Imagine COMMUNICATIONS™

Installation, Configuration, and Operation Manual

RCP-p

PLCP-32×8CQp Local Control Panel
RCP-32×8CQp Remote Control Panel

Edition C

RCP32X8 MAN

Publication Information

This publication is designed to assist in the use of the product as it exists on the date of publication of this manual, and may not reflect the product at the current time or an unknown time in the future. This publication does not in any way warrant description accuracy or guarantee the use for the product to which it refers.

Imagine Communications reserves the right, without notice to make such changes in equipment, design, specifications, components, or documentation as progress may warrant to improve the performance of the product.

Trademarks

Contact Information

Imagine Communications has office locations around the world. For locations and contact information see:
http://www.imaginecommunications.com/contact us/

Support Contact Information

For support contact information see:

- Support Contacts: http://www.imaginecommunications.com/services/technical support/
- eCustomer Portal: http://support.imaginecommunications.com

Contents

Chapter 3: Configuration

Chapter 4: Operation

Chapter 5: Specifications

Appendix A: Safety Precautions, Certifications, and Compliances

Appendix B: Terminal Operations

Index

Preface

Manual Information

Purpose

This manual details the features, installation, operation, maintenance, and specifications for the PLCP-32×8CQp/RCP-32×8CQp control panel.

Audience

This manual is written for technicians and operators responsible for installation, setup, maintenance, and/or operation of the product, and is useful to operations personnel for purposes of daily operation and reference.

Revision History

Table P-1. Revision History of Manual

Edition	Date	Comments
Edition A	April 2005	Initial production release
Edition B	May 2005	Added information concerning the local control panel option Added information concerning serial and Ethernet connections
Edition C	September 2006	Added RoHS and WEEE compliance information

Applications

The R(L)CP-32×8CQp is ideal for operations where professional end users require a small, flexible protocol translator to provide interoperability between routers and control systems made by more than one manufacturer.

R(L)CP-32×8CQp control panels are perfect for

- Television production facilities
- Cable operators
- Production and post-production facilities

- Outside broadcast vans/trucks
- DBS satellite operations
- Webcasters
- Telcos where professional end-users require a small, flexible, high quality routing matrix with the ability to mix and match signal formats and/or signal processing functions within the same frame

Writing Conventions

To enhance your understanding, the authors of this manual have adhered to the following text conventions:

Table P-2. Writing Conventions

Term or Convention	Description
Bold	Indicates dialog boxes, property sheets, fields, buttons, check boxes, list boxes, combo boxes, menus, submenus, windows, lists, and selection names
Italics	Indicates email addresses, the names of books or publications, and the first instances of new terms and specialized words that need emphasis
CAPS	Indicates a specific key on the keyboard, such as ENTER, TAB, CTRL, ALT, or DELETE
Code	Indicates variables or command-line entries, such as a DOS entry or something you type into a field
>	Indicates the direction of navigation through a hierarchy of menus and windows
hyperlink	Indicates a jump to another location within the electronic document or elsewhere
Internet address	Indicates a jump to a Web site or URL
Note	Indicates important information that helps to avoid and troubleshoot problems

Obtaining Documents

Technical documents can be viewed or downloaded from our Web site at www.broadcast.harris.com/leitch (go to **Support>Documentation**). Alternatively, contact your Customer Service representative to request a document.

Unpacking/Shipping Information

Unpacking a Product

This product was carefully inspected, tested, and calibrated before shipment to ensure years of stable and trouble-free service.

1. Check equipment for any visible damage that may have occurred during transit.
2. Confirm that you have received all items listed on the packing list.
3. Contact your dealer if any item on the packing list is missing.
4. Contact the carrier if any item is damaged.
5. Remove all packaging material from the product and its associated components before you install the unit.

Keep at least one set of original packaging, in the event that you need to return a product for servicing.

Product Servicing

The R(L)CP-32×8CQp is not designed for field service. All hardware upgrades, modifications, or repairs require you to return your R(L)CP-32×8CQp product to the Service center.

Returning a Product

In the unlikely event that your product fails to operate properly, please contact Customer Service to obtain a Return Authorization (RA) number, then send the unit back for servicing.

Keep at least one set of original packaging in the event that a product needs to be returned for service. If the original package is not available, you can supply your own packaging as long as it meets the following criteria:

- The packaging must be able to withstand the product's weight.
- The product must be held rigid within the packaging.
- There must be at least 2 in. (5 cm) of space between the product and the container.
- The corners of the product must be protected.

Ship products back to us for servicing prepaid and, if possible, in the original packaging material. If the product is still within the warranty period, we will return the product prepaid after servicing.

Product Documentation

Throughout this manual, you will see references to the technical documentation for other Leitch/Harris products. You can download PDF versions of these manuals from our Web site at www.broadcast.harris.com/leitch.

Standards

Appendix A: "Safety Precautions, Certifications, and Compliances" contains product compliance and safety standards.

Restriction on Hazardous Substances (RoHS) Compliance

Directive 2002/95/EC—commonly known as the European Union (EU) Restriction on Hazardous Substances (RoHS)—sets limits on the use of certain substances found in electrical and electronic equipment. The intent of this legislation is to reduce the amount of hazardous chemicals that may leach out of landfill sites or otherwise contaminate the environment during end-of-life recycling. The Directive takes effect on July 1, 2006, and it refers to the following hazardous substances:

- Lead (Pb)
- Mercury (Hg)
- Cadmium (Cd)
- Hexavalent Chromium (Cr-V1)
- Polybrominated Biphenyls (PBB)
- Polybrominated Diphenyl Ethers (PBDE)

According to this EU Directive, all products sold in the European Union will be fully RoHS-compliant and "lead-free." (See our Web site, www.broadcast.harris.com/leitch>company>environmental compliance, for more information on dates and deadlines for compliance.) Spare parts supplied for the repair and upgrade of equipment sold before July 1, 2006 are exempt from the legislation. Equipment that complies with the EU directive will be marked with a RoHS-compliant emblem, as shown in Figure P-1.

Figure P-1. RoHS Compliance Emblem

Waste from Electrical and Electronic Equipment (WEEE) Compliance

The European Union (EU) Directive 2002/96/EC on Waste from Electrical and Electronic Equipment (WEEE) deals with the collection, treatment, recovery, and recycling of electrical and electronic waste products. The objective of the WEEE Directive is to assign the responsibility for the disposal of associated hazardous waste to either the producers or users of these products. Effective August 13, 2005, producers or users will be required to recycle electrical and electronic equipment at end of its useful life, and may not dispose of the equipment in landfills or by using other unapproved methods. (Some EU member states may have different deadlines.)

In accordance with this EU Directive, companies selling electric or electronic devices in the EU will affix labels indicating that such products must be properly recycled. (See our Web site, www.broadcast.harris.com/leitch>company>environmental compliance, for more information on dates and deadlines for compliance.) Contact your local sales representative for information on returning these products for recycling. Equipment that complies with the EU directive will be marked with a WEEE-compliant emblem, as shown in Figure P-2.

Figure P-2. WEEE Compliance Emblem

Safety

Carefully review all safety precautions to avoid injury and prevent damage to this product or any products connected to it. You will find a complete list of safety precautions in Appendix A. Any user-serviceable components (such as fuses or batteries) are only replaceable by those components listed in the manual.

IMPORTANT! Only qualified personnel should perform service procedures.

Safety Terms and Symbols in this Manual

WARNING

Statements identifying conditions or practices that may result in personal injury or loss of life. High voltage is present.

CAUTION

Statements identifying conditions or practices that can result in damage to the equipment or other property.

Chapter 1

Introduction

Overview

The PLCP-32×8CQp and RCP-32×8CQp are the latest in a long line of control panel options for Leitch/Harris routing switchers. The R(PL)CP-32×8CQp is designed for use with a Panacea clean/quiet switch routing switcher, and combines the ease of operation of a button-per-crosspoint control panel, with the flexibility of programmability.

This chapter contains the following topics:

Product Description

Figure 1-1. R(PL)CP-32×8CQp Control Panel

The R(PL)CP-32×8CQp provides remote control functions for all features and parametric controls specific to the Panacea clean/quiet switch router. The control panel is available in a local version, PLCP-32×8CQp; or as a remote control panel, RCP-32×8CQp.

The control panel is shipped with a default setup that includes 16 source buttons located on the top left row; 9 assignable buttons, 5 transition buttons, and 2 speed buttons located in the row directly below the source buttons; and destination selection buttons in the right-side group of buttons. (See Chapter 4: "Operation" for button function descriptions.) In addition to the control of the unique features of the Panacea clean/quiet switch router, the R(PL)CP-32×8CQp allows for numerous button function assignments via the RouterMapper™ software configuration utility. Complete details of the multiple button functions possible can be found in the *RouterMapper Configuration Utility Reference Guide*; you can download a PDF version of the RouterMapper reference guide from our Web site at www.broadcast.harris.com/leitch.

Main Features

- Control of all source and destination assignments
- Control of switch transition parametric functions
- Slow and Fast selection of transition duration
- Ability to assign numerous control and alarm functions
- Full configuration and function assignment through the RouterMapper configuration utility
- Ethernet, coaxial X-Y, and serial connectivity
- Redundant power supply option

Source Select Buttons

- 16 assignable source buttons on top row of Source Select buttons
- Assignable source button default assignments are Source 1 through Source 16
- 7 preassigned transition buttons on bottom row of Source Select buttons
- 9 user-definable source buttons on bottom row of Source Select buttons

Destination Select Buttons

- 8 assignable destination buttons
- Destination button default assignments are PGM1, PGM2, AUX1, AUX2, AUX3, AUX4, AUX5, AUX6 to duplicate output naming on back panel

Auxiliary Buttons

- 2 assignable auxiliary buttons
- Auxiliary button default assignments are **Enable** and **Lock**

Power Supply

Figure 1-2. Desktop Power Supply Module

Note

A desktop power supply is not included with the local control panel (PLCP-32×8CQp) version. The PLCP-32×8CQp operates via the power supply provided with the Panacea clean/quiet switch router.

Each RCP-32×8CQp comes with a desktop power supply module as a standard feature. The power supply module is equipped with a universal input. The universal AC input version operates from 100 VAC through 240 VAC, which it converts to 15V DC, and provides 70 W of output power. The desktop power supply module has a thermostatically-controlled cooling fan built into it. The cooling fan will turn on and off automatically to control the operating temperature of the power supply module.

Because all frames have at least two power supply connectors and because all necessary current sharing components are located internally to the frame, you only need to plug in the second desktop power supply for redundancy.

Optional Power Supply Mounting Tray

Figure 1-3. Power Supply Mounting Tray

An optional power supply mounting tray allows you to mount up to seven 1RU desktop power supplies. This power supply mounting tray can be forward- or rear-mounted into a regular frame rack. Contact your Sales representative for more information about this option.

Control Panel Configuration Tools

For more complex applications and to take advantage of the programming capability, R(PL)CP-32×8CQp can be configured from a personal computer (PC) or lap-top computer using RouterMapper, the Microsoft® Windows®[1]-based configuration editor supplied with the control panel. Panel configurations are downloaded from the PC to the control panel(s) via a standard RS-232 serial port. Once configured, the panels retain their programming even if powered down.

[1] "Windows" is a registered trademark of Microsoft Corporation in the United States and/or other countries.

Chapter 2

Installation

Overview

WARNING

Potentially lethal voltages are present within the frame during normal operation. Disconnect all power cords from the frame before you remove the top panel. Do not apply power to the frame while the top is open unless the unit is being serviced by properly trained personnel.

Before the control panel can operate as part of your routing system, you must unpack, examine, install, and configure components. This chapter covers those topics specific to physical installation, as follows:

- "Adding the Control Panel to a RouterMapper Database" on page 20
- "Cable Connector Pin Assignments" on page 18
- "Examining RCP-32×8CQp Components" on page 7
- "PLCP-32×8CQp Installation Procedures" on page 13
- "RCP-32×8CQp Installation Procedures" on page 12
- "Unpacking Control Panel Equipment" on page 6

Configuration information is outlined in Chapter 3.

CAUTION

We recommend that you test your system before its final installation. Make sure you verify its configuration, cabling, and proper system operation.

Unpacking Control Panel Equipment

Packing List

The R(PL)CP-32×8CQp package includes the items listed below. Confirm that you have received all items listed on the packing list. Contact your dealer if any item on the packing list is missing.

- One PLCP-32×8CQp or RCP-32×8CQp product
- One *PLCP-32×8CQp/RCP-32×8CQp Installation, Configuration, and Operation Manual*
- One desktop power supply
- Optional redundant power supply (if ordered)

Pre-Installation Checklist

Note

If your equipment was damaged during transit, see "Returning a Product" (page xi) to determine what you must do to return the equipment to us.

This product was carefully inspected, tested, and calibrated before shipment to ensure years of stable and trouble-free service.

1. Remove all packaging material from the product and its associated components before you install the unit.
2. Check equipment for any visible damage that may have occurred during transit.
3. Contact the carrier if any item is damaged.

Keep at least one set of original packaging, in the event that you need to return a product for servicing. If the original packaging is not available, you can purchase replacement packaging, or supply your own packaging as long as it meets the following criteria:

- Withstands the weight of the product
- Holds the product rigid within the packaging
- Leaves at least two inches of space between the product and the container

Examining RCP-32×8CQp Components

The following sections describe the physical components of the RCP-32×8CQp. The descriptions will provide you with the information you need to make sure these components operate correctly after installation is complete.

Physical Components

The components installed in the RCP-32×8CQp frame are as follows:

- Module Interconnect (MI)s
- Flash Memory Module
- Resource Module

Module Interconnect (MI)

Figure 2-1. Module Interconnect

The module interconnect (MI) provides communications, power conversion, and reference conditioning for the resource module. It also provides control connectivity between the resource module and the back panel. The MI monitors and controls the single relay alarm for power loss, fan failure, or other alarms.

Flash Memory Module

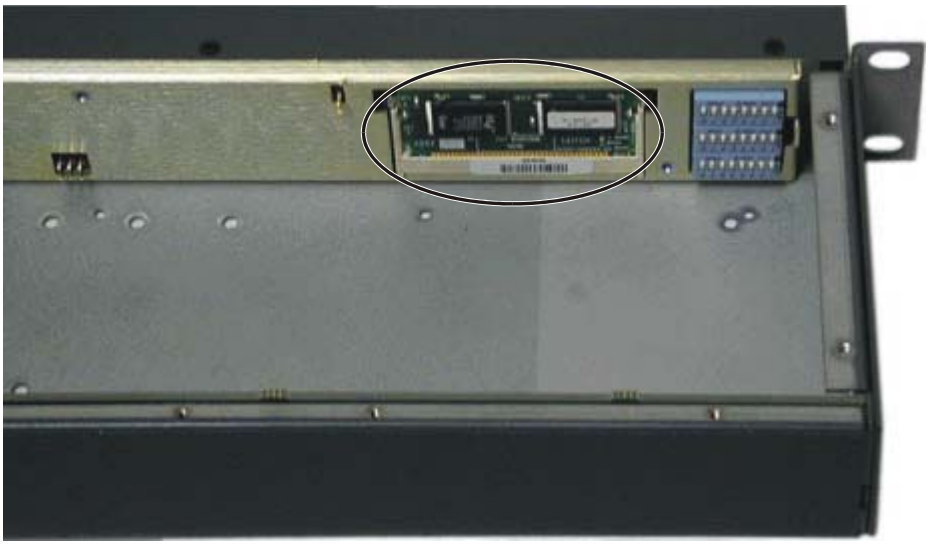


Figure 2-2. Flash Module

The flash memory module houses the operating system software for the RCP-32×8CQp.

Resource Module

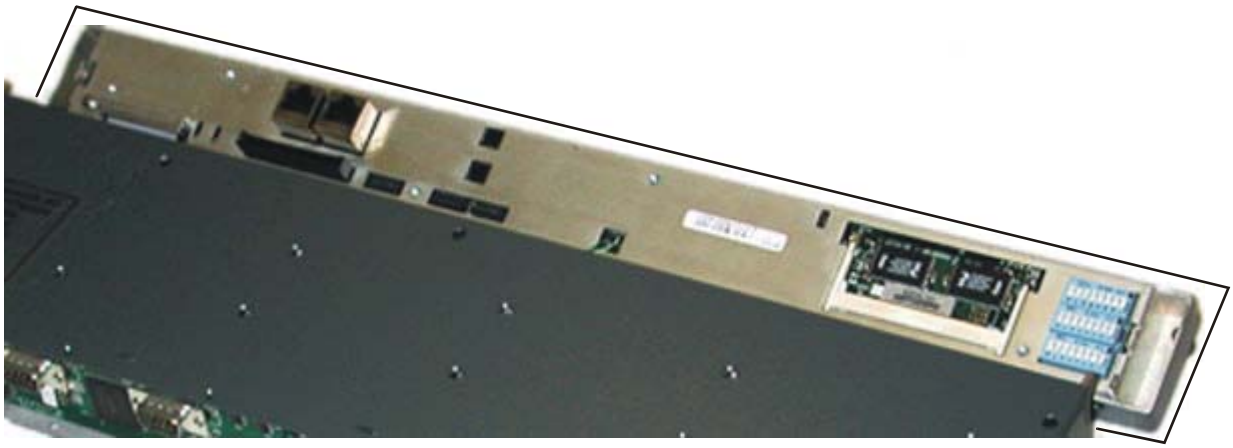


Figure 2-3. Resource Module

The resource module provides control and monitoring of communications, gain access to the communication connectors (X-Y, serial, and Ethernet), and configurable items accessible through the serial port or Telnet interface.

Back Panel Connections

The control and power section of the rear panel includes these items:

- Two DC input power connectors (PS1 and PS2)
- One 3-pin alarm/comm port (ALM/COM)
- One 9-pin RS-232 serial port (on the RCP-32×8CQp, the port labelled as SERIAL 2 is reserved for future use)
- One pair of BNC X-Y ports (single looping X-Y)
- One pair of BNC sync ports (reserved for future use)
- One RJ-45 Ethernet connection (ENET)

Figure 2-4. RCP-32×8CQp Power and Control Connections

Figure 2-5. PLCP-32×8CQp Power and Control Connections

Alarm/Comm Port

The 3-pin alarm/comm port reports alarms as they occur in the frame.

