	200 - 210	

The edge of each card has different circuitry with matching labels that determine the voltage range. The appropriate AC Select Card is inserted into the connector so that the edge labeled with the desired voltage is towards the pins in the connector. The factory installed cards are 120V for 100V-130V systems, or 230V for 200V-250V systems. The input voltage may be adjusted up or down by repositioning the card. To change the AC Select Card voltage from the factory settings, disconnect AC power and remove the cover from the Power Supply Unit. Remove the AC Select Card and insert it into the connector. The connector has contacts only on one side. Replace the cover and reconnect AC power.

Note: To avoid electrical shock, insure that the filter capacitors are completely discharged. Refer to Figure 4–2.

4.2 Power Supplies Continued:

Circuit Description:

The AC Selector Card interconnects the transformer primaries in series and/or parallel combinations to provide the proper nominal input line voltage.

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

Series diodes are used after the filters to allow supplies to be paralleled for redundancy. The diodes assure that one faulty supply cannot load the output of the other power supply.

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

A voltage monitoring circuit senses the output voltages. If the output voltages decrease by approximately 25% from normal, the green LED will extinguish; the red LED illuminates and the alarm closure activates at the same time. The green LED is an indicator of output voltage; it dims as the combined positive and negative voltages decrease.

Test points are provided for plus, minus, and ground. The test points are connected to unregulated voltages and follow input line changes and output load variations.



Figure 4–2 PS140V Functional Block Diagram

4.2 **Power Supplies Continued:**

PS270V Power Supply

The PS270V is an unregulated power source that supplies \pm voltages to the Video Summing Combiner.

Although separate power supply units are available for the 115V and 230V versions, internally, voltage selection is obtained in the same manner for all units. Each power supply produced by Pesa has an adjustable AC Select Card inside the unit that allows the customer to select the required voltage range. There are three types of AC Select Cards: 100-130V range, 220-240V range, and 200-210V range. Pesa supplies one card for 115V units or two cards for the 230V units depending upon where the equipment is being shipped. Voltage ranges can be selected in increments of 10V to comply with most US and International requirements.

	NOMINAL	
PART NUMBER	VOLTAGE RANGES	
81902406982	100 - 110 - 120 - 130	
81902406990	220 - 230 - 240 - 250	
81902407000	200 - 210	

How the card is inserted into the connector determines the voltage range **note the labels on the cards**. The appropriate AC Select Card is inserted into the connector so that the edge labeled with the desired voltage is towards the pins in the connector. The factory installs a card such that the nominal voltages are 120V for 100V-130V systems, or 230V for 200V-250V systems. The voltage may be further adjusted by changing the position of the card.

To change the AC Select Card voltage from the factory settings, disconnect AC power and remove the cover from the Power Supply Unit. Insure that you have the proper AC Select Card and insert it into the connector so that the desired voltage matches up with the contacts in the connector. The connector has contacts only on one side. Replace the cover and check the output voltages to insure they are correct.

Note: To avoid electrical shock, insure that the filter capacitors are completely discharged.

Circuit Description:

An input fuse provides overcurrent protection from internal faults and output overloads. If the fuse opens, correct the overcurrent condition then replace the fuse.

4.2 Power Supplies Continued:

Circuit Description Continued:

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

The secondary 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.

In the PS270V, a temperature sensing circuit controls the fan speed according to the air temperature. The fan usually runs at half speed at normal temperature (25°C). The PS270A does not incorporate a fan.

A circuit senses the voltages across the filter capacitors. If the combined voltages decrease by approximately 25% from normal, the green LED extinguishes. The red LED illuminates and the alarm closure activates at the same time. The green LED serves as a rough indicator of output voltage; it dims as the combined positive and negative voltages decrease.

Test points are provided for plus, minus, and ground. These supplies are unregulated and follow input line changes and output load variations.



Figure 4–3 PS270V Functional Block Diagram

5.1 Maintenance

General

The Video Summing Combiner is designed to provide extended, troublefree service with minimum maintenance requirements. Other than the normal care which should be given to any advanced solid-state electronic device, there are few additional maintenance requirements on the Video Summing Combiner unit.

If additional technical assistance is required, please refer to the "Ordering Assistance, Service, and Inquiries Sheet" in the front of this manual.

5.2 Preventive Maintenance

Use the following guidelines for general preventive maintenance:

- Keep the inside of the frame clean, especially if your facility is subject to dust or dirt in the atmosphere. Use compressed air, an anti-static cloth, or a gentle vacuum to clean the grille 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.
- Avoid covering the front grille for any extended period. The Video Summing Combiner system doen not include cooling fans, the grille is designed to provide all required system ventilation.
- The center conductors of each BNC connector are readily accessible inside the frame, if you wish to check system input and output levels. It is recommended that a scope with a 10:1 probe is used for minimum signal disturbance.
- If a problem is suspected with an individual Video Summing Combiner module, first swap out the module and recheck the system for the problem. If the problem can be isolated on the module itself, and your facility is equipped for module component repair, proceed with repairs using the schematics provided in Section 6 of this manual.
- For replacement components or replacement modules, contact PESA technical support. Refer to the "Ordering Assistance, Service & Inquires Sheet" in the front of this manual for details.

5.2 Preventive Maintenance Continued:



NOTE: Do not repair equipment under warranty without first contacting PESA. Remember that PESA warrants the Video Summing Combiner equipment against defective workmanship or materials for a period of one year from the date of purchase. Refer to the "Equipment Warranty" sheet in the front of this manual for further information.

