

Encore

CONTROL SYSTEM

Installation and Service Manual

A white crosshair graphic consisting of a vertical line with an upward-pointing arrow and a horizontal line with a rightward-pointing arrow, intersecting at a small circle.

SOFTWARE VERSION 1.7

071810304
JULY 2006

the most watched worldwide

CERTIFICATE

Number: 510057.001

The Quality System of:

Thomson Broadcast & Media Solutions

TBMS
400 Providence Mine Road
Nevada City, CA 95945

TBMS
Weiterstadt, Germany
Brunnenweg 9
D-64331 Weiterstadt, Germany

TBMS
15655 SW Greystone Ct.
Beaverton, OR 97006

TBMS
Nederland B.V.
4800 RP BREDA
The Netherlands

TBMS/Nextream
Rennes, France
Rue du Clos Courtel
Cesson-Sevigne, Cedex
France

TBMS
17 rue du Petit Albi-BP 8244
95801 Cergy Pontoise
Cergy, France

TBMS
10 Presidential Way, 3rd Floor, Suite 300
Woburn, MA 08101

TBMS
2300 South Decker Lake Blvd.
Salt Lake City, UT 84119

TBMS - PCB
Rennes, France
Rue du Clos Courtel
Cesson-Sevigne, Cedex
France

TBMS/Nextream
Technopole Brest Iroise
CS 73808
29238 Brest Cedex 3
France

Including its implementation, meets the requirements of the standard:

ISO 9001:2000

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

This Certificate is valid until:

Revision Date:

Renewal Date:

Issued for the first time:

June 14, 2006

September 9, 2003

June 14, 2003

June 14, 2000



H. Pierre Sallé
President
KEMA-Registered Quality, Inc.

The method of operation for quality certification is defined in the KRQ General Terms and Conditions for Quality Certification. Integral publication of this certificate and adjoining reports is allowed.

Encore

CONTROL SYSTEM

Installation and Service Manual

SOFTWARE VERSION 1.7

071810304
JULY 2006

the most watched worldwide

Contacting Grass Valley

Region	Voice	Fax	Address	Web Site
North America	(800) 547-8949 Support: 530-478-4148	Sales: (530) 478-3347 Support: (530) 478-3181	Grass Valley P.O. Box 599000 Nevada City, CA 95959-7900 USA	www.thomsongrassvalley.com
Pacific Operations	+852-2585-6688 Support: 852-2585-6579	+852-2802-2996		
U.K., Asia, Middle East	+44 1753 218 777	+44 1753 218 757		
France	+33 1 45 29 73 00			
Germany, Europe	+49 6150 104 782	+49 6150 104 223		

Copyright © Grass Valley. All rights reserved.

This product may be covered by one or more U.S. and foreign patents.

Grass Valley Web Site

The www.thomsongrassvalley.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 — Software updates, drivers, and patches can be downloaded.

Contents

Preface	9
About This Manual	9
Documentation Set	9
Additional Documentation	10
Safety Summary	
Safety Terms and Symbols	11
Terms in This Manual	11
Terms on the Product	11
Symbols on the Product	12
Warnings	12
Cautions	13
Regulatory Notices	
Certifications and Compliances	15
FCC Emission Control	15
Canadian EMC Notice of Compliance	15
EN55022 Class A Warning	15
Canadian Certified Power Cords	16
Canadian Certified AC Adapter	16
Laser Compliance	16
Laser Safety Requirements	16
Laser Safety	16
FCC Emission Limits	17
Certification	17
Section 1 — Encore System Overview	19
Introduction	19
Controlled Hardware	20
Encore System Controller Frame	20
Control Panels	22
Encore System Control Fundamentals	23
Distributed Control System	23
Configuration PC	23
Sharer Application	23
Encore Database	23
Routing Basics	24
Terminology	24
Matrix Crosspoints and Levels Description	25
Sources and Destinations Description	26
Multi-Level Switching Description	27
All Level Take	27
Breakaway Take	27

Section 2 — Installation	29
Encore System Controller Frame	29
Frame Rack Mounting	29
Frame Power	30
AC Connections	30
48V DC Connections	31
System Controller Frame Module Slots	31
System Controller (SCB) Module	31
Control Processor Submodule Jumper Settings	32
Serial Interface (SIO) Mezzanine	33
SIO ISA Mezzanine Settings	33
Global Serial Channel (GSC) Mezzanine	34
System Cabling Example	35
Reference Cabling	37
Control Panels	38
Rack Mounting	38
Control Panel Grounding	39
Control Panel Power	40
Types of Control Panel Cabling	40
Control Panels Cabling	40
Ethernet Panel Cabling	40
GSC Panel Cabling	42
Joystick Override	43
ENC-48B-GPI, ENC-BPS-GPI Control Panels	43
48B-GPI, BPS-GPI JSO Pinouts	43
JSO Configuration	44
JSO On Updated KAL32UX1, KAL32UX2 Control Panels	44
JSO On Updated SMS7000 GSC Control Panels	45
SMS7000 GSC Joystick Override Connector	45
Serial Cabling RS-232	46
COM 1 (CONSOLE) and Ports 1 to 4 RS-232	46
Serial Cabling RS-422/485	47
Encore Control Frame Identification	47
Late Model Frame 6101000xx Backplane	47
Early Model Frame 6100884xx Backplane	48
COM 2	49
Ports 1 to 8 RS-422/485	50
Nonredundant Frame 6101000xx	50
Nonredundant Frame 6100884xx	50
Redundant Cabling for Encore Control of Device	51
Redundant Cabling for Device Control of Encore	53
Control Frame Pinouts	56
RJ-45 Pinouts	56
RJ-45 to 9-Pin D Adaptor Pinouts (RS-232)	57
RJ-45 to 9-Pin D Adaptor Pinouts (RS-422/486)	58
GPI Pinouts	60
GPI Out Encore Panel Server State Indication	60
Section 3 — Maintenance and Troubleshooting	61
Service and Replacement Parts	61
Maintenance	61
Field Replaceable Units	61
Modules	61

System Controller Modules	62
Power Supply Modules.	64
Fan Assemblies	65
To Replace the Fan Unit	65
To Replace the Fan Filter.	66
System Controller Board (SCB) Time/Date Synchronization.	66
VITC.	66
System Date	67
Troubleshooting	67
System Controller LEDs	67
Power Supply LEDs	70
SNMP Monitoring.	71
Encore System Controller – SNMP Agent	71
SNMP Agent Licensing.	72
SNMP License Key.	72
NetCentral SNMP Manager.	74
NetCentral Capabilities.	74
Third Party SNMP Managers	75
Register a New SNMP Manager	75
Remove a SNMP Manager	76
Encore SNMP Enhancements	77
Matrix Information	77
Native Protocol/Router Control Language Client Information.	77
New SNMP System Controller Trap Messages.	78

Appendix A — Specifications 79

Power Requirements and Mechanical Specifications	79
Performance and Environmental Specifications	79

Appendix B — Encore System Interface Guide 81

Introduction	81
Ethernet Device Interfaces	81
Default Network IP Settings (Concerto 64VAA Example).	82
Concerto 64VAA Control by Encore (Ethernet)	83
Jupiter Control by Encore (Ethernet)	84
Encore System Settings	84
Jupiter System Settings	85
Serial Interfaces	86
Jupiter Control by Encore (Serial).	86
Encore System Settings	87
Jupiter System Settings	88
Cable Connections.	88
Jupiter Serial RS-422/485 Cable Pin Assignments	89
Jupiter Control of Encore NP Protocol Serial Interface	90
Encore System Settings	90
Jupiter System Settings	90
Serial Protocol:	90
Switcher Description, Input and Output Tables	90
Horizon Serial Interface (RS-422/485)	91
Cable Connections.	91
Horizon Serial RS-422/485 Cable Pin Assignments.	92
Encore to Horizon Protects and Unprotects	93

Horizon to Encore Protects and Unprotects 93

Index 95

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,*
- *User 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 *User 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 Soft Panels Instruction Manual*, and
- *Encore Salvo Editor 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 are 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'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté 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 Chapter 1, 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 Comité Européen de Normalization Electrotechnique (CENELEC).

For the CDRH: The radiant power is detected through 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 through 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 interference, 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

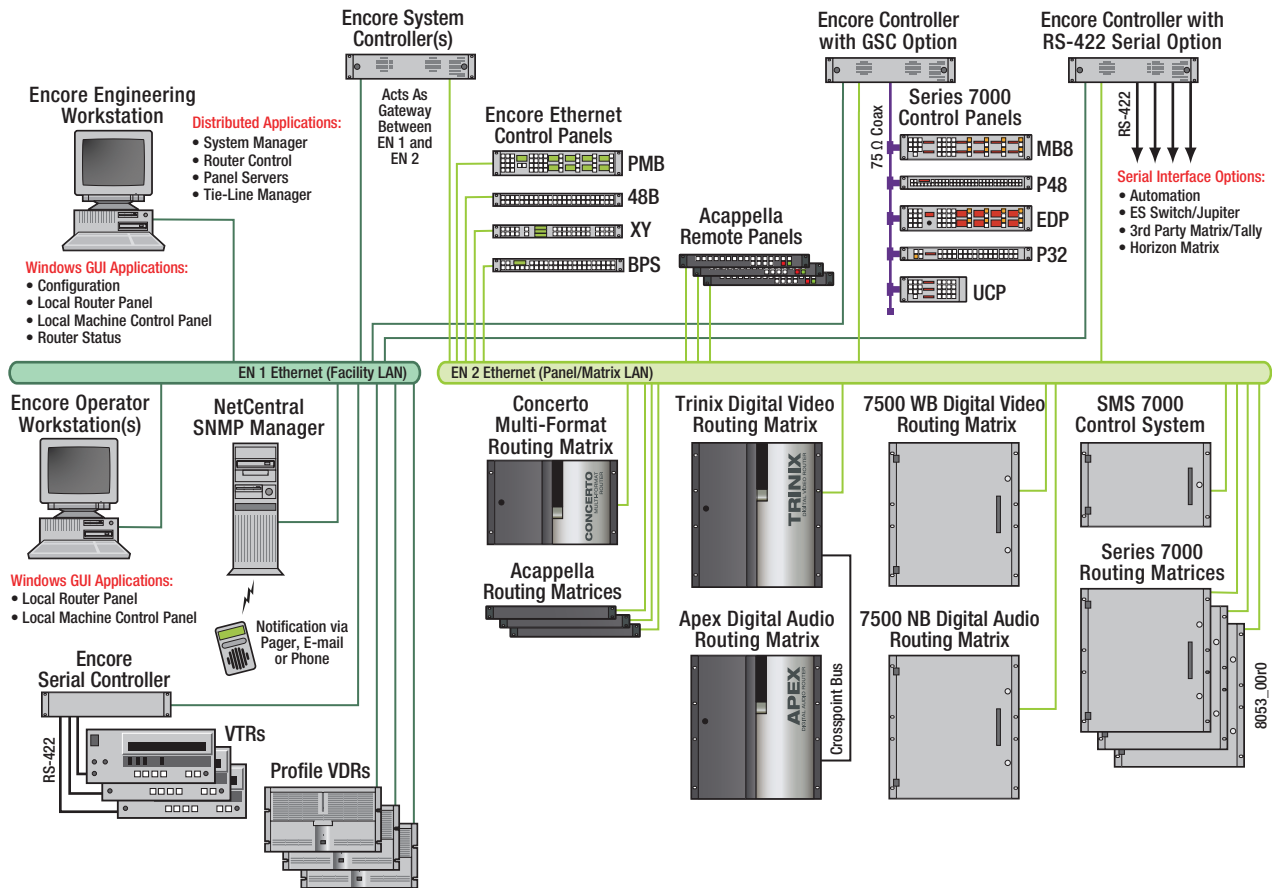
Category	Standard	Designed/tested for compliance with:
Safety	UL1950	Safety of Information Technology Equipment, including Electrical Business Equipment (Second edition, 1993).
	IEC 950	Safety of Information Technology Equipment, including Electrical Business Equipment (Second edition, 1991).
	CAN/CSA C22.2, No. 950-93	Safety of Information Technology Equipment, including Electrical Business Equipment.
	EN60950	Safety of Information Technology Equipment, including Electrical Business Equipment.

Encore System Overview

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.

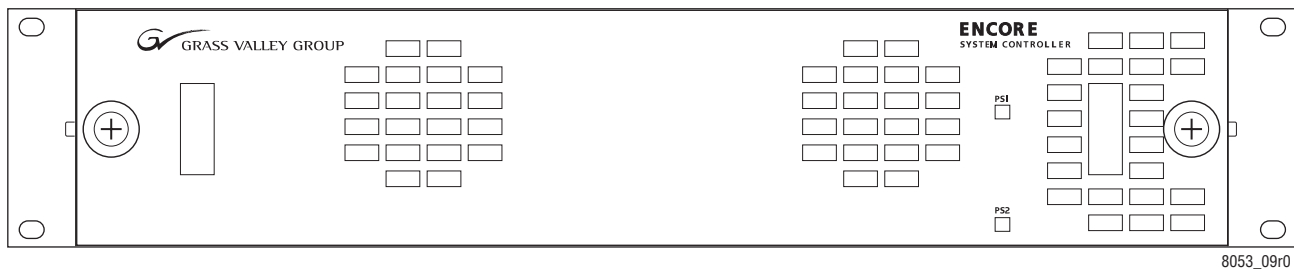
Controlled Hardware

Encore can control a wide range of Grass Valley routers including Trinitix, Apex, Concerto, 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

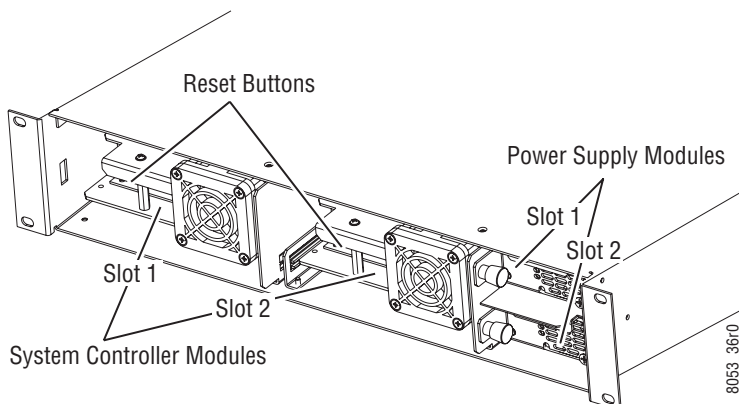
The two rack-unit Encore System Controller Frame supports up to two System Controller Board (SCB) modules and two power supply modules for redundancy. A standard Encore System Controller Frame is equipped with one SCB and one power supply. All modules are front removable and hot pluggable. Cooling is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

Figure 2. Encore System Controller Frame



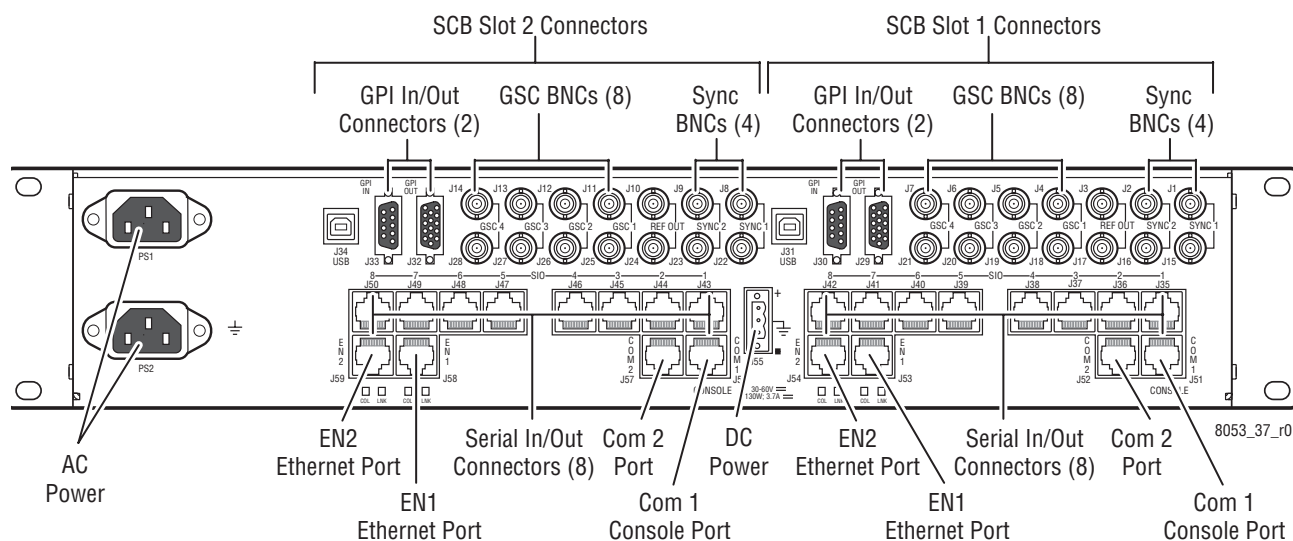
The System Controller Frame has two slots for SCBs and two slots for Power Supply modules, located behind the front cover/air filter. Status indicator LEDs and a reset button are located on each SCB (Figure 3).

