Frame and Firmware Installation, Configuration, and Operation

Edge Protocol Gateway

Edition F

EDGE MAN
Publication Information

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Support Contact Information

For support contact information see:

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

Purpose
This manual details the features, installation, operation, maintenance, and specifications for the Edge protocol gateway.

Audience
This manual is written for engineers, 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>
<thead>
<tr>
<th>Edition</th>
<th>Date</th>
<th>Comments</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>April 2005</td>
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</tr>
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<td>• Added information concerning Ethernet clients support</td>
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<td></td>
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<td>• Added NVISION protocol support</td>
</tr>
<tr>
<td>D</td>
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<td>• Transferred references to individual protocols supported</td>
</tr>
<tr>
<td>E</td>
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<td>• Updated DIP switch settings chart</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Updated minor DIP Switch info in the Frame Configuration chapter</td>
</tr>
</tbody>
</table>

Applications

Edge protocol gateway are 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.

Edge protocol gateway are perfect for

- Television production facilities
- Cable operators
- Production and post-production facilities
Outside broadcast vans/trucks
DBS satellite operations
Webcasters

Writing Conventions

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

Table 4-2 Writing Conventions

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

Obtaining Documents

Documents can be viewed or downloaded from the Harris Broadcast support web portal. 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**

This product is not designed for field service. All hardware upgrades, modifications, or repairs require you to return your product to the Customer 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.

**Standards**


**Safety**

Carefully review all safety precautions to avoid injury and prevent damage to this product or any products connected to it. If this product is rack-mountable, it should be mounted in an appropriate rack using the rack-mounting positions and rear support guides provided. It is recommended that each frame be connected to a separate electrical circuit for protection against circuit overloading. If this product relies on forced air cooling, it is recommended that all obstructions to the air flow be removed prior to mounting the frame in the rack.

If this product has a provision for external earth grounding, it is recommended that the frame be grounded to earth via the protective earth ground on the rear panel.

You will find a complete list of safety precautions in Appendix A.

**IMPORTANT!** Only qualified personnel should perform service procedures.
Restriction on Hazardous Substance (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, which took effect on July 1, 2006, and 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 website 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 4-1.

Figure 4-1 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 are 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 website 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 4-2.

![WEEE Compliance Emblem](image)

Figure 4-2  WEEE Compliance Emblem
1 Introduction

The Edge protocol gateway is a multiuse platform housed in a 1RU frame that provides external connectivity to any Harris routing system. It translates between Harris and other manufacturers’ routing control systems.

Edge protocol gateways provide Ethernet, X-Y serial, and RS-232/RS-422 serial connectivity to any Harris routing system, regardless of the type(s) of routing switcher involved. These hardware products also provide connections to other vendors’ products. This manual provides installation, configuration, and operation information necessary to successfully operate other vendor’s products within a Harris routing system; or, alternatively, to operate a Harris product with other third party equipment.

Main Features

The Edge has the following main features:

- Automatic recovery of broken and restored connections whether due to power supply failures, Ethernet communications failures, or physical medium errors
- Support for the following communications media:
  - Harris X-Y bus loop-through (75Ω coax) port
  - RJ-45 Ethernet port
  - 9-pin D-selectable RS-232 or TIA/EIA-422-B
  - Auto-sensing 110 VAC to 240 VAC power
Chapter 1
Introduction

Supports up to 20 Ethernet clients using any combination of different protocols (such as 10 virtual X-Y and 10 Telnet)
- Alarm convection
- Universal power supply
- Protocol translation support

The Edge provides bidirectional translation of certain third-party routing devices as well as unidirectional (control of Harris or third party routing devices) support for Harris serial terminal protocol.

The Edge also supports these protocols for device configuration:
- Harris serial terminal protocol
- Harris pass-through protocol

Control Features

The Edge is compatible with all existing Harris routers and remote control panels. Frames include the following control options:
- Two standard serial ports for communication to/from computers and automation systems (configurable for RS-232 or RS-422) with support for up to 115K baud serial communications
- One looping coaxial (X-Y) port for connecting to remote control panels and other routers
- An Ethernet port
- A firmware- or software-based control system

Operating Mode

A DIP switch (pole 6 on SW3) controls how the two Edge serial control ports are configured. When set to OFF, the Edge behaves like a typical Harris router (that is, Harris Terminal mode for both serial ports). When set to ON, the Edge uses the programmed port configuration (set through the terminal or via RouterMapper). This setting allows use of non-Harris product protocols.

Software Control Applications

You can configure the Edge directly using Harris terminal protocol, or via the CCS Navigator or RouterMapper™ software configuration utility.

Harris Terminal Protocol

Harris terminal protocol is useful as an interface to a router to check the status of the router and to change the crosspoints. A serial port or Telnet connection and terminal emulation software are all that are needed to establish communications between a terminal and a router. You can find information on the following topics in the Edge Frame and Firmware Installation, Configuration, and Operation Manual:
- Using the terminal protocol specifically with the Edge
- Instructions on serial port configuration
- Instructions on Ethernet port configuration

**RouterMapper**

RouterMapper is an easy-to-use Windows®-based application for programming RouterWorks®, other router frames, control panels, and the Opus™ master controller. You can find instructions for adding and editing Edge configurations in the *RouterMapper Configuration Utility Reference Guide*.

There are several software options available to control your Harris products through the Edge. For information about these software products, contact the Sales Department or see our website.

**CCS Navigator™ (v. 2.0 or later)**

The CCS Navigator software provides the graphical tools that will enable you to create easy-to-use graphical pages that visually represent your network’s many devices, systems, and environments. These graphical pages allow you to consolidate and ease network-wide status monitoring, leading to more efficient deployment of human resources for monitoring and troubleshooting tasks. You can find instructions for adding and editing Edge configurations in Volume 6 of the *Navigator Advanced Graphical Navigation Application User Manual*.

**RouterWorks**

RouterWorks router control software provides a graphical user interface for the entire line of Harris signal routers. RouterWorks software may be used as the only controlling device in a system, or it may be used in conjunction with traditional hardware control panels. Multiple RouterWorks control stations may control the same routing system. RouterWorks continually monitors the routing system and reports all changes in the status of the system, regardless of the type of controlling device that initiated the change.
2 Frame Installation

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 You Begin
Before you can begin the protocol translation configuration procedures, you must

- Install and configure your protocol-specific equipment as described in Installing and Configuring Hardware on page 5
- Install your Edge frame as described in Edge Frame Installation Information on page 6
- Configure your Edge frame as described in Frame Configuration Details on page 17
- If necessary, install the appropriate protocol firmware
- Activate your firmware license

Installing and Activating Firmware
See Chapter 4, Protocol Translation Setup for information about activating the firmware for your protocol.

Installing and Configuring Hardware
- See page 6 for information on how to install and configure an Edge frame.
- See the Grass Valley Group Series 7000 Configuration Manual for specific information on how to install and configure a GVG-SMS 7000 Series signal management system.

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1 If you ordered the protocol firmware at the same time as your original Edge product purchase, it will be factory-installed and -activated.
2 GVG SMS-7000 Jupiter routing control systems are products of Thomson Grass Valley, headquartered in Paris, France.
See the *Jupiter FM 3000 Installation and Operating Manual* for specific information on how to install and configure a Jupiter router switcher.²

See the *NVISION NV6000 and NV8000 Series Universal Routers Users Guide* for specific information on how to install and configure an NVISION routing switcher.¹

See the pertinent PESA installation and operation manual for specific information on how to install and configure a particular PESA routing switcher.²

See the pertinent Pro-Bel installation and operation manual for specific information on how to install and configure a particular Pro-Bel routing switcher.³

---

**Edge Frame Installation Information**

**Unpacking Equipment**

The Edge 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 Edge product
- One *Edge Installation and Configuration Manual*
- One desktop power supply
- Optional redundant power supply (if ordered)

**Pre-Installation Checklist**

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.

If your equipment was damaged during transit, see *Returning a Product* on page vii to determine what you must do to return the equipment to us.

**Examining Equipment**

The following sections describe the physical components of the Edge. The descriptions will provide you with the information you need to make sure these components operate correctly after installation is complete.

---

¹ NV routing control systems are products of NVISION Inc., headquartered in Grass Valley, California.
² PESA routing switchers are products of QuStream Corporation, headquartered in Toronto, Canada.
³ Pro-Bel routing switchers are products of Pro-Bel Ltd., headquartered in Reading, Berkshire, UK.
Modular Components

The components installed in the Edge frame are as follows:

- Power/Alarm and Link LEDs
- Module Interconnect (MI)
- Flash Memory Module
- Resource Module

Power/Alarm and Link LEDs

A power/alarm LED and a link LED are present on all control modules (see Figure 2-4).

Figure 2-4 Power/Alarm and Link LEDs

- The power/alarm LED is illuminated green when power is present. If the power LED is not lit, one or more of the supply rails on the module is invalid.
- The link LED is illuminated yellow when an Ethernet connection is made and maintained.
Module Interconnect (MI)

Figure 2-5  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 2-6  Flash Memory Module
The flash memory module houses the operating system software for the Edge. It includes the software necessary for updating protocols.

**Resource Module**

![Resource Module](image)

The resource module provides control and monitoring of communications, 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 Edge rear panel includes these items:

- Two DC input power connectors (PS1 and PS2)
- One 3-pin alarm/comm port (ALM/COM)
- Two 9-pin RS-232 serial ports (SERIAL 1 and SERIAL 2)
- 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)

![Power and Control Connections](image)

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

- Two DC input power connectors (PS1 and PS2)
- One 3-pin alarm/comm port (ALM/COM)
- Two 9-pin RS-232 serial ports (SERIAL 1 and SERIAL 2)
- One pair of BNC X-Y ports (single looping X-Y)
Chapter 2
Frame Installation

- One pair of BNC X-Y/SBUS ports
- Two RJ-45 Ethernet connections (ENET)

**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.
  - The default operation of the alarm relay is “normally open.”
  - “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

The alarm port provides indication of these alarm conditions:

<table>
<thead>
<tr>
<th>Alarm Condition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS Fail</td>
<td>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)</td>
</tr>
</tbody>
</table>

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 2-4 on page 14 shows the connector pin assignments for a RS-232 cable connection. Table 2-5 on page 14 shows the connector pin assignments for an RS-422 cable connection.*

One of the many powerful features of a 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 Edge 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 3-14 on page 20), or by settings selectable from a terminal screen (see “Terminal Operations” in the Protocol Translation Functions Configuration and Operation Manual).

**X-Y Port**
The X-Y control bus is a high speed serial interface by which 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 Edge 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
The Ethernet connection provides high-speed links for configuration, control, and monitoring of the complete routing system. The Ethernet connection uses 10Base-T wiring. Figure 2-11 on page 15 shows the RJ-45 jack pinout information for 10Base-T Ethernet communication.

Power Supply Modules

Figure 2-9 Desktop Power Supply Module
Each Edge 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 a second desktop power supply for redundancy.

Optional Power Supply Mounting Tray

Figure 2-10 Power Supply Mounting Tray
The power supply mounting tray allows you to mount up to seven 1RU desktop power supplies. This mounting tray can be forward- or rear-mounted into a regular frame rack. Contact your Sales representative for more information about this option.
Installing Hardware

CAUTION
Test your system before its final installation. Make sure you verify its configuration, cabling, and proper system operation.

Siting Requirements

Ensuring Adequate Rack Space
The Edge 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
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. To ensure proper ventilation, keep the front panel of the frame closed during operation; otherwise, the frame could overheat.

Meeting Electrical Requirements
The Edge frame accepts one desktop power supply unit (PSU). The frame is prewired to accept a second, optional power supply for power backup. Their power consumption is nominally 65VA. A fully loaded frame 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 Edge frame. 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 Edge frame does not have a voltage selector switch. The desktop power supply has a continuous input range of 100 VAC to 240 VAC.

Protective Ground
Since the desktop power supply does not present a shock hazard, the Edge frame does not have a protective safety earth ground.

Mounting and Installing
The following tools and equipment are recommended for frame installation:

- One standard 19-in. (0.4-m) rack
Mounting Requirements

The Edge 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).

Edges 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.

Installation Procedures

The Edge can be installed anywhere within a routing system. General installation 
procedures are outlined below.

1. Mount the frame in a 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, and so forth) on 
the frame's rear panel.
5. If the Edge will be used in a multiple frame system, connect the additional frames using port 
the appropriate scheme (X-Y, Ethernet, and so forth).
6. If the Edge 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 Edge power supply port.
9. Connect the power supply to a power source. When power is applied to the Edge, it starts 
up automatically.
Cable Connector Pin Assignments

Serial Port Pin Assignments

Table 2-4 RS-232 Signal Format Pin Assignments

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Frame Ground</td>
</tr>
<tr>
<td>2</td>
<td>RxD (Data received by router)</td>
</tr>
<tr>
<td>3</td>
<td>TxD (Data sent by router)</td>
</tr>
<tr>
<td>4</td>
<td>Data Terminal Ready*</td>
</tr>
<tr>
<td>5</td>
<td>Ground</td>
</tr>
<tr>
<td>6</td>
<td>Data Set Ready (DSR)*</td>
</tr>
<tr>
<td>7</td>
<td>Request to Send (RTS)**</td>
</tr>
<tr>
<td>8</td>
<td>Clear to Send (RTS)**</td>
</tr>
<tr>
<td>9</td>
<td>Frame Ground</td>
</tr>
</tbody>
</table>

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

Table 2-5 RS-422 Signal Format Pin Assignments

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal (Tributary)</th>
<th>Description</th>
<th>Connection to Remote Computer (Controller)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>FG</td>
<td>Frame Ground</td>
<td>Frame Ground</td>
</tr>
<tr>
<td>2</td>
<td>Ta (Tx-)</td>
<td>Transmitted Data (Twisted Pair)</td>
<td>Ra (Rx-)</td>
</tr>
<tr>
<td>7</td>
<td>Tb (Tx+)</td>
<td>Received Data Shield (Twisted Pair)</td>
<td>Rb (Rx+)</td>
</tr>
<tr>
<td>6</td>
<td>Tc</td>
<td>Received Data Shield</td>
<td>Received Data Shield</td>
</tr>
<tr>
<td>8</td>
<td>Ra (Rx-)</td>
<td>Received Data (Twisted Pair)</td>
<td>Ta (Tx-)</td>
</tr>
<tr>
<td>3</td>
<td>Rb (Rx+)</td>
<td>Transmitted Data Shield</td>
<td>Tb (Tx+)</td>
</tr>
<tr>
<td>4</td>
<td>Rc</td>
<td>Transmitted Data Shield</td>
<td>Transmitted Data Shield</td>
</tr>
<tr>
<td>9</td>
<td>FG</td>
<td>Frame Ground</td>
<td>Frame Ground</td>
</tr>
<tr>
<td>5</td>
<td>SP</td>
<td>(Not Connected)</td>
<td>(Not Connected)</td>
</tr>
</tbody>
</table>
RJ-45 Jack Pinout Information for 10Base-T Ethernet Communication

<table>
<thead>
<tr>
<th>Pin</th>
<th>MDI Function</th>
<th>MDI-X Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TX+ (Transmit data +)</td>
<td>RX+ (Receive data +)</td>
</tr>
<tr>
<td>2</td>
<td>TX- (Transmit data -)</td>
<td>RX- (Receive data -)</td>
</tr>
<tr>
<td>3</td>
<td>RX+ (Receive data +)</td>
<td>TX+ (Transmit data +)</td>
</tr>
<tr>
<td>4</td>
<td>Not connected</td>
<td>Not connected</td>
</tr>
<tr>
<td>5</td>
<td>Not connected</td>
<td>Not connected</td>
</tr>
<tr>
<td>6</td>
<td>RX- (Receive data -)</td>
<td>TX- (Transmit data -)</td>
</tr>
<tr>
<td>7</td>
<td>Not connected</td>
<td>Not connected</td>
</tr>
<tr>
<td>8</td>
<td>Not connected</td>
<td>Not connected</td>
</tr>
</tbody>
</table>

Figure 2-11 RJ-45 Jack Pinout Information
Frame Configuration Details

Preparing for Configuration

Before you configure the Edge frame, you must have the following items:

- A PC connected to a local area network running one of the following:
  - HyperTerminal\(^1\) or other terminal emulation program
  - Telnet program
  - Configuration utility software such as Navigator or RouterMapper

Note: To configure Name support, an Ethernet connection is required.

