grass valley

Encore
CONTROL SYSTEM

Installation and Service Manual

Software Version 1.8.1

KEMA

Affiliate with the N.V. KEMA in The Netherlands

CERTIFICATE

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The design, manufacture and support of video and audio hardware and software products and related systems.

This Certificate is valid until: June 14, 2012
This Certificate is valid as of: June 14, 2009
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H. Pierre Sallé
H. Pierre Sallé
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Grass Valley Web Site

The www.grassvalley.com web site offers the following:

Online User Documentation — Current versions of product catalogs, brochures, data sheets, ordering guides, planning guides, manuals, and release notes in .pdf format can be downloaded.

FAQ Database — Solutions to problems and troubleshooting efforts can be found by searching our Frequently Asked Questions (FAQ) database.

Software Downloads — Download software updates, drivers, and patches.

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END-OF-LIFE PRODUCT RECYCLING NOTICE

Grass Valley's innovation and excellence in product design also extends to the programs we've established to manage the recycling of our products. Grass Valley has developed a comprehensive end-of-life product take back program for recycle or disposal of end-of-life products. Our program meets the requirements of the European Union's WEEE Directive, the United States Environmental Protection Agency, and U.S. state and local agencies.

Grass Valley's end-of-life product take back program assures proper disposal by use of Best Available Technology. This program accepts any Grass Valley branded equipment. Upon request, a Certificate of Recycling or a Certificate of Destruction, depending on the ultimate disposition of the product, can be sent to the requester.

Grass Valley will be responsible for all costs associated with recycling and disposal, including freight. However, you are responsible for the removal of the equipment from your facility and packing the equipment to make it ready for pickup.

For further information on the Grass Valley product take back system please contact Grass Valley at + 800 80 80 20 20 or +33 1 48 25 20 20 from most other countries. In the U.S. and Canada please call 800-547-8949, and ask to be connected to the EH&S Department. Additional information concerning the program can be found at: www.grassvalley.com/about/environmental-policy

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Preface

About This Manual

This *Encore Installation and Service Manual* is designed for facility engineers and are involved in Encore system installation, configuration, and servicing.

Documentation Set

The basic Encore documentation set consists of:

- *Installation and Service Manual*,
- *Configuration Manual*,
- *Control Panels Operation Manual*, and
- *Release Notes*.

The *Installation and Service Manual* contains information about installing Encore system hardware, maintaining Encore system components, and configuring network communications used by the system.

The *Configuration Manual* contains detailed information about configuring an Encore system to meet the needs of your facility. Background information about Encore system design is included, and a description of the Encore Operator User Interface (OUI); which is used to configure, test, and operate the system; is also provided.

The *Control Panels Operation Manual* provides operating information for the control panels used with the Encore Control System.

The *Release Notes* contain information about new features and system enhancements for a specific software version. Software installation procedures are also provided. Always review the Release Notes for your current system software before you begin working with your Encore system.

Additional Documentation

Documentation for various Encore system options is also available:

- *Encore Salvo Editor Instruction Manual*,

- *Soft Panels Instruction Manual*, and

- *Visual Status Display Instruction Manual*.

The NetConfig utility program is used to configure your Encore network and install software:

- *NetConfig Instruction Manual*

Software engineering documentation, intended for third-party developers and in-house software engineers, is also available:

- *Routing Products Protocols Manual*.

Safety Summary

Read and follow the important safety information below, noting especially those instructions related to risk of fire, electric shock or injury to persons. Additional specific warnings not listed here may be found throughout the manual.

WARNING Any instructions in this manual that require opening the equipment cover or enclosure are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

Safety Terms and Symbols

Terms in This Manual

Safety-related statements may appear in this manual in the following form:

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

CAUTION Caution statements identify conditions or practices that may result in damage to equipment or other property, or which may cause equipment crucial to your business environment to become temporarily non-operational.

Terms on the Product

The following terms may appear on the product:

DANGER — A personal injury hazard is immediately accessible as you read the marking.

WARNING — A personal injury hazard exists but is not immediately accessible as you read the marking.

CAUTION — A hazard to property, product, and other equipment is present.

Symbols on the Product

The following symbols may appear on the product:

Indicates that dangerous high voltage is present within the equipment enclosure that may be of sufficient magnitude to constitute a risk of electric shock.

Indicates that user, operator or service technician should refer to product manual(s) for important operating, maintenance, or service instructions.

This is a prompt to note fuse rating when replacing fuse(s). The fuse referenced in the text must be replaced with one having the ratings indicated.

Identifies a protective grounding terminal which must be connected to earth ground prior to making any other equipment connections.

Identifies an external protective grounding terminal which may be connected to earth ground as a supplement to an internal grounding terminal.

Indicates that static sensitive components are present which may be damaged by electrostatic discharge. Use anti-static procedures, equipment and surfaces during servicing.

Warnings

The following warning statements identify conditions or practices that can result in personal injury or loss of life.

Dangerous voltage or current may be present — Disconnect power and remove battery (if applicable) before removing protective panels, soldering, or replacing components.

Do not service alone — Do not internally service this product unless another person capable of rendering first aid and resuscitation is present.

Remove jewelry — Prior to servicing, remove jewelry such as rings, watches, and other metallic objects.

Avoid exposed circuitry — Do not touch exposed connections, components or circuitry when power is present.

Use proper power cord — Use only the power cord supplied or specified for this product.

Ground product — Connect the grounding conductor of the power cord to earth ground.

Operate only with covers and enclosure panels in place — Do not operate this product when covers or enclosure panels are removed.

Use correct fuse — Use only the fuse type and rating specified for this product.

Use only in dry environment — Do not operate in wet or damp conditions.

Use only in non-explosive environment — Do not operate this product in an explosive atmosphere.

High leakage current may be present — Earth connection of product is essential before connecting power.

Dual power supplies may be present — Be certain to plug each power supply cord into a separate branch circuit employing a separate service ground. Disconnect both power supply cords prior to servicing.

Double pole neutral fusing — Disconnect mains power prior to servicing.

Use proper lift points — Do not use door latches to lift or move equipment.

Avoid mechanical hazards — Allow all rotating devices to come to a stop before servicing.

Cautions

The following caution statements identify conditions or practices that can result in damage to equipment or other property

Use correct power source — Do not operate this product from a power source that applies more than the voltage specified for the product.

Use correct voltage setting — If this product lacks auto-ranging power supplies, before applying power ensure that the each power supply is set to match the power source.

Provide proper ventilation — To prevent product overheating, provide equipment ventilation in accordance with installation instructions.

Use anti-static procedures — Static sensitive components are present which may be damaged by electrostatic discharge. Use anti-static procedures, equipment and surfaces during servicing.

Do not operate with suspected equipment failure — If you suspect product damage or equipment failure, have the equipment inspected by qualified service personnel.

Ensure mains disconnect — If mains switch is not provided, the power cord(s) of this equipment provide the means of disconnection. The socket outlet must be installed near the equipment and must be easily accessible. Verify that all mains power is disconnected before installing or removing power supplies and/or options.

Route cable properly — Route power cords and other cables so that they ar not likely to be damaged. Properly support heavy cable bundles to avoid connector damage.

Use correct power supply cords — Power cords for this equipment, if provided, meet all North American electrical codes. Operation of this equipment at voltages exceeding 130 VAC requires power supply cords which comply with NEMA configurations. International power cords, if provided, have the approval of the country of use.

Use correct replacement battery — This product may contain batteries. To reduce the risk of explosion, check polarity and replace only with the same or equivalent type recommended by manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Troubleshoot only to board level — Circuit boards in this product are densely populated with surface mount technology (SMT) components and application specific integrated circuits (ASICS). As a result, circuit board repair at the component level is very difficult in the field, if not impossible. For warranty compliance, do not troubleshoot systems beyond the board level.

Regulatory Notices

Certifications and Compliances

FCC Emission Control

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Changes or modifications not expressly approved by Grass Valley Group can affect emission compliance and could void the user's authority to operate this equipment.

Canadian EMC Notice of Compliance

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'emet pas de bruits radioélectriques dépassant les limites applicables aux appareils numeriques de la classe A préscrites dans le Règlement sur le brouillage radioélectrique édicte par le ministère des Communications du Canada.

EN55022 Class A Warning

For products that comply with Class A. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Canadian Certified Power Cords

Canadian approval includes the products and power cords appropriate for use in the North America power network. All other power cords supplied are approved for the country of use.

Canadian Certified AC Adapter

Canadian approval includes the AC adapters appropriate for use in the North America power network. All other AC adapters supplied are approved for the country of use.

Laser Compliance

Laser Safety Requirements

The device used in this product is a Class 1 certified laser product. Operating this product outside specifications or altering from its original design may result in hazardous radiation exposure, and may be considered an act of modifying or new manufacturing of a laser product under U.S. regulations contained in 21CFR Chapter1, subchapter J or CENELEC regulations in HD 482 S1. People performing such an act are required by law to recertify and reidentify this product in accordance with provisions of 21CFR subchapter J for distribution within the U.S.A., and in accordance with CENELEC HD 482 S1 for distribution within countries using the IEC 825 standard.

Laser Safety

Laser safety in the United States is regulated by the Center for Devices and Radiological Health (CDRH). The laser safety regulations are published in the "Laser Product Performance Standard," Code of Federal Regulation (CFR), Title 21, Subchapter J.

The international Electrotechnical Commission (IEC) Standard 825, "Radiation of Laser Products, Equipment Classification, Requirements and User's Guide," governs laser products outside the United States. Europe and member nations of the European Free trade Association fall under the jurisdiction of the Comite European de Normalization Electrotechnique (CENELEC).

For the CDRH: The radiant power is detected trough a 7 mm aperture at a distance of 200 mm from the source focused through a lens with a focal length of 100 mm.

For IEC compliance: The radiant power is detected trough a 7 mm aperture at a distance of 100 mm from the source focused through a lens with a focal length of 100 mm.

FCC Emission Limits

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful inter-ference, and (2) this device must accept any interference received, including interference that may cause undesirable operation. This device has been tested and found to comply with FCC Part 15 Class B limits for a digital device when tested with a representative laser-based fiber optical system that complies with ANSI X3T11 Fiber Channel Standard.

Certification

Category	Standard	Designed/tested for compliance with:
Safety	UL60950	Safety of Information Technology Equipment, including Electrical Business Equipment (Third edition, 12-11-2000).
	IEC 950	Safety of Information Technology Equipment, including Electrical Business Equipment (Second edition, 1991).
	CAN/CSA C22.2 No. 60950-00	Safety of Information Technology Equipment, including Electrical Business Equipment.
	EN60950	Safety of Information Technology Equipment, including Electrical Business Equipment.

ESD Protection

Electronics today are more susceptible to electrostatic discharge (ESD) damage than older equipment. Damage to equipment can occur by ESD fields that are smaller than you can feel. Implementing the information in this section will help you protect the investment that you have made in purchasing Grass Valley equipment. This section contains Grass Valley's recommended ESD guidelines that should be followed when handling electrostatic discharge sensitive (ESDS) items. These minimal recommendations are based on the information in the *Sources of ESD and Risks* area. The information in *Grounding Requirements for Personnel* on page 21 is provided to assist you in selecting an appropriate grounding method.

Recommended ESD Guidelines

Follow these guidelines when handling Grass Valley equipment:

- Only trained personnel that are connected to a grounding system should handle ESDS items.

- Do not open any protective bag, box, or special shipping packaging until you have been grounded.

Note When a Personal Grounding strap is unavailable, as an absolute minimum, touch a metal object that is touching the floor (for example, a table, frame, or rack) to discharge any static energy before touching an ESDS item.

- Open the anti-static packaging by slitting any existing adhesive tapes. Do not tear the tapes off.

- Remove the ESDS item by holding it by its edges or by a metal panel.

- Do not touch the components of an ESDS item unless it is absolutely necessary to configure or repair the item.

- Keep the ESDS work area clear of all nonessential items such as coffee cups, pens, wrappers and personal items as these items can discharge static. If you need to set an ESDS item down, place it on an anti-static mat or on the anti-static packaging.

Sources of ESD and Risks

The following information identifies possible sources of electrostatic discharge and can be used to help establish an ESD policy.

Personnel

One of the largest sources of static is personnel. The static can be released from a person's clothing and shoes.

Environment

The environment includes the humidity and floors in a work area. The humidity level must be controlled and should not be allowed to fluctuate over a broad range. Relative humidity (RH) is a major part in determining the level of static that is being generated. For example, at 10% - 20% RH a person walking across a carpeted floor can develop 35kV; yet when the relative humidity is increased to 70% - 80%, the person can only generate 1.5kV.

Static is generated as personnel move (or as equipment is moved) across a floor's surface. Carpeted and waxed vinyl floors contribute to static build up.

Work Surfaces

Painted or vinyl-covered tables, chairs, conveyor belts, racks, carts, anodized surfaces, plexiglass covers, and shelving are all static generators.

Equipment

Any equipment commonly found in an ESD work area, such as solder guns, heat guns, blowers, etc., should be grounded.

Materials

Plastic work holders, foam, plastic tote boxes, pens, packaging containers and other items commonly found at workstations can generate static electricity.

Grounding Requirements for Personnel

The information in this section is provided to assist you in selecting a grounding method. This information is taken from ANSI/ESD S20.20-2007 (Revision of ANSI/ESD S20.20-1999).

Table 1. Product Qualification

Personnel Grounding Technical Requirement	Test Method	Required Limits
Wrist Strap System*	ANSI/ESD S1.1 (Section 5.11)	$< 3.5 \times 10^7$ ohm
Flooring / Footwear System – Method 1	ANSI/ESD STM97.1	$< 3.5 \times 10^7$ ohm
Flooring / Footwear System – Method 2 (both required)	ANSI/ESD STM97.1	$< 10^9$ ohm
	ANSI/ESD STM97.2	< 100 V

Product qualification is normally conducted during the initial selection of ESD control products and materials. Any of the following methods can be used: product specification review, independent laboratory evaluation, or internal laboratory evaluation.

Table 2. Compliance Verification

Personnel Grounding Technical Requirement	Test Method	Required Limits
Wrist Strap System*	ESD TR53 Wrist Strap Section	$< 3.5 \times 10^7$ ohm
Flooring / Footwear System – Method 1	ESD TR53 Flooring Section and ESD TR53 Footwear Section	$< 3.5 \times 10^7$ ohm
Flooring / Footwear System – Method 2 (both required)	ESD TR53 Flooring Section and ESD TR53 Footwear Section	$< 1.0 \times 10^9$ ohm

* For situations where an ESD garment is used as part of the wrist strap grounding path, the total system resistance, including the person, garment, and grounding cord, must be less than 3.5×10^7 ohm.

Encore System Overview

Note   This same Overview section is included in several Encore manuals. If you are familiar with this material you can skip to the next section.

Introduction

The Encore system is an open, scalable platform for full router and facility control. Featuring tight integration with Grass Valley router matrices, third-party routers, automation systems, and other equipment, the Encore system can consolidate media assets under a single, unified control system.

Figure 1. Encore Facility Control System
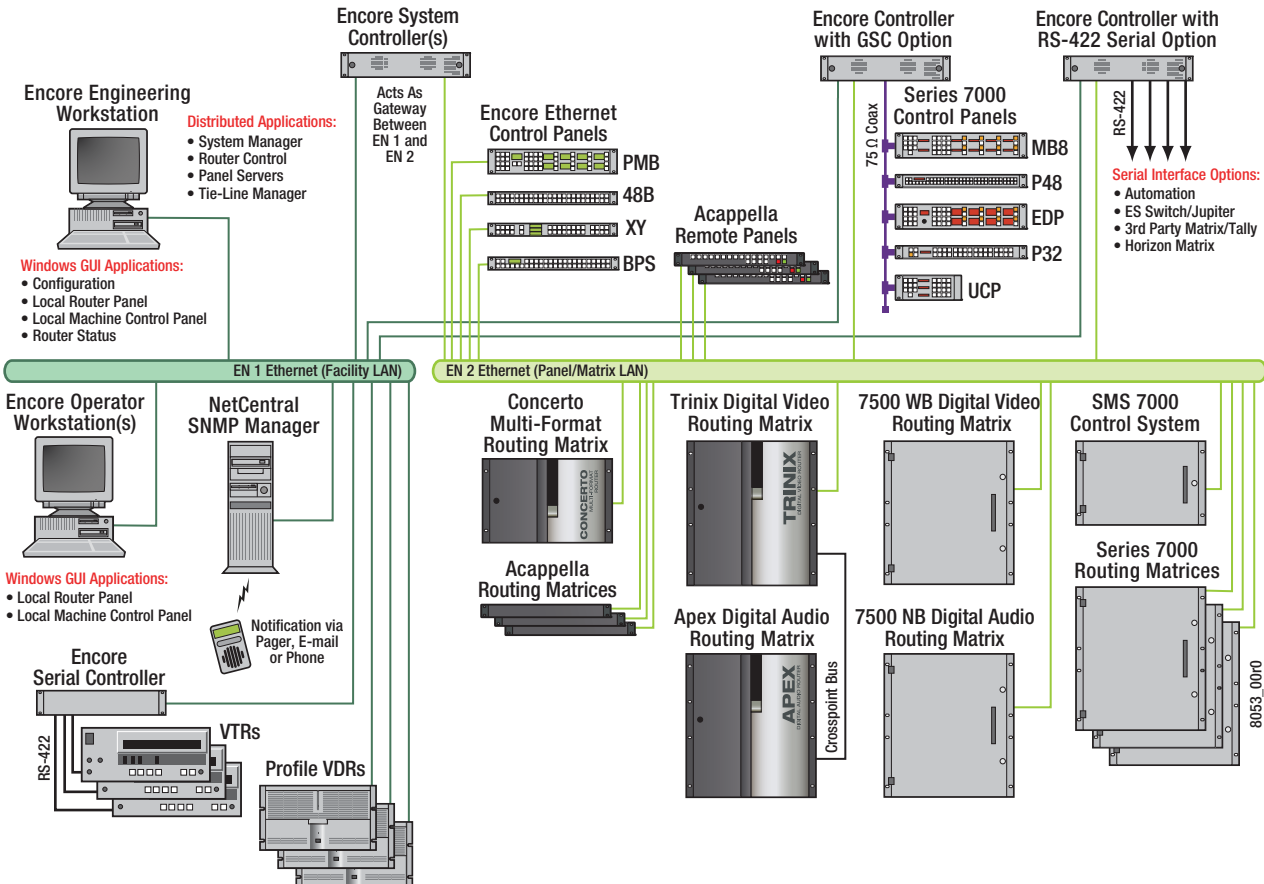
The Encore system modular design lets broadcasters and other high-quality content creators select just the level of control they need. At its most basic, the Encore system can configure and control the crosspoints of a single routing matrix, but it can be expanded to control multiple matrices.

Controlled Hardware

Encore can control a wide range of Grass Valley routers including Trinix, Apex, Concerto, Acappella, 7500 WB, and 7500 NB using Ethernet. Legacy 7000 Series and Horizon routers can be serially controlled. In addition, Encore can control the popular Grass Valley Venus routers with a serial interface to a VM-3000 protocol translator. A wide range of third party routers can also be controlled through a number of supported serial interfaces. Users can also add tally and machine control via Ethernet or serial interfaces.

Encore System Controller Frame

The two rack-unit Encore System Controller Frame supports up to two System Controller Board (SCB) modules and two power supply modules for redundancy. A standard Encore System Controller Frame is equipped with one SCB and one power supply. All modules are front removable and hot pluggable. Cooling is built into the frame so no external cooling units are required.

Figure 2. Encore System Controller Frame
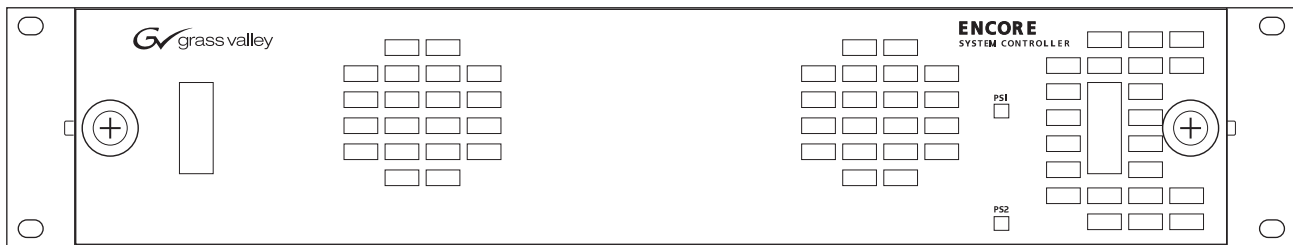
8053_09r0

The System Controller Frame has two slots for SCBs and two slots for Power Supply modules, located behind the front cover/air filter. Status indicator LEDs and a reset button are located on each SCB (Figure 3).

Figure 3. System Controller and Power Supply Modules
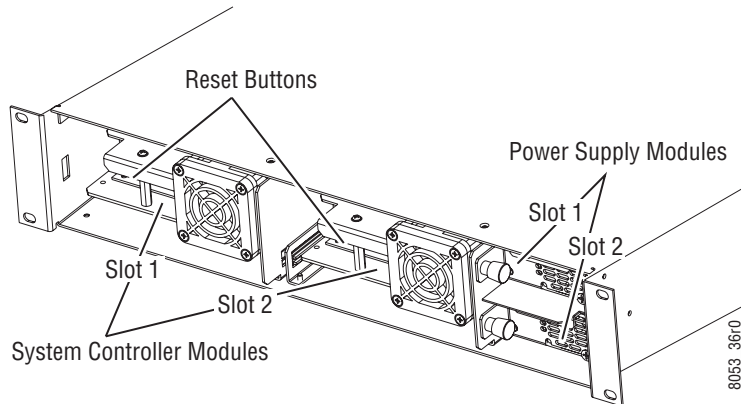
Cabling and power connectors are located on the rear of the System Controller Frame (Figure 4).

Figure 4. System Controller Frame Rear View
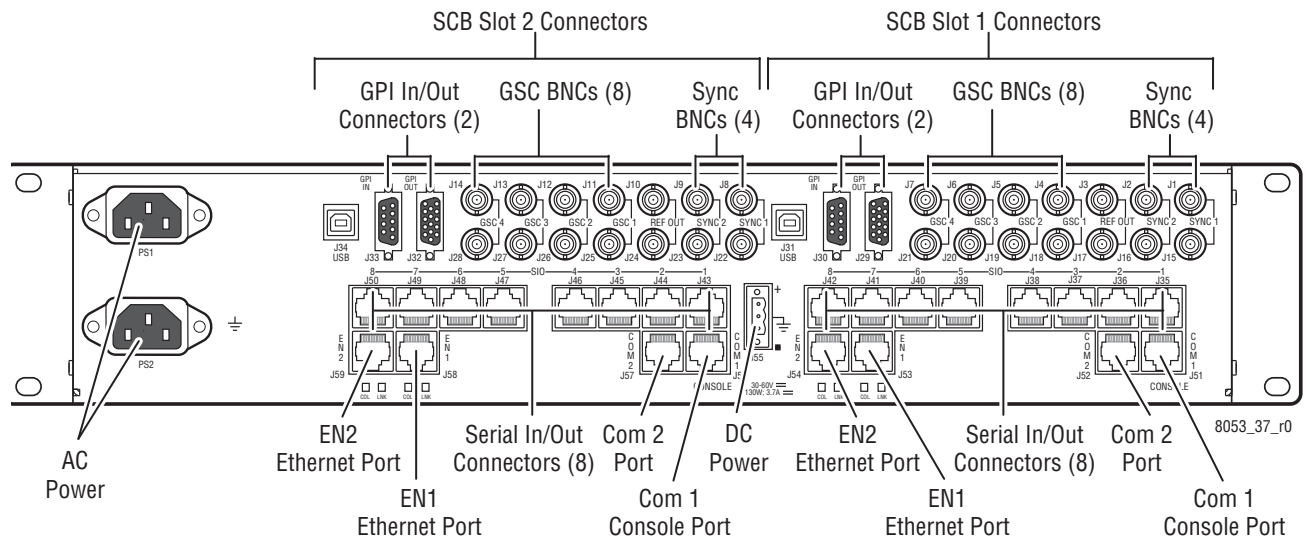
Multiple Encore System Controller Frames can be used to support large systems and to increase throughput by dividing tasks among the controllers. SCBs in the same frame can be configured to control different hardware or to operate redundantly. An SCB in one frame can even operate redundantly with an SCB in a different frame.

Control Panels

A wide variety of hardware control panels are available that can work across the room or across the country via IP LAN/WAN connections. Many Grass Valley legacy hardware control panels can also be used with optional serial interfaces. Optional PC control panel software is also available that emulates many of these hardware panels.

The control panel operator views and selects Sources and Destinations by name and does not need to be concerned with the actual physical cabling or numbers of inputs and outputs.

Two representative Encore control panels are illustrated below.

Figure 5. Encore Paging Multi Bus (PMB) Control Panel
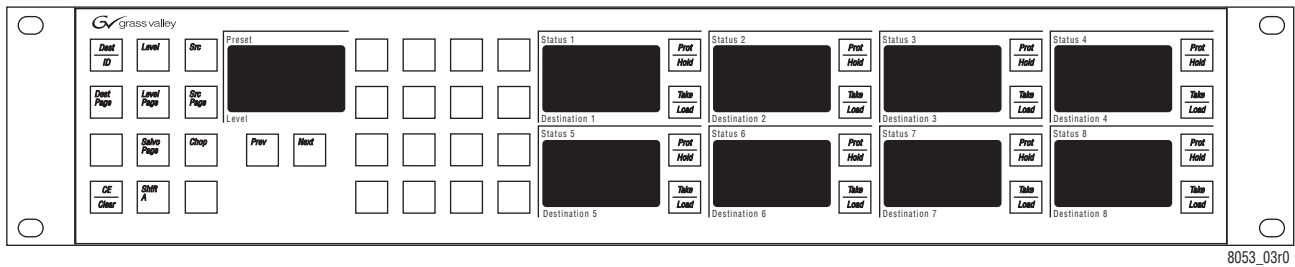
Figure 6. Encore Button Per Source (BPS) Control Panel
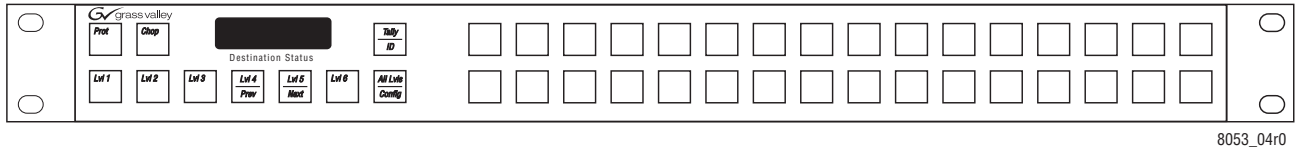
An Acappella control panel and an SMS7000 control panel, both originally developed for other routing systems but able to be configured to work with Encore, are illustrated below.

