grass valley

# JEP-100

## Jupiter / Encore Control Panel

## Installation and Operating Manual

SOFTWARE VERSION 1.2.0

071837201
February 20, 2007

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## 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.

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## END-OF-LIFE PRODUCT RECYCLING NOTICE

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

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

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

For further information on the Grass Valley product take back system please contact Grass Valley at + 800 80 80 20 20 or +33 1 48 25 20 20 from most other countries. In the U.S. and Canada please call 800-547-8949 or 530-478-4148, and ask to be connected to the EH&S Department. Additional information concerning the program can be found at: www.thomsongrassvalley.com/environment

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# Contents

*= New or changed information*

# *Preface*

## About This Manual

This manual provides installation and operating information for the JEP-100 control panel. This control panels is designed for use with a Jupiter CM-4000 System Controller.

### Additional Documentation

An electronic copy of this manual is normally provided with the system. Individual manuals may be ordered by contacting Technical Support. For contact information, see page 2.

Configuration information for the Jupiter control system itself is contained in the control system's documentation set:

Jupiter Control System Release Notes series, 0718275xx.
Jupiter CM-4000 Installation and Operating Manual, 0718261xx.
Jupiter Getting Started Guide, 04-045707-003.

Electronic copies of other routing products documents are available on the following documentation CDs:

CD 0718274xx. Includes Jupiter CM-4000 manuals.

These documents are also available on our web site. See page 2.

# *Safety Summary*

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

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

## Safety Terms and Symbols

### Terms in This Manual

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

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

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

### Terms on the Product

The following terms may appear on the product:

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

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

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

## Symbols on the Product

The following symbols may appear on the product:

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

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

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

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

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

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

# Warnings

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

# Cautions

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

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

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

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

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

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

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

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

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

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

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

# *Regulatory Notices*

## Certifications and Compliances

### FCC Emission Control

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

### Canadian EMC Notice of Compliance

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

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

### EN55022 Class A Warning

In a domestic environment, products that comply with Class A 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 Comite European 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

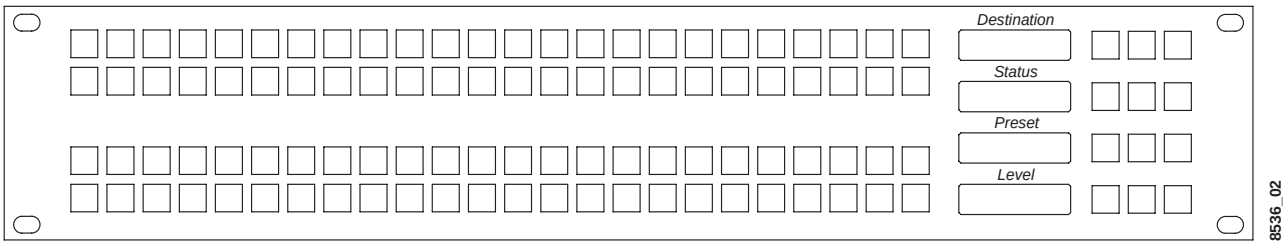
| Category | Standard | Designed/tested for compliance with: |
|---|---|---|
| Safety | ANSI/UL 1950-1997 3rd ed.<br>CAN/CSA-C22.2 No. 950-95<br>EN 60950 | Professional Video and Audio Equipment |

Section 1

# JEP-100 Control Panel

## Introduction

*Figure 1. JEP-100 Control Panel*




The JEP-100 Jupiter/Encore Control Panel is a locally-programmable, eight-character mnemonic, full-matrix control, multiple level break away panel designed especially for use in television production vans.

The current version of the panel uses a 15-pin D female connector on the rear panel to provide a total of 14 control lines (GPI ports) plus ground. Each port can be used to trigger a switching event when initiated by a contact closure on a customer-provided device. In the joystick override application, a joystick such as found on a camera control unit (CCU) can be used to select a camera for QC evaluation.

The panel includes a fully-enclosed auto-sensing power supply with an inrush current rating of 7.9 A. The nominal power requirement is 0.4 A @ 240 VAC or 0.65 A @ 120 VAC. There is no power switch (the AC cord must be disconnected to power down the panel).

The 96 keys on the left side of the panel are initially assigned to inputs using the control system file server, but some or all can be re-assigned to new inputs at any time using only the panel itself. The keys can alternatively be used to control outputs or levels.

Sources, destinations, and levels can also be selected by scrolling up/ down in the various LED displays.

Space has been provided for adhesive strips to be placed on the front surface for identification of buttons as they are arranged for specific projects.

The JEP-100 control panel is designed for use with either a Jupiter CM-4000 System Controller or an Encore Control System.

**Note** At present the JEP-100 can only be used with Jupiter CM-4000 Sys tem Controllers.

**Note** The CM-4000 must be operating with Jupiter / Saturn / AccuSwitch version 7.3.2 to support the JEP-100 1.1.1 feature set (except Salvo. JEP-100 salvo requires Jupiter version 7.4 software).

**Note** The JEP-100 is not intended for use with Jupiter VM-3000 System Controllers.

In Jupiter applications, the JEP-100 can be connected to the CM-4000 System Controller via a 115k Baud serial bus (maximum distance of 2000 feet); or via a Cat 5 Ethernet connection (maximum distance per segment 329 feet). An Ethernet connection is required for software upgrade purposes.

## Specifications

Physical Dimensions:  2 RU rack mount: 19 in. W x 3.5 in. H x approx. 4 in. D (483 mm W x 89 mm H x 102 mm D)

Weight: 2.25 lb. (1.02 kg.)

Operating voltage: 90 to 260 VAC

Operating current: 0.4 A @ 240 VAC or 0.65 A @ 120 VAC

Inrush current rating: 7.9 A

Power consumption: <100 W

Joystick override: Connector, 15-pin D, female.

Wiring between rear-panel connector and customer-supplied contact closure device: minimum 22 AWG (American Wire Gauge); maximum length, 30 feet (10 meters).

# Hardware Installation - Jupiter System

The JEP-100 can be connected to the CM-4000 System Controller via a 115k Baud serial bus or via a Cat 5 Ethernet connection. It is also possible to combine these methods by connecting some panels serially and others through the LAN.

In all cases, an Ethernet connection is required for software upgrade purposes.

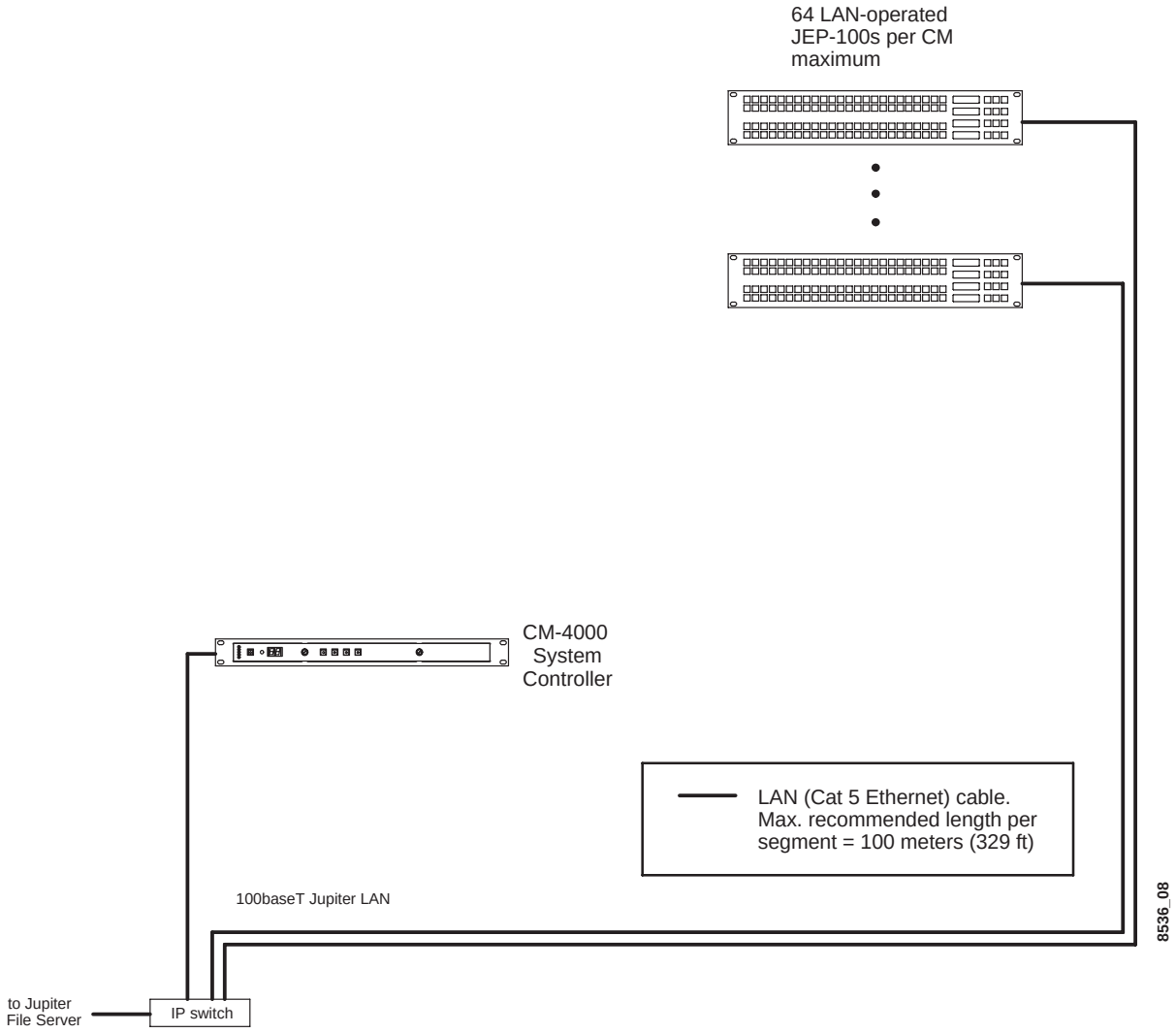
## LAN Only System

In this arrangement the JEP is operated in Ethernet mode, where the LAN connection is used both for operation and for software upgrade purposes. See Figure 2.

**Note** The LAN must be capable of 100 Mb operation.

**Note** Each Ethernet segment (hub to panel) has a 100 meter limit.

*Figure 2. LAN only system connections.*



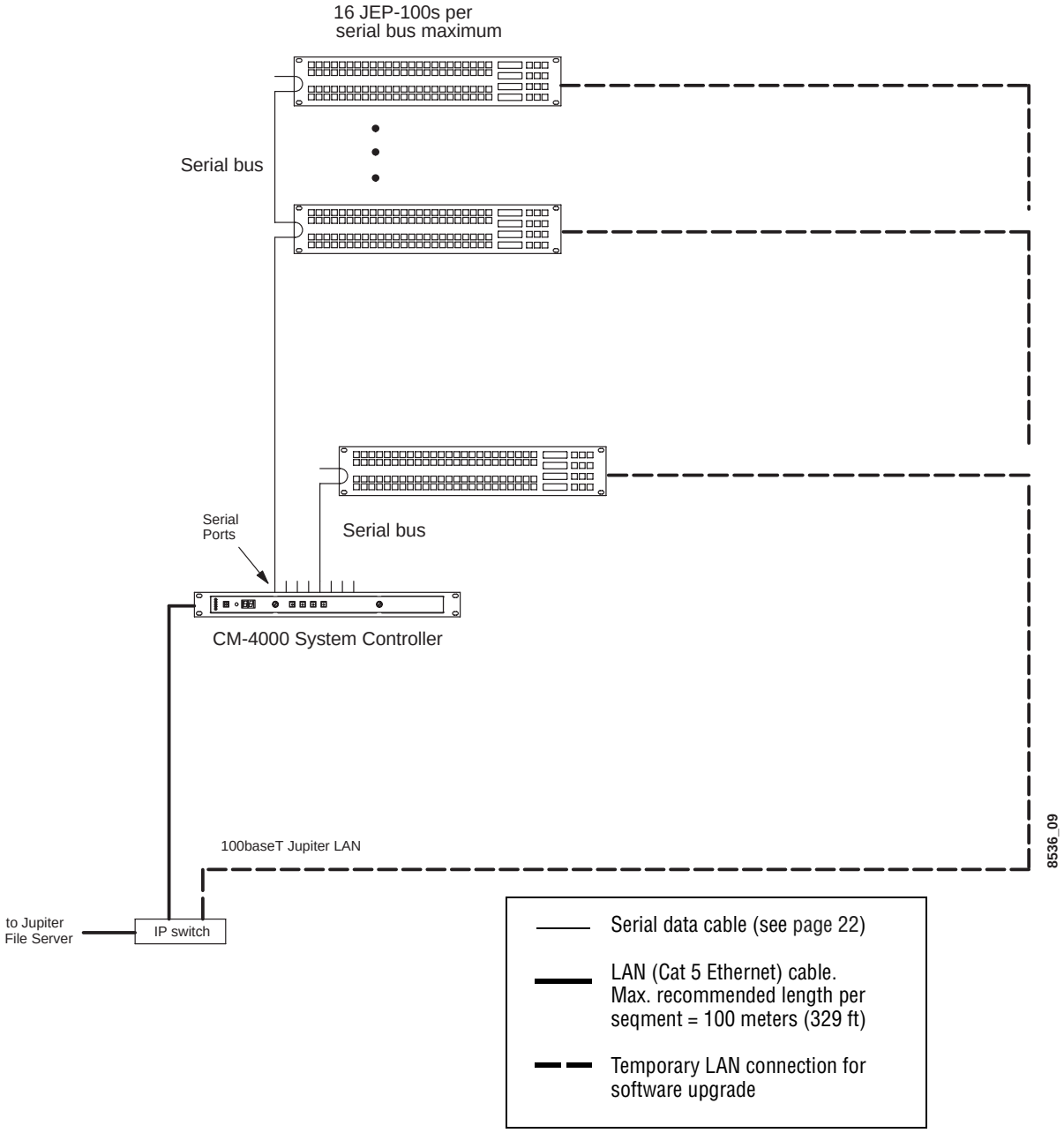
## Serial System

This wiring arrangement assumes that the JEP-100(s) will be operated in Serial mode, with the LAN typically connected to one panel at a time only during software upgrades. See Figure 3.