- An Edge product installed and connected to the local area network
- A standard 10 Mbps 10Base-T RJ-45 Ethernet cable segment or a null modem cable for serial port operations

Configuring the Alarm Jumper and DIP Switches

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

- The Alarm jumper on the (MI) board (Figure 3-12 on page 18 shows the location of the alarm port jumper on the MI module.)
- Three DIP switches on the front of the resource module. (Figure 3-13 on page 19 shows the location of the DIP switches on the Edge resource module. Figure 3-14 on page 20 provides a summary of the functions of each DIP switch.)

---

\(^1\) HyperTerminal, a product of Hilgraeve Inc., is a communications applet that ships with Windows 95/98 and Windows NT 4.0.
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.

**Note:** 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 3-12 on page 18.
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 Edge frame.

![Alarm jumper location (currently set for normally closed [NC])](image)

**Figure 3-12** Location of NO/NC Jumper for the Alarm Port

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 3-13 DIP Switch Location and Identification](image)

*Note: If you want your Edge settings to match the factory defaults, you do not need to make any further changes.*

4. Set the DIP switches as shown in Figure 3-14 (page 20).
   - SW1 provides DIP switches for functions related to frame ID and operating mode.
   - 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 2 are configured using SW3 DIP switch or software settings configured from the terminal. The setting should normally be set to the software mode (SW3-6 On) unless the Edge is not being used for protocol translation. If you select the SW3 DIP switch setting mode, settings for serial ports 1 and 2 are determined by the settings made on SW3 and both serial ports are forced to Harris protocol only. If the ports need to be configured individually, or protocol translation is required, 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 Edge frame.
Figure 3-14  DIP Switch Configuration

* 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) or via configuration utility software

Setting Up the Power Supply Module

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

Push the power supply module plug into the PS1 connector (see Figure 3-15) until the fastener clips. To make sure the power supply module 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 module, plug it into the PS2 connector (see Figure 3-15). Follow the same procedure as for the first power supply.

Figure 3-15  PS1 and PS2 Power Supply Connector Locations
Setting up protocol translation for your hardware product is a multi-part process. This guide provides step-by-step instructions for completing each part of the process.

- Part 1: Determining What To Do First
- Part 2: Reviewing Pre-Installation Information
- Part 3: Installing the Protocol Firmware
- Part 4: Entering the License Key

Pre-Installation Information

The Edge hardware products provide Ethernet, X-Y serial, and RS-232/RS-422 serial connectivity to any Harris routing system, regardless of the type(s) of Harris routing switcher involved. It also provide connections to other vendors’ products. This chapter provides information necessary to successfully install the appropriate firmware and a license key for your selected protocol.

Edge hardware products provide bidirectional translation of the following router control protocols:

- Harris pass-through protocol
- GVG SMS-7000 protocol
- Jupiter ASCII and ESswitch protocol
- NVISION serial and Ethernet protocols
- PESA CPU Link Protocol No 1 (P1) protocols
- Pro-Bel SW-P-02 and SW-P-08 protocols
- Utah Scientific RCP-1 protocol

Determining What To Do First

If you ordered the GVG, Jupiter, NVISION, Pro-Bel, or Utah protocol firmware separately from your original hardware purchase, you must install updated firmware. Review the Equipment You Will Need and Pre-Installation Checklist sections that follow, and then go to Installing the Protocol Firmware on page 24.
If you ordered the GVG, Jupiter, NVISION, Pro-Bel, or Utah protocol firmware at the same time as your original hardware purchase, it will be factory-installed. You will not need to reinstall the firmware; however, you will need to configure it. See Chapter 5, Protocol Translation Configuration for more detailed information.

**Equipment You Will Need**

Before you begin this process, make sure you have the following equipment:

- Edge frame
- Personal computer
- File transfer protocol (FTP) software installed on PC

A network-enabled system setup will usually have some version of FTP client software installed. Refer to your operating system documentation for instructions on how to perform the file transfer function for your particular setup. Alternatively, you can download or purchase third-party FTP software.

**Pre-Installation Checklist**

Before you install and/or configure the firmware module:

1. Check the equipment for any visible damage that may have occurred during transit.
2. Confirm that all items listed on the packing list have been received.
3. Remove the anti-static shipping pouch and all other packaging material.
4. Keep the original packaging in case a product needs to be returned for service or shipped to another location.
5. Check the PC to make sure that FTP client software is installed, and that you know how to use the software correctly.
6. Make sure your hardware product has already been set up on your intranet or local area network with a valid IP address.

**Installing the Protocol Firmware**

**Determining the Size of Installed Flash RAM**

1. Open a serial or Telnet terminal operation session.
2. At the > prompt, type `show fs`, and then press `<Enter>`. The following information will be displayed (the information displayed on your screen may vary from this example):
Check that the flash size is 16 MB. Edge hardware frames require a 16 MB flash RAM.

- If the flash size is 4 MB, a new flash RAM module will be required. You will need to determine the control board serial ID (see step 4).
- If the flash size is 16 MB, check the software code version (see Table 4-6).

Table 4-6 Software Revision Versions for Edge Protocols

<table>
<thead>
<tr>
<th>Protocol Option</th>
<th>Software Revision Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>GVG</td>
<td>2.51 or higher</td>
</tr>
<tr>
<td>Jupiter</td>
<td>2.72 or higher</td>
</tr>
<tr>
<td>NVISION</td>
<td>2.61 or higher</td>
</tr>
<tr>
<td>Pro-Bel</td>
<td>2.77 or higher</td>
</tr>
<tr>
<td>Utah</td>
<td>2.52 or higher</td>
</tr>
</tbody>
</table>

At the > prompt, type `show rparm`. The following information will appear. (the information displayed on your screen may vary from this example):

Figure 4-17 Locations of Software Revision, Control Board Serial ID, and License ID Fields

- If the existing flash size is 4 MB, a new flash RAM module is required.
  - Write down code number shown in the Control Board Serial ID field. (The License ID field will not appear on Edge frames with a 4 MB flash.)
Go to step 5.

- If the existing flash size is 16 MB but the version of code is less than v2.51, a new flash RAM module is required.
- Write down code number shown in the Control Board Serial ID field. (The License ID field will not appear on Edge frames with firmware versions less than v2.51.)
- Go to step 5.

**Note:** The License ID is unique to each Edge frame. License keys generated using one frame’s ID will not work for another frame. If a feature will be installed on several frames, each frame’s License ID will be required so that a separate key may be created for and installed on each frame.

- If the existing flash size is 16 MB and the software revision is v2.51 or higher:
  - Write down the code shown in the License ID field. Your Sales representative will need this code to create a license key that enables the appropriate protocol option.
  - Go to step 5.

5 Contact your Sales representative so that your protocol license key can be created. (See our website for a list of technical support locations and telephone numbers).

The License ID code and/or the Control Board Serial ID code will be necessary to generate the license key number. Give this code and the frame serial number (located at the rear of the frame on a sticker beginning with the characters LHTI) to your Sales representative, and ask that a License Key be generated. **If using the Control Board Serial ID code, make sure you tell the Sales representative that you need a new 16 MB flash RAM with software version v2.51 or higher.**

- If you received a new 16 MB flash RAM module, go to Installing the Flash Module on page 26.
- If you did not need a new flash RAM module, go to Entering the License Key on page 28.

### Installing the Flash Module

When you receive the new 16 MB flash module, it will include the license key. Install the new flash module into the frame as follows:

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.)

**CAUTION**

Some Edge 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.

3 Tilt the panel cover down so that the flash module is visible.
Figure 4-18  Flash Module Tabs Locations

4 Press the two tabs on the sides of the firmware module out, until it pops up.

Figure 4-19  Removing the Firmware Module

5 Pull out the existing firmware module and set it aside.
6 Insert the new firmware module into the card insert on the frame front cover.
7 Align the reassembled front module with the frame body.
8 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.
9 Reapply power to the frame, and verify that the frame operates correctly.
**Entering the License Key**

1. Obtain your “soft” activation code from your Sales representative. This activation code, consisting of fourteen characters, will be provided to you when you purchase the protocol translation option.
   
   If you received a license file (license.txt) from us, go directly to step 4.

2. Use any ASCII text editing program to create a file named `license.txt`.

3. As the first line in the license.txt file, enter the 14-digit license keycode. Do not include any spaces or carriage returns.

4. Use an FTP program to copy the license.txt file from its original location to the Edge flash module directory `devfs:`.
   
   The frame is now set up for protocol translation configuration.
5 Protocol Translation Configuration

Configuring for Use with Harris Protocols

Two separate serial control ports are used to control Edge 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 (salvos). In a system involving multiple frames the commands entered into the serial port on one frame are 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 Edge 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 only need to make the changes once. The Edge uses the changed settings until you switch them again. DIP switch SW3 (see Figure 3-14 on page 20) provides DIP switches for the functions related to serial port configuration.

Configuring for Translating Protocols

The Edge may be used to translate from Harris protocols to other third-party protocols. The commands used to configure protocol translation and to view the Edge’s current protocol configuration can be displayed by typing SHOW MENU P at the Command prompt. See page 83 for a list of the Protocol command line options.

You can use the SHOW PORTS command at any time to view the configuration for all ports that are loaded when you start the Edge.
Figure 5-20  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 and GET SERIAL commands.

Configuring for Use with Serial Protocol

Note: If both serial ports are configured for protocol translation, the Harris Telnet interface may be used. Alternatively, the SW3 pole 6 switch may be set to OFF temporarily to allow configurations.

Serial ports support one active protocol at a time. To configure a serial port’s protocol:

1  Ensure DIP switch 3, pole 6, is ON to enable terminal-based configuration.
2  Determine which serial port (1 or 2) use the selected protocol.
3  Determine the protocol to use. (Use the SHOW PROTOCOLS command [page 83] to view the available protocols.) Available protocols are shown under the Serial Interfaces list displayed by the Available Protocol Summary Table (see Figure 5-21 on page 31). The example shown in Figure 5-21 shows 7 available serial interfaces and 7 available Ethernet interfaces.
Use the SET SERIAL command (page 83) 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 Edge:
- Serial port = 2
- Protocol = GVG SMS-7000 Native “server” (GVG control of Harris router system); shown as item 2 on the Available Protocol Summary Table – Serial Interfaces list
- Baud rate = 38400
- Communications mode = RS-232

The required command syntax is as follows:

```
SET SERIAL2 PROTOCOL=2,BAUD=38400,MODE=RS232
```

Verify the new settings using the SHOW PORTS (page 83), the GET ENET (page 83), or the GET SERIAL (page 83) command.

Save the new configuration using the SAVE SYSCONFIG command (page 83). Changes take effect after the Edge is reset.

**Configuring for Use with Ethernet Protocols**

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-Harris protocols.
2. Determine which Ethernet port uses the selected protocol.
3 Determine the protocol to use. (Use the SHOW PROTOCOLS command [page 83] to view the available protocols.)

Available protocols are shown under the Ethernet Interfaces list displayed on the Available Protocol Summary Table (see Figure 5-21 on page 31).

4 Use the SET ENET command (page 83) 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 Edge:
   - Ethernet port = 1
   - Protocol = GVG SMS-7000 Native “client” protocol (Harris controlling GVG routers with MCPU IP address at 192.168.7.11 and backup controller at 192.168.7.12);

The required command syntax is as follows:

   SET ENET1 PROTOCOL4=ON SERVER=192.168.7.11,192.168.7.12

   Note that for GVG Client, if only a single MCPU IP address is available it must be entered twice; for example:

   SET ENET1 PROTOCOL4=ON SERVER=192.168.7.13,192.168.7.13

5 Verify the new settings using the SHOW PORTS command (page 83).

6 Save the new configuration using the SAVE SYSCONFIG command (page 83). Changes take effect after the Edge is reset.

Configuring for Use with GVG Protocols

The following information is specific to setting up your system so that you can operate it via Edge. Complete details on how to set up and configure your GVG SMS-7000 Series Signal Management System are located in the Grass Valley Group Series 7000 Configuration Manual.

Setting up Configurations

The following sections outline the steps involved in configuring for use with GVG protocols for setting Ethernet client and server configurations.

Setting Up the GVG Ethernet Client Configuration (Harris Controls GVG)

Figure 5-22  GVG Ethernet Client Configuration

Follow the steps for these operations in the Grass Valley Group Series 7000 Configuration Manual:

1 Enable IP control of the GVG system (see “Configuring for the Network Remote End”).
2. Enable levels that can be controlled through remote control interface (see “Configuring for the Network Local End”).
3. Direct the Edge to connect to the GVG Master Control Processing Unit (MCPU) and backup MCPU IP addresses (see “Pre-Configure New Coprocessors”).

Setting Up the GVG Ethernet Server Configuration (GVG Controls Harris)

Figure 5-23  GVG Ethernet Server Configuration

Follow the steps for these operations as provided in the pertinent manuals:

1. Configure the Harris router (see the installation manual that applies to your specific Harris router).
2. Using your configuration utility software, configure the Edge to reflect how you want the router presented to the GVG MCPU (see Configuring for Name Support on page 51; see Chapter 7, Supporting Level, Source, or Destination Names With Edge on page 87 for more detailed background information).
3. Configure Edge server protocol to listen for connections.
4. Configure the GVG MCPU for control of an alien matrix using GVG SMS-7000 protocol (see “Configuration for Control of Alien Matrices” in the Grass Valley Group Series 7000 Configuration Manual).

Setting Up a Third-Party Ethernet Server Configuration (Third Party Controls Harris via GVG)

Figure 5-24  Third-Party Ethernet Server Configuration

Follow the steps for these operations as provided in the pertinent manuals:

1. Configure the Harris router (see the installation manual that applies to your specific Harris router).
2. Using configuration utility software, configure the Edge to reflect how you want the router presented to the GVG MCPU (see Configuring for Name Support on page 51; see
Configure the Edge server protocol to listen for connections.
4 Configure the third-party control system (see the appropriate product manual for the third-party hardware).

**Chapter 7, Supporting Level, Source, or Destination Names With Edge** on page 87 for more detailed background information).

#### Configuring for Use with GVG SMS-7000 Client or Server Protocol

**Note:** The Edge does not support simultaneously running both Client and Server versions of the GVG SMS-7000 protocol on its two serial ports (that is, a configuration with Serial 1 configured for SMS-7000 Server and Serial 2 configured as SMS-7000 Client is not supported).

Many of the GVG SMS-7000 control panels and native protocol commands operate using level, source, and destination names rather than numeric indices. To translate these commands properly and provide names to controllers using the SMS-7000 protocol, the Edge must provide names support. The Edge provides default names for all levels, inputs (sources), and outputs (destinations); for example, “Level 0,” “Level 1,” etc. for levels; “In 1,” “In 2,” etc. for sources; and “Dest 1,” “Dest 2,” etc. for destinations. Note that the “protocol numbers” for similar protocols for the serial and Ethernet protocol options are not the same; for example, GVG Server protocol for a serial port is one number, while GVG Server protocol for Ethernet ports is a different number. Make sure that the desired protocol is selected.

If you want the GVG control system to use assigned rather than default names (for example, levels, sources, and destinations assigned using configuration utility software), the Edge must be configured to recognize the custom names. For more information, see **Configuring for Name Support** on page 51 and **Chapter 7, Supporting Level, Source, or Destination Names With Edge** on page 87.

#### DIP Switch Mode (Configuring via DIP Switches)

**Note:** Settings for Edge DIP switches are shown in **Figure 3-14** on page 20.

The following DIP switches must be set to configure Edge for use with GVG client or server protocol:

- Make sure that pole 1 of SW1 is set to OFF.
- Set up the protocol you want to run (pole 6 of SW3).
- Set up the appropriate baud rate (poles 7-8 of SW3).
- Set up the appropriate mode; usually RS-422 for GVG (pole 1 of SW3).
- If the GVG router is an end point, the Termination DIP switch (pole 2 of SW3) must be ON.