Figure 7. Acappella 16x16 Remote Panel
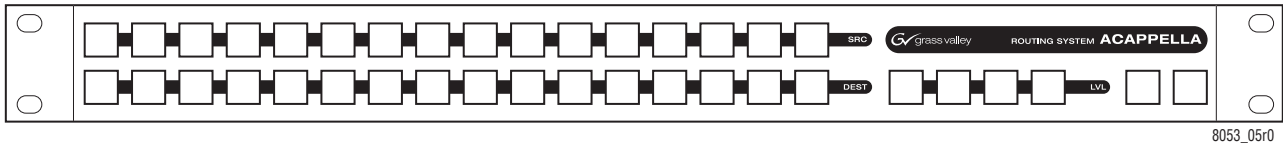
Figure 8. SMS7000 P48 Control Panel
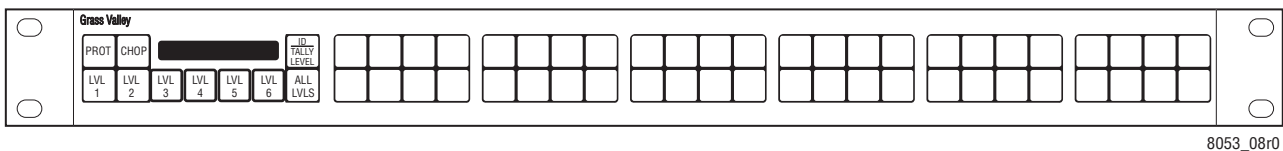
Encore System Control Fundamentals

Distributed Control System

The Encore system uses a distributed control networked architecture. Various Encore software components are installed on different hardware locations to perform different tasks. This design provides extraordinary system power and flexibility. Configuration files are downloaded over the network to target devices, permitting rapid configuration changes while the Encore system remains operational. User-specific system-wide access privileges can also be established to restrict system control as appropriate.

Encore Database

Information vital to Encore system operation resides in a collection of data files, collectively called the Encore database. These files model the routing matrix hardware being controlled, name input Sources and output Destinations, determine matrix Levels, and specify the operational capabilities of the control panels. The Encore database is created when the system is commissioned and is typically maintained by facility engineering staff. The Encore database resides on the same PC as the Sharer.

Sharer Application

The Sharer application automatically downloads configuration information to Encore system components when they are power up or reboot. The Sharer application runs on a PC, and must be running when the Encore system is configured. The Sharer does not need to be running to sustain control panel operation. However, we recommend the Sharer application run at all times, as this makes it easier to resume configuration procedures.

CAUTION An Encore system can have only one Sharer application running on the network at any time. This is important to remember during software installation, or if a notebook PC with the Sharer is moved to different locations.

Configuration PC

An Encore system is configured using a standard PC installed with the appropriate Encore software. Once configured, Encore control panels will be able to switch crosspoints on routing matrices even if the configuration PC is turned off or disconnected from the network. Typically the configuration PC also has the Encore Sharer application installed, but this application can reside on any PC on the network.

Sharer PC

The Sharer PC is the PC on which the Sharer is installed. Typically the configuration PC and Sharer PC are the same, but separate PCs can be used.

Routing Basics

Terminology

Area - An Area is a defined group of Sources and Destinations. Takes are restricted to connecting Sources and Destinations within the same Area (unless Tie-Lines are used). Defining multiple Areas makes it possible to assign the same easily identifiable Source and Destination names (like VTR_1, VTR_2) for use by different devices at different locations in the facility.

Breakaway - A Take operation that switches a Source on at least one Level that is different from the Sources selected on the other Levels.

Channel - The communication path used to control the crosspoint group by the Router Control Engine over a selected protocol such as Serial or Ethernet paths.

Chop - A variation of a Take command that alternately connects each of two different Sources to a single Destination (flip-flopping) at a designated switching rate (the chop rate).

Crosspoint - An electronic switch that allows a signal to pass from an input to an output when the switch is closed.

Destination - The location to which Source signals are routed. A Destination may include one or more outputs across multiple Levels.

Exclusion Set - User-determined set of items excluded from control by a particular control panel. Exclusion sets can be created for Areas, Destinations, Levels, or Salvos. An exclusion set may be shared by more than one panel.

Flag - A parameter that can be set in a control panel template to control how a panel operates.

Level - A grouping of signals of a particular type, such as digital video, audio right, audio left, Red, Green, or Blue, etc. This grouping becomes an independently controllable stratum of signals within a routing system.

Matrix - A configuration of potentially intersecting inputs and outputs. In routing switchers, a matrix is signal switching hardware configured such that any input may be switched to any output.

Preset - Selecting an item (for example a Source or Destination) in preparation for an action.

Protect - A control function that prevents control panels or devices from changing the current Source selection for the specified Destination.

Salvo - A named, system-wide preset which, when executed, can change crosspoints on multiple Destinations at the same time.

Source - An input signal or collection of input signals generally associated with a particular device (like a VTR or DDR). A Source may contain signals from multiple Levels.

Take - The direct, immediate switching of a different Source to a Destination. The Take occurs during the vertical interval for a clean transition.

Template - A set of parameters that can be applied to a control panel's configuration. The same template can be applied to multiple panels.

Tally - A status acknowledgment returned to a control panel or terminal that an operation has been executed. Typically this will light up a button, but a Tally may report text (for example a Source name).

Tie-Line - A system tie-line is a physical connection used to give a Destination connected to the output of one matrix access to Sources connected to the input of another matrix. A signal which passes through two or more matrices; more specifically the path (consisting of one or more Tie Wires) which links a Destination of one matrix to a Source of another matrix. A local tie-line is a special type that has Sources and Destinations in the same matrix, usually sending the signal out of the matrix for external processing.

Matrix Crosspoints and Levels Description

Each router matrix can be broken down into a number of switching matrices. A single switching matrix controls the switching (or routing) of a particular type of electrical signal (e.g. digital video, analog video, audio, data, etc.). These different signal formats are referred to as Levels. When a connection is made, a path is formed between a unique Source (logical grouping of physical inputs) and a unique Destination (logical grouping of physical outputs). The physical connection is accomplished using crosspoint circuitry. Figure 9 illustrates how a single switching matrix operates.

Figure 9. A Single Switching Matrix
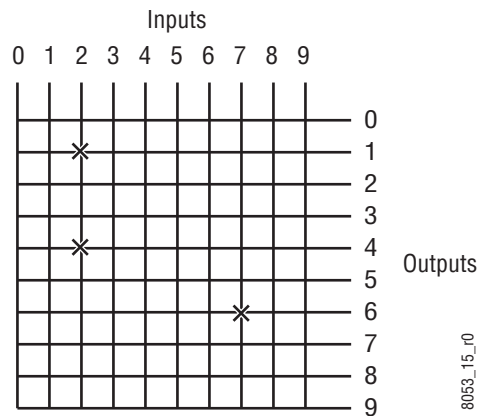
Any of the 10 inputs (numbered 0 to 9) can be routed to any of the 10 outputs (numbered 0 to 9). One input can also be routed to more than one output. All the possible routes are represented by the intersections of the horizontal and vertical lines in the illustration. The points where the lines meet (crosspoints) can be thought of as switches that allow the inputs to be connected to the outputs. In this example, three crosspoints are on (as indicated by the **X** symbols), and the following routes are made:

- Input 2 is routed to Output 1 and Output 4.

- Input 7 is routed to Output 6.

Sources and Destinations Description

Sources consist of input signals to the router, and Destinations are output signals from the router. An individual Source or Destination may contain more than one signal. For example, a Source may consist of a video and a key signal; be separate Red, Green, and Blue video signals; or have a video signal and several associated audio signals. Each signal type is considered a Level. In general, a Source and Destination need to be configured with same number and type of Levels in order for Takes connecting them to be successful.

Multi-Level Switching Description

All Level Take

An all Level Take switches the same input number on all Levels, to the controlled Destination, as shown in Figure 10.

Figure 10. Traditional All Level Take
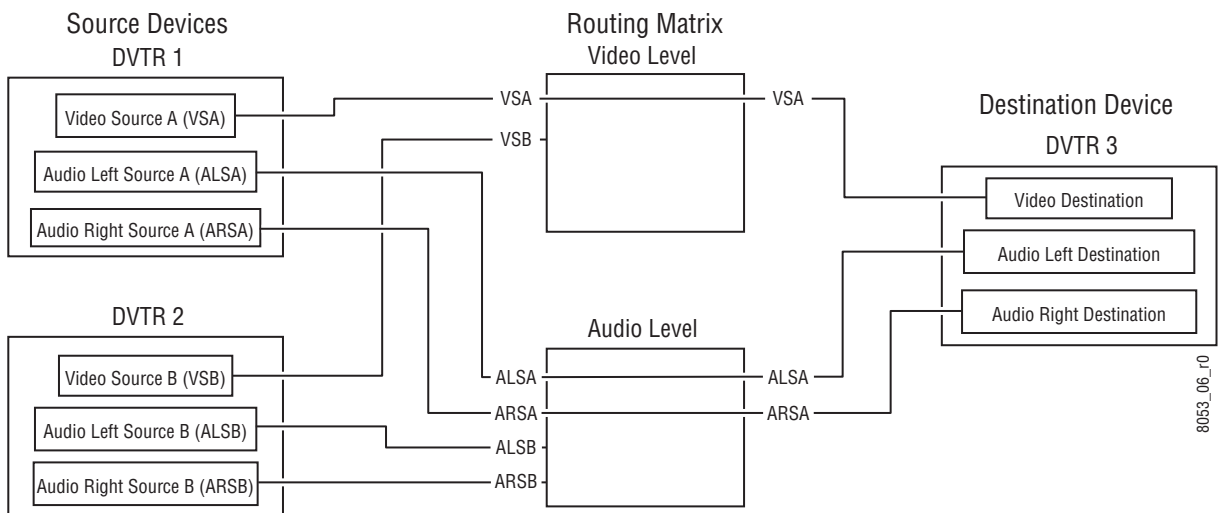
Breakaway Take

A Breakaway Take is performed by selecting a Source different from the others (on at least one Level) to the controlled Destination. Breakaways allow a Destination to use different Sources (Figure 11).

Figure 11. Breakaway Take
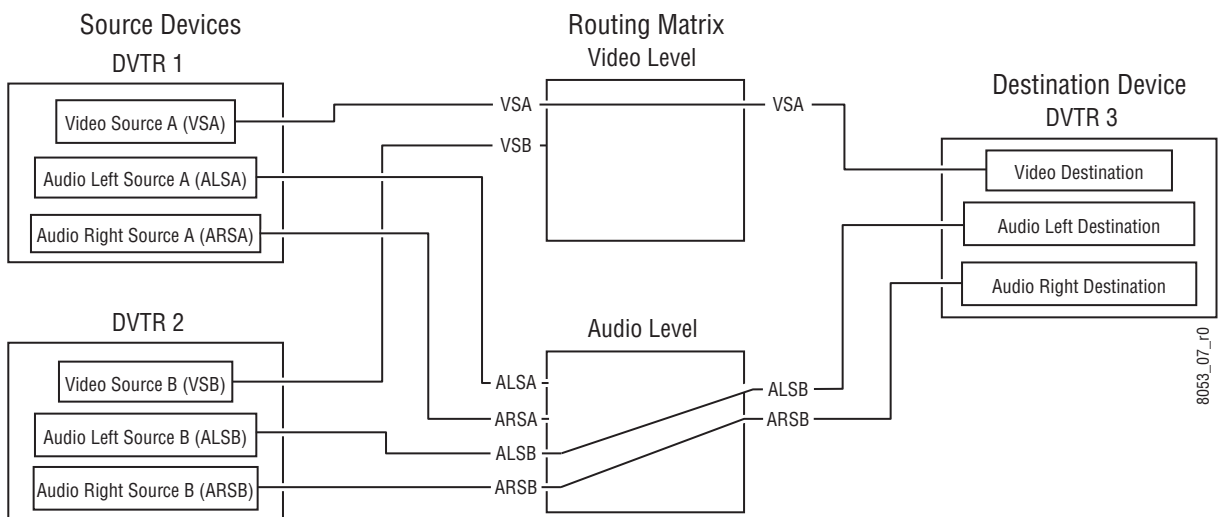
Tie-Line Description

Tie-lines can be used to link different matrices, allowing Sources in one matrix to be routed to Destinations in another matrix. Each tie-line has a Source Name and a Destination Name that defines the signal path. A tie-line Source is actually a Destination of the first matrix, and the tie-line Destination is a Source of the second matrix. Routes that employ more than one tie-line are called multi-hop tie-lines (Figure 12).

Figure 12. Tie-Lines
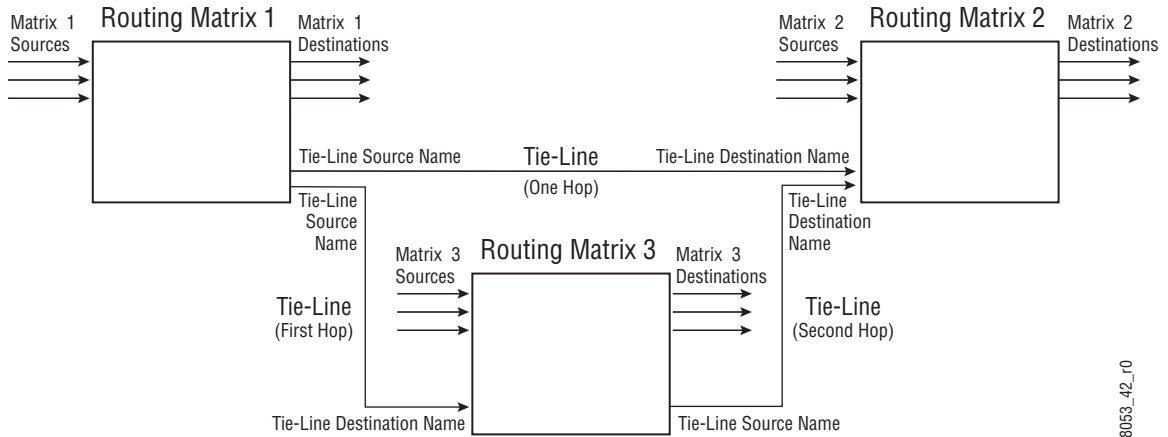
Once configured on an Encore system, actual tie-line operation is transparent to the operator. The Tie-Line Manager application automatically creates and releases tie-line paths as needed.

Installation

Encore System Controller Frame

Frame Rack Mounting

The Encore System Controller frame is installed in a standard 483 mm (19-inch) rack. Rear frame support brackets are included; their use is highly recommended but not required. The frame occupies two rack units. See Figure 13. Cooling is by internal fans mounted on the Controller and Power Supply modules.

Figure 13. Encore System Controller Frame
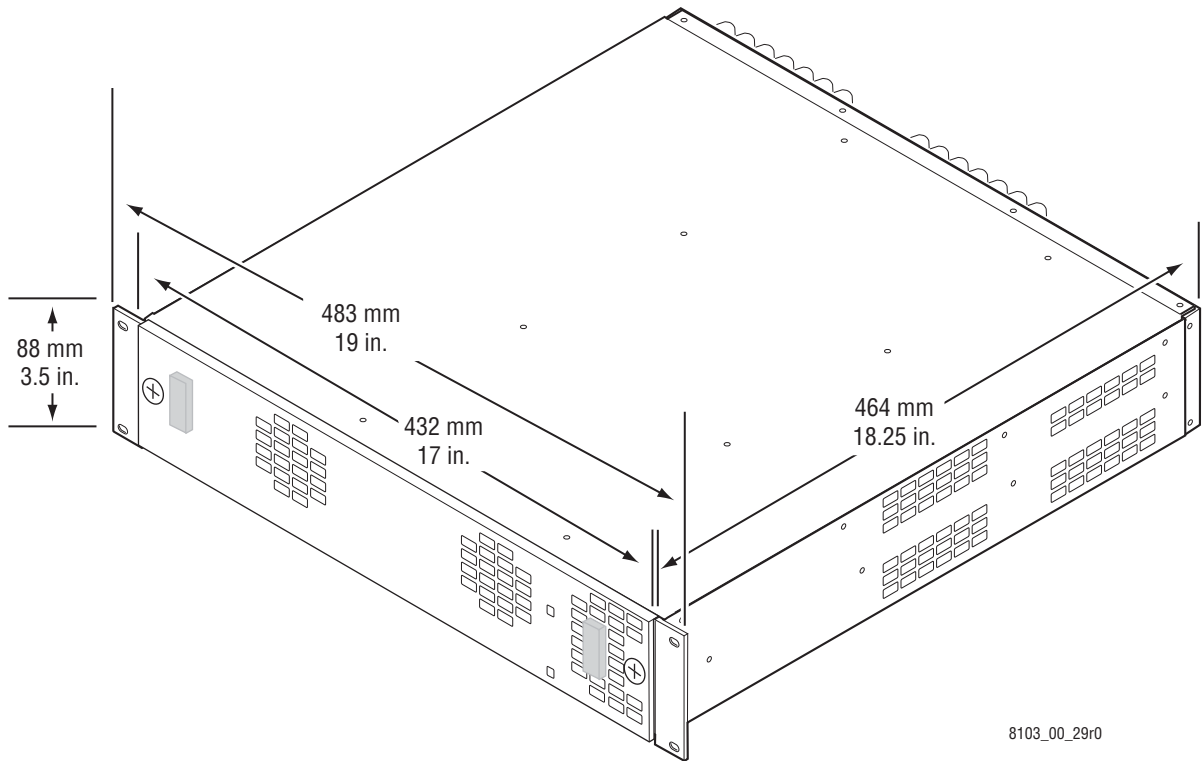
Each side of the Encore Controller frame has two screws with spacers (Figure 14). The openings on the rear support bracket will fit over the screw heads. The spacers allow enough room to slide the bracket along the frame. Adjust the bracket to fit the rack and secure with user supplied screws, washers, and nuts.

Figure 14. Encore Rear Support Bracket

Rear Support Bracket

Screw Head

Spacer

Screw Head

Spacer

8103_03_72r0
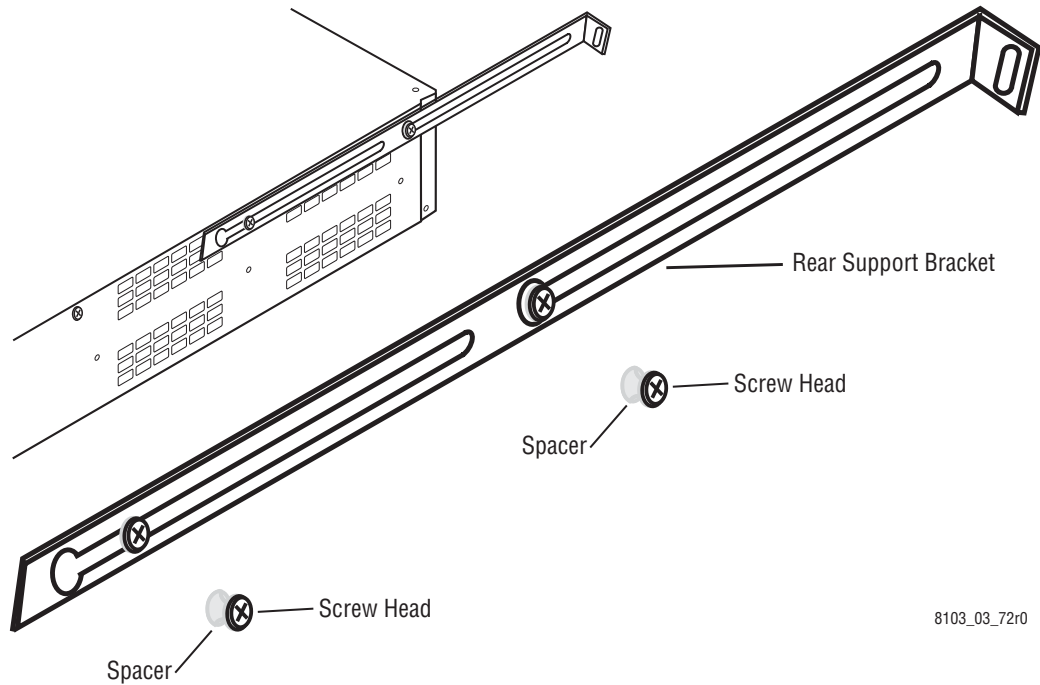
Frame Power

Frames may be powered using either an AC power source, or a 48V DC power source. It is also possible to cable a matrix using an AC power source and a 48V DC power source at the same time. If a matrix has both AC and DC power sources available it will use whichever power source can meet its power level demand. So if the AC power source fails then the DC power source would feed the matrix, and if the DC power starts to fall the AC power would feed the matrix. AC and DC power sources are kept separate with no feedback, so the AC power source will not charge batteries used in a connected DC power source.

AC Connections

The Encore System Controller frame comes with one power supply. Redundancy is provided by adding an additional power supply.

48V DC Connections

WARNING Do not apply a 48V DC power source until all 48V DC connections on the matrices are complete and secure.

The 48V DC connection requires 12 AWG (3.31 mm2) wire and a 3-pin female terminal block connector. See Figure 15.

Figure 15. 48V DC Connection
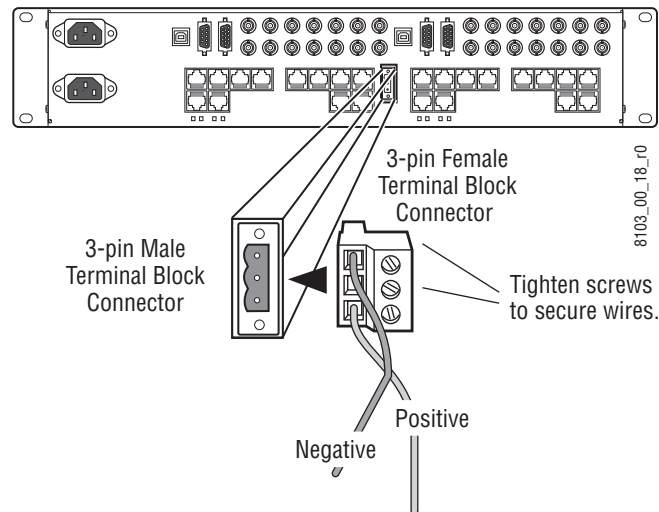
System Controller Frame Module Slots

The Encore System Controller Frame has two slots for System Controller (SCB) modules, and two slots for power supply modules (see Figure 3 on page 25).

Note Modules must be completely seated to operate properly. The fan and LEDs will come on before the Controller module is fully seated. See the Maintenance Section (*To Insert System Controller Modules* on page 73) for instructions on removing and inserting the Controller module.

System Controller (SCB) Module

The SCB has two standard components, the System Controller module motherboard and a Control Processor sub-module. Additional SIO and GSC mezzanines are available, which mount one above the other. The mezzanine mounting order does not affect operation. However, because the SIO mezzanine has user adjustments, if both are installed it is recommended to install the SIO mezzanine above the GSC mezzanine (Figure 16).

Figure 16. System Controller Components
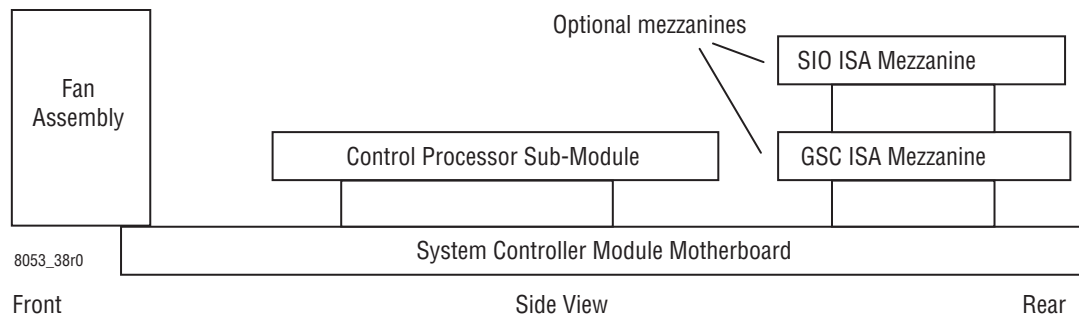
Control Processor Submodule Jumper Settings

The Control Processor submodule provides the processing capacity required for the Router Control and/or the Control Panel Server applications. This module has several user adjustments.

Four sets of Jumpers reside on the Control Processor module (see Figure 17):

- Placing the CMOS Jumper in the Clear position and resetting the System Controller module will erase the CMOS memory. After clearing the memory, the jumper must be returned to the Normal position and the System Controller module reset to resume operation. Only operate the System Controller with the jumper in the Normal position,

- Placing the BIOS Bank Jumper in the Upper position will select the upper BIOS Bank. The Lower position selecting the lower BIOS Bank is default,

- Placing the Watchdog Timer Jumper in the On position will cause the module to reset whenever a Watchdog Timeout occurs. The Off position will cause a non-maskable interrupt whenever a Watchdog Timeout occurs. Off is the default position, and

- Placing the BIOS Write Protect Jumper in the Program position will allow the BIOS to be programmed. Write Protected is the default position. Only operate the System Controller with the jumper in the Write Protected position.

Figure 17. Control Processor Settings
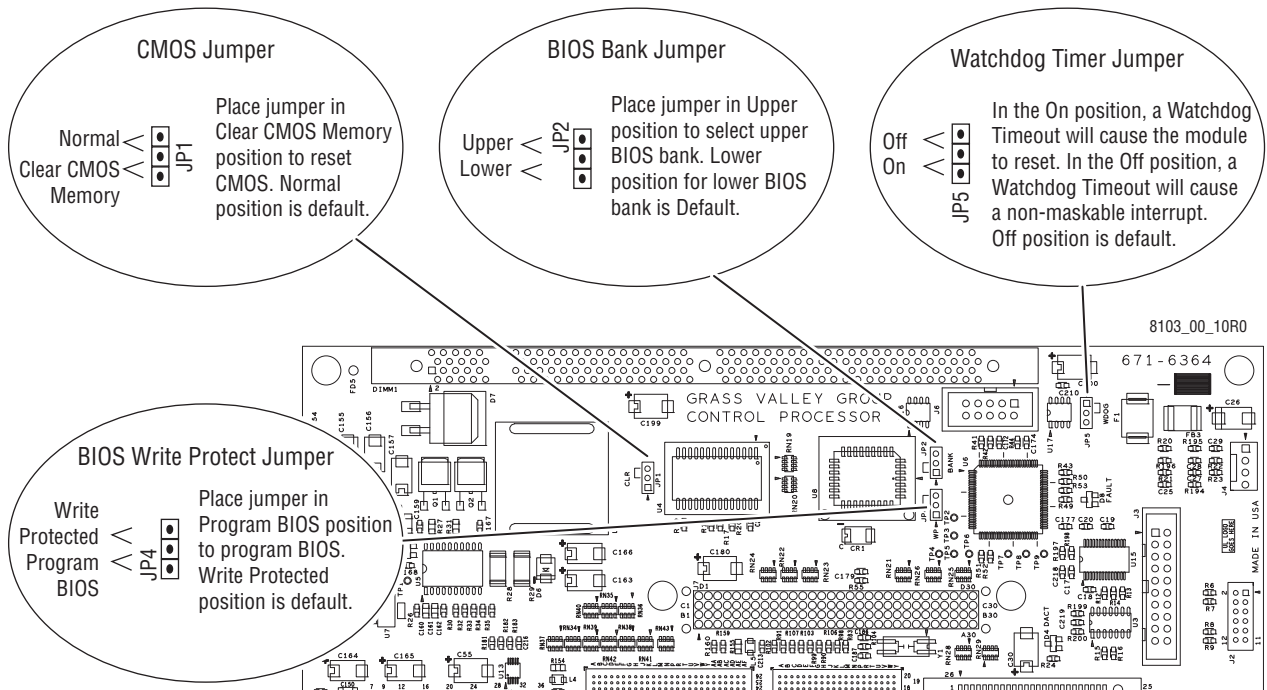
Serial Interface (SIO) Mezzanine

The Serial Interface (SIO) mezzanine is optional. If purchased with the System Controller the mezzanine will come installed. If the mezzanine is purchased separately installation consists of plugging the mezzanine into the Controller module and securing it with the provided standoff screws.