- Pin 1 (labeled "+") – Normally open/normally closed (jumper selectable)
  - "Normally closed" is shorted with the common (closed) when an alarm condition does not exist and the frame is powered
  - "Normally open" is shorted with the common (closed) when an alarm condition exists
- Pin 2 (GND) – Relay common
- Pin 3 (labeled "–") – Reserved for future use

Note

The default operation of the alarm relay is "normally open."

The alarm port provides indication of these alarm conditions:

Table 2-1. Alarm Conditions

Alarm Condition	Description
PS Fail	Alarm asserted in the event of a power supply failure (in systems with multiple power supplies, the alarm will be asserted if any power supply fails)
Specific Alarms	Generated by core routing module

The alarm relay circuitry has been designed so the relays are energized when the alarm condition does not exist. If a relay fails or if the circuit controlling a relay fails, the relay will de-energize, which will cause the corresponding alarm to be asserted. If the frame loses power, the alarm relay will become de-energized, and the alarm condition will be asserted. The relay is energized when power is applied to detect when power is lost and to allow the alarm to be asserted.

Serial Connections

Note

Table 2-2 on page 18 shows the connector pin assignments for a RS-232 cable connection. Table 2-3 on page 18 shows the connector pin assignments for an RS-422 cable connection.

One of the many powerful features of a Leitch/Harris router control system is its ability to use a serial port to access an entire system. The serial port, in effect, is the control gateway to the entire routing system.The serial port allows external control of the R(PL)CP-32×8CQp by a computer, user, or automation system via a serial connection using RS-232 or RS-422. The port is configured by DIP switches on the resource module (see Figure 3-3 on page 27) or from the terminal interface (see Appendix B, “Terminal Operations,” which starts on page 67).

X-Y Port

The X-Y control bus is a high speed serial interface by which Leitch/Harris routers and control panels are interconnected via standard 75Ω video coax cable. The ends of the X-Y bus must be terminated using standard 75Ω video terminators.

The R(PL)CP-32×8CQp features one looped-through port (two BNC connectors). **If either of the BNCs is used, the other associated X-Y port connection must be terminated with a 75Ω BNC terminator or connected to another device’s X-Y port.** For example, it is not necessary to terminate either of the BNCs if neither is used.

Ethernet Connection

Note

Figure 2-10 on page 19 shows the RJ-45 jack pinout information for 10Base-T Ethernet communication.

The Ethernet connection provides high-speed links for configuration, control, and monitoring of the complete routing system. The Ethernet connection uses 10Base-T wiring.

Installing the R(PL)CP-32×8CQp

Siting Requirements

Ensuring Adequate Rack Space

The R(PL)CP-32×8CQp frame is designed for mounting into a standard width 19-in. (48.3-cm) rack. Frames are secured to the rack with standard front-mounting ears built into the chassis. Make sure to provide adequate space behind the mounting ears, and appropriate clearance for the connecting cables at the rear of the frame.

Ensuring Proper Temperature and Ventilation

The R(PL)CP-32×8CQp is cooled by forced air that is drawn in from the left side of the panel and expelled through the right side. You can stack any number of panels in a rack as long as you maintain proper ventilation and remove all obstructions to air flow.

An ambient temperature should be maintained between 32°F (0°C) and 122°F (50°C) at a relative humidity of 10%-90% (non-condensing). No special cooling arrangements are necessary, but make sure to prevent excessive ambient heat rise in closed, unventilated equipment racks.

Meeting Electrical Requirements

Load Limitations

The R(PL)CP-32×8CQp accepts one desktop power supply unit (PSU). The panel is prewired to accept a second, optional power supply for power backup. Their power consumption is nominally 65VA. A fully loaded panel will operate with a single power supply.

Maximum Power Dissipation

These ratings refer to the total module power consumption (excluding that of the power supply) allowable within the R(PL)CP-32×8CQp. The limits are based on the ability of the unit to dissipate heat over a temperature range of 32°F to 122°F (0°C to 50°C).

Voltage Selection

The R(PL)CP-32×8CQp does not have a voltage selector switch. The desktop power supply has a continuous input range of 100VAC to 240VAC.

Protective Ground

Since the desktop power supply does not present a shock hazard, the R(PL)CP-32×8CQp does not have a protective safety earth ground.

Mounting the R(PL)CP-32×8CQp

Tools You'll Need

Note

When power is applied to the RCP-32×8CQp, it starts up automatically.

The following tools and equipment are recommended for installation of the R(PL)CP-32×8CQp:

- One standard 19-in. (0.4-m) rack
- One medium Phillips screwdriver
- Four 10/32 Phillips-head rack mount screws
- One of the following
  - Standard 10 Mbps 10Base-T Ethernet cable segment no longer than 382.08 ft (100 m)

    OR

    RS-232 or RS-422 cable segment; no longer than 50 ft (15 m) for RS-232, and 2,000 ft (610 m) for RS-422

Mounting Requirements

The R(PL)CP-32×8CQp frame can be mounted in a standard width 19-in. (48.3 cm) rack using four $^{10}/_{32}$ Phillips-head mounting screws. The back of the frame does not need to be supported. The frame can be mounted in either the front or the rear of the rack, thereby providing more efficient use of your equipment housing space. The rack ears can be attached to the frame in either direction, thereby allowing you flexible mounting options.

The 1RU mounting frame requires one unit of rack space, that is, 1.75 in. (44 mm) of standard rack space. The depth from the mounting surface is 5.25 in. (13.3 cm).

R(PL)CP-32×8CQp control panels are installed in the control line.

- The maximum allowable distance for each segment of the X-Y coaxial cable run is 2,000 ft (609 m).
- The maximum for each RS-422 segment is 2,000 ft (609 m).
- There is no limit to the number of control devices added to the X-Y control bus.

RCP-32×8CQp Installation Procedures

The RCP-32×8CQp can be installed anywhere within a routing system. General installation procedures are outlined below.

1. Mount the frame in an rack that provides power and cooling facilities. The frame is designed for mounting in a standard equipment rack.
2. Align the frame so that all 4 screw holes in the mounting ears match up with those in the rack. (Adjustable ears on each side of the frame allow adjustable depth placement of the frame within the rack.
3. Secure the frame to the rack with the rack screws and washers.

4. Connect the control device(s) to the appropriate port (X-Y, serial, Ethernet, etc.) on the frame's rear panel.
5. If the RCP-32×8CQp is to be used in a multiple frame system, connect the additional frames using port the appropriate scheme (X-Y, Ethernet, etc.).
6. If the RCP-32×8CQp is at the end of the X-Y bus, terminate the other X-Y connector with a coaxial 75Ω termination.
7. Connect the 3-pin alarm port to the appropriate alarm device(s), as necessary.
8. Plug the desktop power supply into its corresponding RCP-32×8CQp power supply port.
9. Connect the power supply to a power source.

   At power up the RCP-32×8CQp source timing alarms will default to enabled. This will result in blinking source buttons for all sources that are not within a one-line buffer window. The Panacea Clean/Quiet routing switcher will perform an Autotime at power up and whenever requested through RouterMapper configuration utility application software. If there is not a source connected on an input, the alarm can be disabled on each separate source button through RouterMapper. See the *RouterMapper Configuration Utility Reference Guide* for more details.
10. Between the control panel's top and bottom function keys you will find the key brightness adjustment. This adjustment controls the light intensity of all of the control panel keys. To adjust the key light intensity, use a small flat-head screwdriver to turn the brightness screw clockwise (brighter) or counter-clockwise (dimmer).

PLCP-32×8CQp Installation Procedures

CAUTION

Some Panacea front panel units do not have supporting hinges. Consequently, if the front panel face plate is removed and not handled properly, it can fall with sufficient force to dislocate and/or damage the ribbon cable attached to the resource module connector. When removing the front panel, hold the face plate firmly to ensure that it does not become damaged.

1. Unplug the Panacea P-SCQ/P-HSCQ module so that it does not receive electrical power.
2. Unscrew the screws on the front of the front panel. (The screws in the front panel are captive. Do not separate them from the front panel.)
3. Gently pull the front panel away from the frame.

4. Unscrew the eight 4-40 x 1/8 flat head screws (four on top, four on the bottom) attaching the sub-panel assembly to the front panel. Set these screws aside, as you will need them later.
5. Unscrew the two screws attaching the front blank assembly to the frame. (The screws in the front panel are captive. Do not separate them from the front panel.)
6. Remove the cable retaining plate, then carefully remove the cable from the resource module by grasping the outer edges of the connector and pulling it away from the panel.
7. Unscrew the ribbon cable retainer, then unplug the ribbon cable from the connector on the resource module.

Figure 2-6. Removing the Ribbon Cable

8. Pull the sub-panel assembly away from the front panel.
9. Plug the ribbon cable on the control panel to the connector on the core routing module. **Make sure that the colored wire on the ribbon cable is oriented toward the top of the control panel, as shown in Figure 2-7.**

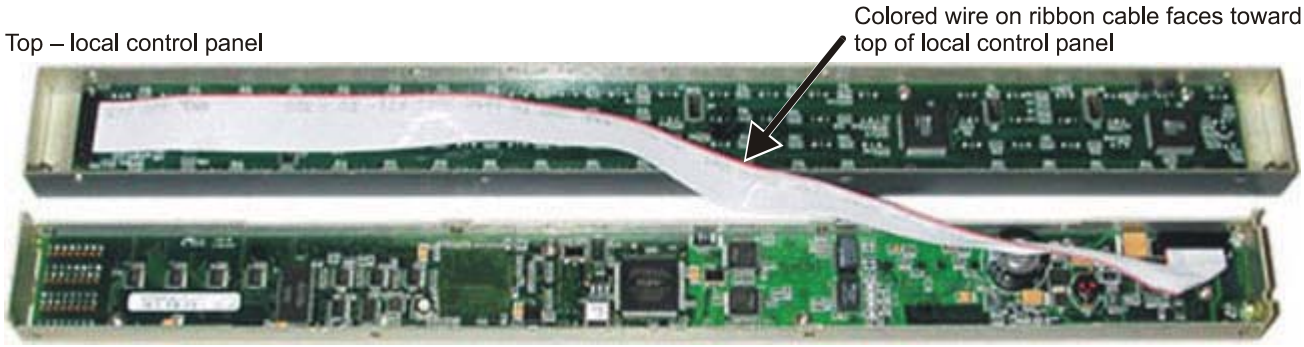


Figure 2-7. Plugging in the Ribbon Cable

Note

You may need to loosen the front panel screws so that the frame top will fall flush with the panel front.

10. Align the sub-panel assembly with the front panel, then press the sub-panel assembly into the rear side of the front panel.
11. Align the mounting holes of the two panels.
12. Using the eight 4-40×1/8 flat head screws, attach the sub-panel assembly to the front panel.
13. Plug the ribbon cable to the connector on the resource module.
14. Reattach the ribbon cable retaining plate.
15. Align the reassembled front module with the frame body.
16. Tighten the screws on the front of the panel. As you tighten the screws, the front module will be pulled tight to the frame body.
17. Power up the P-SCQ/P-HSCQ routing switcher module.

    At power up the PLCP-32×8CQp source timing alarms will default to enabled. This will result in blinking source buttons for all sources that are not within a one-line buffer window. The Panacea Clean/Quiet routing switcher will perform an Autotime at power up and whenever requested through RouterMapper. If there is not a source connected on an input, the alarm can be disabled on each separate source button through RouterMapper. See the *RouterMapper Configuration Utility Reference Guide* for more details.
18. Between the control panel's top and bottom function keys you will find the key brightness adjustment. This adjustment controls the light intensity of all of the control panel keys. To adjust the key light intensity, use a small flat-head screwdriver to turn the brightness screw clockwise (brighter) or counter-clockwise (dimmer).

Installing Key Cap Labels

Control panels are shipped without labels on the front panel key caps. A key cap disassembly tool and a sheet of label inserts are included for your convenience. These label inserts, or any customer artwork printed on translucent material, can be installed in the front panel lamps.

Follow these steps to disassemble and reassemble key cap labels.

Disassembly

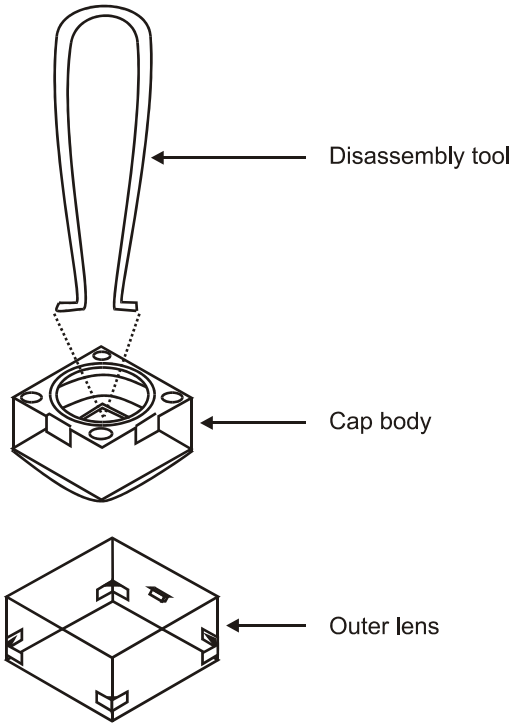


Figure 2-8. Disassembly

1. Pull the key cap off the front of the control panel.
2. Hook the disassembly tool under the opposite corners of the key cap body.
3. Hold the clear outer lens in one hand while you use the disassembly tool to pull the white key cap body from the outer lens.

Reassembly

Note

Two notches on the back of the lens cap assembly fit into two notches on the inside of the switch body on the front panel board. Make sure the artwork's top faces one of these two notches.

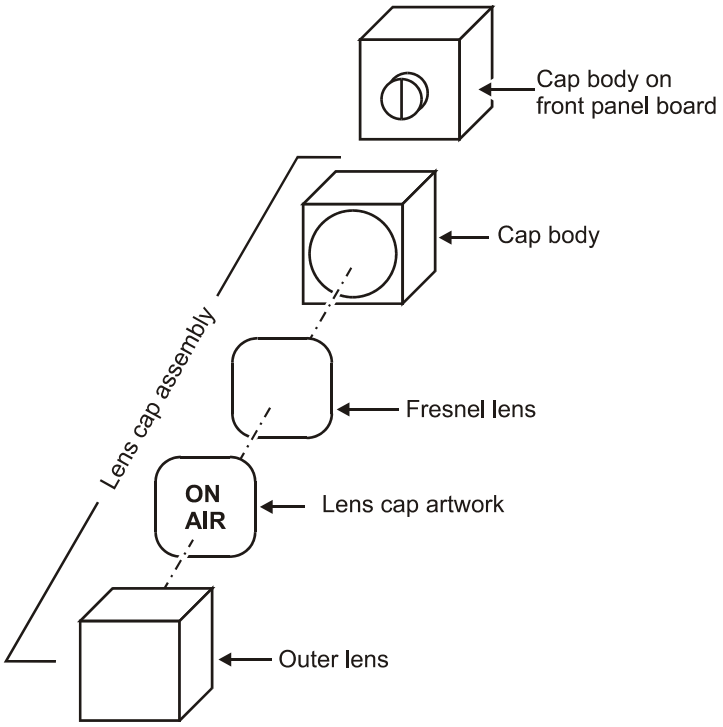


Figure 2-9. Reassembly

1. Remove the fresnel lens from inside the key cap outer lens.
2. Remove desired label artwork from the sheet provided, or use your own artwork (reproduced on transparent material).
3. Fit the artwork into the outer lens.
4. Snap the fresnel lens into the fitted side of the key cap body (the curved side of the lens should face the inside of the key cap body). Make sure the face of this new assembly is flat.
5. Fit the key cap body assembly into the outer lens.
6. Reinstall the lens cap assembly onto the front panel.
7. If you have not already done so, adjust the panel key light intensity. (See the final step in page 13 for instructions.)

Cable Connector Pin Assignments

Serial Port Pin Assignments

- RS-232 signal format pin assignments are shown in Table 2-2.
- RS-422 signal format pin assignments are shown in Table 2-3.

Table 2-2. RS-232 Signal Format Pin Assignments

Pin	Function
1	Frame Ground
2	RxD (Data received by router)
3	TxD (Data sent by router)
4	Data Terminal Ready*
5	Ground
6	Data Set Ready (DSR)*
7	Request to Send (RTS)**
8	Clear to Send (RTS)**
9	Frame Ground

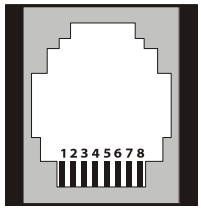
* Pins 4 and 6 connected internally.
** Pins 7 and 8 connected internally

Table 2-3. RS-422 Signal Format Pin Assignments

Pin	Signal (Tributary)	Description	Connection to Remote Computer (Controller)
1	FG	Frame Ground	Frame Ground
2	Ta (Tx-)	Transmitted Data (Twisted Pair)	Ra (Rx-)
7	Tb (Tx+)		Rb (Rx+)
6	Tc	Received Data Shield	Received Data Shield
8	Ra (Rx-)	Received Data (Twisted Pair)	Ta (Tx-)
3	Rb (Rx+)		Tb (Tx+)
4	Rc	Transmitted Data Shield	Transmitted Data Shield
9	FG	Frame Ground	Frame Ground
5	SP	(Not Connected)	(Not Connected)

RJ-45 Jack Pinout Information for 10Base-T Ethernet Communication

Figure 2-10 shows the RJ-45 jack pinout information for a 10Base-T Ethernet connector.



Pin	MDI Function	MDI-X Function
1	TX+ (Transmit data +)	RX+ (Receive data +)
2	TX- (Transmit data -)	RX- (Receive data -)
3	RX+ (Receive data +)	TX+ (Transmit data +)
4	Not connected	Not connected
5	Not connected	Not connected
6	RX- (Receive data -)	TX- (Transmit data -)
7	Not connected	Not connected
8	Not connected	Not connected

Figure 2-10. RJ-45 Jack Pinout Information

Adding the Control Panel to a RouterMapper Database

This section presupposes that you have a working knowledge of RouterMapper and have used its other capabilities. If not, please refer to the *RouterMapper Configuration Utility Reference Guide* to familiarize yourself with its functions before you continue the Add process.