**Note** The LAN must be capable of 100 Mb operation.

**Note** The Ethernet segment (IP switch to panel) has a 100 meter limit.

*Figure 3. Serial system connections.*



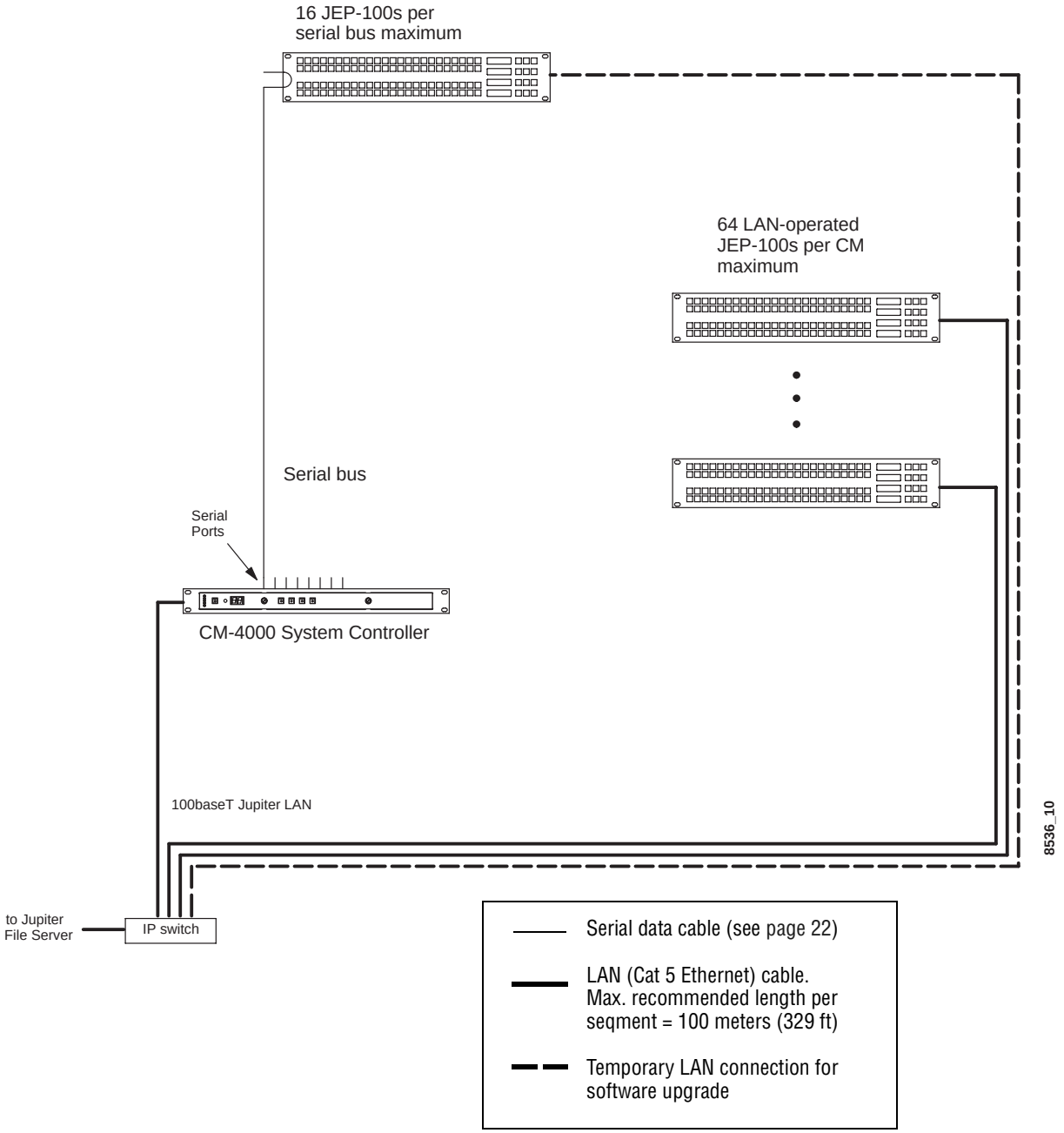
## LAN + Serial System

In this system, one or more JEP-100s are operated in Serial mode, while other JEP-100s are operated in LAN mode. The JEP-100(s) operated in Serial mode will require a LAN connection only during a software upgrade session. See Figure 4.

**Note** The LAN must be capable of 100 Mb operation.

**Note** Each Ethernet segment (hub to panel) has a 100 meter limit.

*Figure 4. LAN + Serial system connections*



## Serial Data Cables

The RS-422 cables used to connect CM-4000 System Controllers and control panels consist of a 4-conductor (plus ground) cable. Maxi mum length per bus, at 115k Baud, is 610 meters (2000 ft).

The rear panel serial data cable connectors on the CM-4000 and con trol panels are 9-pin D, female. The control panel connectors are ar ranged for loop-through wiring. No termination is required. While these connectors are ESbus compatible, it should be noted that the Thomson serial data cables use only 5 of the 9 pins described in the ESbus specification.

The following ready-made cables, with installed 9-pin D male connectors, are available from Grass Valley (VDE cables include ferrite cores):

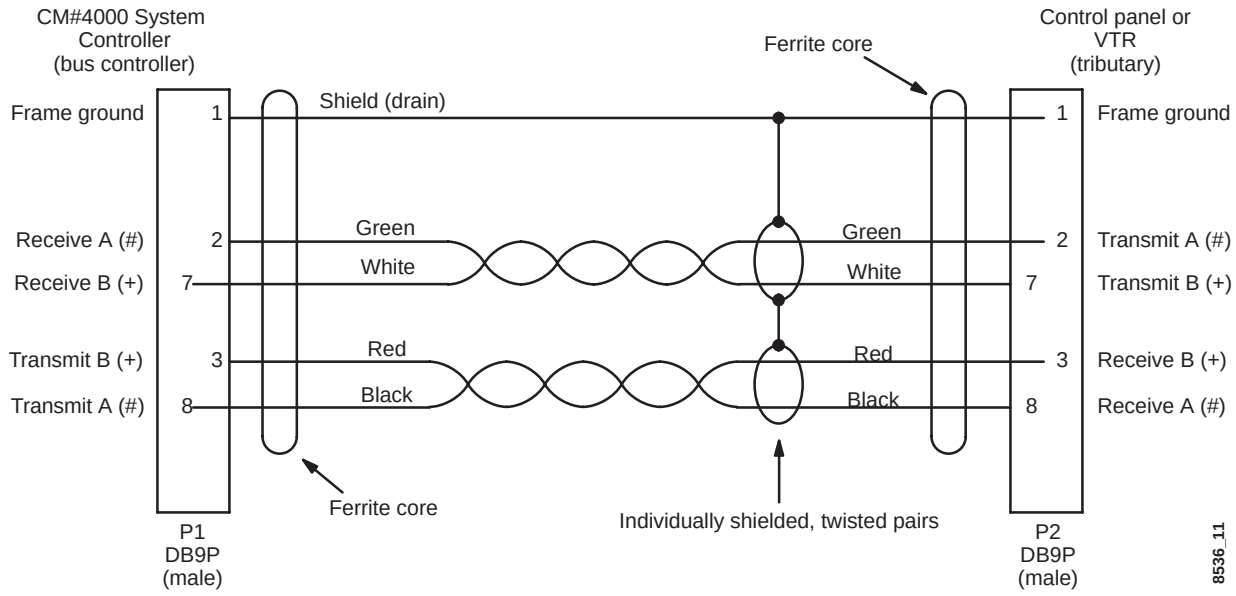
*Table 1.*

| | |
|---|---|
| 1 meter (3.3 ft) | 8 meters (26.2 ft) |
| 2 meters (6.6 ft) | 16 meters (52.5 ft) |
| 4 meters (13.1 ft) | 32 meters (105 ft) |

For those who wish to prepare their own cables, the pin-outs are shown in Figure 5. The cable itself should be Belden 8723 or equiva lent.

Details concerning ferrite cores are given in Figure 6 .

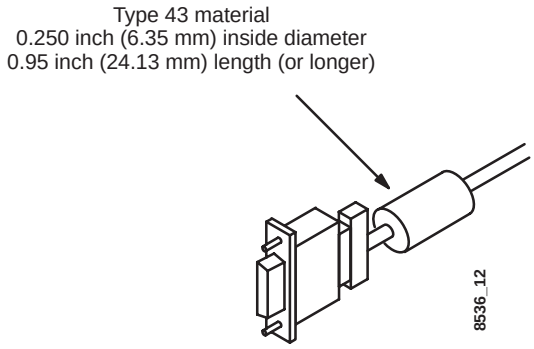
*Figure 5. Serial data cable wiring. Reference: "Assembly, BCS-3000 Serial Data Cable," Grass Valley drawing no. 01-041600-TAB.*



## VDE EMI/RFI Modifications to Serial Data Cables

User-supplied serial data cables for VDE installations require a ferrite core over each end of the cable, adjacent to the connector.

*Figure 6. Serial data cable VDE modifications.*




**Type 43 material sources**

FairRite, part no. 2643480002

FairRite Products Corp., P .O. Box J, Commercial Row, Wallkill, NY 12589, USA; Tel. (914) 8952055.

Chomerics, part no. 8310A6361000

Chomerics Inc., 77 Dragon Ct., Woburn, MA 01888 USA; Tel. (617) 9354850.

## Power Surge Protection using JUP-485-SUP Module

Voltage surges may occur in mobile van environments or other applications involving long serial cable runs or cases where there is a possibility of a power spike appearing between the Jupiter CM-4000 System Controller and a Jupiter control panel. Voltage surges in the 25-volt range have been known to damage the RS-422/485 driver ICs used in the CM controller. The JUP-485-SUP module, available as an option, connects to the CM serial port and uses an internal diode array to limit the voltage on each of the RS-485 conductors to approximately eight volts. For more information, refer to Field Modification Note 0750790xx or contact Grass Valley Technical Support.

# Joystick Override

This function applies only to the current JEP-100 model, which has a 15-pin D female connector on the rear panel to provide a total of 14 joystick control lines plus ground. For more information, see page 59.

# Internet Protocol Configuration

IP connection and configuration allows Ethernet operation and pro vides a downloading path for software upgrades. The JEP-100, CM-4000, and file server PC must be on the same IP network, or else be connected through a network router/gateway.

The following applies to JEP-100 configuration using the panel's built-in HTTP web page.

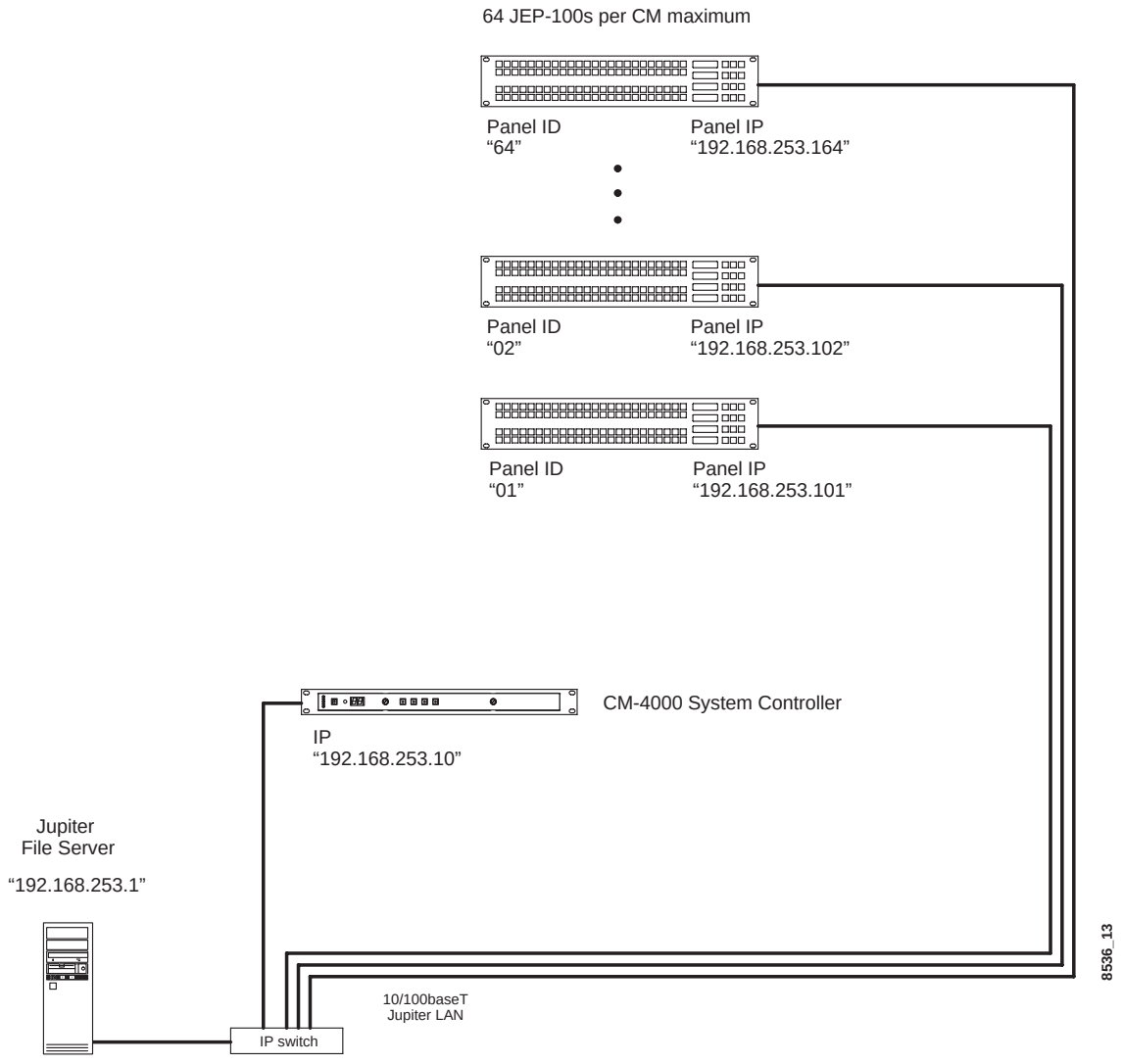
## Single Network IP Configuration

The following discussion applies when the Jupiter equipment (file server, CM-4000, and JEP-100) is in an isolated network environment.

## LAN Only System

Figure 7 shows an example of a system addressing where the JEP-100s will be operated entirely in Ethernet mode. Up to 64 JEP-100s can be controlled per CM-4000.