The **SIO ISA BOARD** mezzanine provides serial interfaces for eight ports at RS-422/485. Four of the eight ports will also support RS-232. User adjustments are available for each port.

SIO ISA Mezzanine Settings

Table 3. SIO ISA Ports

Port Number		RS-232	RS-422/485
Mezz	Frame		
0	1	Yes	Yes
1	2	Yes	Yes
2	3	Yes	Yes
3	4	Yes	Yes
4	5	No	Yes
5	6	No	Yes
6	7	No	Yes
7	8	No	Yes

Eight RJ-45 ports are controlled by the SIO ISA mezzanine. The ports are labelled 0 to 7 on the mezzanine. See Table 3 for port assignments and signal types. Each port has a Duplex Jumper, which allows you to choose Half or Full Duplex. The default setting is **Full**; if you want to use the **Half** setting you must also change the DIP switch setting.

The DIP switch bank has four switches. DIP switches 1 and 2 must be in the **On** (default) position to terminate the bus. DIP switches 3 and 4 (**Off** Full Duplex is default position) are set to the **On** position if the **Half** position is selected for the Duplex Jumper.

CAUTION On all mezzanine ports (whether used or unused), DIP switches 1 and 2 must be in the **On** position.

The default for the first four ports is RS-232; to set these ports to RS-422/485 set all eight jumpers on each port to the 422 position. See Figure 18 for jumper and DIP switch locations. Also see *Serial Cabling RS-232 on page 53* and *Serial Cabling RS-422/485 on page 54* for additional information.

Figure 18. SIO ISA Port Jumpers and DIP Switches
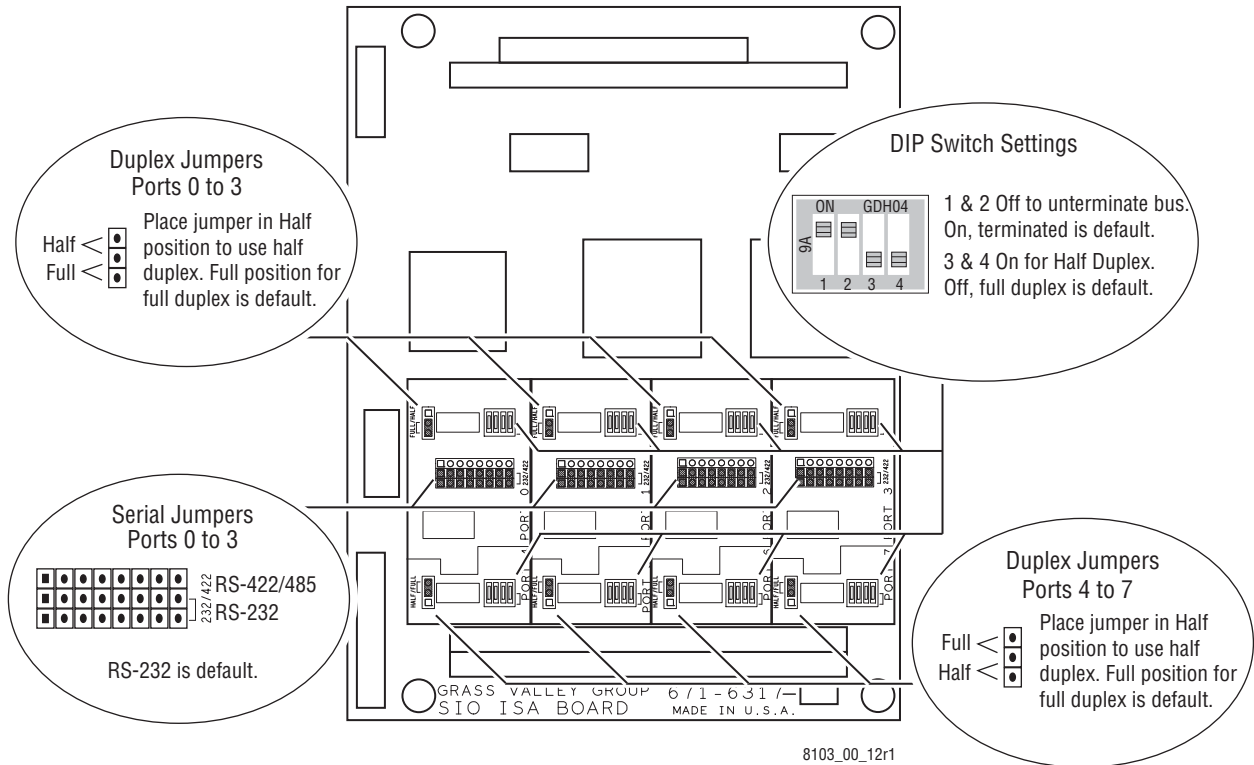
Global Serial Channel (GSC) Mezzanine

An optional Global Serial Channel (GSC) mezzanine is available to control legacy SMS7000 control panels. If purchased with the System Controller the mezzanine will come installed. If the mezzanine is purchased separately installation consists of plugging the mezzanine into the Controller module and securing it with the provided standoff screws. The recommended mounting location is shown in Figure 16 on page 36. The GSC mezzanine has no user adjustments.

GSC control panel cabling is described on page 45.

System Cabling Example

Table 4 list the connectors on the Encore System Controller Frame. The Gender column indicates the gender of the connector found on the frame. The Details column contains information to assist in using the connector.

Table 4. Connectors on Encore System Controller Frame

Label	Connector		Details
	Type	**Gender**	
⊥	Terminal Block	Male	Use 12 AWG (3.31 mm^2) wire and a 3-pin terminal block connector to establish a DC power connection.
COM 1 CONSOLE	RJ-45	Female	RS-232 connector, use Category 5e cable, 8 conductor twisted pair.
COM 2	RJ-45	Female	RS-422, RS-485 connectors, use Category 5e cable, 8 conductor twisted pair.
EN 1 and 2	RJ-45	Female	Ethernet network communication interface is 10Base-T and 100Base-T compatible, use Category 5e cable, 8 conductor twisted pair.
GPI IN	9 Pin D	Male	Future use. Cable specifications and pinouts determined by type of serial device.
GPI OUT	15 Pin D	Male	Future use. Cable specifications and pinouts determined by type of serial device.
GSC 1, 2, 3, and 4	BNC	Female	Use 75 ohm connectors, terminators, and coaxial cable. Loop-thru cabling supported.
REF OUT	BNC	Female	Future use.
SIO 1, 2, 3, and 4	RJ-45	Female	RS-232, RS-422, RS-485 connectors, use Category 5e cable, 8 conductor twisted pair.
SIO 5, 6, 7, and 8	RJ-45	Female	RS-422, RS-485 connectors, use Category 5e cable, 8 conductor twisted pair.
SYNC 1 and 2	BNC	Female	Synchronous video references use 75 ohm connectors, terminators, and coaxial cable. Loop-thru cabling supported.
USB	USB	Female	Future use.

Figure 19 shows cabling for a redundant Encore Control System using a managed switch configured with two VLANs. This example uses two 128x128 Concerto matrices, four Encore control panels, a single PC-compatible, a single managed switch, and an Encore frame with dual SCBs.

Figure 19. Redundant System Controllers Configured Using VLANs
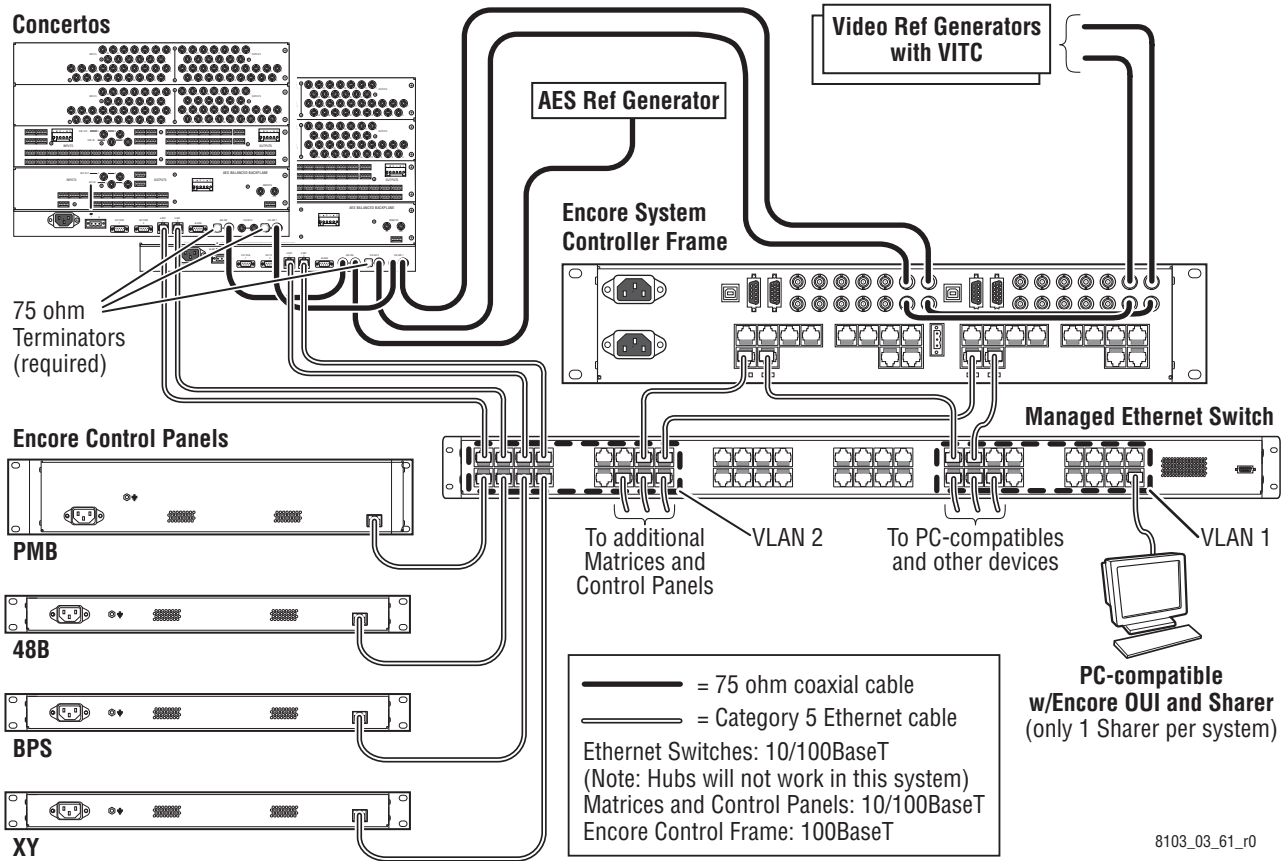
The two System Controllers are both configured as Panel Servers and Router Engines. Panels may be placed anywhere on the network as long as the panel has an Ethernet path to a Encore System Controller frame configured as a Control Panel Server. A Control Panel server can control up to 128 Encore control panels. To add more panels, use another Encore System Controller configured as a Control Panel Server.

Serial and Ethernet connections cannot be routed internally from one side of the System Control frame to the other, so a separate connection is shown from each System Controller to the device or switch.

Video Reference signals can be routed via loop-thru daisy-chain. Two video references are routed through one System Controller to the other and on to the Concerto frames. Video Reference 2 is terminated at the first Concerto frame. Video Reference 1 continues from the first Concerto to the second Concerto before being terminated. An AES reference is added at the first Concerto frame and routed to the second Concerto where it is terminated.

Managed 10/100BaseT switches are recommended for all Encore Systems. Unmanaged 10/100BaseT switches can be used as secondary switches connecting several devices to a managed Ethernet switch, or in isolated areas. Ethernet hubs are not supported.

Figure 20 shows the same system configuration using two switches.

Figure 20. Redundant System Controllers Configured Using Two Switches
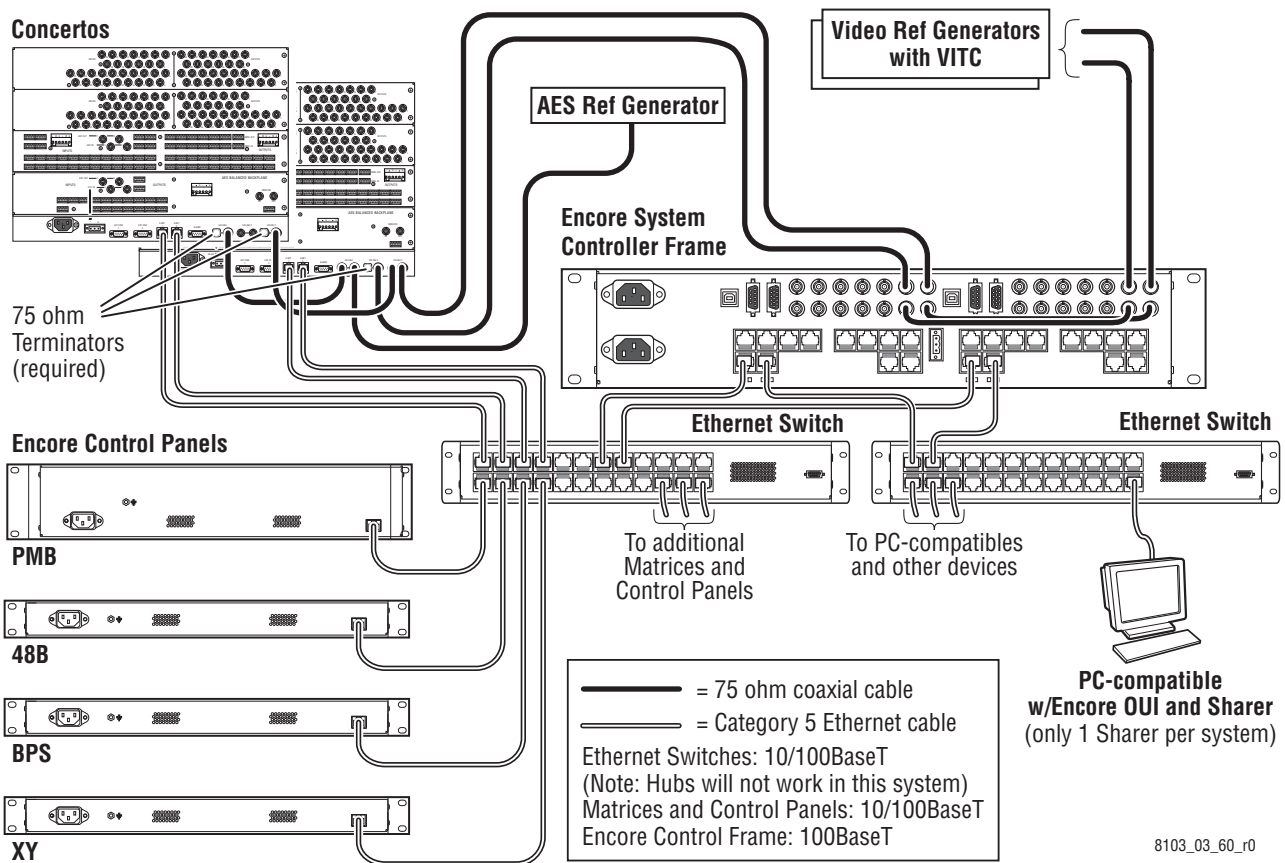
Reference Cabling

Analog Color Black (NTSC/PAL) is used as the primary system Video Reference, and is required for both the controller and the matrices. To allow time stamped deterministic switching, the Video Reference must contain an embedded Vertical Interval Time Code (VITC) signal.

The Encore control system switches the matrices at Frame boundaries, not at Field boundaries (as in the Series 7000 control system). Frame based switching is required to ensure Dolby E compliance.

The Encore System Controller frame, the DV Series matrices, the 7500 Series matrices, and the Concerto matrix support multiple independent switch point reference signals. Multiple reference signals support synchronously switching groups of sources with different repetition rates (PAL/NTSC) or offset timing (delay from studios vs. direct feeds).

Reference signals can be routed via loop-thru daisy-chains. In Figure 21 two Video References are routed through the System Controller and on to

the Concerto frame. Video Reference 2 is terminated at the first Concerto frame. Video Reference 1 continues from the first Concerto to the second Concerto before being terminated at the end of the bus. An AES Audio Reference is added at the first Concerto frame and routed to the second Concerto frame where it is terminated.

Note   If Concerto is configured with an Audio Module, an AES Audio Reference must be present.

Figure 21. Video and AES References
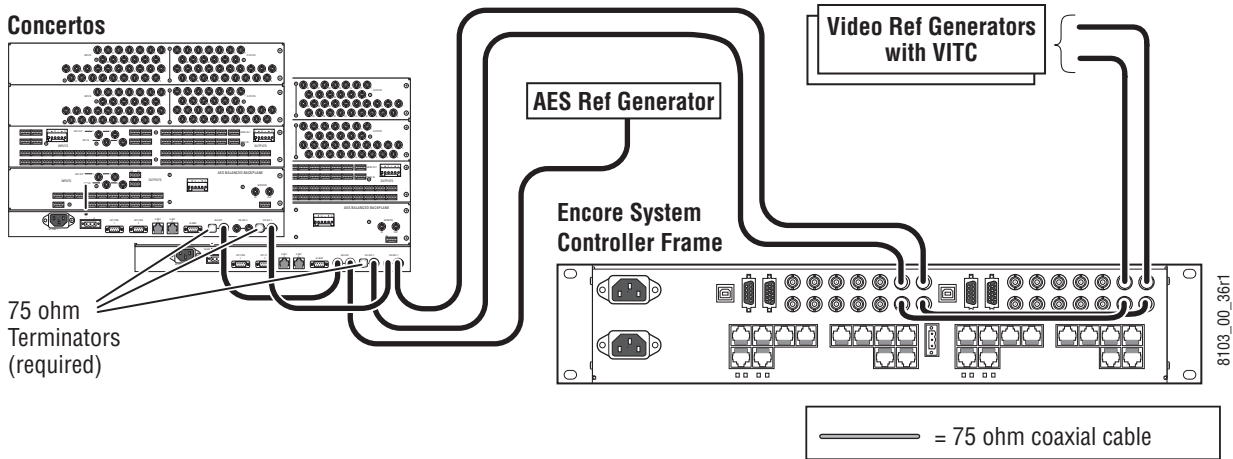
Control Panels

Rack Mounting

Control panel rack mounting is straightforward and requires no special tools or adaptors. Position the control panel in the rack and secure the panel in place using rack screws or bolts and nuts (depending upon your equipment racks). Refer to Figure 22.

CAUTION Do not position rack-mount control panels between matrix frames and their fan and exhaust units. This will break the chimney air flow and create open areas for EMI emissions.

Figure 22. Rack Mount Control Panel Installation

106 mm
4.18 in.

44 mm
1.75 in.

432 mm
17 in.

483 mm
19 in.

The 1 rack unit control panels;
BPS, 48B, and XY are 44 mm (1.75 in.)
The 2 rack units control panel,
PMB is 88 mm (3.5 in.)

8103_00_33r1
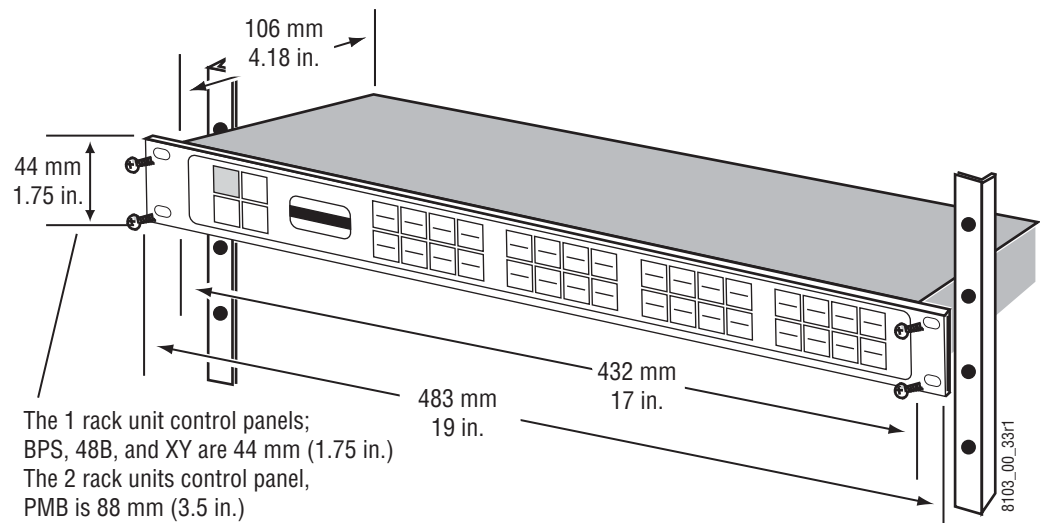
Control Panel Grounding

Encore Control panels must be properly grounded before connecting AC power. Use the ground nut located on the rear of each control panel. See Figure 23.

1. Attach either a 6 AWG (13.30 mm^2) wire or a ground strap to lug.

2. Attach lug to ground post.

3. Secure with nut.

Figure 23. Control Panel Ground

Control Panel (1 rack-unit)

Ground nut

Ground lug

8103_00_34r0

Use a Ground strap   or   a 6 AWG (13.30 mm^2)
Ground wire
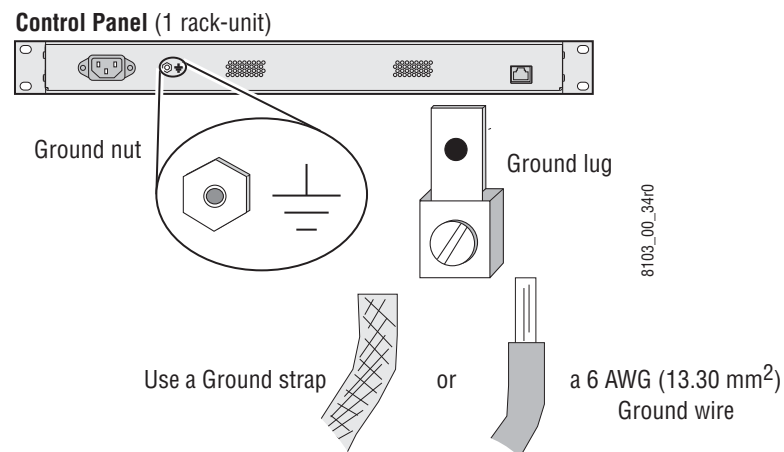
Control Panel Power

Control panels are powered differently, depending on model. Panels either have built in power supplies that use standard power cables, or use external brick style power supplies.

Types of Control Panel Cabling

Current Encore control panels use Ethernet communications that use standard 10Base-T and 100Base-T compatible Category 5e cable.

Legacy SMS7000 control panels use Global Serial Channel (GSC) communications that employ loop through 75 Ohm coaxial cable.

See *Control Panels Cabling* on page 44 for information about Ethernet and GSC cabling requirements.

Control Panels Cabling

Ethernet Panel Cabling

The recommended cabling configuration is to connect control panels via 10/100BaseT switches using Category 5e Ethernet patch cables. Each control panel requires a separate port. See Figure 20 on page 41.

The switches can be layered up to a maximum of five deep. Always use the fewest layers practical for the installation. Figure 24 shows a possible connection configuration using three layers of switches. It is also recommended that control panels that are on shared networks be routed through managed switches at the point where the control panels can come into contact with signals from other devices.

Figure 24. Control Panels on Three Layers of Switches

Encore System Controller Frame

Managed Ethernet Switch

To switches | To matrices

Managed Ethernet Switch

To PC-compatibles, and other devices

= Category 5 Ethernet cable

Ethernet Switches: 10/100BaseT
(Note: Hubs will not work in this system)
Control Panels: 10/100BaseT
Encore Control Frame: 100BaseT

Ethernet Switch

Ethernet Switch

• • •

To switches

Ethernet Switch

To switches

Ethernet Switch

To panels
(one control panel per port)

To panels
(one control panel per port)

Encore Control Panels

Encore Control Panels

• • •

(128 maximum per Control Panel Server)

8103_00_28_r1

Note   While it is possible to directly connect a control panel to an Encore Control frame; a direct connection would limit the number of control panels to two per System Controller. To connect a control panel directly to the Encore Control frame use a Category 5e Ethernet crossover cable between the **LAN** connector on the back of the control panel and the Ethernet connector on the back of the Encore System Controller frame.

GSC Panel Cabling

GSC Control Panels are controlled by an Encore System Controller with an GSC ISA mezzanine installed. The GSC ISA mezzanine controls four sets of

BNC connectors found on the back of the frame. Two GSC mezzanines can be installed in redundant SCBs for redundant GSC operation.

Figure 25. GSC Control Panels, Redundant Operation SCB Cabling
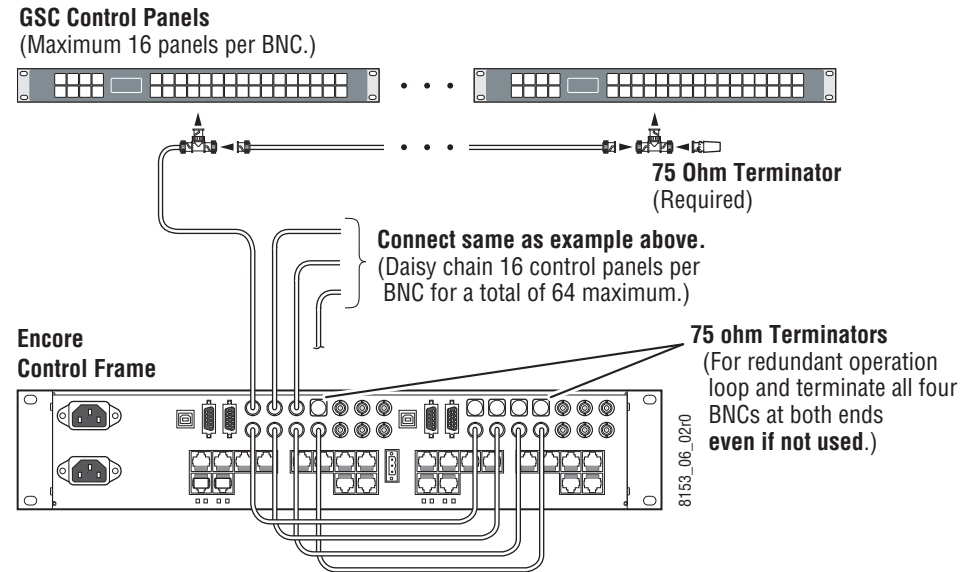
Figure 26. GSC Control Panels, Stand Alone SCB Cabling
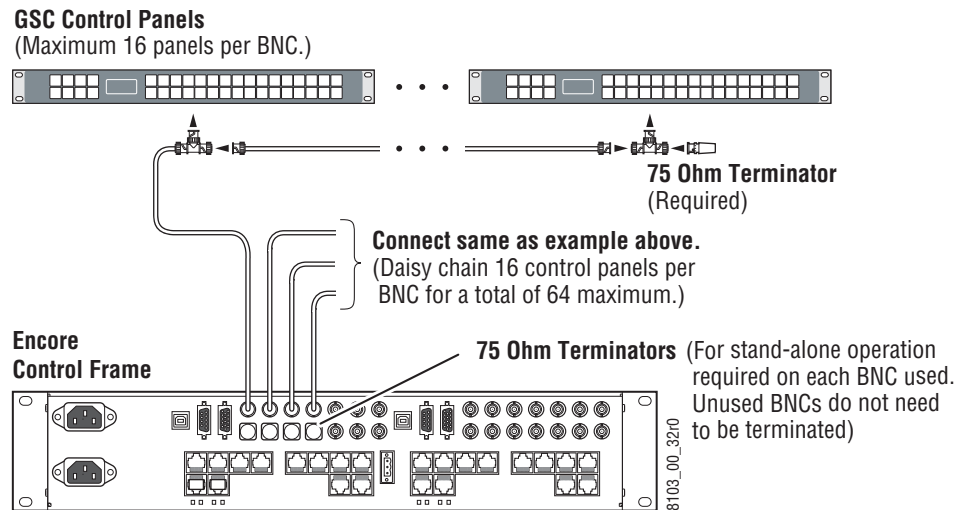
The CP (Control Panel) Bus port supports a maximum of 16 control panels (or devices) on each coaxial cable branch. There are four coaxial cable branches, so the maximum number of GSC panels allowed is 64. An Encore System Controller can control a total of 128 control panels so you could have a maximum of 64 GSC control panels and still control up to 64 Encore control panels via Ethernet.