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

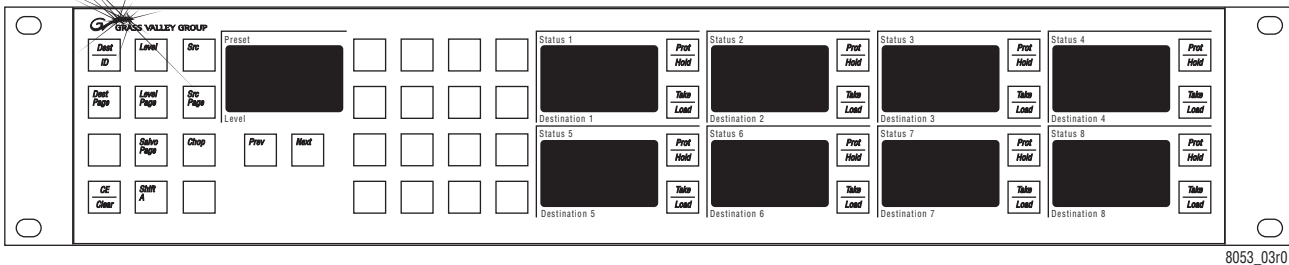
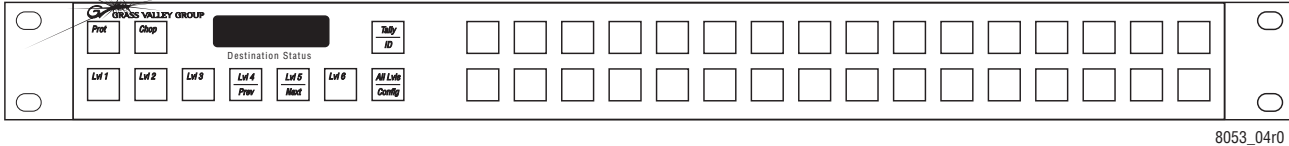


Figure 6. Encore Button Per Source (BPS) Control Panel



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

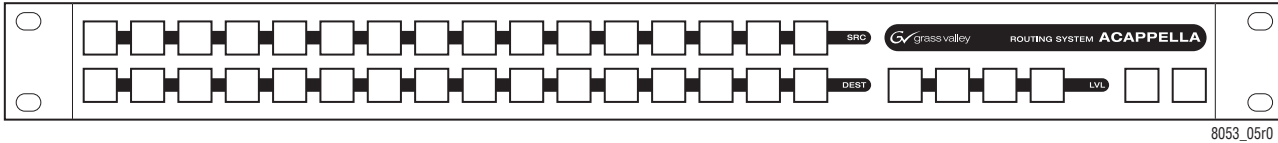
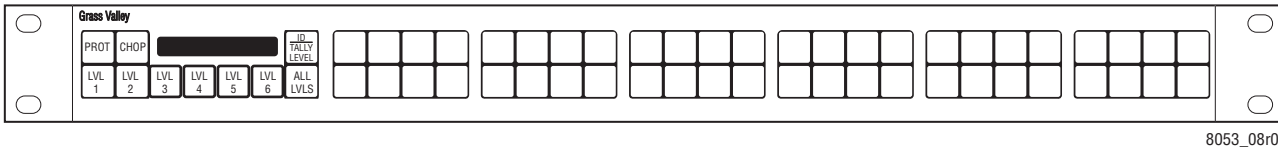


Figure 8. SMS7000 P48 Control Panel



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.

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.

Sharer Application

Typically the configuration PC has the Encore Sharer application installed, but this application can reside on any PC on the network. The Sharer application must be running when the system is configured, but does not need to be running to sustain control panel operation. However, we recommend the Sharer application remain running at all times, as this makes it easier to resume configuration procedures. The Sharer automatically downloads configuration information to Encore system components when they are powered up or rebooted.

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 configuration PC with the Sharer installed is moved to different locations.

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.

Routing Basics

Terminology

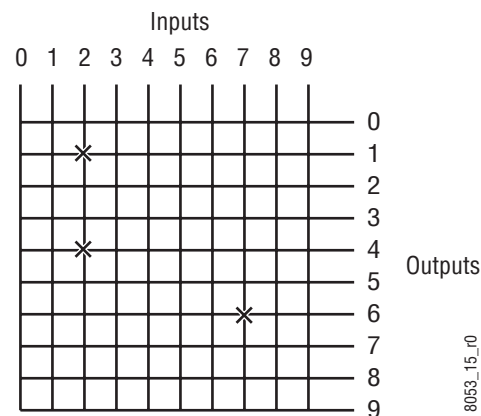
Area	An Area is a defined group of Sources and Destinations. Takes are restricted to connecting Sources and Destinations within the same Area (unless Tie Lines are used). Defining multiple Areas makes it possible to assign the same easily identifiable Source and Destination names (like VTR_1, VTR_2) 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.
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 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 2 or more matrices; more specifically the path (consisting of 1 or more Tie Wires) which links a Destination of one matrix to a Source of another matrix.

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

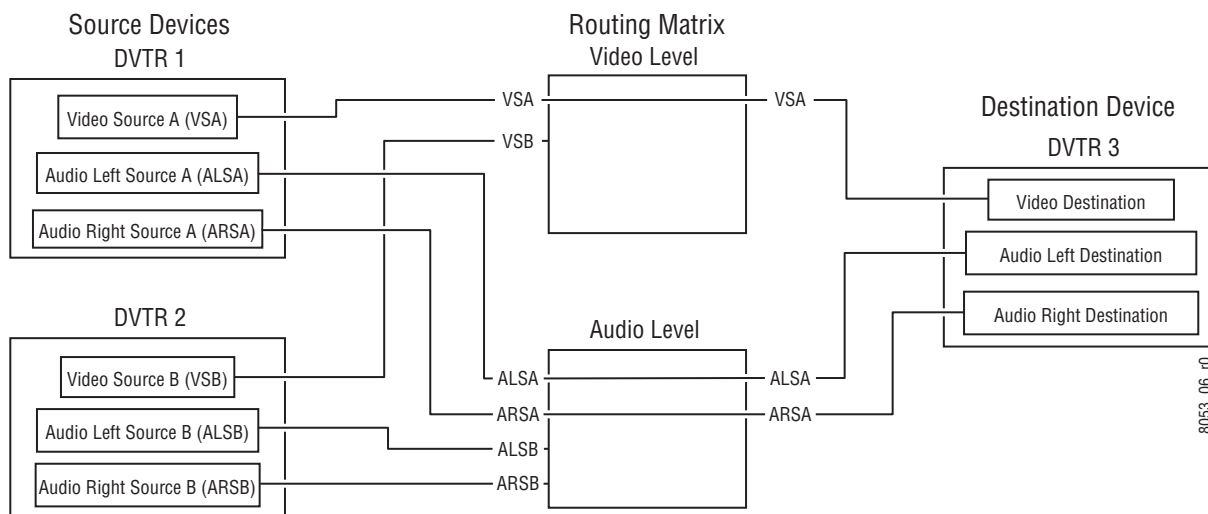
Sources consist of input signals to the router, and Destinations are output signals from the router. An individual Source or Destination may contain more than one signal. For example, a Source may consist of a video and a key signal; be separate Red, Green, and Blue video signals; or have a video signal 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](#).

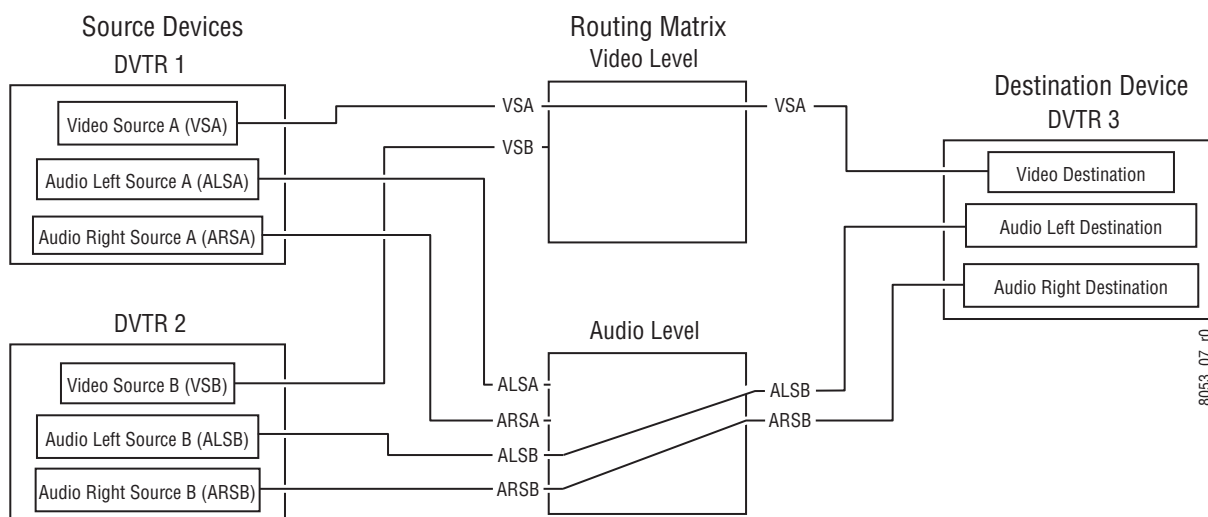
Figure 10. Traditional All-level Take



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



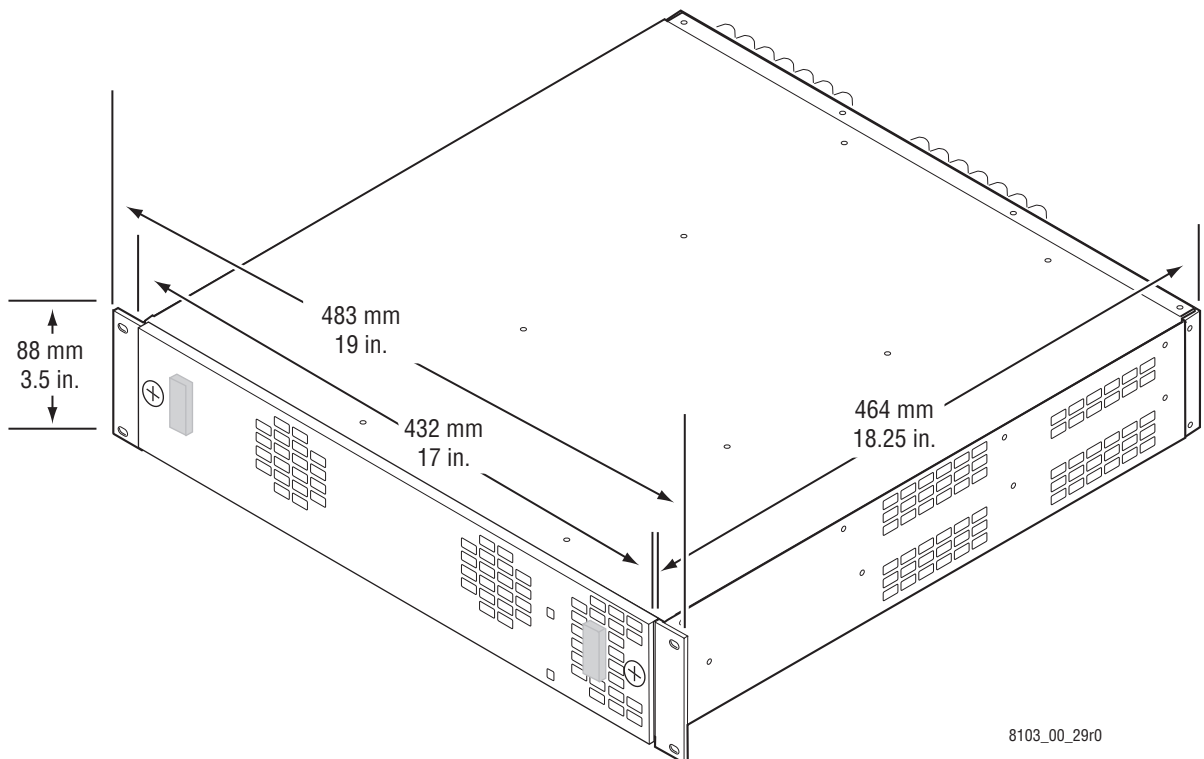
Installation

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 12](#). Cooling is by internal fans mounted on the Controller and Power Supply modules.

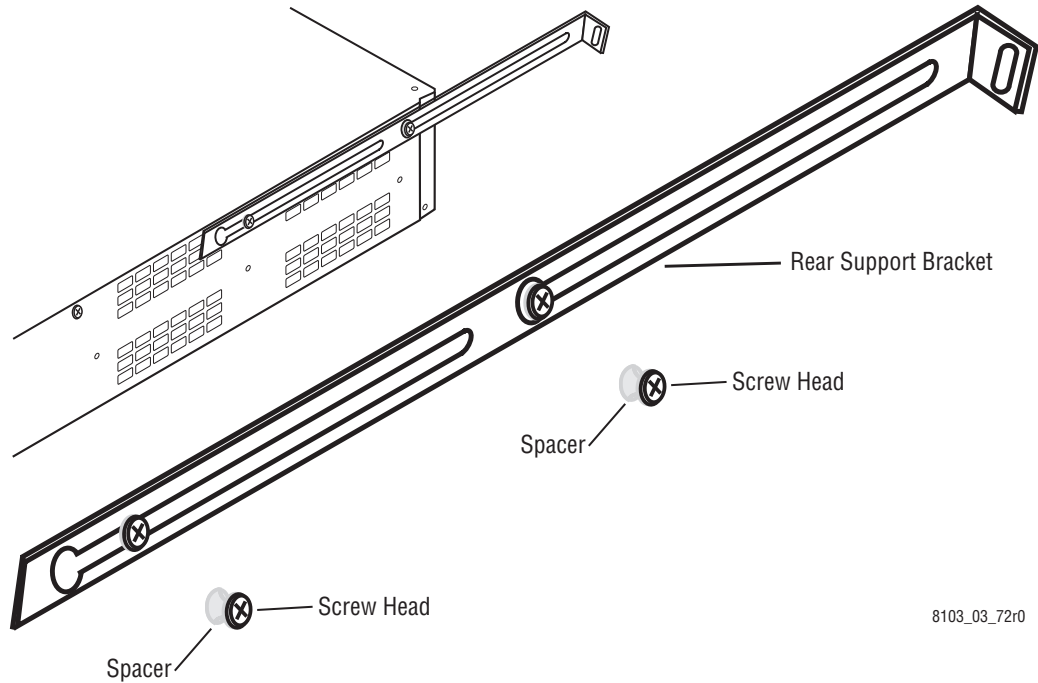
Figure 12. Encore System Controller Frame



8103_00_29r0

Each side of the Encore Controller frame has two screws with spacers (Figure 13). 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 13. Encore Rear Support Bracket



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

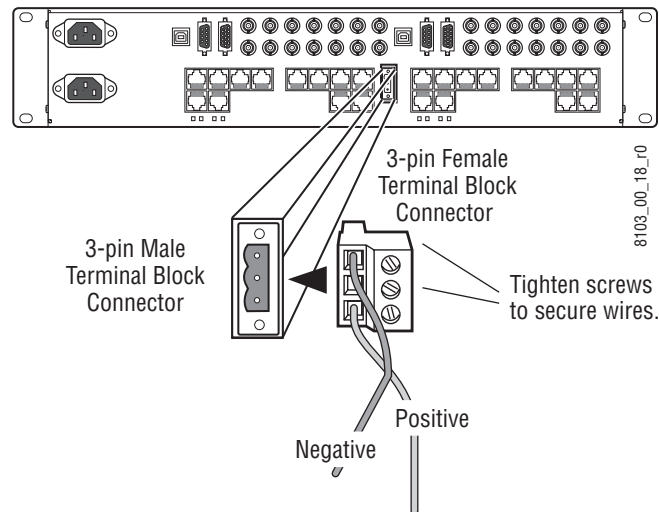
The Encore System Controller frame comes with one power supply. Redundancy is provided by adding an additional power supply.

