DUAL 4X1 RCP PANEL PORT EXPANDER

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About This Manual

This manual provides detailed instructions for the installation, operation, and maintenance of the PESA Dual 4x1 RCP Panel Port Expander.

Warnings, Cautions, and Notes

Warning statements identify conditions or practices that can result in personal injury or loss of life.

Caution statements identify conditions or practices that can result in damage to equipment.

Notes contain information important to the correct installation, operation, or maintenance of the equipment.

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Chapter 1 – Introduction

1.1 Product Overview

The Dual 4x1 RCP Panel Port Expander is a device that allows a user to electrically isolate their RCP panels from each other and from their 3500 family controller. It buffers the host RCP communications port to each of the 4 expansion ports.

A Panel Port Expander is housed in a single rack unit body. The enclosure accepts up to two Panel Port Expanders. These Panel Port Expanders are independent of each other and must be treated as such. They require their own separate power and panel connections.

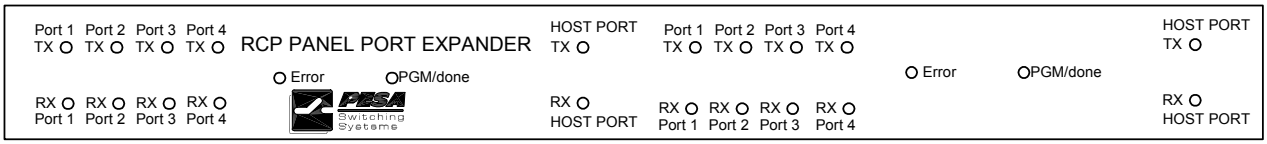


Figure 1. Dual 4x1 RCP Panel Port Expander Front Panel

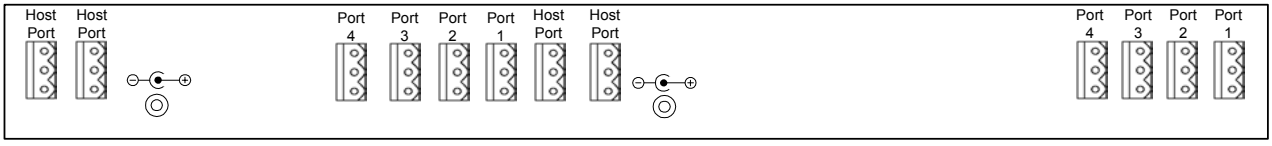


Figure 2. Dual 4x1 RCP Panel Port Expander Rear Panel

Chapter 2 – Installation

This section details the Dual 4x1 RCP Dual Port Expander installation procedures.

The Dual 4x1 RCP Panel Port Expander contains static sensitive devices. Care should be used when it is necessary to handle the internal circuit cards. It is recommended that a ground wrist strap and grounding mat be used before attempting any equipment installations.

2.1 Unpacking and Inspecting

Immediately upon receipt, inspect all shipping containers. Carefully unpack the equipment and compare the parts received against the packing list. If any parts appear to be missing or damaged, please contact PESA immediately.

2.2 Location

The RCP 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.

2.3 Mounting

The 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 Panel Port Expander's bottom while installing it in the rack. Figure 3 illustrates chassis installation in the equipment rack.

To install a Dual 4x1 RCP 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.

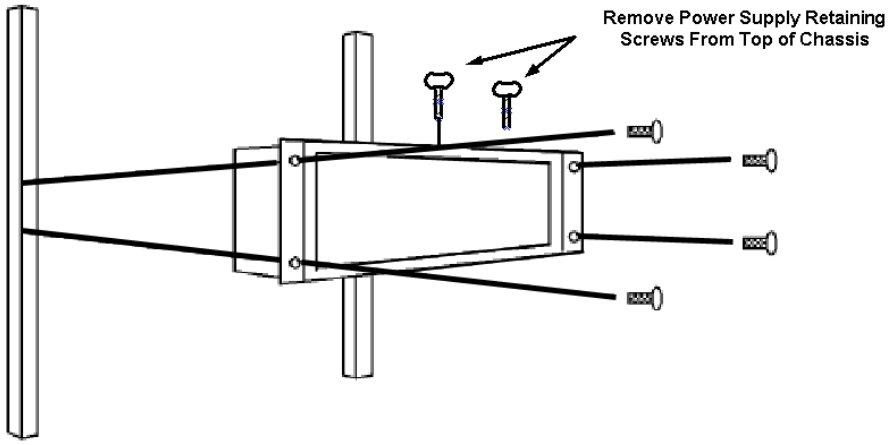


Figure 3. Chassis Installation

2.4 Cabling

Considerable weight will be added to the rear panel of the Panel Port Expander by the 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 Panel Port Expander should be installed in the equipment rack prior to attaching cables.