1. Click the **Add** button at the RouterMapper main window. The Add New Device dialog box will appear.
2. Select **Router Control Panel** from the drop-down list box. The Add Panel dialog box will appear.

Note

If you have not added a Panacea clean switch/quiet switch router to your database, the 32×8 CQ-S[1] and -X[1] panel selections will not appear in the Panel Style drop-down list box, and the Associate with Frames drop-down list box will be greyed out.

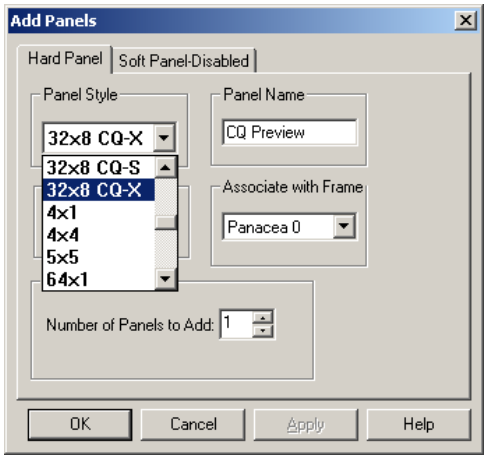


Figure 2-11. Add Panels Dialog Box

3. Select the Panel Style from the drop-down list box.

   (For Panacea clean switch/quiet switch control panels only) If you chose a 32×8 CQ-S[1] or -X[1] panel as the desired panel style, select the frame to associate with this panel from the Associate with Frame drop-down list box.
4. Select the Panel ID (the panel's physical address) from the drop-down list box.
5. Type the panel name into the Panel Name box.

[1] In RouterMapper, the "32×8 CQ-S" corresponds to an R(L)CP-32×8CQp control panel with standard clean switch/quiet switch configuration. The "32×8 CQ-X" corresponds to an R(L)CP-32×8CQp control panel with a special setup, with PGM1 sources controlled by the upper 16 source buttons, PGM2 sources controlled by the lower 16 source buttons, and transitions and timing alarms assigned to destination buttons.

Note

If one panel with these options is sufficient, you do not need to change the default number.

6. If you want to add more than one panel with options identical to those you just selected:
   a. Click on the up/down arrows to the right of the Number of Panels to Add list box.
   b. Select the number of additional panels you want.
7. Click **OK**. The control panel will be added to the device list at the RouterMapper main window.

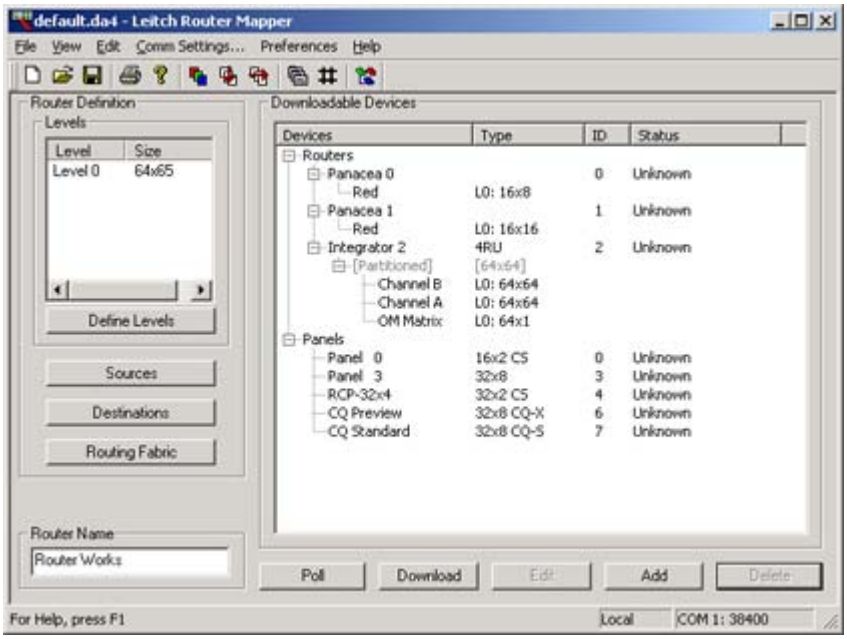


Figure 2-12. Added Control Panels Appearing in RouterMapper Main Window

Chapter 3

Configuration

Overview

Equipment configuration is the final step necessary for successful integration of the R(PL)CP-32×8CQp control panel as an integral part of your clean/quiet switch routing system.

This chapter covers the following topics:

Configuration Details

Preparing for Configuration

Before you configure the R(PL)CP-32×8CQp, you must have the following items:

- A PC connected to a LAN running one of the following:
  - HyperTerminal[1] or other terminal emulation program
  - Telnet program
- The control panel installed and connected to the LAN
- A standard 10 Mbps 10Base-T RJ-45 Ethernet cable segment

  OR

  A null modem cable for serial port operations

Note

To configure name support, an Ethernet connection is required.

Configuring the Alarm Jumper and DIP Switches

Note

If you have installed the PLCP-32×8CQp onto a Panacea clean/quiet switch router, you may have configured the alarm port already. Check all DIP switches to make sure they match the setup shown in "DIP Switch Configuration" on page 27

There are two items that may need to be configured before operating the resource module (if settings other than the defaults listed in the following sections are desired):

- The Alarm jumper on the (MI) board

  Figure 3-1 shows the location of the alarm port jumper on the MI board.
- Three DIP switches on the front of the resource module

  Figure 3-2 shows the location of the DIP switches on the R(PL)CP-32×8CQp resource module. Figure 3-3 provides a summary of the functions of each DIP switch.

Alarm Jumper on the MI Module

The Alarm jumper sets the normally open/normally closed operation of the alarm port. Unless otherwise noted, the frame is shipped from the manufacturing facility with the alarm port configured for normally open (NO) operation.

To switch the alarm port from normally closed operation to normally open operation, follow these steps:

1. Unplug the frame so that it does not receive electrical power.
2. Unscrew the screws on the front panel. (The screws in the front panel are captive. Do not separate them from the front panel.)
3. Gently pull the front panel away from the frame.
4. Tilt the front panel down to expose the MI module. The location of the NO/NC jumper is shown in Figure 3-1.

[1] "HyperTerminal" is a product of Hilgraeve, Inc., Monroe, Michigan.

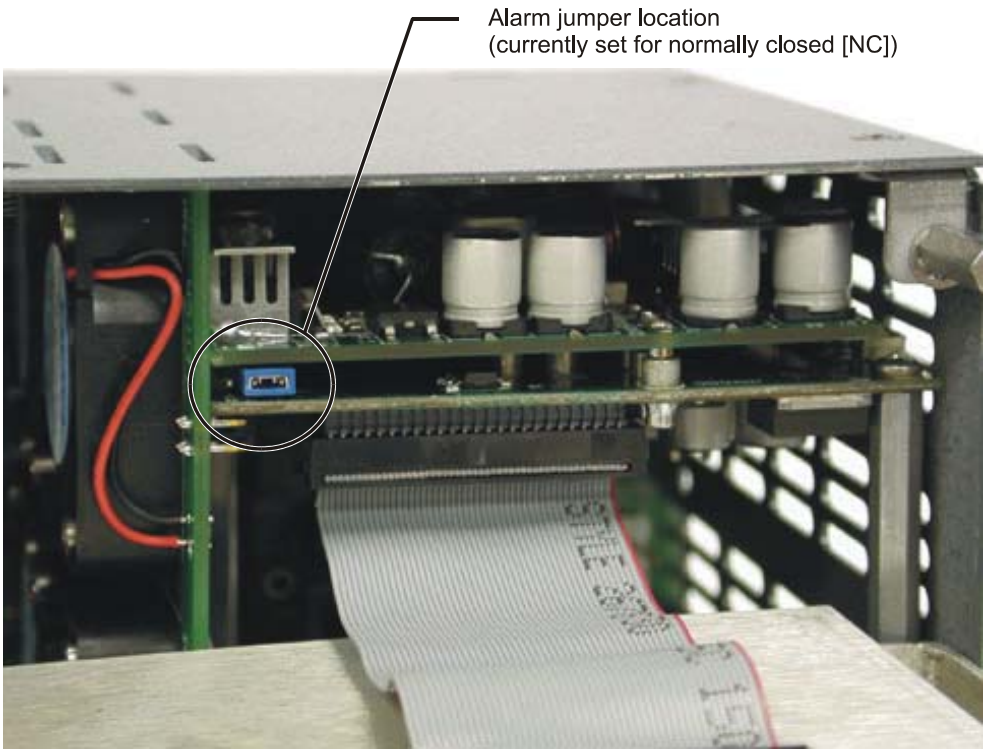


Figure 3-1. Location of NO/NC Jumpers for the Alarm Port

5. Using a pair of tweezers or needle-nosed pliers, pull the jumper pack loose from its location.
6. Push the jumper pack onto the pins of the desired location.
7. Tilt the front panel back up to cover the exposed front of the router.
8. Reattach the front panel to the R(PL)CP-32×8CQp frame.

DIP Switches on the Resource Module

The resource module has three banks of 8-pole DIP switches that are accessible from the front of the frame. To configure the DIP switches, follow these steps:

1. Unscrew the screws on the front panel. (The screws in the front panel are captive. Do not separate them from the front panel.)
2. Gently pull the front panel away from the frame.
3. Tilt the front panel down to expose the DIP switches.

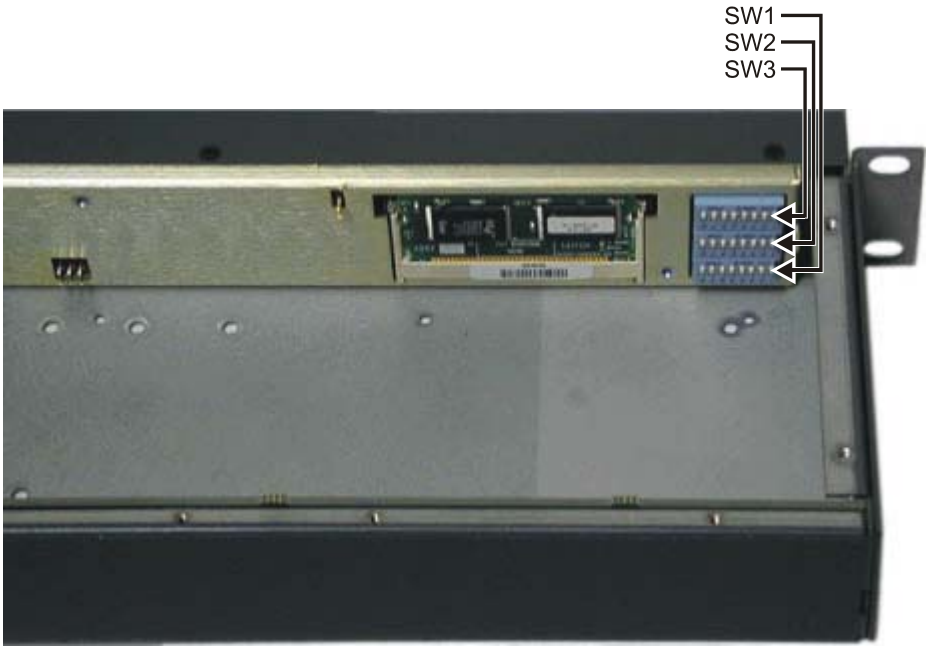


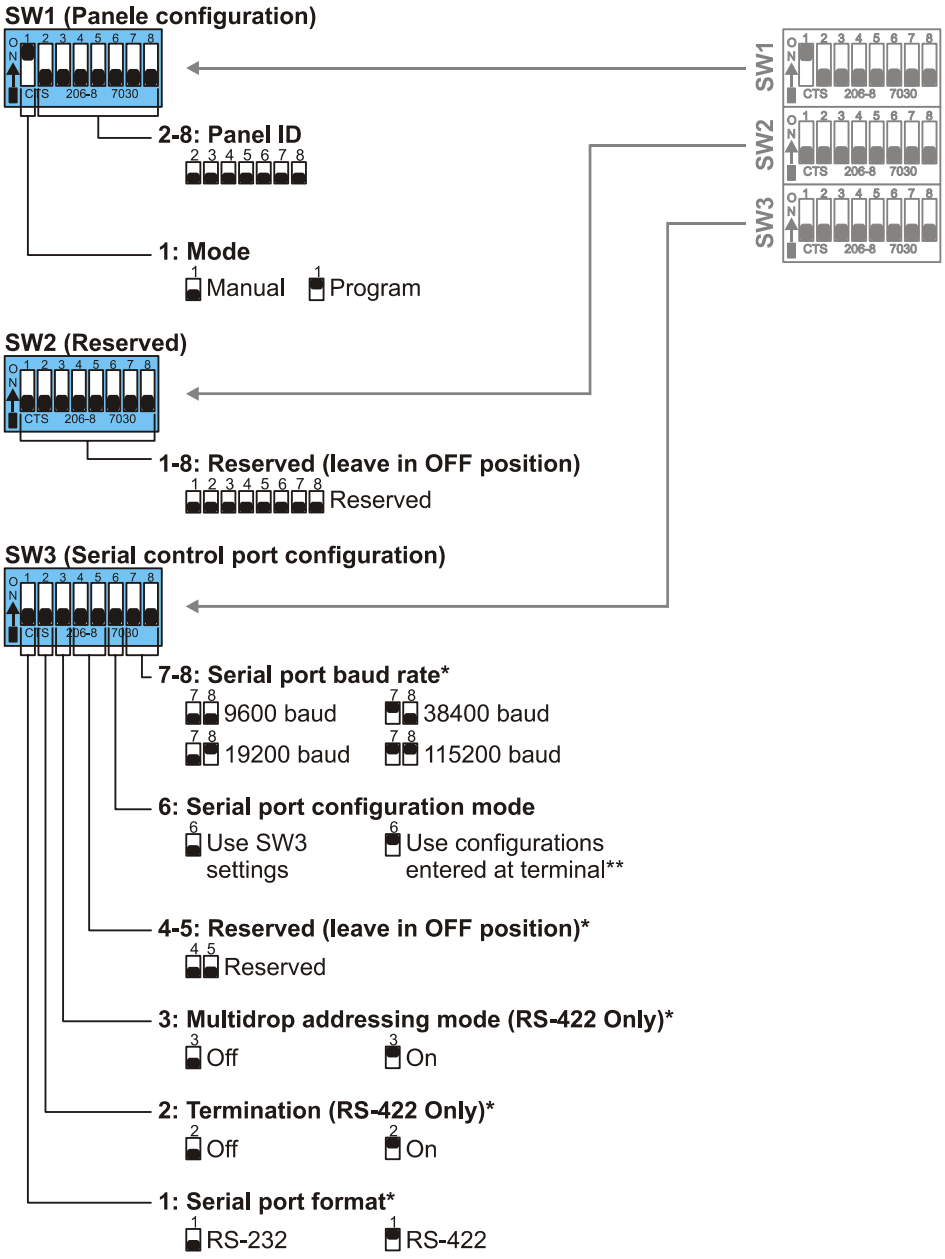
Figure 3-2. DIP Switch Location and Identification

Note

If you want your R(PL)CP-32×8CQp settings to match the factory defaults, you do not need to make any further changes.

4. Set the DIP switches as shown in Figure 3-3.
   - SW1 provides DIP switches for functions related to frame ID.
   - SW2 DIP switch functions are reserved for future use.
   - SW3 provides DIP switches for these functions related to serial port configuration:
     - Serial port protocol configuration mode

       This setting determines whether serial ports 1 and/or 2 are configured using SW3 DIP switch or software settings configured from the terminal. If you select the SW3 DIP switch setting mode, serial port settings are determined by selections made on SW3. If the ports need to be configured individually, the software setting mode should be selected.
     - RS-422 termination
     - RS-422 multidrop mode
     - Multi-drop addressing mode
     - Serial port protocol
     - Serial port baud rate
5. Tilt the front panel back up to cover the exposed front of the router.
6. Reattach the front panel to the R(PL)CP-32×8CQp frame.



* *SW3 poles 1–5 and 7–8 are only used when SW3 pole 6 is set to OFF*
** *Specific protocols are set via the Protocol Configuration subcommands menu (Menu P)*

Figure 3-3. DIP Switch Configuration

Setting Up the Power Supply

CAUTION

You may see an arc within the connector internally as the power supply connection is made. This is normal.

Push the power supply plug into the PS1 connector (see Figure 2-4 and Figure 2-5 on page 9) until the fastener clips. To make sure the power supply is plugged in, gently pull on the plug cable to make sure that the fastener is secure. It should not pull out easily.

If you are using a second power supply, plug it into the PS2 connector (see Figure 2-4and Figure 2-5 on page 9). Follow the same procedure as for the first power supply.

Configuring an R(PL)CP-32×8CQp for Use with Leitch/Harris Protocols

Note

The PLCP-32×8CQp has only one serial port; its functionality is the same as described for the RCP-32×8CQp.

Two separate serial control ports are used to control an RCP-32×8CQp from an external computer or automation system. (See Figure 2-4 and Figure 2-5 on page 9 for the location of the serial control ports.) Either serial port may be used to monitor the system configuration, determine the current status of crosspoint connections, change crosspoint connections in any matrix, and setup pre-programmed crosspoint takes sequences (salvos). In a system involving multiple frames the commands entered into the serial port on one frame will be sent to the other frames in the system via the X-Y control bus. Any serial control port in the routing system can be used for control or status of the entire system.

Note

DIP switches are set to “0” as the default setting.

Both serial control ports are preset at the Manufacturing facility with identical default DIP switch settings. If you want your R(PL)CP-32×8CQp settings to match these defaults, you do not need to make any further changes. If you do want to switch from the default settings (for example, to use a different protocol), you will only need to make the changes once. The R(PL)CP-32×8CQp will use the changed settings until you switch them again. DIP switch SW3 provides DIP switches for the functions related to serial port configuration.