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 14](#).

Figure 14. 48V DC Connection



System Controller Frame Module Slots

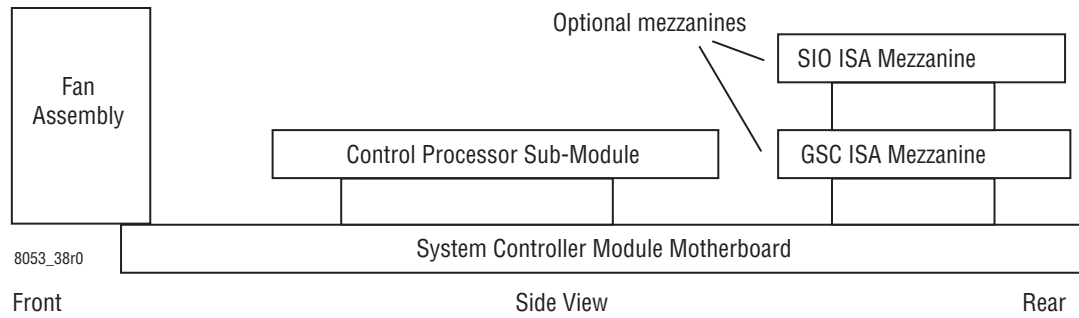
The Encore System Controller Frame has two slots for System Controller (SCB) modules, and two slots for power supply modules (see [Figure 3 on page 21](#)).

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 63](#)) 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 15](#)).

Figure 15. System Controller Components



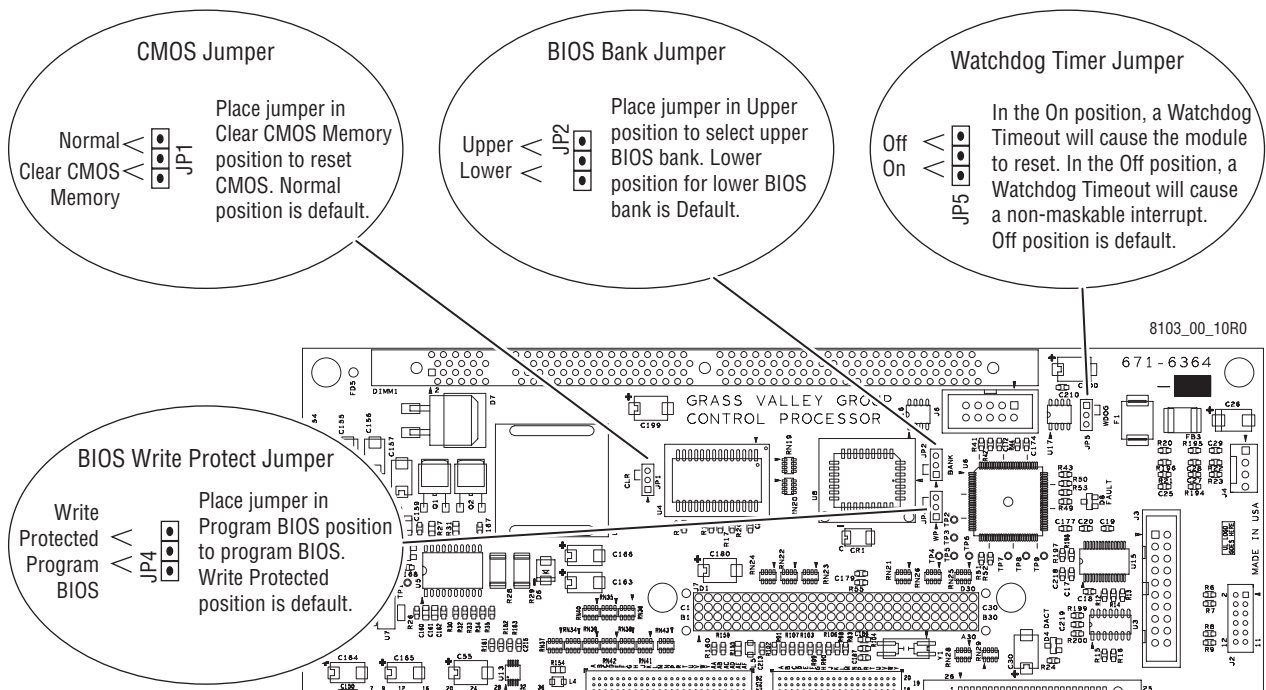
Control Processor Submodule Jumper Settings

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 16](#)):

- 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 16. 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 1. 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

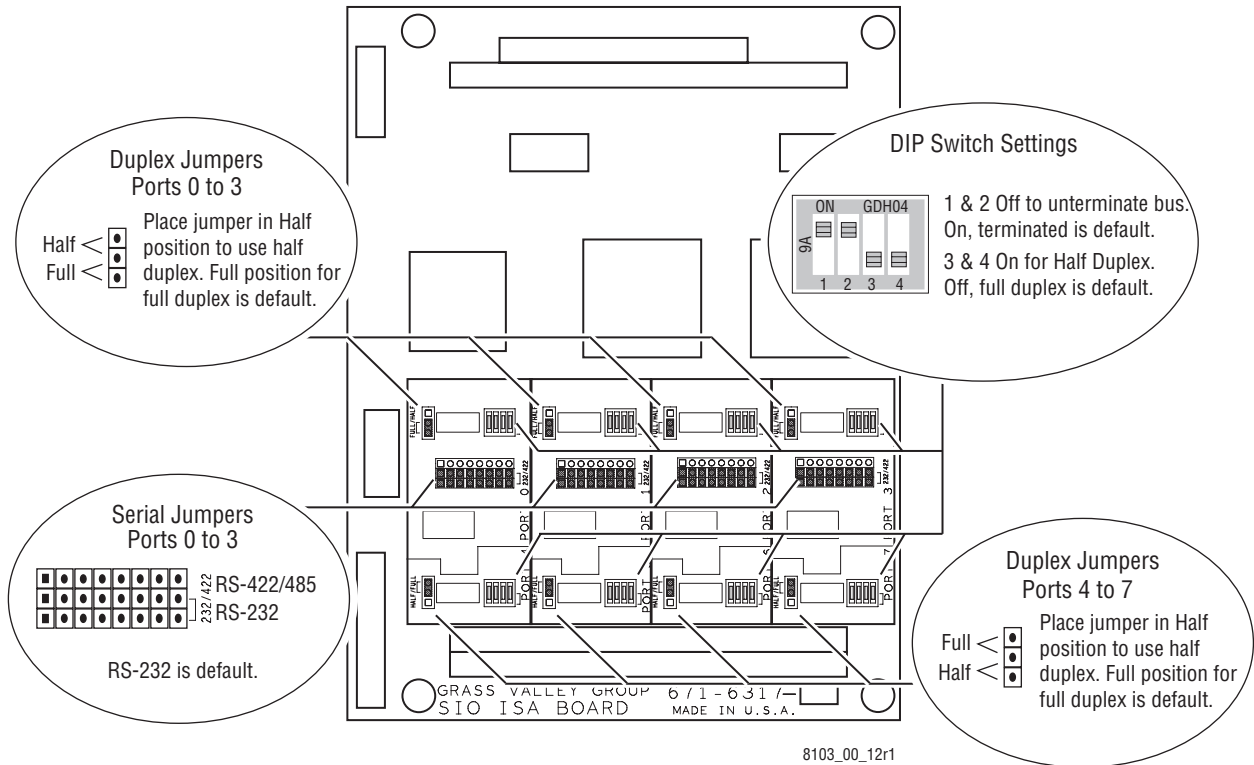
Eight RJ-45 ports are controlled by the SIO ISA mezzanine. The ports are labelled 0 to 7 on the mezzanine. See [Table 1](#) for port assignments and signal types. Each port has a Duplex Jumper, which allows you to choose Half or Full Duplex. The default setting is **Full**; if you want to use the **Half** 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 17](#) for jumper and DIP switch locations. Also see [Serial Cabling RS-232 on page 46](#) and [Serial Cabling RS-422/485 on page 47](#) for additional information.

Figure 17. 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 15 on page 32](#). The GSC mezzanine has no user adjustments.

GSC control panel cabling is described on [page 42](#).

System Cabling Example

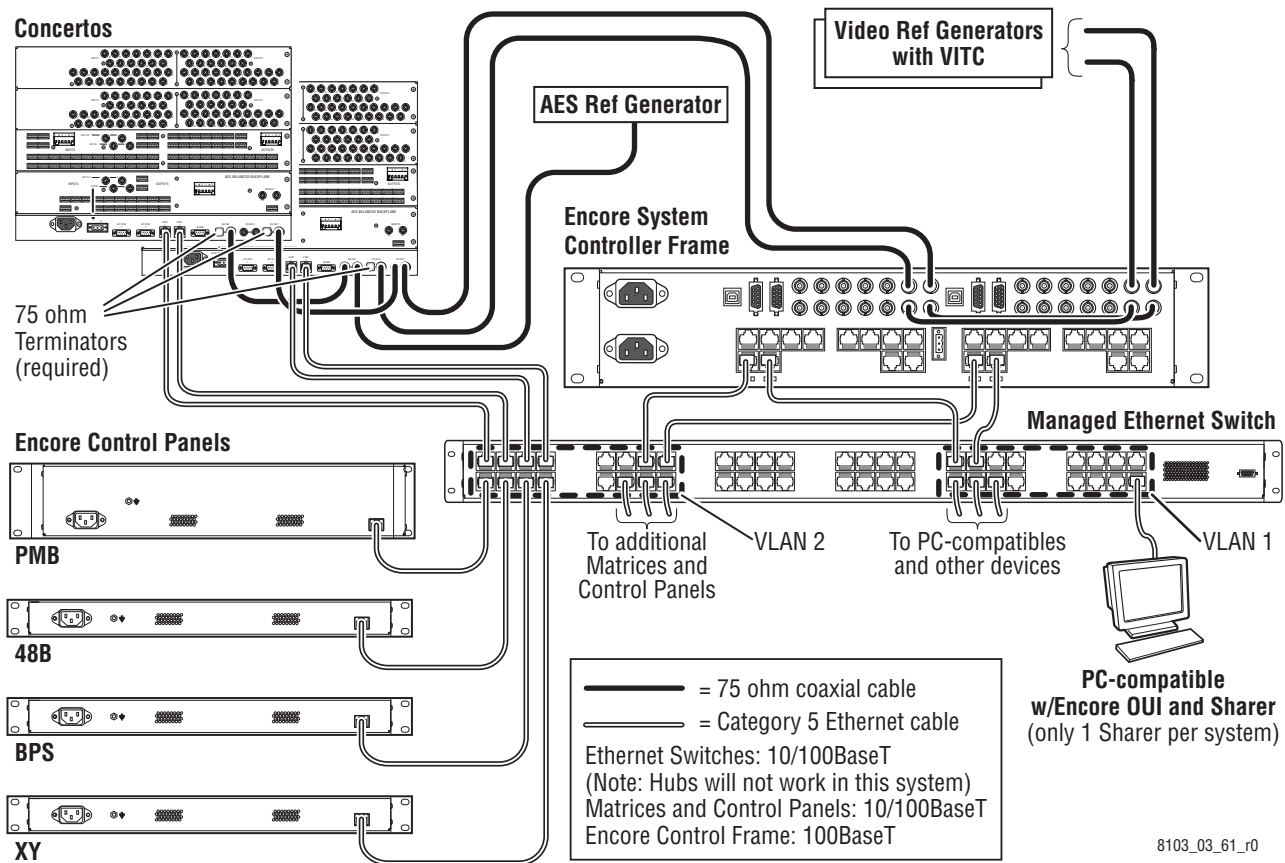
[Table 2](#) list the connectors on the Encore System Controller Frame. The Gender column indicates the gender of the connector found on the frame. The Details column contains information to assist in using the connector.

Table 2. 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 18](#) 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 18. 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.

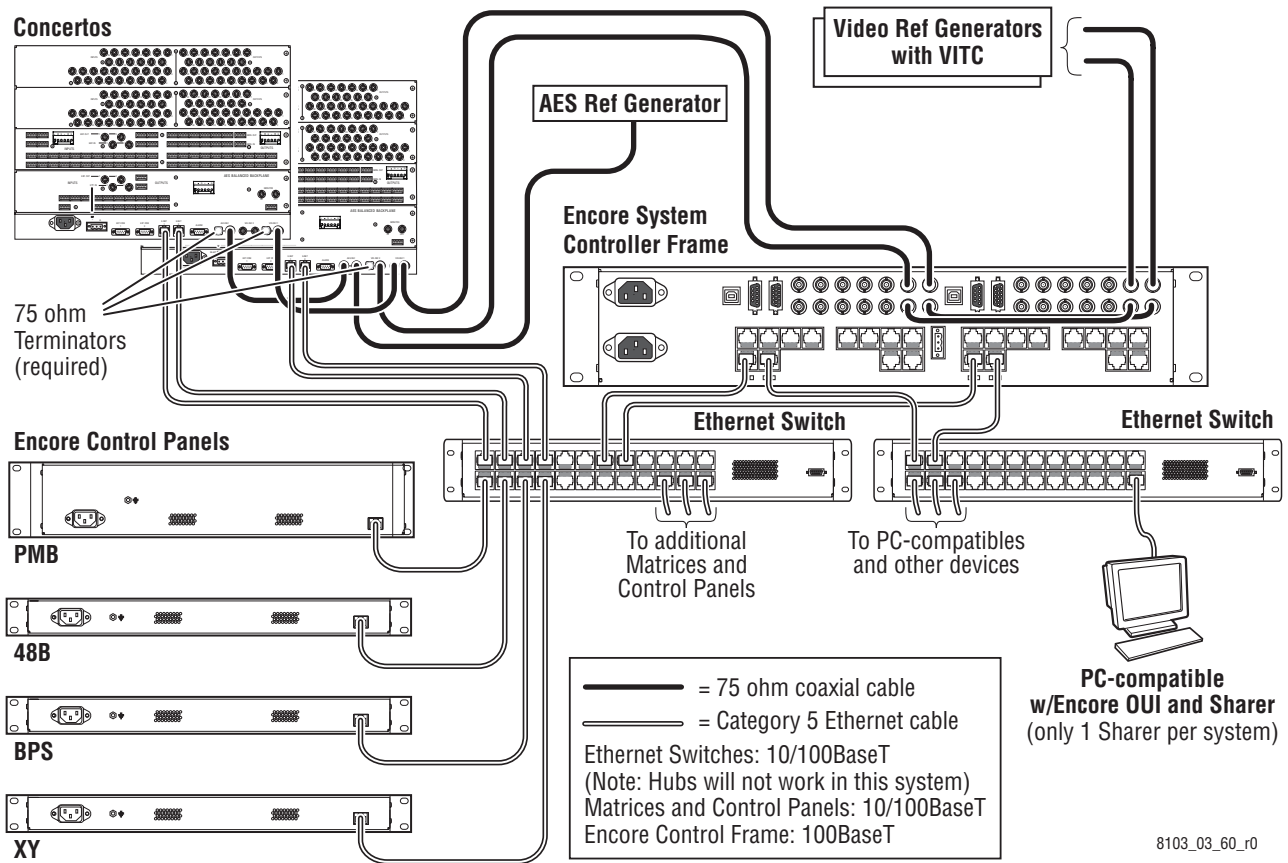
Serial and Ethernet connections cannot be routed internally from one side of the System Control frame to the other, so a separate connection is shown from each System Controller to the device or switch.

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 19 shows the same system configuration using two switches.

Figure 19. 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.