Use the following rules when cabling the Panel Port Expander:

1. Lay all cables in their intended positions.
2. Provide proper support for each cable during the cabling process. The use of tie-wraps is recommended, as shown below in Figure 4.

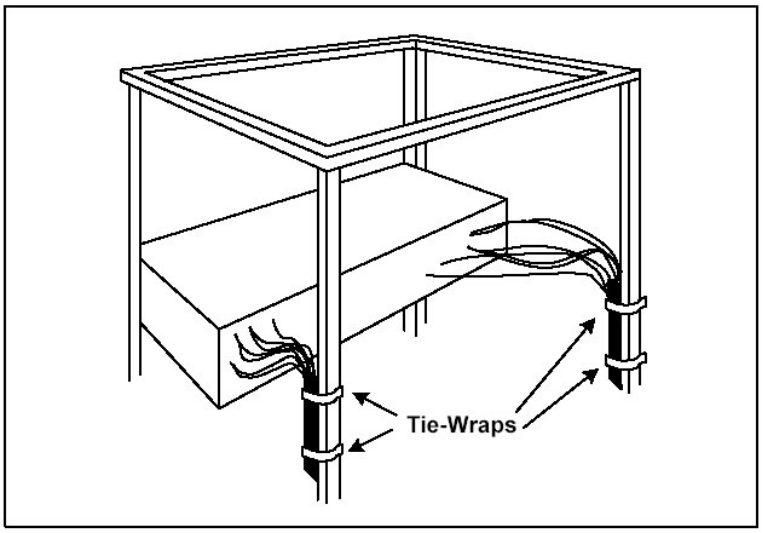


Figure 4. Cabling

Chapter 3 – Operation

3.1 Dual 4x1 RCP Panel Port Expander Block Diagram

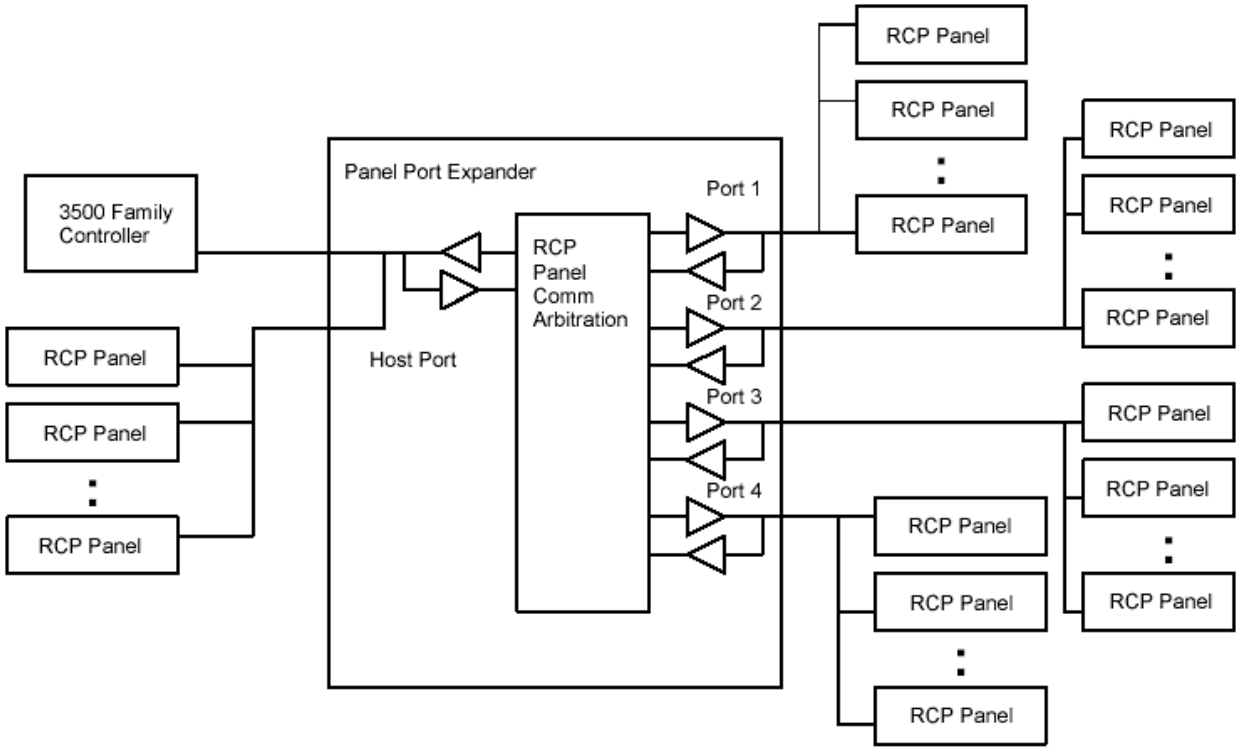


Figure 5. Dual 4x1 RCP Panel Port Expander Block Diagram

The panel port expander is a fairly simple device. The expander tri-states the 5 panel ports (the host and the four expansion ports) and then monitors them for the start of a message. Once it sees a start bit on one of the ports, it echoes that port out to the other ports until completion of the message. The intelligence of the Panel Port Expander resides in an FPGA that continually monitors for a start of message from any of the five ports.

Note that there are two host ports on the back of the unit. These two ports make up simple loopback for convenience in hooking up panels local to the controller.

3.2 Dual 4x1 RCP Panel Port Expander Description

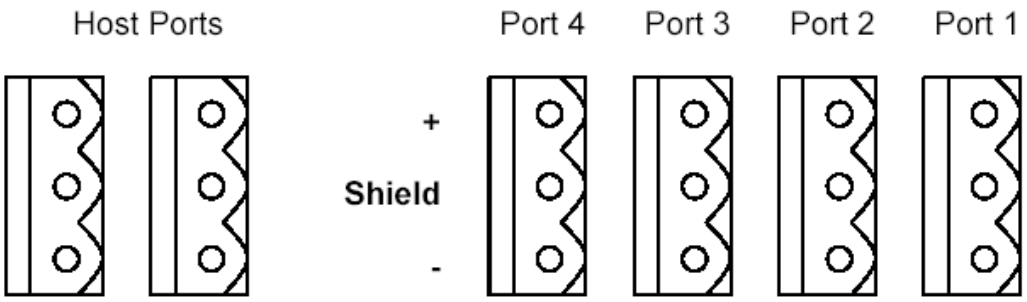


