PNLPRT1X31

Panel Port Expander

PESA Switching Systems, Inc.
330-A Wynn Drive Northwest
Huntsville, AL 35805-1961
http://www.pesa.com
(256) 726-9200

Service and Ordering Assistance

PESA Switching Systems, Inc.
330-A Wynn Drive Northwest
Huntsville, AL 35805-1961 USA
www.pesa.com

Main Office
(256) 726-9200 (Voice)
(256) 726-9271 (Fax)

Service Department
(256) 726-9222 (Voice) **(24 hours/day, 7 days/week)**
(256) 726-9268 (Fax)
service@pesa.com

National Sales Office

PESA Switching Systems, Inc.
35 Pinelawn Rd., Suite 99-E
Melville, NY 11747 USA
(800) 328-1008 (Voice)
(631) 845-5020 (Voice)
(631) 845-5023 (Fax)

Table of Contents

Section 1. Introduction

1.1 General Description ..... …4
1.2 PNLPRT1X31 Panel Port Expander Specifications ..... …6

Figures

Figure 1-1 PNLPRT1X31 Panel Port Expander Front View. ..... …5
Figure 1-2 PNLPRT1X31 Panel Port Expander Rear View . ..... …5

Section 2. Installation

2.1 Introduction..... 7
2.2 Receipt Inspection..... 7
2.3 Unpacking 7
2.4 Location..... 7
2.5 Mounting..... 8
2.6 Cabling 9
2.7 Plug-In Video Card Installation 10
2.8 Front Panel Installation..... 11
2.9 PNLPRT1X31 Mainframe System Connections……12

Figures

Figure 2-1 Chassis Installation..... ...8
Figure 2-2 Cables Attached to Supports 9
Figure 2-3 Sample System Connection 12
Figure 2-4 Card Output Adjustment Detail……13

Section 3. Functional

3.1 Maintenance..... .14
3.2 Preventive Maintenance..... .14
3.3 Test Equipment……14
3.4 Corrective Maintenance ..... .15
Factory Repair Service ..... .15
Troubleshooting ..... .15
Replacement Parts ..... .15
3.5 Power Supply Fuse Replacement……..16
Power Connections……17
Power Supply Removal and Replacement……18

Figures

Figure 3-1 PS130 Fuse Replacement..... ……16

1.1 General Description

The panel polling expander is a control distribution amplifier capable of accepting a single RS485 RCP panel control port from the System Controller and expanding that single physical interface port to 128 individually isolated control ports (124 are located on the rear of the chassis & 4 are located directly on the logic card accessible from the front of the unit for testing purposes). Dipswitch S1, Position-1 on the logic card is set to ON to operate in the 1 to 128 Mode. Alternately, the unit can be configured via Dipswitch S1, Position-1 to operate as four individually isolated sections, A,B,C & D. When Dipswitch S1 Position 1 is set to OFF, each independently isolated section accepts a single master control port from the System Controller and expands that single physical interface port to 32 individually isolated control ports (31 are located on the rear of the chassis & 1 is located directly on the logic card). The associated System Controller provides a total of four independent, individually isolated RS485 RCP panel control ports for one to one connection to master panel control ports MA,MB,MC & MD.

The polling expander logic card is installed from the front into a 3RU. The rear of the unit has four identical control sections labeled A,B,C and D. The I/O connections are three pin, individually detachable, WECO connectors. Each section has a master panel control port labeled MA, MB, MC and MD respectively, for interconnecting to the System Controller and 31 individual connectors labeled 1 to 31 for connecting individual panels. When configured to be used as a single 1 to 128 expander, only master panel control port MA is connected to the System Controller. It is important to note that all 31 panel ports are identical. Every panel connected on a particular system must be uniquely addressed regardless of whether it is connected directly to the System Controller or connected via the Polling Expander unit. However, panels are not limited to connecting to a specific port. Any panel will work on any port, provided all panels are uniquely addressed. Although the Port Expander provides individual ports for each panel for isolation, it is important to note the RCP Panel control ports are based on a multi-drop party line system. In an emergency or test situation, multiple panels can be connected to the same panel control port. If you are attempting to troubleshoot a panel communications problem, one can connect a panel directly to one of the System Controller Panel Control Ports instead of to the Polling Expander. In this scenario, one would detach the cable from the Polling Expander port, labeled MA or MB or MC or MD depending on the particular circumstance, and attach it directly to the panel under test.