The coaxial cable must be 75 ohm (Belden 8281 or equivalent) terminated into 75 ohms at both ends of the bus. For redundant operation all four buses must be looped and terminated. The maximum length of a CP Bus is 1500

ft. (450 m.). The CP Bus is a 1 MBit data bus and will not allow pigtail extensions between the BNC T-connector and the control device (see Figure 27).

Figure 27. Control Panel Bus T-Connections and Termination
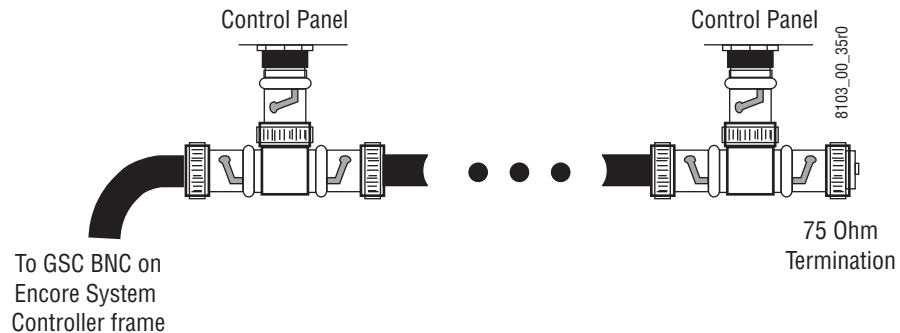
GSC Panel Conversion and Software Update

Conversion from SMS7000 to Encore

GSC control panels used in SMS7000 systems must have their software updated before these panels can be used in an Encore Control System.

Existing Encore GSC Updates

If an Encore software release adds GSC panel features or corrections, the same update procedure may need to be performed to enact these changes on those GSC panels.

GSC Control Panel Software Update Procedure

1. Ensure the System Controller Board (SCB) has the GSC mezzanine installed.

2. Verify the control panels are connected to the encore frame on the side the SCB with GSC mezzanine is installed.

3. Ensure the SCB has been updated with Encore 1.7 or later software using NetConfig.

4. Using a console interface (serial or telnet interface into the SCB) type either 'ls' or 'll' to display the list of files on the flash card. Verify that the gscPanel.mot file is located on the flash.

CAUTION Do not type 'ls-l' on the console interface, as it will stop the SCB from functioning.

5. Next type in the following command, followed by the return key, which will reprogram all GSC control panels connected to the SCB:

   `lcpProgram`

6. Once the panels are programmed they will automatically reboot and sign onto the Encore system. At this point the GSC control panels should connect and be given the default configuration defined for each panel type within the Panel Server.

7. Configure these control panels using the standard method described for Encore control panels. Remember all configuration changes are live changes and do not require a panel reboot, but to make the changes persistent the user must select **Save** (or **Modify** for v1.7.x and earlier software) to save the configuration changes.

CAUTION When renaming a GSC control panel from the Encore OUI, exit and re-enter the OUI edit select screen before editing the renamed GSC panel. This allows the OUI to update active panel configuration chevrons appropriately. Make sure there are active chevrons (>>) for the GSC panel to be edited after re-entering the OUI screen.

SMS7000 GSC control panels use older technology and are inherently slower than the Encore network interface control panels. The GSC control panel takes a longer time to reboot and sign-on to the system after a rename operation. The OUI edit select screen is not dynamically updated, so the panel configuration may incorrectly show active chevrons (>>) when the panel is actually offline. If the OUI attempts to edit a GSC panel in this special condition, the OUI will prevent the GSC panel from signing onto the master panel server because the configuration is in active edit mode. When the edit is completed the panel will then sign-on but the master and mirror panel server will be out of sync.

If this special condition GSC panel rename and edit does occur, the recovery method is to edit the name again of this now active GSC panel configuration from the OUI, save the configuration, and then exit OUI panel configuration screen. This puts the panel server back in sync.

Conversion from Encore Back to SMS7000

After programming GSC panels within an Encore system the application memory space may become corrupted for use in an SMS7000 MCPU system. The symptom of this is the panel's name within SMS7000 will have extended DOS characters that are not recognized by the DOS filing system used on the SMS7000 system. The SMS7000 GUI will be unable to see the panel application because the name will not be recognized.

To overcome this name corruption issue, special files named EraseC.mot and EraseE.mot must be loaded from the MCPU to clear this memory space. This then allows the SMS7000 to properly program the control panel and assign the default panel type name.

To correct this issue from the SMS7000 MCPU console interface:

1. FTP the files 'EraseE.mot' and 'EraseC.mot' to the MCPU. Ensure the FTP is done in the 'bin' (binary mode). You will use "EraseE" for EPOS panels and "EraseC" for CSOS panels.

2. From the MCPU console interface program the control panel with the appropriate .mot file. To know which file is appropriate for a given control panel, reset the panel and observe the boot up display of the panel. This will show the control panel's operating system CPOS or EPOS.

3. For a CPOS panel, such as a UCP type the following at the MCPU console interface:

```
prog "EraseC.mot" cp ucp
```

Note   Quotes and spaces must be used as shown.

- First parameter is the command 'prog'.

- The second parameter is the file name the device is to be programmed with. To use EraseC and EraseE you must know what type of panel OS is being used for the control panel.

- The third parameter is the device type, in this case 'cp' for control panel device types.

- The fourth parameter is the device sub-type, in this case 'ucp' for Universal Control Panel. This will be specific to the type of control panel being programmed.

Joystick Override

Some Encore system control panels support Joystick Override (JSO). Joystick Override is commonly used to switch crosspoints from a switch mounted at the top of the joystick (Iris and Black Level control) on a television camera remote control unit (RCU). This function is used by the camera video engineer to rapidly switch the outputs from multiple cameras to his monitoring station.

The following control panels support Joystick Override:

Table 5. Joystick Override Panels

Encore panels	BPS, 48B, JEP-100
SMS panels	P32, P48
Kalypso panels	KMD, KSD

These control panels are equipped with a D-connectors mounted on their rear panels, used for joystick override inputs. The camera RCU usually has

a GP output (contact closure) that can be connected to one of the 14 GP inputs accessible on the control panel's D-connector.

Encore and Kalypso panels have 15-pin D-connectors, and SMS panels have 50-pin D-connectors on the rear of the panel (see Table 6 on page 51 and Table 7 on page 52).

JSO Configuration

The GP inputs appear in the control panel configuration as additional control panel configurable inputs. The GP inputs support the following configuration modes (assignment/selection):

Source Select (latching)/Source Name

When a GP input configured for source select (latching) initiates a contact closure, the selected source switches to the control panel's active destination. The selected source will remain connected to the active destination after the GPI contact closure is removed.

Source Select (non-latching)/Source Name

When a GP input configured for source select (non-latching) initiates a contact closure, the selected source switches to the control panel's active destination. The selected source will revert to the previously connected source (to the active destination) after the GPI contact closure is removed.

Salvo Select/Salvo Name

When a GP input configured for salvo select initiates a contact closure, the selected salvo shall be executed.

JSO On Updated KAL32UX1, KAL32UX2 Control Panels

KAL32AUX1 and KAL32AUX2 Kalypso style Remote Aux panels can be used with Encore systems after updating their panel software. The Joystick Override capabilities described above is also available with these updated control panels.

JSO On Updated SMS7000 GSC Control Panels

SMS7000 P32 and P48 panels can be equipped with Joystick Override as an option, by installing a ribbon cable, board and connector assembly. Encore supports Joystick Override on these panels (up to 24 inputs).

Encore/Kalypso Control Panel JSO Pinouts

The pin-outs of the 15-pin D-connector on Encore control panels are identical to that used in the Kalypso Ethernet remote AUX panels (KAL-32AUX1, KAL-32AUX2, JEP-100).

Table 6. Encore/Kalypso Joystick Override Pinouts
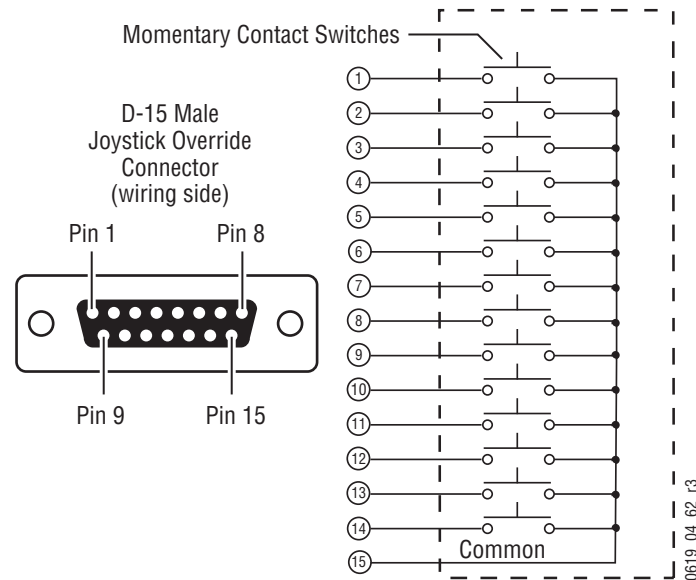
By default, the contacts connected to Pins 1-14 of the GPI connector are assigned to Sources 1 thru 14 in the default area.

SMS7000 GSC Joystick Override Connector

The installation of the Joystick Override uses shielded cable and a 50-pin D connector. The pin outs for the 50-pin D connector is in Table 7.

Table 7. SMS7000 GSC 50-Pin D Connector

	Pin #	Signal	Pin #	Signal
	1	Input 1	26	Input 13
D-50 Female	2	Input 1	27	Input 14
Pin 18	3	Input 2	28	Input 14
Pin 1	4	Input 2	29	Input 15
Pin 34	5	Input 3	30	Input 15
	6	Input 3	31	Input 16
	7	Input 4	32	Input 16
	8	Input 4	33	Input 17
	9	Input 5	34	Input 17
	10	Input 5	35	Input 18
	11	Input 6	36	Input 18
Pin 33	12	Input 6	37	Input 19
	13	Input 7	83	Input 19
Pin 17	14	Input 7	39	Input 20
Pin 50	15	Input 8	40	Input 20
	16	Input 8	41	Input 21
	17	Input 9	42	Input 21
	18	Input 9	43	Input 22
	19	Input 10	44	Input 22
	20	Input 10	45	Input 23
	21	Input 11	46	Input 23
	22	Input 11	47	Input 24
	23	Input 12	48	Input 24
	24	Input 12	49	not used
	25	Input 13	50	not used

The current limiting range for the opto-isolators gives the widest range of acceptable voltage values. The pads of the Current Limiting resistors are larger than normal to allow non-destructive modification of their resistance values. See Table 8.

Table 8. Opto-Isolator Current Limiting Resistors

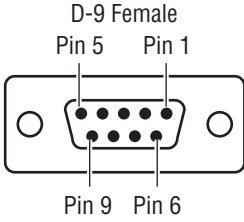| Input Voltage Range	Resistor Value, 1/2 W
+2V to 10.5V	470 Ohm (minimum)
+3V to 21.5V	1000 Ohm
+5V to 34.5V	2200 Ohm (default)

ENC-UCP Serial RS-422 Pinouts

The ENC-UCP control panel has two parallel wired 9-pin female ports, labeled **Data A,** located on the rear of the panel. These ports can be used for RS-422 communications. Termination is not required for short cable runs, but may be needed for longer runs. Pinouts are shown in Table 9.

Table 9. Pinouts on ENC-UCP Control Panel

RS-422 9-Pin Female Connector		
Pin		
1	Ground	
2	TX-	
3	RX+	
4	No connect	
5	No connect	
6	No connect	
7	TX+	
8	RX-	
9	No connect	

D-9 Female
Pin 5   Pin 1

Pin 9   Pin 6

Control Panel Keycap Legends

Control Panel keycaps suitable for Encore and Acappella hardware panels can now be printed. A Microsoft Word template file is available that can be populated with keycap legends using the Soft Panels application. The resulting keycap file can be printed onto a clear sheet, cut to size, and inserted into the hardware panel buttons.

See the separate *Soft Panels Instruction Manual* for more information.

Serial Cabling RS-232

COM 1 (CONSOLE) and Ports 1 to 4 RS-232

The **COM 1 (CONSOLE)** port on the Encore Control frame is a RS-232 serial connection used for connecting to a console. The pinouts and cabling for the port is the same on all the Encore frames. This is a non-redundant port; for

redundant RS-232 connections use ports 1, 2, 3, or 4 on the optional SIO ISA mezzanine. See Figure 28 for a cabling example using PC-compatibles.

Figure 28. COM 1 RS-232 Cabling
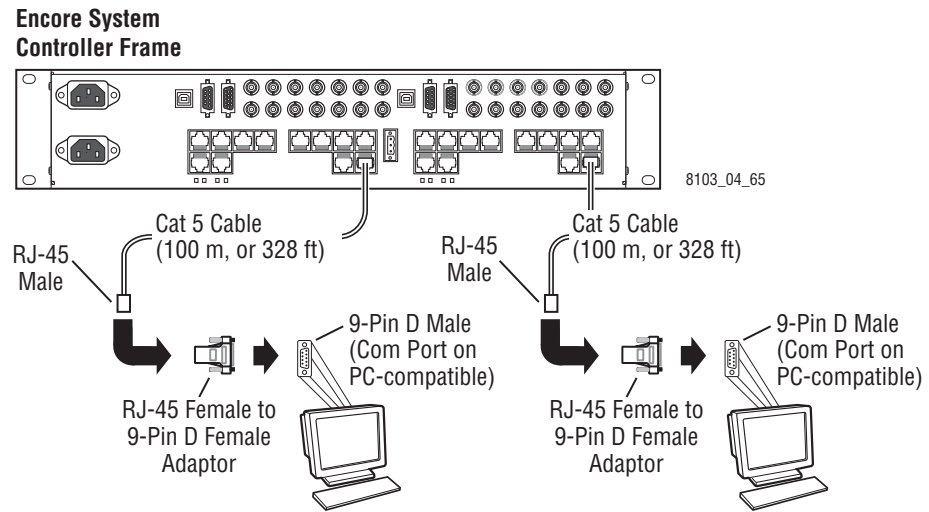
Ports 1 to 4 come from the factory with RS-232 as the default. See *Serial Interface (SIO) Mezzanine* on page 37 for information on port settings. Use the pinouts in Table 11 on page 65.

Serial Cabling RS-422/485

Two different sets of pinouts have been used on the serial RJ-45 connectors on the Encore Control frame backplane. The early model Encore Control frame (part number 6100884xx) port is non-conforming. Later model Encore Control frame (part number 6101000xx port is conforming.

Note   The Serial Interface Y Cable Option contains 8 cables that can be used with the early model frame part number 6100884xx. These cables part number 174821600 are custom crossover cables. See Grass Valley Customer Service for information on ordering these cables.

Encore Control Frame Identification

It is important to use the correct cabling for the Encore Control frame. A label inside the front of the frame identifies the part number of the frame (Figure 29).

Figure 29. Frame Part Number

If this number is:
6101000xx, this is the new Encore Frame.
6100884xx, this is the original Encore Frame.
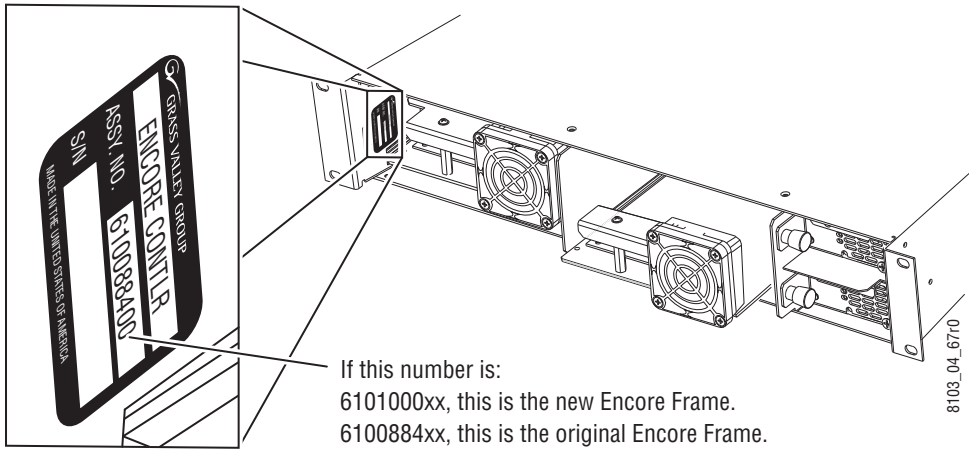
Late Model Frame 6101000xx Backplane

Encore Control frame with part number 6101000xx has pinouts for a RS-422 serial port either on a label or silk screened on the backplane as shown in Figure 30. The serial RJ-45 connectors on these models are conforming.

Figure 30. Backplane for Frame 6101000xx

Early Model Frame 6100884xx Backplane

Encore Control frames with part numbers in the 6100884xx range will appear as one of the two types shown in Figure 31.

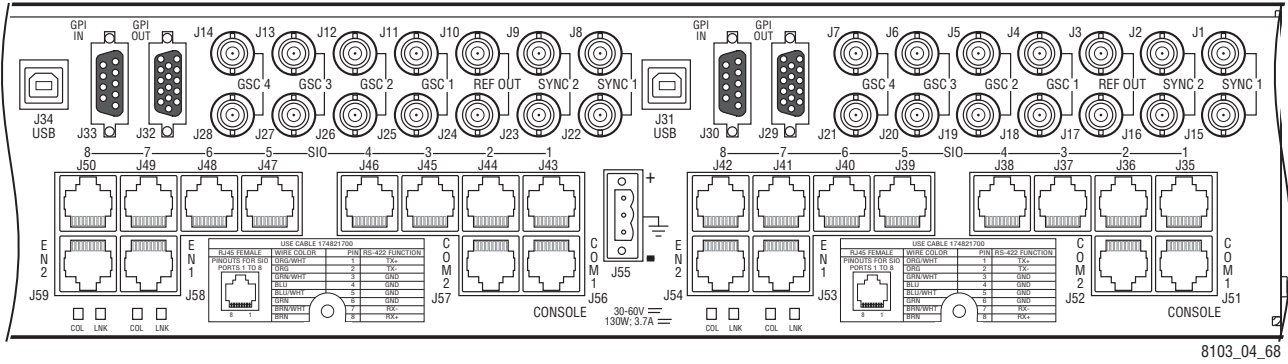*Figure 31. Encore Control Frames 6100884xx*
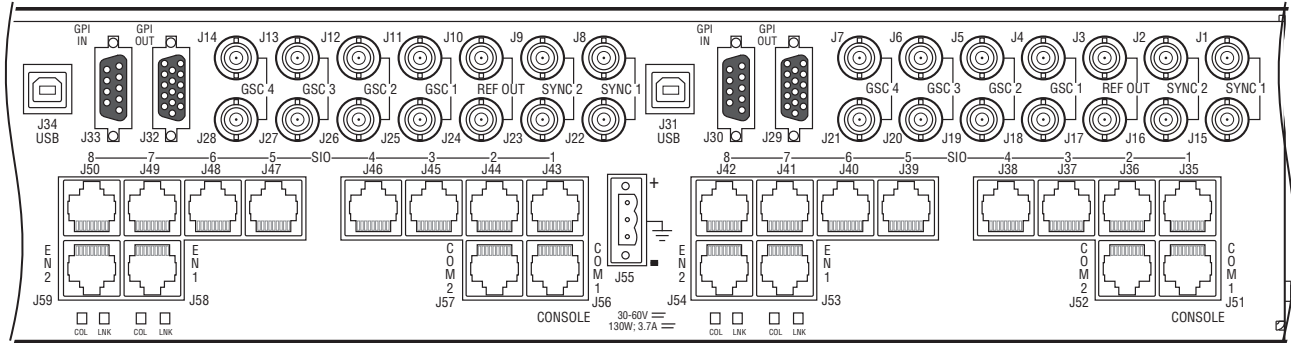
Encore Control Frame with part number 610088401

8279_00_05
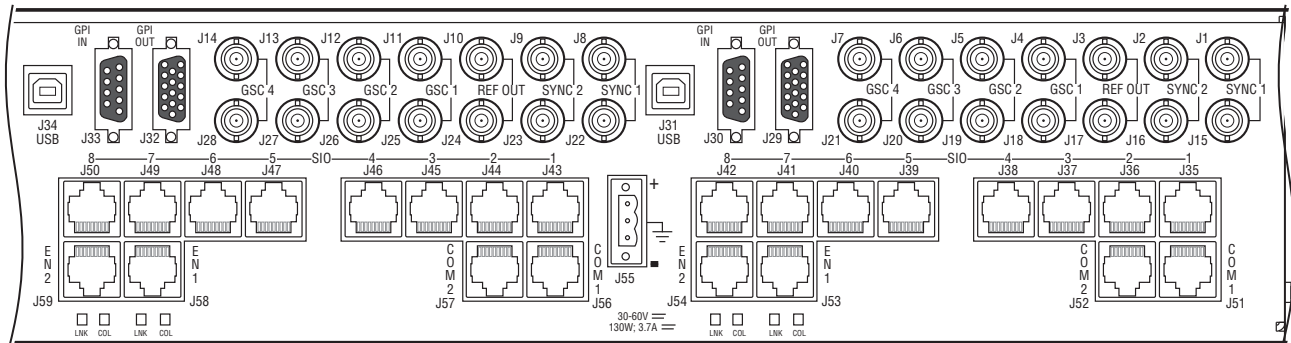
Encore Control Frame with part number 610088400

8279_00_06

The earlier 610088400 frame had silkscreen printing that incorrectly identified the Link and Collision LEDs (they were swapped).

The serial RJ-45 connectors on both these models are non-conforming. Short adapter cables will be required to use these ports.

COM 2

COM 2 is an RS-422/485 serial connection that can be used for connecting to serial devices such as a VTR or an automation system. The pinouts and cabling for the port is determined by the type of Encore Control Frame. This is a non-redundant port; for redundant RS-422/485 connections use ports 1, 2, 3, 4, 5, 6, 7, or 8 on the optional SIO ISA mezzanine. See Figure 32 for a cabling example using Encore Control Frame 6101000xx and two VTRs.

Figure 32. COM 2 RS-422/485 Cabling New Encore Frame 6101000xx

Encore System Controller Frame
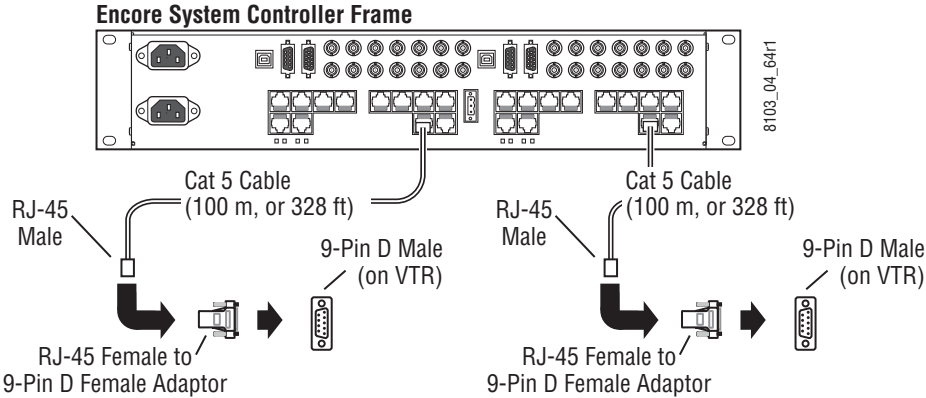
See Figure 33 for a cabling example using Encore Control Frame 6100884xx and two VTRs. A custom crossover is required, either using an available adapter cable or by crossing the RJ-45/9 Pin D connector (see *RJ-45 to 9-Pin D Adaptor Pinouts (RS-422/486) on page 66*). Do not have both crossover.

Figure 33. COM 2 RS-422/485 Cabling Original Encore Frame 6100884xx

Encore System Controller Frame
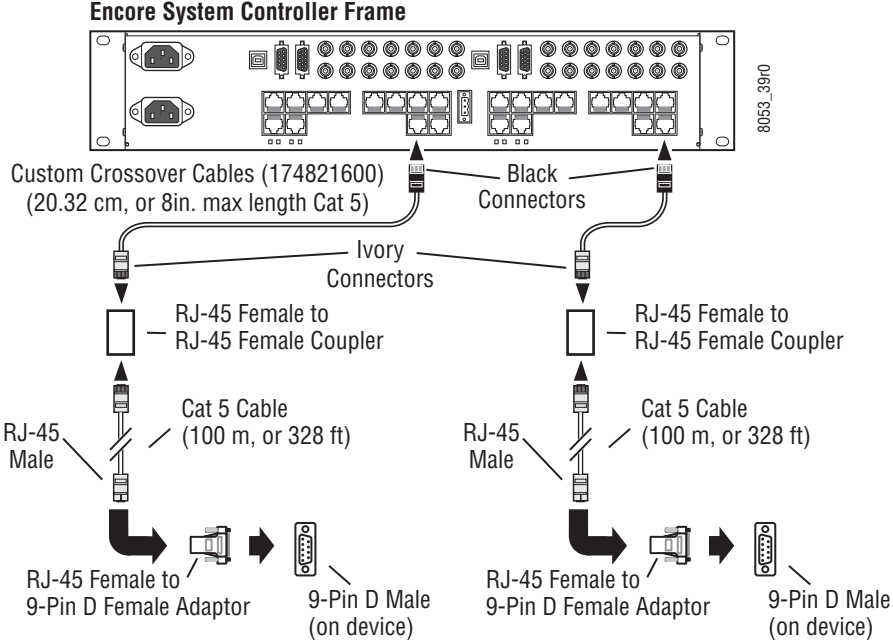
Ports 1 to 8 RS-422/485

Sixteen of the RJ-45 Connectors on the back of the Encore frame are labeled **SIO**. Ports labeled **1** (**J35**) to **8** (**J42**) are controlled by the SIO ISA Mezzanine on the System Controller in slot 1. Ports labeled **1** (**J43**) to **8** (**50**) are controlled by the SIO ISA Mezzanine on the System Controller in slot 2.