Figure 6. Rear Panel Connectors

The pinouts on the Panel Port Expander's connectors is the same as the standard PESA RCP control panel. A connection from the Panel Port Expander to the panels requires pin-to-pin wiring.

The connection between the controller and the Panel Port Expander may not be so straightforward. If the controller is housed in the single rack unit chasses with panel connectors similar to the Panel Port Expander connectors, it uses the same pin-to-pin wiring like that of the panel connections.

If the controller is housed in most other chassis, the controller panel connection will come from a Weco connector. This is a small gray connector that is appreciably smaller than the connectors on the Panel Port Expander. The following diagram shows the pinout from Weco (used as the panel connector on controller and matrix frames) to the Phoenix/Weidmuller (used on panels). Notice that the "shield" and "–" legs swap between the connector.

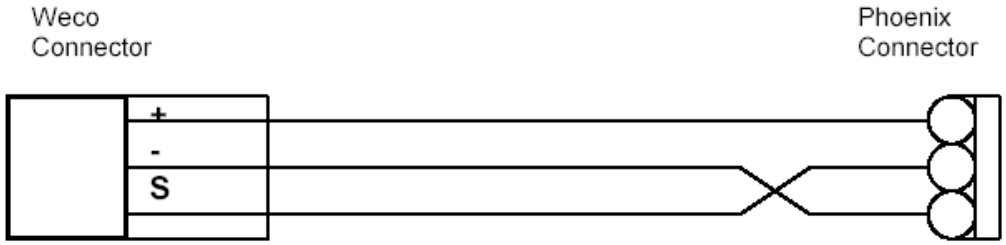


Figure 7. Pinout From Weco to Phoenix/Weidmuller

Each Panel Port Expander unit requires a 9V DC power input. Standard PESA panel power packs are provided with the product.