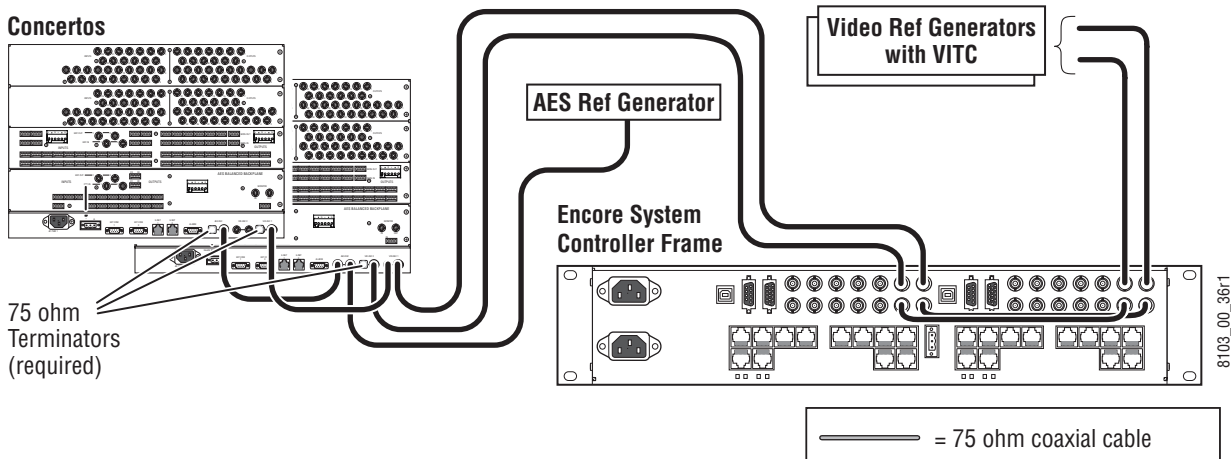
The Encore control system switches the matrices at Frame boundaries, not at Field boundaries (as in the Series 7000 control system). Frame based switching is required to ensure Dolby E compliance.

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 20](#) 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 20. Video and AES References



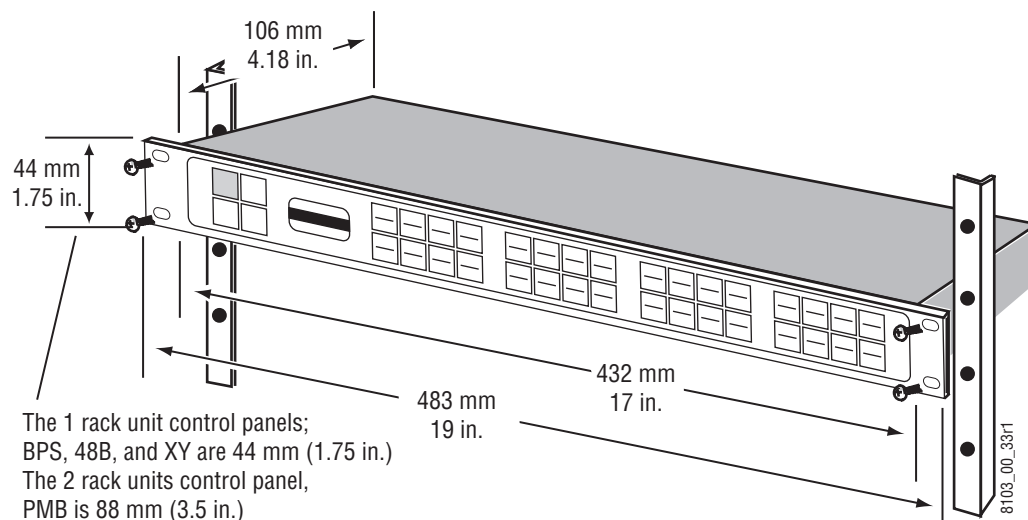
Control Panels

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 21](#).

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 21. Rack Mount Control Panel Installation

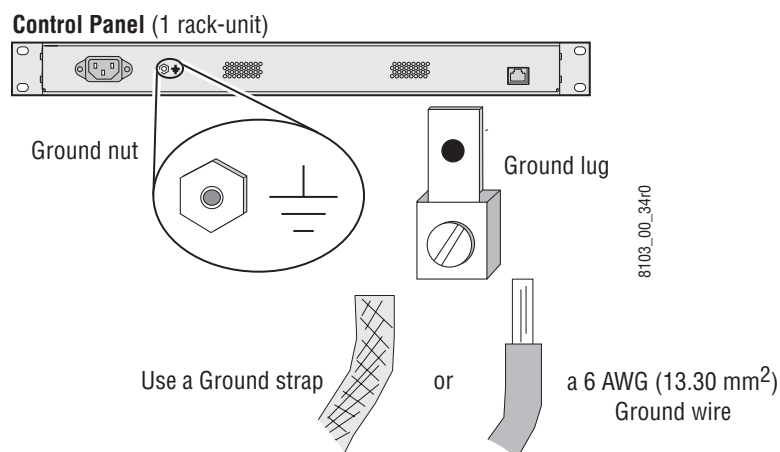


Control Panel Grounding

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 22](#).

1. Attach either a 6 AWG (13.30 mm²) wire or a ground strap to lug.
2. Attach lug to ground post.
3. Secure with nut.

Figure 22. Control Panel Ground



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 40](#) for information about Ethernet and GSC cabling requirements.

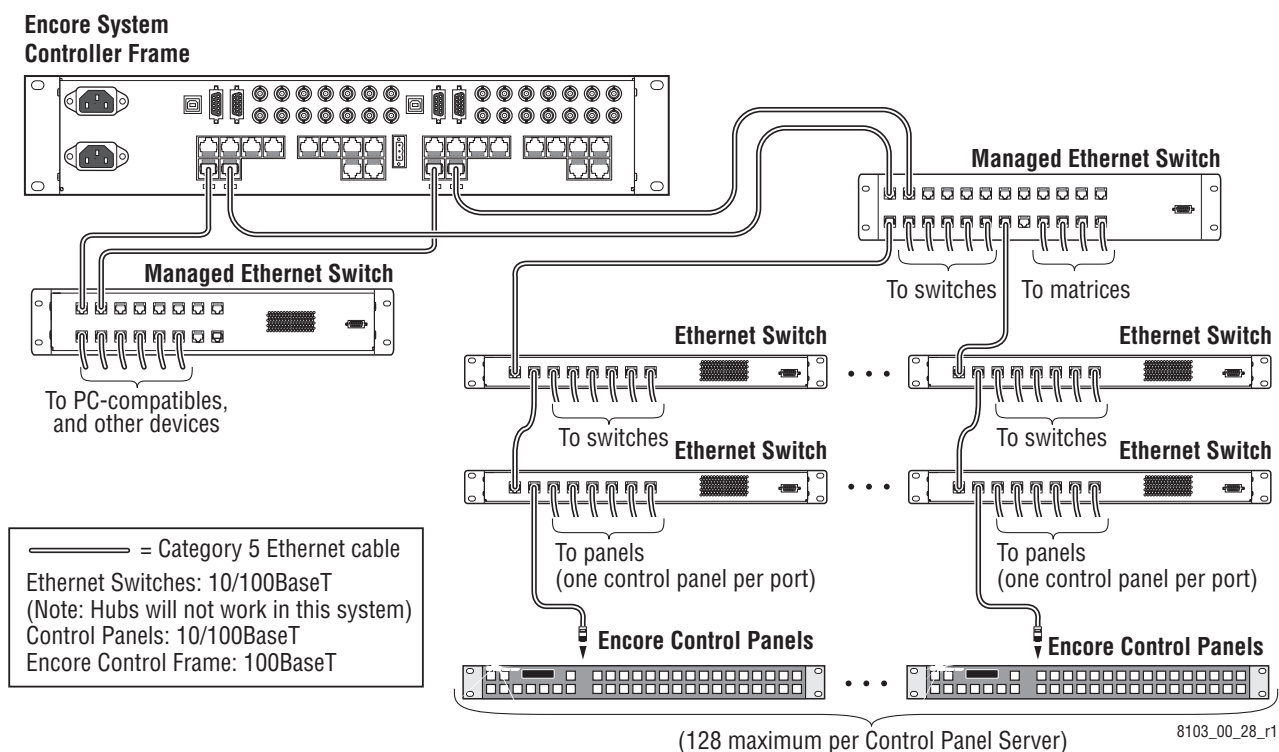
Control Panels Cabling

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 19 on page 37](#).

The switches can be layered up to a maximum of five deep. Always use the fewest layers practical for the installation. [Figure 23](#) 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 23. Control Panels on Three Layers of Switches

**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 24. GSC Control Panels, Redundant Operation SCB Cabling

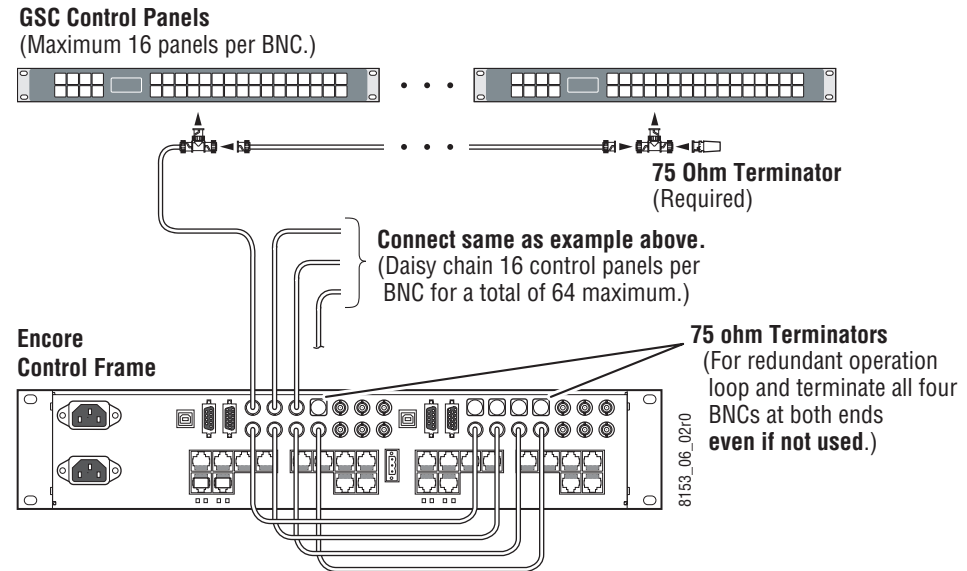
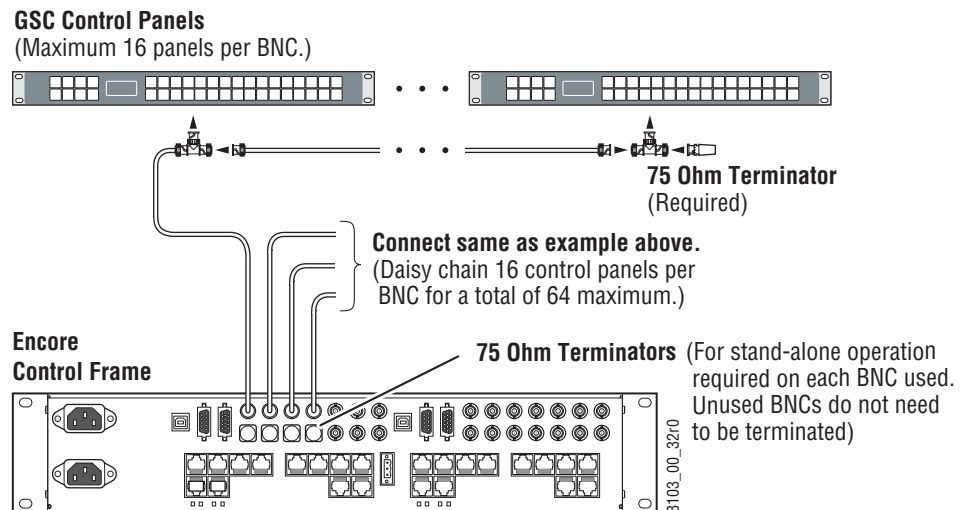


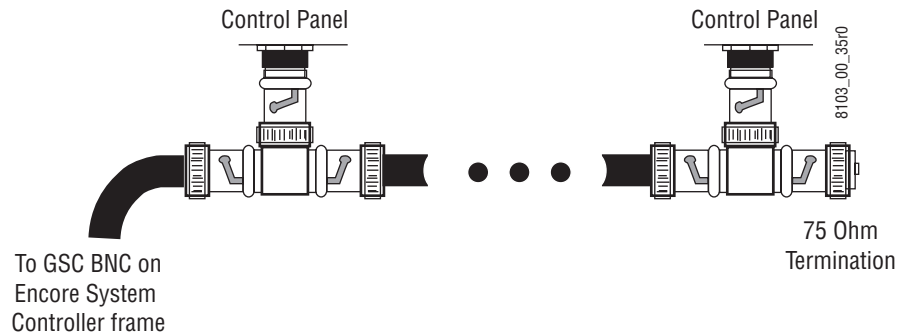
Figure 25. GSC Control Panels, Stand Alone SCB Cabling



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. (300 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 26](#)).

Figure 26. Control Panel Bus T-Connections and Termination



Joystick Override

ENC-48B-GPI, ENC-BPS-GPI Control Panels

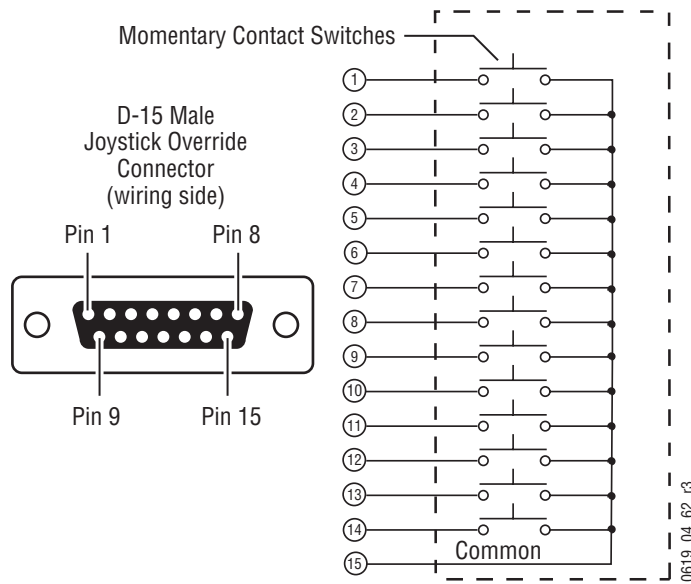
Two control panels (ENC-48B-GPI and ENC-BPS-GPI) are available that support Joystick Override (JSO). Joystick Override is commonly used to switch crosspoints from a switch mounted at the top of the joystick (Iris and Black Level control) on a television camera remote control unit (RCU). This function is used by the camera video engineer to rapidly switch the outputs from multiple cameras to his monitoring station.

The ENC-48B-GPI and ENC-BPS-GPI control panels are equipped with a 15-pin D-connector 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 15-pin D-connector.

48B-GPI, BPS-GPI JSO Pinouts

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

Figure 27. Joystick Override Pinouts



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.

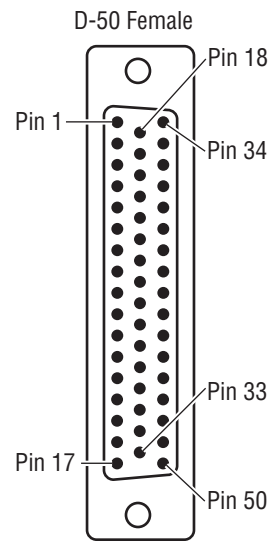
JSO On Updated SMS7000 GSC Control Panels

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).

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 3](#).

Table 3. 50-Pin D Connector

	Pin #	Signal	Pin #	Signal
	1	Input 1	26	Input 13
	2	Input 1	27	Input 14
	3	Input 2	28	Input 14
	4	Input 2	29	Input 15
	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
	12	Input 6	37	Input 19
	13	Input 7	38	Input 19
	14	Input 7	39	Input 20
	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 4](#).