Nonredundant Frame 6101000xx

The RJ-45 serial connectors on this frame use pinouts that conform to an off-the-shelf Cat 5e Ethernet patch (pin-to-pin) cable pinouts. Do not use the patch (pin-to-pin) cables 174821700 for non-redundant cabling. Use customer supplied cabling.

The customer supplied cabling from the Encore Control frame to the device is not specified but here are a few guidelines:

• Use the shortest cabling practical for the installation,

• When using RJ-45 to D type serial adaptors, put the adaptor as close to the device as possible, ideally connect the adaptor to the device, and

• Use Cat 5e Ethernet patch (pin-to-pin) type cabling with RJ-45 connectors from the Encore Control frame to either the device or the adaptor on the device.

Figure 34. Non-Redundant Cabling for Encore Control Frame 6101000xx
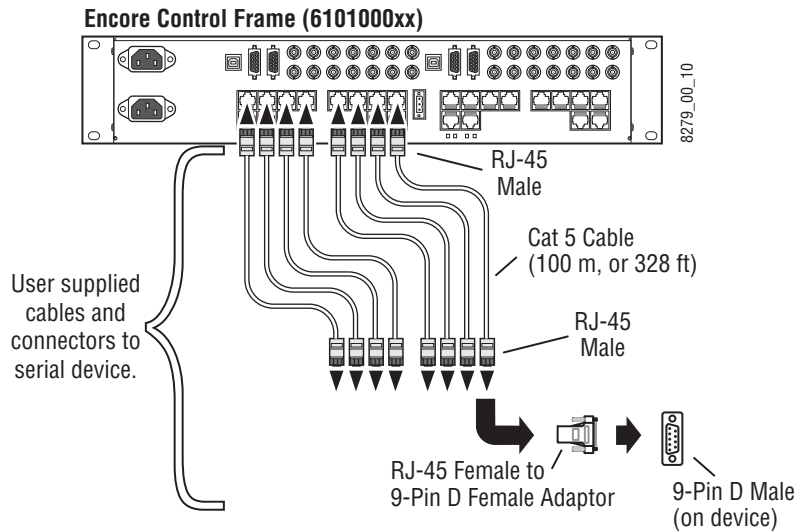
Nonredundant Frame 6100884xx

The RJ-45 serial connectors on this frame use pinouts that do not conform to off the shelf Cat 5e Ethernet cable pinouts. The crossover cables 174821600 are custom designed to change the pinouts from the nonconforming (black connector end of the cable) pinouts at the Encore Control frame to conforming pinouts (ivory connector end of the cable. See Figure 35.

The length of the cables (20.32 cm, 8 in.)provided is the maximum length supported for cabling from the Encore Control frame to a conforming RJ-45 coupler (female-to-female pass-though) connector.

The customer supplied cabling from the ivory RJ-45 connector to the device is not specified but here are a few guidelines:

- Use the shortest cabling practical for the installation,

- When using RJ-45 to D type serial adaptors, put the adaptor as close to the device as possible, ideally connect the adaptor to the device, and

- Use Cat 5e Ethernet patch (pin-to-pin) type cabling with RJ-45 connectors to either the device or the adaptor on the device.

Figure 35. Non-Redundant Cabling for Encore Control Frame 6100884xx

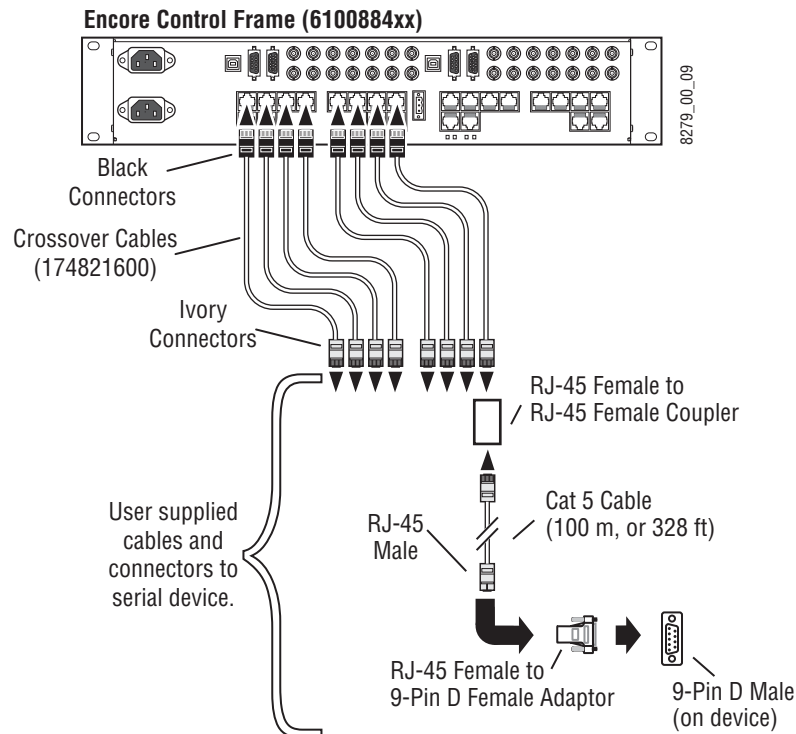## Redundant Cabling for Encore Control of Device

Redundant Encore control of serial devices is similar to non-redundant cabling.The redundant Encore controllers have to be the same type either frame 6101000xx or frame 6100884xx. One serial connection from each of the two Encore controllers needs to be connected to two separate serial ports on the controlled device.

Figure 36 shows redundant cabling using an Encore frame 6101000xx. There is a connection from **SIO Port 5** on the Encore frame from the Controller in Slot 1 to a serial port on the controlled device. There is another connection from **SIO Port 5** on the Encore frame from the Controller in Slot 2 to a separate serial port on the controlled device. These connections can use standard patch cables (pin-to-pin).

The customer supplied cabling from the Encore Control frame to the device is not specified but here are a few guidelines:

- Use the shortest cabling practical for the installation,

- When using RJ-45 to D type serial adaptors, put the adaptor as close to the device as possible, ideally connect the adaptor to the device, and

- Use Cat 5e Ethernet patch (pin-to-pin) type cabling with RJ-45 connectors from the Encore Control frame to either the device or the adaptor on the device.

Figure 36. Redundant Cabling Encore Frame 6101000xx

Encore Control Frame (6101000xx)

Figure 37 shows redundant cabling using an Encore frame 6100884xx. There is a connection from **SIO Port 5** on the Encore frame from the Controller in Slot 1 to a serial port on the controlled device. There is another connection from **SIO Port 5** on the Encore frame from the Controller in Slot 2 to a separate serial port on the controlled device.

The RJ-45 serial connectors on this frame use pinouts that do not conform to off the shelf Cat 5e Ethernet cable pinouts. The crossover cables 174821600 available in Kit # are custom designed to change the pinouts from the nonconforming (black connector end of the cable) pinouts at the Encore Control frame to conforming pinouts (ivory connector end of the cable.

The length of the cables (20.32 cm, 8 in.)provided is the maximum length supported for cabling from the Encore Control frame to a conforming RJ-45 coupler (female-to-female pass-though) connector.

The customer supplied cabling from the ivory RJ-45 connector to the device is not specified but here are a few guidelines:

- Use the shortest cabling practical for the installation,

- When using RJ-45 to D type serial adaptors, put the adaptor as close to the device as possible, ideally connect the adaptor to the device, and

- Use Cat 5e Ethernet patch (pin-to-pin) type cabling with RJ-45 connectors to either the device or the adaptor on the device.
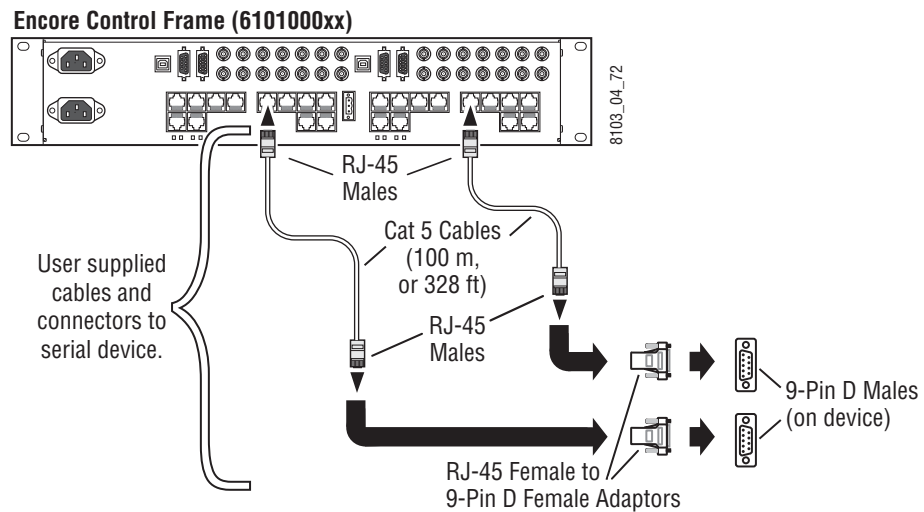
Figure 37. Redundant Cabling Encore Frame 6100884xx

Encore Control Frame (6100884xx)

Black
Connectors

Crossover Cables
(174821600)

Ivory
Connectors

RJ-45 Female to
Female Couplers

User supplied
cables and
connectors to
serial device.

RJ-45
Males

Cat 5 Cables
(100 m,
or 328 ft)

RJ-45
Males

9-Pin D Males
(on device)

RJ-45 Female to
9-Pin D Female Adaptors

8103_04_73
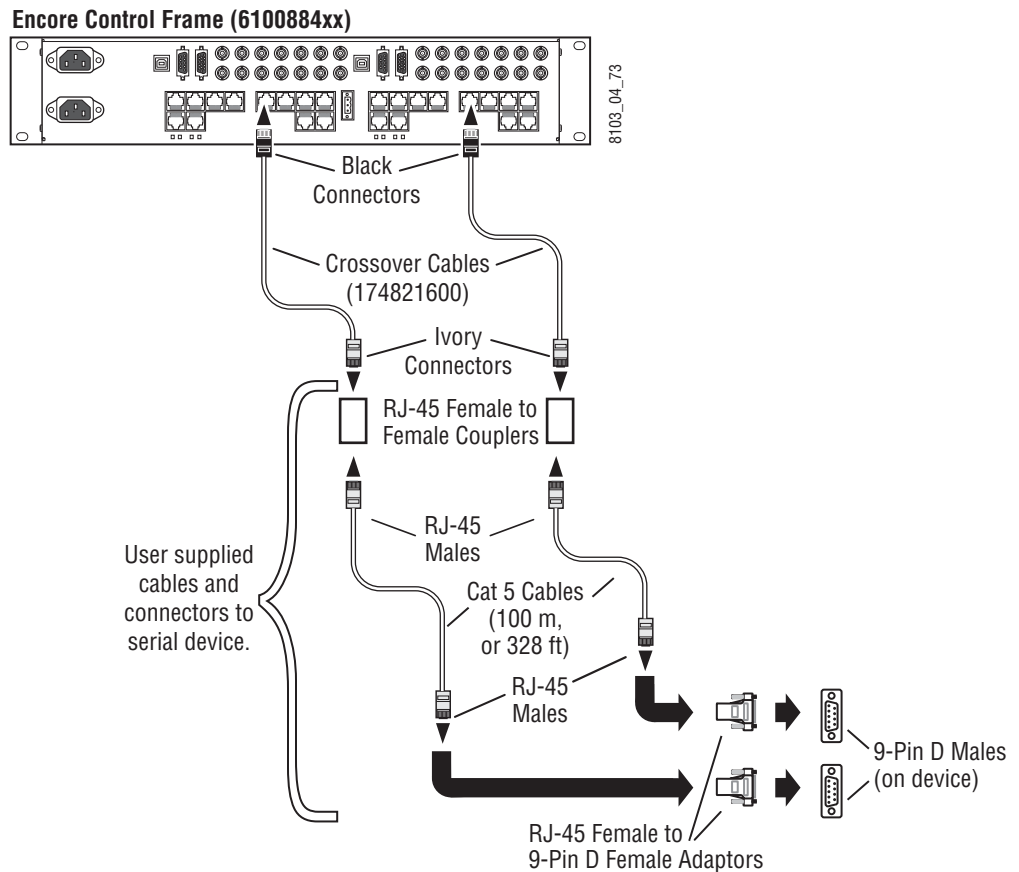
Redundant Cabling for Device Control of Encore

Redundant serial port cabling where a device controls Encore requires the Serial Interface Y Cable Option (Y cable). The Y cable is needed when a device such as an automation system on a PC-compatible, or a router is using a single serial port to control Encore. The Y cable option contains enough cables and connectors to create four Y cables.

The crossover cables (174821600) in the Serial Interface Y Cable Option can also be used for non-redundant cabling to the original Encore Control frame (6100884xx).

The original Encore Control frame part number 6100884xx is noncon-forming and requires the crossover cable (174821600). The newer Encore Control frame part number 6101000xx is conforming and uses a standard Patch (pin-to-pin) cable (174821700).

The length of the cables (20.32 cm, 8 in.)provided is the maximum length supported for cabling from the Encore Control frame to the Y connector. Each of the cables connecting an Encore System Controller to the Y con-nector must be the same length. Redundant connections need to be made within an area ≤ to the length of the two cables. See Figure 38.

Figure 38. Redundant Cabling
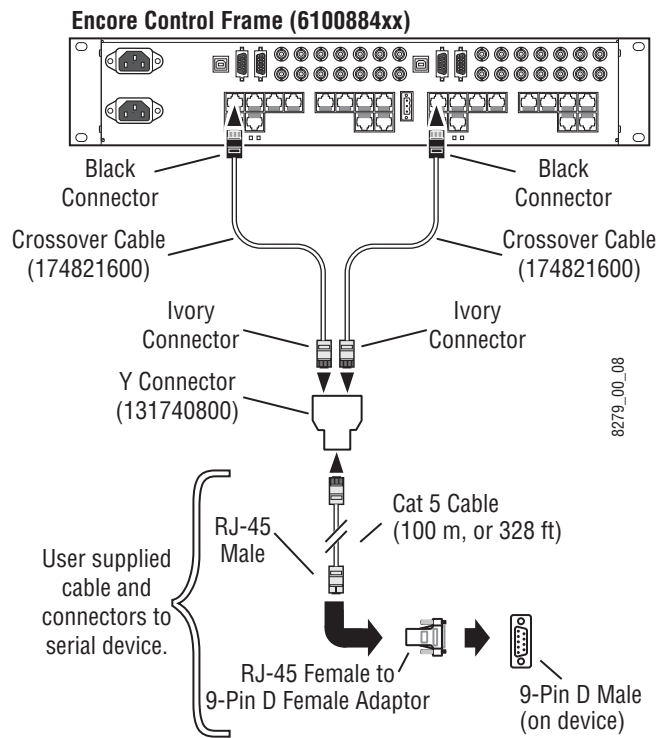
The two Encore System Controllers must have identical hardware and soft-ware configurations. The most common placement of redundant System controllers are side-by-side in one Encore Control frame. However, the redundant System Controllers can be in different Encore Control frames as long as they meet the cable length and configuration requirements.

The customer supplied cabling from the Y connector to the device is not specified but here are a few guidelines;

• Use the shortest cabling practical for the installation,

• When using RJ-45 to D type serial adaptors, put the adaptor as close to the device as possible, ideally connect the adaptor to the device, and

• Use Cat 5e Ethernet patch (pin-to-pin) cabling with RJ-45 connectors from the Y connector to either the device or the adaptor on the device.

Control Frame Pinouts
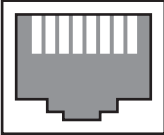
RJ-45 Pinouts
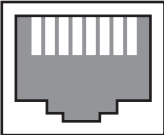
The Encore Control Frame has twelve RJ-45 connectors per slot:
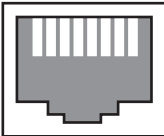
- **EN 1** and **EN 2** are used for Ethernet connections. They require a patch cable if connecting to a switch, or a crossover cable if connecting directly to a PC-compatible.

- **COM 2** and the eight connectors labelled **SIO 1** to **8** are RS-422/485 serial connections. There are different pinouts for RS-422/485 depending on which Encore Control frame is used. See *Encore Control Frame Identification* on page 54 for help.

- Ports labelled **SIO 1** to **4** can be used for RS-232 connections by changing jumpers on the SIO ISA mezzanine. See *Serial Interface (SIO) Mezzanine* on page 37.

- **COM1 CONSOLE** connector is a RS-232 serial connection used by either a terminal or a terminal emulator on a PC-compatible.

See RJ-45 pinout diagrams in Table 10 on page 64.

Table 10. RJ-45 Pinouts

RJ-45 Ethernet	Wire Color	Pin	Function
RJ-45 Female 1 8	Orange White	1	TX+
	Orange	2	TX-
	Green White	3	RX+
	Blue	4	No connect
	Blue White	5	No connect
	Green	6	RX-
	Brown White	7	No connect
	Brown	8	No connect

RS-232 COM 1 (CONSOLE) and Ports 1 to 4 on Encore Frame 6100884xx	Wire Color	Pin	Function
RJ-45 Female 1 8	Orange White	1	RTS
	Orange	2	DTR
	Green White	3	TD
	Blue	4	Ground
	Blue White	5	Ground
	Green	6	RD
	Brown White	7	DSR
	Brown	8	CTS
	Orange White	1	RTS
	Orange	2	DTR

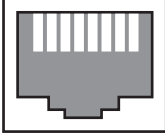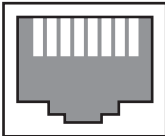| RS-232 COM 1 (CONSOLE) and Ports 1 to 4 on Encore Frame 6101000xx	Wire Color	Pin	Function
RJ-45 Female 1 8	Orange White	1	TD
	Orange	2	DTR
	Green White	3	RTS
	Blue	4	Ground
	Blue White	5	Ground
	Green	6	DSR
	Brown White	7	RD
	Brown	8	CTS
	Orange White	1	RTS
	Orange	2	DTR

RS-422/485 COM 2, Ports 1 to 8 on Encore Frame 6100884xx	Wire Color	Pin	Function
RJ-45 Female 1 8	Orange White	1	RX+
	Orange	2	No connect
	Green White	3	TX+
	Blue	4	Ground
	Blue White	5	Ground
	Green	6	RX-
	Brown White	7	No connect
	Brown	8	TX-

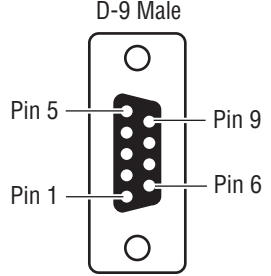| RS-422/485 COM 2, Ports 1 to 8 on Encore Frame 6101000xx	Wire Color	Pin	Function
RJ-45 Female 1 8	Orange White	1	TX+
	Orange	2	TX-
	Green White	3	Ground
	Blue	4	Ground
	Blue White	5	Ground
	Green	6	Ground
	Brown White	7	RX-
	Brown	8	RX+

RJ-45 to 9-Pin D Adaptor Pinouts (RS-232)

Table 11 shows the adaptor pin assignments for RS-232 serial connection to a terminal or a terminal emulator on a PC-compatible.

Table 11. RS-232 Pinouts for RJ-45 to 9-Pin D Adaptor

RJ-45 Cable with Male Connector				RS-232 Cable with 9-Pin D Male Connector		
	Wire Color	**Pin**	**Function**	**Pin**	**Function**	
RJ-45 Connector 1 8	Orange White	1	RTS	1	No connect	D-9 Male
	Orange	2	DTR	2	TD	
	Green White	3	TD	3	RD	
	Blue	4	Ground	4	DSR	Pin 5
	Blue White	5	Ground	5	Ground	Pin 9
	Green	6	RD	6	DTR	
Male Top	Brown White	7	DSR	7	CTS	Pin 1 Pin 6
	Brown	8	CTS	8	RTS	
8103_03_64				9	No connect	
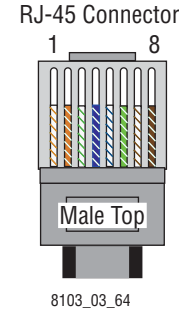
RJ-45 to 9-Pin D Adaptor			
	RJ-45 Female	**9-Pin D Female**	**Function**
	1	8	RTS
	2	6	DTR
	3	2	TD
	4	–	Ground
	5	5	Ground
	6	3	RD
	7	4	DSR
	8	7	CTS
	–	1	No connect
	–	9	No connect
	1	8	RTS

The RJ-45 side of an adaptor will have the pinouts as shown when using RS-232. The D side may change depending on the device.
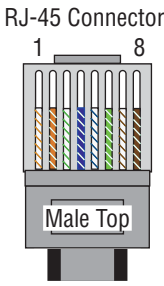
RJ-45 to 9-Pin D Adaptor Pinouts (RS-422/486)

Table 12 shows the adaptor pin assignments for a RS-422/485 connection on an Encore frame with part number 6100884xx.
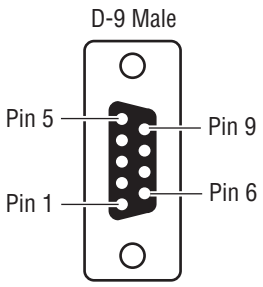
CAUTION The pin-to-pin Cat 5e cable used with this adaptor to connect to the Encore Control frame must be short to minimize crosstalk (suggested ≤ 4 inches).

Table 12. RS-422/485 Pinouts on Encore Frame 6100884xx RJ-45 to 9-Pin D Adaptor

RJ-45 Cable with Male Connector				RS-422/485 Cable with 9-Pin D Male Connector			
	Wire Color	**Pin**	**Function**	**Pin**	**DCE Function**	**DTE Function**	
RJ-45 Connector 1 8 Male Top 8103_03_64	Orange White	1	RX+	1	No connect	No connect	D-9 Male Pin 5 Pin 9 Pin 1 Pin 6
	Orange	2	No connect	2	RX+	TX-	
	Green White	3	TX+	3	TX-	RX+	
	Blue	4	Ground	4	Ground	Ground	
	Blue White	5	Ground	5	No connect	No connect	
	Green	6	RX-	6	Ground	Ground	
	Brown White	7	No connect	7	RX-	TX+	
	Brown	8	TX-	8	TX+	RX-	
				9	No connect	No connect	

RJ-45 to 9-Pin D Adaptor						
DCE Mode				**DTE Mode**		
RJ-45 Female	**9-Pin D Female**	**Function**		**RJ-45 Female**	**9-Pin D Female**	**Function**
1	3	RX+		1	7	RX+
2	-	No connect		2	-	No connect
3	7	TX+		3	3	TX+
4	4	Ground		4	4	Ground
5	6	Ground		5	6	Ground
6	8	RX-		6	2	RX-
7	-	No connect		7	-	No connect
8	2	TX-		8	8	TX-
-	1	No connect		-	1	No connect
-	5	No connect		-	5	No connect
-	9	No connect		-	9	No connect

8103_03_71r2

Table 13 shows the adaptor pin assignments for a RS-422/485 connection on an Encore frame with part number 6101000xx.

Table 13. RS-422/485 Pinouts on Encore Frame 6101000xx RJ-45 to 9-Pin D Adaptor

RJ-45 Cable with Male Connector				RS-422/485 Cable with 9-Pin D Male Connector			
	Wire Color	**Pin**	**Function**	**Pin**	**DCE Function**	**DTE Function**	
	Orange White	1	TX+	1	No connect	No connect	
	Orange	2	TX-	2	RX-	TX-	
	Green White	3	Ground	3	TX+	RX+	
	Blue	4	Ground	4	Ground	Ground	
	Blue White	5	Ground	5	No connect	No connect	
	Green	6	Ground	6	Ground	Ground	
	Brown White	7	RX-	7	RX+	TX+	
	Brown	8	RX+	8	TX-	RX-	
				9	No connect	No connect	

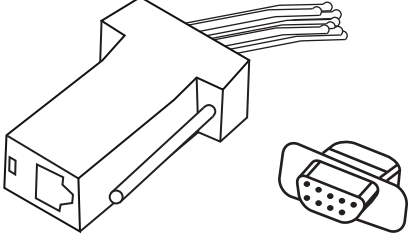RJ-45 Connector 1 8 Male Top 8103_03_64

D-9 Male Pin 5 Pin 9 Pin 1 Pin 6

RJ-45 to 9-Pin D Adaptor							
DCE Mode					**DTE Mode**		
RJ-45 Female	**9-Pin D Female**	**Function**			**RJ-45 Female**	**9-Pin D Female**	**Function**
1	7	TX+			1	3	TX+
2	2	TX-			2	8	TX-
3	-	No connect			3	-	No connect
4	4	Ground			4	4	Ground
5	6	Ground			5	6	Ground
6	-	No connect			6	-	No connect
7	8	RX-			7	2	RX-
8	3	RX+			8	7	RX+
-	1	No connect			-	1	No connect
-	5	No connect			-	5	No connect
-	9	No connect			-	9	No connect

8103_03_71r2

Note   This RJ-45 to 9-Pin D adapter can be used with an Encore frame with part number 6100884xx provided a cross-over cable is used. A suitable cross-over cable (PN 174821600) is included in the Serial Interface Y Cable option.

GPI Pinouts

General Purpose Interface (GPI) pinouts are shown below. The **GPI IN** (Figure 14) is a 9-pin D male connector and the **GPI OUT** (Figure 15) is a 15-pin D male connector.
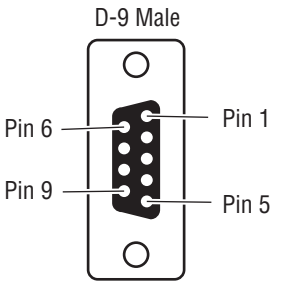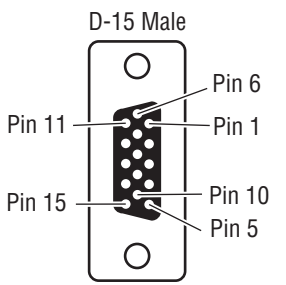
Table 14. GPI In Pinouts

GPI In	Pin	Function	Pin	Function
D-9 Male	1	GPI_IN1-	6	GPI_IN1+
	2	GPI_IN2-	7	GPI_IN2+
Pin 6 — Pin 1	3	GPI_IN3-	8	GPI_IN3+
	4	GPI_IN4-	9	GPI_IN4+
Pin 9 — Pin 5	5	GPI_Power	-	-

Table 15. GPI Out Pinouts

GPI Out	Pin	Function	Pin	Function	Pin	Function
D-15 Male	1	GPI_REL1_NC	6	GPI_REL1_COM	11	GPI_REL1_NO
	2	GPI_REL2_NC	7	GPI_REL2_COM	12	GPI_REL2_NO
Pin 11 — Pin 6 / Pin 1	3	GPI_REL3_NC	8	GPI_REL3_COM	13	GPI_REL3_NO
	4	GPI_REL4_NC	9	GPI_REL4_COM	14	GPI_REL4_NO
Pin 15 — Pin 10 / Pin 5	5	No connect	10	No connect	15	No connect

Note   NC = Normally Closed (SCB inserted and powered off).
NO = Normally Open (SCB inserted and powered off).
Withdrawing an SCB from Frame disconnects pins 1-4 and 11-14.