#### Program Mode (Configuration via Navigator or RouterMapper)

Configuring in Program mode is performed through configuration utility software. To perform this operation:
Your Edge must be configured with a valid IP address and configured to allow FTP client connections. See Network Configuration from Terminal Control Mode on page 74 for additional information on how to configure IP settings.

You must have a PC (with configuration utility application software installed) attached to the Harris router. Make sure that the router is configured as described in the installation manual that applies to your specific router.

You must create, or have an existing, Navigator or RouterMapper database. For more detailed information, see the appropriate configuration utility reference guide.

To configure Edge for use with GVG client or server protocol in Program mode, follow these steps.

1. Make sure that pole 1 of SW1 is set to ON.
2. Make sure that pole 6 of SW3 is set to ON.
3. Start up your configuration utility software; make sure that the appropriate communications settings are selected.
4. Poll the system.
   - If no errors are encountered, the Device List is updated.
   - If errors are encountered, error messages are returned. Refer to the appropriate configuration utility reference guide for information on how to correct returned errors.
5. Double-click on the desired Edge configuration listed in the Device List.
6. At the Edit Edge dialog box, select the Serial Protocols tab.
7. Double-click on the target serial port to which the GVG router is attached.
   - The Options window appears. Assigned values for the default protocol's baud rate, parity, data bits, stop bits, and serial interface are displayed.
   a. Select the desired GVG protocol from the Protocol drop-down list.
      - The assigned values for the selected protocol appear. While all relevant protocol option values are displayed, some values may not be configurable. These values are displayed for informational purposes only; you cannot change them through configuration utility software.
   b. Select the desired baud rate by highlighting the baud rate value only.
      - A drop-down menu appears, which allows you to change the selection.
   c. Select the desired mode by highlighting the serial interface value only.
      - A drop-down menu appears, which allows you to change the selection (usually RS-422 for GVG).
   d. Select the desired termination by highlighting the termination status value only.
      - A drop-down menu appears, which allows you to change the selection. If the GVG router is at an end point, the termination status value must be set to Terminated.
   e. Click OK to return to the Edge serial ports window, and then click OK to accept the changes.

---

Configuring for Use with Jupiter Protocols

The following information is specific to setting up your system so that you can operate it via Edge. Complete details on how to set up and configure your Jupiter routing systems are located in their respective operation manuals.

1 Navigator v. 4.5 and RouterMapper v. 5.13 or higher support GVG SMS-7000 configuration.
Setting Up Configurations

The following sections outline the steps involved in configuring for use with Jupiter protocols.

Setting Up the Jupiter Client Configuration (Harris Controls Jupiter)

![Figure 5-25 Jupiter Client Configuration]

Follow the steps for these operations as provided in the pertinent manuals:

- Configure Edge to enable Jupiter protocol.

Setting Up the Jupiter Server Configuration (Jupiter Controls Harris)

![Figure 5-26 Jupiter Server Configuration]

Follow the steps for these operations as provided in the pertinent manuals:

- Configure the Harris router (see the installation manual that applies to your specific Harris router).

Configuring for Use with Jupiter Client or Server Protocol

Note: Settings for Edge DIP switches are shown in Figure 3-14 on page 20

DIP Switch Mode (Configuring via DIP Switches)

The following DIP switches must be set to configure Edge for use with Jupiter client or server protocol.
Program Mode (Configuration via RouterMapper)

Configuring in Program mode is performed through the Navigator or RouterMapper configuration utility software. To perform this operation:

- Your Edge must be configured with a valid IP address and configured to allow FTP client connections. See Network Configuration from Terminal Control Mode on page 74 for additional information on how to configure IP settings.
- You must have a PC (with configuration utility application software installed) attached to the Harris router. Make sure that the router is configured as described in the installation manual that applies to your specific router.
- You must create, or have an existing, Navigator or RouterMapper database. For more detailed information, see the appropriate configuration utility reference guide.

To configure Edge for use with Jupiter server protocol in Program mode¹, follow these steps.

1. Make sure that pole 1 of SW1 is set to ON.
2. Make sure that pole 6 of SW3 is set to ON.
3. Start up your configuration utility software; make sure that the appropriate communications settings are selected.
4. Poll the system.
   - If no errors are encountered, the Device List is updated.
   - If errors are encountered, error messages are returned. Refer to the appropriate configuration utility reference guide for information on how to correct returned errors.
5. Double-click on the desired Edge configuration listed in the Device List.
6. At the Edit Edge dialog box, select the Serial Protocols tab.
7. Double-click on the target serial port to which the Jupiter router is attached.
   - The Options window appears. Assigned values for the default protocol's baud rate, parity, data bits, stop bits, and serial interface are displayed.
   - a) Select the desired Jupiter protocol from the Protocol drop-down list.
      - The assigned values for the selected protocol appear. While all relevant protocol option values are displayed, some values may not be configurable. These values are displayed for informational purposes only; you cannot change them through your configuration utility software.
   - b) Select the desired baud rate by highlighting the baud rate value only.
      - A drop-down menu appears, which allows you to change the selection.
   - c) Select the desired mode by highlighting the serial interface value only.
      - A drop-down menu appears, which allows you to change the selection (usually RS-422 for Jupiter).
   - d) Select the desired termination by highlighting the termination status value only.

1 Navigator v. 4.5 and RouterMapper v. 6.00 or higher support Jupiter configuration.
A drop-down menu appears, which allows you to change the selection. If the Jupiter router is at an end point, the termination status value must be set to Terminated.

- Click **OK** to return to the Edge serial ports window, and then click **OK** to accept the changes.

## Configuring for Use with NVISION Protocols

The following information is specific to setting up your system so that you can operate it via the Edge. Complete details on how to set up and configure your NVISION routing systems are located in their respective operation manuals.

### Setting up Configurations

The following sections outline the steps involved in configuring for use with NVISION protocols.

### Setting Up the Client Configuration (Harris Controls NVISION)

![Figure 5-27 NVISION Client Configuration](image)

Follow the steps for these operations as provided in the pertinent manuals:

- Configure Edge to enable NVISION protocol.

### Setting Up the Client Configuration (Harris Controls NV9000)

![Figure 5-28 NV9000 Client Configuration](image)

Follow the steps for these operations as provided in the pertinent manuals:
Configure Edge to enable NV9000 protocol.

Setting Up the Server Configuration (NVISION Controls Harris)

Figure 5-29 NVISION Server Configuration

Follow the steps for these operations as provided in the pertinent manuals:

- Configure the Harris router (see the installation manual that applies to your specific Harris router).

Setting Up the Server Configuration (NV9000 Controls Harris)

Figure 5-30 NVISION Server Configuration

Follow the steps for these operations as provided in the pertinent manuals:

- Configure the Harris router (see the installation manual that applies to your specific Harris router).

Setting Up a Third-Party Server Configuration (Third Party Controls Harris via NVISION)

Figure 5-31 NVISION/Third-Party Server Configuration

Follow the steps for these operations as provided in the pertinent manuals:
1. Configure the Harris router (see the installation manual that applies to your specific Harris router).
2. Configure the Edge server protocol to listen for connections.
3. Configure the third-party control system (see the appropriate product manual for the third-party hardware).

**Setting Up a Third-Party Server Configuration**
(Third Party Controls Harris via NV9000)

![Figure 5-32 NV9000/Third-Party Server Configuration](image)

Follow the steps for these operations as provided in the pertinent manuals:

1. Configure the Harris router (see the installation manual that applies to your specific Harris router).
2. Configure the Edge server protocol to listen for connections.
3. Configure the third-party control system (see the appropriate product manual for the third-party hardware).

### Configuring for Use with NVISION or NV9000 Client or Server Protocol

*Note: Settings for Edge DIP switches are shown in Figure 3-14 on page 20.*

**DIP Switch Mode (Configuring via DIP Switches)**

The following DIP switches must be set to configure Edge for use with NVISION or NV9000 server protocol.

- Make sure that pole 1 of SW1 is set to OFF.
- Set up the protocol you want to run (pole 6 of SW3).
- Set up the appropriate baud rate (poles 7-8 of SW3).
- Set up the appropriate mode; usually RS-422, for NVISION (pole 1 of SW3).
- If the NVISION router is an end point, the Termination DIP switch (pole 2 of SW3) must be ON.

**Program Mode (Configuration via Navigator or RouterMapper)**

Configuring in Program mode is performed through the Navigator or RouterMapper configuration utility software. To perform this operation:
Your Edge must be configured with a valid IP address and configured to allow FTP client connections. See Network Configuration from Terminal Control Mode on page 74 for additional information on how to configure IP settings.

You must have a PC (with configuration utility software installed) attached to the Harris router. Make sure that the router is configured as described in the installation manual that applies to your specific router.

You must create, or have an existing, Navigator or RouterMapper database. For more detailed information, see the appropriate configuration utility reference guide.

To configure Edge for use with NVISION or NV9000 client or server protocol in Program mode, follow these steps.

1. Make sure that pole 1 of SW1 and pole 6 of SW3 are set to ON.
2. Start up your configuration utility software; make sure that the appropriate communications settings are selected.
3. Poll the system.
   - If no errors are encountered, the Device List is updated.
   - If errors are encountered, error messages are returned. Refer to the appropriate configuration utility reference guide for information on how to correct returned errors.
4. Double-click on the desired Edge configuration listed in the Device List.
5. At the Edit Edge dialog box, select the Serial Protocols tab.
6. Double-click on the target serial port to which the NVISION router is attached.

   The Options window appears. Assigned values for the default protocol's baud rate, parity, data bits, stop bits, and serial interface are displayed.

   a. Select the desired NVISION protocol from the Protocol drop-down list.

      The assigned values for the selected protocol appear. While all relevant protocol option values are displayed, some values may not be configurable. These values are displayed for informational purposes only; you cannot change them through your configuration utility software.

   b. Select the desired baud rate by highlighting the baud rate value only.

      A drop-down menu appears, which allows you to change the selection.

   c. Select the desired mode by highlighting the serial interface value only.

      A drop-down menu appears, which allows you to change the selection (usually RS-422 for NVISION).

   d. Select the desired termination by highlighting the termination status value only.

      A drop-down menu appears, which allows you to change the selection. If the NVISION router is at an end point, the termination status value must be set to Terminated.

   e. Click OK to return to the Edge serial ports window, and then click OK to accept the changes.

1 Navigator v. 4.5 and RouterMapper v. 5.13 or higher support NVISION and NV9000 configuration.
Configuring for Use with PESA Protocols

Configuration Notes
The PESA protocol interprets (parses) commands and replies by counting fields based on the number of “configured” levels. In a PESA system, both the controller and router must agree on the number of levels, or communications is impossible. On the Edge, this information is read from a names.txt file generated by Navigator or RouterMapper. For example, if configuring an Edge to control a PESA routing system, the Navigator or RouterMapper database must exactly describe the PESA router.

Another requirement is that the levels start with zero (our numbering system) and that they be contiguous (for example, you cannot define a system that has levels 0, 1, and 5). PESA also assumes that all routing matrices on all levels are the same size. If you must configure a system with different size matrices, you can sidestep this requirement by assigning the largest matrix to level zero. This protocol does not work with Source or Destination offsets. All sources and destinations must begin with zero (our numbers).

Internally, the PESA protocol is one-based. The Edge software adds or subtracts one when processing PESA commands. This means that our level zero corresponds to their level one, etc.

By default, the PESA protocol terminates a command with an ASCII carriage return (CR) followed by an ASCII line feed (LF), and expects these to be received in that order. Some PESA routers can be configured to not require the (CR). The Edge accepts commands with or without the (CR), but always sends (CR)(LF).

The Edge PESA Server supports all of the commands listed in the protocol document. However, many of those commands are not supported by all PESA routers. This meant that in order to work with all PESA routers, our Edge PESA client had to use only that subset of commands supported by all of their routers (H, J, L, W and Y).

The PESA protocol does not support asynchronous statusing. In order to show up-to-date status at the controller for changes made by other controllers to the router, the Client polls for destination and lock status every two seconds. This works for small and medium sized routers, but very large routers cannot answer the destination poll because of a 2K limit on packet size. On very large routers, the Client can take switches and see status for changes that it made, but changes made to the router by other controllers are not reported.

The following information is specific to setting up your system so that you can operate it via the Edge. Complete details on how to set up and configure your PESA routing systems are located in their respective operation manuals.

Setting up Configurations
If you haven’t already done so, review the Configuration Notes on page 42.
Setting Up the Client Configuration (Harris Controls PESA)

Figure 5-33  PESA Client Configuration

Follow the steps for these operations as provided in the pertinent manuals:

- Configure Edge to enable PESA CPU Link protocol.

Setting Up the Server Configuration (PESA Controls Harris)

Figure 5-34  PESA Server Configuration

Follow the steps for these operations as provided in the pertinent manuals:

- Configure the Harris router (see the installation manual that applies to your specific Harris router).

Setting Up a Third-Party Server Configuration
(Third Party Controls Harris via PESA)

Figure 5-35  PESA/Third-Party Server Configuration

Follow the steps for these operations as provided in the pertinent manuals:
Chapter 5
Protocol Translation Configuration

Configure the Harris router (see the installation manual that applies to your specific Harris router).

2 Configure the Edge server protocol to listen for connections.

3 Configure the third-party control system (see the appropriate product manual for the third-party hardware).

Follow the steps for these operations as provided in the pertinent manuals:

1 Configure the Harris router (see the installation manual that applies to your specific Harris router).

2 Configure the Edge server protocol to listen for connections.

3 Configure the third-party control system (see the appropriate product manual for the third-party hardware).

Configuring for Use with PESA CPU Link Client or Server Protocol

If you haven’t already done so, review the Configuration Notes on page 42.

DIP Switch Mode (Configuring via DIP Switches)

Note: Settings for Edge DIP switches are shown in Figure 3-14 on page 20.

The following DIP switches must be set to configure Edge for use with PESA CPU Link server protocol.

- Make sure that pole 1 of SW1 is set to OFF.
- Set up the protocol you want to run (pole 6 of SW3).
- Set up the appropriate baud rate (poles 7-8 of SW3).
- Set up the appropriate mode; usually RS-422, for PESA (pole 1 of SW3).
- If the PESA router is an end point, the Termination DIP switch (pole 2 of SW3) must be ON.

Program Mode (Configuration via Navigator or RouterMapper)

Configuring in Program mode is performed through the Navigator or RouterMapper configuration utility. To perform this operation:

- Your Edge must be configured with a valid IP address and configured to allow FTP client connections. See Network Configuration from Terminal Control Mode on page 74 for additional information on how to configure IP settings.
- You must have a PC (with configuration utility software installed) attached to the Harris router. Make sure that the router is configured as described in the installation manual that applies to your specific router.
- You must create, or have an existing, Navigator or RouterMapper database. For more detailed information, see the appropriate configuration utility reference guide.

If you haven’t already done so, review the Configuration Notes on page 42.

To configure Edge for use with PESA CPU Link client or server protocol in Program mode,
follow these steps.

1 Navigator v. 4.5 and RouterMapper v. 6.02 or higher support PESA CPU Link configuration.
1. Make sure that pole 1 of SW1 is set to ON.
2. Make sure that pole 6 of SW3 is set to ON.
3. Start up your configuration utility software; make sure that the appropriate communications settings are selected.
4. Poll the system.
   • If no errors are encountered, the Device List is updated.
   • If errors are encountered, error messages are returned. Refer to the appropriate configuration utility reference guide for information on how to correct returned errors.
5. Double-click on the desired Edge configuration listed in the Device List.
6. At the Edit Edge dialog box, select the Serial Protocols tab.
7. Double-click on the target serial port to which the PESA router is attached.
   The Options window appears. Assigned values for the default protocol's baud rate, parity, data bits, stop bits, and serial interface are displayed.
   a. Select the desired PESA protocol from the Protocol drop-down list.
      The assigned values for the selected protocol appear. While all relevant protocol option values are displayed, some values may not be configurable. These values are displayed for informational purposes only; you cannot change them through your configuration utility software.
   b. Select the desired baud rate by highlighting the baud rate value only. A drop-down menu appears, which allows you to change the selection.
   c. Select the desired mode by highlighting the serial interface value only.
      A drop-down menu appears, which allows you to change the selection (usually RS-232 for PESA).
   d. If using RS-422, select the desired termination by highlighting the termination status value only.
      A drop-down menu appears, which allows you to change the selection. If the PESA router is at an end point, the termination status value must be set to Terminated.
   e. Click OK to return to the Edge serial ports window, and then click OK to accept the changes.