*Figure 7. LAN only system addressing(example).*

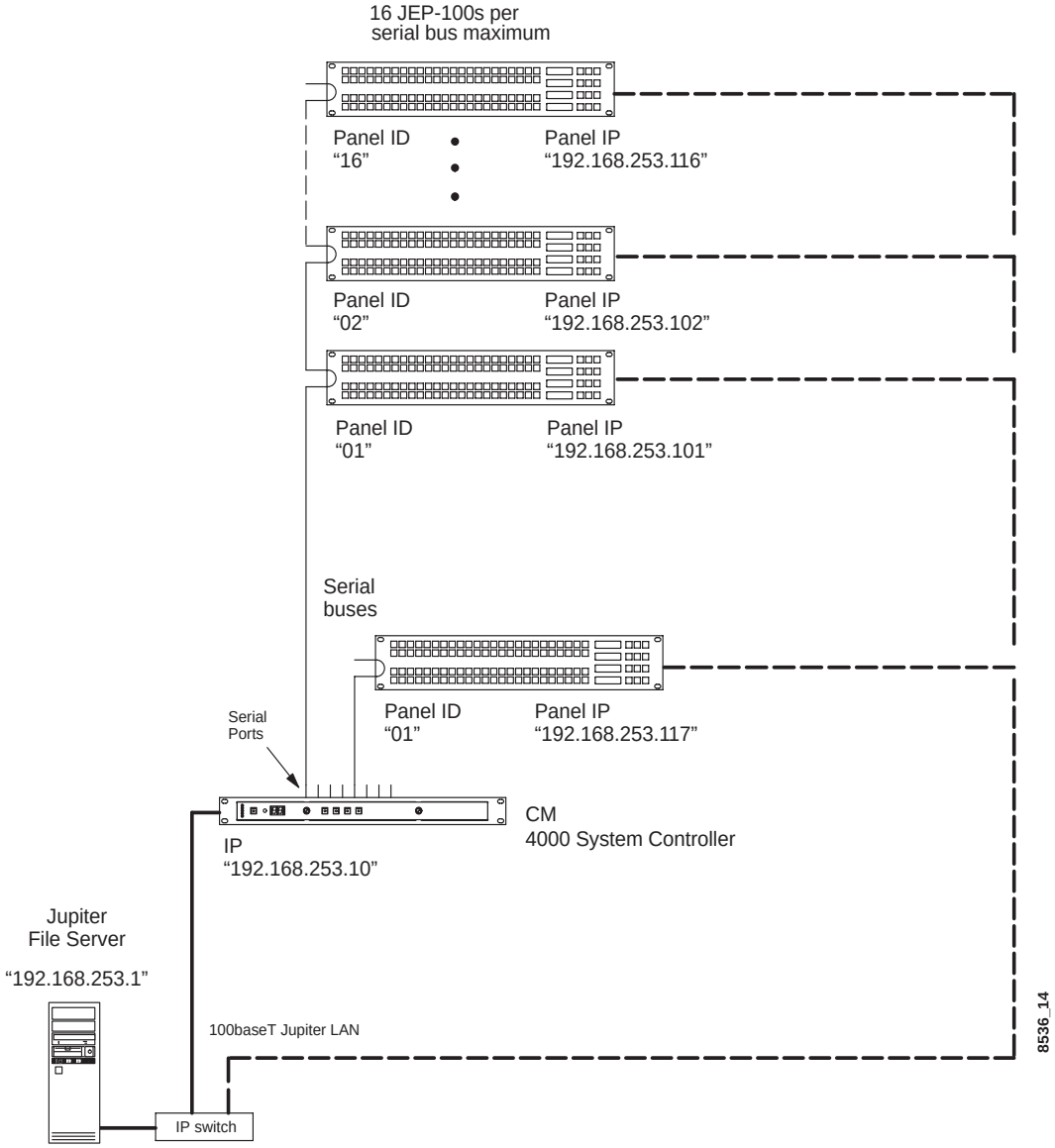


## Serial System

Figure 8 shows an example of a system addressing where the JEP-100s will be operated in Serial mode (the LAN connections are for software upgrade). Because there are more than 16 panels, the 17th panel must be connected to a second CM port. This results in two panels with an ID of "01."

This arrangement assumes that the LAN connections will be made to one panel at a time only for the purpose of software upgrade. In this case, it isn't strictly necessary to have a different IP address for each panel; however, to prevent confusion if more than one panel is con nected it is recommended that unique IP addresses are assigned.

*Figure 8. Serial system addressing (example).*

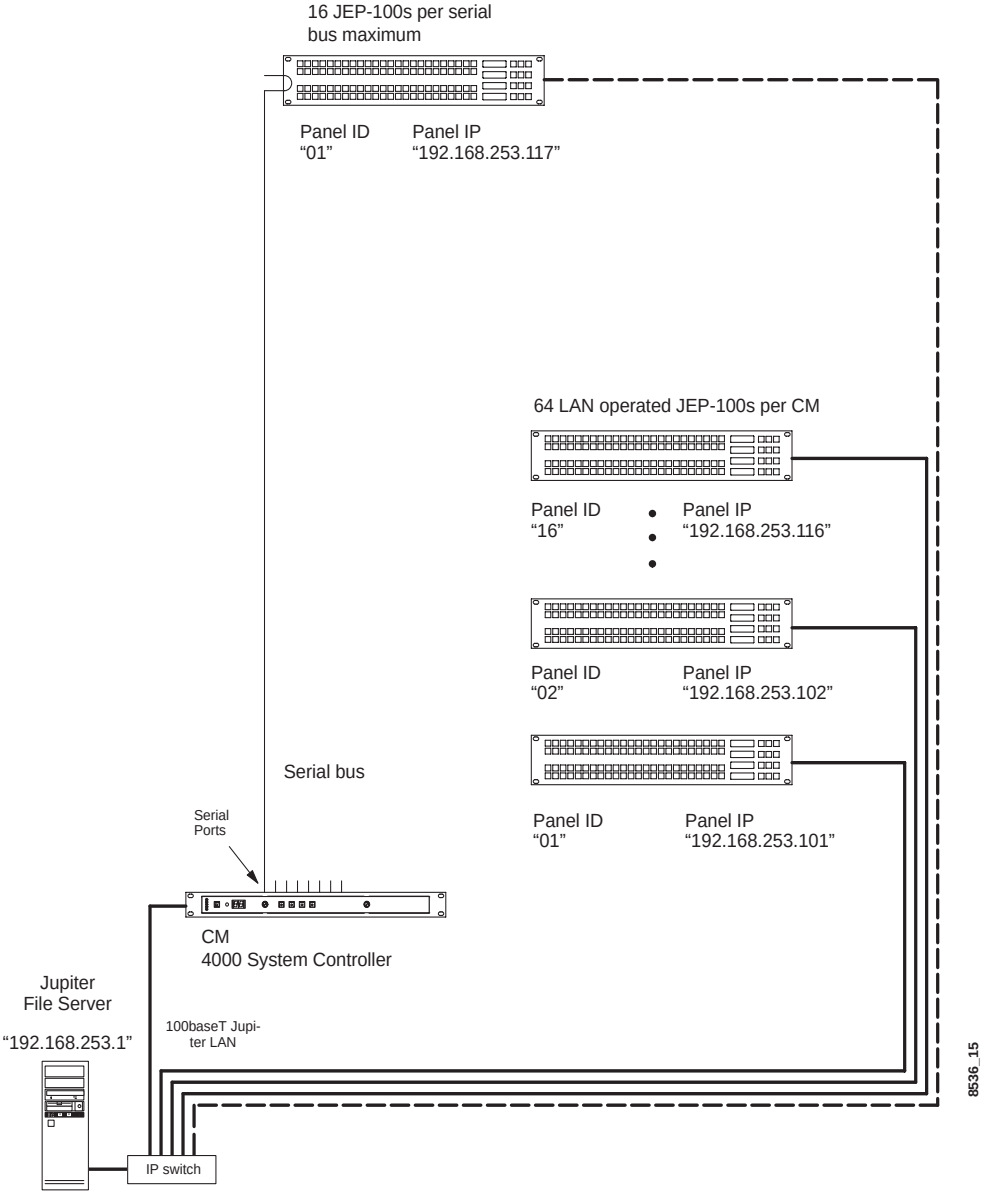


## LAN + Serial System

Figure 9 shows an example of system addressing where one or more JEP-100s will be operated in Serial mode, while other JEP-100s are operated in LAN mode.

The JEP-100(s) operated in serial mode will require a LAN connection only during a software upgrade session.

*Figure 9. LAN + serial system addressing (example)*



## IP Configuration Procedure

During the following steps, you will need to know the IP address of the CM-4000 that will be associated with the JEP-100. Use the Jupiter File Server JNS Control Center application to determine the CM-4000 IP address (the Control Center application is described in the Jupiter CM-4000 manual).

You will also need to know the normal IP settings of the file server so they can be restored at the end of this procedure.

1. At the (first) JEP-100, determine the present IP address of the panel by pressing MENU, then UP/DOWN until the address is displayed in the Preset and Level windows.

2. If there are other devices on the Jupiter LAN with this same address, they must be disconnected at this time.

   JEP-100 panels are normally shipped with a default IP address of 192.168.253.100.

3. At the file server PC:

   a. Use the PC's Network Settings dialog to *temporarily* set the TCP/IP address within the same local network as the JEP-100.

      For example, if the JEP-100 address is presently 192.168.253.100, then the PC address should be changed to be compatible with the 192.168.253.x network (such as "192.168.253.1"). The PC's sub net mask should be set to 255.255.255.0 (class C network). In a simple network environment, all other TCP/IP network settings are irrelevant at this point.

   b. Reboot the PC to apply the changes.

      If desired, you can use the MS-DOS "ipconfig" command to verify the settings.

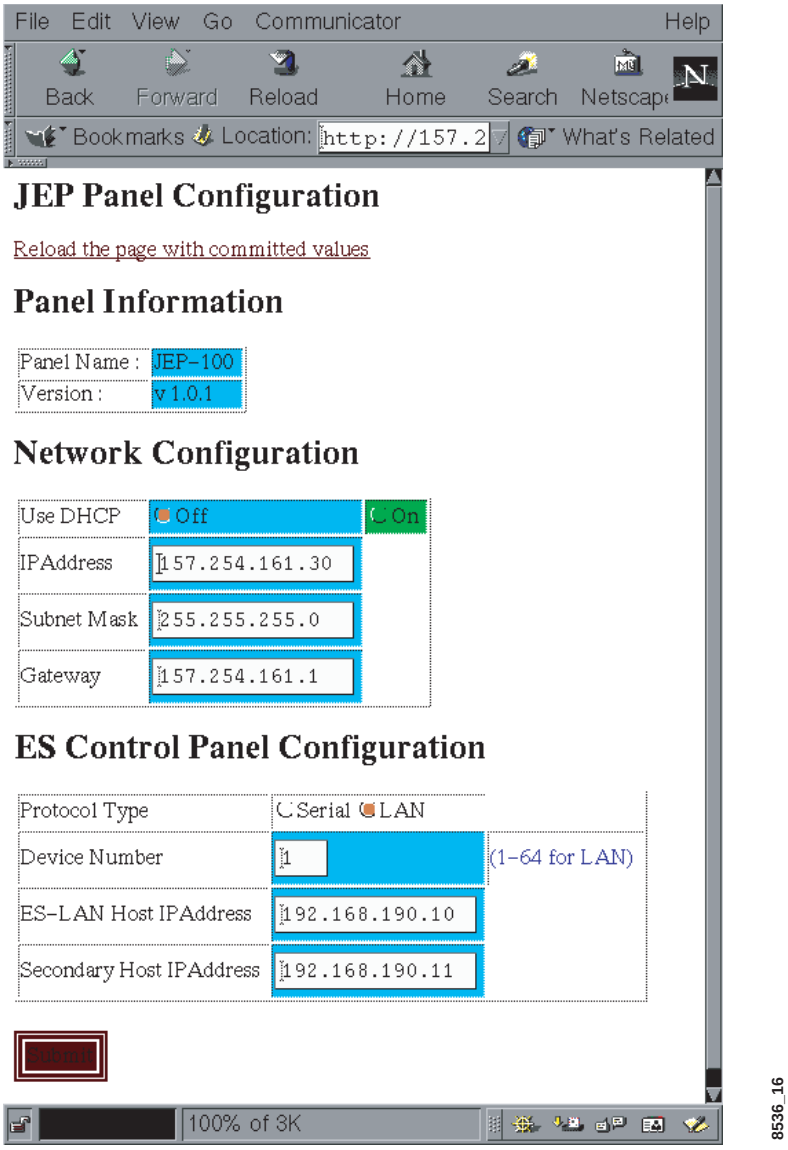
      You must have admin privileges to change Internet settings on a Windows 2000 PC.

   c. Start the http browser (e.g. MS Internet Explorer).

      The browser Proxy setting must be turned off. To check the Proxy setting for Internet Explorer, go to Tools > Internet Options > Connections > LAN Settings.

   d. Enter the JEP-100 IP address in the URL window. This will display the JEP-100 web page:

*Figure 10.*




4. The Panel Information fields are system-generated.

5. For the Network Configuration section:

   a. Select DHCP - OFF (unless IP addresses are being set automatically by a Dynamic Host Configuration Protocol server).

   b. IP address - set to a unique value within the same network as the CM-4000.

      For example, if the CM-4000 address is 192.168.253.10, then the JEP-100 address should be changed to reside in the 192.168.253.x network (such as "192.168.253.101").

   c. Subnet Mask - set to 255.255.255.0.

**d.** Gateway - not used in a simple network environment.

If the JEP-100 and the CM-4000 are on separate networks, the gateway connecting them must be specified.

**6.** ES Control Panel Configuration:

**a.** Protocol Type:

For a LAN only system (as shown on page 25): select "LAN."

For a Serial system (page 26): select "Serial" for normal operation of panel. Select "LAN" only during the software upgrade pro cess.

For a LAN + Serial system (page 27): For panels always operated in LAN mode, select "LAN." For panels normally operated in Se rial mode, select "Serial" (select "LAN" only during the software upgrade process).

Note that this selection is identical to the "ELAN on" setting ac cessed with the front-panel MENU button.

**b.** Device Number:

LAN only system: enter a number from 1 to 64. This number must be unique on this LAN (e.g., unique on network 192.168.253.x).

Serial system: enter a number from 1 to 16. This number must be unique on the CM-4000 serial bus being used.

LAN + Serial system: for panels always operated in LAN mode, enter a number from 1 to 64. For panels normally operated in Se rial mode, enter a number from 1 to 16; this number must be unique on the CM-4000 serial bus being used.

Note that the Device Number is referred to as the "ID" within the JEP-100 MENU system and as the "Address" on the Jupiter MPK Devices table.

**c.** ES-LAN Host ID Address: enter the IP address of the CM-4000 associated with this panel.

**d.** Secondary Host ID Address: enter the IP address of the redundant CM-4000 (if any).

**7.** Select Submit.

This will apply the settings and reboot the JEP-100.

**Note** Once the JEP-100 reboots the panel may (depending on the address used) no longer be visible from the PC. To return to the page, enter the new IP address in the browser's URL window.