Configuring an R(PL)CP-32×8CQp‘s Communication Ports

The R(PL)CP-32×8CQp supports software configuration of communication ports. The commands used to configure port settings and/or to view the R(PL)CP-32×8CQp's current configure port settings can be displayed by typing **SHOW MENU P** at the Command prompt. See page 78 for a list of the Protocol command line options.

You can use the **SHOW PORTS** command (see page 78) at any time to view the configuration for all ports that will be active when you start the R(PL)CP-32×8CQp.

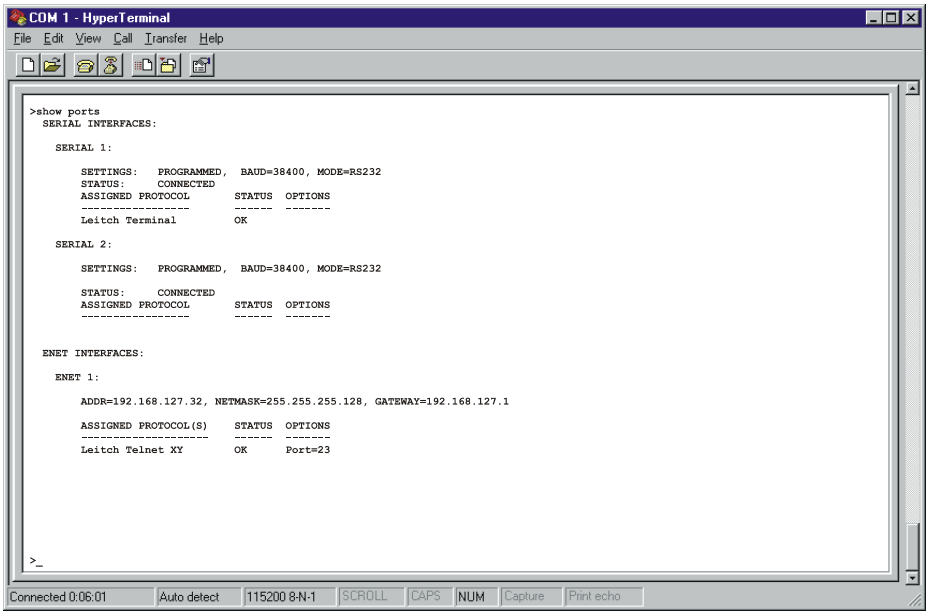


Figure 3-4. Example of **SHOW PORTS** Window

The full configuration table may be too long for standard terminal emulators to show in one screen. To display a particular port's configuration, use the **GET ENET** (page 79) and **GET SERIAL** (page 79) commands.

Configuring for Serial Protocol

Note

If the serial port(s) are in use, the Leitch/Harris Telnet interface may be used. Alternatively, the SW3 pole 6 switch may be set to OFF temporarily to allow configurations.

PLCP-32×8CQp and RCP-32×8CQp serial ports support one active protocol at a time. (The PLCP-32×8CQp only supports Leitch/Harris terminal protocol.) To configure a serial port's protocol:

1. Ensure DIP switch 3, pole 6, is ON to enable terminal-based configuration.[1]
2. Determine which serial port (1 or 2) will use the selected protocol.
3. Determine the protocol to use. (Use the **SHOW PROTOCOLS** command (page 79) to view the available protocols.) Available protocols are shown under the Serial Interfaces list displayed by the Available Protocol Summary Table (see Figure 3-5). The example shown in Figure 3-5 shows one available serial interface and three available Ethernet interfaces.

[1] If you want to use two different serial port types or baud rates at the same time (e.g., 38400 baud and 9600 baud; or RS-422 and RS-232 ports), make sure that DIP switch SW3 pole 6 is set to ON.

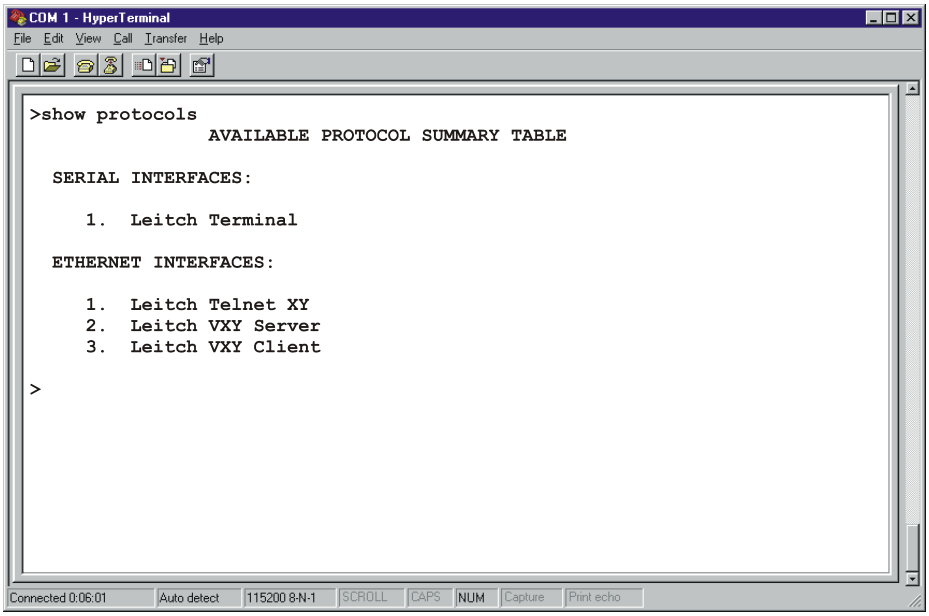


Figure 3-5. Example of **SHOW PROTOCOLS** Window

4. Use the **SET SERIAL** command (page 79) to assign the protocol to enable the configuration. The required command syntax is as follows:

   `SET SERIALx opt=x[opt=x,opt=x]`

   For example, assume that you want to set the following parameters for your R(PL)CP-32×8CQp:

   - Serial port = 1
   - Protocol = Leitch Terminal; shown as item 1 on the Available Protocol Summary Table – Serial Interfaces list
   - Baud rate = 38400
   - Communications mode = RS-232

   The required command syntax will be as follows:

   `SET SERIAL1 PROTOCOL=1,BAUD=38400,MODE=RS232`

5. Verify the new settings using the **SHOW PORTS** (page 78), the **GET ENET** (page 79), or **GET SERIAL** (page 79) command.
6. Save the new configuration using the **SAVE SYSCONFIG** command (page 78).

Changes will take effect after the R(PL)CP-32×8CQp is reset.

Configuring for Ethernet Protocol

Ethernet connections may support more than one active protocol at any given time. To enable an Ethernet protocol:

1. Ensure DIP switch 3, pole 6 is ON to enable support for non-Leitch/Harris protocols.
2. Determine which Ethernet port will use the selected protocol.
3. Determine the protocol to use. (Use the **SHOW PROTOCOLS** command (page 79) to view the available protocols.) Available protocols are shown under the Ethernet Interfaces list displayed by the Available Protocol Summary Table (see Figure 3-5 on page 30).
4. Use the **SET ENET** command (page 79) to assign the protocol to enable the configuration. The required command syntax is as follows:

   `SET ENETx opt=x opt=###.###.###.###,###.###,###.###`

   For example, assume that you want to set the following parameters for your R(PL)CP-32×8CQp:

   - Ethernet port = 1
   - Protocol = Leitch “Virtual XY” client; shown as item 3 on the Available Protocol Summary Table – Ethernet Interfaces list

   The required command syntax will be as follows:

   `SET ENET1 PROTOCOL3=ON SERVER=192.168.7.11,192.168.7.12`

   Note that for the Leitch/Harris VXY client, if only a single IP address available, it must be entered twice; for example:

   `SET ENET1 PROTOCOL3=ON SERVER=192.168.7.11,192.168.7.11`
5. Verify the new settings using the **SHOW PORTS** command (page 78).
6. Save the new configuration using the **SAVE SYSCONFIG** command (page 78).

Changes will take effect after the R(PL)CP-32×8CQp is reset.

Control Panel Configuration Details

Configuring for PC Programming Mode

Note

"PC programming mode" for panels is different from serial port PC Programming mode.

The panel's DIP switches are used to enable PC programming mode and to set the panel's Panel ID. The default DIP switch settings are shown in Figure 3-6 below. (Specific Panel ID DIP switch settings are shown in Figure 3-7 on page 33.)

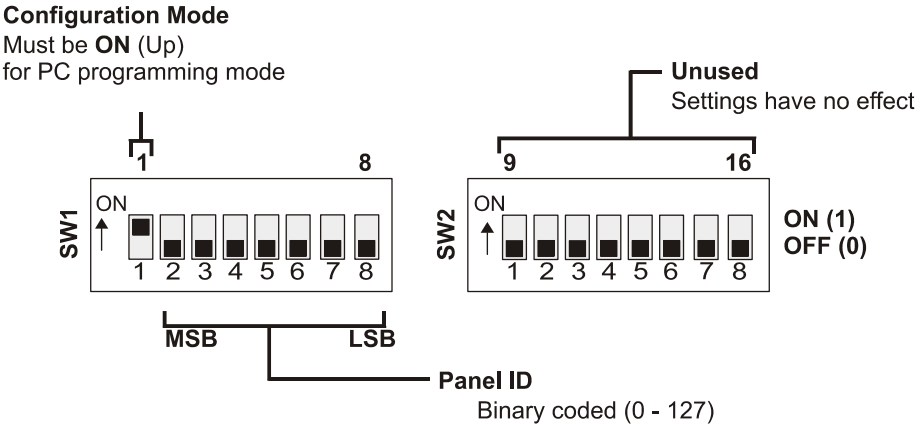


Figure 3-6. DIP Switch Settings – PC Programming Mode

The Panel ID determines the address of the panel. RouterMapper will identify and address a panel using the panel's Panel ID. Normally, each panel is assigned a unique Panel ID. It is possible, however, to assign multiple panels of the same type (e.g., two RCP-32×8CQp) with the same Panel ID. All panels sharing the same Panel ID will receive the same configuration information and will be identically programmed. Assigning the same Panel ID to panels of different types (e.g., an RCP-32×8CQp and an RCP-32×32) will create a programming conflict and will be reported by RouterMapper.

All panels that have been configured using DIP switch configuration mode will be assigned a Panel ID of 0 and will not be recognized by RouterMapper.

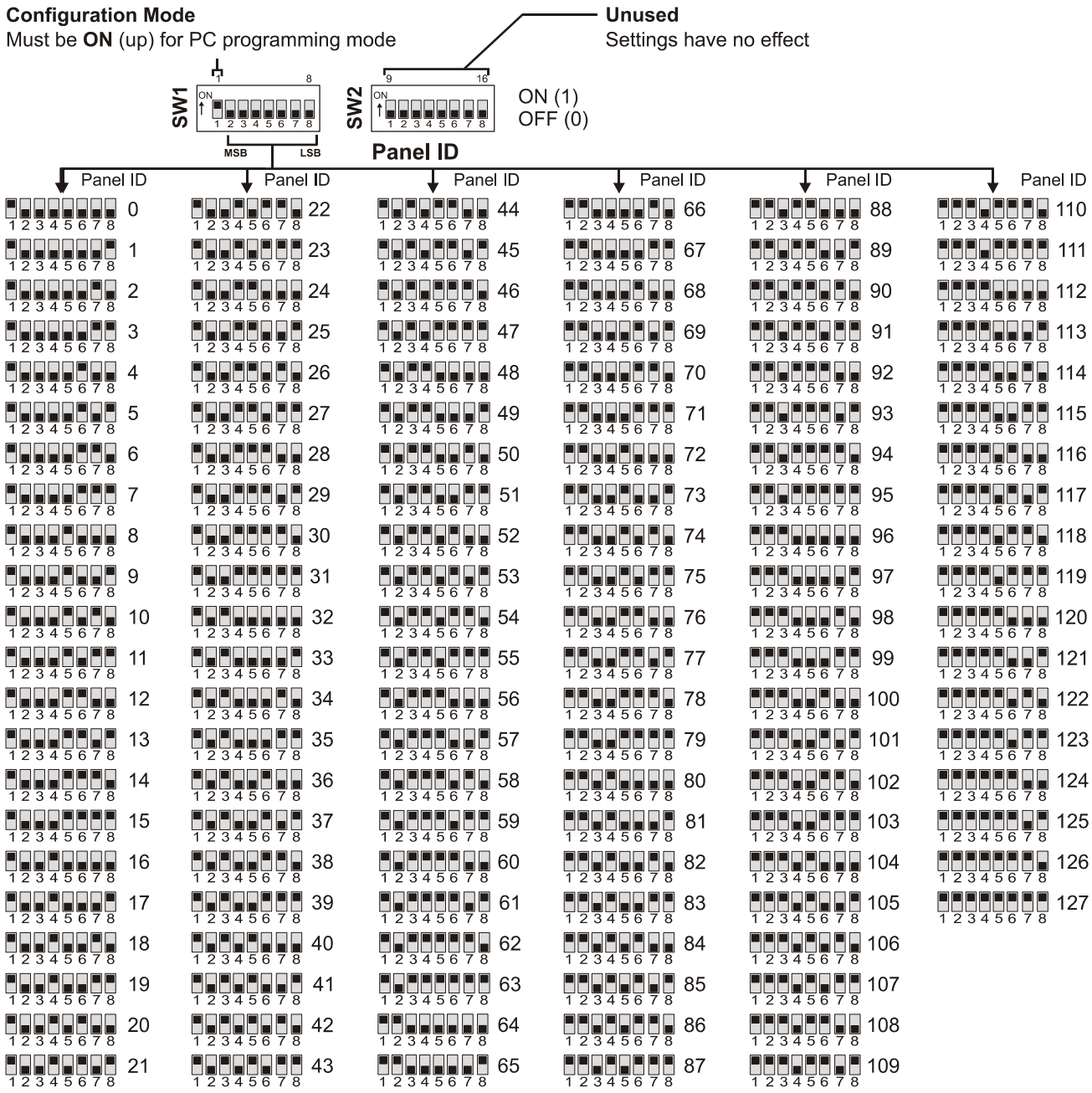


Figure 3-7. PC Programming Mode DIP Switch Settings

Reporting an Invalid Panel Configuration

If the DIP switch to select PC programming mode is turned on and the panel's two function keys are blinking alternately, then one of the following conditions exist:

- The panel has never been programmed.
- The panel's programmed configuration is invalid.
- The battery has failed or been removed since the panel was last programmed.

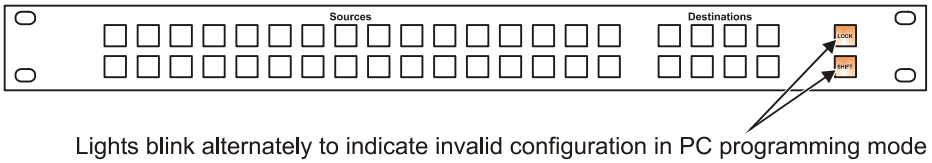


Figure 3-8. Invalid Panel Configuration Warning

Setting Up the Control Panel in a RouterMapper Database

This section presupposes that you have a working knowledge of RouterMapper and have used its other capabilities. If not, please refer to the *RouterMapper Configuration Utility Reference Guide* to familiarize yourself with its functions before you continue the setup process.

1. At the RouterMapper main menu window, highlight the Panacea Clean/Quiet switch panel entry, and then click **Edit**.
2. Select the Sources tab. Verify that the Source tab displays push button key information as shown in Figure 3-9.

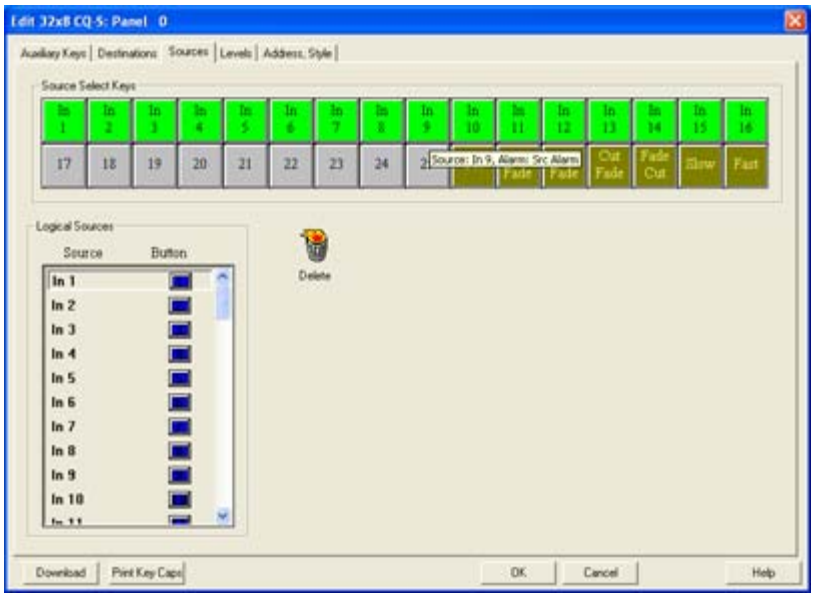


Figure 3-9. Sources Tab

3. Click on the push button labelled “Slow.” The Edit Button Function window will appear.
   a. Click **Configure**. The Parametric Controlling Setup window will appear.
   b. Highlight the parametric setting listed, and then click **Edit**.
   c. Change the value in the Value drop-down list box to whatever slow speed you prefer. The default speed is 30 frames.
   d. Click **OK** until you reach the Sources tab again.
4. Click on the push button labelled “Fast.”
   a. Click **Configure**. The Parametric Controlling Setup window will appear.
   b. Highlight the parametric setting listed, then click **Edit**.

c. Change the value in the Value drop-down list box to whatever fast speed you prefer. The default speed is 10 frames.

d. Click **OK** until you reach the Sources tab again.