Located on the rear of the unit is a general purpose alarm connector which is connected to the alarm relay on the main control logic board. The Communications Error LED is on the bottom of the three high stack of status LEDs labeled D7. If the Bi-color D7 Communications Error LED is Green, the alarm relay is not activated. If the D7 Communications Error LED is RED, the alarm relay is activated and provides a contact closure on the alarm connector. Bi-color System Status LEDs in the D7 stack also report the state of the Input Voltage (Top Most LED) with Green indicating OK and RED indicating out of tolerance. The on board generated 3.3VDC logic voltage is also monitored and status reported on the middle LED associated with D7. Again Green indicates OK and RED indicates out of tolerance.

Four additional dual LED stacks are provided for informational purposes. In the 1x128 Mode, only LED stack labeled D1 is used. The green LED located on the top of the D1 stack indicates RxData activity while the yellow LED on the bottom of the D1 stack depicts TxData activity on the MA master panel control port. When the unit is in the 4x32 Mode, four individual 1x32 sections: LED Stack D1 reflects activity on the MA master panel control port; LED Stack D2 reflects activity on the MB master panel control port; LED Stack D3 reflects activity on the MC master panel control port; and LED Stack D4 reflects activity on the MD master panel control port. Again, the green LEDs located on the top of the D1-D4 stacks indicate RxData activity while the yellow LEDs on the bottom of the D1-D4 stacks depict TxData activity.

Figure 1-1 PNLPRT1X31 Panel Port Expander Front View

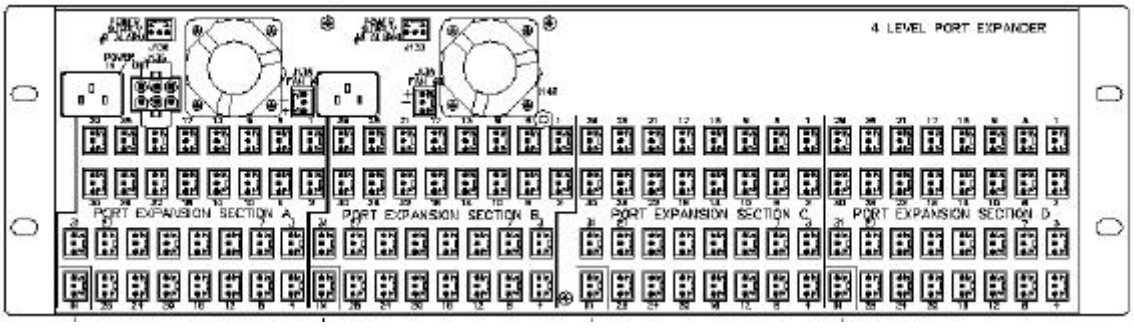

Figure 1-2 PNLPRT1X31 Panel Port Expander Rear View

1.2 PNLPRT1X31 Panel Port Expander Specifications

INPUT CHARACTERISTICS
(One frame model is terminating and the other is looping)

Number	One per section
Connector Type	3-pin, two part detachable plug

OUTPUT CHARACTERISTICS

Number	124 (4 x 31)
Connector Type	3-pin, two part detachable plug

ENVIRONMENTAL - Operational

Temperature	0°C to 40°C
Humidity	10-90% Non-Condensing

MECHANICAL

Dimensions	3RU 19" W X 13.5" D 5.25" H (482.6mm X 342.9mm X 133mm)

