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JEP Series

Jupiter / Encore Control Panels

Installation Manual

Software Version 1.3.0

www.grassvalley.com

071837202
SEPTEMBER 2011

KEMA Quality

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Grass Valley Web Site

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

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

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

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

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END-OF-LIFE PRODUCT RECYCLING NOTICE

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

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

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

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

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Preface

About This Manual

This manual provides installation and operating information for the JEP control panel series. These control panels are designed for use with a Jupiter CM-4000 or CM-4400 System Controller.

Additional Documentation

Printed and electronic copies of this manual are normally provided with the system. Individual manuals may be ordered by contacting Technical Support. For contact information, see *Contacting Grass Valley* on page 4.

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

Jupiter Control System Release Notes.
Jupiter CM-4000 Installation and Operating Manual
Jupiter CM-4400 Installation and Operating Manual
Jupiter Getting Started Guide.

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

Routing Products Documentation CD. Includes all Jupiter manuals.

These documents are also available on the www.grassvalley.com web site.

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.

Certifications:

Category	Standard	Designed/tested for compliance with:
Safety	ANSI / UL60950	"Standard for Safety of Information Technology Equipment - Safety - Part 1: General Requirements", (ANSI/UL 60950-1, First Edition, Dated April 1, 2003, with revision through and including November 26, 2003.)
	IEC 60950	"Standard for Safety for Information Technology Equipment - Safety - Part 1: General Requirements", (IEC 60950-1, First Edition, 2001, Corrigendum 1:10-2002)
	CAN/CSA C22.2, No. 60950	"Standard for Safety of Information Technology Equipment - Safety - Part 1: General Requirements", (CAN/CSA-C22.2 No. 60950-1-03. First Edition Dated April 1, 2003, with revisions through and including November 26, 2003)
	EN60950	Safety of Information Technology Equipment, including Electrical Business Equipment.
	73/23/EEC	Low Voltage Directive
EMI	EMC Directive 89/336/EEC via EN 55103-1 and 2	Audio, Video and Entertainment Lighting Control for the European Community.
	EN 55103-1 standards	Electromagnetic compatibility. Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 1 Emissions, Environment E1/E2 EN 55022: Class A Radiated and Conducted Emissions EN 61000-3-2: Power Line Harmonic Emissions, Radiated Magnetic Field Emissions, Peak Inrush Current
	EN55103-2 standards	Electromagnetic compatibility--Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 2 Immunity, Environment E1/E2 EN 50082-1: Immunity EN 61000-4-2: Electrostatic Discharge "ESD" Immunity EN 61000-4-3: Radiated RF Electromagnetic Field Immunity EN 61000-4-4: Electrical Fast Transient/Burst "EFT" Immunity EN 61000-4-5: Surge Immunity EN 61000-4-6: Conducted RF Immunity EN 61000-4-11: Voltage Dips, Short Interruptions and Voltage Variations Annex A - Radiated Magnetic Field Immunity Note: This only applies to assemblies sensitive to magnetic fields
	US FCC Class A Canada FCC Industry Canada	CISPR Pub. 22 (1985)
	Australia & New Zealand:	AS/NZS 3548

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.

ESD Protection

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

Recommended ESD Guidelines

Follow these guidelines when handling Grass Valley equipment:

- Only trained personnel that are connected to a grounding system should handle ESDS items.
- Do not open any protective bag, box, or special shipping packaging until you have been grounded.

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

- Open the anti-static packaging by slitting any existing adhesive tapes. Do not tear the tapes off.
- Remove the ESDS item by holding it by its edges or by a metal panel.
- Do not touch the components of an ESDS item unless it is absolutely necessary to configure or repair the item.
- Keep the ESDS work area clear of all nonessential items such as coffee cups, pens, wrappers and personal items as these items can discharge static. If you need to set an ESDS item down, place it on an anti-static mat or on the anti-static packaging.

Sources of ESD and Risks

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

Personnel

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

Environment

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

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

Work Surfaces

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

Equipment

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

Materials

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

Grounding Requirements for Personnel

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

Table 1. Product Qualification

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

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

Table 2. Compliance Verification

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

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

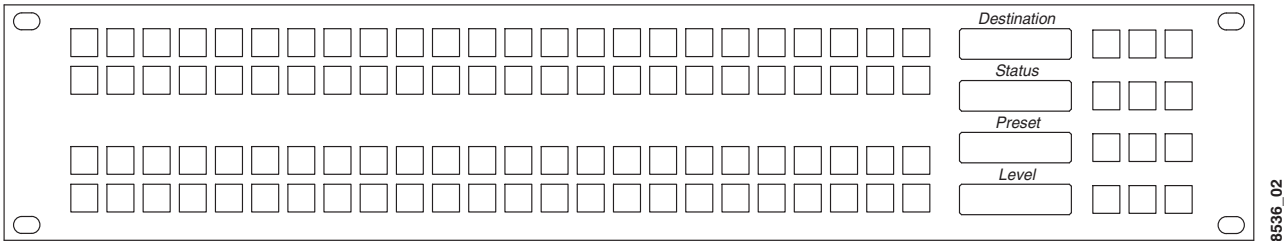
Section 1

JEP-100 Control Panel

Introduction

The JEP-100 Jupiter/Encore Control Panel, which was the first example in the JEP series, is a locally-programmable, eight-character mnemonic, full-matrix control, multiple level break away panel designed especially for use in television production vans. (Figure 1)

Figure 1. JEP-100 Control Panel



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 only designed for use with either a Jupiter CM-4000, CM-4400 System Controller, or an Encore Control System. The JEP-100 panel is not intended for use with Jupiter VM-3000 System Controllers.

Note The CM-4000/4400 must be operating with Jupiter / AccuSwitch version 7.9.1 to support the JEP-100 1.3.0 feature set.

Note The CM-4000/4400 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).

In Jupiter applications, the JEP-100 can be connected to the CM-4000/4400 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. Width x 3.5 in. Height x approx. 4 in. Depth (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.

The wiring between the rear-panel connector and a 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 or CM-4400 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.