After an SCB is powered up and initialized, pins 11-13 will close with respect to pins 6-8, and pin 14 reports Supervisor (closed) or Subordinate (open) in respect to pin 9.

GPI Out Encore Panel Server State Indication

GPI Out Relay 4 can be used to remotely determine the Encore Panel Server/RCL Server Supervisor/Subordinate state. Relay 4 pin 14 closes to pin 9 (and opens pin 4 to pin 9) to indicate the Supervisory state.

For example, you can wire each SCB's pin 14 to an LED in series with pin 9 and a power supply. When these SCBs are run as redundant pairs, the LED of the SCB acting as Supervisor will illuminate, and that LED will go dark when that SCB is Subordinate. Taking the Supervisor SCB of a redundant pair off line using the Encore Panel Server application will make both LEDs immediately change to the opposite illumination state (the other SCB becomes Supervisor).

Note   When an SCB is reset manually (using the board reset button or Encore Controller web page), its GPI Out pins retain their last state during reset. This means both SCBs in a redundant pair will temporarily have pin 14 closed, even though only one is actually the Supervisor. After the reset process completes and the SCBs renegotiate their status, the pins on both SCBs will correctly report the resulting Supervisor/Subordinate state.

Maintenance and Troubleshooting

Service and Replacement Parts

Replacement parts can be ordered. Contact Grass Valley Customer Service for current part numbers, part availability, and ordering directions.

Maintenance

Field Replaceable Units

Modules and Power Supplies are not serviced in the field. Replace faulty modules and Power Supplies with spares. Return faulty units to a designated repair depot. For more information contact Grass Valley Customer Service.

Modules

Modules can be inserted or removed from the frame without powering down the system.

CAUTION Static sensitive components are present which may be damaged by electro-static discharge. Use anti-static procedures, equipment and surfaces during servicing.

System Controller Modules

To Remove System Controller Modules

1. Position the hands with the index and third fingers of both hands curled around the module handle. Place both thumbs on the frame. See Figure 39.

Figure 39. Removing the Controller Module
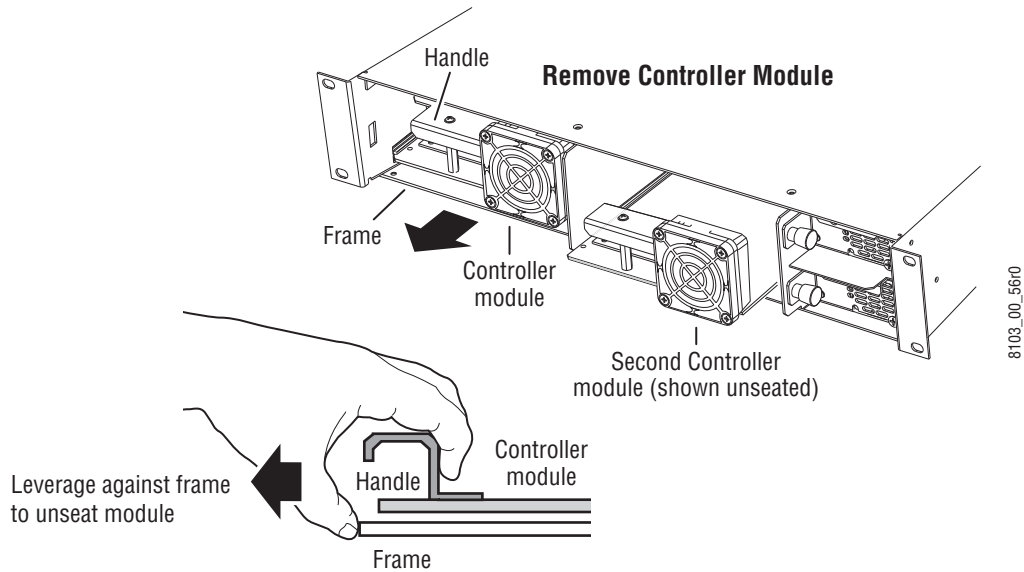
2. Push against the frame with the thumbs while gently pulling with the fingers to disengage the module from the backplane.

3. Slide the module out of the frame.

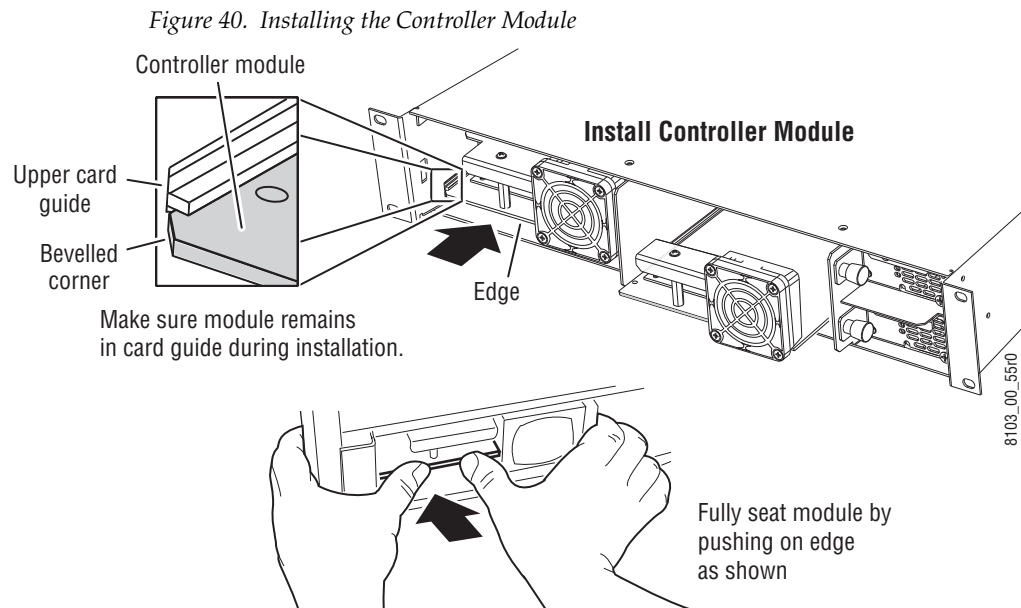**4.** Use anti-static precautions to protect the module.

To Insert System Controller Modules

1. Align the module in the appropriate frame slot.

2. Slide the module into the frame.

    The fan and the LEDs will come on as soon as the pins make contact with the backplane before the module is fully seated.

3. Seat the module by firmly pressing against the bottom edge of the module using index fingers and thumbs.

    When the module is fully seated the bevelled edge of the module will line up with the upper card guide as shown in Figure 40.

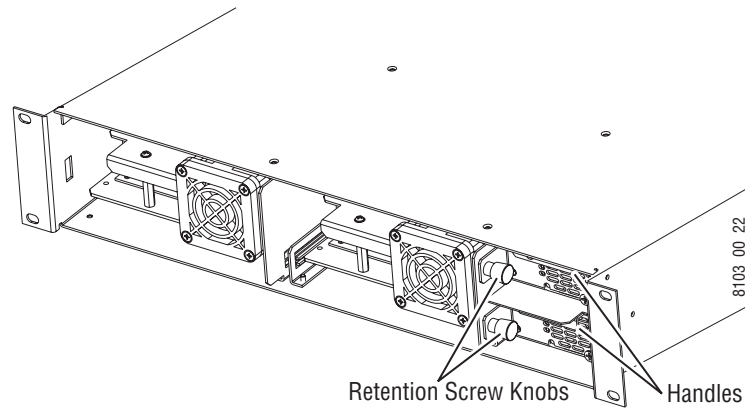*Figure 40. Installing the Controller Module*

CAUTION Multi-pin module connectors can become misaligned and cause damage to the backplane and interconnect. Use caution when inserting modules.

Power Supply Modules

Refer to Figure 41 for the following procedure.

Figure 41. Power Supply Modules

To Remove Power Supply Modules

To Remove Power Supply Modules

1. Unscrew the retention screw knob to disconnect the module from the frame.

2. Pull the module gently to disengage it from the backplane.

3. Slide the module out of the frame.

4. Use anti-static precautions to protect the module.

To Insert Power Supply Modules

1. Align the module in the appropriate frame slot.

2. Slide the module into the frame.

3. Gently push the module to engage the backplane.

4. Tighten the retention screw knob to secure the module to the frame.

CAUTION Multi-pin module connectors can become misaligned and cause damage to the backplane and interconnect. Use caution when inserting modules. Do not force modules into slots.

Fan Assemblies

The fan unit and/or the fan filter on the Encore System Controller module can be replaced. The Fan Filter is made of soft, moderately dense material. It can be cleaned and re-used or replaced with a new filter. Contact Customer Service to order replacements.
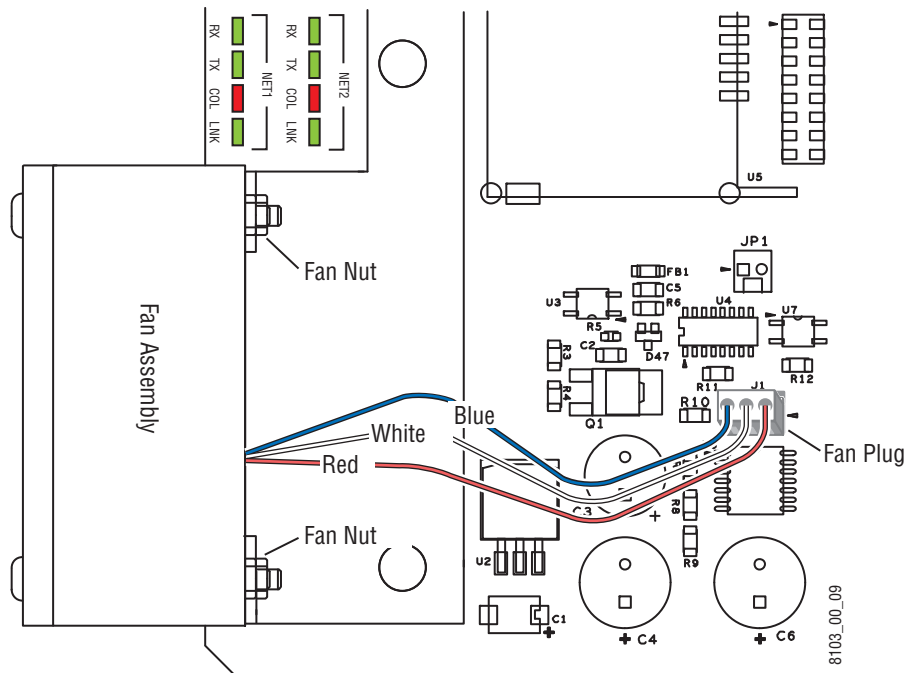
To Replace the Fan Unit

See Figure 42 for the location of the fan unit and plug.

1. Remove the System Controller module from the Encore Control Frame.

2. Disconnect the fan plug located at J1 on the System Controller module.

3. Remove the fan nuts holding the fan unit in place.

4. Remove the old fan unit and position the new fan unit on the module.

5. Replace the fan nuts to secure the fan unit.

6. Connect the new fan unit's plug in the connector at J1.

   The new fan unit must be aligned as shown in Figure 42 with the Blue, White, and Red wires in the proper position.

7. Insert the System Controller into the Encore control Frame.

Figure 42. System Controller Module Fan Unit

To Replace the Fan Filter

Before starting this procedure, ensure that the fan is not operating and will not start by disconnecting the System Controller module. You can disconnect power to the System Controller module by unseating the module, pulling it an inch or so away from the connectors on the Encore Control frame.

See Figure 43 for the location of the fan filter.

1. Remove the Fan Filter Cover.

    The cover is a snap-on, snap-off plastic grid, very little pressure is required to remove it.
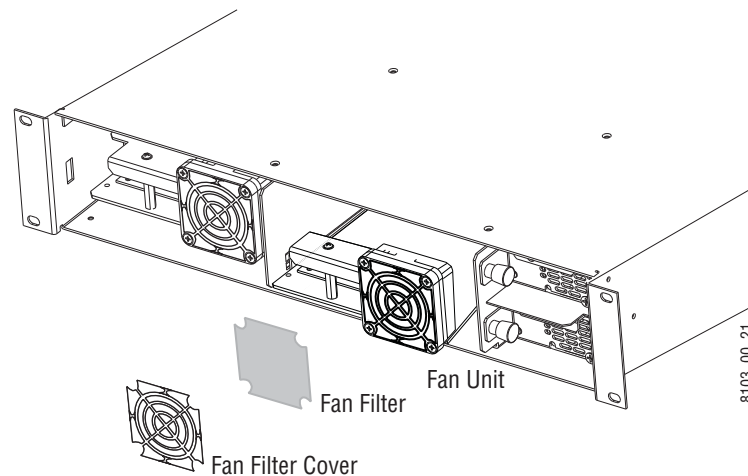
2. Remove the Fan Filter.

    Either clean the Fan Filter or discard it, then use a new Fan Filter.

3. Insert the Fan Filter.

4. Replace the Fan Filter Cover.

Figure 43. System Controller Module Fan Filter


Fan Unit

Fan Filter

Fan Filter Cover

8103_00_21

System Controller Web Pages

An Encore System Controller offers web pages to report system status and allow some configuration changes. These web pages are accessible with a PC configured on the same network, using NetConfig or any web browser application.

System Controller Description Web Page

The System Controller Description web page (Figure 44) reports system information only. No changes can be made from this screen.

Figure 44. System Controller Description Web Page
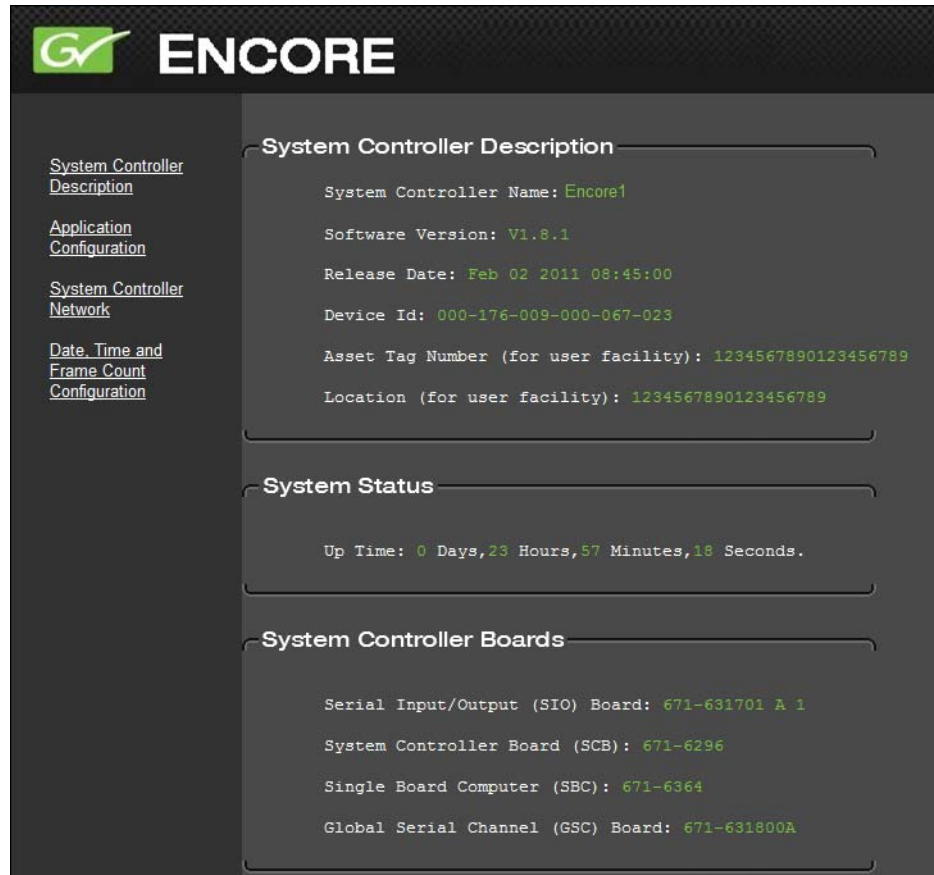
System Controller Description

This portion of the screen reports the System Controller Name, Asset Tag Number, and Location information that has been entered on other web pages. It also displays System Controller software version information.

System Status

The Up Time (time since the last System Controller reset) is displayed.

System Controller Boards

The hardware boards and mezzanines installed in this System Controller are displayed.

Application Configuration Web Page

The Application Configuration web page (Figure 45) is used to specify with Encore applications will be able to be run on that System Controller, enable options, and enter Asset Tag and Location information. The System Controller can also be rebooted from this screen.

Figure 45. Application Configuration Web Page

System Controller Configuration

Check boxes indicate which applications will run on that System Controller. Changes are enacted with the **Update configuration** button.

The **Reset configuration** button clears all the checkboxes.

The **Reboot** box, if checked, will reboot the System Controller when the **Update configuration** button is clicked.

Application Options

The currently enabled options are reported. Clicking on the **Enter License Key** button opens a window allowing you to enter a license to change the enabled options.

System Parameters

Permits entry of **Asset Tag** and **Location** information, for facility management purposes. These appear on the System Controller Description screen.

System Controller Network Web Page

The System Controller Network web page can be used to change IP address data used by the System Controller.

CAUTION   Do not change IP address data unless you know exactly what you are doing. Incompatible IP addresses will make the Encore system inoperable.

Figure 46. System Controller Network Web Page

When the **Check to reboot now** box is checked, clicking the Save New Settings button reset the System Controller and enact any changes made to the settings above.

The **Cancel New Settings** box clears all the fields above. Exiting the screen and returning will bring back the original values.

Date, Time and Frame Count Configuration Web Page

The Date, Time and Frame Count web page (Figure 47) supports Simple Network Time Protocol (SNTP), permits manually setting the SCB's date, and allows activation of the SCB's Frame Count Server. These settings control synchronization of the SCB with other devices on the network. For example, both SCBs in a redundant pair need to use the same time reference to ensure proper data sharing during system operation. The recommended practice is to use both VITC and SNTP on all the SCBs, which will ensure consistent times and dates for the entire Encore system.

Figure 47. SCB Date and Time Web Page

Note   The Frame Count Server feature, introduced with Encore Release 1.7.3, was formerly located on the SCB's **Application Configuration** web page and was previously labeled **Reference Count Server**.

Current Time

The **Current Time** line reports the current time and date being used by that SCB. The reference source being used for each is shown by the **Time Source** and **Date Source** fields. Possible Time sources are VITC, SNTP, and Frame Count Server. Possible Date sources are SNTP and a manually set System Date.

The various synchronization methods available operate in conjunction with Vertical Interval Time Code (VITC) as follows:

When VITC is present, it will always be used for the time source. When SNTP is active, it will always be used for the date source, and if VITC is not present SNTP will also be used for the time source. If SNTP is not active, the date will need to be set manually on each SCB. If neither VITC or SNTP is being used, the Frame Count Serve is available to synchronize Encore system devices on the network. When the Frame Count Server is used, elapsed time since reset, not time of day, will be displayed for the Current Time, and the System Date will need to be set manually on each SCB.

Note   All SCBs on the network should use the same time reference, especially if they are configured as redundant pairs.

VITC

The Encore SCB Real Time Clock is synchronized to Vertical interval time code (VITC) on startup when a color black reference containing VITC is connected to the REF1 input.

Note   If the VITC signal changes, the SCB must be rebooted before its clock will reflect the new time. System time is synced with VITC time at startup only.

If VITC is not present, the system controller frame counts from zero on start-up (which was the behavior for software earlier than 1.7).

The NTSC DF (drop frame) VITC setting is recommended for use with NTSC Encore systems. This setting is accessed via the **TimeCode** button on the Encore OUI Router Controller Config screen.

SNTP Configuration

A Simple Network Time Protocol (SNTP) Client has been added to the Encore SCB. This Client can work with an SNPT Server to synchronize time over the networK. The SNTP Server typically runs on a Windows PC configured on the Encore network. The SNTP server is provided as part of standard windows installation and provides Coordinate Universal Time (UTC). The end user is responsible for adjusting UTC to match local time. For example, California requires a UTC offset of -08:00.

The **Daylight Savings Time** checkbox advances SNTP time by one hour, and is available for use with SNTP servers that do not automatically correct for this time change.

After making any SNTP changes, click on the **Save** button to enact the changes.

System Parameters

The System Date is displayed on this screen, and on the service console readout as part of the header for any error or event message.

When SNTP is not active, the **System Date** can be set manually by clicking on the calendar icon, choosing a year, month, and day, and rebooting the SCB.

Note   Encore SCB system date changes are not reflected immediately. The SCB needs to be rebooted before the date changes will take effect.

You can reset the SCB with the **Reboot** button on the web page. If two SCBs are running in redundant mode, both SCBs will need to have their system dates set individually. For consistent log timestamps for both mirror and master be sure to set both SCBs to the same date.

Frame Count Server

Operation of the Frame Count Server feature, available for use when VITC or SNTP is not being used, is described in the separate *Encore Configuration Manual*.

Note   When using SNTP or VITC disable the Frame Count Server.

Logging Time and Date

The date and time data obtained from VITC/SNTP is used to log console messages by all the applications running on the SCB. Other applications which depend on VITC (like timed takes in CPS) are not affected by the SNTP implementation. The time source used for logging has the following priority: VITC, then SNTP, then Frame Count Server, and last System Up-Time. Table 16 shows in detail how time and date is applied to logging.

Table 16. Time and Date Sources for Logging

VITC Status	Frame Count Status	SNTP Status	Date Source for Logging	Time Source for Logging
Present	Not Considered	Present	SNTP	VITC
Present	Not Considered	Not Present	System Date*	VITC
Not Present	Enabled	Present	SNTP	SNTP

Table 16. Time and Date Sources for Logging

VITC Status	Frame Count Status	SNTP Status	Date Source for Logging	Time Source for Logging
Not Present	Enabled	Invalid SNTP Server	System Date*	Frame Count Server - SNTP Server Not Found
Not Present	Enabled	Not Present	System Date*	Frame Count Server
Not Present	Disabled	Present	SNTP	SNTP
Not Present	Disabled	Not Present	System Date*	System Up Time
Not Present	Disabled	Invalid SNTP Server	System Date*	System Up Time - SNTP Server Not Found

ENCONFIG.ini

Encore v1.8.0 SCBs employs an ENCORE.ini file to set certain system parameters. This file consolidates parameters that were previously located in several different system locations. This file is located in the root directory of each SCB, is read on bootup, and can be viewed and edited using a standard ascii text editor.

CAUTION Modifying the ENCORE.INI file incorrectly can adversely affect Encore system operation. Changes to the ENCORE.ini file should only be made by qualified personnel who fully understand the ramifications of any alterations made.

An example of ENCORE.ini text information, is shown below:

```
;The configuration entries used by Control Panel Server
needs to be added under this section.
[CPS]

;PBlock is used to control the Panel display updates by
redundant Control Panel Servers. To block display up-
dates from subordinate write 'Enable', else write 'Dis-
able'.
PBlock=Enable

;RBlock is used to control the Router operations by re-
dundant Control Panel Servers. To block operations from
subordinate write 'Enable', else write 'Disable'.
RBlock=Enable

;MxMemory is used to configure the Maximum backlog of
system memory that can be consumed by a serial client,
in Mega Bytes. Default is 10MB, can be configured be-
tween 2 to 50, 0 shall use the Default, and -1 shall
Disable.
MxMemory=0
```

```
;NPBlock is used to control the Router operations by re-
dundant serial client. To block operations from subor-
dinate write 'Enable', else write 'Disable'.
NPBlock=Disable

;NetDelay is used to configure the periodicity of the
Network connectivity detection for connected NP/RCL cli-
ents, in seconds. Default is 5 seconds, can be config-
ured between 3 to 255, 0 shall use the Default, and -1
shall Disable.
NetDelay=0

;FDelay is used to configure the number of frames delay
to be added to each route request, can be any natural
number, used by Engineering only. Configure 0 to use the
default, which is 6 frames.
FDelay=0

;The configuration entries used by Router Controller En-
gine needs to be added under this section.
[RCE]

;NPMatrix is used to configure the periodicity of the
Status query to a Remote NP system, in seconds. Default
is 5 seconds, can be configured between 1 to 5, 0 shall
use the Default.
NPMatrix=0

;The configuration entries used by System Controller
Board needs to be added under this section.
[SCB]

;NoNCRelay is used to control the relay of network traf-
fic from EN1 to EN2 by NetConfig Relay Agent. To block
relay to EN2 of the system, write 'Enable', else write
'Disable'.
NoNCRelay=Disable

;WatchdogTime is used to configure the reboot wait time
of the Task Watchdog, before which it can log the diag-
nostics. Default is 45 seconds, can be configured be-
tween 1 to 300, 0 shall use the Default.
WatchdogTime=0

;WatchdogAction is used to control the Action of the
Task Watchdog when any key task is suspended. Default is
'Disable', can be configured as 'Reboot' or 'Shutdown'.
WatchdogAction=Disable
```

SCB Software Watchdog

A Software Watchdog is available on Encore SCBs. This utility program monitors SCB tasks and can reboot the SCB should any task become suspended. Diagnostic information is printed on the console before a reboot. This feature is enabled or disabled using the new ENCONFIG.ini file.

Disable NetConfig Relay Agent

An SCB's NetConfig Relay Agent can now be disabled, which can be useful if an external Ethernet router is used for connectivity between the Facility and Panel/Matrix LANs. This option is set in the common INI options file (ENCONFIG.ini) of the SCB. To change the setting, add or edit a **NoNCRely=Enable** text entry to the file to disable the relay agent.

Troubleshooting

System Controller LEDs

The System Controller module has LEDs, testpoints, and switches along its front edge which is visible when the frame door is open. The LEDs indicate the operating condition of the module and any mezzanines on that module. Testpoints are used to check voltages and ground. Switches are used to reset the module. Testpoint and switch markings are self-explanatory.