Table 4. Opto-Isolator Current Limiting Resistors

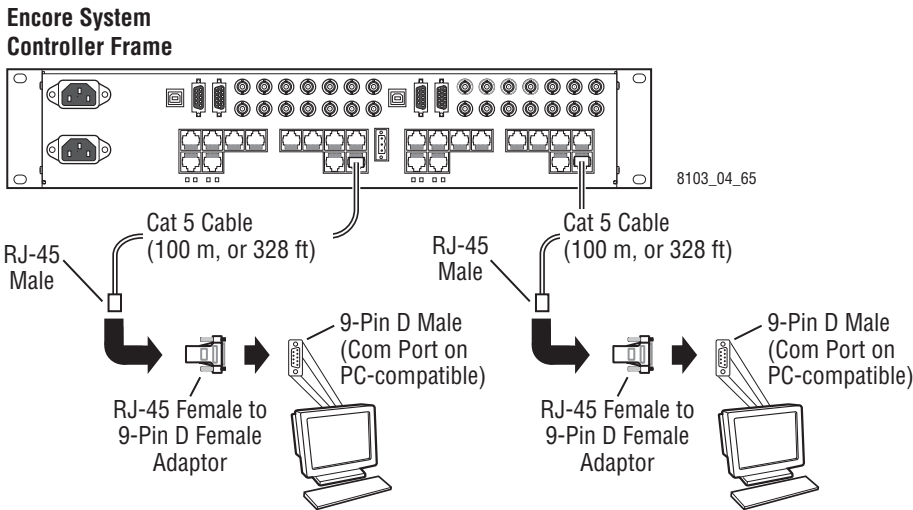
Input Voltage Range	Resistor Value, 1/2 W
+2V to 10.5V	470 Ohm (minimum)
+3V to 21.5V	1000 Ohm
+5V to 34.5V	2200 Ohm (default)

Serial Cabling RS-232

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

COM 1 (CONSOLE) 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 33](#) for information on port settings. Use the pinouts in [Table 6 on page 57](#).

Serial Cabling RS-422/485

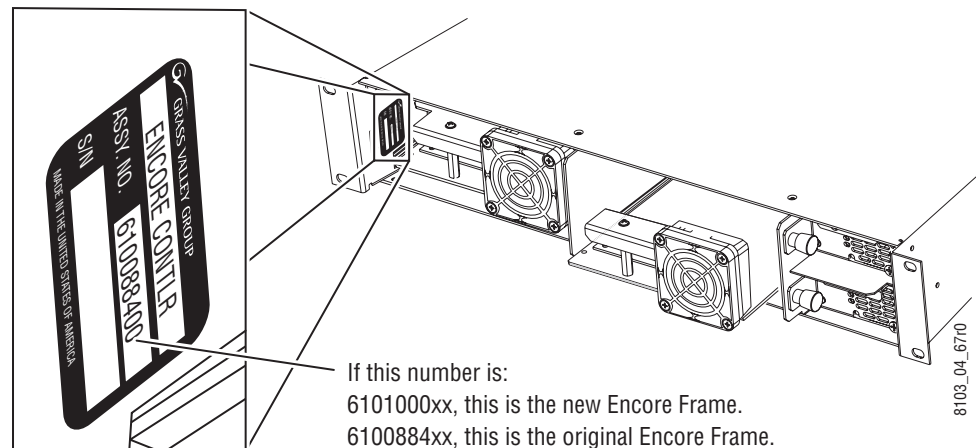
Two different sets of pinouts have been used on the serial RJ-45 connectors on the Encore Control frame backplane. The early model Encore Control frame (part number 6100884xx) port is non-conforming. Later model Encore Control frame (part number 6101000xx) port is conforming.

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).

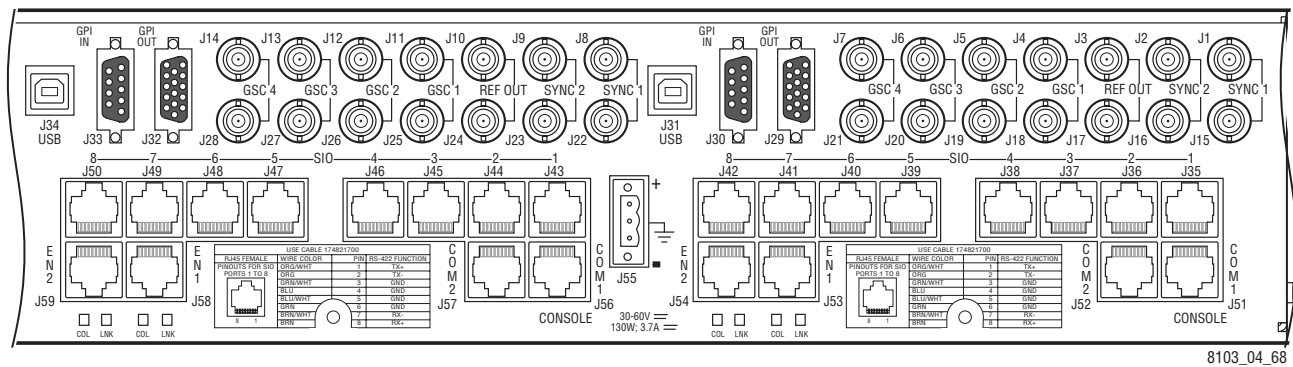
Figure 29. Frame Part Number



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.

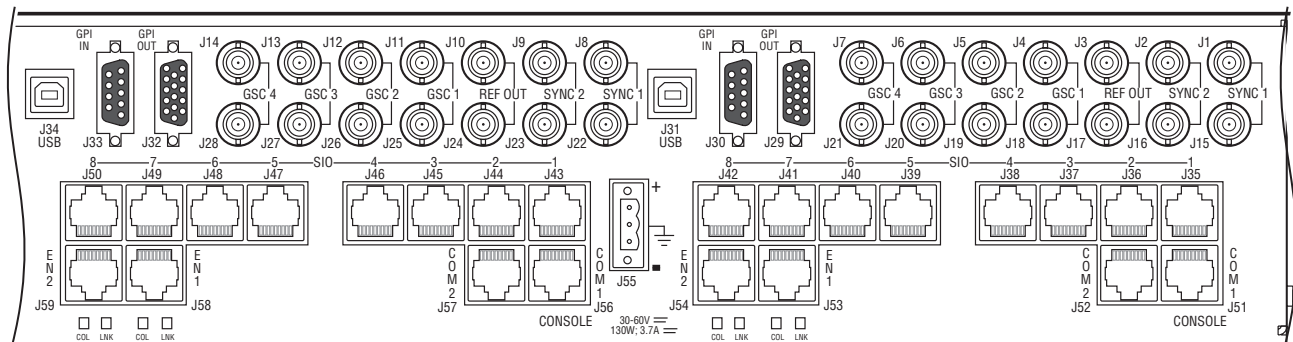
Figure 30. Backplane for Frame 6101000xx



Early Model Frame 6100884xx Backplane

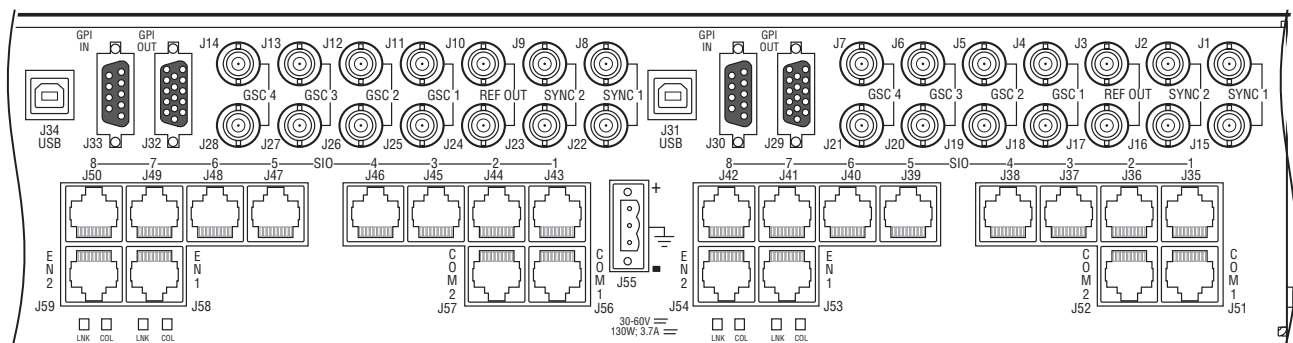
Encore Control frames with part numbers in the 6100884xx range will appear as one of the two types shown in [Figure 31](#).

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

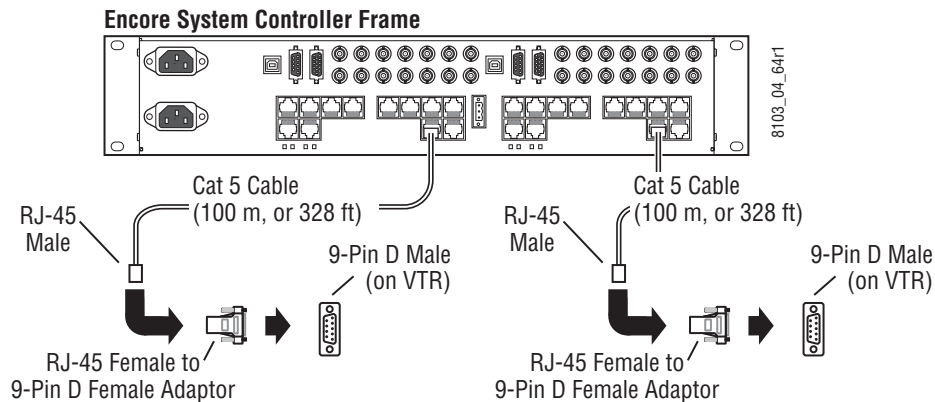
The earlier 610088400 frame had silkscreen printing that incorrectly identified the Link and Collision LEDs (they were swapped).

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

COM 2

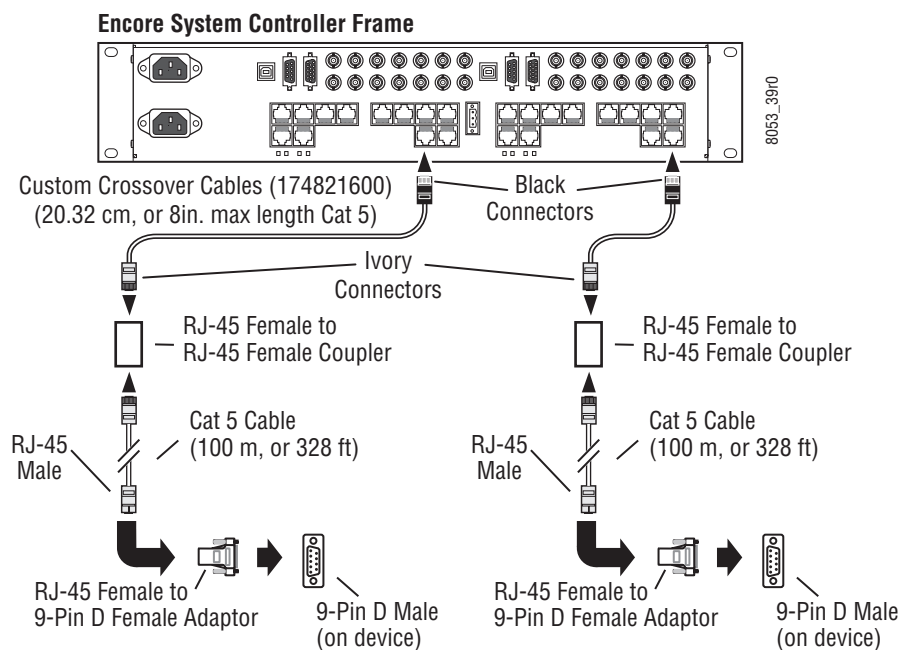
COM 2 is an RS-422/485 serial connection that can be used for connecting to serial devices such as a VTR or an automation system. The pinouts and cabling for the port is determined by the type of Encore Control Frame. This is a non-redundant port; for redundant RS-422/485 connections use ports 1, 2, 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



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 58). Do not have both crossover.

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



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.

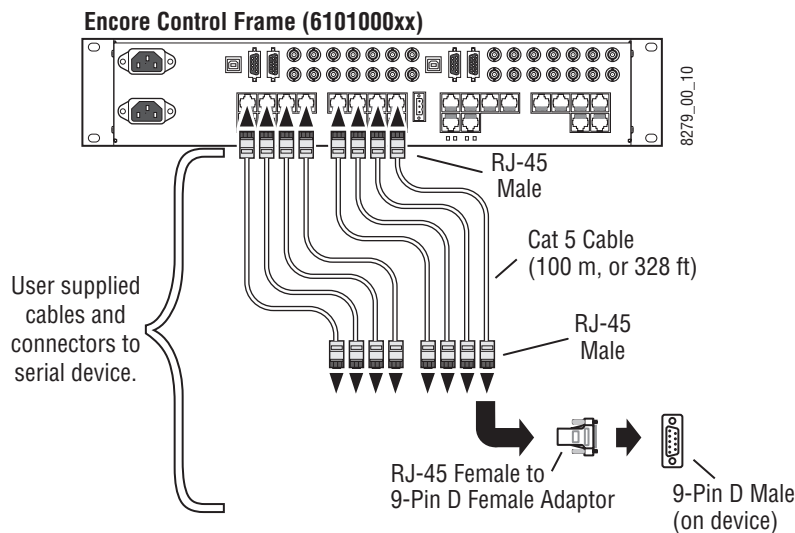
Nonredundant Frame 6101000xx

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 noncon-

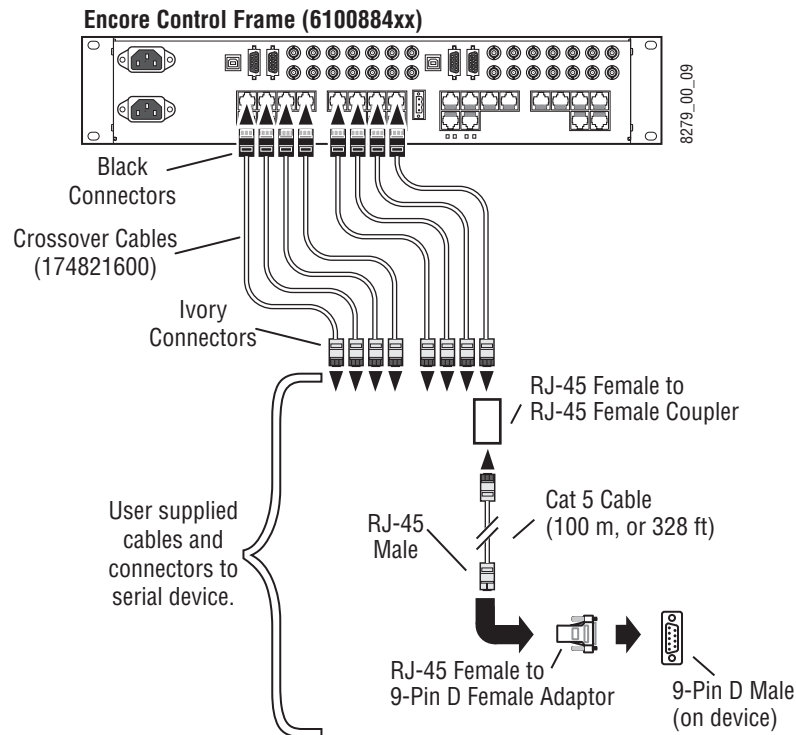
forming (black connector end of the cable) pinouts at the Encore Control frame to conforming pinouts (ivory connector end of the cable. See [Figure 35](#).