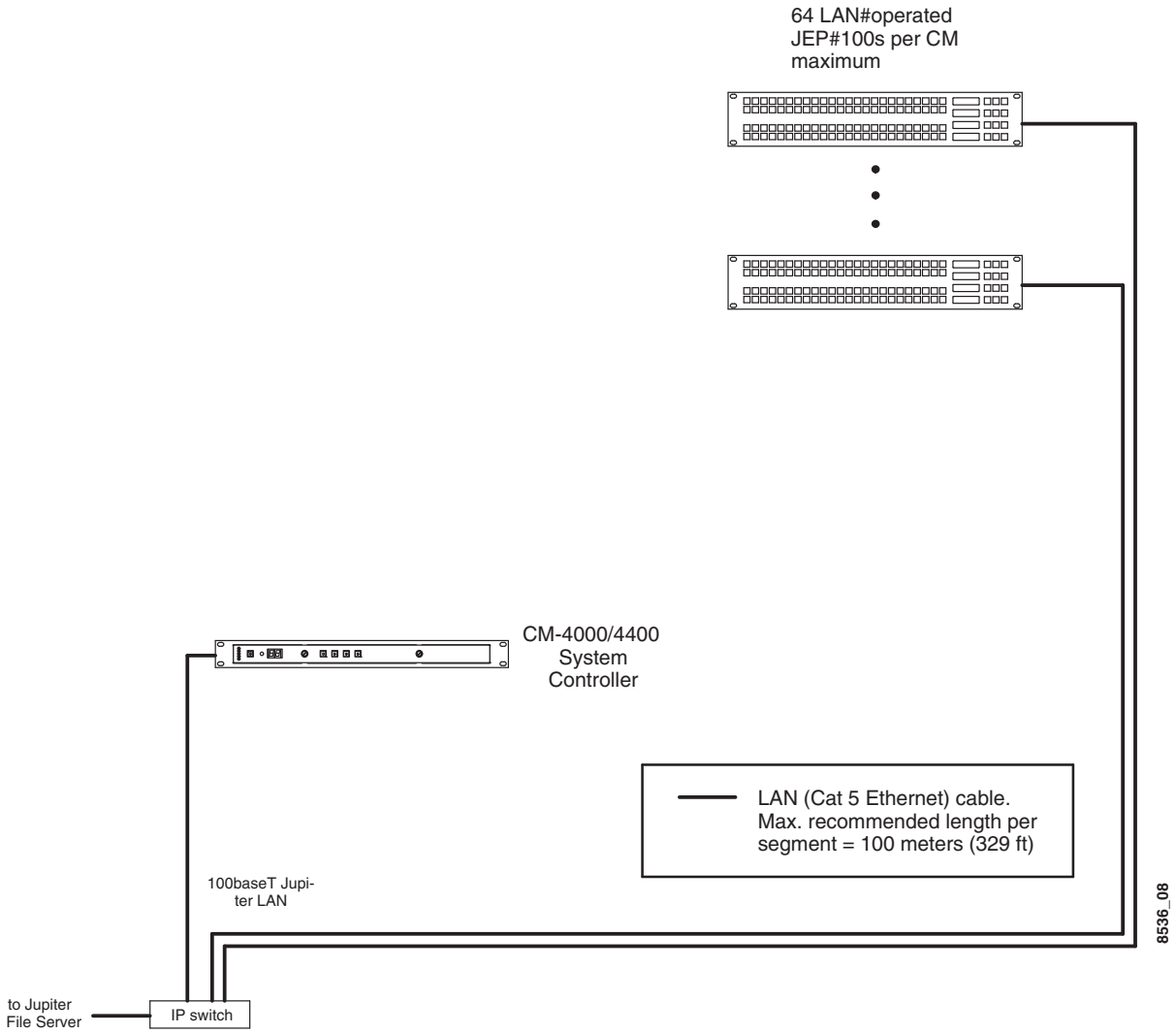
An Ethernet connection is required for upgrading the panel software, for all panels, even if you use a serial connection to connect to the CM-4000 or CM-4400 to the panels.

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

Figure 2. LAN only system connections.

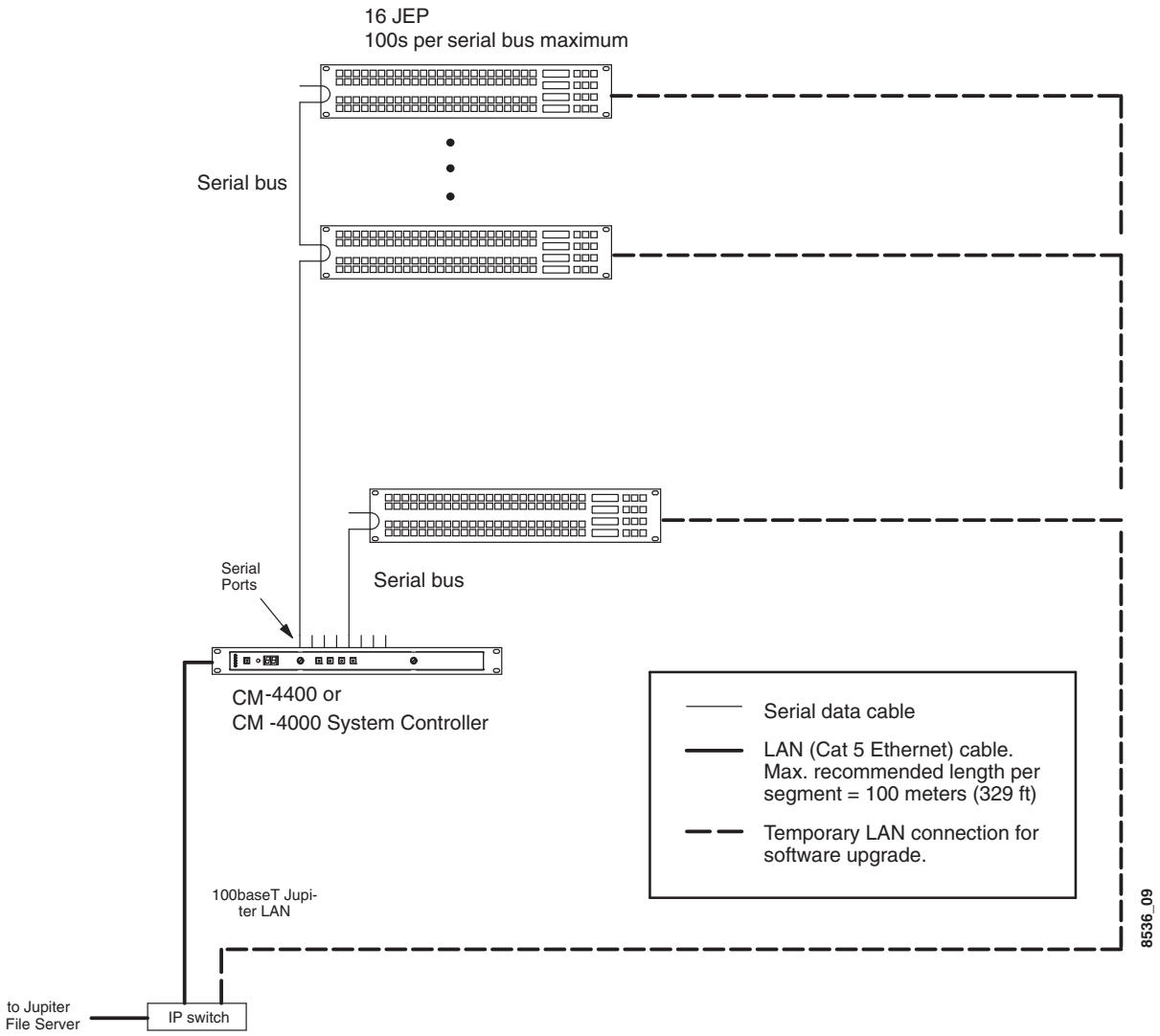


Serial System

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

Figure 3. Serial system connections.