POWER

AC Voltages	100-250V, ±10%, 47-63Hz
Power	160VA max

POWER SUPPLIES

Number	1 (Standard) 2 (Optional)

2.1 Introduction

This section details PNLPRT1X31 Panel Port Expander installation procedures. The following topics are discussed:

- Receipt Inspection
- Unpacking
- Location
- Mounting
- Cabling
- Plug-In Card Installation
- Power Supply Installation
- Front Panel Installation
- Rear Panel Connectors

NOTICE

THE PNLPRT1X31 PANEL PORT EXPANDER AND POWER SUPPLIES 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 PNLPRT1X31 Panel Port Expander 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 PNLPRT1X31 Panel Port Expander is comprised of a frame, a backplane, up to two power supplies, and one polling expander distribution board. Prior to discarding packing material compare the parts received against the packing list. Carefully inspect the layers of packing material for any components that may have been overlooked during the initial unpacking.

2.4 Location

The PNLPRT1X31 Panel Port Expander 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 PNLPRT1X31 Panel Port Expander is rack mounted in a standard 19” equipment rack. Sufficient space must be provided behind the rack to allow for the signal 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 PNLPRT1X31 mainframe's bottom while installing it in the rack. Figure 2-1 illustrates chassis installation in the equipment rack.

To install a PNLPRT1X31 Panel Port Expander 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.

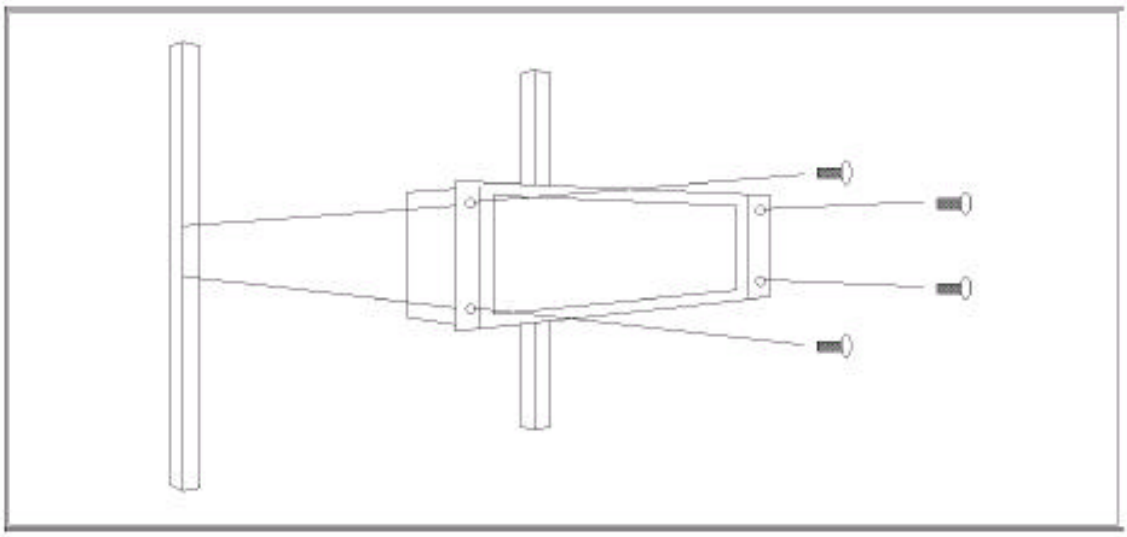

Figure 2-1 Chassis Installation

2.6 Cabling

Considerable weight will be added to the rear panel of the PNLPRT1X31 mainframe by the signal 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 PNLPRT1X31 mainframe should be installed in the equipment rack prior to attaching cables.

Use the following rules when cabling the PNLPRT1X31 Mainframe:

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.