6.1 Schematics

General

This section contains the schematic diagrams and parts location diagrams for the Video Summing Combiner. Refer to this section when troubleshooting the equipment or replacing defective parts.

Description	<u>Dwg No.</u>	<u>Page No.</u>
Mainframe Assembly	CD63-0711	6.2
Video Summing Combiner Card	CA25-1198	6.3
	SC33-1198	6.4
Backplane	CA25-1199	6.6
	SC33-1199	6.7
Chassis	CD63-0631	6.10

Not Available at Time of Printing

Configuration Drawing • Mainframe Assembly • CD63-0711



page 6.2



Component Assembly • Video Summing Combiner Card • CA25-1198

page 6.3



8/93 P/N 81905902180

Schematic (Sheet 1 of 2) • Video Summing Combiner Card • SC33-1198

Video Summing Combiner	Schematics
$\begin{array}{c} 2 \leftarrow J3 \\ 5 \leftarrow J3 \\ \end{array} $ N.C.	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c c} R121 & U9 & LM317MT \\ + VIN & 1 < J3 & 1 & & & & \\ + VIN & 4 < J3 & & & & \\ C45 & + & & & & \\ 1MF & - & & & & & \\ 1MF & - & & & & & \\ & & & & & & & \\ & & & &$
$ \begin{array}{c} \text{GND} & 28 \underbrace{\text{OII}}_{\text{II}} \\ \text{GND} & 10 \underbrace{\text{JI}}_{\text{II}} \\ \text{GND} & 29 \underbrace{\text{JI}}_{\text{II}} \\ \text{GND} & 30 \underbrace{\text{JI}}_{\text{II}} \\ \text{GND} & 12 \underbrace{\text{JI}}_{\text{III}} \\ \text{GND} & 13 \underbrace{\text{JI}}_{\text{III}} \\ \text{GND} & 32 \underbrace{\text{JI}}_{\text{III}} \\ \text{GND} & 33 \underbrace{\text{JI}}_{\text{III}} \\ \text{GND} & 15 \underbrace{\text{JI}}_{\text{III}} \\ \text{GND} & 15 \underbrace{\text{JI}}_{\text{III}} \\ \text{GND} & 16 \underbrace{\text{JI}}_{\text{III}} \\ \text{GND} & 16 \underbrace{\text{JI}}_{\text{III}} \\ \text{GND} & 18 \underbrace{\text{JI}}_{\text{IIII}} \\ \end{array} $	-VIN $3 \leftarrow J3$ -VIN $6 \leftarrow J3$ R125 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 1 2 1 1 1 2 1 1 2 1 1 3 7 MT 3 1 1 2 1 1 3 7 MT 3 3 7 MT 3 1 1 2 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	C49 R127 1MF 825
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	-5V MMBZ 523 4 BL GRN 243 -5V GRN 243 1%
$\frac{J2}{GND} 33 \frac{J2}{4}$	

 $\frac{1}{\text{GND}} \quad 15 \frac{1}{\sqrt{12}}$ $_{\rm GND}$ 34 < J2 gnd 16 < J2 $_{\rm GND}$ 36< J2 GND $18 \leftarrow J2$







Schematic (Sheet 2 of 2) • Video Summing Combiner Card • SC33-1198

00 00 00 00 00 00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00 00 00 00 00 00	© 0 © 0 © 0 © 0 © 0 © 0 © 0 © 0 © 0 © 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	00 00 00 00 00 00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00 00 00 00 00 00	00 000 000 000 000 000 000 000 000 000	00 00 00 00 00 00 00 00 00 00 00 00 00	00 000 000 000 000 000 000 000 000 000	00 000 000 000 000 000 000 000 000 000	00 000 000 000 000 000 000 000 000 000	οο οο οο οο οο οο οο οο οο οο οο οο οο
J270 00 00 00 00 00 00 00 00 00 00 00 00 0	1269 60 00 00 00 00 00 00 00 00 00 00 00 00	7586 750 750 750 750 750 750 750 750 750 750	J267 00 00 00 00 00 00 00 00 00 00 00 00 00	J266 00 00 00 00 00 00 00 00 00	235L 00 00 00 00 00 00 00 00 00 00 00 00 00	J6 00 00 00 00 00 00 00 00 00 00 00 00 00	25 00 00 00 00 00 00 00 00 00 00 00 00 00	J4 00 00 000 000 000 000 000 000 000 000	J3 00 00 00 00 00 00 00 00 00 00 00 00 00	SL 00 00 00 00 00 00 00 00 00 00 00 00 00	