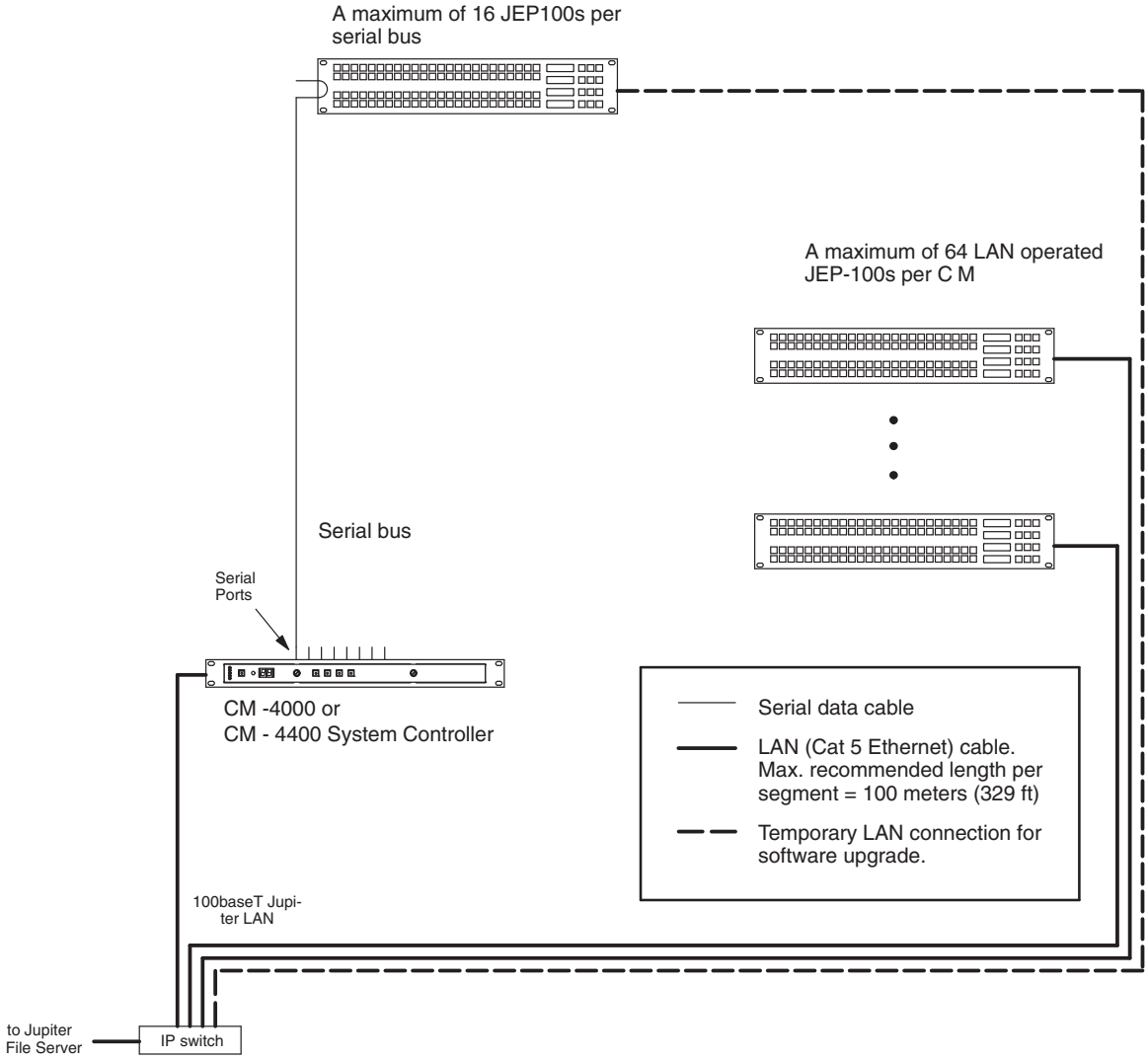
LAN + Serial System

In this system, one or more JEP-100s are operated in Serial mode, while other JEP-100s are operated in LAN mode (Figure 4).

The JEP-100(s) operated in Serial mode will require a LAN connection only during a software upgrade session. See Figure 3 on page 27.

Note The LAN must be capable of 100 Mb operation. Each Ethernet segment (hub to panel) has a 100 meter limit.

Figure 4. LAN + Serial system connections



Maximum of JEP-100 panels per CM:

- Connected to a Serial Bus - 16.
- Connected to a LAN - 64.

Serial Data Cables

The RS-422 cables used to connect CM-4000 or CM-4400 System Controllers and control panels consist of a 4-conductor (plus ground) cable. Maximum length per bus, at 115k Baud, is 610 meters (2000 ft.).

The rear panel serial data cable connectors on the CM-4000 or CM-4400 and control panels are 9-pin D, female. The control panel connectors are arranged for loop-through wiring. No termination is required. While these connectors are ESbus compatible, it should be noted that the Grass Valley 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):

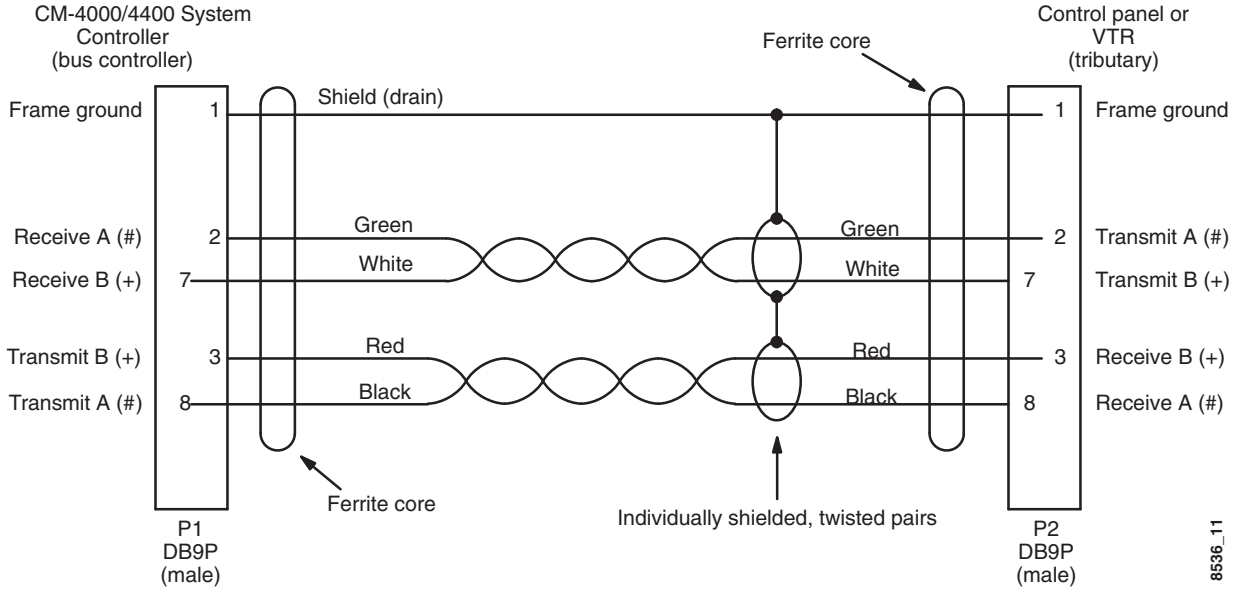
Table 3. Ready-Made Cables

1meter (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 equivalent.

Details concerning ferrite cores are given in Figure 6 on page 30.

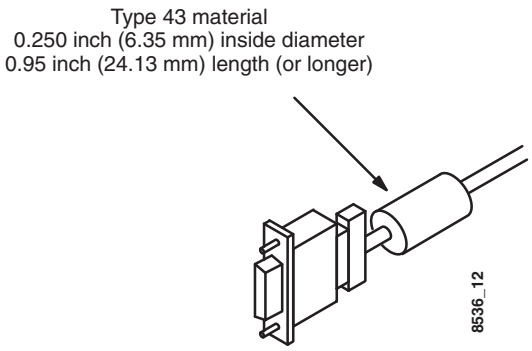
Figure 5. Serial Data Cable Wiring.



VDE 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.

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.

Internet Protocol Configuration

IP connection and configuration allows Ethernet operation and provides a download path for software upgrades using the NetConfig application. The JEP-100, CM-4000 or CM-4400, 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.