Figure 48. System Controller LEDs

= Green
= Red
= Yellow
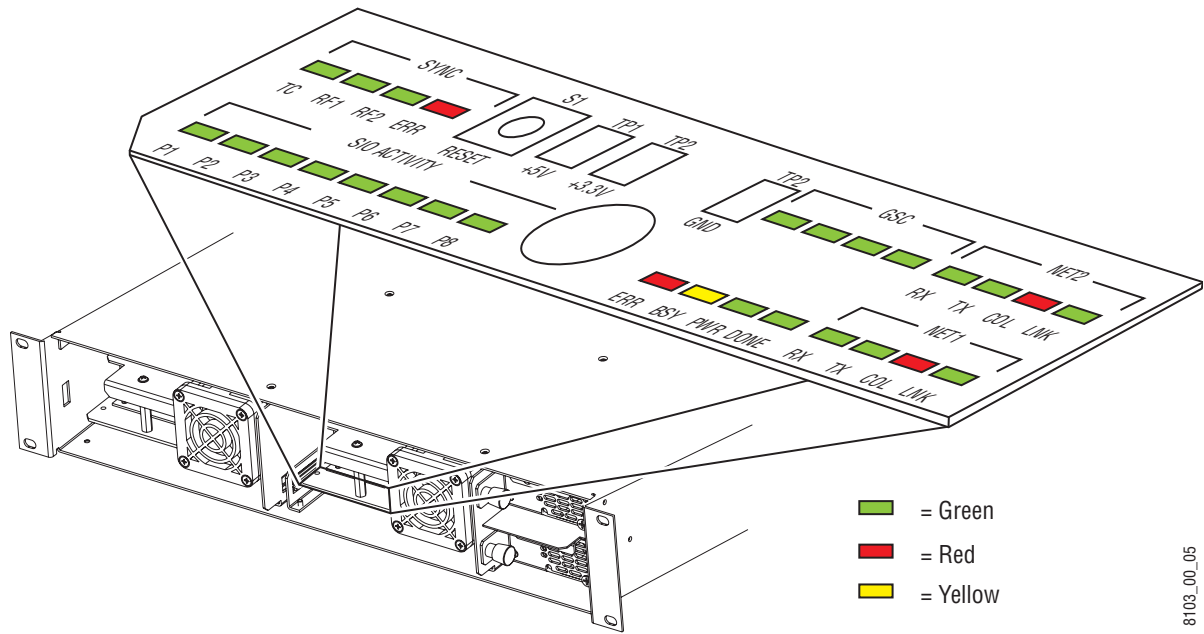
8103_00_05

The LEDs found on the System Controller module are shown in Table 17.

Table 17. System Controller LEDs

Component	Group Label		Color	Indication	Condition
System Controller Module	None	ERR	Red	On	Circuit failure or reset
				Off	Normal
		BSY	Yellow	On	Active controller indication: On - Standalone or supervisor state (Supervisor CPS drives Control Panel displays and tallies).
				Off	Inactive
		PWR	Green	On	Power on - normal
				Off	Power off - unseated or bad module
		DONE	Green	On	Firmware loaded okay
				Off	Firmware load problem
	SYNC	TC	Green	On	Time code present
				Off	Time code not present
		RF1	Green	On	Reference 1 present
				Off	Reference 1 not present
		RF2	Green	On	Reference 2 present
				Off	Reference 2 not present
		ERR	Red	On	Reference Error
				Off	Normal
	NET1	RX	Green	On	Ethernet receiving
				Off	Ethernet not receiving
		TX	Green	On	Ethernet transmitting
				Off	Ethernet not transmitting
		COL	Red	On	Ethernet collision
				Off	Ethernet normal
		LNK	Green	On	Ethernet linked
				Off	Ethernet not linked
	NET2	RX	Green	On	Ethernet receiving
				Off	Ethernet not receiving
		TX	Green	On	Ethernet transmitting
				Off	Ethernet not transmitting
		COL	Red	On	Ethernet collision
				Off	Ethernet normal
		LNK	Green	On	Ethernet linked
				Off	Ethernet not linked

Table 17. System Controller LEDs - (continued)
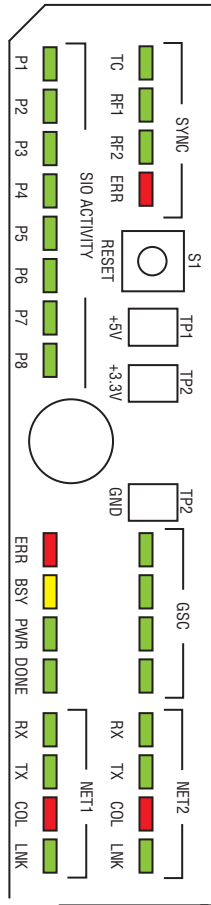
Component	Group Label		Color	Indication	Condition
Global Serial Channel Mezzanine	GSC	None	Green	On	Software debug
				Off	Normal
		None	Green	On	Mezzanine Failure
				Off	Normal
		None	Green	On	Application dependent can be on or off
				Off	
		None	Green	On	Normal is flashing 1/sec
				Off	No mezzanine or if mezzanine is present then it is unseated or bad
Serial Input Output Mezzanine	SIO ACTIVITY	P1	Green	On	Serial port active
				Off	Serial port inactive
		P2	Green	On	Serial port active
				Off	Serial port inactive
		P3	Green	On	Serial port active
				Off	Serial port inactive
		P4	Green	On	Serial port active
				Off	Serial port inactive
		P5	Green	On	Serial port active
				Off	Serial port inactive
		P6	Green	On	Serial port active
				Off	Serial port inactive
		P7	Green	On	Serial port active
				Off	Serial port inactive
		P8	Green	On	Serial port active
				Off	Serial port inactive

Power Supply LEDs

Each Power Supply module has a single LED that can be seen when the Encore Control Frame cover is in place. When the Power Supply module is in use the LED will be Green. If there is no power to the frame, or there is no module in the slot, or the module is defective the LED is dark.

Figure 49. Power Supply LEDs

Power Supply LEDs

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System Controller Flash Memory Formatting

Each Encore System Controller board contains a Compact Flash memory card, which is specially formatted for use with the Encore hardware. If this memory card should become corrupted, it may need to be reformatted.

Because of this special formatting, you cannot directly use a Compact Flash memory card purchased from a retail or other non-Grass Valley supplier on an Encore System Controller board. The card will need to be formatted, using an executable file (mkdosfs.exe) available on the Encore Software Release CD.

Flash Memory Format Requirements

You will need the following:

- PC running Windows XP service pack 2
- 64MB or 512MB Compact Flash (SanDisk recommended)
- Encore System Release 1.7.2.2 or later Software CD.
- `mkdosfs.exe` (in the "Unsupported" directory of the Encore System Software CD.)
- Compact Flash reader

Note   This process has been validated only with SanDisk 64MB and 512MB Compact Flash.

Flash Memory Format Procedure (Using Encore Configuration PC)

The following procedure uses the Encore Configuration PC that has Encore software installed. You will be copying files that were loaded during installation from the PC to the Compact Flash.

1. Copy the `mkdosfs.exe` file to the C: root directory.

CAUTION This is a general purpose DOS format tool and can format any drive. Use extreme caution when using this tool as irreparable damage can be done to the PCs operating system and memory contents.

2. Format the Compact Flash

    a. Open Windows Explorer

    b. Right Click on the Compact Flash reader

    c. Select **Format**

    d. Select **FAT 16** for format type

3. Open a command Prompt Window.

4. Run the mkdosfs executable by typing

`c:\> mkdosfs -w <Drive label of Compact Flash reader>:`

Note   Be sure to use the -w option and use care when selecting the drive name.

5. Copy the entire contents of `c:\Program Files\Grass Valley Group\Encore\FileSystem\` folder to the Compact Flash (two files).

6. Copy all the files and folders from the `c:\Program Files\Grass Valley Group\Encore\Encore Image\` folder except the Encore.tar file to the Compact Flash (16 items).

Note   Be sure there are no Read Only options set for the copied files.

Flash Memory Format Procedure (Using Only Encore Software CD)

If you wish to use a PC that has not had Encore software installed, you can use the Encore Software CD to format Compact Flash cards.

- The `mkdosfs.exe` file is located at the same location:

  <Drive label of CD drive> \ Unsupported.

The files copied in steps Step 5 and Step 6 above are included on the Encore Software CD at the following locations:

- <Drive label of CD drive> \ FileSystem (2 files)
- <Drive label of CD drive> \ Encore Image (16 items, do not copy the `Encore.tar` file).

Incorrectly Named Salvo Recovery

When new Salvos are created, the new Salvo is displayed in LRP with a Keycap name <filename> that must be the same as the Salvo file name <filename>. If this is not done, problems can occur that require the special recovery procedures described below.

Salvo Filename Different from Keycap Name

Scenario

Salvo is created from an existing Salvo using LRP, wherein the Keycap name is duplicate.

Symptoms

Telnet the SCB running the CPS. The console connected to SCB, shall display the following error message when a Salvo is created with the duplicate Salvo keycap name.

```
Error loading Salvo in file <filename>
Duplicate Keycap name, Salvo <filename> has not been
loaded, Rename the Salvo Keycap.
```

When the duplicate Salvo keycap names exist in the system, it will not appear in the Salvo Editor as well as Panel Server.

Recovery

Change the duplicate Salvo Keycap name to be a unique name.

1. Clicking on the **Salvo Keycap** tab.

2. Enter a unique keycap name (same as filename) and save the Salvo using LRP. The console connected to SCB will then display the following message:

```
Successfully saved Salvo to Flash
```

The Salvo Editor will now list the newly saved Salvo keycap name.

Unsupported Characters in Filename

Scenario

Salvo is created from an existing Salvo using LRP, with Non-DOS FS2 character in Salvo file name and keycap name. The Salvo file name can be created with the non-DOS FS2 characters. However these Salvos will not be stored in the local drive of the SCB.

FS2 compliant file names are less than 9 characters in length, do not contain special characters like / \ ; : , * ? " < > | , and do not contain any spaces.

Symptoms

When the Salvo is created with the keycap name which contains the non DOSFS2 characters, it will not have any impact on the Salvo operations in the Encore. However the Salvo Editor will not list the invalid names.

The Salvo Editor will shows the error message:

```
COUNT field incorrect
```

Recovery

1. Change the Keycap name to contain only the valid DOS FS2 characters and save the Salvo from LRP.

2. Save the Salvo with the new name containing valid DOS FS2 characters and delete the old Salvo.

Filename More than 8 Characters

Scenario

The Salvo file name has no restriction on the number of characters. If the Salvo keycap name is more than 8 characters, the Panel Server will resize it to 8 characters and list. However the Salvo cannot be used for any of the operation.

Symptoms

The console connected to SCB, displays the following error message

```
Keycap name of Salvo <filename>exceeds 8 chars,
Rename the Salvo Keycap.
Unknown salvo name - <keycapname>
```

Recovery

1. Rename the keycap name such that it does not exceed 8 characters and save using LRP.

Mapping Encore SCB Drives

System Controller (SCB) flash drives can be mapped using a Window PC residing on the Encore network. This permits viewing the files located on the flash, and allows file copying and deleting.

CAUTION   Do not change files residing on an Encore SCB flash unless you know exactly what you are doing. Altering the wrong files can make the SCB inoperable.

To map SCB drives using Windows XP:

1. Open Windows Explorer.

2. Go to Tools / Map Network Drive.

3. Select a drive letter.

4. Enter the following into the Folder field, where xx.xx.xx.xx represents the IP address of the SCB:

```
\\xx.xx.xx.xx\h0
```

Telnet Connection to System Controller

Using the Hyperterminial (or equivalent) utility program and an Ethernet connection you can connect to an Encore System Controller (SCB) via Ethernet. Simply enter the IP address of the SCB. The SCB must be operational at the network level, and resetting the SCB drops the connection.

Serial Connection Settings for Encore System Controller

Using the Hyperterminial (or equivalent) utility program and a serial cable with the appropriate RJ45 adapter, you can connect to an Encore System Controller for diagnostic or maintenance operations. This type of connection allows lower level diagnostics, including the reporting of reset activity. Use the following settings:

Table 18. Encore SCB Serial Connection Settings

Baud	Data Bits	Parity	Stop Bits	Flow Control
9600	8	None	1	None

SNMP Monitoring

Encore supports the Simple Network Management Protocol (SNMP) for monitoring the Encore System Controller.

Note   Customers using the Thomson Grass Valley NetCentral application receive the required Management Information Bases (MIBs) with the NetCentral software. Customers using a Third Party SNMP Manager should contact Customer Service for instructions on obtaining MIBs.

SNMP messages originating from Thomson Grass Valley equipment conform to the SNMPv1 protocol (IETF RFC 1157) and SNMPv2c. These messages can also be trapped by other SNMP management stations.

Encore System Controller – SNMP Agent

Monitored Subsystems

The Encore SNMP agent allows SNMP Manager applications to monitor the subsystems shown in Table 19.

Table 19. SNMP Monitored Subsystems

Subsystem	Description
General	General Information about the system controller board like System Controller Name, IP Address, Model Number, Product Name and Serial Number
Modules	Information about Module/Board presence and their status (SIO board / GSC board /CPU Mezzanine board)
LEDs	Current status of LEDs on the system controller (Error, Busy, Power, Done, Sync TC, Sync RF1, Sync RF2, Sync Error LEDs)
Power	Current status of Power supply 1 and 2 present, AC and DC
Fan	Current status of Frame fan, CPU fan, Power supply1 fan and Power supply2 fan
Thermal	Currents CPU temperature in Fahrenheit and centigrade
Network	Details about Name, Status, IP Address, Subnet mask and Gateway Address for Network Interface 1 and 2
Software	Details about Boot software version, Application software version, Name, Software versions and status of various applications running on SCB - Panel Server, Router Controller, Tie-line Manager
Ports	Details about Port Number, Port Name and Port Status of SIO and COMM ports
General Purpose Interface	Details about GPI Number, GPI Name, GPI Type and GPI Status for all the GPI's
File System	Details about File system Status, File System Type, Use Space, Free Space and File System Capacity
Matrix (CPL)	Matrix ID to uniquely identify the each Matrix. Matrix Type values are: 7500NB, 7500WB, Concerto, Trinix, and Apex
	Matrix Network IP Address
	Matrix Controller Status, values are: Active, Redundant, or Not Available
	Board Status information including ID (slot position), Function (Input board, Output board, Crosspoint board etc.), Type (AA, AES, SD, etc.), and Status (Present, Not Present, or Error)
	Status and events of CPL Matrices connected to the Encore SCB
	When the matrix system initializes, all the boards that are currently present in the frame and any boards that are inserted into the frame later, are monitored, if the boards are configured as part of the current configuration.
Panel	Panel related information and events. Events include Panel disconnect and re-connect to the Panel Server application running on an SCB. A panel disconnect event will be generated after a 30 second delay of the Panel disconnect, and a re-connect event will be generated without any delay. This delay ensures that a software update to a panel (resulting in a panel reboot) is not treated as a panel disconnect.
Router Engine	The Control Panel Server application provides RE IP Address, RE Area, RE Status, RE Redundancy configuration for each Router Controller running in the system.
	A Router Engine absent Error" is generated whenever any configured Sandalone or Mirror and/or Master Router Engine of an Area goes down. This notification is sent in less than 90 seconds

Table 19. SNMP Monitored Subsystems - (continued)

Subsystem	Description
Native Protocol/ RCL Client	Client ID to uniquely identify the client, Client Name, such as M2100, Kalypso, or Encoda,
	Client IP Address / Serial Port of System Controller,
	Client Status, values are: Active or Disconnected, and
	Total Client Connection (number of Ethernet clients connected).
	Status and events of NP/RCL clients. Event includes disconnect and re-connect of Ethernet clients from a specific IP address. Disconnect event is sent when all the clients connections from a specific IP address are closed."

Traps

In addition to reporting the status of subsystems, the Encore System Controller SNMP Agent generates alarm messages, called Traps. The Traps are sent to all registered SNMP Managers when there is a failure detected in any of the subsystems. Similarly, Traps are generated by the System Controller for the corresponding subsystem when the subsystems returns to a normal state.

An Encore SCB sends notification messages to an SNMP Manager PC configured as a trap target regardless of which network the PC is connected to, either EN1 or EN2 of the Encore network. Connecting the PC to EN1 is recommended to avoid possible excessive message traffic on EN2 that could affect Encore system performance.

See for specific trap information.

SNMP Agent Licensing

The SNMP Agent is an optional component, and is licensed separately. The default for the SNMP Agent is Disabled. The License Key is needed to activate the SNMP Agent, and is obtained from Customer Support. You will be asked to send the Device ID. In systems with redundant System Controllers a unique License Key must be obtained for each controller.

SNMP License Key

To obtain the Device ID and enter the License Key you will need to open the Product Web Access windows for the System Controller you want to enable. If you know the IP Address of the System Controller you can enter it in a Web browser. If you do not know the IP Address or you want to see more than one System Controller use the Thomson Grass Valley utility application, NetConfig.

1. Open the Product Web Access window for a System Controller.

Figure 50. System Controller Description Window
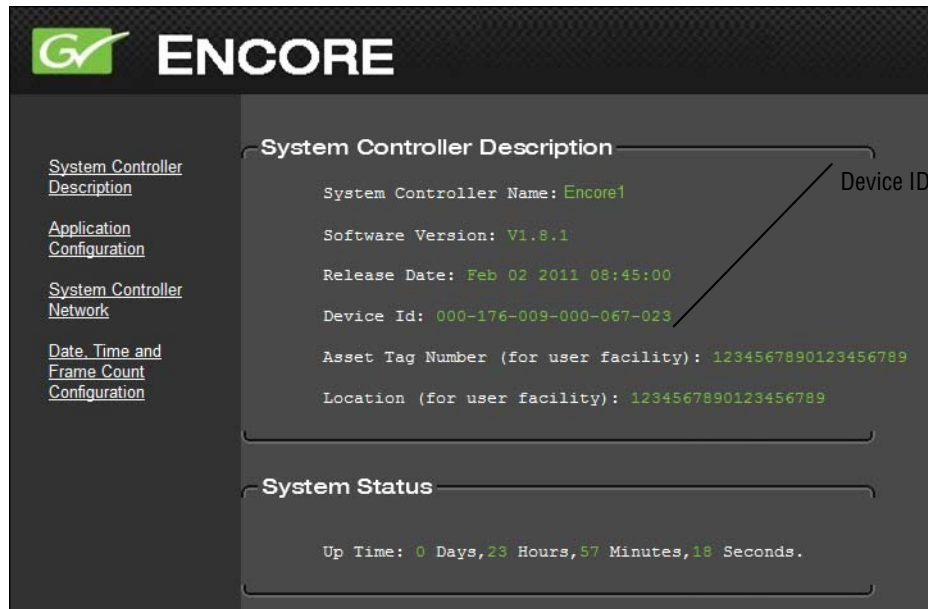
2. Locate the Device ID in the System Controller Description window.

3. Obtain License Key from Thomson Grass Valley Customer Service.

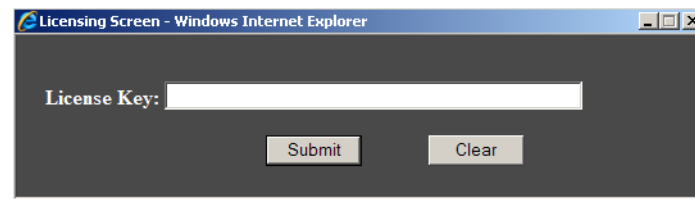4. Select the Application Configuration window for the System Controller.

Figure 51. System Controller Application Configuration Window
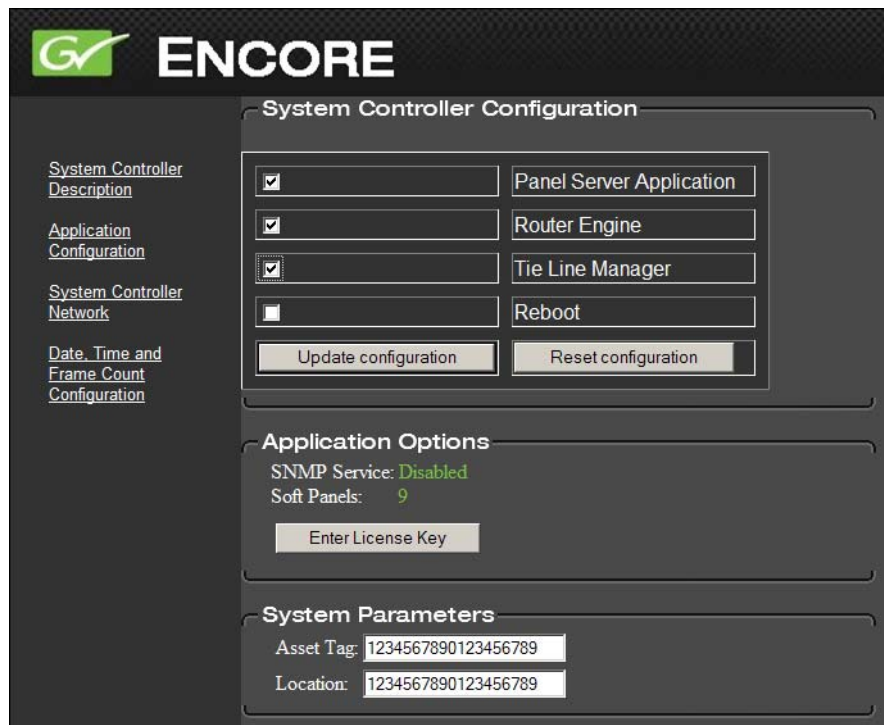
5. Click on **Enter License Key** button.

Figure 52. Enter License Key Window

6. Enter License Key in text box and click **Submit**.

7. Verify that the System Controller Application Configuration window now shows **SNMP Service: Enabled**.

Repeat the procedure for each System Controller that needs a License Key.

NetCentral SNMP Manager

The Thomson Grass Valley NetCentral system is a suite of software modules, residing on one or more centrally located PC-compatible computers. These modules work together to monitor and report the operational status of devices such as an Encore System Controller, using Simple Network Management Protocol (SNMP).

The Encore SNMP Agents interface with NetCentral. The NetCentral product is sold separately. Once the Encore SNMP Agent is registered, it can be monitored by NetCentral.

NetCentral Capabilities

The Encore SNMP Agent is registered on an Encore System Controller. The Encore System Controller will automatically send Trap messages to the NetCentral Monitoring Station, reporting the device status. The NetCentral Monitoring Station is configured to listen to and respond to the Trap messages. The Trap message is assigned a severity status and a response. The responses can range from; sound an alarm, or send E-mail, or call someone on a phone, or call a pager, or log the status. For information on how to install and configure NetCentral see *NetCentral TV Facility Monitoring System User Guide Software Version 4.1* or later.

NetCentral (Thomson Grass valley SNMP Manager) supports auto-discovery, such that any SNMP device present on the network will be added automatically to NetCentral. If the device is connected to EN2 of the Encore network, it will not be detected by auto-discovery if the PC running NetCentral is connected to EN1 network. In such cases, customers have to add devices on EN2 network manually to NetCentral.

The Thomson Grass Valley NetCentral SNMP Manager automatically registers itself with the Encore System Controller to receive the Traps. Third Party SNMP Managers need to manually register with the Encore System Controller.

Third Party SNMP Managers

Other industry standard Third Party SNMP Managers can monitor Encore System Controllers. For their installation & configuration, please contact your SNMP Manager Software vendor. The Third Party SNMP Manager needs to be manually registered in the Encore SNMP agent database so the Encore System Controller will send Traps to the corresponding SNMP Manager.

Note Customers using a Third Party SNMP Manager should contact Grass Valley Customer Service for instructions on obtaining MIBs.

The Third Party SNMP Manager requires the following MIBs:

- GVG-ELEMENT-MIB
- GVG-REG-MIB
- THOMSON-MATRIX-MIB
- GVG-ENCORE-SCB-MIB.mi2

Add all the MIB files to the MIB repository of the SNMP Manager you use.

Register a New SNMP Manager

In the GVG-ELEMENT-MIB, a Trap target table is defined to store the IP Addresses and community names of the SNMP Managers intended to receive Traps from the Encore System Controller SNMP agent.

Add a New SNMP Manager

From the Third Party SNMP Manager perform the following steps:

1. Send a `GET` request for:

`gvgTtCfgTableNextIndex` variable defined in `GVG-ELEMENT-MIB`.

For this example we will use 2 as the response for the `GET` request.

2. Create a new Row in the Trap target table by sending a `SET` request for:

`gvgTtCfgEntryStatus(1.3.6.1.4.1.4947.2.1.3.3.1.4)`.*index*

Where *index* is the value returned in Step 1 (value 2).

For this example generate a SET request for

`1.3.6.1.4.1.4947.2.1.3.3.1.4.2`

Where 2 is the next available index, syntax is INTEGER32 and set the value as 5 (create and wait).

If the SET request is successful proceed to Step 3.

Note that the SET request could be unsuccessful if:

- The row for the above index already exists, or

- The number of registered Matrix Managers (7500NP, 7500WB, Concerto, Trinix) in the SNMP Agent database has reached the maximum allowed (5). All subsequent attempts to register additional Managers will fail unless existing Managers are deleted from it's database. Note that the Encore SNMP agent does not have any restriction on the number of supported SNMP Managers.

3. Send a SET request for

`gvgTtCfgIpAddress (1.3.6.1.4.1.4947.2.1.3.3.1.2)`.*index*

where *index* is the value returned in the step 1 above (value 2).

For this example generate a SET request for

`1.3.6.1.4.1.4947.2.1.3.3.1.2.2`

Where 2 is the next available index, syntax is IPADDRES and enter the IP Address of the SNMP Manager to be registered

If the SET request is successful proceed to Step 4.

Note that SET request could be unsuccessful if:

- the above IP Address is already present in the Trap target table.

4. Send a SET request for:

`gvgTtCfgCommunity(1.3.6.1.4.1.4947.2.1.3.3.1.3)`.*index*

where *index* is the value returned in the Step 1 above (2).

In this example generate a SET request for

`1.3.6.1.4.1.4947.2.1.3.3.1.3.2`

Where 2 is the next available index, syntax is OCTET STRING and enter the community string that would be used for the communication between the Encore System Controller and the SNMP Manager.

Proceed to Step 5.

5. Send a SET request for:

`gvgTtCfgEntryStatus (1.3.6.1.4.1.4947.2.1.3.3.1.4).`*index*

where *index* is the value returned in the step 1 above (value 2) and value to be 1 (Active). This will activate the newly created row. If this SET request is successful, you are all set to receive the Traps.

If the SET request is successful you are all set to receive the Traps.

Remove a SNMP Manager

Some possible reasons for wanting to delete an SNMP Manager include:

• The SNMP manager IP Address is changed.

• You no longer wish to monitor the Encore system controller using the SNMP manager.

• You want to delete the SNMP managers you no longer use.

Delete an SNMP Manager

From the Third Party SNMP Manager perform the following steps:

1. Scan through the gvgTtCfgIpAddress and write down the index of the row, you want to delete.

2. Delete the above selected Row from the Trap target table by sending a SET request for the gvgTtCfgEntryStatus (1.3.6.1.4.1.4947.2.1.3.3.1.4).index, where index is the value returned in , syntax is INTEGER32 and set the value as 6 (destroy). If the SET request is successful then you may add new SNMP Managers as described above.

SET request could be unsuccessful, if the above row is already deleted from the Trap target table.

SNMP Trap Messages

The SNMP trap messages listed below are available for various Encore system components.

Table 20. System Controller Trap Messages

Trap	Description
Matrix Communication Error Trap	CPL Matrix lost the Communication from Encore
Matrix Communication Clear Trap	CPL Matrix regained the Communication to Encore
Matrix Controller Switchover Error:	CPL Matrix controller is switched from Redundant to Primary.
No Mirror Panel Server:	Mirrored Panel Server is not available.
Mirror Panel Server Present	Mirrored Panel Server is available.
NP/RCL Serial Client Disconnects:	A NP or RCL Serial client disconnects from Encore.