Schematics



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Schematics



8/93 P/N 81905902180



Schematics





Section 6

ightarrow 7	IN1A11	IN1A12	J245	J270 > 7	IN1A12
ightarrow10	IN1B11	IN1B12		$\xrightarrow{J270}$ 10	IN1B12
→13	IN1C11	IN1C12		\downarrow J270 \rightarrow 13	IN1C12
ightarrow 1	out1a11	out1a12	J248	$\xrightarrow{J270} 1$	out1a12
ightarrow 2	OUT1B11	OUT1B12	J249	$\xrightarrow{\downarrow}$ J270 \rightarrow 2	OUT1B12
\rightarrow 22	IN2A11	IN2A12	J250	$\xrightarrow{J270} 22$	IN2A12
→25	IN2B11	IN2B12		$\xrightarrow{J270}$ 25	IN2B12
\rightarrow 28	IN2C11	IN2C12	J252	\rightarrow J270 \rightarrow 28	IN2C12
→33	out2a11	OUT2A12		$\xrightarrow{J270} 33$	OUT2A12
→ 34	OUT2B11	OUT2B12	J254	J270 → 34	OUT2B12
\rightarrow 7	IN3A11	IN3A12	J255	J276 → 7	IN3A12
ightarrow 7 ightarrow 10	IN3A11 IN3B11	IN3A12 IN3B12	J255 J256	$\xrightarrow{J276} 7$ $\xrightarrow{J276} 10$	IN3A12 IN3B12
ightarrow 7 ightarrow 10 ightarrow 13	IN3A11 IN3B11 IN3C11	IN3A12 IN3B12 IN3C12	J255 J256 J257	$\begin{array}{c} J276 \\ \hline \\ J276 \\ \hline \\ J276 \\ \hline \\ J276 \\ 13 \\ \end{array}$	IN3A12 IN3B12 IN3C12
\rightarrow 7 \rightarrow 10 \rightarrow 13 \rightarrow 1	IN3A11 IN3B11 IN3C11 OUT3A11	IN3A12 IN3B12 IN3C12 OUT3A12	J255 J256 J257 J257 J258	$\begin{array}{c} J276 \\ \hline \\ J276 \\ 1 \end{array}$	IN3A12 IN3B12 IN3C12 OUT3A12
	IN3A11 IN3B11 IN3C11 OUT3A11 OUT3B11	IN3A12 IN3B12 IN3C12 OUT3A12 OUT3B12	J255 J256 J257 J257 J258 J259 J259	$\begin{array}{c} J276 \\ \hline J276 \\ \hline J276 \\ 10 \\ \hline J276 \\ 13 \\ \hline J276 \\ 1 \\ \hline J276 \\ 1 \\ \hline J276 \\ 2 \\ \end{array}$	IN3A12 IN3B12 IN3C12 OUT3A12 OUT3B12
$ \rightarrow 7 $ $ \rightarrow 10 $ $ \rightarrow 13 $ $ \rightarrow 1 $ $ \rightarrow 2 $	IN3A11 IN3B11 IN3C11 OUT3A11 OUT3B11	IN3A12 IN3B12 IN3C12 OUT3A12 OUT3B12	J255 J256 J257 J257 J258 J259 J259	$\begin{array}{c} J276 \\ \hline J276 \\ \hline J276 \\ 10 \\ \hline J276 \\ 13 \\ \hline J276 \\ 1 \\ \hline J276 \\ 1 \\ \hline J276 \\ 2 \\ \hline \end{array}$	IN3A12 IN3B12 IN3C12 OUT3A12 OUT3B12