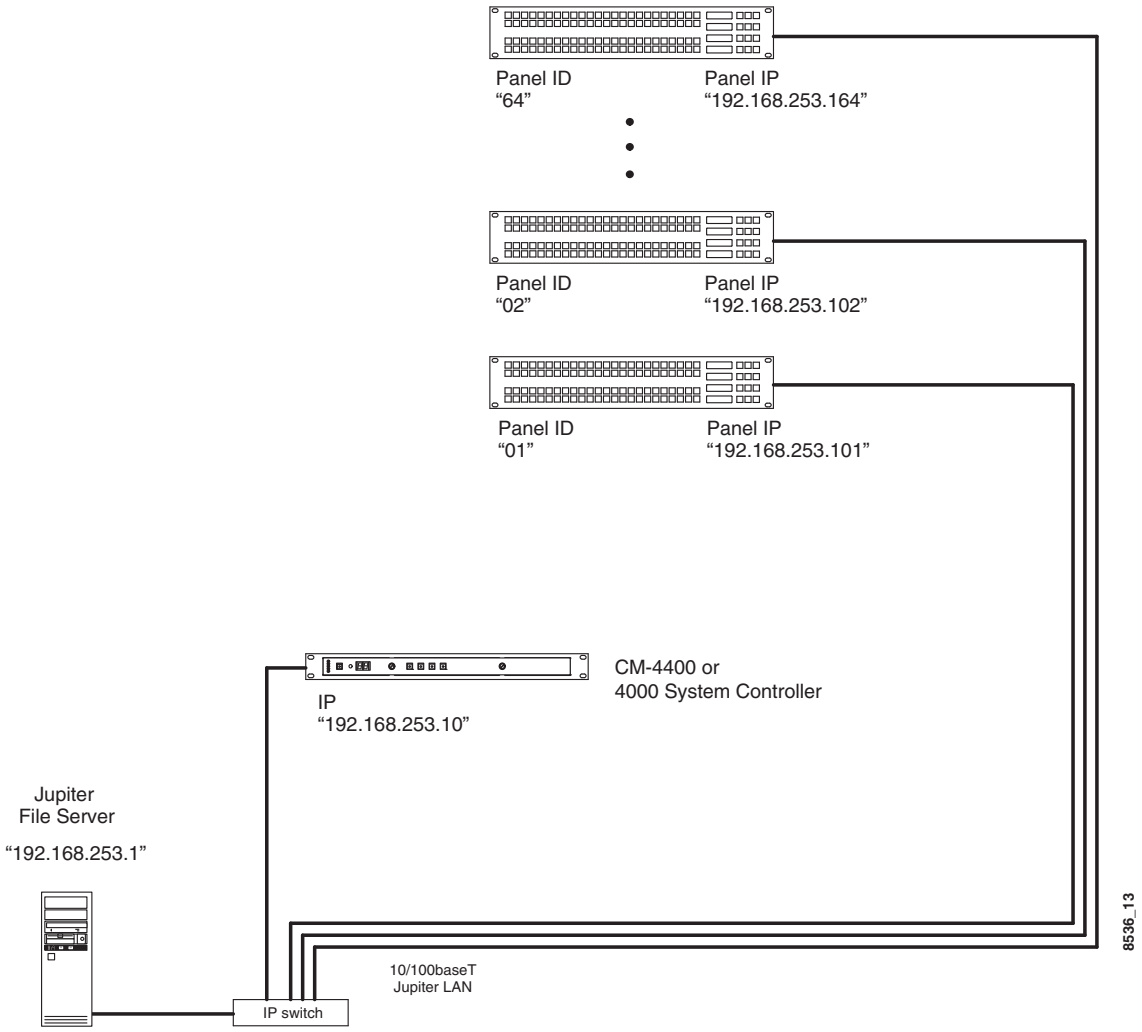
Single Network IP Configuration

The following discussion applies when the Jupiter equipment (file server, CM-4000 or CM-4400, 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 or CM-4400.

Figure 7. LAN only System Addressing (example).

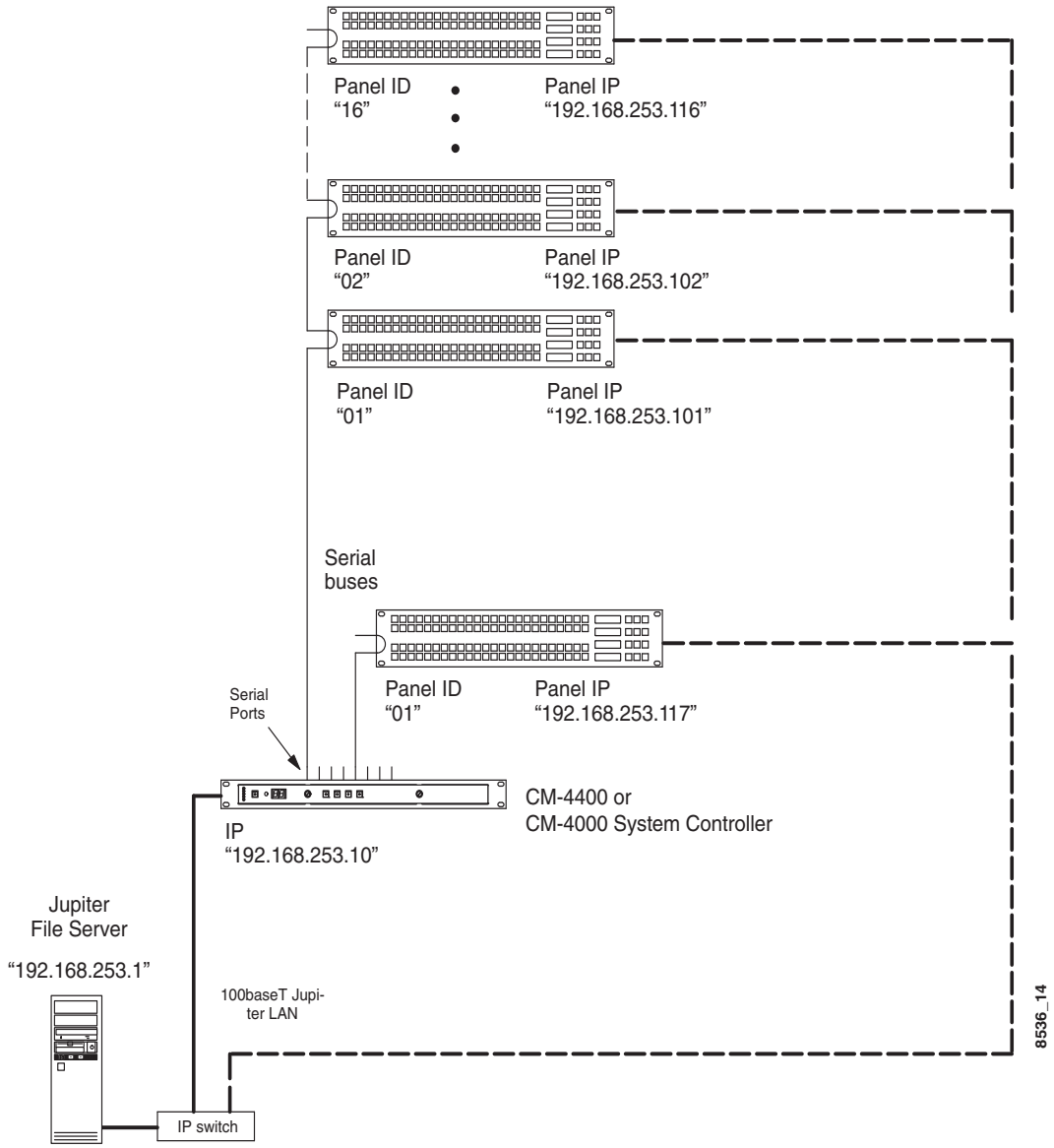


Serial System

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 necessary to have a different IP address for each panel; however, to prevent confusion if more than one panel is connected it is recommended that unique IP addresses are assigned.