5. Select the Address, Style tab. Panel information should appear as shown in Figure 3-10.

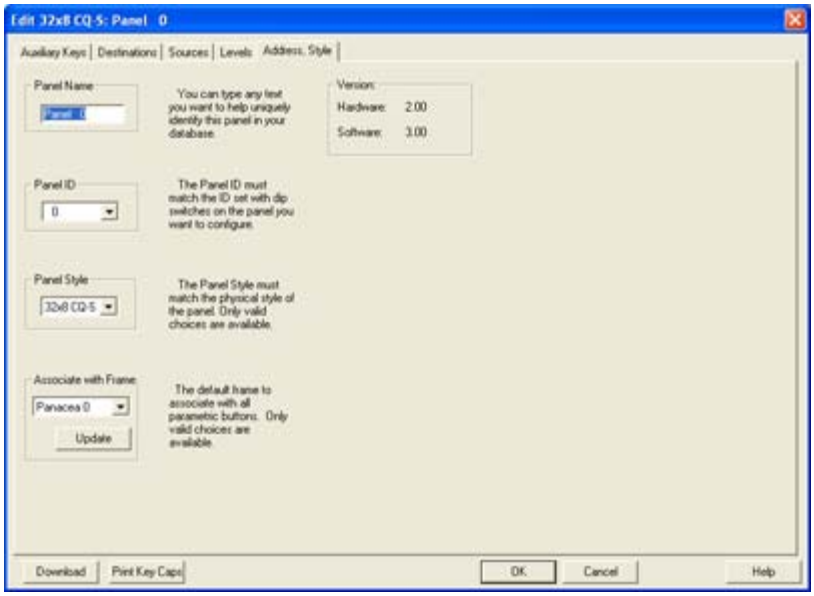


Figure 3-10. Address, Style Tab

6. If necessary, print key cap legends as shown by clicking **Print Key Caps**. (A specialized key caps legend software template [in Microsoft® Visio®[1] and PDF formats] is available on the RouterMapper software CD.)

7. Click **OK**. You will return to the RouterMapper main menu window.

   If you made changes on any of the panel tabs, a message ("Needs Download") will appear next to the panel name listed on the RouterMapper main menu window. Highlight the appropriate device and click **Download** to download the revised settings.

Clean Switch Autotiming

To autotime all connected inputs:

1. Right click on the Panacea Clean/Quiet switch router entry.
2. Select **Parametric Settings…**.
3. Select the Clean Switch tab.
4. Click on the **Refresh** button to get the current source's vertical and horizontal timing, and the status of the source's autotiming.

[1] "Visio" is a registered trademark of Microsoft Corporation.

5. Verify that sources to be timed appear as ENABLE in the Availability column. (Autotiming status of each source is shown in the Availability column.)
6. Click **Auto Timing**.

Note

To enable or disable inputs that do not have source connections:
Select the source line.
Click **Enable** to include the source in the Autotime sequence.
OR
Click **Disable** to remove the source from the Autotime sequence.

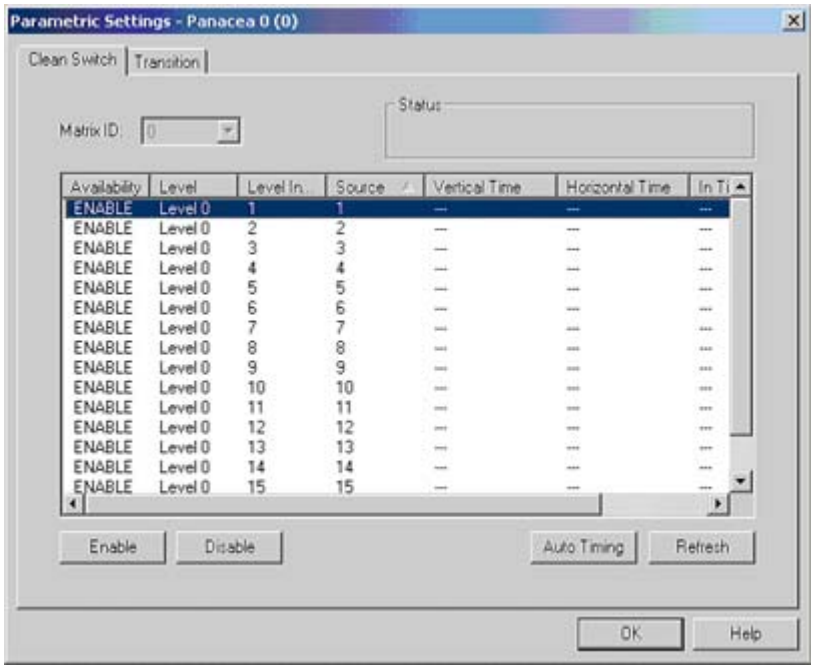


Figure 3-11. Clean Switch Tab

The In Time column will show you if sources are within the required timing window. The Vertical Time and Horizontal Time columns will indicate the actual timing.

- If a "No" appears in the In Time column or the Vertical Time and Horizontal Time columns contain dashes (–), autotiming can take place:
  - Click **Auto Timing**.
  - Wait for the autotime to take place (approximately 30 seconds). Sources out of time will blink on the front panel.
  - Click **Refresh**.
- If the In Time column still displays a "No" or if dashes still appear in the Vertical Time and Horizontal Time columns, check sources and source timing.

Note

"Refresh" is required for any updated information to be displayed accurately. Timing information is only updated during the Autotime sequence.

7. Select the Transition tab, and then click **Refresh**. The factory default transition duration will appear.

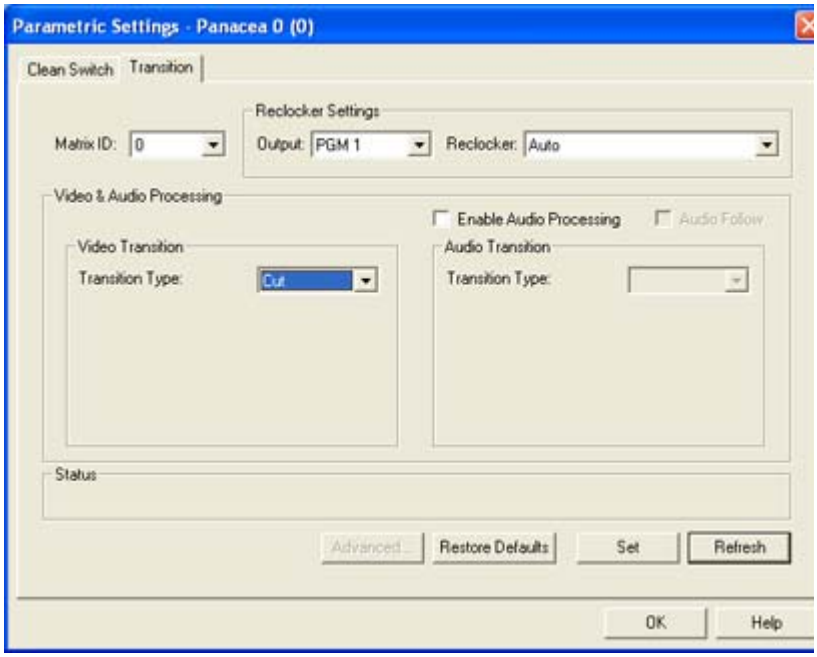


Figure 3-12. Transition Tab

If you want to set a different transition duration, click on the Transition Duration bar and slide it to the desired rate (both seconds and frames are indicated). The transition duration change will apply to all transitions except **Cut**, which does not have a duration.

8. By default, audio effects is set to Pass-Through so it will always cut, regardless of the video transition. To allow other transitions:
   a. Click **Advanced**. The Parametric Audio Settings tab will appear.
   b. If necessary, click the Effects tab.
   c. Click **Refresh** to reset the tab entries to their defaults.
   d. In the Output drop-down list box, select PGM 1.
   e. Select the radio button next to a group associated with PGM 1. (Each group contains four audio channels.)
   f. From the Channel 1 & 2 and the Channel 3 & 4 drop-down list boxes, select "Pass Through (Transition)."
   g. Repeat steps e and f for each group associated with PGM 1.
   h. If necessary, in the Output drop-down list box, select PGM 2.
   i. Select the radio button next to a group associated with PGM 2.
   j. From the Channel 1 & 2 and the Channel 3 & 4 drop-down list boxes, select "Pass Through (Transition)."
   k. Repeat steps i and j for each group associated with PGM 2.
9. Click **Set** to accept the changes you made in the Transition tab.

Note

If you are not using PGM 2, skip to step 9.

10. Click **OK**. You will return to the RouterMapper main menu window.

    If you made changes to the transition duration, a message ("Needs Download") will appear next to the router or panel name listed on the RouterMapper main menu window. Highlight the appropriate devices and click **Download** to download the revised settings.

Chapter 4

Operation

Overview

Note

At power up the R(PL)CP-32×8CQp source timing alarms will default to enabled. This will result in blinking source buttons for all sources that are not within a one-line buffer window. The Panacea clean/quiet routing switcher will perform an Autotime at power up and whenever requested through RouterMapper configuration utility application software. If there is not a source connected on an input, the alarm can be disabled on each separate source button through RouterMapper. See the *RouterMapper Configuration Utility Reference Guide* for more details.

This chapter contains the following topics:

The default configurations are set via the PC programming mode.

Programming for PC Programming Mode

RouterMapper is used to define a database describing the routing switcher and then used to define panels, assigning sources and destinations to each panel as required. RouterMapper also allows the operator to set other functional aspects of the control panels, such as the operation of the two function keys.

Once a panel has been defined by RouterMapper, its configuration is downloaded to non-volatile memory within the actual panel via the serial port and control network, at which time RouterMapper is no longer required and may be removed from the system. RouterMapper can also be used to print key cap inserts for all of the Function, Source Select and Destination Select keys on the control panel. This feature will ensure that buttons on panels will accurately represent the actual programming of the panels.

Because a panel's downloaded configuration is stored in non-volatile memory it will not be lost if the panel loses power. RouterMapper can also save a panel's configuration to a disk file. This disk-based definition can later be retrieved to program other panels, make future adjustments to this panel, or as a backup in case the configuration is lost.

Router Database Definition

RouterMapper allows you to create a database that fully describes the routing system. Once created, the database is used as the basis for the definition of control panels.

The router database includes the following information.

Table 4-1. Router Database Definitions and Descriptions

Router Database Definition	Description
Level size and name	Specifies the size and assigns an 8-character name to each level.
Source definitions	Assigns an 8-character name and optional icon to each source. Defines which physical input on the router each source represents.
Destination definitions	Assigns an 8-character name and optional icon to each Destination. Defines which physical output on the router each destination represents.

Control Panel Definition

A control panel definition is maintained for each separate panel located on the network. Multiple panels sharing the same Panel ID will share a common definition.

The R(PL)CP-32×8CQp local and remote control panels feature two function keys located on the right side of the panel. In PC programming mode the function of these two keys can be assigned to any of the functions described in Table 4-2.

Table 4-2. Control Panel Function Keys

Function Key Description	Definition
Clear	Aborts a pending Take operation. Used only in conjunction with the Take key as defined above.
Destination Lock	Allows the operator to lock and unlock a router destination (output). A locked destination cannot have its source changed.
Destination Protect	Allows the operator to protect a router destination. A Destination Protect is similar to a Destination Lock, except that a protected destination can be changed from the panel that originally protected the destination.
Panel Enable	Allows the panel to be enabled and disabled. When enabled, the panel functions normally allowing sources to be selected, salvos to be fired and commands to be executed. When disabled source selections are not performed, but a source poll is performed instead.
Panel Status	Provides indication of whether the control panel is connected to a routing switcher or not. The Panel Status key will light if the panel is connected to a routing system and be extinguished if the panel is not connected to a routing system. Pressing the key will have no effect.*

Table 4-2. Control Panel Function Keys *(Continued)*

Function Key Description	Definition
Shift	Requires the operator to press the Shift key to execute salvos. This scheme is meant as a safeguard against accidentally firing a salvo. Salvos can be dangerous since they can potentially affect any or all destinations on the routing switcher.
Take	Requires you to press the Take key to execute any source selection for each destination choice.**

* The time interval that is used to check for the presence of the system can be set in a file called "editrtr.ini" in the Windows directory. The "**StatusButnInterval**" entry in the [Preferences] section of the file allows the operator to adjust the interval in 0.1 second increments. The default value is 5, or half a second. Polling the router system periodically will use the bandwidth of the X-Y bus control system. The **PanelStatus** button should be used sparingly to allow plenty of bandwidth for other operations such as firing Salvos.

** In the Program/Preview configuration, the **Take** button must be pressed for each source selection.

Destination Selection Key Assignments

One of the more powerful features of the programmable control panels is the ability to assign or map each selection key on the panel. In the case of the Destination Selection keys, the mapping feature allows panels to be given access to only specific destinations and denying access to destinations that a user of this panel should not be able to change. Selection keys need not be assigned in any particular order. The layout of each panel can be optimized for its specific use. It is possible to leave some keys unassigned if a panel includes more Destination Selection keys than the panel requires access to. Unassigned selection keys will not do anything if pressed.

Source Selection Key Assignments

As with the Destination Selection keys, the Source Selection keys may be assigned to any of the sources defined in the router database. Different panels can be given access to different sources and the sources can be assigned in different orders.

Salvo Firing Keys and Salvo Definitions

Using the panel configuration editor, it is possible to define a source selection key to fire a salvo instead of selecting an input. Salvos are pre-defined sequences of source and destination assignments.

A salvo is defined using an ASCII format file, where each line indicates what source is connected to what destination on what level(s). Refer to the RouterMapper manual for details on creating and editing salvo definitions.

Panel Name

A panel can be assigned a 15-character name. The Panel Name makes it easier to identify panels, and allows them to be described. (Examples of panel names are “Edit Suite A” for a panel located in “Edit Suite A,” or “Sat Rx Room” for a panel located in the satellite receiver room.) The Panel Name is also used by RouterWorks when it describes which panel owns a lock.

Operating by PC Programming Mode

Operation of the programmable panels in the PC configuration mode is summarized in the figures and in the text that follows. Full details of RouterMapper are provided in the *RouterMapper Configuration Utility Reference Guide*.

Two function keys are located on the right side of the programmable panel series control panels. These keys may be programmed for any two of the following functions:

- Clear
- Destination Lock
- Destination Protect
- Panel Enable
- Panel Status
- Shift
- Take

The operation of a specific panel will depend on how its function keys have been defined. The operation of all keys are described in the figures and tables that follow.

Standard Clean/Quiet Switch Control Panel Configuration

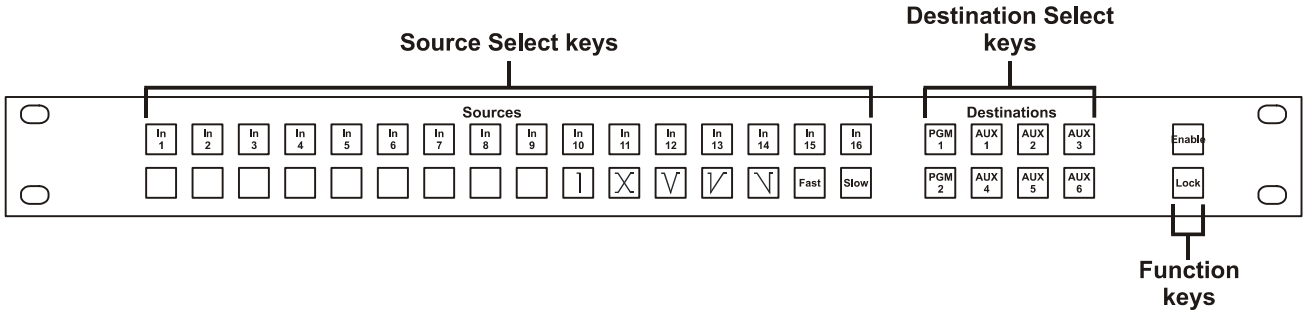


Figure 4-1. Panel Operation, PC Programming Mode: Standard Clean/Quiet Switch Configuration

Table 4-3. Standard Clean/Quiet Switch Configuration

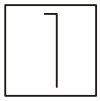
Key	Description
Destination Select	Can be assigned to any destination in the routing system Allows preventing specific panels from accessing specific destinations by not assigning restricted destinations Mapping can vary from panel to panel
Source Select	Can be programmed for these functions:
Source Selection	Can be mapped to any source in a router; mapping can vary from panel to panel
Firing Salvo	Can be assigned to execute (“fire”) a preprogrammed salvo
Source Status	Provides indication of whether or not the source is in time when selected
Function keys	Assignable to any two functions:
Destination Lock (default)	Locks current destination so that it cannot be changed from this or any other control panel
Destination Protect	Protects current destination so that it cannot be changed from this control panel (destination appears locked to other panels)
Panel Enable (default)	Enables or disables the control panel
SHIFT	Requires that the Shift key be used to fire salvos (i.e., hold down the Shift key while pressing the Salvo key)
TAKE	Requires that the Take key be pressed to complete each source selection
Additional function keys (Parametric)	
	Cut — Cuts from current source immediately into next source
	Crossfade — Performs a dissolve from current source to next source

Table 4-3. Standard Clean/Quiet Switch Configuration *(Continued)*

Key	Description
	V Fade — Performs a fade-to-black from current source and a fade-from-black to next source
	Cut Fade — Performs a cut from current source and fade to next source
	Fade Cut — Performs fade from current source to black, and cut into next source
	Fast — Sets transition duration for Crossfade, V Fade, Cut Fade, and Fade Cut to the number of frames specified in the RouterMapper setup
	Slow — Sets transition duration for Crossfade, V Fade, Cut Fade, and Fade Cut to the number of frames specified in the RouterMapper setup

Control Key Configuration

Destination Select

Note

This function is the default selection on the default and the standard clean switch/quiet switch configurations. It is not applicable to the Program/ Preview configuration.

The Destination Select keys are used to select the panel's current destination. At any given time a control panel is providing the status for, and allowing selection of sources on its current destination.