	IN3A11 IN3B11 IN3C11 OUT3A11 OUT3B11 IN4A11	IN3A12 IN3B12 IN3C12 OUT3A12 OUT3B12 IN4A12	J255 J256 J257 J258 J259 J260 J260	$\begin{array}{c} J276 \\ \hline J276 \\ \hline J276 \\ \hline 10 \\ \hline J276 \\ \hline J276 \\ \hline 11 \\ \hline J276 \\ \hline J276 \\ \hline 2 \\ \hline J276 \\ \hline 2 \\ \hline \end{array}$	IN3A12 IN3B12 IN3C12 OUT3A12 OUT3B12 IN4A12
	IN3A11 IN3B11 IN3C11 OUT3A11 OUT3B11 IN4A11 IN4B11	IN3A12 IN3B12 IN3C12 OUT3A12 OUT3B12 IN4A12 IN4B12	J255 J256 J257 J257 J258 J259 J260 J260 J261	$\begin{array}{c} J276 \\ \hline J276 \\ \hline J276 \\ \hline 10 \\ \hline J276 \\ \hline 13 \\ \hline J276 \\ \hline 1 \\ \hline J276 \\ \hline 2 \\ 2 \\$	IN3A12 IN3B12 IN3C12 OUT3A12 OUT3B12 IN4A12 IN4B12
	IN3A11 IN3B11 IN3C11 OUT3A11 OUT3B11 IN4A11 IN4B11 IN4C11	IN3A12 IN3B12 IN3C12 OUT3A12 OUT3B12 IN4A12 IN4B12 IN4C12	J255 J256 J257 J257 J258 J259 J260 J261 J261 J262	$\begin{array}{c} J276 \\ \hline J276 \\ 10 \\ \hline J276 \\ 13 \\ \hline J276 \\ 1 \\ \hline J276 \\ 2 \\ 2 \\ 2 \\ \hline J276 \\ 2 \\ 2 \\ 2 \\ \hline J276 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ $	IN3A12 IN3B12 IN3C12 OUT3A12 OUT3B12 IN4A12 IN4B12 IN4C12
$ \begin{array}{c} \rightarrow 7 \\ \rightarrow 10 \\ \rightarrow 13 \\ \rightarrow 1 \\ \rightarrow 2 \\ \rightarrow 22 \\ \rightarrow 225 \\ \rightarrow 28 \\ \rightarrow 33 \end{array} $	IN3A11 IN3B11 IN3C11 OUT3A11 OUT3B11 IN4A11 IN4B11 IN4C11 OUT4A11	IN3A12 IN3B12 IN3C12 OUT3A12 OUT3B12 IN4A12 IN4B12 IN4C12 OUT4A12	J255 J256 J257 J257 J258 J259 J260 J260 J261 J262 J263 J263	$\begin{array}{c} J276 \\ 7 \\ \hline J276 \\ 10 \\ \hline J276 \\ 13 \\ \hline J276 \\ 1 \\ \hline J276 \\ 2 \\ 2 \\ \hline J276 \\ 2 \\ 2 \\ \hline J276 \\ 2 \\ 3 \\ 3 \\ \hline J276 \\ 3 \\ 3 \\ 3 \\ \hline J276 \\ 3 \\ 3 \\ 3 \\ \hline J276 \\ 3 \\ 3 \\ 3 \\ \hline J276 \\ 3 \\ 3 \\ 3 \\ \hline J276 \\ 3 \\ 3 \\ 3 \\ \hline J276 \\ 3 \\ 3 \\ 3 \\ \hline J276 \\ 3 \\ 3 \\ 3 \\ \hline J276 \\ 3 \\ 3 \\ 3 \\ \hline J276 \\ 3 \\ 3 \\ 3 \\ \hline J276 \\ 3 \\ 3 \\ 3 \\ 3 \\ \hline J276 \\ 3 \\ 3 \\ 3 \\ 3 \\ \hline J276 \\ 3 \\ 3 \\ 3 \\ 3 \\ \hline J276 \\ 3 \\ 3 \\ 3 \\ 3 \\ \hline J276 \\ 3 \\ 3 \\ 3 \\ 3 \\ \hline J276 \\ 3 \\ 3 \\ 3 \\ 3 \\ \hline J276 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ \hline J276 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ $	IN3A12 IN3B12 IN3C12 OUT3A12 OUT3B12 IN4A12 IN4B12 IN4C12 OUT4A12