Configuring for Use with Pro-Bel Protocols

The following information is specific to setting up your system so that you can operate it via Edge. Complete details on how to set up and configure your Pro-Bel routing systems are located in their respective operation manuals.

Setting Up Configurations

The following sections outline the steps involved in configuring for use with Pro-Bel protocols.
Setting Up the Pro-Bel Client Configuration (Harris Controls Pro-Bel)

Follow the steps for these operations as provided in the pertinent manuals:

- Configure Edge to enable Pro-Bel protocol.

Setting Up the Pro-Bel Server Configuration (Pro-Bel Controls Harris)

Follow the steps for these operations as provided in the pertinent manuals:

- Configure the Harris router (see the installation manual that applies to your specific Harris router).
Setting Up a Third-Party Server Configuration (Third Party Controls Harris via Pro-Bel)

Follow the steps for these operations as provided in the pertinent manuals:

1. Configure the Harris router (see the installation manual that applies to your specific Harris router).
2. Configure the Edge server protocol to listen for connections.
3. Configure the third-party control system (see the appropriate product manual for the third-party hardware).

Configuring for Use with Pro-Bel Client or Server Protocol

**Note:** Settings for Edge DIP switches are shown in Figure 3-14 on page 20.

**DIP Switch Mode (Configuring via DIP Switches)**

The following DIP switches must be set to configure Edge for use with Pro-Bel client or server protocol.

- Make sure that pole 1 of SW1 is set to OFF.
- Set up the protocol you want to run (pole 6 of SW3).
- Set up the appropriate baud rate (poles 7-8 of SW3).
- Set up the appropriate mode; usually RS-422 for Pro-Bel (pole 1 of SW3).
- If the Pro-Bel router is an end point, the Termination DIP switch (pole 2 of SW3) must be ON.

**Program Mode (Configuration via Navigator or RouterMapper)**

Configuring in Program mode is performed through the Navigator or RouterMapper configuration utility. To perform this operation:

- Your Edge must be configured with a valid IP address and configured to allow FTP client connections. See *Network Configuration from Terminal Control Mode* on page 74 for additional information on how to configure IP settings.
- You must have a PC (with configuration utility application software installed) attached to the Harris router. Make sure that the router is configured as described in the installation manual that applies to your specific router.
You must create, or have an existing, Navigator or RouterMapper database. For more detailed information, see the appropriate configuration utility reference guide.

To configure Edge for use with Pro-Bel client or server protocol in Program mode\(^1\), follow these steps.

1. Make sure that pole 1 of SW1 is set to ON.
2. Make sure that pole 6 of SW3 is set to ON.
3. Start up your configuration utility software; make sure that the appropriate communications settings are selected.
4. Poll the system.
   - If no errors are encountered, the Device List is updated.
   - If errors are encountered, error messages are returned. Refer to the appropriate configuration utility reference guide for information on how to correct returned errors.
5. Double-click on the desired Edge configuration listed in the Device List.
6. At the Edit Edge dialog box, select the Serial Protocols tab.
7. Double-click on the target serial port to which the Pro-Bel router is attached.

   The Options window appears. Assigned values for the default protocol’s baud rate, parity, data bits, stop bits, and serial interface are displayed.

   a. Select the desired Pro-Bel protocol from the Protocol drop-down list.

   The assigned values for the selected protocol appear. While all relevant protocol option values are displayed, some values may not be configurable. These values are displayed for informational purposes only; you cannot change them through your configuration utility software.

   b. Select the desired baud rate by highlighting the baud rate value only.

   A drop-down menu appears, which allows you to change the selection.

   c. Select the desired mode by highlighting the serial interface value only.

   A drop-down menu appears, which allows you to change the selection (usually RS-422 for Pro-Bel).

   d. Select the desired termination by highlighting the termination status value only.

   A drop-down menu appears, which allows you to change the selection. If the Pro-Bel router is at an end point, the termination status value must be set to Terminated.

   e. Click **Mappings...** to set up levels, inputs, outputs, and matrices for the Pro-Bel routing system.

   f. Click **OK** to return to the Edge serial ports window, and then click **OK** to accept the changes.

---

**Configuring for Use with Utah Protocols**

The following information is specific to setting up your system so that you can operate it via Edge. Complete details on how to set up and configure your Utah Scientific routing systems are located in their respective operation manuals.

---

\(^1\) Navigator v. 4.5 and RouterMapper v. 6.01 or higher support Pro-Bel configuration.
Setting up Configurations

The following sections outline the steps involved in configuring for use with Utah protocols.

Setting Up the Utah Client Configuration (Harris Controls Utah)

![Figure 5-39 Utah Client Configuration](image)

Follow the steps for these operations as provided in the pertinent manuals:

- Configure Edge to enable Utah protocol.

Setting Up the Utah Server Configuration (Utah Controls Harris)

![Figure 5-40 Utah Server Configuration](image)

Follow the steps for these operations as provided in the pertinent manuals:

- Configure the Harris router (see the installation manual that applies to your specific Harris router).
Setting Up a Third-Party Server Configuration (Third Party Controls Harris via Utah)

Follow the steps for these operations as provided in the pertinent manuals:

1. Configure the Harris router (see the installation manual that applies to your specific Harris router).
2. Configure the Edge server protocol to listen for connections.
3. Configure the third-party control system (see the appropriate product manual for the third-party hardware).

Configuring for Use with Utah Client or Server Protocol

Note: Settings for Edge DIP switches are shown in Figure 3-14 on page 20.

DIP Switch Mode (Configuring via DIP Switches)

The following DIP switches must be set to configure Edge for use with Utah client or server protocol.

- Make sure that pole 1 of SW1 is set to OFF.
- Set up the protocol you want to run (pole 6 of SW3).
- Set up the appropriate baud rate (poles 7-8 of SW3).
- Set up the appropriate mode; usually RS-422 for Utah (pole 1 of SW3).
- If the Utah router is an end point, the Termination DIP switch (pole 2 of SW3) must be ON.

Program Mode (Configuration via Navigator or RouterMapper)

Configuring in Program mode is performed through the Navigator or RouterMapper configuration utility software. To perform this operation:

- Your Edge must be configured with a valid IP address and configured to allow FTP client connections. See Network Configuration from Terminal Control Mode on page 74 for additional information on how to configure IP settings.
- You must have a PC (with configuration utility software installed) attached to the Harris router. Make sure that the router is configured as described in the installation manual that applies to your specific router.
You must create, or have an existing, Navigator or RouterMapper database. For more detailed information, see the appropriate configuration utility reference guide.

To configure Edge for use with Utah client or server protocol in Program mode\(^1\), follow these steps.

1. Make sure that pole 1 of SW1 is set to ON.
2. Make sure that pole 6 of SW3 is set to ON.
3. Start up your configuration utility software; make sure that the appropriate communications settings are selected.
4. Poll the system.
   - If no errors are encountered, the Device List is updated.
   - If errors are encountered, error messages are returned. Refer to the appropriate configuration utility reference guide for information on how to correct returned errors.
5. Double-click on the desired Edge configuration listed in the Device List.
6. At the Edit Edge dialog box, select the Serial Protocols tab.
7. Double-click on the target serial port to which the Utah router is attached.

   The Options window appears. Assigned values for the default protocol's baud rate, parity, data bits, stop bits, and serial interface are displayed.

   a. Select the desired Utah protocol from the Protocol drop-down list.

      The assigned values for the selected protocol appear. While all relevant protocol option values are displayed, some values may not be configurable. These values are displayed for informational purposes only; you cannot change them through your configuration utility software.

   b. Select the desired baud rate by highlighting the baud rate value only.

      A drop-down menu appears, which allows you to change the selection.

   c. Select the desired mode by highlighting the serial interface value only.

      A drop-down menu appears, which allows you to change the selection (usually RS-422 for Utah).

   d. Select the desired termination by highlighting the termination status value only.

      A drop-down menu appears, which allows you to change the selection. If the Utah router is at an end point, the termination status value must be set to Terminated.

   e. Click OK to return to the Edge serial ports window, and then click OK to accept the changes.

---

### Configuring for Name Support

The name support capability is important for use with protocols that use names (rather than numeric indices) in commands to identify router levels, sources, and destinations. See Chapter 7, Supporting Level, Source, or Destination Names With Edge for more detailed information about names and name support for Edge products.

Configuring for name support is performed through the Navigator or RouterMapper configuration utility. To perform this operation:

- Your Edge must be configured with a valid IP address and configured to allow FTP client connections. See Network Configuration from Terminal Control Mode on page 74 for additional information on how to configure IP settings.

\(^1\) Navigator v. 4.5 and RouterMapper v. 5.13 or higher support Utah configuration.
You must have a PC (with configuration utility software configuration utility application software installed) attached to the Harris router.

**Note:** Instructions for specific protocols indicate if these steps are required.

1. Configure the Harris router and router system. For more detailed information, see the installation manual that applies to your specific router.
2. Create a Navigator or RouterMapper database. For more detailed information, see the appropriate configuration utility reference guide.
3. Add the appropriate Edge configuration to the database.
4. If necessary, assign the desired names using Navigator or RouterMapper. Save the database.

**Configuration Examples**

Harris router control software applications and remote control panels (hardware) use the Edge to command and monitor routing switcher systems. **Figure 5-42** shows an example of Ethernet connectivity for Edge configuration applications. When using Navigator or a remote control panel, configure the routing system as shown in **Figure 5-42**.

**Figure 5-42**  An Example of Ethernet Connectivity for PC-Based Configuration/Control Applications
X-Y protocol is a Harris legacy protocol used to command and monitor router switching systems. This protocol can be transported via Ethernet, serial, or LXY coax media (or a mixture of those three types) throughout the network. Figure 5-44 shows an example of remote applications for newer Ethernet-based control panels. Figure 5-45 on page 55 shows an example of remote applications for RCP panels.
Centralized control and monitoring from one or more remote sites

Figure 5-44 Remote Applications for Newer Ethernet-Based Control Panels
Centralized control and monitoring from one or more remote sites

Figure 5-45 An Example of Remote Applications for RCP Panels
6 Protocol Formats and Terminal Operations

This section contains information concerning various protocol formats and their operation as they apply to the Edge. It does not contain detailed background information concerning these protocols.

- The following Jupiter documents contain detailed information concerning the Jupiter protocol:
  - ESswitch Serial Routing Switcher Control Protocol Guide (04-045707-008)
  - Jupiter Getting Started Guide (04 045707 003)
- The following NVISION documents contain detailed information concerning the NVISION protocol:
  - NVISION Ethernet Protocol, Router Control Messages (NP0016-00), Rev.B
  - NVISION Serial Protocol, Router Control Messages (NP0010-02), Rev.B
- The PESA CPU Link Protocol No. 1 (P1) manual contains detailed information concerning the PESA P1 protocol.
- The Pro-Bel Router Control Protocols (SW-P-88, Issue No. 2) manual contain detailed information concerning the SW-P-02 and SW-P-08 protocols.
- The Utah Scientific Routing Switcher Controls Protocol manual contains detailed information concerning the RCP-1 and Utah-12 protocols.

Protocol Formats

Using Harris Terminal Protocol
Terminal protocol is implemented via one of the Edge serial ports. Terminal protocol is useful as an interface to a router to check the status of the router, to change the crosspoints, and to write and execute simple automated programs.

DIP Switch Settings
There are no special DIP switch settings necessary to run terminal protocol.
System Operations and Queries

Commands in the systems operations and queries group are used to set the Echo Mode, list the current crosspoint connection status, obtain command syntax information, and determine the system configuration. System operations and queries are performed by executing the QUERY, INFORMATION, READ, POLL, ZERO, and TERMINAL commands. In addition, the Edge supports DESTINATION, LEVEL, SOURCE, SHOW MENU [X], XPOINT, and REBOOT commands.

You can find a description each of these commands in Table 6-23 on page 77. Please refer to the Serial Protocol Reference Manual for a detailed explanation of these commands.

Using Pass-Through Protocol (X-Y Commands)

Pass-through protocol is a simple protocol suited to automated/programmed control of a Harris router system. If you want a simple way to make a switch from a dumb ASCII terminal with no computer or automated control/status required, the terminal protocol is probably a better choice. For debugging and any computer or automated control and/or monitoring, the pass-through protocol is a much better solution.

Supported Commands

Table 6-7 X-Y Commands Supported

<table>
<thead>
<tr>
<th>Command Name</th>
<th>Syntax</th>
<th>Response</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buffer clear</td>
<td>B:C</td>
<td>None</td>
<td>Buffers are cleared only if any routing hardware is present</td>
</tr>
<tr>
<td>Buffer execute</td>
<td>B:E</td>
<td>S:</td>
<td>Buffers are taken only if any routing hardware is present</td>
</tr>
<tr>
<td>Level poll size query</td>
<td>F?</td>
<td>F: only if any routing hardware is present</td>
<td>The size of the largest frame on each level is updated in the internal system status table; this is used to determine how many GVG destinations and sources to status</td>
</tr>
<tr>
<td>Level poll size reply</td>
<td>F:</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Device discovery query</td>
<td>I?</td>
<td>I!</td>
<td>None</td>
</tr>
<tr>
<td>Device discovery reply</td>
<td>I!</td>
<td>None</td>
<td>None; the server does not monitor replies from other devices</td>
</tr>
<tr>
<td>Buffer crosspoint preset</td>
<td>P:</td>
<td>None</td>
<td>Buffers are preset only if any routing hardware is present</td>
</tr>
<tr>
<td>Alarm status query</td>
<td>Q?</td>
<td>Q! (power supply alarms only on Edge)</td>
<td>None</td>
</tr>
</tbody>
</table>
### Table 6-7  X-Y Commands Supported (Continued)

<table>
<thead>
<tr>
<th>Command Name</th>
<th>Syntax</th>
<th>Response</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm status reply</td>
<td>Q:</td>
<td>None</td>
<td>None; the server does not monitor alarms from other devices</td>
</tr>
<tr>
<td>Extended alarm reporting</td>
<td>Q!</td>
<td>None</td>
<td>None; the server does not monitor alarms from other devices</td>
</tr>
<tr>
<td>Level status query</td>
<td>S?</td>
<td>S: only if any routing hardware is present</td>
<td>None</td>
</tr>
<tr>
<td>Crosspoint status reply</td>
<td>S:</td>
<td>None</td>
<td>Crosspoint status is updated in the internal system status table; this data is used to generate the status replies for the GVG destination query command series and for the R[ead] terminal command</td>
</tr>
<tr>
<td>Crosspoint restrict query</td>
<td>U?</td>
<td>U! only if any routing hardware is present</td>
<td>None</td>
</tr>
<tr>
<td>Crosspoint restrict set/clear</td>
<td>U:</td>
<td>U! only if any routing hardware is present</td>
<td>Crosspoints are blocked if any routing hardware is present</td>
</tr>
<tr>
<td>Crosspoint restrict status</td>
<td>U!</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Buffer preset status query</td>
<td>V?</td>
<td>V: only if any routing hardware is present</td>
<td>None</td>
</tr>
<tr>
<td>Buffer preset status reply</td>
<td>V:</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Lock/Protect status query</td>
<td>W?</td>
<td>W! for local routing hardware</td>
<td>None</td>
</tr>
<tr>
<td>Lock/Protect status reply</td>
<td>W!</td>
<td>None</td>
<td>Lock information is updated in the internal system status table; this data is used to generate the &lt;N</td>
</tr>
<tr>
<td>Lock/Protect status set</td>
<td>W:</td>
<td>W! for local routing hardware</td>
<td>Lock/protect/unlock local routing hardware</td>
</tr>
<tr>
<td>Crosspoint status query</td>
<td>X?</td>
<td>S: only if any routing hardware is present</td>
<td>None</td>
</tr>
<tr>
<td>Crosspoint Take request</td>
<td>X:</td>
<td>S: only if any routing hardware is present</td>
<td>Crosspoints are taken if any routing hardware is present</td>
</tr>
</tbody>
</table>
Using GVG SMS-7000 Protocol

Table 6-8 provides a brief listing of the GVG SMS-7000 commands available through Edge. Table 6-9 on page 62 lists unsupported commands. Please refer to the Grass Valley Routing Products Protocols Manual for a detailed explanation of the Series 7000 native protocol.