**8.** Go to the next JEP-100 and repeat steps 1 through 7 above.

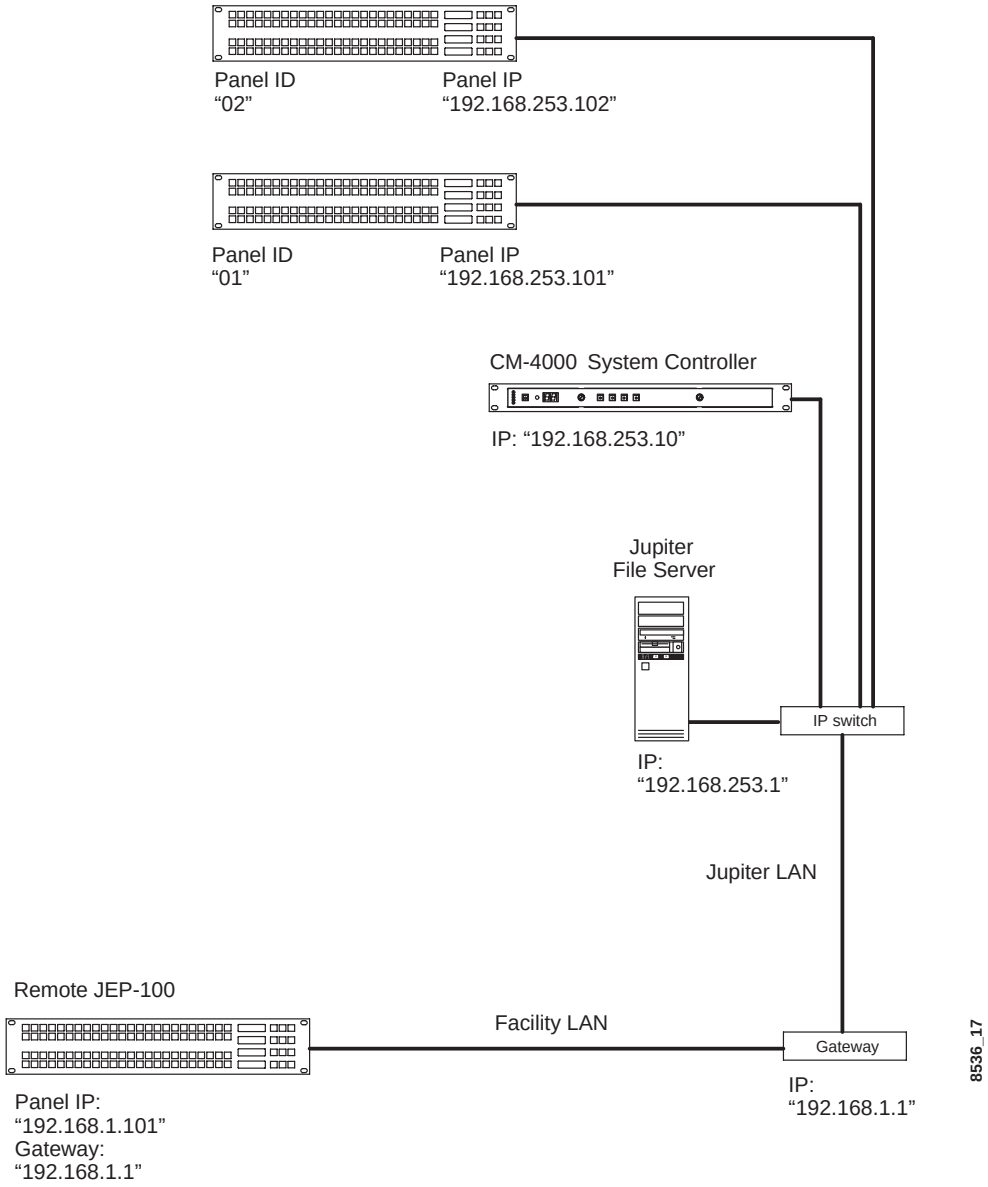
**9.** When finished, restore the file server PC to the original IP settings.

**10.** Proceed to the panel configuration instructions in the following section.

# Multi-Network IP Configuration

A "remote" JEP-100 can be placed on a network separate from the other Jupiter devices, such as on a facility LAN. In Figure 11, an IP router serves as a gateway between two networks.

*Figure 11. LAN addressing with remote JEP-100 (example)*




Configuration is similar to that just described, except that the address of the gateway must be entered on the web page for the remote JEP-100.

# Software Installation

JEP-100 panels are shipped with all current software installed.

If the software is being upgraded from a previous version, you must follow the special upgrade instructions in the appropriate Grass Valley Release Notes or Field Engineering Bulletin. Failure to do so could result in loss of user data. For more information, please contact Grass Valley Technical Support (see page 2).

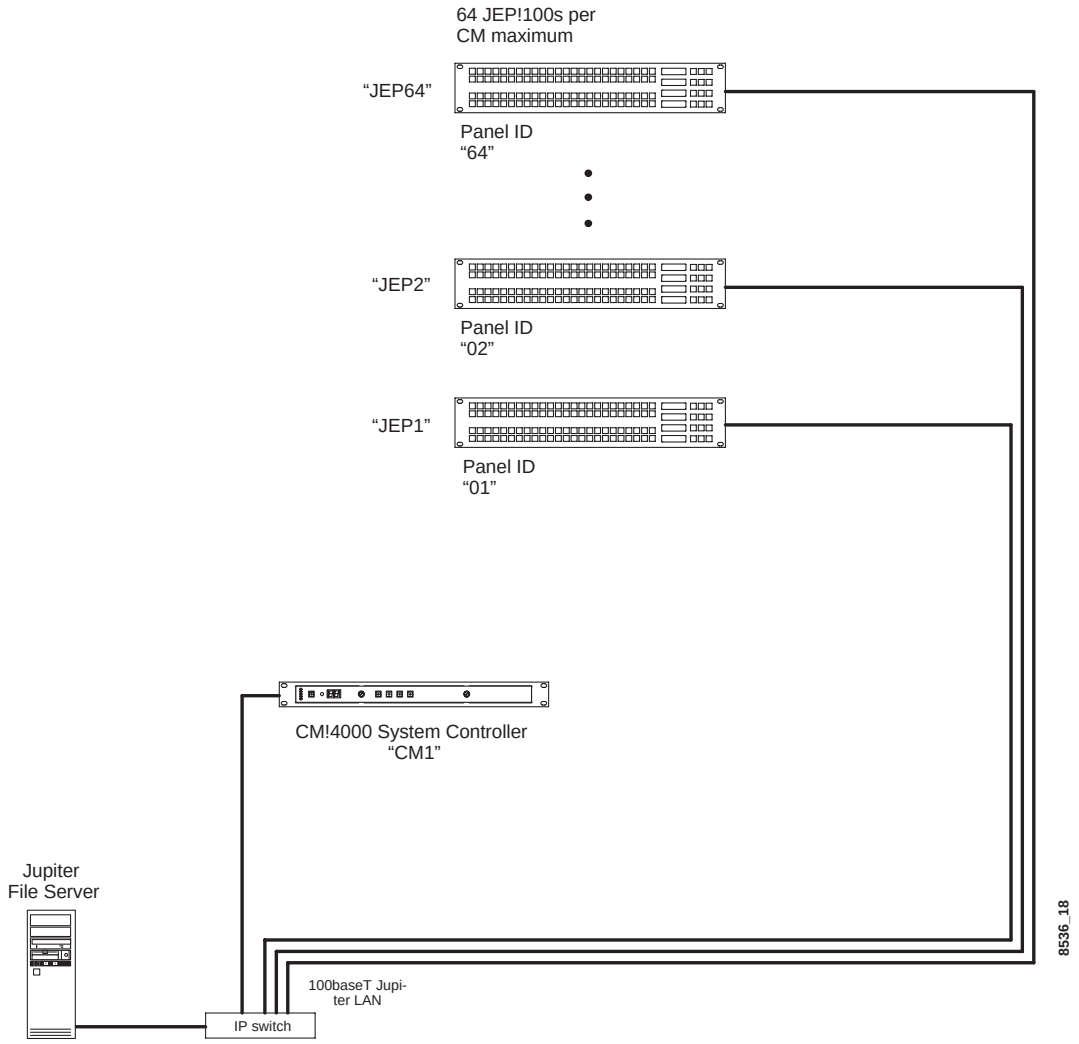
# Configuration - Jupiter System

The following overview of JEP-100 installation and configuration assumes that the reader is familiar with the Jupiter Facility Control System. If not, please refer to the Jupiter CM-4000 Installation and Operating manual, part. no. 0718261xx.

## LAN Only System

In this system, the JEP is operated in Ethernet mode, where the LAN connection is used both for operation and for software upgrade purposes. See Figure 12.

*Figure 12. LAN only system naming and addresssing*



## MPK Table Entries

Although the JEP is not actually an MPK-type panel (it has an on-board microprocessor and does not use the Message Per Keystroke protocol), the MPK table is used for configuration purposes. An ex ample is shown in Figure 13.

*Figure 13. MPK Devices table corresponding to system shown in Figure 12*

MPK Devices

| | MPK Devices | Device Type | Expansion | Pass word | Board | Port | Address | Input Sets | In Panel | Output Sets | Out Panel | Level Set | Overide Set | Sequence Set |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | JEP1 | ES LAN | ☐ | | CM1 | | 01 | KXYZ INP | | KXYZ OUT | | KXYZ LEV | | K |
| 2 | JEP2 | ES LAN | ☐ | | CM1 | | 02 | KXYZ INP | | KXYZ OUT | | KXYZ LEV | | |
| ⋮ | | | | | | | | | | | | | | |
| 64 | JEP64 | ES LAN | ☐ | | CM1 | | 64 | KXYZ INP | | KXYZ OUT | | KXYZ LEV | | |

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**MPK Devices** - This column is used to create a name, up to eight characters in length, for each JEP-100. This name must be unique system-wide.

**Type** - Select type "ES-LAN" on the pull-down menu.

**Expansion** - Not used for JEP-100 (leave unchecked).

**Password** - Not used for JEP-100.

**Board** - Name of CM-4000 associated with this JEP-100. The source of this name is the Network Description table.

**Port** - Not used for LAN-only installation.

**Address** - Panel address from 01 to 64. Must be unique for panels associated with the same CM-4000.

JEP-100 panels are normally shipped with a panel address of "01." Modification of this address was discussed on page 30.

This number is referred to as the "Device Number" on the IP configuration page and "ID" within the JEP-100 MENU system .

**Input Set** - Name of CP Input Set to be assigned to this panel. The usu al practice is to have one CP Input Set, containing the names of all in puts, apply to all panels. However, special CP Input Sets could be created which list only selected inputs; such a set could be used to prevent certain panels from selecting specific inputs.

**In Panel** - This column is not used for JEP-100 panels.

**Out Set** - Output Set name. If the entry is an actual CP Output Set, then the control panel will be able to control all the outputs listed in that Set. Depending on the con tents of the set, this would allow for full-matrix or multi-bus control.

Alternatively, this field can be used to enter the name of a single switcher output to be controlled. The source of the output name is the Switcher Output table.

**Out Panel** - This column is not used for JEP-100 panels.

**Level Set** - Select the CP Level Set name.

**Override** - Not used for JEP-100 panels.

**Sequence** - Not used for JEP-100 panels.

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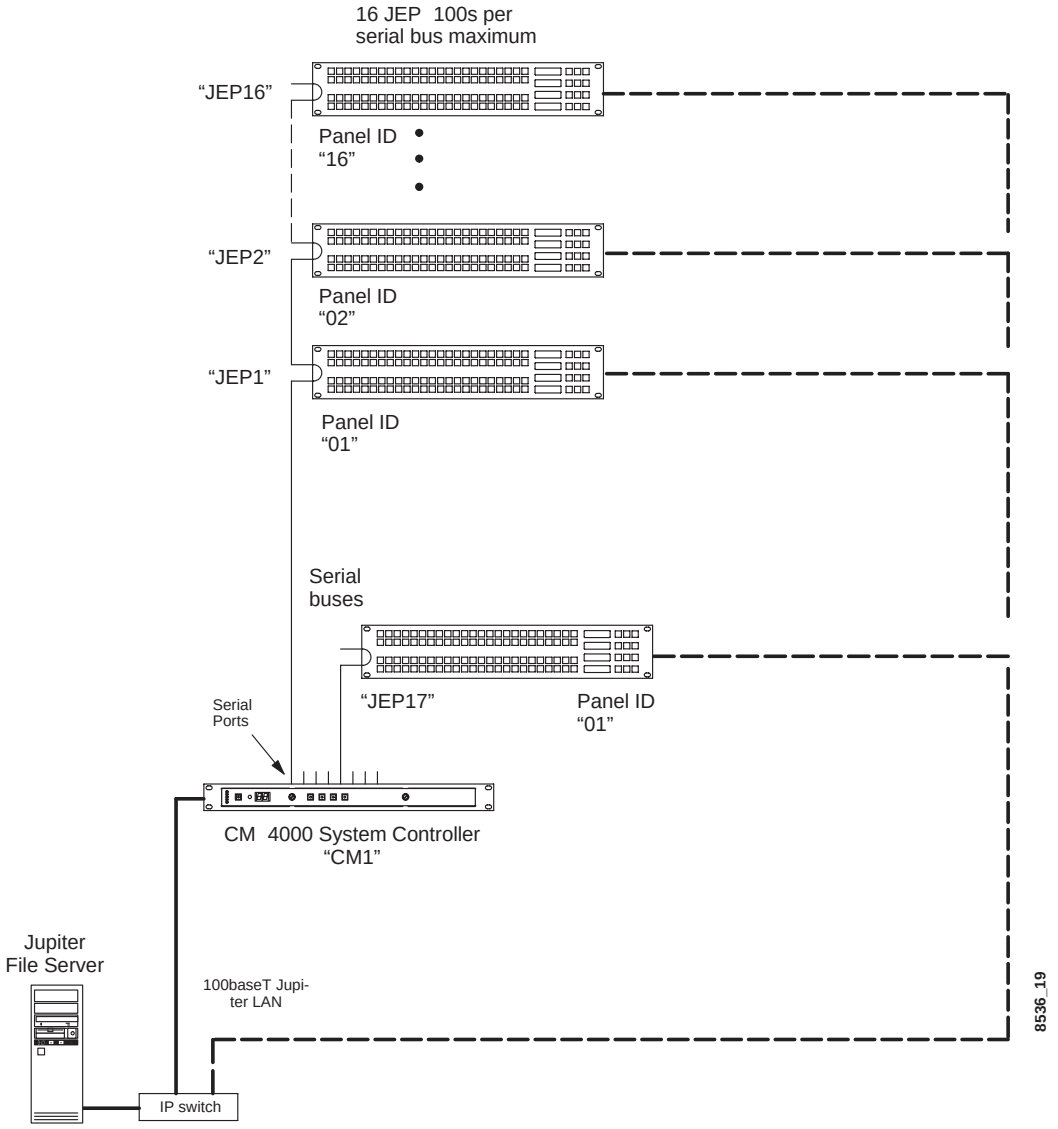
## Serial System

In this application the JEP-100 is operated in Serial mode, with the LAN connection used only for software upgrade purposes. See Figure 14.