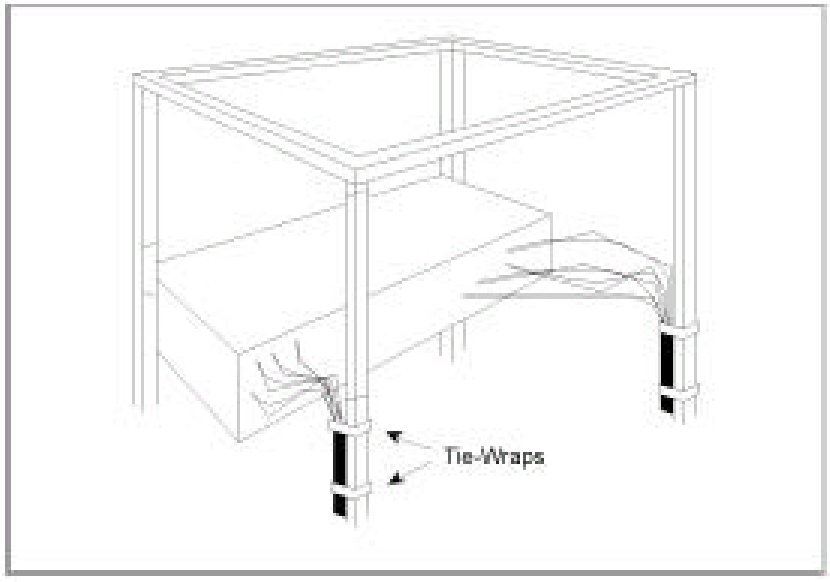

Figure 2-2 Cables Attached to Supports

2.7 Polling Expander Logic Card Installation

The polling expander logic card is installed from the front into a standard 3RU chassis.

WARNING

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

At least one power supply must be installed in the PNLPRT1X31 Mainframe before attempting to power-up the frame.

To install the PS130 Power Supplies in the PNLPRT1X31 Mainframe take the following steps while referring to the PNLPRT1X31 Mainframe configuration drawing:

1. Align the shield plate on the first PS130 Power Supply with the left-hand set of circuit card guides in the upper, right-hand portion of the front of the PNLPRT1X31 Mainframe (circuit side to the left).

2. Carefully push the PS130 Power Supply into the PNLPRT1X31Mainframe until the power supply connectors make initial contact with the Power Mid-Plane connectors. At this point, firmly but carefully continue pushing the PS130 Power Supply into the frame while making sure the connectors are properly aligned. Continue pushing the power supply until the slide lock snaps into place and the connectors are firmly mated.

3. For the optional second power supply, align the shield plate on the next PS130 Power Supply with the next set of circuit card guides in the upper, right-hand portion of the front of the PNLPRT1X31Mainframe and repeat step 2.

2.8 Front Panel Installations

To install the access door (front panel) of the PNLPRT1X31 take the following steps:

1. Align the front panel to the front of the PNLPRT1X31 Mainframe.

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

Alarm Connector

When PS130 Power Supplies are utilized to power the PNLPRT1X31Mainframe, the fan circuit is enabled and the alarm circuit, contained in PS130V Power Supply 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 transistor closure but do not provide an operational voltage for the external alarm. Transistors limit the external alarm power to 24 volts DC and 10 mA. Be sure to observe polarity. The alarm connector, located on the backplane, allows connection of the external alarm.

DC Power Connector

Power can be supplied to the PNLPRT1X31 Mainframe 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 video mainframe to power additional equipment items.

2.9 PNLPRT1X31 Mainframe System Connections

Once the PNLPRT1X31 Mainframes are installed in the equipment racks, system connections can be made. Use the following guide and the sample system connections illustration, Figure 2-3 to insure that the PNLPRT1X31Mainframe system connections are hooked up correctly.