Figure 8. Serial System Addressing (example).

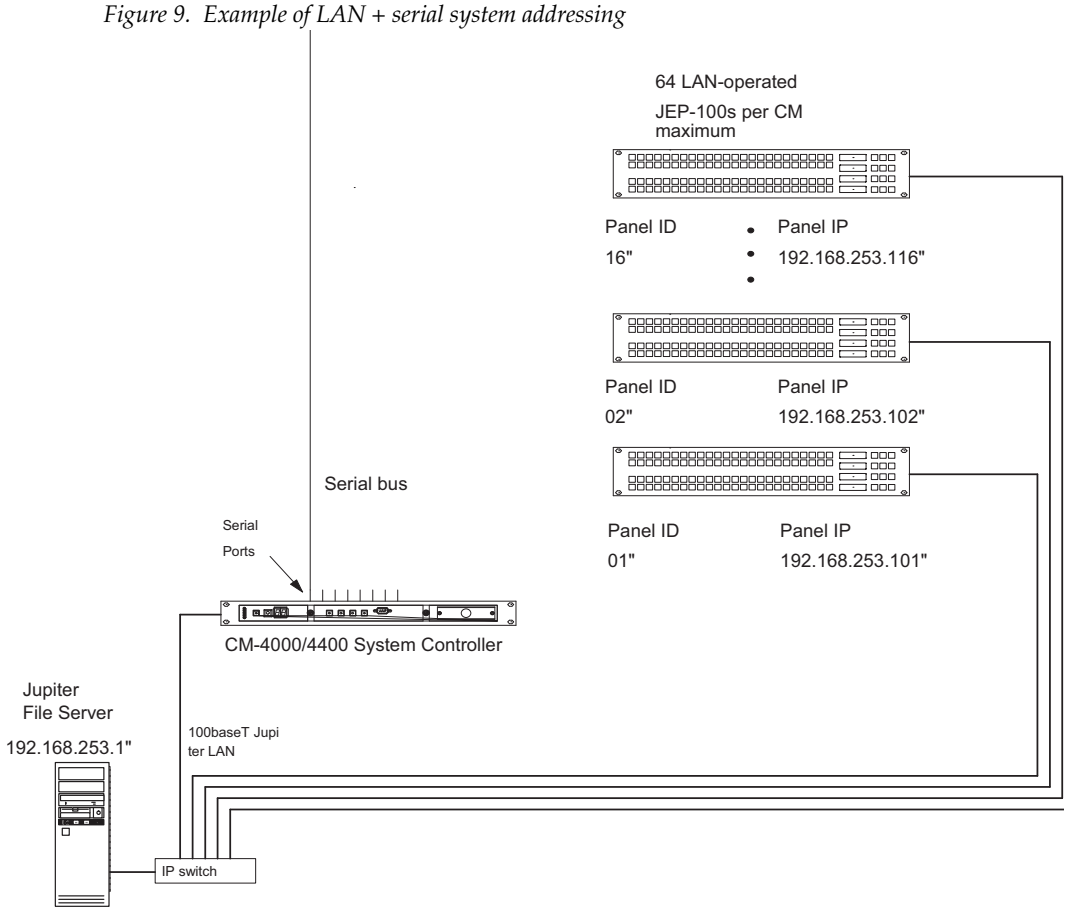


LAN + Serial System

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. Example of LAN + serial system addressing



Software Installation Process

JEP-100 series hardware panels are shipped with the current software installed. There is no need to install panel software on newly shipping systems. However, the IP address must be set on each panel so it can operate on the network. The NetConfig application is used to discover and set IP addresses of the JEP-100 series panels. Once version 1.3.0 is installed, NetConfig may also used to update JEP-100 series panel software, by transferring panel code from the computer running NetConfig directly to the panels.

This section will describe the steps needed to Install the latest software on the PC, Download the new firmware to the panel using the Network Download Utility and Updating the panel using the Update Manager application.

Note The Panels MUST be connected to a LAN connection during a software upgrade session even if the panel is uses a Serial connection.

Installing the Latest Software Version to the PC

Follow these steps to begin installing the JEP-100 software:

1. Insert the supplied software CDROM into the computer's CD Drive and follow the prompts.

Note The CD should automatically start the installation process. If not, browse to the CD, using Window Explorer, and then click the **setup.exe** icon.

The JEP-100 Welcome screen will then appear. The space requirements will be gathered (Figure 10).

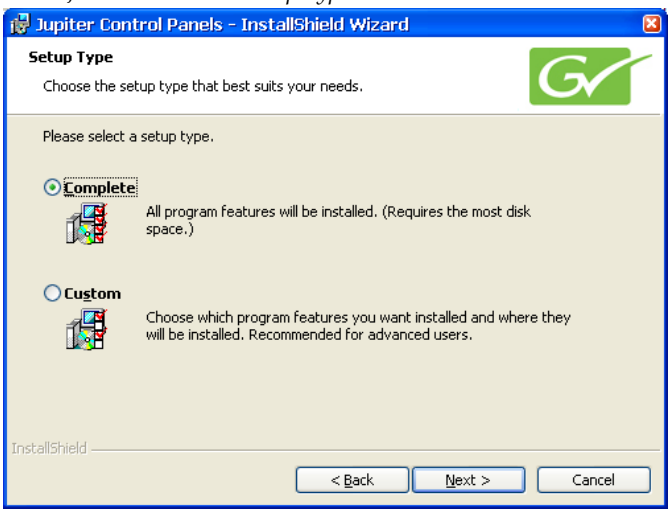
Figure 10. JEP-100 Installer Welcome Screen

The **Next** button will be active when the space requirement gathering is finished (Figure 11).

Figure 11. JEP-100 Installer Welcome Screen

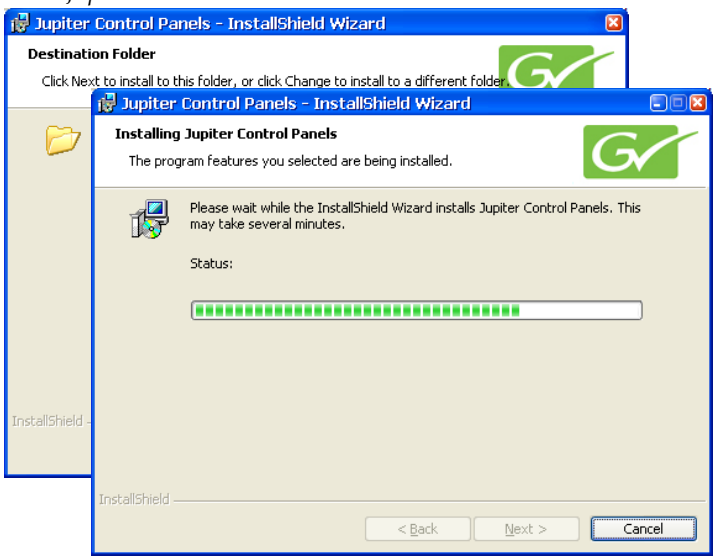
2. Click the **Next>** button to begin the installation process. The Setup Type screen will then appear (Figure 12).