Table 20. System Controller Trap Messages - (continued)

Trap	Description
NP/RCL Serial Client Connects:	A NP or RCL Serial client connects to Encore.
NP/RCL Ethernet Client Disconnects:	A NP or RCL Ethernet client disconnects from Encore.
NP/RCL Ethernet Client Connects:	A NP or RCL Ethernet client connects to Encore.
Control Panel Disconnects	Control Panel disconnects from Encore.
Control Panel Connects	Control Panel connects to Encore network.
Router Engine Absent	Router Engine status becomes absent in Encore network
Router Engine Available	Router Engine becomes available in Encore network

Matrix Controller Signal Loss Traps

A CPL Matrix Controller can now be configured to send an SNMP trap when an input or output signal is lost on the matrix. A clear trap can be sent when the signal is restored. The SNMP Matrix Controller web page can be used to selectively enable or disable the sending of traps on an input-by-input and an output-by-output basis.

SNMP Console Commands for SCB

With Encore 1.8.0 software, the Encore SCB now has five new console commands available that list SNMP diagnostic information (see Table 21). This logging option is controlled by an On/Off console command.

Table 21. SCB SNMP Logging Information

Command	Information
snmpShow	a. SNMP License Status
	b. SNMP Software Status
	c. Trap Target IP Address.
snmpCurrentTrapListShow	(Lists the current error trap that has sent from the system.)
snmpTrapDebugOn	(Enables the trap details print on console.)
snmpTrapDebugOff	(Disables the trap details print on console.)
snmpStatusShow	(Reports the health of SNMP software along with other information such as how many SNMP packets are sent out from the system)

Specifications

Power Requirements and Mechanical Specifications

Table 22. Encore Mechanical and Power Specifications

Model	Depth	Width	Height	Weight	Rack Units	Voltage Input	Power Consumption (Maximum)
Encore System Controller Frame	464 mm 18.25 in.	483 mm 19 in	88 mm 3.5 in.	13.15 kg. 29 lbs.	2	100-120 / 200-240 VAC, or 38-60 VDC	≤ 130 W
BPS Control Panel	106 mm 4.18 in.	483 mm 19 in	44 mm 1.75 in.	1 kg. 2.2 lbs	1	100-240 VAC	≤ 25 W
48B Control Panel	106 mm 4.18 in.	483 mm 19 in	44 mm 1.75 in.	1.04 kg. 2.3 lbs.	1	100-240 VAC	≤ 25 W
XY Control Panel	106 mm 4.18 in.	483 mm 19 in	44 mm 1.75 in.	1 kg. 2.2 lbs.	1	100-240 VAC	≤ 25 W
PMB Control Panel	106 mm 4.18 in.	483 mm 19 in	88 mm 3.5 in.	1.36 kg. 3 lbs.	2	100-240 VAC	≤ 25 W
UCP Control Panel	88 mm 3.5 in.	203 mm 8 in. (w/o rack)	88 mm 3.5 in.	0.9 kg. 2 lbs. (w/o rack)	2 (half width)	100-240 VAC	≤ 25 W
CLNT Control Panel	88 mm 3.5 in.	203 mm 8 in. (w/o rack)	88 mm 3.5 in.	0.9 kg. 2 lbs. (w/o rack)	2 (half width)	100-240 VAC	≤ 25 W

Performance and Environmental Specifications

Table 23. Encore System Controller Frame

Com 1 (Console)	
Type	RS-232
Connector	RJ-45
Cable	Cat 5e Ethernet
Com 2	
Type	RS-422/485
Connector	RJ-45
Cable	Cat 5e Ethernet

Table 23. Encore System Controller Frame - (continued)

SIO Ports 1, 2, 3 & 4	
Type	RS-232 or RS-422/485
Connector	RJ-45
Cable	Cat 5e Ethernet
SIO Ports 5, 6, 7, & 8	
Type	RS-422/485
Connector	RJ-45
Cable	Cat 5e Ethernet
Ref Out and Sync Input	
Type	NTSC or PAL color black
Impedance / Connector	High looping BNC
Return Loss	> 25 dB @ 1 MHz, when terminated into 75 Ohms
GSC Inputs	
Type	SMS7000 Node Bus proprietary Global Serial Channel
Impedance / Connector	High, looping BNC
Return Loss	> 10 dB @ 1 MHz, when terminated into 75 ohms
Ethernet Ports	
Type	10BaseT/100BaseTx full duplex
Connector	RJ-45
Cable	Cat 5e Ethernet
Power Supply		
---	---	---
Mains AC Voltage		100-240 V 50/60 Hz
AC Current	100-120 V	2.9 amps maximum
	200-240 V	
DC Voltage		48 V DC nominal (38-60 V DC)
DC Current		4 amps DC nominal @ 48 V in

Environmental	
Power Consumption	≤ 130 W
Operating Temperature	0-45 degrees C (32-113 degrees F)
Storage Temperature	-40-95 degrees C (-104-203 degrees F)
Operating Humidity	5-95% non-condensing
Storage Humidity	5-95% non-condensing

Appendix B

Encore System Interface Guide

Introduction

This section provides settings that can be used as a guide to configure an Encore system to work with specific devices. This information is intended for engineers who are already familiar with Encore and third party system configuration procedures.

Refer to the separate *Encore Configuration Manual*, the latest *Encore Release Notes*, and documentation provided by any third party devices involved for more information.

Ethernet Device Interfaces

Encore communicates with devices using Ethernet networks. Examples of the different device types include:

- Router matrices (Concerto, Trinix, 7500 Series, etc.),

- Control panels (Encore control panels, Soft panels, etc.),

- Control systems (Jupiter, Series 7000, etc.),

- PC-compatibles (Laptops, NetCentral Monitoring Station, etc.),

- Master control systems (M-2100, MMCP, Maestro, etc.),

- Switchers (Kalypso, Zodiak, KayakDD, etc.), and

- Media storage (Profile XP, Profile PDR. etc.).

The Encore Control frame has four RJ-45 Ethernet connectors, two for each System Controller (EN1 and EN2). The EN2 connector is typically restricted for use with router matrices and control panels. Other devices (control systems, PC, etc.) typically connect to Encore using EN1.

Use standard peer-to-peer (crossover) cables to connect a device directly to the Encore Control frame.

CAUTION Encore control systems employ consecutive IP addresses for redundant Concerto matrix controller operation. The next higher IP address is reserved for this purpose and cannot be assigned to another device on the network, even if the Concerto is not operating redundantly. Serious system communications problems can occur if this next higher Concerto Controller IP address is used on the network.

CAUTION Even though Acappella frames do not support matrix controller redundancy, if they reside on an Encore network the next higher IP address must be reserved and cannot be assigned to another device on the network. Serious system communications problems can occur if this next higher Acappella frame IP address is used on an Encore network.

Default Network IP Settings (Concerto 64VAA Example)

The NetConfig utility program can be used to set IP addresses on Encore system components. You will need to configure the PC running NetConfig on the same network as the Encore system components before these components will be recognized by NetConfig.

Note   Default IP Addresses are shown, which will need to be changed to add an Encore system to an existing facility network. If different IP Addresses are used, be sure the new addresses correspond to each other, as indicated at the bottom of Table 24.

Table 24.   Encore>Concerto 64VAA Network Configuration Default IP Addresses

Encore System Controllers	**Encore Controller 1**	**Encore Controller 2**
	Master	Mirror
System Name	SCB-1A	SCB-1B
Ethernet1 IP Address	192.168.0.100	192.168.0.101
Ethernet1 Subnet Mask	255.255.255.0	255.255.255.0
Ethernet1 Gateway	N/A	N/A
Ethernet2 IP Address	192.168.1.1[a]	192.168.1.2[b]
Ethernet2 Subnet Mask	255.255.255.0	255.255.255.0
Ethernet2 Gateway	192.168.1.1[c]	192.168.1.2[c]

Concerto Matrix Controllers	**Matrix Controller 1**	**Matrix Controller 2**
	Primary	Secondary
Matrix Device Name	Concert1	Concert2
Ethernet IP Address	192.168.1.34[d]	192.168.1.35
Ethernet Subnet Mask	255.255.255.0	255.255.255.0
Ethernet Gateway	N/A	N/A
Encore Master Controller IP	192.168.1.1[a]	192.168.1.1[a]
Encore Mirror Controller IP	192.168.1.2[b]	192.168.1.2[b]

PC Running NetConfig	
Ethernet IP Address	192.168.0.102
Ethernet Subnet Mask	255.255.255.0
Ethernet Gateway	192.168.0.100[e]

[a] Encore Controller 1 Ethernet2 IP Address must match Matrix Controllers 1 & 2 Encore Master Controller IP Address.

[b] Encore Controller 2 Ethernet2 IP Address must match Matrix Controllers 1 & 2 Encore Mirror Controller IP Address.

[c] Ethernet2 Gateway same as Ethernet2 IP Address for that Encore Controller.

[d] Matrix Controller 1 IP Address must match the Net Name of the Physical Matrix shown in Table 25 on page 108.

[e] PC Ethernet Gateway must match Encore Master Controller Ethernet1 IP Address

Encore Control of Concerto 64VAA (Ethernet)

Table 25. Encore>Concerto 64VAA Router Configuration

Config./Channels			
Channel Index	1		
Protocol	GVG CPL		
Host IP	N/A		
Config./Levels			
Set Label	SDV	Audio1	Audio2
Set Format	D	G	G
Config/Physical Matrix	**Concerto 64V**	**Concerto 64A**	
Crosspoint Group			
Name	SDV	AUDIO	
No. Inputs	64	64	
No. Outputs	64	64	
No. Controllers	1	1	
No. Segments	1	1	
Matrix Type	Concerto Digital Video	Concerto Audio (Stereo)	
Controller			
Controller No.	1	1	
Channel	1	1	
Address	0	1	
Protocol	GVG CPL	GVG CPL	
Outputs	64	64	
Net Name	192.168.1.34	192.168.1.34	
Segment (shared)			
Segment ID	A	A	
Segment Type	Blocked	Blocked	
First Input	1	1	
Last Input	64	64	
First Output	1	1	
Last Output	64	64	
Park Input	0	0	
No. Virtuals	0	0	
Config./Logical Matrix	**Concerto 64V**	**Concerto 64A**	**Concerto 64A**
Name	SDV	Audio 1	Audio 2
Level	Level 1	Level 2	Level 3
No. Elements	1	1	1
Element 1	SDV:A	Audio:A	Audio:A

Encore Control of Jupiter (Ethernet)

Encore System Settings

Table 26. Encore Control of Jupiter over Ethernet using Native Protocol - Encore Settings

Config/Channels			
Channel Index	2		
Protocol	GVG NP		
Host IP	N/A		
Config/Levels			
Set Label	JUP-S	JUP-A	
Set Format	D	G	
Config/Phys Matrix/Crosspoint Group			
Name	JUP_SDV	JUP_AES	
No. Inputs	20	20	NOTE: The number of inputs and outputs is arbitrary and typically a subset of the total.
No. Outputs	10	10	
No. Controllers	1	1	
No. Segment	1	1	
Matrix Type	NP Matrix	NP Matrix	
Config/Phys Matrix/Controller			
Controller No.	1	1	
Channel	2	2	
Address	0 (first level)	1 (second level)	NOTE: Encore controls Jupiter by Index into Jupiter Control Panel Level Set Tables.
Protocol	GVG NP	GVG NP	
Outputs	10	10	
Net Name	192.168.0.10[a]	192.168.0.10[a]	
Config/Phys Matrix/Segment			
Segment ID	A	A	
Segment Type	Blocked	Blocked	
First Input	1	1	
Last Input	20	20	
First Output	1	1	
Last Output	10	10	
Park Input	0	0	
No. Virtuals	0	0	
Config/Logical Matrix			
Name	SDV	AES	
Level	JUP_S	JUP_A	
NO. ELEMENTS	1	1	I
Element 1	JUP_SDV:A	JUP_AES:A	

[a] Encore controller Net Name is CM-4000 address

Jupiter System Settings

Note   Only CM-4000 Jupiter systems running Version 7.4 or higher software can be controlled via Ethernet.

Table 27. Encore Control of Jupiter over Ethernet using Native Protocol - Jupiter Settings

Network Description		
Board Name	CM-4000	ENCORE
Type	SB	NP
Address	MAC address of Primary CM4000	192.168.0.100[a]
Redundant Address	MAC address of Secondary CM4000	NA
MPK		
MPK Device	ENCORE	
Device Type	NP-LAN	
Board	CM-4000	
Port	N/A	
Input Set	ENC-INP	
Output Set	ENC-OUT	
Level Set	ENC-LVL	

Control Panel Sets:		
Input Sets:/ENC-INP		
Type	Serial	
Inputs	20	
Output Sets:/ENC-OUT		
Type	Serial	
Outputs	10	
Output Sets:/ENC-LVL		
Type	CP3000	
Mnemonic	JUP-S	JUP-A
Level	SDV (Default)	AES (Default)

[a] Jupiter Network Description Table NP device addresses is the Encore primary controller IP.

Serial Interfaces

Devices that do not support Ethernet communications may be controlled serially by Encore.

Encore systems also support being controlled externally with serial communciations. This is typically the mechanism older Station Automation systems employ to control Encore devices.

Encore Control of Jupiter (Serial)

Encore provides support for serial control of a Jupiter system as follows:

- Uses the Philips ESswitch serial protocol setting,

- Maximum Jupiter system matrix sizes and number of levels, and

- Default Serial matrix communication baud rate of 38400.

The interface to the Encore control system allows users to perform Takes from any connected point of control (including, but not limited to, an Encore panel, a Jupiter panel, and the Encore OUI). Execution of such Takes will result in corresponding tally on any connected point of control that is observing an affected destination.

Encore System Settings

Table 28. Encore Control Jupiter ESswitch Protocol over Serial Port, Encore Settings

Config/Channels			
Channel Index	3		
Protocol	Philips ESswitch		
Port	2	NOTE: Any RS-422 port can be used.	
Data Bits	8		
Stop Bits	1		
Baud Rate	38400		
Parity	Odd		
Hand Shake	None		
Config/Levels			
Set Label	JUP-S	JUP-A	
Set Format	D	G	
Config/Phys Matrix/Crosspoint Group			
Name	JUP_SDV	JUP_AES	
No. Inputs	20	20	
No. Outputs	10	10	
No. Segment	1	1	
No. Controllers	1	1	
Matrix Type	Generic Matrix	Generic Matrix	
Config/Phys Matrix/Controller			
Controller No	1	1	
Channel	3	3	
Address	0 (first level)	1 (second level)	NOTE: Encore controls Jupiter by Index into Jupiter Control Panel Level Set Tables.
Protocol	Philips ESswitch	Philips ESswitch	
Outputs	10	10	
Config/Phys Matrix/Segment			
Segment ID	A	A	
Segment Type	Blocked	Blocked	
First Input	1	1	
Last Input	20	20	
First Output	1	1	
Last Output	10	10	
Park Input	0	0	
No. Vituals	0	0	
Config/Logical Matrix			
Name	SDV	AES	
Level	JUP_S	JUP_A	
No. Elements	1	1	
Element 1	JUP_SDV:A	JUP_AES:A	

Jupiter System Settings

Table 29. Encore Control Jupiter ESswitch Protocol over Serial Port - Jupiter Settings

Network Description		
Board Name	VM-3000	
Type	VM (VM 3000)	
Address	MAC address of Primary VM3000	
Redundant Address	MAC address of Secondary VM3000	
Serial Protocol		
Board	VM-3000	
Protocol 7/8	ES-W (ES-Switch)	
MPK		
MPK Device	ENCORE	
Device Type	Serial	
Board	VM-3000	
Port	7	
Input Set	ENC-INP	
Output Set	ENC-OUT	
Level Set	ENC-LVL	
Control Panel Sets:		
Input Sets:/ENC-INP		
Type	Serial	
Inputs	20	
Output Sets:/ENC-OUT		
Type	Serial	
Outputs	10	
Level Sets:/ENC-LVL		
Type	CP3000	
Mnemonic	JUP-S	JUP-A
Level	SDV (Default)	AES (Default)

Cable Connections

Use the same connectors, adaptors, and cables as shown in *Ports 1 to 8 RS-422/485* on page 57. To create a RJ-45 to 9 pin D adaptor use Table 13 on page 67, this adaptor is for use with the cables in the Serial Interface Y Cable Option. The adaptor in Table 12 on page 66 is for use with a ≤4 inch patch cable.

Jupiter Serial RS-422/485 Cable Pin Assignments

The pinouts below are used for creating serial cables to connect an Encore Control frame to either the Jupiter VM 3000 or the Jupiter CM4000.

Figure 53 shows the pin assignments for a RS-422/485 cable from an Encore frame with part number 6100884xx to either the Jupiter VM 3000 or the Jupiter CM4000.

Figure 53. Serial RS-422/485 Cable for Encore Frame 6100884xx
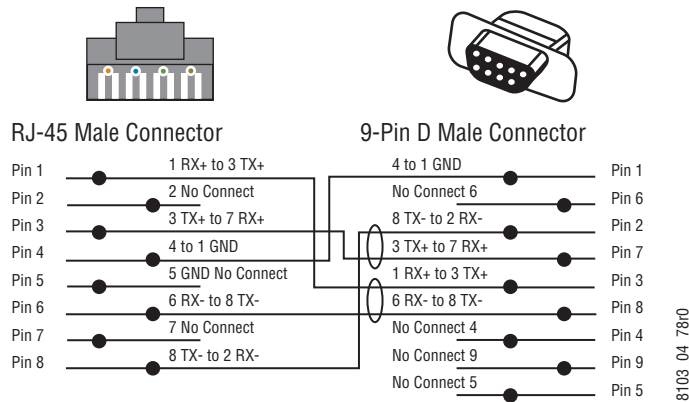
Figure 54 shows the pin assignments for a RS-422/485 cable from an Encore frame with part number 6101000xx to either the Jupiter VM 3000 or the Jupiter CM4000.

Figure 54. Serial RS-422/485 Cable for Encore Frame 6101000xx
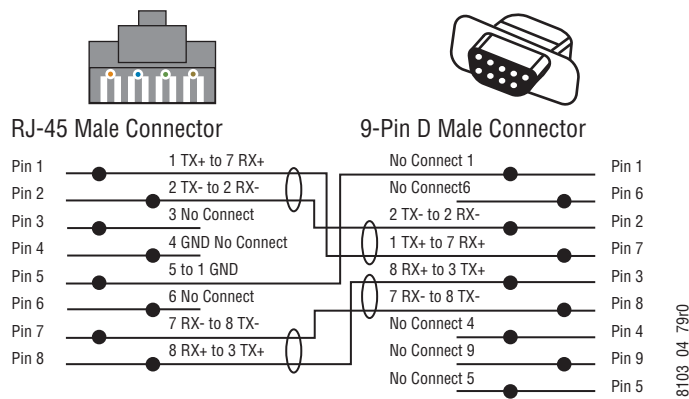
Jupiter Control of Encore NP Protocol Serial Interface

Encore System Settings

When Jupiter controls an Encore system, on the Encore side only a serial connection between the two systems needs to be established.

Table 30. Jupiter Control Encore, NP Protocol over Serial Port, Encore Settings

RCL Client	Serial
Protocol	NP
Port	2
Data Bits	8
Stop Bits	1
Baud Rate	9600
Parity	Odd
Hand Shake	None
Refresh Rate	0

Jupiter System Settings

Once a serial connection exists, the extent of control that the Jupiter system will have over the Encore system is determined by configuration on the Jupiter side.

Serial Protocol:

GNP Grass Valley Native Protocol, 9600 Baud

Switcher Description, Input and Output Tables

Define Encore routers the same as Jupiter routers:

- Physical level must match router physical level

  (x-1 because Jupiter is 0 based, while Encore is 1 based)

- Driver: GNP (Grass Valley Native Protocol)

- Switcher inputs and outputs are indexes in Encore router definitions)

Encore Control of Horizon Serial Interface (RS-422/485)

Encore provides support for serial control of a Horizon matrix as follows:

• Matrix sizes up to 128 x 128,

• Maximum of 4 levels,

• Serial matrix (XY port) communication baud rate of 19200, and

• The Encore RS-422 SIO port baud rate is user adjustable. Supported rates are 19200, 9600, 4800, and 2400.

The Horizon interface to the Encore control system allows users to perform Takes from any connected point of control (including, but not limited to, an Encore panel, a Horizon panel, and the OUI). Execution of such Takes will result in corresponding tally on any connected point of control that is observing an affected destination.

Cable Connections

Horizon Control Section (HX-48)
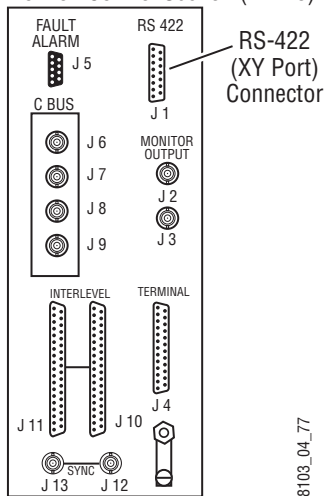
On the back of the Horizon Control frame is a 15-pin D female connector labeled **RS-422**; this is the connector to use for the interface. A 15 pin D male to RJ-45 female adapter is required. The adapter's 15 pin D connector end can be plugged directly into the Horizon frame or an RS-422 male to female cable can be used. See Table 18 on page 38 for adaptor pinouts.

The **RS-422** connector is also know as the Horizon XY port. This port was designed as a maintenance port. Many customers have used this port to connect XY control panels or other serial devices. In some cases, customers have used Y cables or other splitters to connect multiple devices to the Horizon XY port at the same time. The Encore-Horizon interface requires Encore to be the only device connected to the Horizon using the **RS-422** (XY) port.

Refer to Figure 55 for a sample configuration diagram.

Figure 55. Sample Configuration Diagram
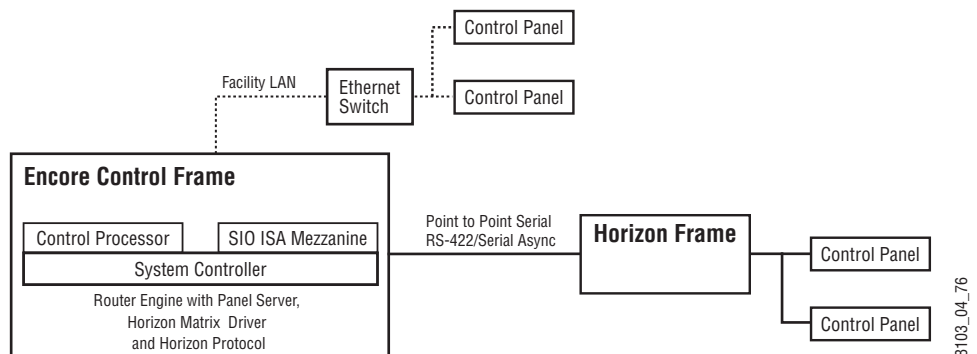
Horizon Serial RS-422/485 Cable Pin Assignments

Table 31 shows the adaptor pin assignments for a RS-422/485 connection from an Encore frame to a Horizon frame

Table 31. RS-422/485 Pinouts for Encore RJ-45 to 15 Pin D Horizon Adaptor
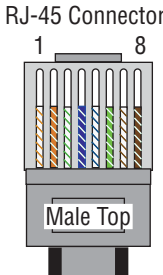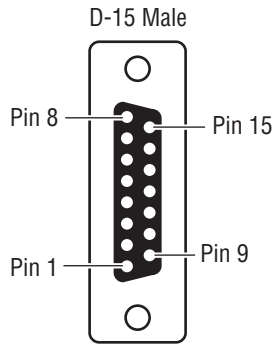
RJ-45 Cable with Male Connector				RS-422/485 Cable with 15-Pin D Male Connector		
	Wire Color	**Pin**	**Function**	**Pin**	**Function**	
RJ-45 Connector	Orange White	1	TX+	1	No connect	
1 ___ 8	Orange	2	TX-	2	No connect	D-15 Male
	Green White	3	No connect	3	No connect	
	Blue	4	Ground	4	No connect	
	Blue White	5	Ground	5	RX+	
	Green	6	No connect	6	TX+	Pin 8 — Pin 15
Male Top	Brown White	7	RX-	7	No connect	
	Brown	8	RX+	8	Ground	
8103_03_64				9	No connect	Pin 1 — Pin 9
				10	No connect	
				11	No connect	
				12	No connect	
				13	RX-	
				14	TX-	
				15	No connect	

Table 32.

RJ-45 Female Connector   15 Pin D Female Connector

Pin 1	1 to 6 TX+		No Connect 1	Pin 1
Pin 2	2 to 14 TX-		No Connect 9	Pin 9
Pin 3	3 No Connect		No Connect 2	Pin 2
Pin 4	4 to 4 GND		No Connect 10	Pin 10
Pin 5	5 to 6 GND		No Connect 3	Pin 3
Pin 6	6 No Connect		No Connect 11	Pin 11
Pin 7	7 to 13 RX-		No Connect 4	Pin 4
Pin 8	8 to 5 RX+		No Connect 12	Pin 12
			8 to 5 RX+	Pin 5
			7 to 13 RX-	Pin 13
			1 to 6 TX+	Pin 6
			2 to 14 TX-	Pin 14
			No Connect 7	Pin 7
			No Connect 15	Pin 15
			4 & 5 to 8 GND	Pin 8

8103_04_75r0

RJ-45 to 9-Pin D Adaptor		
RJ-45 Female Connector Pin	**9-Pin D Female Connector Pin**	**Function**
1	6	TX+
2	14	TX-
3	-	No connect
4	8	Ground
5		Ground
6	-	No connect
7	13	RX-
8	5	RX+
-	1	No connect
-	2	No connect
-	3	No connect
-	4	No connect
-	7	No connect
-	8	No connect
-	10	No connect
-	11	No connect

Encore to Horizon Protects and Unprotects

Encore control of Horizon only supports All Level Protects and Unprotects. It does not support soft Locks, hard Locks, force Unlocks, or Lock/Protect Override.

An Encore issued Protect to a Horizon router is removable using the force Unprotect feature.

Horizon enforces a time-to-live on all destination protects. Horizon uses an 8-bit protocol and does not utilize text strings for identifying a protecting device. Also, Horizon cannot query for which device has protected a given destination (however the Encore Router Control Engine (RCE) does have this knowledge base).The Horizon system associates a device ID for a protect that cannot be externally accessed.

The Horizon recognizes the RS-422 (XY) port connection as a single device. Therefore, a protect issued from the Encore RCE interface will always be identified as a single issuing device from within the Horizon system; however, the RCE has knowledge of which device has protected a Horizon Destination.

An Encore issued protect cannot be unlocked or overridden by any Horizon device. An Encore issued protect must be removed by the Encore issuing device or Encore control system.

Protects sent from Encore panels/OUI to Horizon will not be retained after the Encore SCB is power cycled.

After a SCB power cycle, only protects done from the Horizon panel will be read back and shown on the Encore Panels/OUI/VSD.

If an Encore panel attempts to unprotect a destination protected by a Horizon panel, the error message will read as "MatrixLibrary error: Miscellaneous error, src '<Undef>' dest <dest name> on level(s):<levels>. Here the "<Undef>" is only part of the error message text. There is no change on the OUI status screen and the source name on the OUI/Panels remains correct.

Horizon to Encore Protects and Unprotects

A Horizon issued protect cannot be unlocked or overridden by any Encore device. A Horizon issued protect must be removed by the Horizon issuing device. If the Horizon router is rebooted or loses connection with the Encore control system then all protects are lost.

The Horizon does not broadcast Tally status. It must be queried Destination by Destination in order to receive Tally status information (polling).

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