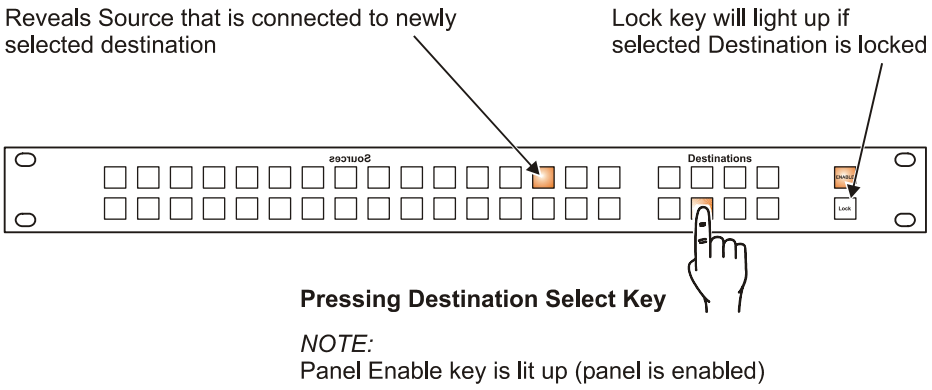


Figure 4-2. Selecting Current Destination

- Pressing a Destination Select key changes the panel's current destination and causes the Source Selection key representing the source connected to the destination to be lit.
- Pressing a Destination Selection key does not cause crosspoint changes.

- If the panel is configured to include Lock as one of its function keys, and the selected destination is locked, then the Lock key will be lit up.

Source Selection

Note

This function is the default selection on the default and the standard clean switch/quiet switch configurations. It is not applicable to the Program/ Preview configuration.

When configuring a control panel using the PC programming mode, each of the Source Selection keys can be defined for either of the following:

Table 4-4. Source Selection Keys and Definitions

Source Selection Key	Definition
Source Selection	Selects source on current destination.
Salvo Firing	Causes a preprogrammed salvo sequence to be executed.

Figure 4-3 on page 48 shows how to operate a Source Selection key configured for source selection.

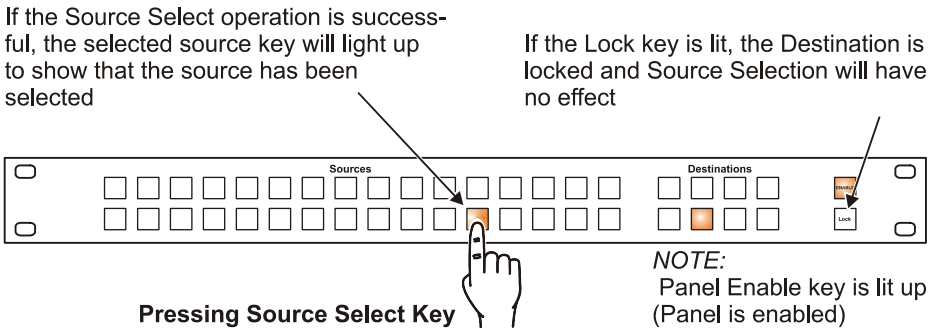


Figure 4-3. Selecting Sources

Operation of the Source Selection keys configured for salvo firing is described in "Salvo Firing" on page 49.

Each Source Select key represents a source which can be switched (connected) to the currently selected destination. The panel lights up the Source key that is currently connected.

Pressing a Source Select key will send a command to the router frame(s) to switch the source to the currently selected destination. Once the switch has physically occurred in the router, the Source Select key that was pressed will light up. If the destination is locked, pressing a Source Select key will have no effect; the previously connected source will remain connected and its Source Selection key will remain lit. If the router frame does not respond to the command the switch will not occur and all Source Selection keys will be extinguished.

In a multilevel routing system only the levels defined by the router database's definition of the source and the panel's level settings will be affected.

Salvo Firing

A salvo is a preprogrammed switch sequence potentially involving multiple destinations. Salvo Firing keys are actually Source Select keys that have been programmed via RouterWorks to fire salvos.

To fire a salvo, press the corresponding Salvo Firing key. Once the operation is complete the panel will show the last selected current destination and its status.

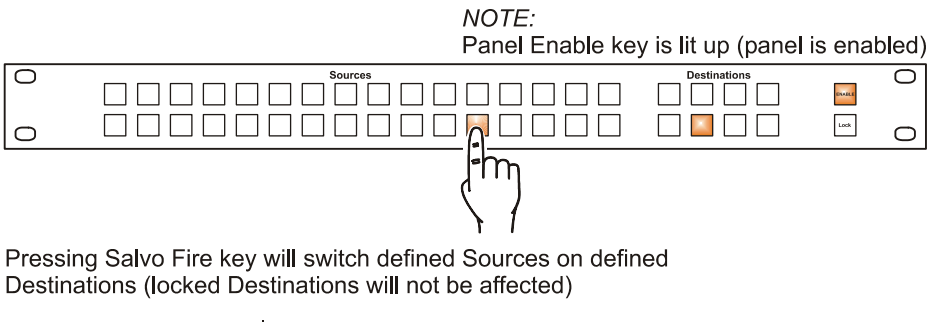


Figure 4-4. Firing Salvos

Firing a salvo is a potentially dangerous operation since it is possible for a salvo to effect not only the currently selected destination but many others as well. To prevent accidental firing of Salvos it is possible for the firing of salvos to require a two handed, shift-select Salvo operation.

Salvo Firing on Panels Configured with Shift Key

If the panel has been configured with a Shift key, hold down the Shift key, then press the Salvo Firing key to fire the salvo.

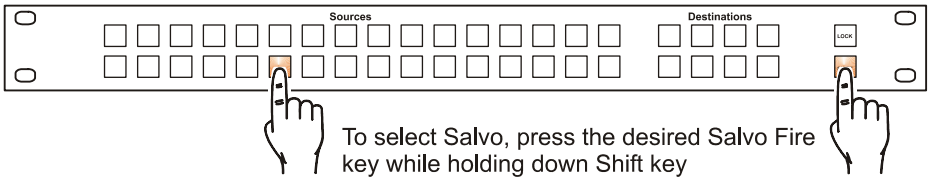


Figure 4-5. Firing Salvos on Panels with a Shift Key

Take Operation of Source Selection and Salvo Firing

If a control panel has been programmed to include a Take key then source selection will not take place until the Take key is pressed. When a Source Selection is pressed, the Source key begins to flash along with the Take key, indicating that an operation is preset and pending. To complete the operation, press the Take key once. Once the Take has been made, the Take key will no

longer be lit up. If the Take key is not pressed within one minute of it beginning to flash, then the panel will time out (i.e., return to the state it was in before the Source Selection key was pressed) and thus cancel the operation. If the Clear key is pressed, the pending crosspoint operation is aborted. (See Figure 4-6 on page 50.)

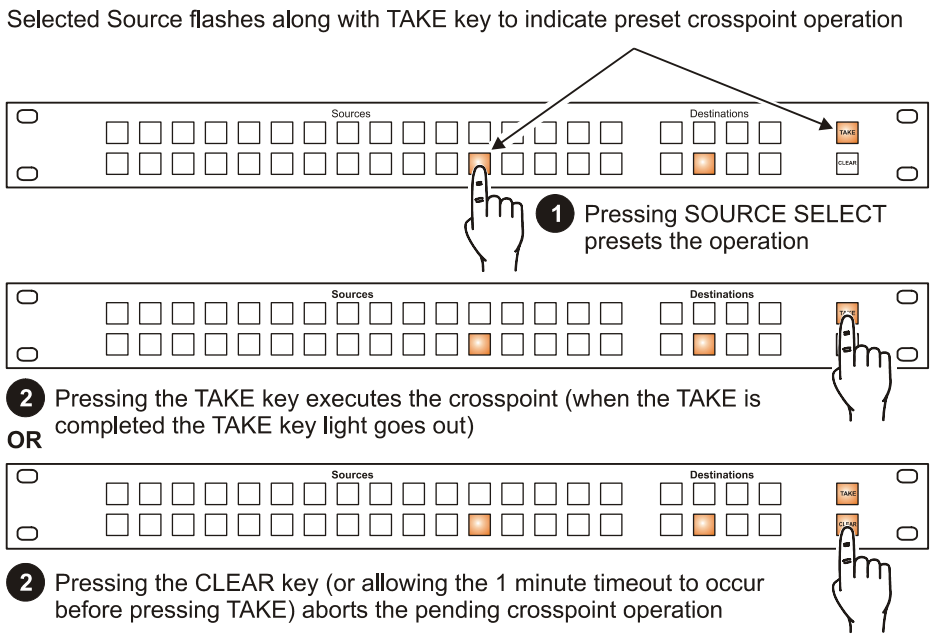


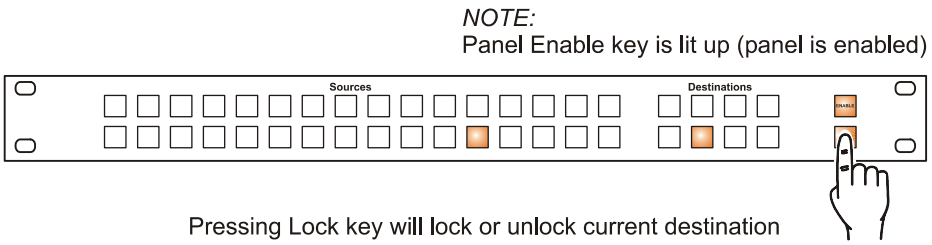
Figure 4-6. Take Operation

Destination Lock

The Destination Lock key is used to lock and unlock the currently selected destination. When a destination is locked, sources cannot be selected from this or any other control panel on the control network. The actual status of a destination lock is stored in the router frame rather than in the control panel, thus ensuring that once locked a destination cannot be changed by any panel.

The Destination Lock key is lit up if the currently selected destination is locked. If the destination was locked by this panel or another panel sharing the same Panel ID then pressing a lit Destination Lock key will unlock the destination.

If the destination was locked by another panel (a panel with a different Panel ID), pressing the Destination Lock key will not unlock the destination. In this “locked elsewhere” situation, pressing the Destination Lock key will cause the key to blink for approximately 5 seconds, indicating that the destination has been locked by another panel. At the end of the 5 second period the Destination Lock key will return to the lit condition continuing to indicate that the destination is locked. To unlock a destination one must press the Destination Lock key of the panel that originally locked the destination or perform a Destination Lock override.



Previous State of Destination Lock	Effect of Pressing Lock Key
NOT LOCKED (not lit)	Destination becomes locked, Lock key lights up
LOCKED (lit up)	Destination becomes unlocked, Lock key turns off

Figure 4-7. Operational Summary: Destination Locks

Overriding a Destination Lock

The goal of the destination lock feature is to protect the operator from accidentally selecting a source on a destination (bus) that has been locked. To prevent users from locking a destination and not being able to find the panel that originated the lock, the panels incorporate a feature by which a destination lock can be overridden.

To override a Destination Lock that was set by another panel (panel with a different Panel ID):

- Press and hold the lock key until it stops blinking (about 5 seconds).
- At the end of the 5 second period the Destination Lock key will no longer be lit up, which means that the destination is no longer locked.

Special Notes Regarding Destination Lock Operation

You may configure a system in which some of the panels have a Destination Lock key while others do not. Panels without a Lock key will still be prevented from affecting crosspoints on destinations that have been locked. Because they lack a Lock key these panels will not show the status of a lock, and will not be able to unlock or override the lock.

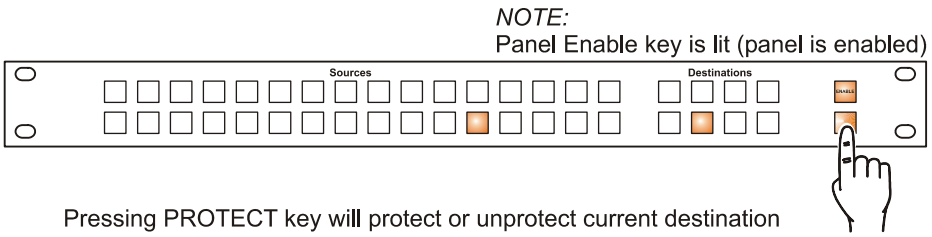
If multiple panels are given the same Panel ID the operation of the Destination Lock is compromised slightly. If two panels share the same Panel ID they will appear to the routers as the same control panel. It will thus be possible for a panel to lock a destination and have another panel which shares the same Panel ID to unlock it by simply pressing its Destination Lock key.

Destination Protect

The Destination Protect key works much like the Destination Lock key with one important exception: Protecting a destination prevents other panels (panels with different Panel IDs) from changing sources on this destination, but allows this panel and other panels sharing the same Panel ID to make crosspoint changes. A Destination Protect is used to prevent other panels from changing a given destination without affecting the operation at the panel that originated the protect. When a destination is protected it appears protected to the panel that initiated the protect operation and locked to all other panels (any panel that does not have the same Panel ID as the panel which protected the destination).

The Destination Protect key is used to protect and unprotect the currently selected destination. When a destination is protected the Destination Protect key will illuminate on the control panel which set the destination protect. The Lock keys of other control panels will illuminate thus conveying the fact that to them this destination is locked.

If the destination was protected by this panel or any panel sharing the same Panel ID, press the Destination Protect key to “unprotect” the destination.



Previous State of Destination Protect	Effect of Pressing Protect Key	
	On this panel and other panels sharing same Panel ID	On other panels (panels with different Panel IDs)
NOT PROTECTED (Not lit up)	Destination becomes protected, Protect key lights up	Destination becomes locked, Lock key lights up
PROTECTED (Lit up)	Destination becomes unprotected, Protect key turns off	Destination becomes unlocked, Lock key turns off

Figure 4-8. Operational Summary: Destination Protects

Panel Enable

The Panel Enable key is used to enable and disable a panel.

- If a panel’s Enable key is lit, the panel is enabled.
- If the Enable key is not lit, the panel is disabled.

When a panel is enabled it will operate normally. These keys will all function as described in the preceding sections:

- Destination Lock
- Destination Protect
- Destination Select
- Salvo Firing
- Source Select

When disabled, a panel will not change crosspoints, fire a salvo, or lock/protect a destination.

- Pressing the Lock, Protect, Shift, or Take keys will have no effect.
- Pressing a Source Selection key will not cause a crosspoint switch, but will provide a Source Poll as described below.
- Pressing a Destination Selection key will change the current destination.

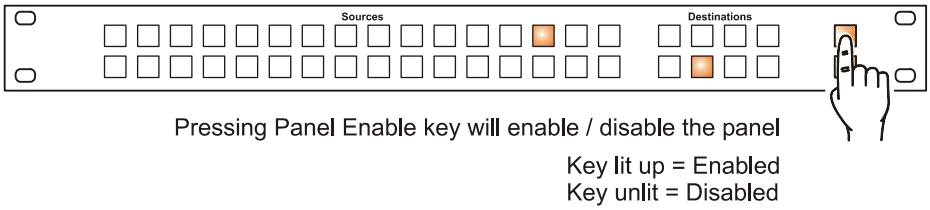


Figure 4-9. Panel Enable

Source Polling

Pressing a Source Select key when the panel is disabled will cause all of the Destination Select keys of the destinations to which the pressed source is routed to be lit. This operation is commonly known as Source Polling because it inquires about the status of a particular source. A Source Poll operation allows a user to quickly establish to what destination(s) a given source is connected.

Source polling is a status-only operation which does not cause any crosspoints to change in the system.

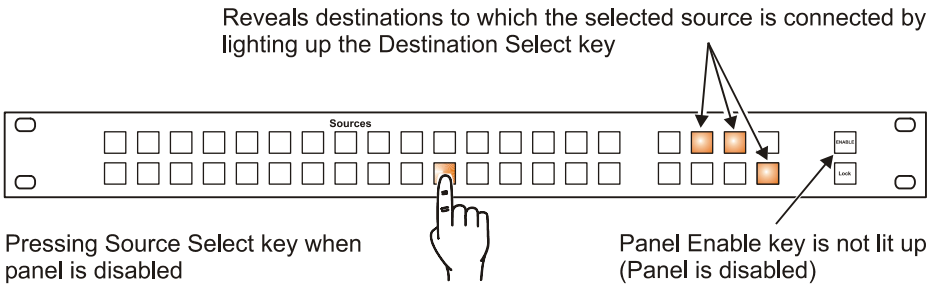


Figure 4-10. Source Polling

Panel Status

The Panel Status key is used to indicate whether or not a control panel is connected to a routing switcher system. The Panel Status key will light, if the panel is connected to a routing system and the key will be extinguished, if the panel is not connected to a routing system. Pressing the Panel Status key will have no effect.

This function is appropriate in installations where panels are frequently connected and disconnected from routing switcher systems or when a panel is connected via a dedicated phone line or satellite feed. When a panel is configured to include the Panel Status key, it will periodically poll the control bus to see if the routing switcher is present. If the routing switcher responds, the Panel Status key will be lit indicating the panel is operational. If the routing switcher does not respond, the Panel Status key and all other keys on the panel will be extinguished, and the panel will not be operational. The panel continues to poll the routing switcher system, even if the previous poll attempt failed. In the event that the panel is eventually reconnected to a router, the panel will wake up and the Panel Status key, the current destination and the source keys will once again be lit indicating that the panel is operational.

It is possible to change the polling interval used to determine the Panel Status. To change the polling interval edit the file C:\windows\editrtr.ini using Microsoft® Notepad or a similar text editor. The **StatusButnInterval** setting controls the period of time used between polls to the router system. This setting is in 0.1 second intervals. The default value is 5 for 0.5 seconds.

```
; The StatusButnInterval setting controls the period of time
; used between polls to the router system when a Status button
; has been assigned to a control panel. This setting is in
; 0.1 second intervals. The default value is 5, or half a
; second.

StatusButnInterval=5
```

Figure 4-11. Setting a New Polling Interval Time

The entry in the editrtr.ini file should look like **`StatusButnInterval=5`**.

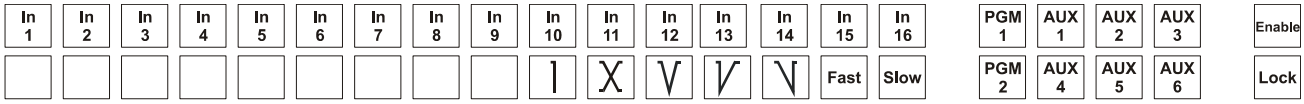
To change the polling interval, simply change the value after the “=” sign.