DIP Switch Settings

If you are using a protocol other than Harris terminal protocol, the SW3 pole 6 DIP switch on your Edge must be set to ON.

Supported Commands

Table 6-8  GVG SMS-7000 Native Commands Supported

<table>
<thead>
<tr>
<th>Command</th>
<th>Syntax</th>
<th>Description</th>
<th>Client/Server</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background Activities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Return system name</td>
<td>BK,N</td>
<td>Used without parameters to synchronize communications</td>
<td>Server</td>
</tr>
<tr>
<td>Return protocol processor software revision</td>
<td>BK,R</td>
<td>Used to periodically refresh</td>
<td>Server</td>
</tr>
<tr>
<td>Return native protocol software title</td>
<td>BK,t</td>
<td>Used as a diagnostic tool</td>
<td>Server</td>
</tr>
<tr>
<td>Return status bit flags</td>
<td>BK,F</td>
<td></td>
<td>Server</td>
</tr>
<tr>
<td>Clear status bit flags</td>
<td>BK,f</td>
<td></td>
<td>Server</td>
</tr>
<tr>
<td>Force next QD command to return status of all destinations</td>
<td>BK,D</td>
<td></td>
<td>Server</td>
</tr>
<tr>
<td>Clear flags associated with QA,no_parameter command</td>
<td>BK,A</td>
<td></td>
<td>Server</td>
</tr>
<tr>
<td>Set/query refresh interval in seconds</td>
<td>BK,I</td>
<td></td>
<td>Server</td>
</tr>
<tr>
<td>Set/query level 4 echo status</td>
<td>BK,E</td>
<td></td>
<td>Server</td>
</tr>
<tr>
<td>Null command (implemented in Level 2)</td>
<td>BK,2</td>
<td></td>
<td>Server</td>
</tr>
<tr>
<td>Request protect</td>
<td>PR,dest_name,level_bitmap</td>
<td>Protects a specific destination from having its source changed</td>
<td>Server</td>
</tr>
<tr>
<td>Query combined destination status</td>
<td>QC[,dest_name]</td>
<td>Returns source status on combined levels of a destination</td>
<td>Server</td>
</tr>
<tr>
<td>Query destination status</td>
<td>QD[,dest_name] Qd[,dest_name]</td>
<td>Checks sources assigned to destinations by destination name</td>
<td>Server</td>
</tr>
<tr>
<td>Command</td>
<td>Syntax</td>
<td>Description</td>
<td>Client/Server</td>
</tr>
<tr>
<td>---------</td>
<td>--------</td>
<td>-------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Query error definition</td>
<td>QE,error_code</td>
<td>Retrieves text describing a particular error code</td>
<td>Server</td>
</tr>
<tr>
<td>Query destination status by index (response type 1)</td>
<td>Qi,destIndex,lvlIndex</td>
<td>Checks sources assigned to destinations by specific Destination and Level Index</td>
<td>Server</td>
</tr>
<tr>
<td>Query destination status by index (response type 2)</td>
<td>Qj,destIndex</td>
<td>Checks sources assigned to destinations by Destination Index for all levels</td>
<td>Server</td>
</tr>
<tr>
<td>Query destination status with tie line info</td>
<td>Qj[dest_name]</td>
<td>Checks sources assigned to destinations by destination name; includes tie line information</td>
<td>Server</td>
</tr>
<tr>
<td>Query Names</td>
<td></td>
<td></td>
<td>Server</td>
</tr>
<tr>
<td>Query source names</td>
<td>QN,S</td>
<td>Checks names associated with sources</td>
<td>Server</td>
</tr>
<tr>
<td>Query destination names</td>
<td>QN,D</td>
<td>Checks names associated with destinations</td>
<td>Server</td>
</tr>
<tr>
<td>Query level names</td>
<td>QN,L</td>
<td>Checks names associated with levels</td>
<td>Server</td>
</tr>
<tr>
<td>Query salvo names</td>
<td>QN,V</td>
<td>Checks names associated with salvos</td>
<td>Server</td>
</tr>
<tr>
<td>Query sources with source index</td>
<td>QN,IS</td>
<td>Checks names associated with sources via the Source Index</td>
<td>Server</td>
</tr>
<tr>
<td>Query destinations with destination index</td>
<td>QN,ID</td>
<td>Checks names associated with destinations via the Destinations Index</td>
<td>Server</td>
</tr>
<tr>
<td>Query date and time</td>
<td>QT</td>
<td>Checks system date and time information</td>
<td>Server</td>
</tr>
<tr>
<td>Query salvo status</td>
<td>QV,salvo_name</td>
<td>Checks sources, destinations, and levels associated with a specified Salvo (timed salvo information is not available).</td>
<td>Server</td>
</tr>
<tr>
<td>Request set date and time</td>
<td>ST,yyymmddhmmss</td>
<td></td>
<td>Server</td>
</tr>
<tr>
<td>Request Take</td>
<td>TA,dest_name,nbr_sources,src_name_entry1[,...src_name_entryn]</td>
<td>Takes Sources (on specified levels) to specified destination, by name rather than index</td>
<td>Server</td>
</tr>
<tr>
<td>Request Take destination</td>
<td>TD,dest_name,src_name_entry</td>
<td>Takes same source to all or specified levels</td>
<td>Server</td>
</tr>
</tbody>
</table>
Unsupported Commands

These commands are not supported, but do return a Level 4 Error code 5, “Not Implemented”:

<table>
<thead>
<tr>
<th>Command</th>
<th>Syntax</th>
<th>Description</th>
<th>Client/Server</th>
</tr>
</thead>
<tbody>
<tr>
<td>Request Take by index with level index (indexes are zero based)</td>
<td>TI,destIndex,srcIndex[,levelIndex]</td>
<td>Takes source (on specified level) to specified destination by index rather than name</td>
<td>Server</td>
</tr>
<tr>
<td>Request Take index with level bitmap</td>
<td>TJ,destIndex,nbr_sources,srcIndex,level_bitmap[,...,srcIndex,level_bitmap]</td>
<td>Takes sources (on specified levels) to specified destination by index rather than name; allows breakaways</td>
<td>Server</td>
</tr>
<tr>
<td>Request Take salvo</td>
<td>TS,salvo_name</td>
<td>executes a specified salvo</td>
<td>Server</td>
</tr>
<tr>
<td>Request unprotect</td>
<td>UP,dest_name,level_bitmap</td>
<td>Removes Protect from specified destination</td>
<td>Server</td>
</tr>
</tbody>
</table>

Using Jupiter Protocol

DIP Switch Settings

If you are using a protocol other than Harris terminal protocol, the SW3 pole 6 DIP switch on your Edge must be set to ON.
## Supported Commands

### Jupiter ASCII Commands

Table 6-10 identifies the Jupiter ASCII commands available through Edge. Please refer to the appropriate Jupiter manual for a detailed explanation of these protocols.

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZA</td>
<td>Acknowledge</td>
<td>Used to see if the ASCII interface exists and is running; a response of ZA is returned whenever a ZA is received</td>
</tr>
<tr>
<td>ZJOOO</td>
<td>Report Lock Status</td>
<td>Returns a code based on which kind of system control device or interface locked or protected the specified output; if the output is not locked or protected, no response will be sent</td>
</tr>
<tr>
<td>ZN</td>
<td>Command Rejected</td>
<td>Issued when a condition occurs where the current command cannot be executed. A ZN response can be issued for several reasons such as an invalid command, an invalid command format, or an invalid input, output or level. Invalid inputs, outputs and levels are logged to the system logger. Also if the system is busy a ZN will be issued followed by XOFF. When it is again ready for the next command a XON will be issued. Note that after the XON, response(s) from the prior command may be issued (for example, ZR response[s]).</td>
</tr>
<tr>
<td>ZPOOO</td>
<td>Lock Output</td>
<td>Locks the specified output from being changed by any system control device</td>
</tr>
<tr>
<td>ZROOO</td>
<td>Status Request</td>
<td>Requests current switcher status for a single output. Response is in the format: ZRO0OIIIIILLLL; if the status for the output is “split,” multiple responses will be returned</td>
</tr>
<tr>
<td>ZSOOOIIIIIIIIIIII</td>
<td>Switch Request</td>
<td>Causes the interface to issue a Take switch request to the routing switcher control system and affects a single routing switcher output; if no levels are specified, then all defined levels are assumed.</td>
</tr>
</tbody>
</table>

**Note:** Passwords are not honored by automation protocol handling. A remote computer can send a command with multiple Switch Requests (older releases do not have this capability). A single command can be up to 180 characters long which allows switching of from 12-22 outputs (depending on the specified levels).

| ZUOOO    | Unlock Output     | Removes the lock or protect from the specified system output; if another system control device or interface locked or protected this output, this command will fail |
| ZVOOO    | Protect Output    | Protects the specified output from being changed by any other system control device |
Table 6-10  Jupiter ASCII Commands (Continued)

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZWOOO</td>
<td>Watch Output</td>
<td>Causes the interface to watch the specified output for any changes and report such changes. A request to watch output “999” is a request to watch all defined outputs in that port’s serial output set. All responses are in the “ZR” format described above. When issued, this command also may result in an immediate ZR response for the requested output(s). No ZR response(s) will be returned if the requested output(s) do not have any inputs assigned to them.</td>
</tr>
<tr>
<td>ZY</td>
<td>Command Accepted (ACK)</td>
<td>Returns after the serial port has successfully parsed the command and, in the case of a switch command, has successfully issued the TAKE to the system and received a switch response back from the system. <strong>Note:</strong> This does not mean that the command was successfully executed. The remote computer should not issue a new command until receiving a ZY or ZN from the current command. The amount of time for the response will vary depending on system complexity and current system activity. Also, the number of switches involved in the command will affect the amount of time it takes to receive the ZY response. Multiple switches sent in one command may result in ZR response(s) being returned before the ZY response.</td>
</tr>
<tr>
<td>ZZ</td>
<td>Reset</td>
<td>Forces the ASCII controller to reset, which causes the interface to cancel all previous ZP, ZV, and ZW commands. A ZX response is returned to the external computer upon command completion. This ZX is also returned whenever the interface is manually reset.</td>
</tr>
</tbody>
</table>

Jupiter ESswitch Commands

Table 6-11 and Table 6-12 identify the Jupiter ESswitch commands available through Edge. Please refer to the Jupiter Facility Control System ESswitch Serial Routing Switcher Control Protocol Guide for a detailed explanation of these protocols.

Table 6-11  Jupiter ESswitch Message Keywords

<table>
<thead>
<tr>
<th>Hex</th>
<th>Message Keyword</th>
<th>Function</th>
<th>Mnemonic</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>READ</td>
<td>Directs the virtual machine to transmit the instantaneous content of the specified information field</td>
<td>READ</td>
</tr>
<tr>
<td>23</td>
<td>I/F ITEM RESPONSE</td>
<td>Response to READ, UPDATE, or CYCLE commands</td>
<td>IFRE</td>
</tr>
<tr>
<td>48</td>
<td>CLEAR CROSSPNT EXCLUSION</td>
<td>Causes connection of the crosspoint between a specified source (row or input) and specified destination (column or output) in the specified level of the specified matrix to be allowed; previously connected crosspoints are not affected</td>
<td>CCEX</td>
</tr>
<tr>
<td>42</td>
<td>CONNECT CROSSPOINT</td>
<td>Causes the crosspoint between a specified source (row or input) and a specified destination (column or output) in the specified level of a specified matrix to be connected</td>
<td>CONC</td>
</tr>
</tbody>
</table>
### Table 6-11 Jupiter ESswitch Message Keywords (Continued)

<table>
<thead>
<tr>
<th>Hex</th>
<th>Message Keyword</th>
<th>Function</th>
<th>Mnemonic</th>
</tr>
</thead>
<tbody>
<tr>
<td>7E</td>
<td>CONNECT W/AUDIO MODE</td>
<td>Causes the crosspoint between a specified source (row or input) and a specified destination (column or output) of the specified left and right audio levels of the specified left and right audio matrices to be connected with the specified audio mode</td>
<td>CWAM</td>
</tr>
<tr>
<td>44</td>
<td>LOCK CROSSPOINT</td>
<td>Causes a previously connected crosspoint between a specified destination (column or output) and its existing source (row or input) in the specified level of the specified matrix to be locked in its current state</td>
<td>LCKC</td>
</tr>
<tr>
<td>60</td>
<td>PRESET</td>
<td>Presets the named information field to a given value</td>
<td>PRST</td>
</tr>
<tr>
<td>4A</td>
<td>SET CROSSPOINT EXCLUSION</td>
<td>Causes connection of the crosspoint between a specified source (row or input) and specified destination (column or output) in the specified level of a specified matrix to be disallowed; previously connected crosspoints that become excluded are not affected</td>
<td>SCEX</td>
</tr>
<tr>
<td>46</td>
<td>SPECIFIC MUTE</td>
<td>Directs the controlled virtual machine to switch off all responses previously initiated by a CYCLE or UPDATE command for the specified information field</td>
<td>SPMT</td>
</tr>
<tr>
<td>40</td>
<td>START-UP RESPONSE</td>
<td>Indicates that the controlled device has been powered up</td>
<td>STUR</td>
</tr>
<tr>
<td>45</td>
<td>UNLOCK CROSSPOINT</td>
<td>Causes the crosspoint between the specified destination (column or output) and its existing source (row or input) in the specified level of the specified matrix to be unlocked and available for a change in state</td>
<td>UNLC</td>
</tr>
</tbody>
</table>

### Table 6-12 Jupiter ESswitch Information Fields

<table>
<thead>
<tr>
<th>Hex</th>
<th>Information Field Name</th>
<th>Function</th>
<th>Mnemonic</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>COMMAND ERROR STATUS</td>
<td>Tallies faults in the system and their reasons detected by internal diagnostics (as applicable); contains the returned status of failed switches</td>
<td>CEST</td>
</tr>
<tr>
<td>48</td>
<td>CROSSPOINT STATUS</td>
<td>Gives a list of the unconfirmed crosspoints corresponding to a specified destination (column) in a specified level of a specified matrix</td>
<td>CSTA</td>
</tr>
<tr>
<td>4F</td>
<td>DESTINATION NAME</td>
<td>Contains the name of the specified destination in the specified level of a specified matrix</td>
<td>DNAM</td>
</tr>
<tr>
<td>44</td>
<td>DESTINATION POINTER</td>
<td>Defines a pointer to a destination (column or output) in the level (specified in the LEVEL POINTER information field) of the matrix (specified in the MATRIX POINTER information field)</td>
<td>DPOI</td>
</tr>
</tbody>
</table>
### Table 6-12  Jupiter ESswitch Information Fields  (Continued)

<table>
<thead>
<tr>
<th>Hex</th>
<th>Information Field Name</th>
<th>Function</th>
<th>Mnemonic</th>
</tr>
</thead>
<tbody>
<tr>
<td>53</td>
<td>EXCLUSION SOURCE-TO-DEST</td>
<td>Indicates all sources (rows or inputs) in a specified level of a specified matrix that cannot be connected to a specified destination (column or output)</td>
<td>EXSD</td>
</tr>
<tr>
<td>4A</td>
<td>LEVEL CONFIGURATION</td>
<td>Describes the start-up configuration in the specified level of the specified matrix by first defining the rectangular limits of the level and then detailing crosspoint blocks (typically card-related) that do not exist</td>
<td>LECO</td>
</tr>
<tr>
<td>42</td>
<td>LEVEL POINTER</td>
<td>Defines a pointer to a level of the matrix specified in the MATRIX POINTER information field</td>
<td>LPOI</td>
</tr>
<tr>
<td>50</td>
<td>LOCKED SOURCE-TO-DEST</td>
<td>Indicates all sources (rows or inputs) in a specific level of a specific matrix whose crosspoint to a destination (column or output) is locked</td>
<td>LSTD</td>
</tr>
<tr>
<td>41</td>
<td>MATRIX POINTER</td>
<td>Defines a pointer to a matrix</td>
<td>MPOI</td>
</tr>
<tr>
<td>4E</td>
<td>SOURCE NAME</td>
<td>Contains the name of the specified source in the specified level of a specified matrix</td>
<td>SNAM</td>
</tr>
<tr>
<td>43</td>
<td>SOURCE POINTER</td>
<td>Defines a pointer to a source (row or input) in the level (specified in the LEVEL POINTER information field) of the matrix (specified in the MATRIX POINTER information field)</td>
<td>SPOI</td>
</tr>
<tr>
<td>47</td>
<td>SOURCES-TO-DEST</td>
<td>Indicates all sources (rows or inputs) in a specified level of a specified matrix that are currently connected to a specified destination (column or output)</td>
<td>STOD</td>
</tr>
</tbody>
</table>

### Using NVISION Protocol

#### DIP Switch Settings

If you are using a protocol other than Harris terminal protocol, the SW3 pole 6 DIP switch on your Edge must be set to ON.