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Schematics

$31 \rightarrow 3$ GND	3 3 GND	J3 3 GND	34 3 GND	35 3 GND	$36 \rightarrow 3$ GND	J265 3 GND	$3266 \rightarrow 3$ GND	3267 3 GND	J268 3 GND	J269 3 GND	3 G
$\xrightarrow{J1}$ 4 GND	$\xrightarrow{J2}$ 4 GND	$33 \rightarrow 4$ GND	$\xrightarrow{J4} 4$ GND	$35 \rightarrow 4$ GND	$\xrightarrow{J6}$ 4 GND	$3265 \rightarrow 4$ GND	$3266 \rightarrow 4$ GND	3267 4 GND	J268 4 GND	J269 4 GND	3270 4 GNI
$J \downarrow 5$ GND	$\downarrow J \swarrow 5$ GND	5 GND	$\downarrow J4 \rightarrow 5$ GND	J5 5 GND	$\rightarrow 5$ GND	$\downarrow JZ05 \rightarrow 5$ GND $\downarrow JZ65 \rightarrow$	1266 S GND	1267 5 GND	JZ08 5 GND	5 GND	$\downarrow JZ /U \rightarrow 5$ GNE
6 GND	$12 \rightarrow 6$ GND	13 6 GND	$14 \rightarrow 6$ GND	$\xrightarrow{0.5}$ 6 GND	GND JO GND	1265 6 GND	1266 GND	1267 6 GND	1268 GND	1269 6 GND	
J1 > s GND	$J^2 \rightarrow 8$ GND	J3 8 GND	J4 8 GND	J5 8 GND	J6 S GND	J265 8 GND	J266 8 GND	J267 8 GND	J268 8 GND	J269 8 GND	J270 8 GNE
$J1 \rightarrow g$ GND	$J^2 > 64$ gmb	J3 AL AND	J4 $J4$ $grad J4$	J^{5} 9 GND	$J_6 \rightarrow g GND$	J265	J266 9 GND	J267 9 GND	J268 GND	$J269 \rightarrow g GND$	J270 9 GND
J1 > 12 GND	$J^2 > 12$ GND	J3 12 GND	J4 12 GND	J^{5} 12 GND	$\rightarrow 11$ GND J6 $\rightarrow 12$ GND	J265 12 GND	J266 12 GND	J267 12 CND	J268 12 CND	J269 12 GND	J270 12 GND
J1 14 CND	J^2 14 CND	J3 14 GND	J4 14 GND	J5 14 GND	J6 14 CND	J265 14 CND	J266 14 CND	J267 14 CND	J268 14 CND	J269 14 CND	J270 14 CND
$J1 \rightarrow 15$ GND	J^2 15 GND	J3 15 GND	$J4 \rightarrow 15$ CND	J5 15 GND	$J6 \rightarrow 15$ GND	J265 15 GND	J266 15 GND	J267 15 GND	J268 15 GND	J269 15 GND	J270 15 GND
$J1 \rightarrow 16$ GND	$J^2 \rightarrow 16$ GND	$J3 \rightarrow 16$ GND	$J4 \rightarrow 16$ GND	$J5 \rightarrow 16$ GND	$J6 \rightarrow 16$ GND	$J265 \rightarrow 16$ GND	J266 16 GND	$J267 \rightarrow 16$ GND	J268 16 GND	$J269 \rightarrow 16$ GND	$J270 \rightarrow 16$ GND
$J1 \rightarrow 17$ GND	$J^2 \rightarrow 17$ GND	$J3 \rightarrow 17$ GND	$J4 \rightarrow 17$ GND	$J5 \rightarrow 17$ GND	$J6 \rightarrow 17$ GND	$J265 \rightarrow 17$ GND	$J266 \rightarrow 17$ GND	$J267 \rightarrow 17$ GND	$J268 \rightarrow 17$ GND	$J269 \rightarrow 17$ GND	$J270 \rightarrow 17$ GND
J1 18 GND	J^2 18 GND	J3 18 GND	J4 18 GND	J5 18 GND	$J6 \rightarrow 18$ GND	J265 18 GND	J266 18 GND	J267 18 GND	J268 18 GND	$J269 \rightarrow 18$ GND	J270 18 GND
J1 19 GND		J3 19 GND	J4 19 GND	35 19 GND	$\rightarrow 19$ GND	J265 19 GND	J266 19 GND		J268 19 GND	J269 19 GND	3270 19 GND
$J1 \rightarrow 20$ GND		$J3 \rightarrow 20$ GND	$J4 \rightarrow 20$ GND	35 20 GND	36 20 GND	J265 20 GND	J266 20 GND	J267 20 GND	J268 20 GND	3269 20 GND	J270 20 GND
$\rightarrow 11$ $\rightarrow 21$ GND	$\rightarrow 32$ 21 GND	$33 \rightarrow 21$ GND	$\rightarrow 14$ 21 GND	35 21 GND	$\rightarrow 16$ 21 GND	$\rightarrow 1265$ 21 GND	$J266 \rightarrow 21$ GND	3267 21 GND	$J268 \rightarrow 21$ GND	$\rightarrow 1269 \rightarrow 21$ GND	3270 21 GND
$\rightarrow J1 \rightarrow 23$ GND	$\rightarrow 32$ 23 GND	$\xrightarrow{J3}$ 23 GND	$\rightarrow 34$ 23 GND	$\xrightarrow{J5}$ 23 GND	\rightarrow 23 GND	\rightarrow 23 GND	\rightarrow 23 GND	$\rightarrow 23$ GND	$\rightarrow 1268 \rightarrow 23$ GND	$\rightarrow 23$ GND	$\rightarrow 3270$ 23 GND