*Figure 14. Serial system naming and adressing (example)*



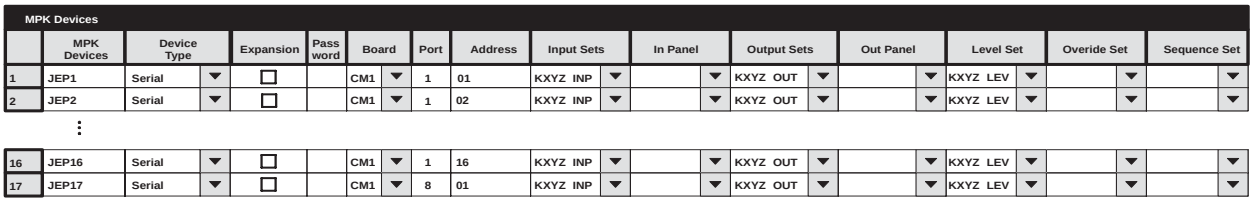
## Serial Protocol Table Entries

When a JEP-100 is connected to a CM-4000 serial port (and operated in Serial mode), the panel must be configured for "ESCP" protocol using the Serial Protocol table. The Baud rate should be set at 115K.

## MPK Table Entries

Although the JEP-100 is not actually an MPK-type panel (it has an on-board microprocessor and does not use the Message Per Key stroke protocol), the MPK table is used for configuration purposes. An example is shown in Figure 15.

*Figure 15. MPK Devices table corresponding to system shown in Figure 14*




**MPK Devices** - This column is used to create a name, up to eight characters in length, for each JEP-100. This name must be unique system-wide.

**Type** - Select type "Serial" on the pull-down menu.

**Expansion** - Not used for JEP-100 (leave unchecked).

**Password** - Not used for JEP-100.

**Board** - Name of CM-4000 connected to this JEP-100. The source of this name is the Jupiter Network Description table.

**Port** - Number of CM-4000 port connected to this JEP-100.

**Address** - Panel address from 1 to 16. Must be unique for panels sharing the same CM-4000 serial port.

JEP-100 panels are normally shipped with a panel address of "01." Modification of this address was discussed on page 30.

This number is referred to as the "Device Number" on the IP configuration page and "ID" within the JEP-100 MENU system.

**Input Set** - Name of CP Input Set to be assigned to this panel. The usu al practice is to have one CP Input Set, containing the names of all in puts, apply to all panels. However, special CP Input Sets could be created which list only selected inputs; such a set could be used to prevent certain panels from selecting specific inputs.

**In Panel** - This column is not used for JEP-100 panels.

**Out Set** - Output Set name.

If the entry is an actual CP Output Set, then the control panel will be able to control all the outputs listed in that Set. Depending on the con tents of the set, this would allow for full-matrix or multi-bus control.

Alternatively, this field can be used to enter the name of a single switcher output to be controlled. The source of the output name is the Switcher Output table.

**Out Panel** - This column is not used for JEP-100 panels.

**Level Set** - Select the CP Level Set name.

**Override Set** - Not used for JEP-100 panels.

**Sequence** - Not used for JEP-100 panels.

## Special Entries Needed to Upgrade Serial Panels

In a Serial system, downloading new software to panels normally op erated in Serial mode will require IP settings. These settings are en tered using the web page. See page 24 .

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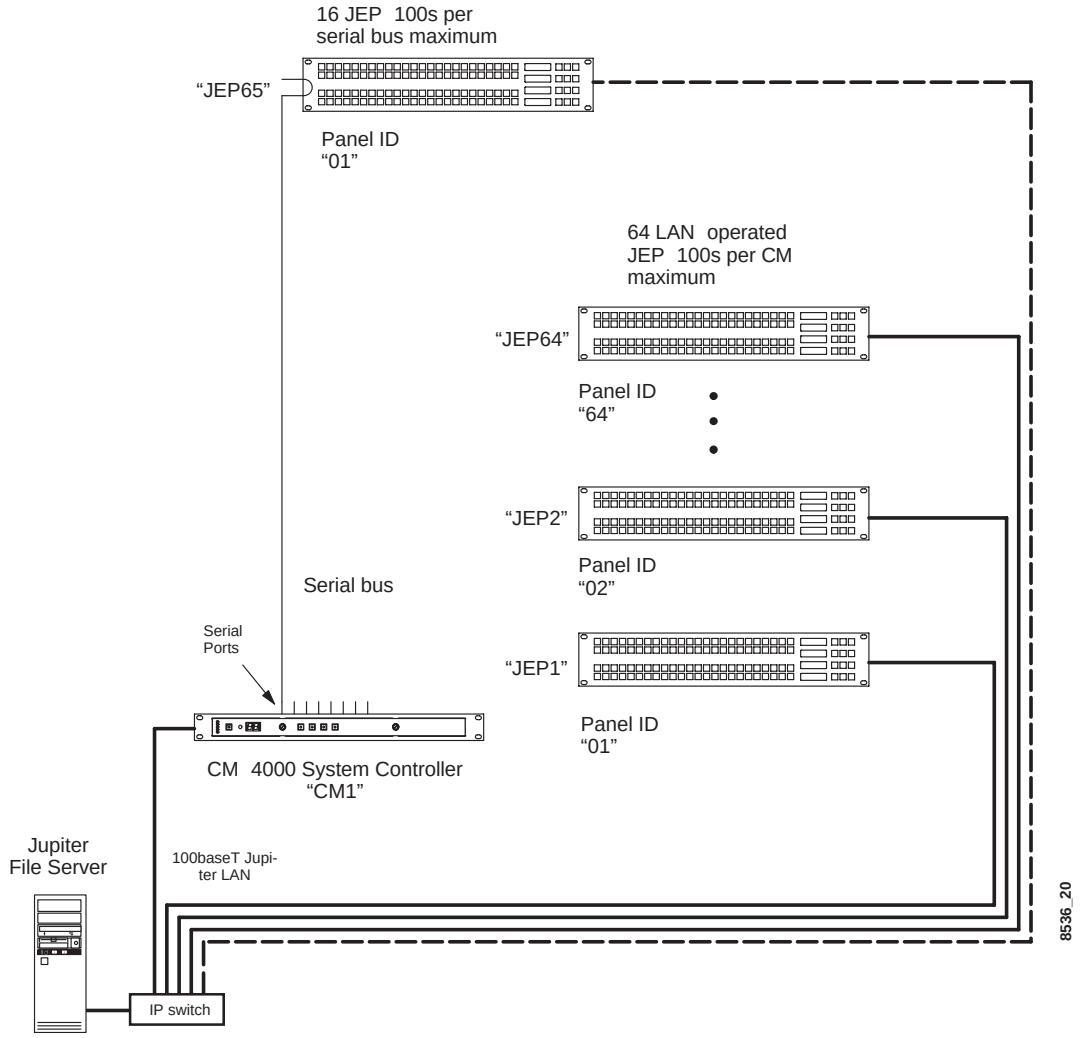
## LAN + Serial System

Figure 16 shows an example of a system where one or more JEP-100s will normally be operated in Serial mode, while other JEP-100s are always operated in LAN mode.

The JEP-100(s) operated in Serial mode will require a LAN connection only during a software upgrade session.

*Figure 16. LAN + serial system naming and addressing (example)*



## Serial Protocol Table Entries

When a JEP-100 is connected to a CM-4000 serial port (and operated in Serial mode), the panel must be configured for "ESCP" protocol using the Serial Protocol table. The Baud rate should be set at 115K. Panels normally operated in LAN mode do not require a Serial Proto col table entry.

## MPK Table Entries

Although the JEP-100 is not actually an MPK-type panel (it has an on-board microprocessor and does not use the Message Per Key stroke protocol), the MPK table is used for configuration purposes. An example is shown in Figure 17.

*Figure 17. MPK table for system shown in Figure 16.*

MPK Devices

| | MPK Devices | Device Type | Expansion | Pass word | Board | Port | Address | Input Sets | In Panel | Output Sets | Out Panel | Level Set | Overide Set | Sequence Set |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | JEP1 | ES LAN | ☐ | | CM1 | | 01 | KXYZ INP | | KXYZ OUT | | KXYZ LEV | | |
| 2 | JEP2 | ES LAN | ☐ | | CM1 | | 02 | KXYZ INP | | KXYZ OUT | | KXYZ LEV | | |
| ⋮ | | | | | | | | | | | | | | |
| 64 | JEP64 | ES LAN | ☐ | | CM1 | | 64 | KXYZ INP | | KXYZ OUT | | KXYZ LEV | | |
| 65 | JEP65 | Serial | ☐ | | CM1 | 1 | 01 | KXYZ INP | | KXYZ OUT | | KXYZ LEV | | |

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**Device Type** - For the panels always operated in LAN mode, select type "ES-LAN" on the pull-down menu. For the panels normally operated in Serial mode, select type "Serial."

**Expansion** - Not used for JEP-100 (leave unchecked).

**Password** - Not used for JEP-100.

**Board** - Name of CM-4000 connected to this JEP-100. The source of this name is the Jupiter Network Description table.

**Port** - For LAN panels: Not used. For serial panels: Number of CM-4000 port connected to this JEP-100.

**Address** - For the panels always operated in LAN mode: enter the panel address from 1 to 64; must be unique for panels associated with the same CM-4000. For the panels normally operated in Serial mode: enter the panel address from 1 to 16; must be unique for panels shar ing the same CM-4000 serial port.

JEP-100 panels are normally shipped with a panel address of "01." Modification of this address was discussed on page 30 .

This number is referred to as the "Device Number" on the IP configuration page and "ID" within the JEP-100 MENU system.

**Input Set** - Name of CP Input Set to be assigned to this panel. The usual practice is to have one CP Input Set, containing the names of all in puts, apply to all panels. However, special CP Input Sets could be created which list only selected inputs; such a set could be used to prevent certain panels from selecting specific inputs.

**Input Panel** - This column is not used for JEP-100 panels.

**Output Set** - Output Set name.

If the entry is an actual CP Output Set, then the control panel will be able to control all the outputs listed in that Set. Depending on the con tents of the set, this would allow for full-matrix or multi-bus control.

Alternatively, this field can be used to enter the name of a single switcher output to be controlled. The source of the output name is the Switcher Output table.

**Out Panel** - This column is not used for JEP-100 panels.

**Level Set** - Select the CP Level Set name.

**Override Set** - Not used for JEP-100 panels.

**Sequence Set** - Not used for JEP-100 panels.

## Special Entries Needed to Upgrade Serial Panels

In a LAN + Serial system, downloading to panels normally operated in Serial mode will require IP settings. These settings are entered using the web page. See page 24.

# All Systems

## Control Panel Sets

Switcher inputs and outputs for the JEP-100 are specified by creating a CP Level Set of type "CP3000," a CP Input Set of type "Serial," and a CP Output Set of type "Serial." These sets are assigned to each panel using the MPK Devices table.

**Note** With the JEP-100, the CP Level Set does establish the order in which levels are displayed on the panel; however, this table is *not* the source of the display mnemonics used for the various levels ("Video," "Left," etc.). The level names are instead based on the Switcher "Name" (i.e., level name) as entered in the Switcher Description table, with a maximum length of eight characters. For this reason, systems with JEP-100 panels require that all Switcher Names in the Switcher Description table be unique (not just unique within a given switcher). For example, if switcher "Main" has a level Name "Video," then switcher "News" could not also have a level name "Video."

**Note** The Type "Serial" Input and Output sets used for the JEP-100 must have an Entry number "0" in the first row, Entry number "1" in the second row, and so on in sequence.

The CP Input and Output sets are also the source of the eight-charac ter mnemonics displayed on the panel.

Further, the CP Input set determines which of the 96 button-per-source buttons is assigned to which source. The upper left-hand but ton of the JEP-100 will select the first input listed on the CP Input Set created and selected for this particular panel, the next button to the right will select the next listed input, etc. Override sets are not used.

## Audio Mode (Special Stereo Switching)

When used to control Venus or Apex audio routers, the JEP-100 can provide stereo switching modes, which are Normal, Left, Right, Mix, and Reverse. In this case, the Switcher Description table must define Left and Right levels in the Audio column. For more information, re fer to the Switcher Description Table in Section 5 of the Jupiter CM-4000 manual.

Audio mode operating instructions are detailed on page 64.

## Salvo Switching

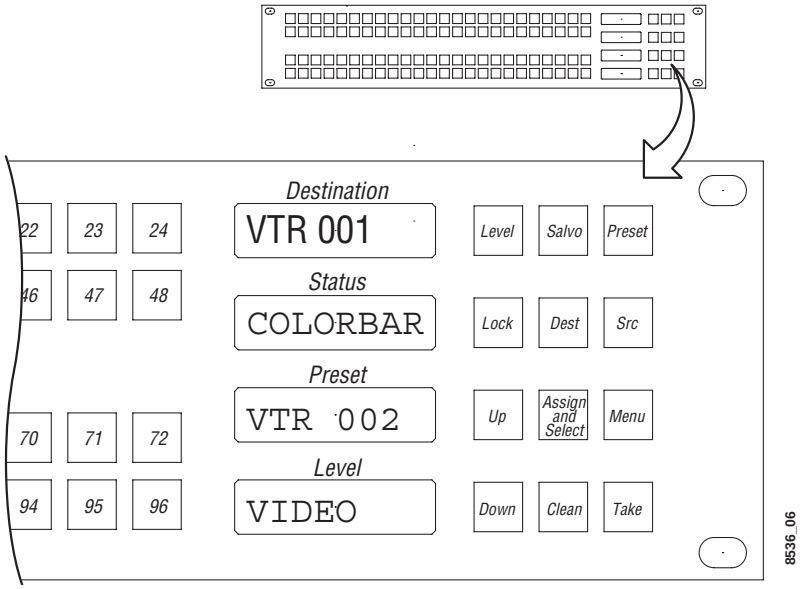
The SALVO key can be used to execute a list of pre-built Jupiter se quences, where a *sequence* is a switch of one or more sources to one or more destinations. For more information, see page 57.

## Compiling

Before the panel can be used, the edited Jupiter set must be compiled and the appropriate configuration set made active using the Control Center. For more information, please refer to Section 5, "Configurator" in the Jupiter CM-4000 manual.

# Operation

*Figure 18. JEP-100 LEDs and mode select buttons*




## LED Displays

**Destination** - the output presently controlled by the panel.

**Status** - the source presently switched to the panel's controlled out put.

**Preset** - shows the new sources as they being entered, e.g., scrolled using the UP and DOWN buttons. After TAKE is pressed, the *previous* source is shown in the Preset window. This allows "flip-flopping" the sources, or switching between the current and preset sources by sim ply pressing the TAKE button.