#### Supported Commands

> **Note:** NP0020 commands are not supported.
Table 6-13 through Table 6-16 identify the NVISION commands available through Edge. Please refer to the appropriate NVISION manual for a detailed explanation of these protocols.

### Table 6-13  NP0010 Command Codes

<table>
<thead>
<tr>
<th>Hex Designator</th>
<th>Command Protocol/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x10</td>
<td>Manufacturer and product ID</td>
</tr>
<tr>
<td>0x11</td>
<td>Software version</td>
</tr>
<tr>
<td>0x50</td>
<td>Take (without time stamp)</td>
</tr>
<tr>
<td>0x51</td>
<td>Destination status</td>
</tr>
<tr>
<td>0x55</td>
<td>Lock destination</td>
</tr>
<tr>
<td>0x56</td>
<td>Protect destination</td>
</tr>
<tr>
<td>0x58</td>
<td>Release destination</td>
</tr>
<tr>
<td>0x59</td>
<td>Level configuration</td>
</tr>
<tr>
<td>0x5D</td>
<td>Tally request</td>
</tr>
<tr>
<td>0x5E</td>
<td>Salvo</td>
</tr>
<tr>
<td>0x68</td>
<td>Expanded tally</td>
</tr>
<tr>
<td>0x80</td>
<td>Error response</td>
</tr>
</tbody>
</table>

### Table 6-14  NP0016 Command Codes

<table>
<thead>
<tr>
<th>Hex Designator</th>
<th>Command Protocol/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x0000 0050</td>
<td>Take</td>
</tr>
<tr>
<td>0x0000 0051</td>
<td>Set output lock, protect, release</td>
</tr>
<tr>
<td>0x0000 0052</td>
<td>Get status of output</td>
</tr>
<tr>
<td>0x0000 0059</td>
<td>Router partition information</td>
</tr>
<tr>
<td>0x0000 005E</td>
<td>Salvo (tally)</td>
</tr>
</tbody>
</table>

### Table 6-15  NP0017 Command Codes

<table>
<thead>
<tr>
<th>Hex Designator</th>
<th>Command Protocol/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x0000 3001</td>
<td>Take input port to output port</td>
</tr>
<tr>
<td>0x0000 3003</td>
<td>Lock/protect/release port</td>
</tr>
<tr>
<td>0x0000 3005</td>
<td>Register for changes for port</td>
</tr>
<tr>
<td>0x0000 3007</td>
<td>Get physical crosspoint status</td>
</tr>
<tr>
<td>0x0000 3009</td>
<td>Get physical LPR (lock/protect/release) status</td>
</tr>
<tr>
<td>0x0000 300C</td>
<td>Physical output changed</td>
</tr>
<tr>
<td>0x0000 3012</td>
<td>Get mnemonics</td>
</tr>
<tr>
<td>0x0000 3013</td>
<td>Find mnemonics</td>
</tr>
<tr>
<td>0x0000 3014</td>
<td>Get physical level dimensions</td>
</tr>
</tbody>
</table>
Using PESA Protocol

DIP Switch Settings

If you are using a protocol other than Harris terminal protocol, the SW3 pole 6 DIP switch on your Edge must be set to ON.

Supported Commands

Table 6-17 and Table 6-18 identify the PESA commands available through Edge. Please refer to the appropriate PESA manual for a detailed explanation of these protocols.

Table 6-16  NP0025 Command Codes

<table>
<thead>
<tr>
<th>Hex Designator</th>
<th>Command Protocol/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x22</td>
<td>Get NV9000 mnemonic</td>
</tr>
</tbody>
</table>

Table 6-17  PESA P1 Commands

<table>
<thead>
<tr>
<th>ASCII</th>
<th>Command Protocol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>B SLV CS @</td>
<td>Display Salvo</td>
</tr>
<tr>
<td>C</td>
<td>C SLV S DST L1 L2 L3 L4 CS @</td>
<td>Change Salvo</td>
</tr>
<tr>
<td>D</td>
<td>D SLV S DST CS @</td>
<td>Delete Salvo</td>
</tr>
<tr>
<td>F</td>
<td>F SLV CS @</td>
<td>De-allocate Salvo Group.</td>
</tr>
<tr>
<td>H</td>
<td>H DST L1 L2 L3 L4 CS @</td>
<td>Change Switcher (Take)</td>
</tr>
<tr>
<td>J</td>
<td>J CS @</td>
<td>Switcher Status (no error info)</td>
</tr>
<tr>
<td>L</td>
<td>L S DST CS @</td>
<td>Change (Toggle) Lock Status</td>
</tr>
<tr>
<td>P</td>
<td>P S DST CS @</td>
<td>Change Protect Status</td>
</tr>
<tr>
<td>R</td>
<td>R CS @</td>
<td>Restore All Call</td>
</tr>
<tr>
<td>T</td>
<td>T L1 L2 L3 L4 CS @</td>
<td>All Call</td>
</tr>
<tr>
<td>W</td>
<td>W S CS @</td>
<td>Display Lock/Protect Status</td>
</tr>
<tr>
<td>Y</td>
<td>Y DST CS @</td>
<td>Switcher Status (one destination with error info)</td>
</tr>
<tr>
<td>Z</td>
<td>Z CS @</td>
<td>Switcher Status (entire matrix with error info)</td>
</tr>
</tbody>
</table>

Table 6-18  PESA P1 <-> X-Y Pass-Through Correlation

<table>
<thead>
<tr>
<th>X-Y Pass-Through Command</th>
<th>PESA P1 Command</th>
<th>Explanation/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>B:C</td>
<td>Not supported</td>
<td>Preset status, preset status request and preset buffer clear and reset are not supported in RCP-1</td>
</tr>
<tr>
<td>B:R</td>
<td>Not supported</td>
<td>Parameter Assignment/Matrix Take</td>
</tr>
<tr>
<td>V?</td>
<td>Not supported</td>
<td>Parameter Query/Matrix Status request</td>
</tr>
</tbody>
</table>
Using Pro-Bel Protocol

DIP Switch Settings

If you are using a protocol other than Harris terminal protocol, the SW3 pole 6 DIP switch on your Edge must be set to ON.

Supported Commands

Table 6-19 and Table 6-20 identify the Pro-Bel commands available through Edge. Please refer to the appropriate Pro-Bel manual for a detailed explanation of these protocols.

Table 6-19 Pro-Bel General Switcher Communication Protocol (SW-P-02) Command Codes

<table>
<thead>
<tr>
<th>Decimal</th>
<th>Command Protocol/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Interrogate message</td>
</tr>
<tr>
<td>02</td>
<td>Connect message</td>
</tr>
<tr>
<td>03</td>
<td>Tally message</td>
</tr>
<tr>
<td>04</td>
<td>Connected message</td>
</tr>
<tr>
<td>05</td>
<td>Connect On Go message</td>
</tr>
</tbody>
</table>
Table 6-19  Pro-Bel General Switcher Communication Protocol (SW-P-02) Command Codes

<table>
<thead>
<tr>
<th>Decimal</th>
<th>Command Protocol/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>06</td>
<td>Go message</td>
</tr>
<tr>
<td>12</td>
<td>Connect On Go Acknowledge message</td>
</tr>
<tr>
<td>13</td>
<td>Go Done Acknowledge message</td>
</tr>
</tbody>
</table>

Table 6-20  Pro-Bel General Remote Control Protocol (SW-P-08) Command Codes

<table>
<thead>
<tr>
<th>Decimal</th>
<th>Command Protocol/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Crosspoint Interrogate message</td>
</tr>
<tr>
<td>2</td>
<td>Crosspoint Connect message</td>
</tr>
<tr>
<td>3</td>
<td>Crosspoint Tally message</td>
</tr>
<tr>
<td>4</td>
<td>Crosspoint Connected message</td>
</tr>
<tr>
<td>21</td>
<td>Crosspoint Tally Dump Request message</td>
</tr>
<tr>
<td>22</td>
<td>Crosspoint Tally Dump (BYTE) message</td>
</tr>
<tr>
<td>23</td>
<td>Crosspoint Tally Dump (WORD) message</td>
</tr>
</tbody>
</table>

Using Utah Scientific RCP-1/Utah-12 Protocol

DIP Switch Settings

If you are using a protocol other than Harris terminal protocol, the SW3 pole 6 DIP switch on your Edge must be set to ON.

Supported Commands

Table 6-21 provides a brief listing of the Utah Scientific RCP-1/Utah-12 commands available through Edge. Table 6-22 on page 71 lists correlations between the Utah commands and X-Y commands. Please refer to the Utah Scientific Routing Switcher Controls Protocol manual for a detailed explanation of the RCP-1/Utah-12 native protocol.

Table 6-21  Utah Scientific RCP-1/Utah-12 Command Codes

<table>
<thead>
<tr>
<th>ASCII</th>
<th>HEX</th>
<th>Command Protocol/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH</td>
<td>01</td>
<td>Matrix Take command</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SOH &lt;Lev 1-4&gt; &lt;Lev 5-8&gt; &lt;Matrix input&gt; &lt;Matrix output&gt;</td>
</tr>
<tr>
<td>SOH &lt;@&gt;&lt;@&gt; (Utah-12)</td>
<td>01</td>
<td>Matrix Status Request (Same as Matrix Take command where both level bytes are “@”</td>
</tr>
<tr>
<td>ESC @</td>
<td>1B 40</td>
<td>Matrix refresh report enable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reported data = STX &lt;Lev 1-4&gt;&lt;Lev 5-8&gt; &lt;Matrix input&gt; &lt;Matrix output&gt; &lt;Checksum&gt; CR</td>
</tr>
<tr>
<td>ESC A</td>
<td>1B 41</td>
<td>Matrix refresh report disable</td>
</tr>
<tr>
<td>ESC B</td>
<td>1B 42</td>
<td>Matrix change report enable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reported data = FS &lt;Lev 1-4&gt;&lt;Lev 5-8&gt; &lt;Matrix input&gt; &lt;Matrix output&gt; &lt;Checksum&gt; CR</td>
</tr>
</tbody>
</table>
### Table 6-21  Utah Scientific RCP-1/Utah-12 Command Codes (Continued)

<table>
<thead>
<tr>
<th>ASCII</th>
<th>HEX</th>
<th>Command Protocol/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESC C</td>
<td>1B 43</td>
<td>Matrix change report disable</td>
</tr>
<tr>
<td>ESC D OR</td>
<td>1B 44</td>
<td>Matrix original take report enable</td>
</tr>
<tr>
<td>ESC Q (Utah-12)</td>
<td></td>
<td>Reported data = SOH&lt;Lev 1-4&gt; &lt;Lev 5-8&gt; &lt;Matrix input&gt; &lt;Matrix output&gt; &lt;Checksum&gt; CR</td>
</tr>
<tr>
<td>ESC E OR</td>
<td>1B 45</td>
<td>Matrix original take report disable</td>
</tr>
<tr>
<td>ESC R (Utah-12)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESC L</td>
<td>1B 4C</td>
<td>Matrix Status request</td>
</tr>
<tr>
<td>ESC 0</td>
<td>1B 4F</td>
<td>Current Mode and station name request</td>
</tr>
<tr>
<td>ESC P</td>
<td>1B 50</td>
<td>Program checksum request</td>
</tr>
<tr>
<td>ESC S (Utah-12)</td>
<td>1B 53</td>
<td>Enable XON/XOFF</td>
</tr>
<tr>
<td>ESC T (Utah-12)</td>
<td>1B 54</td>
<td>Disable XON/XOFF</td>
</tr>
<tr>
<td>ESC V</td>
<td>1B 56</td>
<td>Program version request</td>
</tr>
</tbody>
</table>

### Table 6-22  Utah Scientific RCP-1/Utah-12 <-> X-Y Pass-Through Correlation

<table>
<thead>
<tr>
<th>XY- Pass-Through Command</th>
<th>Utah RCP-1/ Utah-12 Command</th>
<th>Explanation/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>I? /I! / I?T</td>
<td>No equivalent</td>
<td>Device discovery &amp; reporting</td>
</tr>
<tr>
<td>I?V</td>
<td>ESC V</td>
<td>Device version</td>
</tr>
<tr>
<td>E?</td>
<td>ESC L</td>
<td>Parameter Query/Matrix Status request</td>
</tr>
<tr>
<td>E:</td>
<td>SOH</td>
<td>Parameter Assignment/Matrix Take</td>
</tr>
<tr>
<td>G?</td>
<td>ESC 0</td>
<td>Name Query</td>
</tr>
<tr>
<td>Q?</td>
<td>No equivalent</td>
<td>Alarm Status request/Matrix status request</td>
</tr>
<tr>
<td>W? / W: / W!</td>
<td>No equivalent</td>
<td>Lock, Protect / Unlock, Unprotect a destination</td>
</tr>
<tr>
<td>F?</td>
<td>No equivalent</td>
<td>Frame size request</td>
</tr>
<tr>
<td>P:</td>
<td>SOH</td>
<td>Preset and Preset execute are not supported in RCP-1. Therefore a take command will be issued to do both jobs at the same time.</td>
</tr>
<tr>
<td>B:E</td>
<td>SOH</td>
<td>Preset status, preset status request and preset buffer clear and reset are not supported in RCP-1</td>
</tr>
<tr>
<td>B:C, B:R, V?, and V:</td>
<td>No equivalent</td>
<td>Crosspoint take request/Matrix take</td>
</tr>
<tr>
<td>X:</td>
<td>SOH</td>
<td></td>
</tr>
</tbody>
</table>
Terminal Operations

Two separate serial control ports are used to control Edge 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 Edge on page 77.

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 77. In addition, the configuration scenarios listed in Chapter 5, Protocol Translation Configuration cite specific needed terminal commands.

Before you configure your Edge 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 73.
- For a standalone system with Ethernet connections, see Establishing a Telnet Session for Ethernet Control Interface Products on page 73.
- For a network system with serial connections see Establishing a Terminal Operation Session for Serial Control Interface Products on page 73 and Network Configuration from Terminal Control Mode on page 74.
- For a network system with Ethernet connections see Establishing a Telnet Session for Ethernet Control Interface Products on page 73 and Network Configuration from Terminal Control Mode on page 74.

Table 6-22  Utah Scientific RCP-1/Utah-12 <—> X-Y Pass-Through Correlation (Continued)

<table>
<thead>
<tr>
<th>XY- Pass-Through Command</th>
<th>Utah RCP-1/Utah-12 Command</th>
<th>Explanation/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>X? / S?</td>
<td>ESC L (RCP-1) / SOH @@ @@ (Utah-12)</td>
<td>Crosspoint or level status request/Matrix request</td>
</tr>
<tr>
<td>U? / U:</td>
<td>No equivalent</td>
<td>Crosspoint restriction status/Query</td>
</tr>
<tr>
<td>K:</td>
<td>No equivalent</td>
<td>Device name assignment</td>
</tr>
<tr>
<td>K?</td>
<td>No equivalent</td>
<td>Device name request</td>
</tr>
</tbody>
</table>
Establishing a Terminal Operation Session for Serial Control Interface Products

1. Configure a host machine (such as a PC with HyperTerminal 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

2. Ensure that the Edge 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 Edge port labeled SERIAL1.

4. Connect the Edge Ethernet port to the router network.

5. Connect the Edge X-Y to the router network.

CAUTION
Make sure the X-Y network is terminated appropriately.