$J1 \rightarrow 24$ GND	$32 \rightarrow 24$ GND	$J_3 \rightarrow 24$ GND	$\xrightarrow{J4}$ 24 GND	$35 \rightarrow 24$ GND	$\rightarrow 24$ GND	3265 24 GND	3266 24 GND	3267 24 GND	3268 24 GND	3269 24 GND	3270 24 GND
$J1 \rightarrow 26$ GND	$\xrightarrow{J2}$ 26 GND	$33 \rightarrow 26$ GND	$\xrightarrow{J4}$ 26 GND	$35 \rightarrow 26$ GND	$\xrightarrow{J6}$ 26 GND	$\xrightarrow{J265}$ 26 GND	$J266 \rightarrow 26$ GND	3267 26 GND	$J268 \rightarrow 26$ GND	$J269 \rightarrow 26$ GND	3270 26 GND
$J1 \rightarrow 27$ GND	$32 \rightarrow 27$ GND	$33 \rightarrow 27$ GND	$\xrightarrow{J4}$ 27 GND	$\rightarrow 15$ 27 GND	$\rightarrow 16$ 27 GND	265 27 GND	1266 27 GND	3267 27 GND	1268 27 GND	$3269 \rightarrow 27$ GND	3270 27 GND
JI 29 GND	$32 \rightarrow 29$ GND	33 29 GND	14 29 GND	29 GND	29 GND	29 GND	29 GND	1267 29 GND	29 GND	29 GND	29 GND
30 GND	30 GND	30 GND	30 GND	30 GND	30 GND	30 GND	30 GND	30 GND	30 GND	30 GND	30 GND
31 GND	31 GND	$33 \rightarrow 31$ GND	$34 \rightarrow 31$ GND	31 GND	31 GND	31 GND	31 GND	31 GND	31 GND	1269 31 GND	31 GND
$31 \rightarrow 32$ GND J1 > as as	$32 \rightarrow 32$ GND $J2 \rightarrow az$	32 GND $J3$ > 55 GND	32 GND J4 32 GND	32 GND $J5$ > 55 GND	32 GND J6 32 GND	$3200 \rightarrow 32$ GND $J265 \rightarrow as$	32 GND	$3207 \rightarrow 32$ GND J267 32 GND	$3200 \rightarrow 32$ GND J268 32 GND	$J_{269} \rightarrow 32$ GND $J_{269} \rightarrow 32$ GND	32 GND J270 > 32 GND
$J1 \rightarrow 35$ GND	$\xrightarrow{J_2}$ 35 GND J_2 as gup	$J^3 \rightarrow 35$ GND	$J4 \rightarrow 35$ GND	35 GND J5 > 25 GND	\rightarrow 35 GND J6 > 35 GND	35 GND J265 36 GND	35 GND J266 36 GND	35 GND J267 35 GND	$J268 \rightarrow 35$ GND $J268 \rightarrow 35$ GND	$J269 \rightarrow 35$ GND	$J270 \rightarrow 35$ GND
36 GND	36 GND	36 GND	36 GND	36 GND	36 GND	36 GND	→ 36 GND	36 GND	36 GND	36 GND	36 GND
J7 \	J8 \	J9 \	J10 \	J11 \	J12 \	J271 \	J272 \	J273 \	J274 \	J275	J276 \
$J7 \rightarrow 3$ GND	3 GND	3 GND J9	$J10 \rightarrow 3$ GND	J11 3 GND	\rightarrow 3 GND J12 \rightarrow	\rightarrow 3 GND J271 \rightarrow	3 GND J272 3 GND	J273 3 GND	J274 GND	J275 GND	$J276 \rightarrow 3$ GND
J7 GND	$J^8 > 5$ GND	J9 5 GND	J10 5 GND	J11 GND	J12 > 5 GND	J271 GND	J272 GND	J273 GND	J274 GND	J275 S GND	J276
J7 6 CND	J8 C CND	J9 6 CND	J10 6 CND	J11 6 CND	J12 6 CND	J271 S GND	J272 6 CND	J273 6 CND	J274 6 CND	J275 6 CND	J276 6 CND
J7 8 GND	J8 8 GND	J9 8 GND	J10 8 GND	J11 8 GND	$J12 \rightarrow 8$ GND	J271 8 GND	J272 8 GND	J273 8 GND	J274 8 GND	J275 8 GND	J276 8 GND
$J7 \rightarrow 9$ GND	$J8 \rightarrow 9$ GND	J9 9 GND	J10 9 GND	J11 9 GND	$J12 \rightarrow 9$ GND	J271 9 GND	J272 9 GND	J273 9 GND	J274 9 GND	J275 9 GND	J276 9 GND
$J7 \rightarrow 11$ GND	$38 \rightarrow 11$ GND	$J^9 \rightarrow 11$ GND	J10 J1 GND	J11 J11 GND	$J12 \rightarrow 11$ GND	3271 11 GND	$J272 \rightarrow 11$ GND	J273 11 GND	J274 11 GND	J275 11 GND	$J276 \rightarrow 11$ GND
J7 12 GND	$J^8 \rightarrow 12$ GND	39 12 GND	J10 12 GND	\rightarrow 12 GND	$J12 \rightarrow 12$ GND	3271 12 GND	3272 12 GND	J273 12 GND	J274 12 GND	3275 12 GND	3276 12 GND
J7 14 GND		J9 14 GND		J11 J14 GND	\rightarrow 14 GND	3271 14 GND	J272 14 GND	J273 14 GND	J274 14 GND	3275 14 GND	3276 14 GND
\rightarrow 15 GND	\rightarrow 15 GND	39 15 GND	\rightarrow 15 GND	\rightarrow 15 GND	\rightarrow 15 GND	\rightarrow J271 \rightarrow 15 GND	\rightarrow 15 GND	3273 15 GND	J274 15 GND	J275 15 GND	3276 15 GND