**Level** - used for level breakaway (split) switching and level-by-level sta-tusing.

## Show Button Assignment

The 96 keys on the left side of the panel can be assigned to inputs, outputs, levels, and salvos. To check button assignments, press PRE SET and one of the "96 keys;" the name of the in/output, level, or sal vo assigned to the key will be displayed in the Preset window. No ac tual switching takes place during this procedure.

## Destination Selection / Status Check

To select a destination prior to making a switch or to check status:

1. ASSIGN/SELECT button - ON.
2. DEST button - ON.
3. Select a new destination by using the UP and DOWN arrows to scroll through all destinations.

   When using the UP/DOWN buttons, scrolling past the end of the list will wrap around to the other end.

   It is also possible to program one or more buttons to control outputs directly. See page 52.
4. When the desired destination is displayed in the Destination window, press the TAKE button to select it.

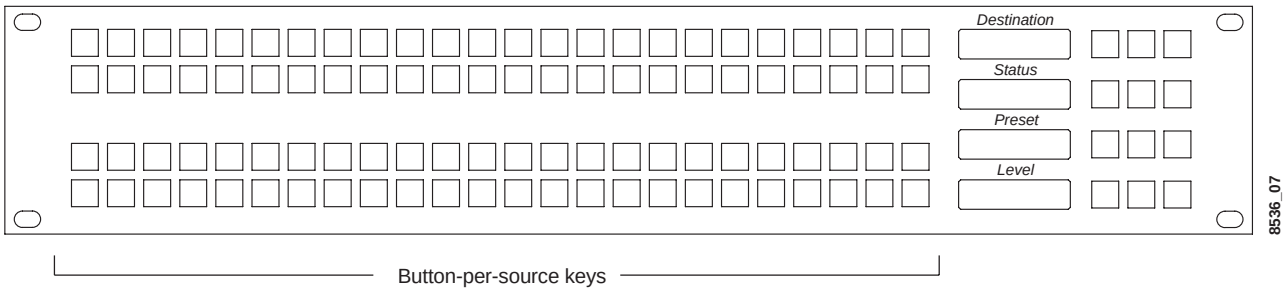
   The name of the input currently switched to this destination will be shown in the Status window.

**Note** If panel "A" does not have access to a certain input, but that input has been selected by panel "B" for the output presently being statused by panel A, then panel A has no way of reporting the mnemonic of the input. Under these conditions, panel A will show asterisks (****) for status.

**Note** If the panel cannot be changed to the desired output, it may have been limited to certain outputs by the CP Output set used on the MPK Devices table. See *Output Set - Output Set name.* on page 44.

## Source Selection (All Levels Take)

*Figure 19.*




1. The PRESET and LEVEL buttons should be OFF.
2. Select the desired input:
   –Press one of the button-per-source (BPS) keys on the left side of the panel (which immediately completes the switch), or
   –When the SOURCE button is ON, the UP/DOWN buttons can be used to find a source in the Preset window. Press TAKE to complete the switch.

   The newly switched source will be shown in the Status window.

   If a BPS button was used to select the source (or if an BPS button cor responds to the selected source) the button will illuminate. However, the button will not illuminate if the first level assigned to the panel on the Level set table has been set to "No" switching. Nor will it illuminate unless all levels assigned to the button are switched.

### BPS button programming

The BPS button assignments are based on the entries to the CP Input table (see page 45), but these assignments can be changed using the panel itself (see page 52).

It is also possible to assign these buttons to a destination (see page 54) or to levels (see page 55).

## Level Breakaways (Split Switching)

This function allows different sources to be selected for different levels. For example, switching video without switching audio.

**Note** Breakaway in v1.1.1 and later includes a method similar to that used for the Jupiter CP-300/330 panels. With this method, levels are selected first; when the source is selected with a button-per-source (BPS) key, the switch is executed.

There are two breakaway methods available:

- Default mode - level names are scrolled in the Level window and toggled on/off before the switch is made.
- Button-per-level mode - levels are assigned to specific buttons and toggled on/off before the switch is made. A level can be assigned to to one of the 96 keys on the left side of the panel or one of the top six keys on the right side of the panel.

### Default Mode Breakaway

1. LEVEL button - ON.
2. Select the wanted levels:
   a. Use UP/DOWN to step to the first wanted level.
   b. Press ASSIGN/SELECT to toggle the level on/off. Dashes in the Level window mean the level is de-selected.
   c. Repeat as needed for remaining levels.
3. Select the desired input:

   –Press one of the button-per-source (BPS) keys on the left side of the panel (which immediately completes the switch), or

   –Toggle the SOURCE button ON, and use the UP/DOWN buttons to find a source in the Preset window. Press TAKE to complete the switch. Toggling SOURCE to OFF will exit.

As long as LEVEL is ON, the panel will remember the breakaway level(s) previously selected and switch accordingly. When LEVEL is OFF, the panel will revert to All Level switching.

#### Checking Status of Selected Level

Press CLEAR. With the LEVEL button ON, press UP/DOWN to step to the desired level. The status of the selected level with be shown in the Status window.

## Button-per-Level Mode Breakaway

This method assumes that the levels have been assigned to specific buttons; if not see "Defining a Level Button" on page 55 or "Alternate Mode" on page 63.)

1. LEVEL - ON.

**Note** In this mode, when using a subset of the 96 buttons on the left side of the panel, the LEVEL button must *always* be ON for the Level but tons to be effective.

2. Toggle on/off the desired level(s).

3. Select the desired input:

   –Press one of the button-per-source (BPS) keys on the left side of the panel (which immediately completes the switch), or

   –Toggle the SOURCE button ON and use the UP/DOWN buttons to find a source in the Preset window. Press TAKE to complete the switch. Toggling SOURCE to OFF will exit.

As long as LEVEL is ON, the panel will remember the breakaway level(s) previously selected and switch accordingly. When LEVEL is OFF, the panel will revert to All Level switching.

### Checking Status of Selected Level

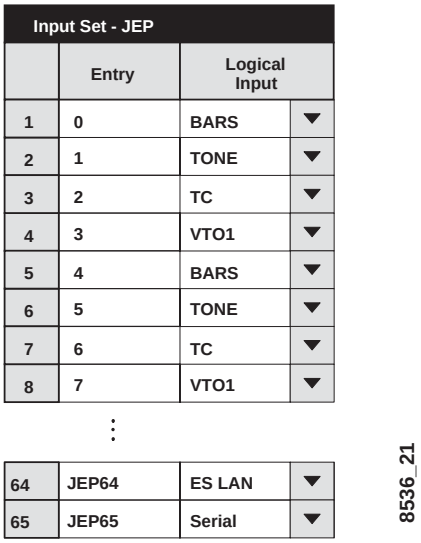
Press CLEAR. With the LEVEL button ON, press UP/DOWN to step to the desired level. The status of the selected level with be shown in the Status window.

## Defining a Source Button

By default, the 96 keys on left side of the panel are assigned to Entry numbers 0 through 95 listed in the the CP Input set table.

See Figure 20.

*Figure 20.*




Button "1" (the first button) is always equivalent to Entry 0, which in this example maps to BARS. Buttons can also be programmed from the front panel using the ASSIGN/SELECT key, as follows:

1. Press CLEAR.

   This returns the panel to the "home state."

2. (Optional) Check the desired key position for the new input:

   a. PRESET - ON.

   b. Press the key you would like to use. Check the Preset window for the current assignment.

   c. Repeat if necessary to find a suitable location.

   d. PRESET - OFF.

3. ASSIGN/SELECT - ON

4. SOURCE - ON.

5. Use the UP/DOWN buttons to select the new input.

   The name of the new input is shown in the Preset window.

**6.** Press the desired button.

The input is now assigned to the button.

The top six function buttons on the right side of the panel can also be used for sources but only when Alternate mode is active (see page 63).

**Note** A source button assignment always refers to an Entry number in the CP Input Set table. If the table is changed such that the Entry number points to a different Logical Input, the source button will now select the new Logical Input.

## Defining a Destination Button

Any group of the "96 buttons" can be assigned to individual outputs for "X-Y" style switching where the operator first selects an output button and then completes the switch by selecting an input button.

1. Press CLEAR.

   This returns the panel to the "home state."

2. (Optional) Check the desired key position for the output:

   a. PRESET - ON.

   b. Press the key you would like to use. Check the Preset window for the current assignment.

   c. Repeat if necessary to find a suitable location.

   d. PRESET - OFF.

3. ASSIGN/SELECT - ON

4. DEST - ON.

5. Use the UP/DOWN buttons to select the new output.

   The name of the new output is shown in the Preset window.

6. Press the desired button.

   The output is now assigned to the button.

The top six function buttons on the right side of the panel can also be used for destinations but only when Alternate mode is active (see page 63).

**Note** A destination button assignment always refers to an Entry number in the CP Output Set table. If the table is changed such that the Entry number points to a different Logical Output, the destination button will now select the new Logical Output.

## Defining a Level Button

Any group of the "96 buttons" can be assigned to individual levels, allowing the operator to toggle buttons on and off during a split switch.

1. Press CLEAR.

   This returns the panel to the "home state."

2. (Optional) Check the desired key position for the level:

   a. PRESET - ON.

   b. Press the key you would like to use. Check the Preset window for the current assignment.

   c. Repeat if necessary to find a suitable location.

   d. PRESET - OFF.

3. ASSIGN/SELECT - ON

4. LEVEL - ON.

5. Use the UP/DOWN buttons to select the level.

   The name of the level is shown in the Level window.

6. Press the desired button.

   The Level is now assigned to the button.

   The button will illuminate to show that the level is selected for switching.

For level breakaway instructions, see page 50.

The top six function buttons on the right side of the panel can also be used for levels but only when Alternate mode is active (see page 63).

**Note** A level button assignment always refers to a row number in the CP Level Set table. If the table is changed such that the row number points to a different level, the level button will now select the new level.

## Locking or Unlocking an Output

Locking an output prevents that output from being switched by any panel in the system, including the initiating panel.

To lock an output:

1. Press the LOCK button.

   This has the effect of locking only those levels this control panel can control (as defined on the CP Level set assigned to the panel). The LOCK button will remain on, indicating the output has been locked by this panel.

   If another Jupiter panel selects this output for control, that panel's LOCK button will light.

To unlock the output:

1. Press the LOCK button again.

   The LOCK button lamp will go off.

   If the output will not unlock, it has been locked by another panel.

**For additional lock information** - please refer to the Jupiter CM-4000 manual.

# Salvo Switching

**Note** The JEP-100 Salvo function requires Jupiter version 7.4 software (or newer) to be operating in the CM-4000.

The SALVO key can be used to execute a list of pre-built Jupiter sequences, where a *sequence* is a switch of one or more sources to one or more destinations.

## Setting Up a Sequence

A Jupiter sequence is built using the Jupiter **Sequence Set** table, an example of which is shown in Figure 21.

*Figure 21. Sequence Set*

**Sequence Set - SETUP**

| | Sequence | Logical Input | | Logical Output | | Levels | |
|---|---|---|---|---|---|---|---|
| 1 | SETUP1 | CAM1 | ▼ | MON1 | ▼ | YYYY | ... |
| 2 | SETUP1 | CAM2 | ▼ | MON2 | ▼ | YYYY | ... |
| 3 | SETUP1 | CAM3 | ▼ | MON3 | ▼ | YYYY | ... |
| 4 | SETUP2 | CAM1 | ▼ | MON3 | ▼ | YYYY | ... |
| 5 | SETUP2 | CAM2 | ▼ | MON2 | ▼ | YYYY | ... |
| 6 | SETUP2 | CAM3 | ▼ | MON1 | ▼ | YYYY | ... |

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The sequence set is given an eight-character (max) name and is of type "3800."

In this example, sequence set "SETUP" contain two sequences: "SET UP1" and "SETUP2." "SETUP1" will switch Cameras 1 through 3 into Monitors 1 through 3 (a total of three switches) with a single TAKE command. "SETUP2" will reverse the order of the cameras in the monitors. Each sequence can include up to 25 events (switches).

There is no specific limit to the number of sequences, but due to memory restrictions a limit of 16 is recommended (e.g., "SETUP1" through "SETUP16."

The sequence set must be assigned to the JEP-100 panel on the Jupiter **MPK Devices** table.

For additional information regarding Jupiter sequences and assigning them to control panels, refer to the CM-4000 manual.

## Executing a Sequence

After a sequence is created and downloaded, it can be executed as follows:

1. SALVO button - On.

   The name of the first sequence (e.g., "SETUP1") will be shown in the Status window.

2. Use UP/DOWN to scroll to the desired sequence.

3. Press TAKE to execute the sequence.

## Assigning a Sequence to a Button

The 96 keys on the left side of the JEP can be assigned to individual sequences. Pressing the assigned button will then execute the se quence.

1. ASSIGN button - On.

2. SALVO button - On.

   The name of the first sequence (e.g., "SETUP1") will be shown in the Status window.

3. Use UP/DOWN to scroll to the desired sequence.

4. Press one of the desired 96 keys on the left side of the panel.

## Joystick Override

The current version of the JEP uses a 15-pin D female connector on the rear panel to provide a total of 14 control lines (GPI ports) plus ground. Each port can be used to trigger a switching event when initi ated by a contact closure on a customer-provided device.

By default, the contacts connected to Pins 1-14 of the GPI connector are mapped to Entry numbers 1 through 14 in the CP Input set as signed to the JEP-100. However, a front-panel menu can be used to manually assign a port to any router input, or to a sequence (salvo).

**Note** GPI assignments always refer to the Entry number in the CP Input Set table. If the CP Input table is changed such that the Entry number refers to a different Logical Input, the GPI port will now select the new input.