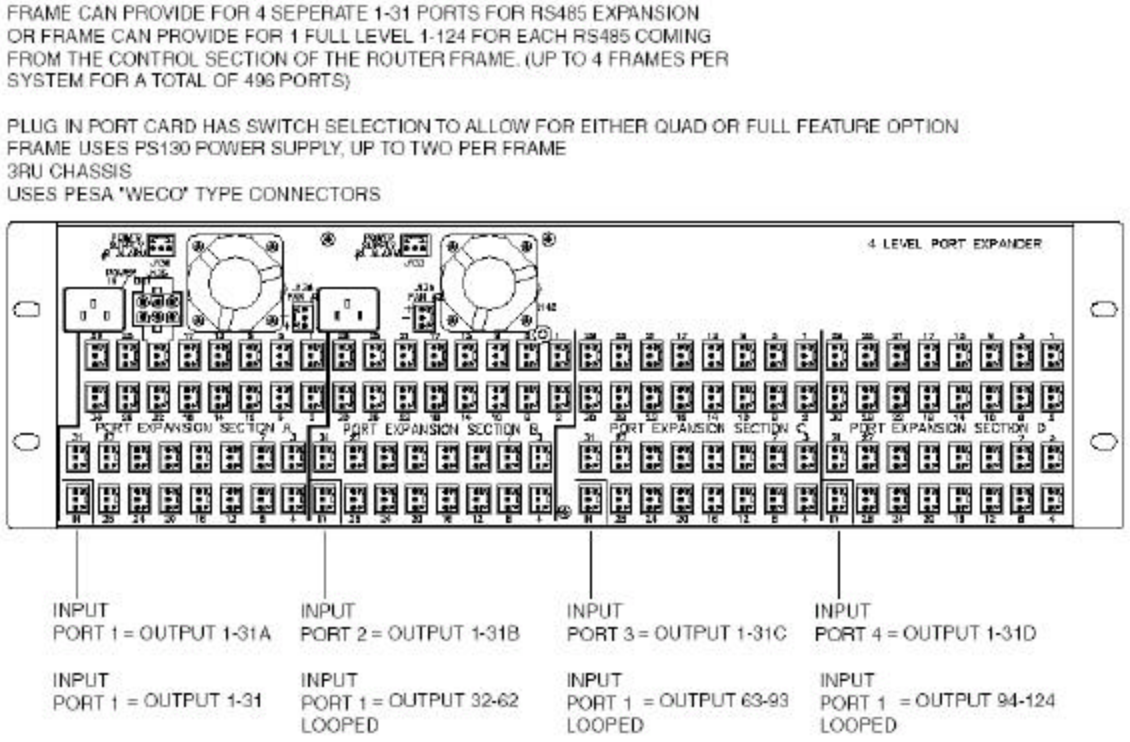

Figure 2-3 Sample System Connections for Mainframe

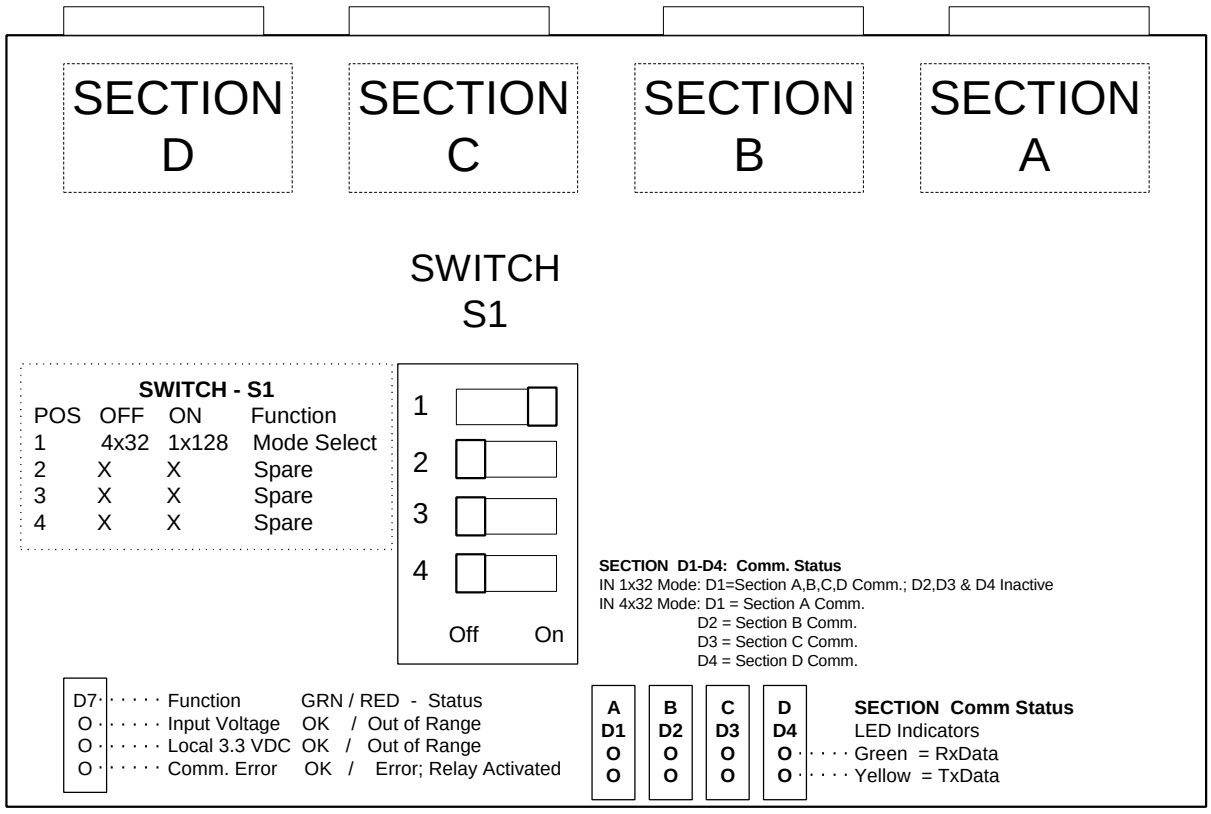

Figure 2-4 Card Output Adjustment Detail

3.1 Maintenance

The PNLPRT1X31 Panel Port Expander is 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.

3.2 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 antistatic cloth, or an antistatic vacuum to clean the frame and internal components.

NOTICE

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

- 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 video distribution board, first swap out the board and recheck the system for the problem.

3.3 Test Equipment

The test equipment recommended for servicing the PNLPRT1X31 Mainframe, the Video Distribution Boards, and the PS130 Power Supplies are listed below. Equivalent test equipment may be used.

Digital Multimeter
Audio Generator
Video Generator
Oscilloscope

3.4 Corrective Maintenance

The following paragraphs provide information to assist the servicing technician in maintenance of the PNLPRT1X31 Mainframe and the PS130 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.

Troubleshooting

The best troubleshooting tool is a familiarity with the equipment and a thorough understanding of its operation. If all of the video outputs from a DA3100 Video Mainframe are missing, check the PS130 Power Supply System and the power supply line fuses. See Section 4.5 for fuse replacement details.

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 PNLPRT1X31Mainframe and the PS130 Power Supplies. If the inherent stability and reliability are to be maintained, replacement parts must be of the same quality. 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.

3.5 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 (5x20mm) for a line voltage of 115VAC and 315 mA for a line voltage of 220VAC. Be sure to use the same voltage rating and type of fuses for replacements. See Figure 3-1.