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-through) 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 adapters, 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 adapters, 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

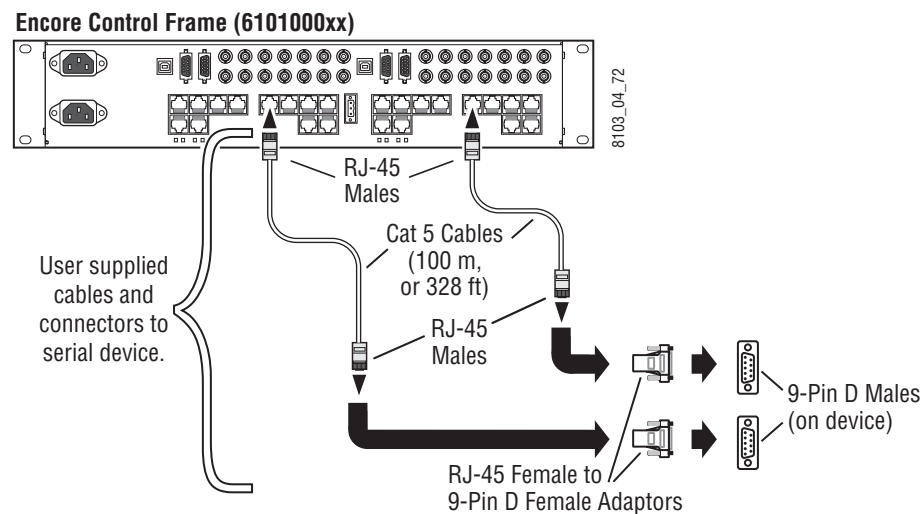


Figure 37 shows redundant cabling using an Encore frame 6100884xx. There is a connection from **SIO Port 5** on the Encore frame from the Controller in Slot 1 to a serial port on the controlled device. There is another connection from **SIO Port 5** on the Encore frame from the Controller in Slot 2 to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

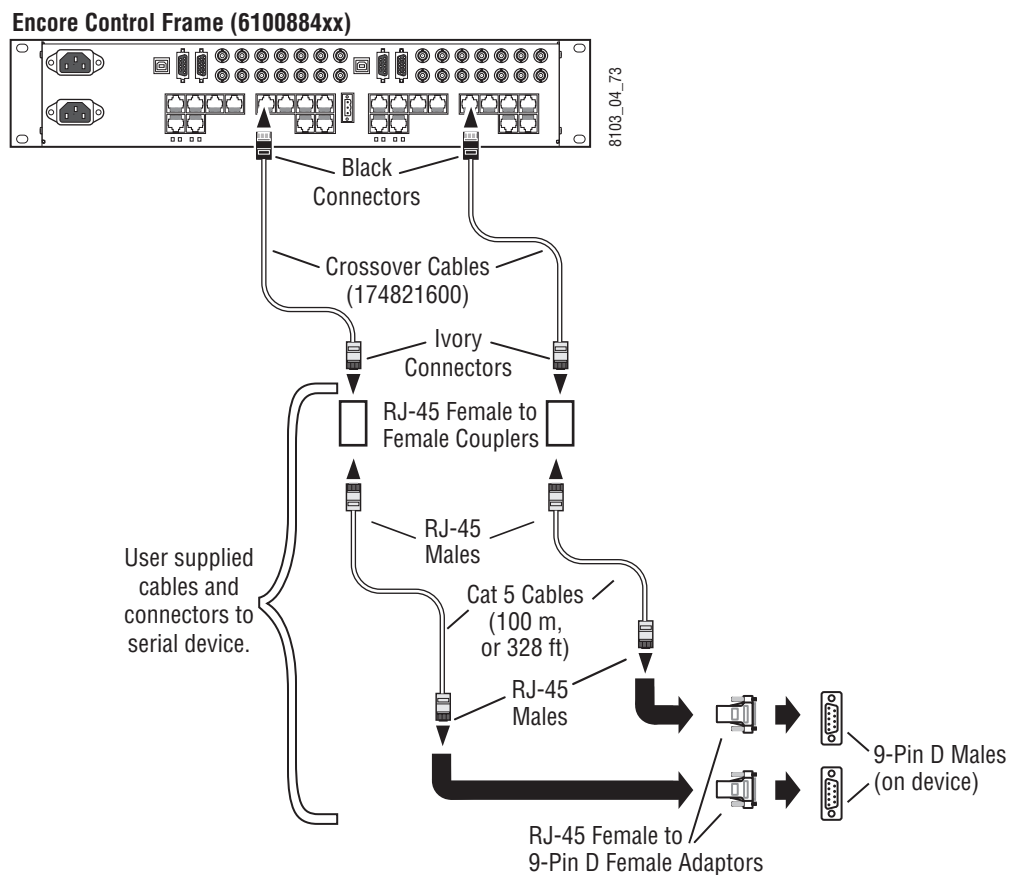
The RJ-45 serial connectors on this frame use pinouts that do not conform to off the shelf Cat 5e Ethernet cable pinouts. The crossover cables 174821600 available in Kit # are custom designed to change the pinouts from the nonconforming (black connector end of the cable) pinouts at the Encore Control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



Redundant Cabling for Device Control of Encore

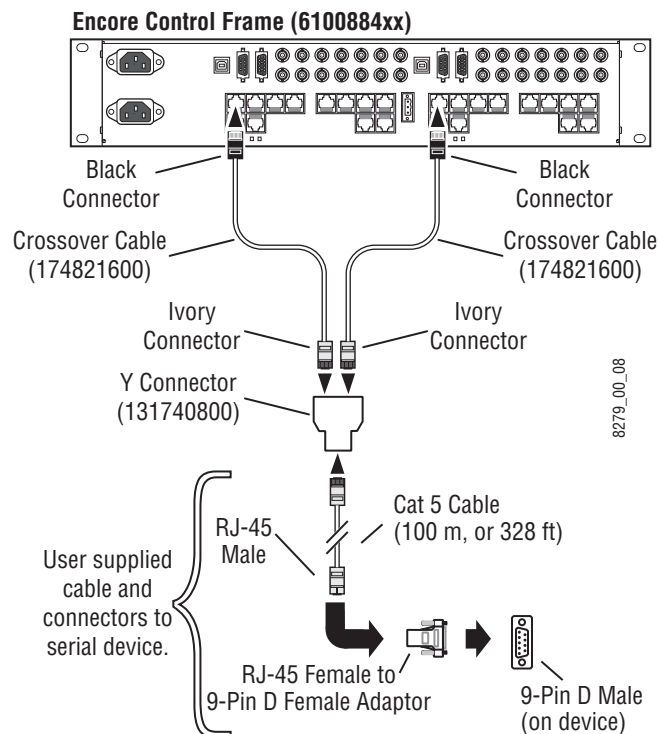
Redundant serial port cabling where a device controls Encore requires the Serial Interface Y Cable Option (Y cable). The Y cable is needed when a device such as an automation system on a PC-compatible, or a router is using a single serial port to control Encore. The Y cable option contains enough cables 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 nonconforming 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 connector must be the same length. Redundant connections need to be made within an area $\leq$ to the length of the two cables. See [Figure 38](#).

Figure 38. Redundant Cabling



The two Encore System Controllers must have identical hardware and software 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) type cabling with RJ-45 connectors from the Y connector to either the device or the adaptor on the device.

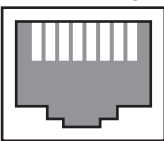
Control Frame Pinouts

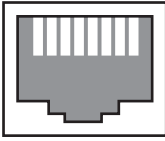
RJ-45 Pinouts

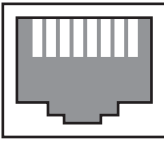
The Encore Control Frame has twelve RJ-45 connectors per slot:

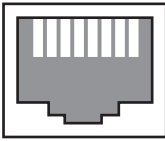
- **EN 1** and **EN 2** are used for Ethernet connections. They require a patch cable if connecting to a switch, or a crossover cable if connecting directly to a PC-compatible.
- **COM 2** and the eight connectors labelled **SIO 1** to **8** are RS-422/485 serial connections. There are different pinouts for RS-422/485 depending on which Encore Control frame is used. See [Encore Control Frame Identification on page 47](#) 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 33](#).
- **COM1 CONSOLE** connector is a RS-232 serial connection used by either a terminal or a terminal emulator on a PC-compatible.

Table 5. 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	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

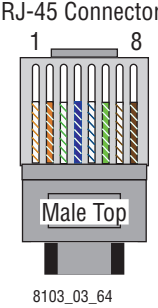
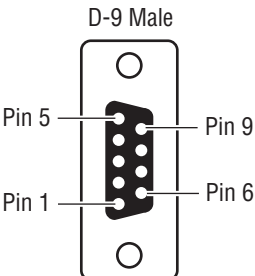
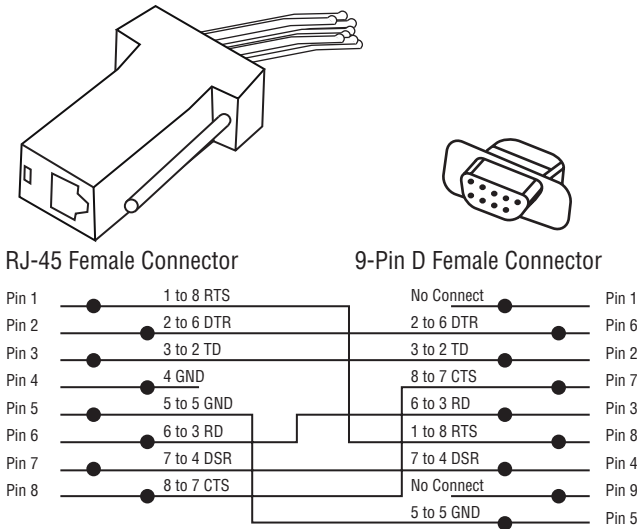
RS-422/485 COM 2, Ports 1 to 8 on Encore Frame 6100884xx	Wire Color	Pin	Function
RJ-45 Female 1 8 	Orange White	1	RX+
	Orange	2	No connect
	Green White	3	TX+
	Blue	4	Ground
	Blue White	5	Ground
	Green	6	RX-
	Brown White	7	No connect
	Brown	8	TX-

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

Table 6. 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	
	Orange White	1	RTS	1	No connect	
	Orange	2	DTR	2	TD	
	Green White	3	TD	3	RD	
	Blue	4	Ground	4	DSR	
	Blue White	5	Ground	5	Ground	
	Green	6	RD	6	DTR	
	Brown White	7	DSR	7	CTS	
	Brown	8	CTS	8	RTS	
				9	No connect	
RJ-45 to 9-Pin D Adaptor				RJ-45 Female Connector Pin	9-Pin D Female Connector Pin	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

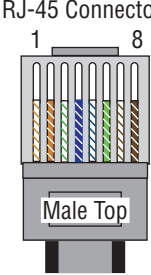
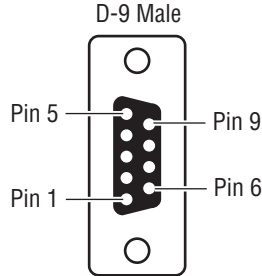
The RJ-45 side of an adaptor will have the pinouts as shown when using RS-232. The D side may change depending on the device.

RJ-45 to 9-Pin D Adaptor Pinouts (RS-422/486)

Table 7 shows the adaptor pin assignments for a RS-422/485 connection on an Encore frame with part number 6100884xx that is NOT using the cross-over cable 174821600.

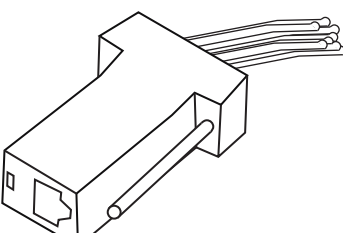
CAUTION The pin-to-pin Cat 5e cable used with this adaptor to connect to the Encore Control frame must be short to minimize crosstalk (suggested ≤ 4 inches).

Table 7. 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		
 RJ-45 Connector 8103_03_64	Wire Color	Pin	Function	Pin	Function	
	Orange White	1	RX+	1	No connect	
	Orange	2	No connect	2	TX-	
	Green White	3	TX+	3	RX+	
	Blue	4	Ground	4	Ground	
	Blue White	5	Ground	5	No connect	
	Green	6	RX-	6	Ground	
	Brown White	7	No connect	7	TX+	
	Brown	8	TX-	8	RX-	
				9	No connect	

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

RJ-45 Female Connector		9-Pin D Female Connector	
Pin 1	1 to 3 RX+	No Connect 1	Pin 1
Pin 2	2 No Connect	5 to 6 GND	Pin 6
Pin 3	3 to 7 TX+	8 to 2 TX-	Pin 2
Pin 4	4 to 4 GND	3 to 7 TX+	Pin 7
Pin 5	5 to 6 GND	1 to 3 RX+	Pin 3
Pin 6	6 to 8 RX-	6 to 8 RX-	Pin 8
Pin 7	7 No Connect	4 to 4 GND	Pin 4
Pin 8	8 to 2 TX-	No Connect 9	Pin 9
		No Connect 5	Pin 5

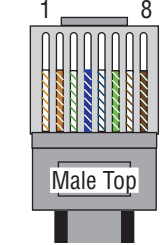


8103_03_71r1

Table 8 shows the adaptor pin assignments for a RS-422/485 connection on an Encore frame with part number 6101000xx or an Encore frame with part number 6100884xx. The Encore frame with part number 6100884xx must use the crossover cable 174821600 which is part of the Serial Interface Y Cable Option.

Table 8. RS-422/485 Pinouts on Encore Frame 6101000xx RJ-45 to 9-Pin D Adaptor

RJ-45 Cable with Male Connector

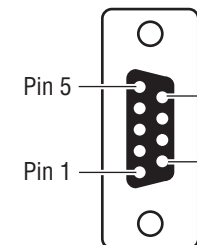


Wire Color	Pin	Function
Orange White	1	TX+
Orange	2	TX-
Green White	3	Ground
Blue	4	Ground
Blue White	5	Ground
Green	6	Ground
Brown White	7	RX-
Brown	8	RX+

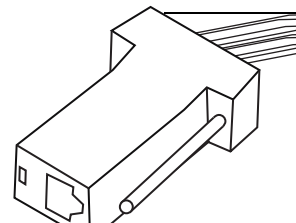
8103_03_64

RS-422/485 Cable with 9-Pin D Male Connector

Pin	Function
1	No connect
2	TX-
3	RX+
4	Ground
5	No connect
6	Ground
7	TX+
8	RX-
9	No connect



D-9 Male



RJ-45 Female Connector

Pin 1	1 to 7 TX+
Pin 2	2 to 2 TX-
Pin 3	3 No Connect
Pin 4	4 to 4 GND
Pin 5	5 to 6 GND
Pin 6	6 No Connect
Pin 7	7 to 8 RX-
Pin 8	8 to 3 RX+



9-Pin D Female Connector

Pin 1	No Connect 1
Pin 6	5 to 6 GND
Pin 2	2 to 2 TX-
Pin 7	1 to 7 TX+
Pin 3	8 to 3 RX+
Pin 8	7 to 8 RX-
Pin 4	4 to 4 GND
Pin 9	No Connect 9
Pin 5	No Connect 5

RJ-45 to 9-Pin D Adaptor

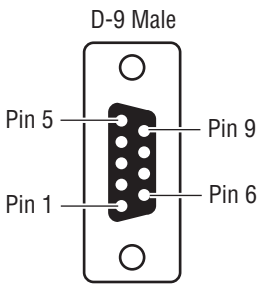
RJ-45 Female Connector Pin	9-Pin D Female Connector Pin	Function
1	7	TX+
2	2	TX-
3	-	No connect
4	4	Ground
5	6	Ground
6	-	No connect
7	8	RX-
8	3	RX+
-	1	No connect
-	5	No connect
-	9	No connect

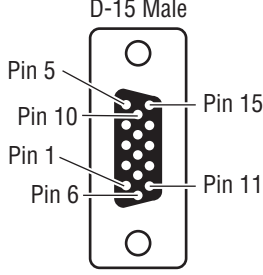
The RJ-45 side of an adaptor will have the pinouts as shown when using RS-422/485. The D side may change depending on the device.

GPI Pinouts

General Purpose Interface (GPI) pinouts are in [Table 9](#). The **GPI IN** is a 9-pin D male connector and the **GPI OUT** is a 15-pin D male connector.

Table 9. GPI Pinouts

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

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

GPI Out Encore Panel Server State Indication

GPI Out pin 14 (Relay 4) and pin 9 (common return) are used for relay closure to indicate the Encore Panel Server/RCL Server Supervisor/Subordinate state.