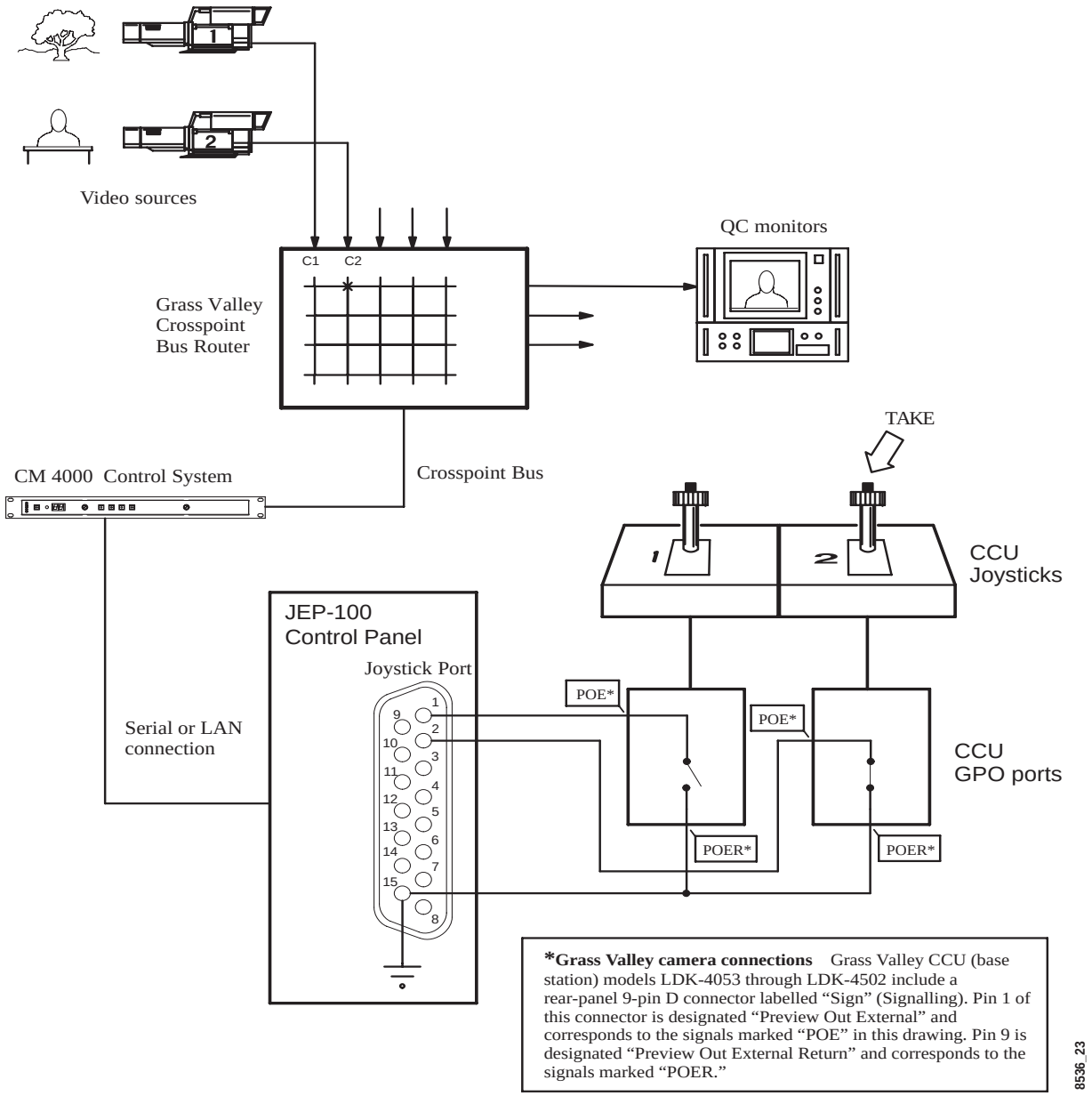
If assigned to a router input, the port can be defined as latching or non-latching:

- In latching mode, the JEP-100 will send a switch command for the source assigned to the triggered control line and not switch away from that source until a different source (i.e., a different contact) is selected by the user. For example, if the operator presses and then releases a joystick push button, the source will remain selected.
- In non-latching mode, the JEP-100 will send a switch com mand for the selected source but switch back to the previous source when the control line returns to a high state (e.g., when the joystick button is released). This provides a single-button chop or flip-flop style of operation.

Figure 22 shows an example of the joystick override application, where a CCU joystick is used to select a camera for QC evaluation. When a camera is selected (camera 2 in this example) and the joystick button is pressed, the CCU provides a contact closure on relay 2. The closure is sensed by an opto-coupler at pin 2 of the JEP-100 GPI con nector, which results in a command being issued to the CM-4000 to switch input C2 to the output presently being controlled by the JEP-100.

Wiring between the rear-panel connector and the customer-supplied contact closure device should be at least 22 AWG (American Wire Gauge) and no longer than 30 feet (10 meters). A circuit diagram for ports 1-8 is shown in Figure 23 (circuitry for ports 8-14 is similar).

*Figure 22. JEP-100 joystick override application*




***Grass Valley camera connections** Grass Valley CCU (base station) models LDK-4053 through LDK-4502 include a rear-panel 9-pin D connector labelled "Sign" (Signalling). Pin 1 of this connector is designated "Preview Out External" and corresponds to the signals marked "POE" in this drawing. Pin 9 is designated "Preview Out External Return" and corresponds to the signals marked "POER."

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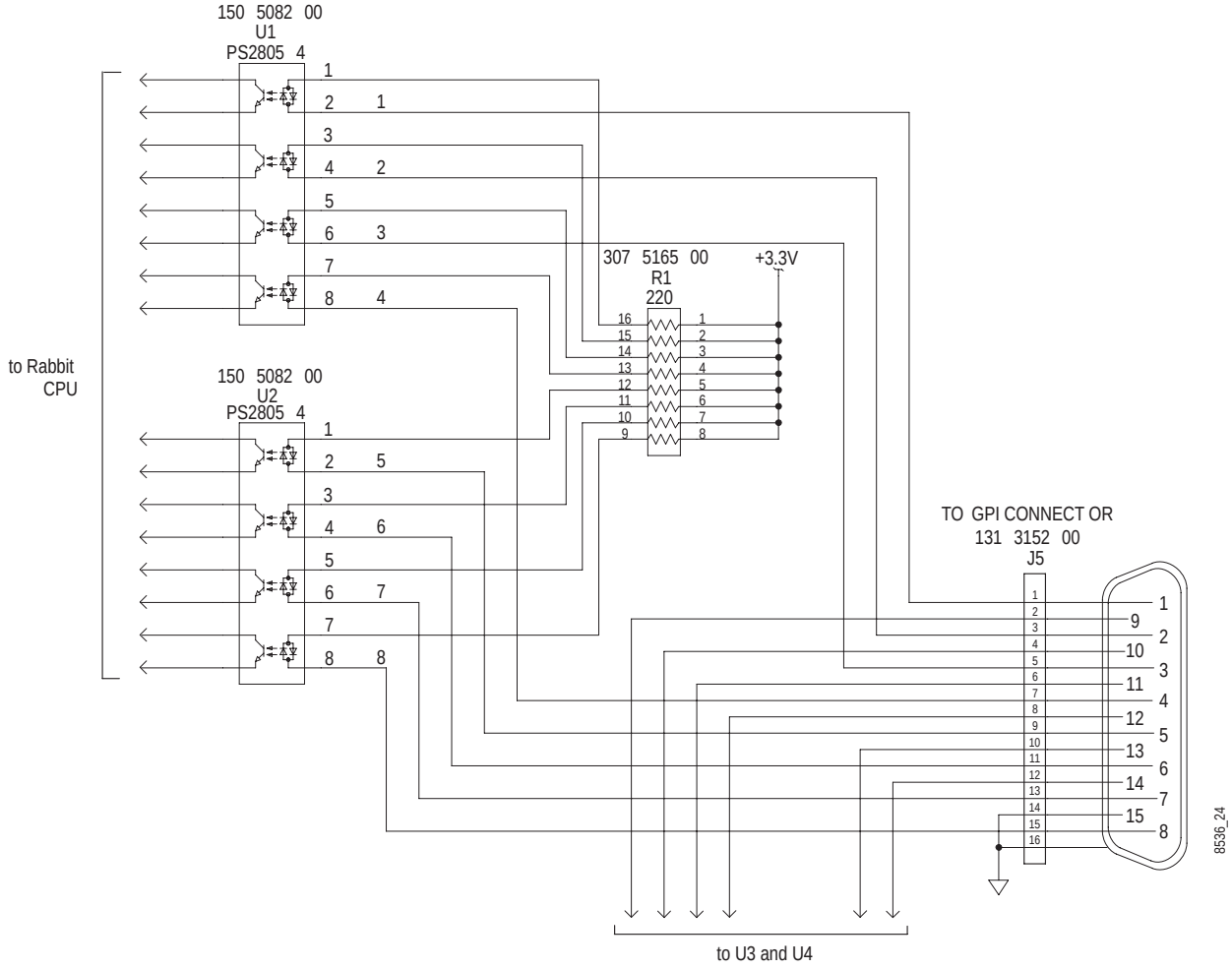
*Figure 23. JEP-100 internal circuitry for GPI ports 1-8 (ports 9-14 are similar).*



## Configuring a JEP-100 GPI Port (Joystick Override Control Line)

1. MENU button - ON.
2. Use UP/DOWN to scroll to "GPI mode."
3. Press TAKE.

   The Status window will indicate "GPI 1" (highlighted). This refers to pin 1 on the rear panel connector.

   Highlighting is used to indicate the window that will be scrolled using the UP/DOWN keys.

   The Preset window will indicate the port's present mode.

   To exit GPI mode at any time and return to home state without saving any changes, press CLEAR. (Sometimes CLEAR must be pressed twice.)
4. Use UP/DOWN to display the number of the desired port from 1 to 14.
5. Press MENU. This will highlight the mode as shown in the Preset window.
6. Use UP/DOWN to select the desired mode for this port: Latch, NoLatch, Salvo, or GPI off.
7. Press MENU. The number of the GPI port should now be highlighted.

   –If Latch or NoLatch was selected, the name of a router input must now be specified. Press SRC. This will highlight the Level window and enable the UP/DOWN buttons to scroll to the input that will be selected when this port receives a switch command (i.e., is pulled low).

   –If Salvo was selected, a sequence must now be specified. Press SALVO. This will highlight the Level window and en able the UP/DOWN buttons to scroll to the existing se quence that will be executed when this port receives a start command (i.e., is pulled low).
8. To apply the setting, press TAKE.
9. To save the setting, the number of the port ("GPI 1," etc.) must be highlighted. Press TAKE. The panel will return to home state.

# Menu Functions

The various menu modes are entered by selecting MENU, then UP/DOWN to scroll to the desired item in the Preset window.

In general, the window describes what will happen if TAKE is pressed. For example, "Alm. on?" means that Alternate mode will be turned On by pressing TAKE.

## AlM. - Alternate Mode

Alternate mode may be useful when all 96 buttons to the left of the status displays have been assigned to inputs, outputs, or levels and the operator wants to make additional assignments on a temporary basis. Alternate mode allows the top six buttons in the right-hand button cluster to be used for this purpose. For example, the buttons could be used for level selection during breakaway switching.

**Button assignments** must be made *prior* to entering Alternate mode:

Assigning a source - see page 52.

Assigning a destination - see page 54.

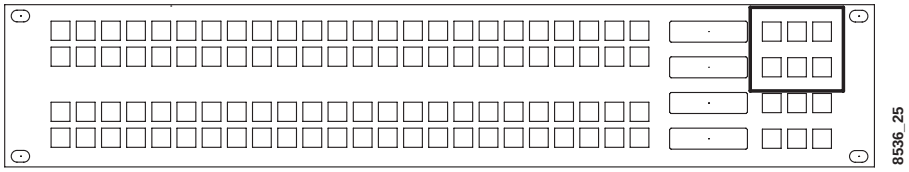
Assigning a level - see page 55.

### Alternate mode operation

1. MENU button - ON.
2. Use UP/DOWN to display "Alm on" (Alternate mode On), meaning that this is the mode that will be selected if TAKE is pressed.
3. Press TAKE.

   This activates the six "temporary level" buttons (the outlined buttons in Figure 24). Lighted buttons initially indicate defined levels.

*Figure 24.*




4. Select the new input.
5. Toggle OFF the level(s) you **don't** want to switch.

6. Press TAKE to complete the switch on the selected level(s).

## SelAMod. - Select Audio Mode (Special Stereo Switching)

The JEP-100 can provide stereo switching modes, which are Normal, Left, Right, Mix, and Reverse. These changes are made to individual levels prior to completing a switch.

**Note** Audio mode will only appear in the Preset window if a Venus or Apex router is connected and configured for special stereo switching. In particular, the Jupiter Switcher Description table must define Left and Right levels in the Audio column. For more information, refer to the Jupiter CM-4000 manual.

To perform a special stereo switch:

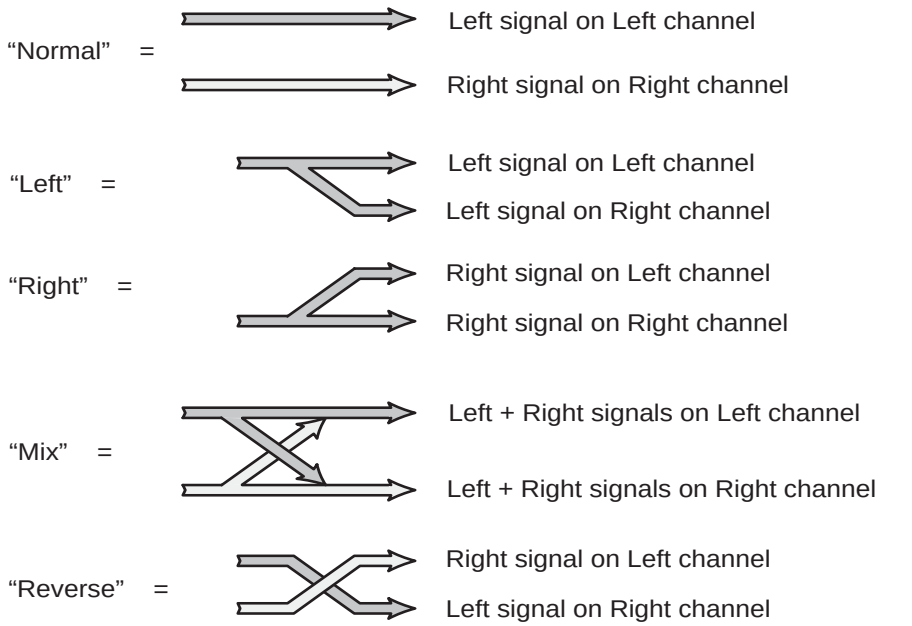
1. SOURCE - ON.
2. Use the UP/DOWN buttons to select the new input.
3. Press MENU.
4. Use UP/DOWN to display "SelAMod?" meaning that this is the mode that will be selected if TAKE is pressed.
5. Press TAKE.

   The Preset window will display "Pair 1," referring to the first two audio levels listed in the Jupiter CP Level Set; e.g., Left and Right.
6. If this is the desired pair, press TAKE. If not, use UP/DOWN to select the appropriate audio pair, and then press TAKE.

   The current audio mode for the selected pair will be shown.

   A maximum of four audio pairs can be defined.
7. Toggle to the desired mode:

*Figure 25. Audio Modes*




8. Press TAKE.
9. The last selected Audio mode will remain in effect until explicitly changed by the operator.

## DspAMod. - Display Audio Mode (Special Stereo Switching)

This mode provides a method of checking the Audio mode that is presently in effect.

1. Press MENU.
2. Use UP/DOWN to display "DspAMod?" meaning that this is the mode that will be selected if TAKE is pressed.
3. Press TAKE.

   The Preset window will display "Pair 1," referring to the first two audio levels listed in the Jupiter CP Level Set; e.g., Left and Right.
4. If this is the desired pair, press TAKE. If not, use UP/DOWN to select the appropriate audio pair, and then press TAKE.