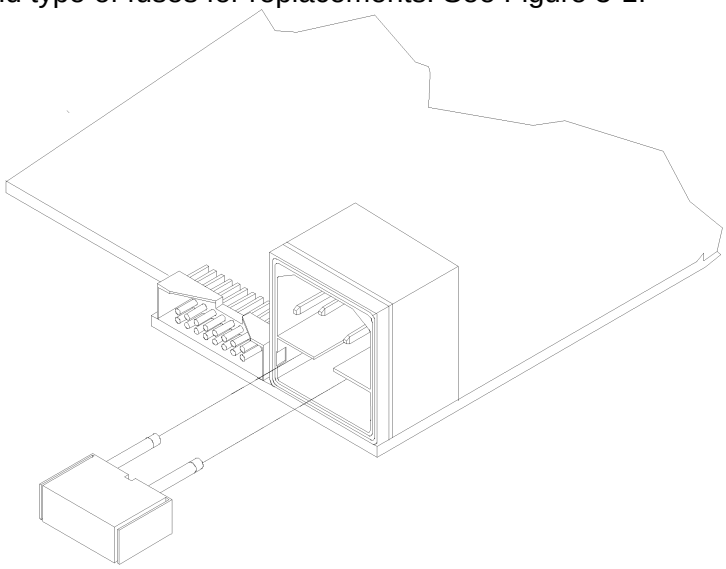

Figure 3.1 PS130 Fuse Replacement

CAUTION

THERE ARE NO USER SERVICEABLE PARTS CONTAINED IN THE PS130 POWER SUPPLY. ALL SERVICE PERFORMED ON THE PS130 POWER SUPPLY SHOULD BE ACCOMPLISHED BY QUALIFIED SERVICE PERSONNEL. **THE INTERNAL CIRCUITS OF THE PS130 POWER SUPPLY CONTAIN DANGEROUS VOLTAGE AND CURRENT LEVELS. PRIOR TO SERVICING ANY PS130 POWER SUPPLY MAKE ABSOLUTELY SURE THAT THE AC LINE INPUT IS DISCONNECTED.**

CAUTION

HIGH LEAKAGE CURRENT AT 230 VAC

The PS130 Power Supply leakage current exceeds 3.5mA when used at 230VAC because of leakage through emission filter capacitors. Do not operate the unit unless the safety ground (third wire ground) is appropriately connected.

The PS130 Video Power Supply is responsible for providing a regulated ±8.9VDC @ 5.5A to the switching frame. The PS130 Power Supply is designed to operate within output specifications with AC line voltages ranges from 105 - 240 VAC and with AC line

frequencies of 50/60 Hz automatically. 3.15A 250VAC AC line fuses provide over-load protection.

In the event of a PS130 Power Supply failure, PESA suggests returning the malfunctioning unit to the PESA Service Department for replacement. Please call the PESA Service Department for a RMA number before returning any units for replacement. The service department's phone number is listed on the Service and Ordering Assistance Page.

Power Connections

CAUTION

THIS POWER SUPPLY USES AN INDIVIDUAL AC POWER CORD.

Power Connect

To power-up a PS130 Power Supply and its associated routing switcher frame take the following steps:

1. Insert the power supply into the frame following the instructions in the Power Removal Section of this addendum.

2. Connect the power supply to the AC line.

3. Repeat steps 1 and 2 for a secondary power supply if applicable.

4. If applicable, connect any DC power looped to and from other frames in the routing switcher system to the unit under test.

Power Disconnect

To power-down a PS130 Power Supply, disconnect the AC power cord from the power supply's AC line input connector and its associated frame take the following steps:

1. If applicable, disconnect any DC power looped to and from other frames in the routing switcher system from the unit under test.

2. Disconnect the AC line from the primary PS130 Power Supply.

3. If applicable, disconnect the AC line from the secondary PS130 Power Supply.

Power Supply Removal and Replacement

CAUTION

Two AC Power Cords may be connected to this unit.

Power Supply Removal

To remove the PESA equipment item's power supply or power supplies take the following steps:

1. Remove or open the equipment item's front door.

2. Grasp the power supply slide lock and pull it toward the center of the supply.

3. Once the slide lock is slid toward the center of the supply, carefully pull the power supply out of the equipment chassis.

4. Repeat step 1 and steps 3 and 4 to remove any additional power supplies from the equipment item.