Pin 14 which is normally open will close to indicate the Supervisory 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. Contact Customer Service. (See [Contacting Grass Valley on page 4.](#))

Modules

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

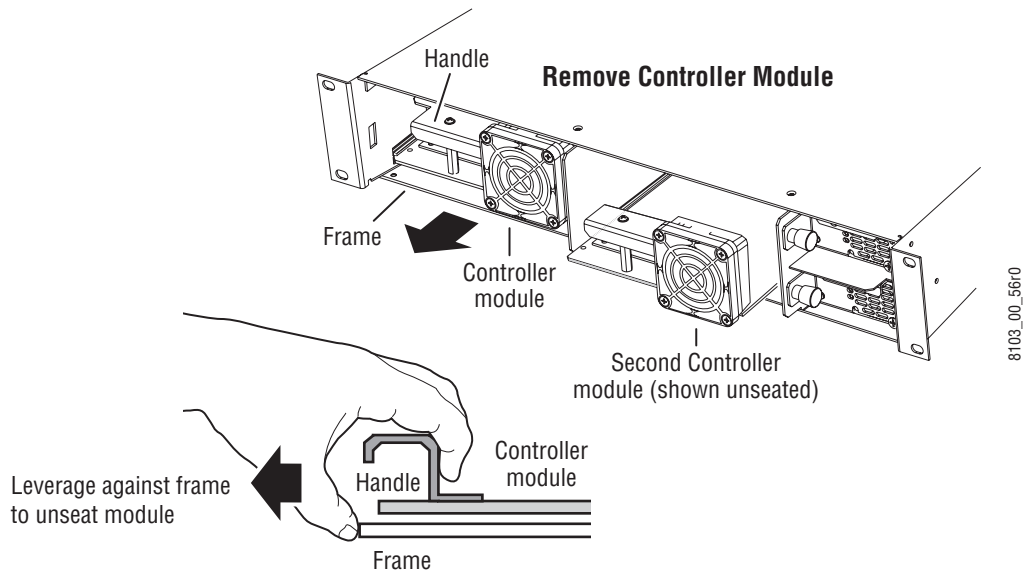
CAUTION Static sensitive components are present which may be damaged by electrostatic discharge. Use anti-static procedures, equipment and surfaces during servicing.

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.

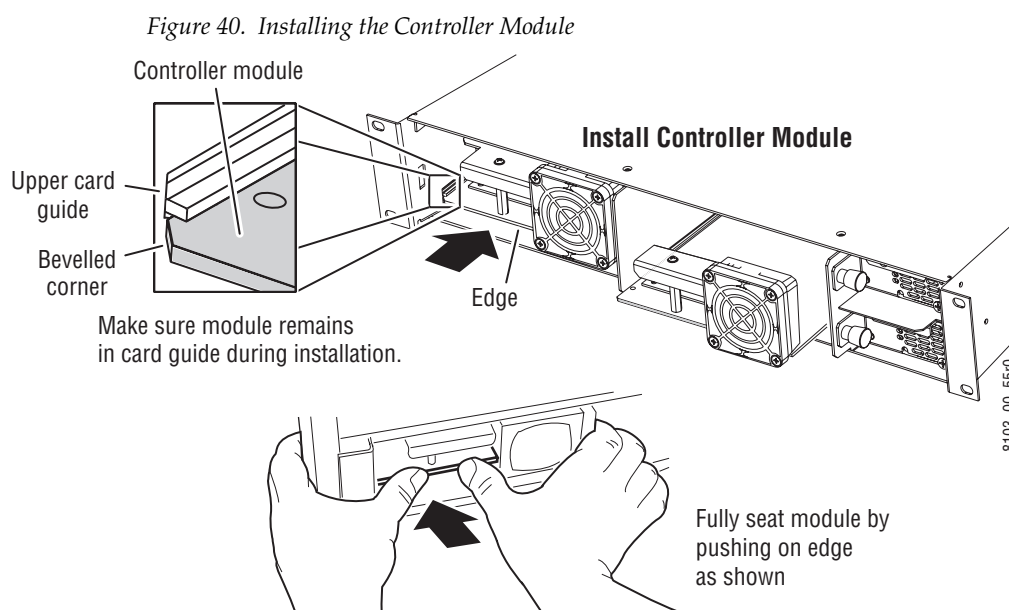
To Insert System Controller Modules

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](#).

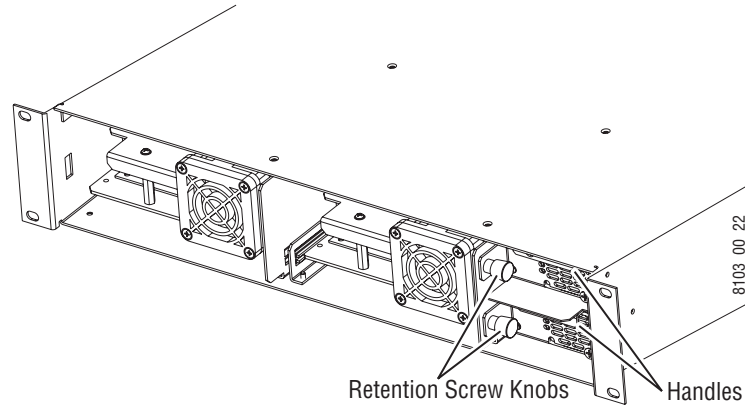


CAUTION Multi-pin module connectors can become misaligned and cause damage to the backplane and interconnect. Use caution when inserting modules.

Power Supply Modules

Refer to [Figure 41](#) for the following procedure.

Figure 41. Power Supply Modules



To Remove Power Supply Modules

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

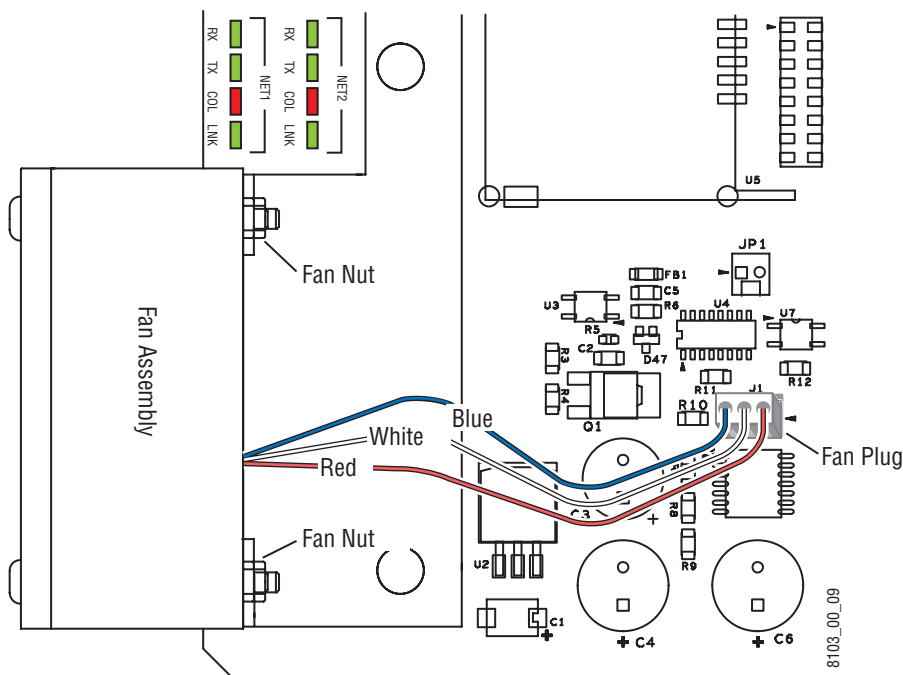
See [Figure 42](#) for the location of the fan unit and plug.

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.

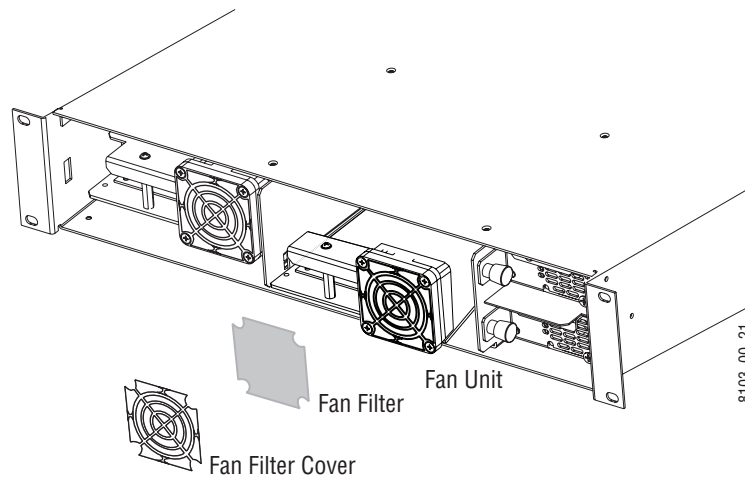
2. Remove the Fan Filter.

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



System Controller Board (SCB) Time/Date Synchronization

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).

System Date

The system date on the Encore SCB can be set via the system controller web page. The date is displayed on the console as part of the header for any error or event message.

The date set java applet on the Encore SCB requires the IE browser on the PC running NetConfig be equipped with the Java Virtual Machine (JVM). Due to legal issues with Sun Microsystems the Microsoft JVM has been discontinued. A JVM from Sun (for Win2k and XP Pro) is available for download from: <http://www.java.com/en/download/help/5000010400.xml>

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.

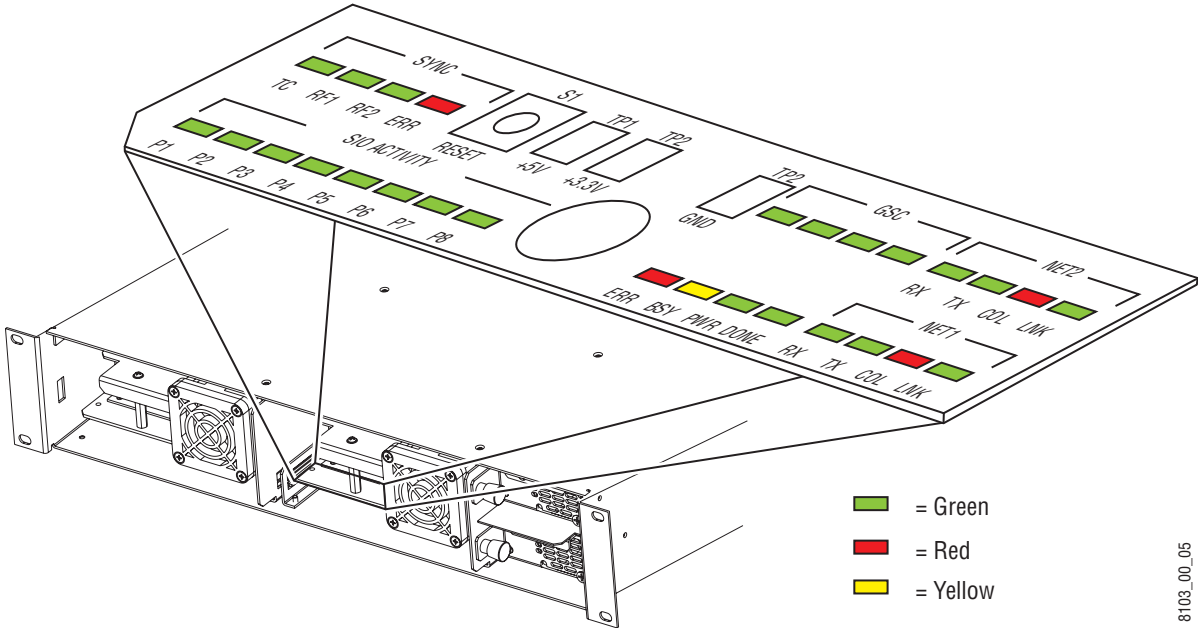
Note Encore SCB system date changes are not reflected immediately. The SCB needs to be rebooted before the date changes will take effect.

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 44. System Controller LEDs



8103_00_05

The LEDs found on the System Controller module are shown in [Table 10](#).

Table 10. 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
				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

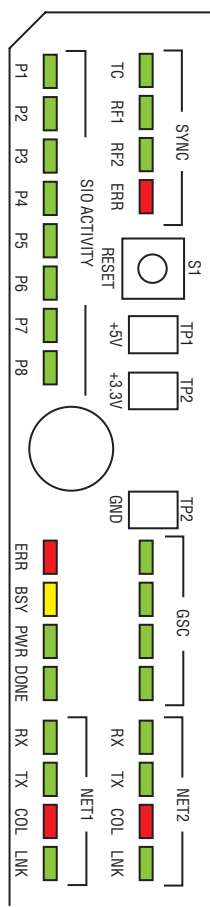
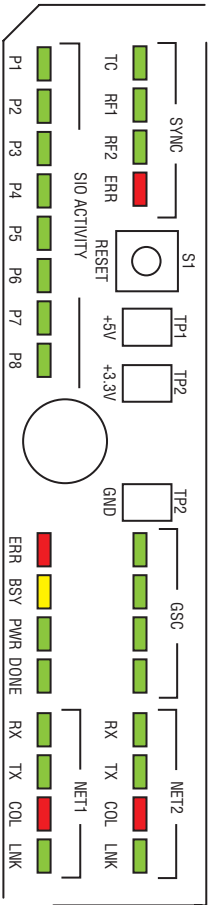


Table 10. System Controller LEDs - (continued)

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 45. Power Supply LEDs



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

The Encore SNMP agent allows SNMP Manager applications to monitor the subsystems shown in [Table 11](#).

Table 11. SNMP 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

In addition to reporting the status of the 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.

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. Please see *Third Party SNMP Managers on page 75* for detailed 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 46. 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 47. System Controller Application Configuration Window

Configuration

[System Controller Description](#)
[Application Configuration](#)
[System Controller Network](#)

System Controller Configuration

☒	Panel Server Application
☒	Router Engine
☐	Tie Line Manager
☐	Reboot

Update configuration Reset configuration

SNMP Service: Disabled
Soft Panels : 0

Enter License Key

Asset Tag : none
Location : none

5. Click on **Enter License Key** button.

Figure 48. Enter License Key Window

Licensing Screen - Microsoft Internet Explorer

License Key:

Submit Cancel

6. Enter License Key in text box and click **Submit**.
7. Verify that the System Controller Application Configuration window now shows **SNMP Service: Enabled**.

Figure 49. SNMP Service Enabled

The screenshot displays the 'System Controller Configuration' web page. At the top, there is a blue header with the 'Product Web Access' logo. Below the header, the page is divided into two main sections. On the left, under the 'Configuration' heading, there are four links: 'System Controller Description', 'Application Configuration', 'System Controller Network', and 'System Controller Configuration'. The 'System Controller Configuration' link is highlighted. On the right, the 'System Controller Configuration' section contains a table with four rows of configuration options. The first two rows, 'Panel Server Application' and 'Router Engine', have their checkboxes checked. The next two rows, 'Tie Line Manager' and 'Reboot', have their checkboxes unchecked. Below the table are two buttons: 'Update configuration' and 'Reset configuration'. Underneath these buttons, the status is displayed as 'SNMP Service: Enabled' and 'Soft Panels : 0'. Below this status, there is a button labeled 'Enter License Key'. At the bottom of the page, there are two input fields: 'Asset Tag : none' and 'Location : none'.

Configuration	System Controller Configuration
System Controller Description	☒ Panel Server Application
Application Configuration	☒ Router Engine
System Controller Network	☐ Tie Line Manager
	☐ Reboot

Update configuration Reset configuration

SNMP Service: Enabled
Soft Panels : 0

Enter License Key

Asset Tag : none
Location : none

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. Refer to the *NetCentral TV Facility Monitoring System User Guide Software Version 4.0* for more information.

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, and
- THOMSON-MATRIX-MIB

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 an 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 the `gvgTtCfgEntryStatus(1.3.6.1.4.1.4947.2.1.3.3.1.4).index`,

- Where index is the value returned in [Step 1](#).

In this case generate a SET request for

`1.3.6.1.4.1.4947.2.1.3.3.1.4.2` wherein 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](#).

- SET request could be unsuccessful:
 - a. If the row for the above index already exists, or
 - b. If the no. of registered Managers count in SNMP Agent database has reached the maximum allowed number. A maximum of 5 managers can be registered at any point of time. All the subsequent attempts to register additional managers will fail unless existing managers are deleted from it's database.

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.
 - In this case generate a SET request for 1.3.6.1.4.1.4947.2.1.3.3.1.2.2 wherein 2 is the next available index, syntax is IPADDRESS and enter the IP Address of the SNMP Manager to be registered, if the SET request is successful proceed to next step.
 - 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. In this case generate a SET request for 1.3.6.1.4.1.4947.2.1.3.3.1.3.2 wherein 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.

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 add a new SNMP manager but the Encore System Controller SNMP agent has the maximum number of SNMP Managers already registered, or
- 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 [Step 1 Add a New SNMP Manager on page 75](#), 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.

Encore SNMP Enhancements

The SNMP Agents for Encore have been enhanced with new traps and attributes. The following groups of new parameters are monitored by this software. For information on how to install and configure NetCentral see *NetCentral TV Facility Monitoring System User Guide Software Version 4.1* or later.