Performing a Routing Matrix Switch

Note

Transitions are available only on PGM 1 and PGM 2 outputs.

1. Connect the monitoring devices to the output under test.
2. From the control panel:
   - Select destination (i.e., PGM 1)
   - Select transition (i.e., V fade)
   - Select transition duration (i.e., Slow)
   - Select source (i.e., Source 2)
3. The source connected to Source 2 should show a transition on the monitoring device with a slow “V” fade from its previous source. The audio for this source should also show a transition with a slow “V” fade to the audio of Source 2.
4. Continue with destination, transition, and source selection as desired.



16x8 Clean Switch Panel with Full Control of Aux Buses

Figure 4-12. Router Operation

Chapter 5

Specifications

Overview

All specifications and designs are subject to change without notice.

This chapter contains following specification tables:

- Electrical
- Mechanical
- Input/output

Table 5-1. R(PL)CP-32×8CQp Electrical Specifications

Item	Specification
Input	1RU portable desktop power supply (rear mount AC power supply module available as an option)
Desktop power supply	Universal input 47-63 Hz, 70 W AC: 100-240 VAC DC: –36 to –72 VDC
Output	15 VDC
Total power	70 W
Performance temperature	41° – 104°F (5° – 40°C)
Operating temperature	32° – 122° F (0° – 50°C)

Table 5-2. R(PL)CP-32×8CQp Mechanical Specifications

Item	Specification
Size	19 in.×5.25 in.×1.75 in. (48.3 cm×13.3 cm×44 cm)
Weight (fully loaded)	5 lb (2.3 kg)
Indicators	Power/alarm LED Data LED

Table 5-3. Input/Output Signal Specifications

Item	Specification
RS-232/RS-422 serial communication	DB-9 pin connector
Alarm/comm port	Leitch/Harris 3-pin connector
X-Y (coaxial communication)	75Ω BNC
Sync	75Ω BNC
Ethernet	RJ-45

Appendix A

Safety Precautions, Certifications, and Compliances

Overview

Carefully observe the safety alert symbols below for dangers, warnings, and cautions. They alert installers and operators of possible dangers or important information contained in this manual.

Keep in mind, though, that warnings alone do not eliminate hazards, nor are they a substitute for safe operating techniques and proper accident prevention measures.

Any user-serviceable components (such as fuses or batteries) are only replaceable by those components listed in the manual.

IMPORTANT! Only qualified personnel should perform service procedures.

Safety Terms and Symbols in this Manual

WARNING

Statements identifying conditions or practices that may result in personal injury or loss of life. High voltage is present.

CAUTION

Statements identifying conditions or practices that can result in damage to the equipment or other property.

Safety Terms and Symbols on the Product

DANGER: *High voltage and indicates a personal injury hazard immediately accessible as one reads the marking.*

WARNING: *Indicates a personal injury hazard not immediately accessible as one reads the marking.*

CAUTION: *Indicates a hazard to property, including the product, or to pay attention and refer to the manual.*

Protective ground (earth) terminal.

Fuse. *Replace with same type and rating of fuse.*
Zur Vermeidung von Feuer verwenden Sie nur Sicherungen mit der für dieses Produkt geforderten Typ und Stromstärke.

Preventing Electrostatic Discharge

Observe precautions for handling electrostatic sensitive devices.

CAUTION: Electrostatic discharge (ESD) can damage components in the product. To prevent ESD, observe these precautions when directed to do so:

1. ***Use a Ground Strap.*** Wear a grounded antistatic wrist strap to discharge the static voltage from your body while installing or removing sensitive components.
2. ***Use a Safe Work Area.*** Do not use any devices capable of generating or holding a static charge in the work area where you install or remove sensitive components. Avoid handling sensitive components in areas that have a floor or benchtop surface capable of generating a static charge.
3. ***Handle Components Carefully.*** Do not slide sensitive components over any surface. Do not touch exposed connector pins. Handle sensitive components as little as possible.
4. ***Transport and Store Carefully.*** Transport and store sensitive components in a static-protected bag or container.

Injury Precautions

WARNING
Potentially lethal voltages are present within the frame during normal operation. The AC power cord must be disconnected from the frame before the top panel is removed. (In frames with multiple power supplies, remove ALL power cords.) Power should not be applied to the frame while the top is open unless properly trained personnel are servicing the unit.
Pull out the plug from the main socket before the removal of a cover.
Przod zdjeciem pokrywy wyciagnac wtyczke z gniazda sieciowego.

WARNING: *SHOCK HAZARD - DO NOT OPEN.*
AVIS: *RISQUE DE CHOC ÉLECTRIQUE - NE PAS OUVRIR.*
MOUNT IN RACK ONLY
I*NSTALLER SUR SUPPORT DE MONTAGE SEULEMENT.*

Use proper power cord

To avoid fire hazard, use only the power cord specified for this product.

Ground the product

This is a Safety Class 1 product and is grounded through the grounding conductor of the power cord. To avoid electrical shock, the grounding conductor must be connected to earth ground. Before making connections to the product's input or output terminals, ensure the product is properly grounded.
WARNING: *THIS APPLIANCE MUST BE GROUNDED.*
WARNING: *THIS APPLIANCE MUST BE EARTHED.*
VARNING: *APPARATEN SKALL ANSLUTAS TILL JORDAT UTTAG NÄR DEN ANSLUTS TILL ETT NÄTVERK.*

Do Not Operate Without Covers

To avoid electrical shock or fire hazard, do not operate this product with covers or panels removed.

Use Proper Fuse

To avoid fire hazard, use only the fuse type and rating specified for this product.

Do Not Operate in Wet/Damp Conditions

To avoid injury or fire hazard, do not operate this product in wet or damp conditions.

Do Not Operate in an Explosive Atmosphere

To avoid injury or fire hazard, do not operate this product in an explosive atmosphere.

Avoid Exposed Circuitry

To avoid injury, remove jewelry such as rings, watches, and other metallic objects. Do not touch exposed connections and components when power is present.

Product Damage Precautions

CAUTION:

Disconnect power from the frame before removing or installing input/ output modules. Removing or installing modules with power applied could cause serious damage to system components.

Use Proper Power Source

Do not operate this product from a power source that supplies more than the specified voltage.

Use Proper Voltage Settings

Before applying power, ensure that the line selector is in the proper position for the power source being used.

Provide Proper Ventilation

To prevent product overheating, provide proper ventilation.

Do Not Operate With Suspected Failures

If you suspect there is damage to this product, have it inspected by qualified service personnel.
CAUTION: This unit can have more than one power supply cord. To de-energize the internal circuitry, you have to disconnect all power cords.
ADVARSEL: Utstyret kan ha mere ennn en tilførselsledning. For å gjore interne deler spennigsløse må alle tilførselsledningene trekkes ut.
VARNING: Denna apparat har mer än en nätanslutning. Samtliga nätkablar måste bortkopplas för att göra de interna kretsarna spänningsfria.

FUSE: REPLACE WITH SAME TYPE AND RATING OF FUSE.
CAUTION: REPLACE WITH SAME TYPE FUSE.
ATTENTION: UTILISER UN FUSIBLE DE RECHANGE DE MÊME TYPE.
CAUTION: DISCONNECT SUPPLY CORD BEFORE CHANGING FUSE.
ATTENTION: DÉBRANCHER AVANT DE REMPLACER LE FUSIBLE.
ACHTUNG: VOR AUSWECHSELN DER SICHERUNG IST DAS GERÄT VOM NETZ ZU TRENNEN.

CAUTION

Disconnect power from the frame before removing or installing input/ output modules. Removing or installing modules with power applied could cause serious damage to system components.

Use Proper Power Source

Do not operate this product from a power source that supplies more than the specified voltage.

EMC and Safety Standards

This product has been tested and found to comply with the following IEC, FCC, UL, ICES, and CSA standards, per the provision of the Electromagnetic Compatibility Directive 89/336/EEC of 3 May 1989 as amended by 92/31EEC of 28 April 1992 and 93/68/EEC, Article 5 of 22 July 1993, and the Low Voltage Directive 73/23/EEC of 19 February 1973.

EMC Standards

Table A-1. EMC Standards

EMC Standard	Description
EN55014	Limits and Methods of Measurement of Radio Disturbance Characteristics of Electric Motor-Operated and Thermal Appliances for Household and Similar Purposes, Electric Tools, and Similar Electric Apparatus
EN55022	Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Equipment-Class A
EN55103-1	Electromagnetic Compatibility — Product Family Standard for Audio, Video, Audio-Visual, and Entertainment Lighting Control Apparatus for Professional Use — Part 1: Emission, Environment E4
EN55103-2	Electromagnetic Compatibility — Product Family Standard for Audio, Video, Audio-Visual, and Entertainment Lighting Control Apparatus for Professional Use — Part 2: Immunity, Environment E4
EN61000-3-2	Limits for Harmonic Current Emissions (Equipment Input Current Less Than or Equal to 16 A Per Phase)
EN61000-3-3	Limitations of Voltage Fluctuations and Flicker in Low Voltage Supply Systems for Equipment with Rated Current Less Than 16 A
EN61000-4-2	Electrostatic Discharge Requirements “ESD” 2 kV CD, 4 kV AD
EN61000-4-3	Radiated Radio-Frequency Electromagnetic Field Immunity Test 1 V/m {1 kHz 80% AM, 80-1000 MHz}
EN61000-4-4	Electrical Fast Transient Requirements “Burst,” 0.5 kV Sig. & Ctrl. Lines 0.5 kV a.c. & d.c. Power Line, 0.5 kV Functional Earth
EN61000-4-5	Surge Immunity Test 0.5 kV a.c. Power Line
EN61000-4-6	Immunity to Conducted Disturbances Induced by Radio Frequency Fields 1 V rms 0.15-80 MHz Sig. & Ctrl. Lines, 3 V rms 0.15-80 MHz d.c. Power Line, 1 V rms 0.15-80 MHz a.c. Power Line, 1 V rms 0.15-80 MHz Functional Earth
EN61000-4-11	Voltage Dips, Short Interruptions, and Voltage Variations- Immunity Tests

These devices are for professional use only and comply with Part 15 of FCC rules. Operation is subject to the following two conditions:

1. These devices may cause interference to radio and TV receivers in residential areas.
2. These devices will accept any interference received, including interference that may cause undesired operations.

Changes or modifications not expressly approved by Leitch Technology,™ the party responsible for compliance to the FCC Part 15 Rule, could void the user's authority to operate this equipment legally in the United States.

These devices do not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the interference standard entitled "Digital apparatus," ICES-003 of the Canadian Department of Communications.

Additional EMC Information

This device is for professional use in a controlled EMC environment, such as purpose-built broadcast studios.

EMC regulations require that the radiation emitted from this unit does not exceed certain limits. These limits are only met when the front panel is closed and the two thumb screws are secured.

Compliance to the EMC regulations is also dependent on the use of suitably shielded (screened) cables. Coax cables should be of the double-shielded (screened) variety. Unused BNCs should be fitted with 75Ω terminations.

All audio cables should be screened with the shield (screen) making good contact with the metallic parts of the cable connectors.

D-type connectors used with this unit should always have metallic shells with the shield (screen) of the cable mechanically bonded to the metal shell. It is further recommended that the D-type cable connectors be of the "dimple" variety. These connectors make a better contact and consequently improve EMC performance.

Safety Standards

Table A-2. Harmonized and Reference IEC Safety Standards

Harmonized Standard	Reference IEC Standard	Description
EN 60950:1992 with Am1, Am 2, Am 3, Am4, A11 amendments	IEC 60950:1991 (Modified)	Safety of Information Technology Equipment
EN 60950	IEC 60950:1999 (Modified)	Safety of Information Technology Equipment
	IEC 60950-1 (2001-10)	Information Technology Equipment Safety—Part 1: General Requirements
EN 60065	IEC 60065: 1998 (Modified) 6th Edition	Audio, Video, and Similar Electronic Apparatus Safety Requirements
	IEC 60065 (2001) 7th Edition	Audio, Video, and Similar Electronic Apparatus Safety Requirements
	Amendment 1 to IEC 60065 7th Edition	Audio, Video, and Similar Electronic Apparatus Safety Requirements
EN 60825-1:1999	IEC 60825-1:1993	Safety of Laser Products—Part 1: Equipment Classification, Requirements, and User's Guide
EN 60825-2:2000	IEC 60825-2:2000	Safety of Laser Products—Part 2: Safety of Optical Fibre Communication Systems
	IEC 60825-1 (2001-08) Edition 1.2	Safety of Laser Products—Part 1: Equipment Classification, Requirements, and User's Guide
UL 1419 (March 28, 1997	2nd Edition	Standard for Professional Video and Audio Equipment
UL 6500 (September 30, 1999)	2nd Edition	Standard for Audio/Video and Musical Instrument Apparatus for Household, Commercial, and Similar General Use
UL 60950 (December 1, 2000)	3rd Edition	Safety of Information Technology Equipment
CAN/CSA-C22.2 No. 60950-00		Safety of Information Technology Equipment (Bi-National Standard, with UL 60950)
CAN/CSA-E60065-00		Audio, Video and Similar Electronic Apparatus Safety Requirements (Adopted IEC 60065:1998, 6th Edition, with Canadian Deviations)
CAN/CSA-C22.2 No. 1-98		Audio, Video, and Similar Electronic Equipment
CSA C22.2 No. 1-98 including Am1 (June, 2003)		Audio, Video, and Similar Electronic Equipment

Appendix B

Terminal Operations

Overview

This section contains general information concerning configuration of the R(PL)CP-32×8CQp communication ports. The *Leitch/Harris Serial Protocol Reference Manual* contains detailed information concerning Leitch/Harris terminal protocol and X-Y commands.

Terminal Operations

Note

The PLCP-32×8CQp has only one serial port; its functionality is the same as described for the RCP-32×8CQp.

Two separate serial control ports are used to connect to an RCP-32×8CQp from an external computer or automation system. Either serial port may be used to monitor the system configuration, determine the current status of crosspoint connections, change crosspoint connections in any matrix, and setup pre-programmed crosspoint takes sequences, or salvos. These (and other) operations are assigned to the serial ports via a series of commands called "terminal operation" commands. You can find a list of the startup commands available for the R(PL)CP-32×8CQp on page 73.

Establishing a Terminal Operation Session

The particular settings for your operation are selected via a series of configuration startup commands. You can find a list of the startup commands available on page 73. In addition, the configuration scenarios listed in Chapter 3, *Configuration* cite specific needed terminal commands.

Before you configure your R(PL)CP-32×8CQp you will need to initiate a terminal operation session. You need to determine which type of setup you will use:

- For a standalone system with serial connections, see "Establishing a Terminal Operation Session for Serial Control Interface Products" on page 68.
- For a standalone system with Ethernet connections, see "Establishing a Telnet Session for Ethernet Control Interface Products" on page 69.
- For a network system with serial connections see "Establishing a Terminal Operation Session for Serial Control Interface Products" on page 68 and "Network Configuration from Terminal Control Mode" on page 69.
- For a network system with Ethernet connections see "Establishing a Telnet Session for Ethernet Control Interface Products" on page 69 and "Network Configuration from Terminal Control Mode" on page 69.

Establishing a Terminal Operation Session for Serial Control Interface Products

1. Configure a host machine (such as a PC with HyperTerminal[1] installed) for serial port communication at a baud rate of 9600 with these settings: Data on the serial control port is encoded as **8N1**:
   - 8
   - None
   - 1
   - No flow-control

[1] HyperTerminal, a product of Hilgraeve Inc., is a communications applet that ships with Windows 95/98 and Windows NT 4.0.

2. Ensure that the R(PL)CP-32×8CQp DIP switch SW3 is set as follows:

   1 = OFF (down position)
   2 = OFF (down position)
   3 = OFF (down position)
   4 = OFF (down position)
   5 = OFF (down position)
   6 = OFF (down position)
   7 = OFF (down position)
   8 = OFF (down position)

3. Connect a null modem serial cable from a PC serial port to the R(PL)CP-32×8CQp port labeled SERIAL1.
4. Connect the R(PL)CP-32×8CQp Ethernet port to the router network.
5. Connect the R(PL)CP-32×8CQp X-Y to the router network.
6. Start up both PC and terminal emulation application.
7. Apply power to the R(PL)CP-32×8CQp box. The Command Summary screen should appear on the PC screen.

Caution

Make sure the X-Y network is terminated appropriately.

Establishing a Telnet Session for Ethernet Control Interface Products

Follow these steps to establish a Telnet session to the R(PL)CP-32×8CQp **if the Telnet application is resident on a PC:**

1. Connect an Ethernet crossover cable between the 10Base-T connector on a PC to the 10Base-T connector on the PLCP-32×8CQp/RCP-32×8CQp.
2. Change the IP address of your PC to a static IP address compatible with the PLCP-32×8CQp/RCP-32×8CQp IP address.
3. At a DOS prompt, enter the word "telnet" and the IP address of the PLCP-32×8CQp/RCP-32×8CQp box (e.g., **telnet 192.168.100.250**).
4. Press <**Enter**>. The Telnet screen will appear.
5. Enter your login, then press <**Enter**>.
6. Enter your password, then press <**Enter**>.
7. The startup screen and the message "**Type Q for menu**..." will appear.
8. Type in the letter "**Q**" (it will not appear on the screen), then press <**Enter**>. The Command Summary screen will appear. (See page 72 for an example of the Command Summary screen.)

Note

Invoking Telnet commands requires a valid username and password. The default username is **leitch** and the default password is **leitchadmin**. You should change these defaults to ones that are more meaningful for your organization.

Once a Telnet session is established, you will have access via the Telnet interface to the commands listed in this section. Also see "Telnet Interface" on page 70 for more information.

Network Configuration from Terminal Control Mode

The R(PL)CP-32×8CQp is ready to process user commands whenever you see the prompt ">." All user-entered commands should be followed by a carriage

return. The R(PL)CP-32×8CQp comes preconfigured with a network MAC address. However, you must configure the IP, GATEWAY, and NETMASK parameters to have basic network control of the EDGE.