Figure 12. JEP-100 Installer Setup Type Screen



3. Click the **Complete** radio button.
4. Click the **Next>** button to begin the installation process.
5. Follow the instructions on the following installation screens, click the **Next>** button as needed (Figure 13).

Figure 13. Jupiter VSD Installation Screens



6. The Installed Wizard Completed screen will appear when the installation process is finished (Figure 14).

Figure 14. Installation Completed Screen

7. Click the **Finish** button. The Installation application will then close.

Updating to the Latest Software Version

Versions 1.2.0 and earlier used the Network Download Utility to update software. Follow this process for converting the panels to work with NetConfig.

NetConfig is used to update panels for versions after 1.3.0.

The update process will use three applications: the Download Manager and the Update Manager. You will then use NetConfig.

All of these programs are installed with the JEP-100 panel software installation.

You will need to know the IP address and Device ID of the hardware that will be associated with the JEP-100. Grass Valley recommends that you identify and write down the Device IDs and IP Address for the current panels before you start the update process.

Using the Network Download Utility

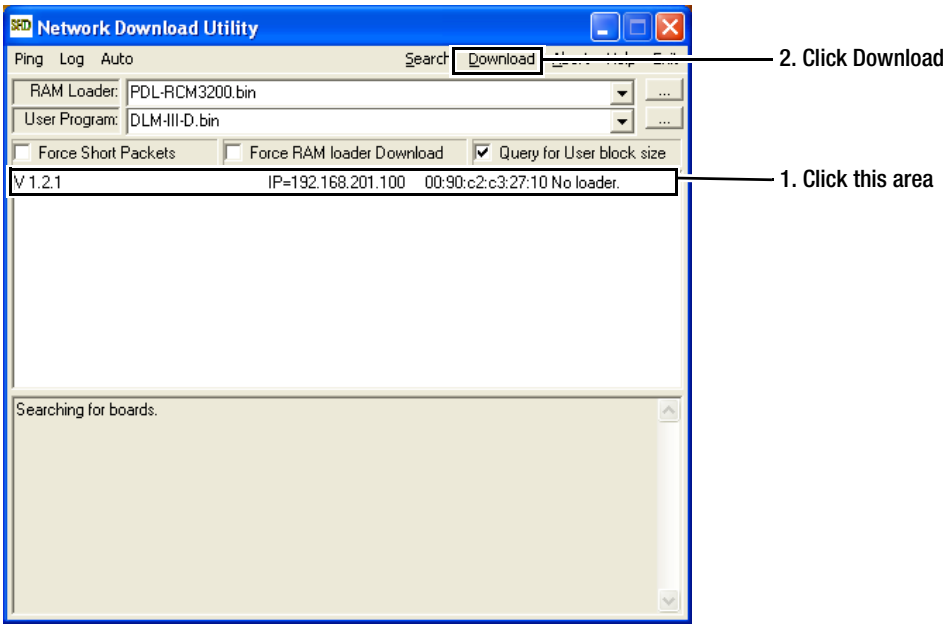
This step you will download the new firmware to the panel using the Network Download Utility.

Follow these steps to load the software onto the panels:

1. Start the Network Download Utility application. (Start>All Programs >Grass Valley>Jep100 >DownloadManager) Any JEP-100 panels with 1.2.0 on the network should be displayed

Leave the RAM Loader and User Program fields with their default settings, these are the correct files.

Figure 15. The Network Download Utility

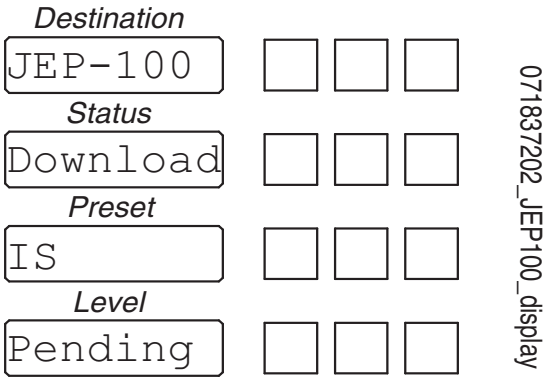


2. Highlight the line with the 1.2.0 panel in the middle message area.

3. Click **Download** (Figure 15) the download process will then start. Watch the messages in the window to know when the download is complete.

The JEP-100 panel will display "Download is Pending."

Figure 16. The JEP-100 panel will display "Download is Pending"



Using the Update Manager

In this section you will update the panel, with the previously updated firmware, using the Update Manager application. Control Panels should only be upgraded one at a time using this tool.

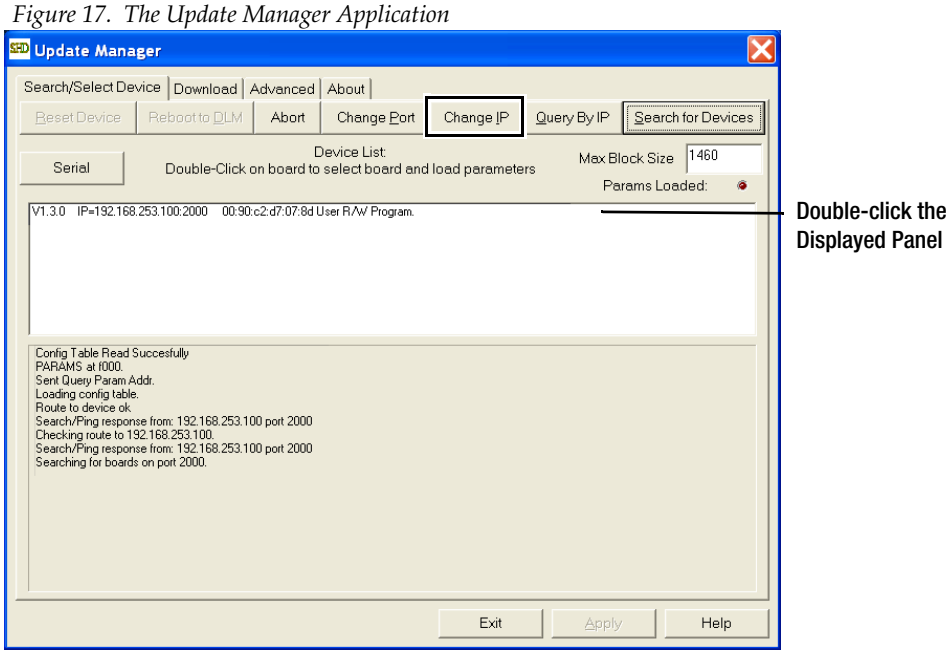
Note After using the Download manager, the control panel's IP address was altered; you will be required to reset the control panel's IP address before proceeding.

Follow these steps to load the latest software onto the panels:

1. Start the Update Manager application. (Start>All Programs >Grass Valley>Jep100 >UpdateManager) Any JEP-100 panels on the network should be displayed.

   The program will find the JEP-100 panels

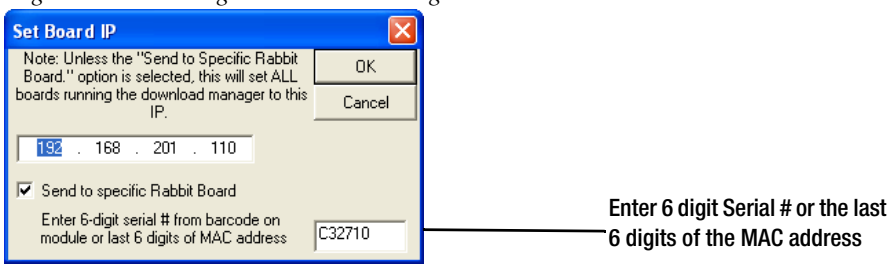
Figure 17. The Update Manager Application



2. Select the panel and then click the **Change IP** button. The Change IP Addresses dialog will then appear.

Note The IP Addresses shown in Figure 18 are used for example only. Enter your Network settings.