6. Start up both PC and terminal emulation application.

7. Apply power to the Edge box. The Command Summary screen should appear on the PC screen.

Establishing a Telnet Session for Ethernet Control Interface Products

Follow these steps to establish a Telnet session to the Edge 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 Edge.

2. Change the IP address of your PC to a static IP address compatible with the Edge IP address.

   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.

3. At a DOS prompt, enter the word “telnet” and the IP address of the Edge (for example, telnet 100.200.50.10).


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.
Type in the letter “Q” (it will not appear on the screen), then press <Enter>. The Command Summary screen will appear. (See page 76 for an example of the Command Summary screen.)

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 75 for more information.

Network Configuration from Terminal Control Mode

The Edge is ready to process user commands whenever you see the prompt “>.” All user-entered commands should be followed by a carriage return. The Edge 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:

```plaintext
>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:

```plaintext
>show ipdisplay
```

Note: “Active” settings are the ones that the Edge currently uses. “Stored” settings are the ones that will be used the next time the Edge is started up. The numbers will be different if the IP address is changed.

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

>
This completes network configuration of Edge. For IP changes to take effect, the Edge should be restarted. Type the REBOOT command at the terminal prompt:

>REBOOT

Telnet Interface

Telnet Configuration

The Telnet interface allows remote connection to the router 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 6-28 on page 84 for appropriate user management commands).

The Telnet commands listed in Table 6-24 on page 79 provide control of Edge 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 router via the Telnet or FTP interfaces exposed by the router.

Appropriate user management commands are listed in Table 6-28 on page 84.

Virtual (Network) X-Y Configuration

The virtual X-Y interface allows remote connection to a router from Harris Ethernet-enabled router control hardware and software packages such as the RCP-ABA-E, RouterWorks, Pilot 3.0 or higher, and Navigator 2.0 or higher. To connect to the virtual X-Y interface, the router should be configured as a virtual X-Y server and the router control device as a client (to configure the product to connect to Edge as a client, see Setting Up the GVG Ethernet Client Configuration (Harris Controls GVG) on page 32).

To configure the Edge's virtual X-Y server, enable the Harris VXY Server protocol on the hardware's Ethernet port (see Configuring for Use with Ethernet Protocols on page 31). Once the protocol server has been installed on the Ethernet port, it may be configured.

To enable the virtual X-Y server on the Edge's Ethernet port, use the following commands:

>set ENET1 PROTOCOL2=ON
To configure operational parameters of the server, use the virtual X-Y commands listed in Table 6-24 on page 79 (accessed by typing SHOW VIRTUALXY at the command prompt). The commands appropriate to this configuration are

- SET VXYMAXCONNECTIONS
- SET VXYDISCONNECTUSER
- SHOW VXYCONNECTIONS

---

**Terminal Commands**

Some commands referenced in this section are explained in the Serial Protocol Reference 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 6-46) should be seen on the terminal emulation application. The Command Summary screen provides the basic command line entry syntax for the commands available for Edge.

![Command Summary Screen](image-url)
List of Terminal Commands

The commands listed in Table 6-23 are in order corresponding to their appearance on the Command Summary screen (Figure 6-46 on page 76). 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 Serial Protocol Reference Manual. You can download a copy of this manual from our website.

Table 6-23 Terminal Commands from Terminal Protocol Menu Screen

<table>
<thead>
<tr>
<th>Command</th>
<th>Syntax</th>
<th>Input Parameters</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>DESTINATION</td>
<td>DESTINATION #[,#,...] or D #</td>
<td># = Destination number</td>
<td>Completes crosspoint operations after the level number and the source number have been set</td>
</tr>
<tr>
<td>INFORMATION</td>
<td>INFORMATION or I</td>
<td>None</td>
<td>Provides information on the overall system as seen from the connection to the X-Y bus</td>
</tr>
<tr>
<td>LEVEL</td>
<td>LEVEL # or L #</td>
<td># = Level number</td>
<td>Sets the level number for a router that is connected to an active system</td>
</tr>
<tr>
<td>POLL</td>
<td>POLL # or P #</td>
<td># = Source number to be searched; may be any number 1 to 12</td>
<td>Determines which destinations are connected to a specific source number</td>
</tr>
<tr>
<td>QUERY</td>
<td>QUERY or Q</td>
<td>None</td>
<td>Provides a list that includes a basic command syntax and brief description of each command</td>
</tr>
<tr>
<td>READ</td>
<td>READ or R</td>
<td>None</td>
<td>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</td>
</tr>
<tr>
<td>SHOW MENU</td>
<td>SHOW MENU E</td>
<td>E = Ethernet command options</td>
<td>Displays subcommands for Ethernet command options (see page 79 for a list of subcommands)</td>
</tr>
</tbody>
</table>
### Table 6-23  Terminal Commands from Terminal Protocol Menu Screen (Continued)

<table>
<thead>
<tr>
<th>Command</th>
<th>Syntax</th>
<th>Input Parameters</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHOW MENU F</td>
<td>F = File system command options</td>
<td></td>
<td>Displays subcommands for file system command options (see page 82 for a list of subcommands)</td>
</tr>
<tr>
<td>SHOW MENU H</td>
<td>H = Hardware options command options</td>
<td></td>
<td>Displays subcommands for hardware options (see page 82 for a list of subcommands)</td>
</tr>
<tr>
<td>SHOW MENU P</td>
<td>P = Protocol configuration command options</td>
<td></td>
<td>Displays subcommands for the protocol configuration command options (see page 83 for a list of subcommands)</td>
</tr>
<tr>
<td>SHOW MENU U</td>
<td>U = User account command options</td>
<td></td>
<td>Displays subcommands for user account options command options (see page 84 for a list of subcommands)</td>
</tr>
<tr>
<td>SOURCE</td>
<td>SOURCE # or S #</td>
<td># = Source number ; can range from 1 to the maximum number of sources on that level, or “X” for disconnect</td>
<td>Sets the desired source number</td>
</tr>
<tr>
<td>TERMINAL</td>
<td>TERMINAL [ON</td>
<td>OFF] or T[/F]</td>
<td>ON = Turns on Echo mode OFF = Turns off Echo mode</td>
</tr>
<tr>
<td>XPOINT</td>
<td>XPOINT [#:]#,#,#,...] /...</td>
<td>[#L:] = Level number [#S] = Source number [#D,#D,...] = Destination number</td>
<td>The crosspoint is executed (you can use a READ command to confirm the crosspoint connection)</td>
</tr>
<tr>
<td>ZERO</td>
<td>ZERO or Z</td>
<td>None</td>
<td>The device is restarted and status is cleared</td>
</tr>
<tr>
<td>REBOOT</td>
<td>REBOOT</td>
<td>None</td>
<td>The device is restored, but the status is not cleared</td>
</tr>
</tbody>
</table>
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 6-24 through Table 6-28 on page 84. Each command is defined, its syntax is illustrated, its parameters are listed, and its response is provided.

Table 6-24  Menu E (Ethernet) Subcommands

<table>
<thead>
<tr>
<th>Command</th>
<th>Syntax</th>
<th>Input Parameters</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>SET IP</td>
<td>SET IPx=#.#.#.#</td>
<td>x = Ethernet port number #.#.#.# = IP address (factory default setting is 192.168.100.250)</td>
<td>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.</td>
</tr>
<tr>
<td>SET GATEWAY</td>
<td>SET GATEWAYx=#.#.#.#</td>
<td>x = Ethernet port number #.#.#.# = Gateway IP address (factory default setting is 192.168.100.1)</td>
<td>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.</td>
</tr>
<tr>
<td>SET NETMASK</td>
<td>SET NETMASKx=#.#.#.#</td>
<td>x = Ethernet port number #.#.#.# = System IP address</td>
<td>Assigns IP address to a subnet mask</td>
</tr>
<tr>
<td>SHOW IPDISPLAY</td>
<td>SHOW IPDISPLAY</td>
<td>None</td>
<td>Device will display active and stored network IP address, subnet mask, and gateway address</td>
</tr>
<tr>
<td>SET BOOTDEFAULTS</td>
<td>SET BOOTDEFAULTS</td>
<td>None</td>
<td>Resets the IP address, subnet mask, and network gateway address to the factory defaults; settings take effect after you reboot the device.</td>
</tr>
</tbody>
</table>

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 6-24 Menu E (Ethernet) Subcommands (Continued)

<table>
<thead>
<tr>
<th>Command</th>
<th>Syntax</th>
<th>Input Parameters</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>SET PING</td>
<td>SET PING #.#.#.#.</td>
<td>#.#.#.#. = IP address of another device or computer</td>
<td>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.</td>
</tr>
<tr>
<td>SHOW TELNET</td>
<td>SHOW TELNET</td>
<td>None</td>
<td>Displays these Telnet options available on your device: SET TMAXCONNECTIONS SET TDCONNECTUSER SHOW TCONNECTIONS</td>
</tr>
<tr>
<td>SET TMAXCONNECTIONS*</td>
<td>SET TMAXCONNECTIONS=#</td>
<td># = Number of allowable concurrent Telnet sessions</td>
<td>Restricts the maximum number of concurrent Telnet sessions to a specific number (the maximum number of sessions cannot exceed 12)</td>
</tr>
<tr>
<td>SET TDISCONNECTUSER</td>
<td>SET TDISCONNECTUSER=#</td>
<td># = Session number</td>
<td>Terminates the Telnet connection to your device (SHOW TCONNECTIONS command will display the number of sessions)</td>
</tr>
<tr>
<td>SHOW TCONNECTIONS</td>
<td>SHOW TCONNECTIONS</td>
<td>None</td>
<td>Displays Telnet system information (that is, who is connected and the number of total connections)</td>
</tr>
<tr>
<td>SHOW VIRTUALXY</td>
<td>SHOW VIRTUALXY</td>
<td>None</td>
<td>Displays these virtual (network) X-Y options available on your device: SET VXYMAXCONNECTIONS SET VXYDISCONNECTUSER SHOW VXYCONNECTIONS</td>
</tr>
</tbody>
</table>
### Table 6-24  Menu E (Ethernet) Subcommands (Continued)

<table>
<thead>
<tr>
<th>Command</th>
<th>Syntax</th>
<th>Input Parameters</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>SET VXMAXCONNECTIONS*</td>
<td>SET VXMAXCONNECTIONS=#</td>
<td># = Number of allowable concurrent virtual X-Y sessions</td>
<td>Restricts the maximum number of concurrent virtual X-Y sessions to a specific number (the maximum number of sessions cannot exceed 12). When setting this value, note that one connection is always required by the system, so this value should be set to one number greater than your desired maximum number of client connections; for example, if you need two simultaneous client connections, # should be set to 3 to allow for the required “system” connection.</td>
</tr>
<tr>
<td>SET VXYDISCONNECTUSER</td>
<td>SET VXYDISCONNECTUSER=#</td>
<td># = Session number</td>
<td>Terminates a virtual X-Y connection to a device; SHOW VXYCONNECTIONS will display the number of sessions</td>
</tr>
<tr>
<td>SHOW VXYCONNECTIONS</td>
<td>SHOW VXYCONNECTIONS</td>
<td>None</td>
<td>Displays virtual X-Y system information (that is, who is connected and the number of total connections)</td>
</tr>
<tr>
<td>SAVE SYSCONFIG</td>
<td>SAVE SYSCONFIG</td>
<td>None</td>
<td>Saves device’s operating system parameters</td>
</tr>
<tr>
<td>REBOOT</td>
<td>REBOOT</td>
<td>None</td>
<td>The device is restored, but the status is not cleared</td>
</tr>
</tbody>
</table>

* 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 6-25  Menu F (File System) Subcommands

<table>
<thead>
<tr>
<th>Command</th>
<th>Syntax</th>
<th>Input Parameters</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>SET FILEDEL</td>
<td>SET FILEDEL=Name</td>
<td>Name = Name of file to be deleted</td>
<td>Specified file deleted; the message FILE (file name) DELETED will appear on the response screen</td>
</tr>
<tr>
<td>GET BOOTFILE</td>
<td>GET BOOTFILE=Name</td>
<td>Name = Name of the boot file</td>
<td>Displays name of the boot file that was loaded when the device booted up</td>
</tr>
<tr>
<td>SET BOOTFILE</td>
<td>SET BOOTFILE=Name</td>
<td>Name = Name of the boot file</td>
<td>System will change the name of the boot file, but will not display the new name unless you enter the GET BOOTFILE command</td>
</tr>
<tr>
<td>SHOW FS</td>
<td>SHOW FS</td>
<td>None</td>
<td>Displays all pertinent file system information</td>
</tr>
<tr>
<td>SHOW FILES</td>
<td>SHOW FILES</td>
<td>None</td>
<td>Displays a list of associated files</td>
</tr>
</tbody>
</table>

### Table 6-26  Menu H (Hardware Options) Subcommands

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

* 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 6-27 Menu P (Protocol Configuration) Subcommands

If you use a protocol other than Harris terminal protocol, the Edge SW3 pole 6 DIP switch must be set to ON

<table>
<thead>
<tr>
<th>Command</th>
<th>Syntax</th>
<th>Input Parameters</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHOW PORTS</td>
<td>SHOW PORTS</td>
<td>None</td>
<td>Displays a port/protocol configuration summary table that shows which protocols are attached to particular serial or IP communications ports</td>
</tr>
<tr>
<td>SHOW PROTOCOLS</td>
<td>SHOW PROTOCOLS</td>
<td>None</td>
<td>Displays a list of available protocols (not all protocols are applicable to both serial and Ethernet ports)</td>
</tr>
<tr>
<td>SET SERIAL</td>
<td>SET SERIALx opts</td>
<td>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)</td>
<td>Sets designated serial port to use designated protocol with designated options</td>
</tr>
<tr>
<td>GET SERIAL</td>
<td>GET SERIALx</td>
<td>x = Serial port for which you want protocol information</td>
<td>Displays protocol information for designated serial port</td>
</tr>
<tr>
<td>SET ENET</td>
<td>SET ENETx opts</td>
<td>x = Ethernet port for which you want to set protocol and options, opts = Options (protocol [ON</td>
<td>OFF], other options vary by protocol), GVG client must know IP address of primary and secondary servers that it is to connect</td>
</tr>
<tr>
<td>GET ENET</td>
<td>GET ENETx</td>
<td>x = Ethernet port for which you want protocol information</td>
<td>Displays protocol information for designated Ethernet port</td>
</tr>
<tr>
<td>SET IP</td>
<td>SET IPx=#.#.#.#</td>
<td>x = Ethernet port number #.#.#.#=System IP address (for example, 192.168.1.1)</td>
<td>Sets the router IP address for a network connector</td>
</tr>
<tr>
<td>SET GATEWAY</td>
<td>SET GATEWAYx=#.#.#.#</td>
<td>x = Ethernet port number #.#.#.#=System IP address (for example, 192.168.1.10)</td>
<td>Sets the network gateway IP address</td>
</tr>
<tr>
<td>SET NETMASK</td>
<td>SET NETMASKx=#.#.#.#</td>
<td>x = Ethernet port number #.#.#.#=System IP address (for example, 255.255.255.128)</td>
<td>Assigns the IP address to a subnet mask</td>
</tr>
</tbody>
</table>
Table 6-27  Menu P (Protocol Configuration) Subcommands (Continued)
If you use a protocol other than Harris terminal protocol, the Edge SW3 pole 6 DIP switch must be set to ON

<table>
<thead>
<tr>
<th>Command</th>
<th>Syntax</th>
<th>Input Parameters</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAVE SYSCONFIG*</td>
<td>SAVE SYSCONFIG</td>
<td>None</td>
<td>Saves system file names and configuration information*</td>
</tr>
</tbody>
</table>

* 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 6-28  Menu U (User Account) Subcommands
The user account information is specific to each Edge box. If you have more than one Edge box at your facility, you will need to set up the user account information for each box.

<table>
<thead>
<tr>
<th>Command</th>
<th>Syntax</th>
<th>Input Parameters</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHOW USERS</td>
<td>SHOW USERS</td>
<td>None</td>
<td>Shows a list of authorized users, associated groups, and login status via the User Account Summary Table</td>
</tr>
</tbody>
</table>
| SAVE USER  | SAVE USER=abc,#,abc | abc = Name of user who will be added to Edge 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 |
Table 6-28  Menu U (User Account) Subcommands (Continued)
The user account information is specific to each Edge box. If you have more than one Edge box at your facility, you will need to set up the user account information for each box.

<table>
<thead>
<tr>
<th>Command</th>
<th>Syntax</th>
<th>Input Parameters</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>SET DELETEUSER</td>
<td>SET DELETEUSER=abc</td>
<td>abc = Name of user who will be deleted from Edge compact flash module database</td>
<td>- System will ask for ADMIN password</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- System will ask for verification that the user should be deleted</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- User is deleted from flash module database</td>
</tr>
<tr>
<td>SET PASSWORD</td>
<td>SET PASSWORD =abc,abc</td>
<td>abc = Name of user who needs password to access Edge functions changed to a new password abc = Password for specified user</td>
<td>- System will ask for ADMIN password</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- System will ask for existing password for specified user</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- System will ask for new password for specified user</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- System will ask for new password confirmation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Specified password for user is changed on flash module database</td>