Matrix Information

This indicates the matrices connected to Encore via Ethernet (using CPL). The following information about each Matrix is displayed:

- Matrix ID to uniquely identify the each Matrix,
- Matrix Type, values are: 7500NB, 7500WB, Concerto, Trinitix, and Apex,
- Matrix Network information including IP Address, Network Mask, Gateway Address, Encore Master System Controller's IP Address and Encore Slave System Controller's 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),
- 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.

Native Protocol/Router Control Language Client Information

The status of Native Protocol/Router Control Language (NP/RCL) clients are monitored. This information includes the following parameters of each 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).

New SNMP System Controller Trap Messages

Table 12. 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.
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.

Specifications

Power Requirements and Mechanical Specifications

Table 13. 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	100-240 VAC or 30-60 VDC	≤ 150 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

Performance and Environmental Specifications

Table 14. 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
SIO Ports 1, 2, 3 & 4	
Type	RS-232 or RS-422/485
Connector	RJ-45
Cable	Cat 5e Ethernet

Table 14. Encore System Controller Frame - (continued)

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	3.3 amps maximum
	200-240 V	1.7 amps maximum
DC Voltage		48 V DC nominal (36-60 V DC)
DC Current		4 amps DC nominal @ 48 V in
Environmental		
Power Consumption		≤ 150 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

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 User 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, Zodiac, 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.

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 15](#).

Table 15. Encore>Concerto 64VAA Network Configuration Default IP Addresses

Encore System Controllers	Encore Controller 1	Encore Controller 2
	Master	Mirror
System Name	SCF-1A	SCF-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	7500WB1	7500WB2
Ethernet IP Address	192.168.1.32 ^d	192.168.1.33
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 Ethernet1 IP Address must match Matrix Controller Master Controller IP Address.

^b Ethernet2 IP Address must match Matrix Controller 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 16 on page 83](#).

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

Concerto 64VAA Control by Encore (Ethernet)

Table 16. 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	192.168.1.32	192.168.1.32	
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

Jupiter Control by Encore (Ethernet)

Encore System Settings

Table 17. 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			NOTE: The number of inputs and outputs is arbitrary and typically a subset of the total.
Name	JUP_SDV	JUP_AES	
No. Inputs	20	20	
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	
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 18. 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	192.168.0.101 ^a
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 are Encore primary and secondary 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 communications. This is typically the mechanism older Station Automation systems employ to control Encore devices.

Jupiter Control by Encore (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 19. 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. Virtuals	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 20. 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 50](#). To create a RJ-45 to 9 pin D adaptor use [Table 8 on page 59](#), this adaptor is for use with the cables in the Serial Interface Y Cable Option. The adaptor in [Table 7 on page 58](#) 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 50 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 50. Serial RS-422/485 Cable for Encore Frame 6100884xx

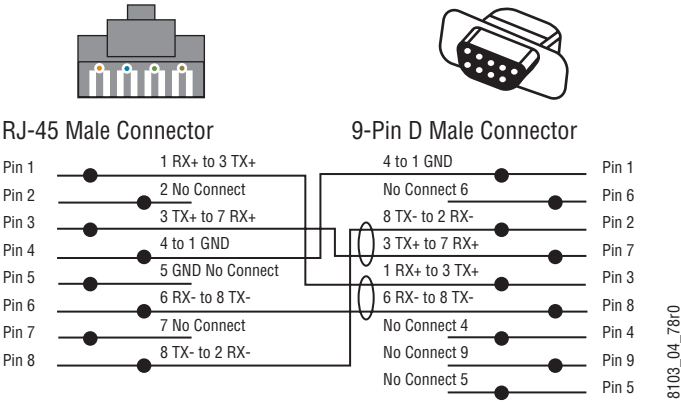
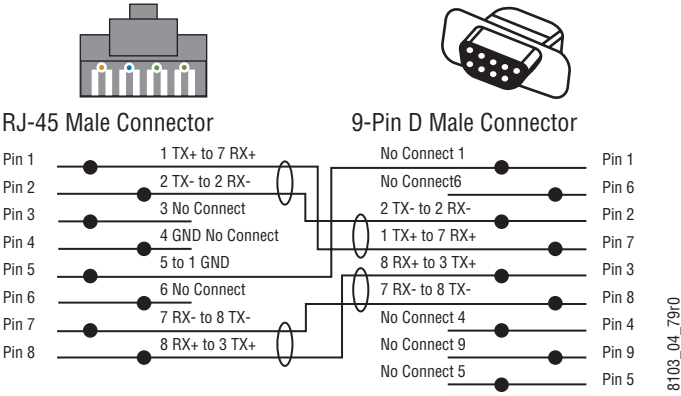


Figure 51 shows the pin assignments for a RS-422/485 cable from an Encore frame with part number 6101000xx to either the Jupiter VM 3000 or the Jupiter CM4000.

Figure 51. 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 21. 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)

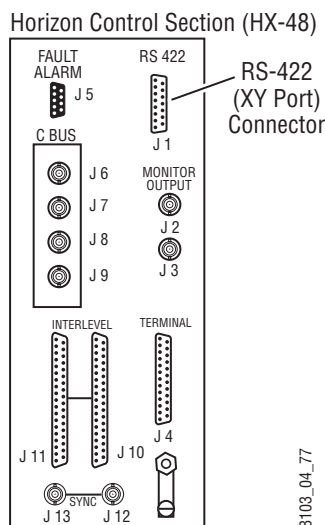
Horizon Serial Interface (RS-422/485)

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

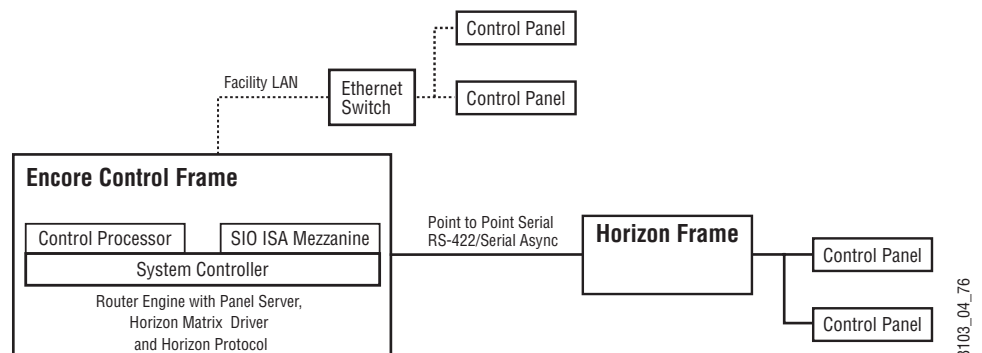


On the back of the Horizon Control frame is a 15-pin D female connector labeled **RS-422**; this is the connector to use for the interface. A 15 pin D male to RJ-45 female adapter is required. The adapter's 15 pin D connector end can be plugged directly into the Horizon frame or an RS-422 male to female cable can be used. See [Table 17 on page 34](#) for adaptor pinouts.

The **RS-422** connector is also known 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 52](#) for a sample configuration diagram.

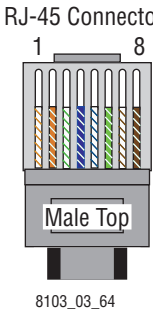
Figure 52. Sample Configuration Diagram



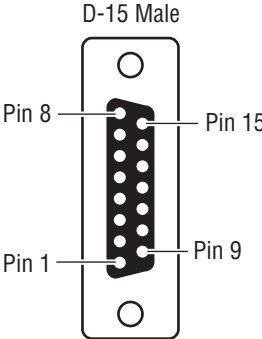
Horizon Serial RS-422/485 Cable Pin Assignments

Table 22 shows the adaptor pin assignments for a RS-422/485 connection from an Encore frame to a Horizon frame

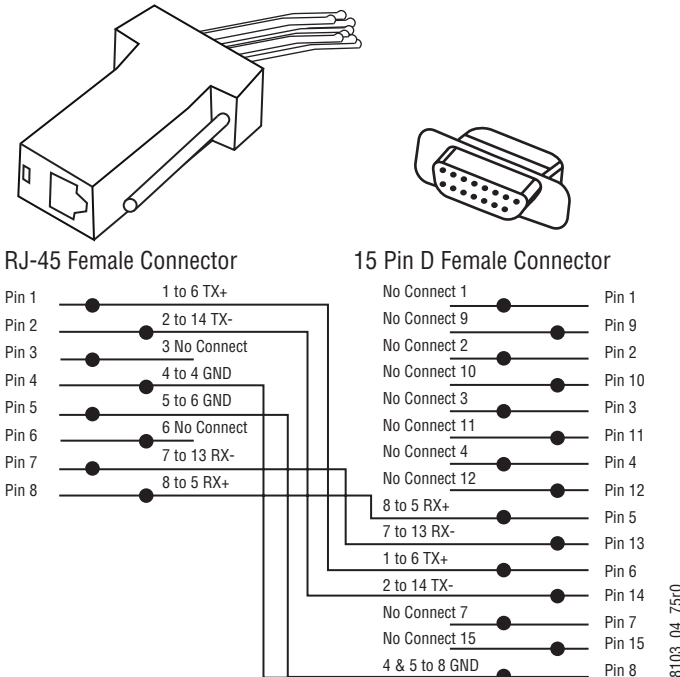
Table 22. RS-422/485 Pinouts for Encore RJ-45 to 15 Pin D Horizon Adaptor

RJ-45 Cable with Male Connector			
	Wire Color	Pin	Function
	Orange White	1	TX+
	Orange	2	TX-
	Green White	3	No connect
	Blue	4	Ground
	Blue White	5	Ground
	Green	6	No connect
	Brown White	7	RX-
Brown	8	RX+	

RS-422/485 Cable with 15-Pin D Male Connector	
Pin	Function
1	No connect
2	No connect
3	No connect
4	No connect
5	RX+
6	TX+
7	No connect
8	Ground
9	No connect
10	No connect
11	No connect
12	No connect
13	RX-
14	TX-
15	No connect



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
-	12	No connect
-	15	No connect



RJ-45 Female Connector

15 Pin D Female Connector

8103_04_75r0

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.

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).

Index

Numerics

10/100BaseT switch [36](#)

6100884xx
Frame [47](#)

6101000xx
Frame [47](#)

A

all-level Take
illustration [27](#)

area
definition [24](#)

B

breakaway
definition [24](#)

breakaway Take
illustration [27](#)

C

cabling
Encore Control System diagram [36, 37](#)

cabling example
Encore Control System [35](#)

Chop
definition [24](#)

COM 1 (CONSOLE)
RS-232 [56](#)

COM 2 frame 6100844xx
RS-422/485 [56](#)

COM 2 frame 6101000xx
RS-422/485 [56](#)

Concerto
settings for control by Encore (Ethernet) [83](#)

configuration
Encore control of Concerto (Ethernet) [83](#)
Encore control of Horizon (Serial) [91](#)
Encore control of Jupiter (Ethernet) [84](#)

Encore control of Jupiter (Serial) [86](#)
Jupiter control of Encore (Serial) [90](#)

configuration PC
general description [23](#)

control panel
Ethernet connection [41](#)
grounding [39](#)

control panel bus [42](#)

control panels
general description [22](#)

Control Processor
functional description [32](#)

jumper [32](#)

CP bus [42](#)

crosspoint
definition [24](#)

D

database
general description [23](#)

Destination
definition [24](#)
general description [26](#)

distributed control [23](#)

documentation online [4](#)

E

Encore
database [23](#)
distributed control [23](#)
general description [19](#)
serial cable connections to Jupiter [88](#)
settings for Concerto control (Ethernet) [83](#)
settings for control by Jupiter (Serial) [90](#)
settings for Horizon control (Serial) [91](#)
settings for Jupiter control (Ethernet) [84](#)
settings for Jupiter control (Serial) [86](#)

Encore System Controller
connectors [21](#)
general description [20](#)

- multiple [21](#)
- rear view [21](#)
- Encore system diagram [19](#)
- Ethernet device interfaces
 - interface
 - Ethernet devices [81](#)
- Ethernet switch
 - layers [40](#)
- exclusion set
 - definition [24](#)

F

- fan filter
 - replacement [66](#)
- fan unit
 - replacement [65](#)
- FAQ database [4](#)
- flag
 - definition [24](#)
- Frame
 - 6100884xx [47](#)
 - 6101000xx [47](#)
- frequently asked questions [4](#)

G

- general description
 - Encore [19](#)
- GPI In
 - Pinouts [60](#)
- GPI Out
 - Pinouts [60](#)
 - Pinouts for Panel Server state [60](#)
- Grass Valley web site [4](#)
- grounding
 - control panel [39](#)

H

- hardware
 - controlled by Encore [20](#)
- Horizon
 - configuration for control by Encore (Serial) [91](#)

I

- installation
 - panel rack mount [38](#)
 - System Controller frame [29](#)
- IP addresses
 - default settings [82](#)

J

- jumper
 - Control Processor [32](#)
- Jupiter
 - serial cable connections to Encore [88](#)
 - settings for control by Encore (Ethernet) [84](#)
 - settings for control by Encore (Serial) [86](#)
 - settings to control Encore (Serial) [90](#)

L

- Level
 - definition [24](#)
 - general description [25](#)

M

- matrix
 - definition [24](#)
- matrix crosspoints
 - general description [25](#)
- mezzanine
 - System Controller [33](#)
- module
 - hot swapping [61](#)
 - System Controller insertion [63](#)
 - System Controller power insertion [64](#)
 - System Controller power removal [64](#)
 - System Controller removal [62](#)
- modules
 - System Controller [31](#)
- multi-level switching
 - general description [27](#)

N

- Nonredundant serial port cabling
 - frame 6100884xx [50](#)
 - frame 6101000xx [50](#)

O

online documentation [4](#)

P

panel

maximum number controlled [36](#)

rack mount installation [38](#)

Panel Server Supervisor/Subordinate state [60](#)

Pinouts

GPI In [60](#)

GPI Out [60](#)

RJ-45 Ethernet [56](#)

RS-232 [56](#)

RS-232 adaptor [57](#)

RS-422/485 adaptor frame 6100884xx [58](#)

RS-422/485 adaptor frame 6101000xx [59, 89, 92](#)

System Controller [56](#)

Ports 1 to 4

RS-232 [56](#)

Ports 1 to 8 frame 6100884xx

RS-422/485 [56](#)

Ports 1 to 8 frame 6101000xx

RS-422/485 [56](#)

power

System Controller

System Controller

power [30](#)

Protect

definition [25](#)

R

Redundant serial port cabling

frame 6100884xx [53](#)

frame 6101000xx [53](#)

reference

video [36, 38](#)

replacement parts [61](#)

RJ-45

Pinouts [56](#)

routing terminology [24](#)

RS-232

Adaptor pinouts [57](#)

COM 1 (CONSOLE) [46, 56](#)

Pinouts [56](#)

Ports 1 to 4 [46, 56](#)

RS-422/485

Adaptor pinouts frame 6100884xx [58](#)

Adaptor pinouts frame 6101000xx [59, 89, 92](#)

COM 2 [49](#)

COM 2 frame 6100884xx [56](#)

COM 2 frame 6101000xx [56](#)

Ports 1 to 8 [49](#)

Ports 1 to 8 frame 6100884xx [56](#)

Ports 1 to 8 frame 6101000xx [56](#)

S

Salvo

definition [25](#)

serial bus termination [33](#)

Sharer

general description [23](#)

SIO ISA mezzanine

settings [33](#)

software download from web [4](#)

Source

definition [25](#)

general description [26](#)

specifications

environmental [79](#)

mechanical [79](#)

performance [79](#)

power [79](#)

Supervisor/Subordinate state of Panel Server [60](#)

System Controller

fan filter replacement [66](#)

fan unit replacement [65](#)

general description [20](#)

insert module [63](#)

insert power module [64](#)

installation [29](#)

mezzanine [33](#)

Pinouts [56](#)

power supply module [21](#)

remove module [62](#)

remove power supply module [64](#)

reset button [21](#)

System Controller Frame

slots [21](#)

System Controller module [31](#)

slots [31](#)

System Interface Guide [81](#)

T

Take

all-level Illustration [27](#)

breakaway illustration [27](#)

definition [25](#)

tally

definition [25](#)

template

definition [25](#)

terminology [24](#)

tie line

definition [25](#)

V

video reference [36](#), [38](#)

W

web site documentation [4](#)

web site FAQ database [4](#)

web site Grass Valley [4](#)

web site software download [4](#)