Figure 18. The Change IP Addresses Dialog



3. Select the **IP Address** check box and then enter a free IP address on your network.

4. Select and enter the information about your network in the field.

5. Click the **OK** button.

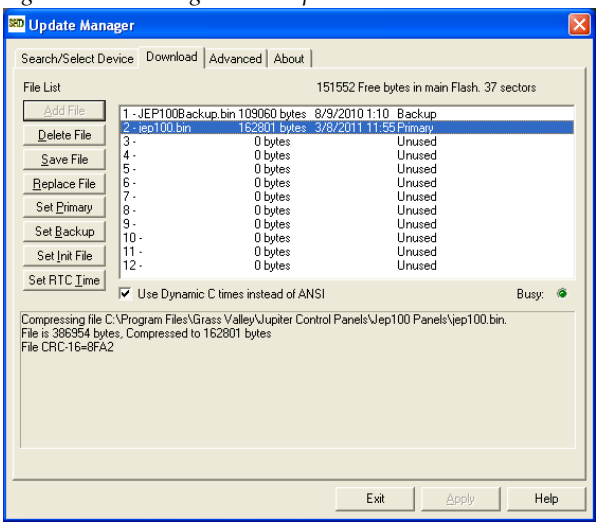
Selecting the Files to Download

1. Double click the first control panel to upgrade.
2. Select the **Download** tab at the top of the dialog.

   The order of the following steps is very important. The backup file JEP100backup.bin must be added as the first file in the list.
3. Select the **Add File** button in the left margin and navigate to C:\program files\grass valley\jupiter control panels\jep100\...then select the JEP100backup.bin file.

   This file is used as a secondary application in the event that the primary application should ever fail, and allows you a way to re-load the software using the NetConfig application again in if the primary application fails.
4. Select the **Add File** button in the left margin again and navigate to C:\program files\grass valley\jupiter control panels\jep100\... to select the JEP100.bin primary file.

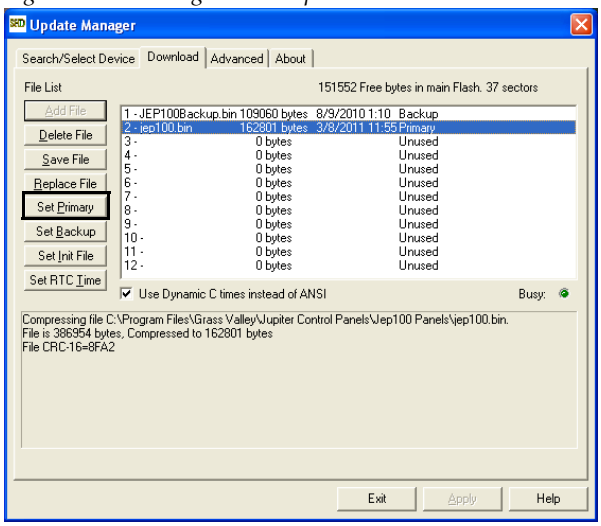
Figure 19. Selecting the Backup and Bin Files



Assigning Primary and Backup Status to the files

1. Highlight the JEP100backup.bin file and then select the **Set Backup** button in the left margin to set Backup file.
2. Highlight the JEP100.bin file and then select the **Set Primary** button in the left margin to set Primary file (Figure 20 on page 42).

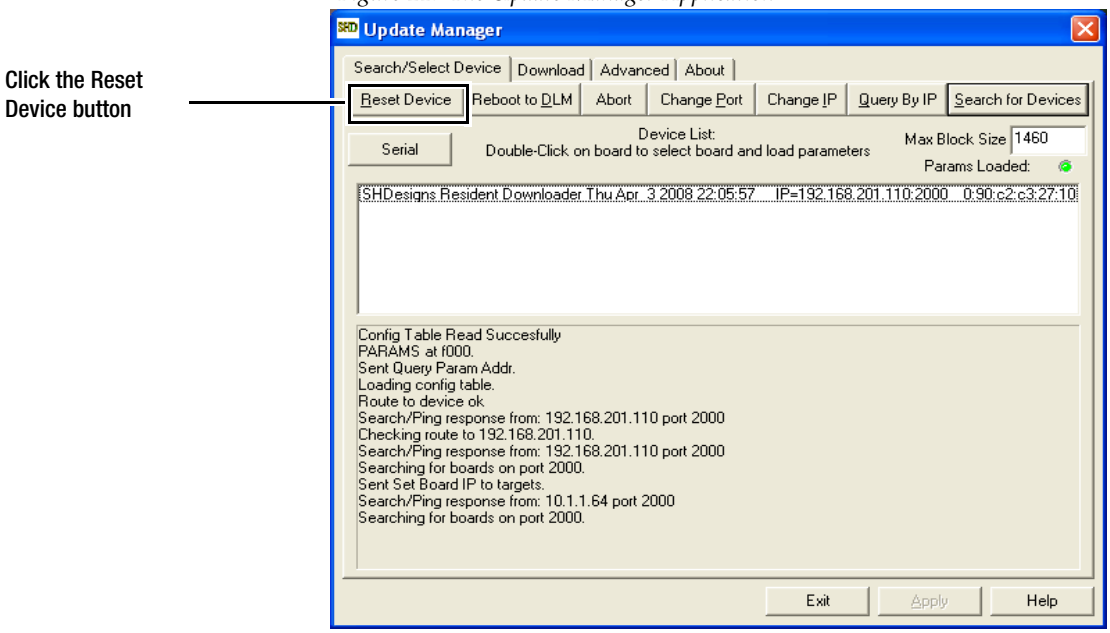
Figure 20. Selecting the Backup and Bin Files