   The current Audio mode for the selected pair will be shown.
5. Press CLEAR to exit.

## S.M. - Sticky Level Mode On/Off

This function allows breakaway operation during which the selected Levels remain selected after a TAKE. For example, you may want to keep switching different video test signals to a destination but not switch audio tone. To turn on sticky mode:

1. MENU - ON.
2. Use UP/DOWN to step to "S.M. on?"
3. Press TAKE. Sticky mode is now active.
4. Perform a breakaway switch (see page 50) .

   The breakaway pattern of this switch will remain in effect after the TAKE is executed (and also if CLEAR is selected).

   For example, if Sticky mode is on, and the operator makes a vid eo-only switch, the next switch will also be video only unless spe cified otherwise. In other words, as long as Sticky mode is on the last-selected breakaway settings will persist.

To find out which levels are sticky, press LEVEL, then UP/DOWN. The Level window will show the levels that will switch. If Level but tons have been assigned, the appropriate buttons will illuminate.

To **cancel sticky levels**, press MENU, then use UP/DOWN to toggle the display to "S.M off?" Then press TAKE.

## M.O. - Multiple Output Mode On/Off

This function allows "gang" switching where the same input is switched to multiple outputs with a single TAKE. The following pro cedure assumes that destination buttons have been assigned (see page 54).

To turn on Multiple Output mode:

1. MENU - ON.
2. Use UP/DOWN to step to "M.O. on?"
3. Press TAKE. Multiple Output mode is now active.
4. Toggle on/off the outputs that you want to switch.
5. Select the desired input.
6. Press TAKE. The input will be switched to all selected outputs.

   The breakaway pattern of subsequent switches will remain in ef fect after the TAKE is executed (and also if CLEAR is selected).

To **cancel multiple output mode** press MENU, then use UP/DOWN to toggle the display to "M.O. off?" Then press TAKE.

## ELAN - Ethernet Mode On/Off

Ethernet mode enables communication through a LAN cable connec tion (as shown on page 42). The ELAN OFF setting enables communication through a serial connection.

When a LAN + Serial arrangement is used the panel will normally be operated in the Serial mode; however, during software upgrades the Ethernet mode must be used.

**Note** When switching between Serial and LAN modes, multiple startup messages may be seen momentarily.

## D.T. - Display Time On/Off

In this mode, the time of day (HH:MM:SS) is displayed in the Level window. The source of this clock is the CM-4000.

**Note** The clock is synchronized with the CM-4000 approximately every 10 minutes.

## Chg ID - Change Panel ID Mode

The panel ID is used to identify an individual panel on the Jupiter MPK Devices table.

When "Chg Id?" is displayed, press TAKE; the Name of the panel (as created on the Jupiter MPK Devices table) will be displayed in the Level window. Then use UP/DOWN to select the desired ID in the Preset window.

In Serial mode, the ID can range from 1 to 16; in Ethernet mode the ID can range from 1 to 64. When the desired ID is shown, press and hold the "24" button and press TAKE to apply the change. You should see the panel restart.

**Note** The panel ID can also be changed on the IP configuration (web) page, where it is referred to as the "Device Number" (see page 30). On the MPK Devices table the panel ID is called "Address" (see page 43 and page 43).

## v - Version Number Display

Displays the panel software version. Exit with TAKE.

## Internet Protocol Address Display

Displays the IP address for reference. The address can be changed us ing the web page (as described on page 29). Exit with TAKE or CLEAR.

## Diag - Diagnostic Mode

Provides a test of the LED character set and all button lamps. Exit with TAKE or CLEAR.

**Note** Buttons 65, 73, and 81 may not light while in Diagnostics mode. This is a diagnostics code problem and does not affect the function of the panel.

## C.B. - Change Brightness

Changes brightness of LEDs in display windows.

When "C.B. ?" is displayed, press TAKE; then use UP/DOWN to se lect the desired brightness level. Exit with TAKE or CLEAR.

# *Glossary*

Note: terms set in SMALL CAPS are defined within this glossary.

### 10/100BaseT

ETHERNET configuration that uses twisted pair wiring (typically Cat 5 UTP unshielded twisted pair cable with RJ45 8-pin connectors) to transmit data up to 100 Mbps.

## A

### AES

Audio Engineering Society. Internet address: http://www.aes.org.

### AES3-1992

AES Recommended Practice for Digital Audio Engineering -- Serial transmission format for two-channel linearly represented digital audio data.

### AES11

AES Recommended Practice for digital audio engineering -- Synchronization of digital audio equipment in studio operations.

### AFV

Audio-Follow-Video. Normal operation of a distribution switcher where selection of a video source automatically selects audio from that source. Example: selection of VTR1 video automatically selects VTR1 Audio 1 and VTR1 Audio 2 as well.

## B

### breakaway

Independent operation of a switcher level. Same as "split." Contrasts with normal AFV operation. Example: selecting video from VTR1 but audio from Announce Booth 2.

### bus

In distribution switching, a channel leading to an output or destination. Example: "controls 20 buses" means being able to select sources for 20 destinations.

### button-per-input/output control panel

Buttons are dedicated to a particular source or destination. As opposed to CATEGORY/NUMBER control.

## C

### category/number selection method

Operator first picks category (example: VTR); then unit within category.

### chop

Rapid, back-and-forth switching between two inputs.

### CPL

Control Point Language. Protocol used to control Trinix router through Encore / SMS 7000 Ethernet connection to NR-33000 Broadlinx board.

### crosspoint

Distribution switcher circuit where input signal can be connected to output bus.

### crosspoint bus

Also called the *matrix bus.* A five-pair bus that carries switching and status commands between the crosspoint (matrix) cards and the control device.

## D

### delegation

Use of a special control panel or supervisory display to restrict control of a specific VTR to a particular control panel or panels. The delegation process does not actually connect a control panel to a machine; rather, it allows the connection to be made using the normal machine linkage procedures. See also Linkage.

### DHCP

Dynamic Host Configuration Protocol. Provides automatic TCP/IP configuration when a DHCP server is present on the network.

### DVB-ASI

Digital Video Broadcasting -Asynchronous Serial Interface.

### DSP

Digital signal processor.

## E

### EBU

European Broadcasting Union. Internet address: http://www.ebu.ch/.

### ESbus

Nickname for EBU/SMPTE RS-422 bus protocol for remote control of television production equipment using a full-duplex four-wire, asynchronous serial, 38.4 kbits/s digital channel. Connectors are 9-pin D. Incorporates ANSI-SMPTE 207M and Recommended Practice 113. The Jupiter Serial bus is designed to be compatible with ESbus; however, the serial data cable supplied by Thomson uses only 5 conductors. (In Jupiter systems, "ESbus" usually refers to VTR control.)

### EScontrol

Control of a "remote" (non-crosspoint bus) routing switcher using proposed ESBUS routing switcher dialect. Also referred to as "**ESbus Router**" protocol.

### ESnet

Nickname for EBU/SMPTE proposed protocol for remote control of television production equipment based on THIN NET.

### ESswitch

control of a routing switcher using a third-party computer operating according to the proposed ESBUS routing switcher dialect. Also referred to as "ESBUS TRIBUTARY" protocol.

### ESswitch protocol

(a.k.a. "ESW"). Protocol used for control of a routing switcher by a third-party computer. It is described in Thomson document "ESswitch Serial Routing Switcher Control Protocol, Enhanced Version." This is a simplified version of the ESBUS TRIBUTARY PROTOCOL.

### ESbus Tributary protocol

(a.k.a. "ESTR" and "ES-trib"). Full tributary ESBus automation protocol, compliant with SMPTE EG 29-1993, and all associated normative references. The protocol supports all standard bit rates from 300 to 115.2 kBPS. Flow control is an advantage with this protocol.

### exclusion

Lockout of selected inputs from selected outputs. Example: lockout of a test signal from bus leading to transmitter.

## F

### file server

Computer dedicated to providing access to a hard disk on a LAN. In Jupiter systems, the PC that holds the Jupiter installation with the active set.

### follow switch

Switch made automatically on one level in response to a switch made by the operator on another level. See also AFV, REVERSE SWITCHING.

### FPGA

Field Programmable Gate Array.

### full-matrix control

Ability to select any source for any destination.

## G

### gateware

Configuration data downloaded to FPGA device.

### gateway

Device for connecting two dissimilar networks.

## H

### hardware address

Another name for the link level address, a unique identifier required for every device that operates on a network (for example, 08000090acf6 [hex]). Compare with TCP/IP ADDRESS.

## I

### interface bus

ESBUS term for the channel that connects VTRs, control panels, bus controllers, etc. Uses 9-pin D connectors (but Thomson version uses only 5-conductor cable). See SERIAL BUS.

### IP multicast

Protocol for sending messages to multiple receivers at the same time on TCP/IP networks, by use of a multicast address.

## L

### level

Historically, a switcher matrix that carries one type of signal, as determined by DIP switch settings on crosspoint boards. Example: level 1 for video, levels 2 and 4 for left and right audio, etc. However, in 3-stage switching systems this switch-set level is referred to as the "physical" level; and large systems may require more than one physical level to provide enough hardware for an entire "logical" level (such as video). The Jupiter Physical Switching menu refers to a "logical level" that is actually the logical level *number,* this being the row number on which the level is identified on the Switcher Level Descriptions table. The logical level *name* also appears on this table.

### LOS

Loss of Signal.

## M

### MAC address

See HARDWARE ADDRESS.

### MADI

Multiplexed Audio Digital Interface. matrix bus

see CROSSPOINT BUS.

### MDI

Multiple Document Interface.

### MIDI

Musical Instrument Digital Interface. Serial interface bus used in Triton switchers.

### mnemonic

Abbreviation, usually four characters long, for a particular input or output. Mnemonics appear in the LED status windows of the control panels. However, the term is sometimes used to define an input or output in the sense of a logical device name.

### MPK

Message-per-keystroke. Protocol developed by Thomson for control panels and devices connected to the Jupiter Serial bus. Baud rate is variable, with 8 data bits, 1 start bit, 1 stop bit, and even parity; time out is 6 characters (1.72 msec).

### multicast

see IP MULTICAST.

## N

### native protocol

GV Series 7000 Signal Management System Protocol via RS-232, RS-422, SLIP, or Ethernet. Maestro commands to an Encore control system use this protocol.

### node

Device on a network, such as a controller board, control panel, file server, or VTR.

### numeric mode

Switcher selection method using input and output numbers only (as opposed to category/number mode).

### numeric set

Factory-supplied configuration set used to set up and operate the routing switcher in the minimum possible time.

## O

### OPM

OUTPUT MONITOR.

### override

One-button selection of an input. Override button of a control panel is programmed to select a particular input that is used heavily.

### output monitoring

Feature of routing switcher which allows control system to verify switcher performance without interrupting normal operations. A separate, internal switching system is used to switch the Monitor Output to any *output* of the switcher.

## P

### path finding

Switching technique allowing two or more routing switchers to operate as a system, where each switcher can access the other's inputs through a number of *tie lines*. Because the tie lines are limited, the path will be *blocked* when all lines are busy. Not to be confused with THREE-STAGE SWITCHING.

### PCI

Peripheral Component Interconnect, a local computer bus standard developed by Intel Corporation. Most PCs include a PCI bus in addition to a more general ISA expansion bus.

### physical level

see LEVEL.

### Pmem

Battery-protected memory.

### pPPM

Peak program meter.

## R

### RCL

GV Router Control Language Protocol (Encore Control System Protocol via RS-232, RS-422, SLIP, or Ethernet.) Note: Maestro commands to an Encore control system use *NATIVE PROTOCOL*.

### refresh

Continuous repetition of switching instructions and confirmation of crosspoint status. Reports any interruption of service – for example, if crosspoint board is removed. When board is replaced, automatically restores previous switch instructions.

### repeater

Device for connecting two LAN segments.

### RS-422

EIA standard which defines the electrical characteristics of balanced voltage digital interface circuits. More rugged than the earlier RS-232 standard, which employs unbalanced voltages. This standard does *not* specify a connector type. While the Jupiter VTR / control panel bus and CC 2010 matrix (crosspoint) bus are both based on the RS-422 standard, the VTR / control panel bus uses 9-pin D connectors and the CC-2010 matrix bus uses 15-pin D connectors.

### RS-422 bus

see SERIAL BUS.

## S

### salvo

Single-command switching of source(s) to multiple destinations.

### SCP

Software Control Panel.

### segment

Portion of a LAN. In 10BASE2 systems, a segment is limited to 185 meters and 30 nodes. However, segments can be joined by repeaters.

### server

1. Hardware: a computer that provides shared services to other computers over a network; e.g., a file server.

2. Software: a program that provides data to client programs in the same or other computers. In Jupiter systems, a "JNS server" (software) is said to run on a "file server" (hardware).

### single-bus control panel

Selects any source for 1 destination.

### SMPTE

Society of Motion Picture and Television Engineers. URL: http://www.smpte.org.

### SMPTE 259M-1997

Television standard: "10-Bit 4:2:2 Component and 4fsc Composite Digital Signals - Serial Digital Interface."

### SMPTE 269M-1999

Television standard - "Fault Reporting in Television Systems."

### SMPTE 274M-1998

Television standard: "1920 x 1080 Scanning and Analog and Parallel Digital Interfaces for Multiple Picture Rates."

### SMPTE 292M-1998

Television standard: "Bit-Serial Digital Interface for High-Definition Television Systems."

### SNMP

Simple Network Management Protocol.

### split

see BREAKAWAY.

### status

In a distribution switcher, a display indicating what source is currently switched to a given destination.

## T

### three-stage switching

Architecture used for very large switchers as a means of reducing crosspoints needed for a given number of inputs/outputs. An array of relatively small matrixes is arranged in an input stage, an intermediate stage, and an output stage. The path taken by a given signal through these stages is determined by software and will vary according to which circuits are already in use. Unlike PATH FINDING between two discrete switchers, three-stage switchers are carefully designed so that all inputs are always available at all outputs; i.e., the switcher cannot be *blocked*.

### tie line

see PATH FINDING.

### TDM

Time Domain Multiplexing.

### tributary

Term used in ESBUS documentation for an intelligent device (such as a VTR or control panel) connected to an ESBUS.

## V

### VDE

Verband Deutscher Electrotechniker e.V. (Union of German Electrical Engineers). Professional organization in Germany authorized to conduct product safety tests.

### VITC

Vertical Interval Time Code, embedded in the vertical interval of the video signal.

## X

### X-Y selection method

Full-matrix control of switcher, where source is described as (x) and destination is described as (y).

# *Index*

## Symbols



## Numerics



## A



## B



## C



## D



## E

## F



## G



## H



## I



## J



## L



## M



## N



## O

## P



## R



## S



## T

## U



## V



## W



## X