\rightarrow J7 16 GND	\rightarrow J8 \rightarrow 16 GND	\rightarrow 16 GND	\rightarrow 16 GND	\rightarrow 16 GND	\rightarrow 16 GND	\rightarrow 16 GND	\rightarrow 16 GND	\rightarrow 16 GND	\rightarrow 16 GND	\rightarrow 16 GND	$\rightarrow 1276$ 16 GND
$\rightarrow 17$ GND	$38 \rightarrow 17$ GND	$J9 \rightarrow 17$ GND	\rightarrow 17 GND	\rightarrow J11 \rightarrow 17 GND	\rightarrow J12 \rightarrow 17 GND	\rightarrow J271 \rightarrow 17 GND	3272 17 GND	3273 17 GND	3274 17 GND	3275 17 GND	3276 17 GND
$J7 \rightarrow 18$ GND	38 18 GND	39 18 GND	\rightarrow 18 GND	\rightarrow 18 GND	\rightarrow 18 GND	\rightarrow 18 GND	1272 18 GND	3273 18 GND	$J274 \rightarrow 18$ GND	3275 18 GND	3276 18 GND
17 J/ 19 GND	18 19 GND	19 J9 GND	19 GND	JII 19 GND	\rightarrow 19 GND	19 GND	19 GND	19 GND	J274 19 GND	19 GND	3276 19 GND
17 20 GND	\rightarrow 20 GND	20 GND	10 20 GND	JII 20 GND	20 GND	1271 20 GND	1272 20 GND	1273 20 GND	1274 20 GND	1075 20 GND	1276 20 GND
17 21 GND	\rightarrow 21 GND	10.9 21 GND	21 GND	21 GND	21 GND	1271 21 GND	1272 21 GND	1273 21 GND	1274 21 GND	1275 21 GND	1276 21 GND
17 23 GND	\rightarrow 23 GND	23 GND		J11 23 GND	$312 \rightarrow 23$ GND $J12 \rightarrow$	23 GND	1272 23 GND	23 GND	1274 23 GND	1275 23 GND	3276 23 GND
J7 > 24 GND	$\rightarrow 24$ GND $J8$ > as $==$	J^9 24 GND	$J10 \rightarrow 24$ GND	$\rightarrow 24$ GND J11 $\rightarrow 24$ GND	$\rightarrow 24$ GND J12 > 24 GND	$\rightarrow 24$ GND J271 $\rightarrow 26$ mm	$J272 \rightarrow 24$ GND	$J273 \rightarrow 24$ GND	J274 > 24 GND	J275 24 GND	$J276 \rightarrow 24$ GND
J7 26 GND	$J^8 \rightarrow 26$ GND	$J^9 > 26$ GND	J10 > 26 GND	J11 26 GND	$J12 \rightarrow 26$ GND	J271 26 GND	$J272 \rightarrow 26$ GND	J273 26 GND	J274 26 GND	J275 26 GND	J276 \ 07 GND
J7 20 CND	J8 20 CND	J9 20 CND	J10 20 GND	J11 20 CND	J12 20 CMD	J271 20 CND	J272 20 CND	J273 20 CND	J274 20 CND	J275 20 CMD	J276 20 CND
$J7 \rightarrow 30$ GND	J^{8} 30 GND	J9 30 GND	J10 30 GND	J11 30 GND	$J12 \rightarrow 30$ GND	J271 30 GND	J272 30 GND	J273 30 GND	J274 30 GND	J275 30 GND	J276 30 GND
$J7 \rightarrow 31$ GND	$J^8 \rightarrow 31$ GND	$J^9 \rightarrow 31$ GND	J10 31 GND	J11 31 GND	$J12 \rightarrow 31$ GND	J271 31 GND	J272 31 GND	J273 31 GND	J274 31 GND	J275 31 GND	J276 31 GND
$J7 \rightarrow 32$ GND	$J8 \rightarrow 32$ GND	$J^9 \rightarrow 32$ GND	$J10 \rightarrow 32$ GND	$J11 \rightarrow 32$ GND	$J12 \rightarrow 32$ GND	$3271 \rightarrow 32$ GND	$J272 \rightarrow 32$ GND	$J273 \rightarrow 32$ GND	$J274 \rightarrow 32$ GND	$J275 \rightarrow 32$ GND	$J276 \rightarrow 32$ GND
37 35 GND			35 GND	J11 35 GND	\rightarrow 35 GND	J271 35 GND	J272 35 GND		J274 35 GND	J275 35 GND	J276 35 GND
J7 36 GND	36 GND	J9 36 GND	J10 36 GND	J11 36 GND			J272 36 GND	J273 36 GND	J274 36 GND	J275 36 GND	J276 36 GND
								J289 J290			
\sim	\checkmark	\checkmark	\sim	\checkmark	\checkmark	\checkmark	\checkmark			\sim	\sim
								G 2 0 2			
							F1 2 5A				
•	•	•	•	•	•	F2 2.5A		•			
J277	J278 J J279	J280	J281 J	J282 ,	J283 J J284	J285	J286 J	J287 ,	J288		
J277 2	J278 2 +V J279	$J_{1} + V$ J280 J_{2}	+V J281 7 .V		J283 2 +V J284	$\downarrow + \psi$ J285 \downarrow +		J287			
J277 3 +V	J278J279	J280	J281 3	J282 3	J283 3 J284	J285	J286 3	J287 3	J288 3		
4		J280 4	J2814		J283J284 <	J285 4	J2864		J288 4		
	J278 5 -V J279	→5 -V + J280 →5	-v J281 5 -v (J282 5 -V	J283 5 -V J284	→5 -V + <u>J285</u> 5 -	-v + J286 5 -v +				
		•6 -V <u>J280</u> ∕6 -	-v J281 6 -v		J283 6 -V J284	→6 -V J285 6 -	-v J286 -v				