3.3 Connections

The PESA RCP panels communicate via an RS-485 communications bus via a twisted pair cable. The frame accepts up to two Panel Port Expanders. These Panel Port Expanders are independent of each other and must be treated as such. They require their own separate power and panel connections. You can use the Host ports as loop-through connectors from another panel.

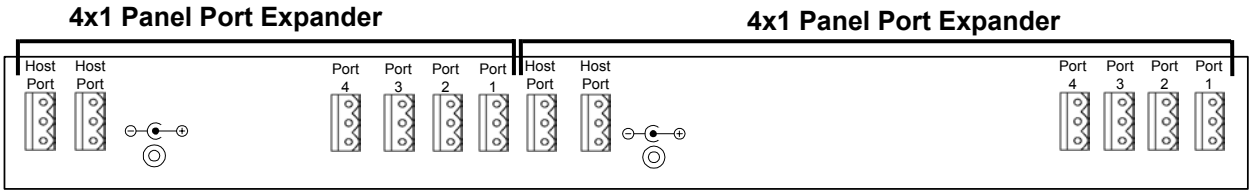


Figure 8. Dual 4x1 RCP Panel Port Expander Rear Panel Connectors

3.4 Status LEDs

There are four types of status indicators on the Panel Port Expander.

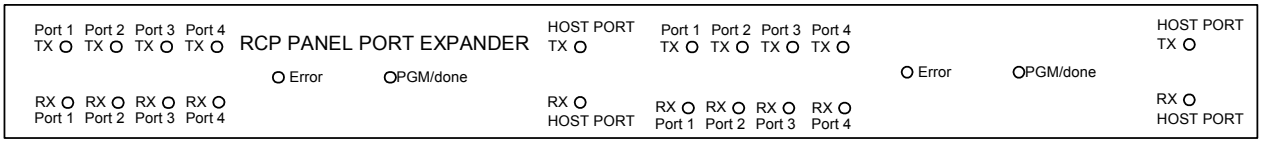


Figure 9. Front Panel LEDs

PGM/Done – Indicates that the internal FPGA was able to run its program. This light indicates that the Panel Port Expander is up and running.

Error – An error was detected on the communication bus. This may entail two different devices on different ports attempting to take control of the RCP bus at the same time.

RX (for each port) – Indicates that data is being received by the panel Port Expander on the appropriate communications port.

TX (for each port) – Indicates that data is being transferred by the Panel Port Expander out the appropriate communications port.

Chapter 4 - Maintenance

4.1 Maintenance

The Dual 4x1 RCP Panel Port Expander is designed and manufactured to give long, trouble free service with minimum maintenance requirements. If technical assistance is required, refer to the Service information on the front of this manual.

4.2 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.
- 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.

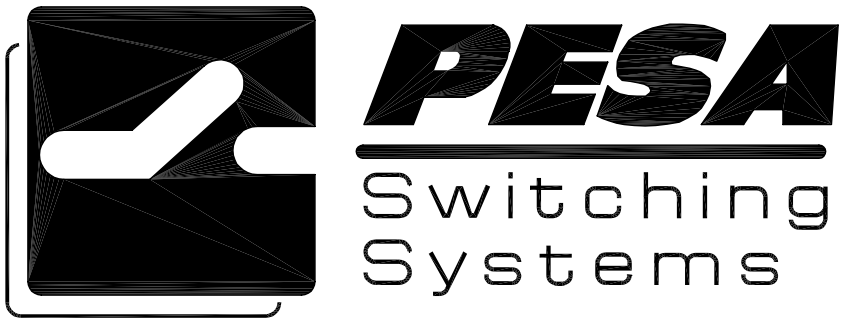
The Dual 4x1 RCP Panel Port Expander contains static sensitive devices. Care should be used when it is necessary to handle the internal circuit cards. It is recommended that a ground wrist strap and grounding mat be used before attempting any equipment installations.

4.3 Factory Repair Service

If desired, equipment may be returned to the factory (transportation prepaid) for repair. Refer to the Service information on 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.

<u>Do not</u> attempt to repair equipment that is in warranty. Doing so will void your warranty.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