The following are network configuration commands (commands are in bold). Please use your proper network settings accordingly. The network parameters in these examples are fictitious and should not be used. If you are not sure of the proper network addresses to use, consult your Network System Administrator. From the terminal program, issue these commands when a ">" (prompt) is seen below the Command Summary window:

```
>SET IP1=192.168.127.33
>
>SET GATEWAY1=192.168.127.1
>
>SET NETMASK1=255.255.255.128
>
>SAVE SYSCONFIG
Saving SysConfig.xml
Save complete.

>
```

You may review the network settings with the following terminal commands:

```
>show ipdisplay
Active:
Ip Address: 192.168.127.33
Gateway Address: 192.168.127.1
Netmask Address: 255.255.255.128
Mac address 00-90-F9-00-22-F3
Stored:
Ip Address: 192.168.127.33
Gateway Address: 192.168.127.1
Netmask Address: 255.255.255.128
Mac address 00-90-F9-00-22-F3
>
```

Note

"Active" settings are the ones that the R(PL)CP-32×8CQp currently uses. "Stored" settings are the ones that will be used the next time the control panel is started up. The numbers will be different if the IP address is changed.

This completes network configuration of the R(PL)CP-32×8CQp. For IP changes to take effect, the R(PL)CP-32×8CQp should be restarted, type the reboot command at the terminal prompt:

```
>REBOOT
```

Telnet Interface

Telnet Configuration

The Telnet interface allows remote connection to the control panel and router system from a standard Telnet client program (such as those provided with the Windows operating system) over IP port 23. To log into the Telnet interface, a user account and password is required (please refer to the Table B-6 on page 80 for appropriate user management commands).

The Telnet commands listed in Table B-2 on page 76 provide control of the R(PL)CP-32×8CQp Telnet interface (accessed by typing **SHOW TELNET** at the command prompt).The commands appropriate to this configuration are

- **SET TMAXCONNECTIONS**
- **SET TDISCONNECTUSER**
- **SHOW TCONNECTIONS**
- **SAVE SYSCONFIG**

User Management

User accounts are required to be created for access to the control panel and router system via the Telnet or FTP interfaces exposed by the router.

Appropriate user management commands are listed in Table B-6 on page 80.

Virtual (Network) X-Y Configuration

The virtual X-Y interface allows remote connection to a router from Leitch/Harris Ethernet-enabled router control hardware and software packages such as the RCP-ABA-E, RouterWorks, Pilot 3.0 and Navigator 2.0. To connect to the virtual X-Y interface, the router should be configured as a virtual X-Y server and the R(PL)CP-32×8CQp as a client.

- To configure the router as an X-Y server, refer to your particular router manual for instructions.
- To configure the R(PL)CP-32×8CQp's virtual X-Y client, enable the Leitch/Harris virtual XY protocol on the R(PL)CP-32×8CQp Ethernet port. Once the Leitch/Harris VXY client has been installed on the Ethernet port, it may be configured. See "Configuring for Ethernet Protocol" on page 31 for instructions.

Terminal Commands

Commands referenced in this section are explained in the *Serial Protocol Reference for Leitch/Harris Routing Switchers Operation and Reference Manual*. This manual provides a detailed discussion of each command and outlines how each product router uses these commands. (These commands are not case-sensitive; that is, when you enter the desired command you may use all lower-case, all upper-case, or a mix of lower and upper-case characters.) It also includes a list of error messages and their corresponding definitions.

Basic Terminal Protocol Menu Screen

The Command Summary screen (Figure B-1) should be seen on the terminal emulation application. The Command Summary screen provides the basic command line entry syntax for the commands available for an R(PL)CP-32×8CQp.

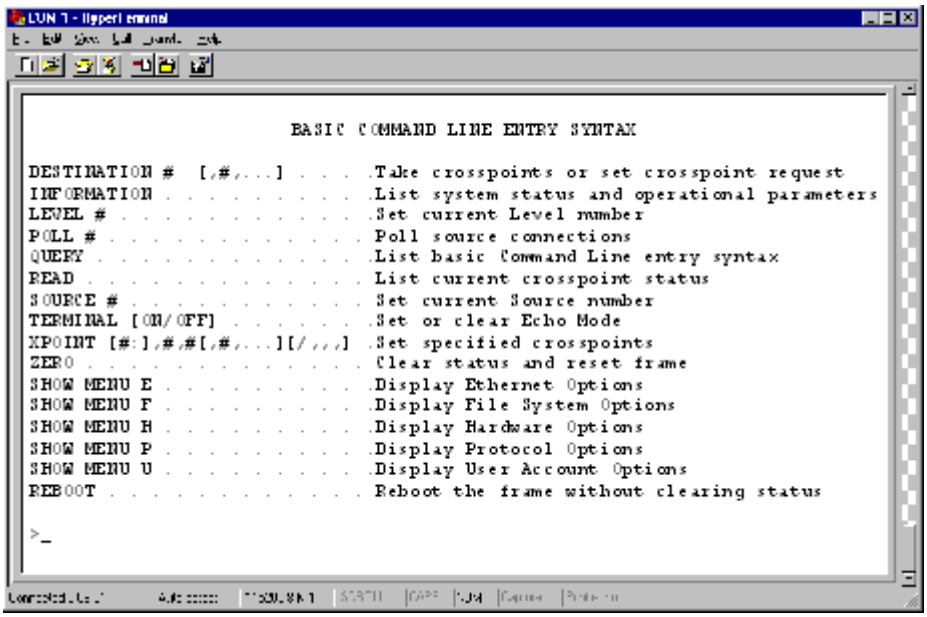


Figure B-1. R(PL)CP-32×8CQp Command Summary Screen

List of Terminal Commands

The commands listed in Table B-1 on page 73 are in order corresponding to their appearance on the Command Summary screen (Figure B-1 on page 72). Each command is defined, its syntax is illustrated, its parameters are listed, and its response is provided. More detailed explanations of these commands can be found in the *Leitch/Harris Serial Protocol Reference Manual*. You can download a copy of this manual from our Web site at www.broadcast.harris.com/leitch.

Table B-1. Terminal Commands from Terminal Protocol Menu Screen

Command	Syntax	Input Parameters	Result
DESTINATION	**DESTINATION #[,#,...]** **or** **D #**	#=Destination number	Completes crosspoint operations after the level number and the source number have been set
INFORMATION	**INFORMATION** **or** **I**	None	Provides information on the overall system as seen from the connection to the X-Y bus
LEVEL	**LEVEL #** **or** **L #**	#=Level number	Sets the level number for a router that is connected to an active system
POLL	**POLL #** **or** **P #**	#=Source number to be searched; may be any number 1 to 12	Determines which destinations are connected to a specific source number
QUERY	**QUERY** **or** **Q**	None	Provides a list that includes a basic command syntax and brief description of each command
READ	**READ** **or** **R**	None	Lists all crosspoints within a frame in order by level numbers, then by destination numbers that show which source is assigned to each of the destinations on that level Each crosspoint connection is represented by a numeric pair separated by a semicolon and a space: the first number is the destination number; the second number is the source number that is connected to that destination

Table B-1. Terminal Commands from Terminal Protocol Menu Screen *(Continued)*

Command	Syntax	Input Parameters	Result
SHOW MENU	**SHOW MENU E**	**E** = Ethernet command options	Displays subcommands for Ethernet command options (see page 76 for a list of subcommands)
	SHOW MENU F	**F** = File system command options	Displays subcommands for file system command options (see page 77 for a list of subcommands)
	SHOW MENU H	**H** = Hardware options command options	Displays subcommands for hardware options (see page 78 for a list of subcommands)
	SHOW MENU P	**P** = Protocol configuration command options	Displays subcommands for the protocol configuration command options (see page 78 for a list of subcommands)
	SHOW MENU U	**U** = User account command options	Displays subcommands for user account options command options (see page 80 for a list of subcommands)
SOURCE	**SOURCE #** **or** **S #**	# = Source number.; can range from 1 to the maximum number of sources on that level, or "**X**" for disconnect	Sets the desired source number
TERMINAL	**TERMINAL [ON|OFF]** **or** **T[/F]**	**ON** = Turns on Echo mode **OFF** = Turns off Echo mode	• When **ECHO** mode is ON, all the characters sent are "echoed" to the terminal • When **ECHO** mode is OFF, messages sent are not "echoed" to the terminal
XPOINT	**XPOINT [#:]#,#[,#,...][/...]** **or** **X [#:]#,#[,#,...][/...]**	**[#L:]**= Level number **[#S]** = Source number **[,#D,#D,...]** = Destination number	The crosspoint is executed (you can use a **READ** command to confirm the crosspoint connection) Combines operations of the LEVEL, SOURCE, and DESTINATION commands into one command; and allows multiple crosspoint connection requests in one command

Table B-1. Terminal Commands from Terminal Protocol Menu Screen *(Continued)*

Command	Syntax	Input Parameters	Result
ZERO	**ZERO** **or** **Z**	None	The device is restarted and status is cleared
REBOOT	**REBOOT**	None	The device is restored, but the status is not cleared

SHOW MENU [#] Subcommands

The **SHOW MENU [#]** command lists submenus of commands specific to that particular parameter you enter. The **SHOW MENU** subcommands are listed starting in Table B-2 through Table B-6 on page 80. Each command is defined, its syntax is illustrated, its parameters are listed, and its response is provided.

Table B-2. Menu E (Ethernet) Subcommands

Command	Syntax	Input Parameters	Result
SET IP	**SET IPx=#.#.#.#**	**x** = Ethernet port number **#.#.#.#** = IP address (factory default setting is 192.168.100.250)	Sets the router IP address for a network connector; this value is stored permanently once set and does not have to be entered each time at power-up Reboot the router device for IP related changes to take effect
SET GATEWAY	**SET GATEWAYx=#.#.#.#**	**x** = Ethernet port number **#.#.#.#** = Gateway IP address (factory default setting is 192.168.100.1)	Sets the network gateway IP address; this value is stored permanently once set and does not have to be entered each time at power-up Reboot the router device for IP related changes to take effect
SET NETMASK	**SET NETMASKx=#.#.#.#**	**x** = Ethernet port number **#.#.#.#** = System IP address	Assigns IP address to a subnet mask
SHOW IPDISPLAY	**SHOW IPDISPLAY**	None	Device will display active and stored network IP address, subnet mask, and gateway address
SET BOOTDEFAULTS 	**SET BOOTDEFAULTS**	None	Resets the IP address, subnet mask, and network gateway address to the factory defaults; settings take effect after you reboot the device

CAUTION
The SET BOOTDEFAULTS command will completely overwrite all system parameters and will require you to reset all parameters in your system before it will operate. Improper use of this command may result in permanent damage to your router. Do not use this command without first contacting Customer Service. If you have inadvertently used this command, contact Customer Service immediately.

Table B-2. Menu E (Ethernet) Subcommands *(Continued)*

Command	Syntax	Input Parameters	Result
SET PING	**SET PING #.#.#.#.**	**#.#.#.#.** = IP address of another device or computer	• If the device or computer is accessible, CLIENT #.#.#.#. IS ALIVE message will appear • If the device or computer is not accessible, HOST UNREACHABLE message will appear
SHOW TELNET	**SHOW TELNET**	None	Displays these Telnet options available on your device: • SET TMAXCONNECTIONS • SET TDCONNECTUSER • SHOW TCONNECTIONS
SET TMAXCONNECTIONS*	**SET TMAXCONNECTIONS=#**	**#** = Number of allowable concurrent Telnet sessions	Restricts the maximum number of concurrent Telnet sessions to a specific number (the maximum number of sessions cannot exceed 12)
SET TDISCONNECTUSER	**SET TDISCONNECTUSER=#**	**#** = Session number	Terminates the Telnet connection to your device (SHOW TCONNECTIONS command will display the number of sessions)
SHOW TCONNECTIONS	**SHOW TCONNECTIONS**	None	Displays Telnet system information (i.e., who is connected and the number of total connections)
SAVE SYSCONFIG	**SAVE SYSCONFIG**	None	Saves device's operating system parameters
REBOOT	**REBOOT**	None	The device is restored, but the status is not cleared

***** When you use this command the system will change the number of sessions allowed but it will not save change permanently
- Use the SAVE SYSCONFIG command to commit the change to system memory
- Use the REBOOT command to continue with the previous configuration

Table B-3. Menu F (File System) Subcommands

Command	Syntax	Input Parameters	Result
SET FILEDEL	**SET FILEDEL=Name**	**Name** = Name of file to be deleted	Specified file deleted; the message FILE (file name) DELETED will appear on the response screen
GET BOOTFILE	**GET BOOTFILE=Name**	**Name** = Name of the boot file	Displays name of the boot file that was loaded when the device booted up

Table B-3. Menu F (File System) Subcommands *(Continued)*

Command	Syntax	Input Parameters	Result
SET BOOTFILE	**SET BOOTFILE=Name**	**Name** = Name of the boot file	System will change the name of the boot file, but will not display the new name unless you enter the **GET BOOTFILE** command
SHOW FS	**SHOW FS**	None	Displays all pertinent file system information
SHOW FILES	**SHOW FILES**	None	Displays a list of associated files

Table B-4. Menu H (Hardware Options) Subcommands

Command	Syntax	Input Parameters	Result
SHOW ALARMS	**SHOW ALARMS**	None	Displays alarm status
SAVE HW	**SAVE HW**	None	Saves the current hardware configuration to file (**hw.xml** is the default file name; this can be changed via the **SET HWFILE** command)
SET HWFILE	**SET HWFILE=Filename**	**Filename** = Any name you designate as the hardware configuration file name	Sets the file name for the XML file used to store hardware parameters
GET HWFILE	**GET HWFILE**	None	Displays the file name of the current XML file used to store hardware parameters
SAVE SYSCONFIG*	**SAVE SYSCONFIG**	None	Saves device's operating system parameters*

* This command saves a device's operating system parameters, including configuration file names, to the **sysconfig.xml** file. Saved system parameters are used during the re-initialization of your device to allow you to reuse custom configurations.

Table B-5. Menu P (Protocol Configuration) Subcommands

If you are using a protocol other than Leitch/Harris terminal protocol, the SW3 pole 6 DIP switch must be set to ON (see Figure 3-3 on page 27).

Command	Syntax	Input Parameters	Result
SHOW PORTS	**SHOW PORTS**	None	Displays a port/protocol configuration summary table that shows which protocols are attached to particular serial or IP communications ports

Table B-5. Menu P (Protocol Configuration) Subcommands *(Continued)*

If you are using a protocol other than Leitch/Harris terminal protocol, the SW3 pole 6 DIP switch must be set to ON (see Figure 3-3 on page 27).

Command	Syntax	Input Parameters	Result
SHOW PROTOCOLS	**SHOW PROTOCOLS**	None	Displays a list of available protocols (not all protocols are applicable to both serial and Ethernet ports)
SET SERIAL	**SET SERIALx opts**	**x** = Serial port for which you want to set protocol and options **opts** = Options (protocol, serial baud rate, serial communications mode, [RS-422 only] transmission line termination)	Sets designated serial port to use designated protocol with designated options
GET SERIAL	**GET SERIALx**	**x** = Serial port for which you want protocol information	Displays protocol information for designated serial port
SET ENET	**SET ENETx opts**	**x** = Ethernet port for which you want to set protocol and options **opts** = Options (protocol [ON|OFF]; other options vary by protocol)	Adds or removes a protocol on designated Ethernet port; sets designated Ethernet port to use designated protocol with designated options
GET ENET	**GET ENETx**	**x** = Ethernet port for which you want protocol information	Displays protocol information for designated Ethernet port
SET IP	**SET IPx=#.#.#.#**	**x** = Ethernet port number #.#.#.#=System IP address (e.g., 192.168.1.1)	Sets the router IP address for a network connector
SET GATEWAY	**SET GATEWAYx=#.#.#.#**	**x** = Ethernet port number #.#.#.#=System IP address (e.g., 192.168.1.10)	Sets the network gateway IP address
SET NETMASK	**SET NETMASKx=#.#.#.#**	**x** = Ethernet port number #.#.#.#=System IP address (e.g., 255.255.255.128)	Assigns the IP address to a subnet mask
SAVE SYSCONFIG*	**SAVE SYSCONFIG**	None	Saves system file names and configuration information*

* This command saves a device's operating system parameters, including configuration file names, to the sysconfig.xml file. Saved system parameters are used during the re-initialization of your device to allow you to reuse custom configurations

Table B-6. Menu U (User Account) Subcommands

The user account information is specific to each PLCP-32×8CQp/RCP-32×8CQp box. If you have more than one PLCP-32×8CQp/RCP-32×8CQp box at your facility, you will need to set up the user account information for each box.

Command	Syntax	Input Parameters	Result
SHOW USERS	**SHOW USERS**	None	Shows a list of authorized users, associated groups, and login status via the User Account Summary Table
SAVE USER	**SAVE USER=abc,#,abc**	**abc** = Name of user who will be added to R(PL)CP-32×8CQp compact flash module database # = Group to which the specified user will be added **abc** = Password for the specified user	• System will ask for ADMIN password • System will ask for new password for specified user • System will ask for password confirmation • User is added to flash module database
SET DELETEUSER	**SET DELETEUSER=abc**	**abc** = Name of user who will be deleted from R(PL)CP-32×8CQp compact flash module database	• System will ask for ADMIN password • System will ask for verification that the user should be deleted • User is deleted from flash module database
SET PASSWORD	**SET PASSWORD =abc,abc**	**abc** = Name of user who needs password to access R(PL)CP-32×8CQp functions changed to a new password **abc** = Password for specified user	• System will ask for ADMIN password • System will ask for *existing* password for specified user • System will ask for *new* password for specified user • System will ask for *new* password confirmation • Specified password for user is changed on flash module database
SET USERGROUP	**SET USERGROUP USER=abc,#**	**abc** = Name of user who will be assigned to a specific group # = Group number	• System will ask for ADMIN password • User is added to a specific group User group is required, but not used by R(PL)CP-32×8CQp

Index

Q

R

S

T

U

W

X

Z