Section 6

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Not Available at Time of Printing



Configuration Drawing • Chassis • CD63-0631

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7.1 Parts List

General

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

Part	Part Number	Page
Mainframe Assembly	81906515580	7.2
Video Summing Combiner Card	81906515590	7.3
Backplane	81906515600	7.5
Chassis	81906512256	7.6

Mainframe Assembly - 81906515580

81903462720	REAR PANEL VIDEO SUMMING COM	1	ΕA
81906511837	CABLE MVDA/RM5000 6' POWER	1	ΕA
81906512256	CHASSIS COMBINER AUD/VID	1	ΕA
81906515600	BACKPLANE VID SUMM COMBINER	1	ΕA
PK65-1558	DOC MAINFRAME VID SUM COMB	REF	

Video Summing Combiner Card - 81906515590

81901606236	REG LM337MT NEG 0.5A TO-220	U10	1	ΕA
81901606244	REG LM317MT POS 0.5A TO-220	U9	1	ΕA
81902200120	SCREW 4-40 X ¼ PAN HEAD PHIL		4	ΕA
81902201979	RIVET 1/8 ALUM		2	ΕA
81902411980	PCB ASSY VID SUMMING COMB		1	ΕA
81902907096	CONN 2X3 RECEPT RT/A PCB MT	J3	1	ΕA
81902907530	CONN 36 POS FEM RT/A PC MT	.11.12	2	FA
81902907600	CONN 2 POS HEADER 0 15" CENTER	TP1-TP8	4	FA
81902907630	CONN 3 POS HEADER 0 15" CENTER	TP9-TP11	1	FA
81903200541	LED GREEN RT/A HI-FEE PCB	D2	1	FA
81903462730		DL	1	FΔ
8100660018/	RESISTOR 10 OHM 5% 0805	R20 R30 R50 R60 R80		
0190000104	RESISTOR TO OT IM 5 /8 0805	R29 R30 R39 R00 R89	Q	۳
91006600966		R90 R119 R120	1	
01900000000	$ \begin{array}{c} \text{RESISTOR 0.0K 5\% 0005} \\ \text{RESISTOR 22K 6\% 0005} \\ \end{array} $	R34 D24	1	
01900000900			I	EA
8190601521	RESISTOR 0.0 OHM 5% 0805	R13 R43 R51 R73 R81	~	– ^
0400000700		R103	6	EA
81906602700	RESISTOR 1.05K 1% 0805	R17 R47 R77 R107	4	EA
81906610563	RESISTOR 37.4 OHM 1% 0805	R111	1	EA
81906610852	RESISTOR 75.0 OHM 1% 0805	R21	1	EA
81906610930	RESISTOR 90.9 OHM 1% 0805	R12 R42 R72 R102	4	ΕA
81906611058	RESISTOR 121 OHM 1% 0805	R20 R50 R80 R110	4	ΕA
81906611348	RESISTOR 243 OHM 1% 0805	R122 R126 R129	3	ΕA
81906611431	RESISTOR 301 OHM 1% 0805	R11 R23 R41 R53 R71		
		R83 R101 R1133	8	ΕA
81906611540	RESISTOR 392 OHM 1% 0805	R22 R52 R83 R112	4	ΕA
81906611720	RESISTOR 604 OHM 1% 0805	R16 R46 R76 R106	4	ΕA
81906611850	RESISTOR 825 OHM 1% 0805	R123 R127	2	ΕA
81906612180	RESISTOR 1.82K 1% 0805	R18 R48 R78 R108	4	ΕA
81906612264	RESISTOR 2.21K 1% 0805	R7 R27 R28 R37 R57		
		R58 R70 R87 R88 R100)	
		R117 R118 R124 R128	14	ΕA
81906612680	RESISTOR 6.19K 1% 0805	R68	1	EA
81906612690	RESISTOR 6.34K 1% 0805	R15 R45 R75 R105	4	FA
81906612718	RESISTOR 6 65K 1% 0805	R98	1	FA
81906612759	RESISTOR 7.32K 1% 0805	R9	1	FA
81906612882	RESISTOR 10K 1% 0805	R84	1	FΔ
81906612940	RESISTOR 11 5K 1% 0805	R30 R114	2	ΕΔ
81006621513	RESISTOR 1 OHM 5% 1206	R121 R125	2	
81006640073	RESISTOR 75 OHM 0 5% 1206	R75 R76 R55 R56 R85	2	LA
01900040075	RESISTOR 73 OF M 0.5 % 1200	P86 P115 P116	Q	۳
91006640140			4	
01900040140			4	LA
01900040100	RESISTOR 49.9 OHM 0.5% 0005)	
		R01 R03 R05 R91 R93	10	
010000040470			12	EA
01900040170	RESISTUR 214 UNIVI U.3% U8U3)	
		R02 R04 R00 R92 R94	40	
		K90	12	ΕA

Video Summing Combiner Card - 81906515590 Continued:

81906650080	POT 200 OHM RT/A 1-TURN 10%	R14 R44 R74 R104	4	ΕA
81906700026	CAP 560PF 50V CERAMIC SMT	C12	1	ΕA
81906700059	CAP 6.8PF 50V CERAMIC 0805	C15 C26 C37	3	ΕA
81906700166	CAP 100PF 50V CERAMIC 0805	C1 C34	2	ΕA
81906700210	CAP 1PF CERAMIC 2% 0805	C7 C18 C29 C40	4	ΕA
81906700290	CAP 68PF NPO CERAMIC 0805	C23	1	ΕA
81906700350	CAP 22PF NPO CERAMIC 0805	C16 C27 C38	3	ΕA
81906700410	CAP 20.7PF NPO 50V CERAMIC 0805	C3 C14 C25 C36	4	ΕA
81906700420	CAP 90PF NPO 50V CERAMIC 0805	C6 C17 C28 C39	4	ΕA
81906700470	CAP 31.8PF NPO 50V 2% 0805	C5	1	ΕA
81906700480	CAP 13.6PF NPO 0805 2%	C4	1	ΕA
81906720010	CAP 0.1MF 25V X7R 0805	C8-C11 C19-C22		
		C30-C33 C41-C44 C46		
		C47 C49 C50	20	ΕA
81906770052	CAP 1MF 20V TANT SIZE A	C45 C48	2	ΕA
81906800065	TRANS MMBZ5234B SMT	D1	1	ΕA
81906810470	IC OPAMP 670MHZ 6V SO-8	U1-U8	8	ΕA
CA25-1198	DOC ASSY VIDEO SUMM COMBINER		REF	
SC33-1198	DOC ASSY VIDEO SUMM COMBINER		REF	

Backplane - 81906515600

81902411990	PCB BACKPLANE VID SUMM COMB	1	ΕA
81902905082	HEADER DOUBLE ROW 2X3 6 POS	12	ΕA
81902906320	CONN 3 PIN MALE PRESS-IN	2	ΕA
81902906486	CONN BNC PRESS-IN 75 OHM	240	ΕA
81902907520	CONN 36 POS 18X2 HEADER	24	ΕA
PK65-1560	DOC BACKPLANE VID SUM COMB	REF	

Chassis - 81906512256

81902002807	LATCH ADJ W/KNOB AND PAWL	2	ΕA
81902104470	WASHER 0.15 SHOULDER NYLON	2	ΕA
81902201896	SCREW #6 HEX/WASHER	8	ΕA
81902202837	RIVET 0.125" STAINLESS	8	ΕA
81903460442	SIDE COMBINER CHASSIS	2	ΕA
81903460459	CARD GUIDE HORZ COMB CHASSIS	2	ΕA
81903460467	FRONT DOOR COMBINER	1	ΕA
81903460947	SUPPORT BAR REAR COMB CHAS	2	ΕA
PK65-1225	DOC COMBINER CHASSIS	REF	