</tr>
<tr>
<td>SET USERNUMGROUP</td>
<td>SET USERNUMGROUP USER=abc,#</td>
<td>abc = Name of user who will be assigned to a specific group # = Group number</td>
<td>- System will ask for ADMIN password</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- User is added to a specific group</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- User group is required, but not used by Edge</td>
</tr>
</tbody>
</table>

GVG SMS-7000 Native Protocol Commands

Table 6-8 on page 60 and Table 6-9 on page 62 provide brief listings of the GVG SMS-7000 native protocol commands available through the Edge. Please refer to the Grass Valley Routing Products Protocols Manual for a detailed explanation of the Series 7000 native protocol.

Jupiter ASCII and ES Switch Protocol Commands

Table 6-10 on page 63, Table 6-11 on page 64, and Table 6-12 on page 65 provide brief listings of the Jupiter ASCII and ES switch protocol commands available through the Edge. Please refer to the pertinent Jupiter manual for detailed explanations of the ASCII and ES switch protocols.
NVISION Protocol Commands

Table 6-13 on page 67 and Table 6-14 on page 67 provide brief listings of the NVISION protocol commands available through the Edge. Please refer to the pertinent NVISION manual for detailed explanations of the NVISION protocols.

PESA Protocol Commands

Table 6-17 on page 68 and Table 6-18 on page 68 provide brief listings of the PESA protocol commands available through the Edge. Please refer to the pertinent PESA manual for detailed explanations of the PESA protocols.

Pro-Bel Protocol Commands

Table 6-19 on page 69 and Table 6-20 on page 70 provide brief listings of the Pro-Bel protocol commands available through the Edge. Please refer to the pertinent Pro-Bel manual for detailed explanations of the Pro-Bel protocols.

Utah RCP-1/Utah-12 Protocol Commands

Table 6-21 on page 70 and Table 6-22 on page 71 provide brief listings of the Utah RCP-1 protocol commands available through the Edge. Please refer to the Utah Scientific Routing Switcher Protocols Manual for a detailed explanation of the RCP-1/Utah-12 protocols.
Supporting Level, Source, or Destination Names With Edge

Certain routers and router control systems that the Edge hardware supports (for example, GVG SMS-7000 native) use logical level, source, and destination names directly as part of the protocol to formulate router control and status messages. In some cases control panel status displays are derived directly from the names supplied in the control messages.

For example, an application may involve a Harris alphanumeric breakaway control panel interfacing through Edge hardware to a router system that supports names using the SMS-7000 control protocol.

![Diagram](Figure 7-47 Example 1: Harris ABA Panel Interface to GVG SMS-7000 Router System)

In this case, the Edge hardware’s client side protocol support will obtain the names for levels, sources, and destinations that are stored in the SMS-7000 controller, and translate them to numerical indexes compatible with the Harris X-Y control system. The numerical indexes used on X-Y to control router crosspoints will be the same as assigned by the SMS-7000 controller to the levels, sources, and destinations, respectively. (These numbers do not necessarily correspond to the router’s physical inputs and outputs.) As a result, when translating between GVG SMS 7000 native protocol and X-Y protocol, the Source and Destination indexes that appear in the messages will be the same.

**Note:** The X-Y protocol is not a name-based protocol; however, it is necessary to configure the Harris ABA panel’s names support using Navigator or RouterMapper configuration utility software application. To ensure that the names used by the GVG Series 7000 system and the Harris router control panel are consistent, make sure that the names assigned in the logical database Source and Destination pages are entered in the same order as shown by the Source and Destination (sorted by index) report generated by the GVG Print Config program.

The most direct way to determine the SMS-7000 system’s index order for Sources and Destinations is to use the GVG SMS-7000 based system’s Print Config program to generate a report of all Sources and Destinations sorted by index. For details of using the Print Config program to generate this report, please consult the Series 7000 System Configuration manual.

If the Harris control system does not need to display the same names as those used by the devices that use SMS-7000 native protocol, any names may be assigned.
In another example, an application may involve a third-party control system that supports names using the SMS-7000 control protocol interfacing through Edge hardware to a Harris router system.

![Figure 7-48](example2.png) Example 2: Third-Party Interface to Harris Router via GVG SMS-7000 Server

In this case, the controller depends on Edge hardware to provide the names of the levels, sources, and destinations in response to queries it issues via the GVG SMS-7000 native protocol. The controller may subsequently use the supplied names in SMS-7000 commands that the Edge hardware supports.

**Note:** Currently this situation applies only when using the Edge hardware in SMS-7000 Server mode; that is, when using a controller that employs GVG SMS-7000 native protocol to control a Harris routing system.

To translate between these protocols and the Harris X-Y protocol (which uses numeric indexes, rather than names, as part of messages) the Edge hardware allows assignment of default or user-defined names.

The default names provided by the Edge hardware for levels, sources, and destinations are shown in Table 7-29.

### Table 7-29 Level, Source, Destination Default Names

<table>
<thead>
<tr>
<th>Item</th>
<th>Numeric Index</th>
<th>Default Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levels</td>
<td>0</td>
<td>Level 0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Level 1</td>
</tr>
<tr>
<td></td>
<td><strong>• • •</strong></td>
<td><strong>• • •</strong></td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Level 7</td>
</tr>
<tr>
<td>Sources</td>
<td>0</td>
<td>In 1</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>In 2</td>
</tr>
<tr>
<td></td>
<td><strong>• • •</strong></td>
<td><strong>• • •</strong></td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>In x (x=highest Source number)</td>
</tr>
<tr>
<td>Destinations</td>
<td>0</td>
<td>Dest 1</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Dest 2</td>
</tr>
<tr>
<td></td>
<td><strong>• • •</strong></td>
<td><strong>• • •</strong></td>
</tr>
<tr>
<td></td>
<td>Y</td>
<td>Dest y (y=highest Destination number)</td>
</tr>
</tbody>
</table>

If no user-defined names are supplied, the default names will be used in the processing of messages for protocols requiring name support. For an explanation of how the names are used in a particular protocol’s messages, please refer to the appropriate protocol manual (for example, the SMS-7000 Protocol manual)
Assigning User-Defined Names

In some configurations (such as using a non-Harris controller that employs a name-based protocol to control a Harris router), or to match the names that the Edge hardware will use to an existing control system, you may want to program the Edge hardware with more descriptive, user-defined names. To ensure desired operation you must create a database that assigns the desired names to the correct levels, sources, and destinations.

Assigning Names That Do Not Need to Match an Existing Harris Control System

Note: For additional information on creating a Navigator database, please consult Volume 6: Routing Components of the CCS Navigator Advanced Graphical Application User Manual. For additional information on creating a RouterMapper database, please consult the RouterMapper Configuration Utility Reference Guide.

In this case, where the names supplied by the Edge hardware do not need to match any existing names (for example, a new installation or system where no alphanumeric control panels are already installed), the procedure is the same as creating a database from scratch for the router system to be controlled. Each level, source, and destination is assigned a name as desired using the appropriate configuration utility software’s Level and Logical Database Editing screens. The configured names will be reported in place of the default names, in the order in which they were specified in the database. Please note that some control systems or GUI displays may rearrange the display order of the levels, sources, or destinations to be alphabetical. If this is the case and the reordering results in conflicting sort orders between different control panels in the routing system, a “workaround” is to ensure that all of the database names are entered into the configuration utility software in alphabetical order.

Assigning Names that Correspond to an Existing Harris Control System

In this case, the configuration procedure is the same except that, to ensure consistent operation between the existing control system and the control supplied through the Edge hardware, names are assigned to GVG router Sources and Destinations that are consistent with those previously assigned to Sources and Destinations associated with the existing Harris router system. Typically, this scenario would arise when adding an Edge hardware to an existing Harris router system that already has names assigned to its levels, sources, and destinations (for example, to support existing alphanumeric panels or Navigator™/RouterWorks® workstations). In this case, a new database is not necessary – the existing database may be used.
Specifications

Note: Specifications are subject to change without notice.

Electrical Specifications

Table 8-30  Edge Electrical Specifications

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

Mechanical Specifications

Table 8-31  Edge Mechanical Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>19 in.×5.25 in.×1.75 in. (48.3 cm×13.3 cm×44 cm)</td>
</tr>
<tr>
<td>Weight (fully loaded)</td>
<td>5.0 lb (2.3 kg)</td>
</tr>
<tr>
<td>Indicators</td>
<td>Power/alarm LED, Data LED</td>
</tr>
</tbody>
</table>
## Input/Output Specifications

**Table 8-32**  Edge Input/Output Signal Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS-232/RS-422 serial communication</td>
<td>DB-9 pin connector</td>
</tr>
<tr>
<td>Alarm/comm port</td>
<td>Harris 3-pin connector</td>
</tr>
<tr>
<td>X-Y (coaxial communication)</td>
<td>75Ω BNC</td>
</tr>
<tr>
<td>Sync</td>
<td>75Ω BNC</td>
</tr>
<tr>
<td>Ethernet</td>
<td>RJ-45</td>
</tr>
<tr>
<td>Maximum number of Ethernet clients</td>
<td>20</td>
</tr>
<tr>
<td>supported</td>
<td></td>
</tr>
</tbody>
</table>
A Safety Precautions, Certifications and Compliances

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.

CAUTION: 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.*

**WARNING:** SHOCK HAZARD - DO NOT OPEN.
**AVIS:** RISQUE DE CHOC ÉLECTRIQUE - NE PAS OUVrir.
**MOUNT IN RACK ONLY**
**INSTALLER 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.

**WARNING:** 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**

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 mer enn en tilførselsledning. For å gjøre interne deler spenningsløse må alle tilførselsledningene trekkes ut.

**WARNING**: Denna apparat har mer än en nätanslutning. Samtliga nätkablarna 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**

EMC Standards

Table A-33  EMC Standards

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<th>Description</th>
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<tr>
<td>EN55022</td>
<td>Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Equipment-Class A</td>
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<td>EN61000-3-2</td>
<td>Limits for Harmonic Current Emissions (Equipment Input Current Less Than or Equal to 16 A Per Phase)</td>
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<td>EN61000-3-3</td>
<td>Limitations of Voltage Fluctuations and Flicker in Low Voltage Supply Systems for Equipment with Rated Current Less Than 16 A</td>
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<td>EN61000-4-2</td>
<td>Electrostatic Discharge Requirements “ESD” 2 kV CD, 4 kV AD</td>
</tr>
<tr>
<td>EN61000-4-3</td>
<td>Radiated Radio-Frequency Electromagnetic Field Immunity Test 1 V/m (1 kHz 80% AM, 80-1000 MHz)</td>
</tr>
<tr>
<td>EN61000-4-4</td>
<td>Electrical Fast Transient Requirements “Burst,” 0.5 kV Sig. &amp; Ctrl. Lines 0.5 kV a.c. &amp; d.c. Power Line, 0.5 kV Functional Earth</td>
</tr>
<tr>
<td>EN61000-4-5</td>
<td>Surge Immunity Test 0.5 kV a.c. Power Line</td>
</tr>
<tr>
<td>EN61000-4-6</td>
<td>Immunity to Conducted Disturbances Induced by Radio Frequency Fields 1 V rms 0.15-80 MHz Sig. &amp; 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</td>
</tr>
<tr>
<td>EN61000-4-11</td>
<td>Voltage Dips, Short Intermittons, and Voltage Variations- Immunity Tests</td>
</tr>
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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.
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

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<td>IEC 60950:1999 (Modified)</td>
<td>Safety of Information Technology Equipment</td>
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<th>Reference IEC Standard</th>
<th>Description</th>
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<td>EN 60065</td>
<td>IEC 60065: 1998 (Modified)</td>
<td>Audio, Video, and Similar Electronic Apparatus Safety Requirements</td>
</tr>
<tr>
<td></td>
<td>6th Edition</td>
<td></td>
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<tr>
<td></td>
<td>7th Edition</td>
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<tr>
<td></td>
<td>Amendment 1 to IEC 60065</td>
<td>Audio, Video, and Similar Electronic Apparatus Safety Requirements</td>
</tr>
<tr>
<td></td>
<td>7th Edition</td>
<td></td>
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<tr>
<td></td>
<td>Edition 1.2</td>
<td></td>
</tr>
<tr>
<td>UL 1419</td>
<td>2nd Edition</td>
<td>Standard for Professional Video and Audio Equipment</td>
</tr>
<tr>
<td>(March 28, 1997)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UL 6500</td>
<td>2nd Edition</td>
<td>Standard for Audio/Video and Musical Instrument Apparatus for Household, Commercial, and Similar General Use</td>
</tr>
<tr>
<td>(September 30, 1999)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UL 60950</td>
<td>3rd Edition</td>
<td>Safety of Information Technology Equipment</td>
</tr>
<tr>
<td>(December 1, 2000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAN/CSA-C22.2</td>
<td></td>
<td>Safety of Information Technology Equipment (Bi-National Standard, with UL 60950)</td>
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<td>Crosspoint Connect message</td>
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<tr>
<td>21</td>
<td>Crosspoint Tally Dump Request message</td>
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<tr>
<td>22</td>
<td>Crosspoint Tally Dump (BYTE) Request message</td>
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<td>23</td>
<td>Crosspoint Tally Dump (WORD) Request message</td>
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<td>3</td>
<td>Crosspoint Tally message</td>
</tr>
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<td>4</td>
<td>Crosspoint Connected message</td>
</tr>
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</table>

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<th>Description</th>
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</tr>
<tr>
<td>B:E</td>
<td>Buffer execute</td>
</tr>
<tr>
<td>BK,2</td>
<td>Null</td>
</tr>
<tr>
<td>BK,A</td>
<td>Clear flags associated with QA,no_parameter</td>
</tr>
<tr>
<td>BK,D</td>
<td>Force next QD command to return status of all destinations</td>
</tr>
<tr>
<td>BK,E</td>
<td>Set query level 4 echo status</td>
</tr>
<tr>
<td>BK,f</td>
<td>Clear status bit flags</td>
</tr>
<tr>
<td>BK,F</td>
<td>Return status bit flags</td>
</tr>
<tr>
<td>BK,I</td>
<td>Set query refresh interval in seconds</td>
</tr>
<tr>
<td>BK,N</td>
<td>Return system name</td>
</tr>
<tr>
<td>BK,R</td>
<td>Return protocol processor software revision</td>
</tr>
<tr>
<td>BK,t</td>
<td>Return native protocol software title</td>
</tr>
<tr>
<td>CCEX</td>
<td>Clear Crosspnt Exclusion</td>
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<td>CEST</td>
<td>Command Error Status</td>
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<td>CSTA</td>
<td>Crosspoint Status</td>
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<td>DESTINATION</td>
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</tr>
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<td>Matrix refresh report enable</td>
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<td>Matrix refresh report disable</td>
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<td>ESC C</td>
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<td>ESC D</td>
<td>Matrix original take report enable</td>
</tr>
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<td>ESC E</td>
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</tr>
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</tr>
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<td>ESC P</td>
<td>Program checksum request</td>
</tr>
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<td>ESC Q</td>
<td>Matrix original take report enable</td>
</tr>
<tr>
<td>ESC S</td>
<td>Enable XONXOFF</td>
</tr>
<tr>
<td>ESC T</td>
<td>Disable XONXOFF</td>
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