3. Select the **Search/Select Device** tab.

4. Select the **Reset Device** button.

Figure 21. The Update Manager Application



Using NetConfig to Reset Network and Panel Settings

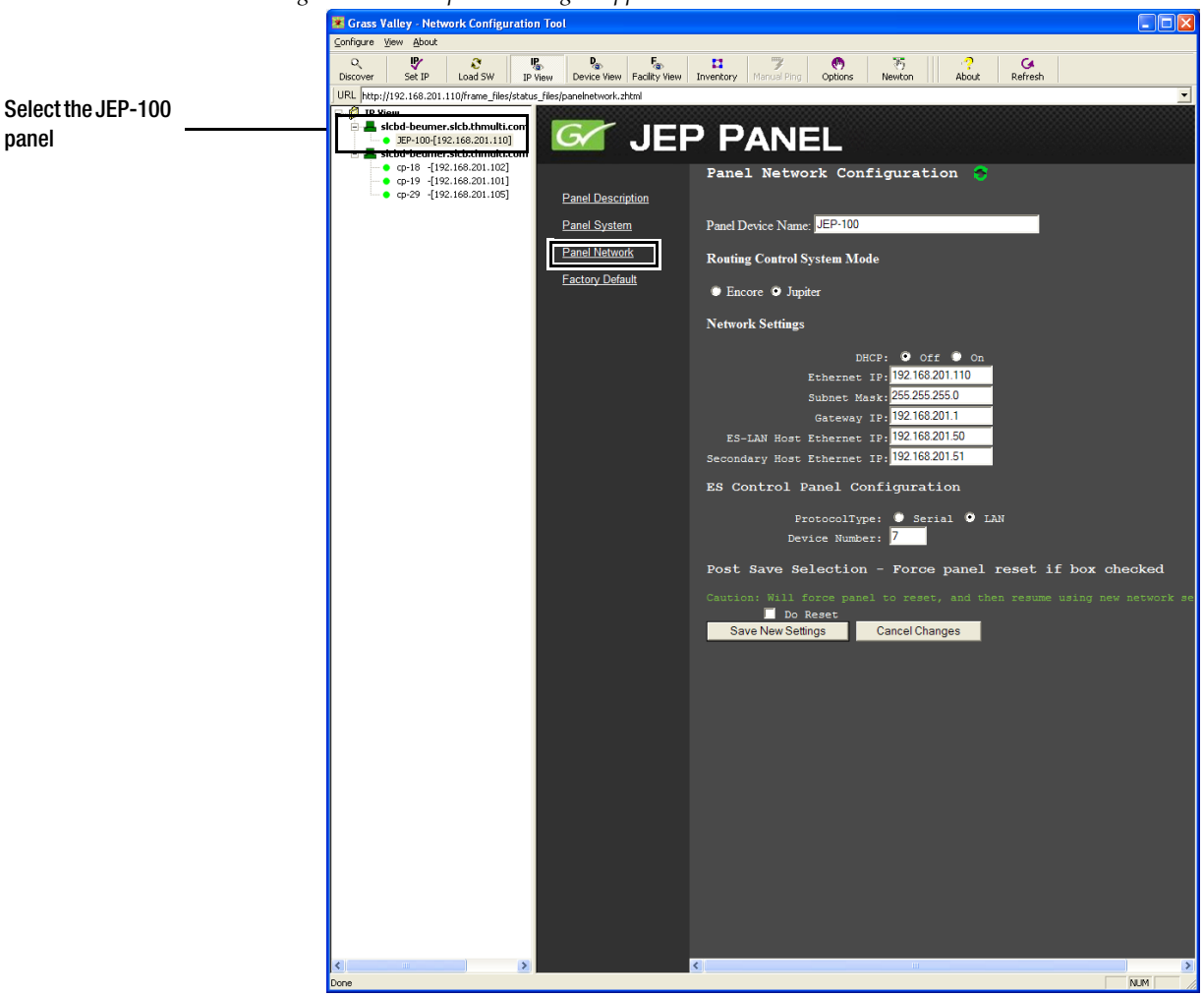
The control panel's name and network settings were cleared. This section describes the steps needed to use the NetConfig application to reset the control panel's name and network settings.

Note This procedure will work if the Default IP address of the control panel is on the same network as the computer. If the Default IP address is not, then you will not be able to access the Panel Web page; in this case you will have to use Netconfig's change IP tool to set the IP, Gateway, Mask, and Server IP addresses. After changing the IP address, navigate to the Web page and set the control panels device ID.

Follow these steps to reset the control panel's name and network settings:

1. Select the JEP-100 panel from the Navigation panel on the left side (Figure 22). The JEP Panel page will appear on the right frame.

Figure 22. The Update Manager Application



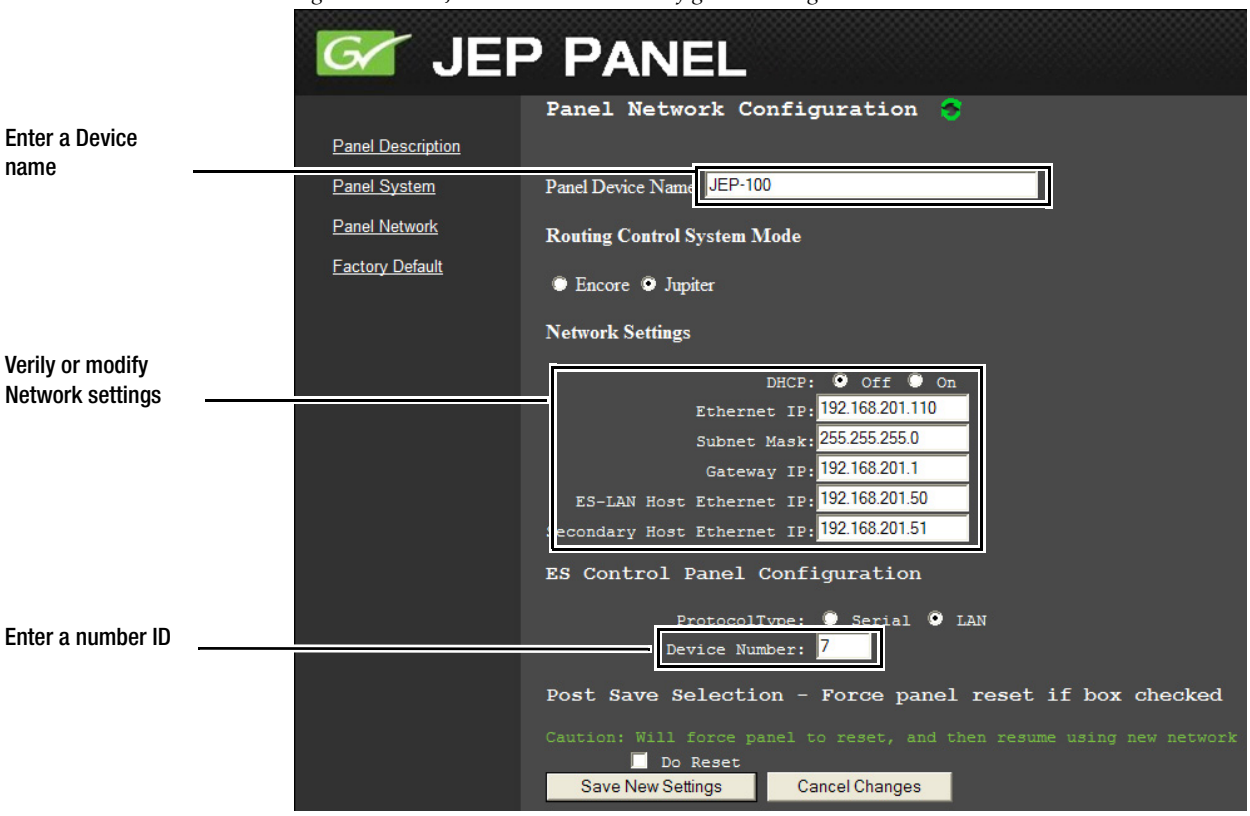
2. Select the Panel Network link. The Panel Network Configuration page will then appear.

3. Enter a name in the Panel Device name field.

4. Verify and modify the network settings as necessary.

5. Enter a number ID in the Device Number field (Figure 23 on page 44).

Figure 23. The JEP Panel Network Configuration Page



The Panel upgrade is now complete.

Updating the JEP-100 panel Using NetConfig

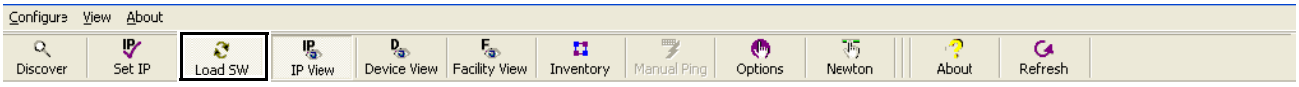
This section describes the steps that are needed to update the JEP-100 using the NetConfig application.

Follow these steps to update the JEP-100 software:

1. Start NetConfig.
2. Click the **Load SW** button in the Tool bar row (Figure 24).

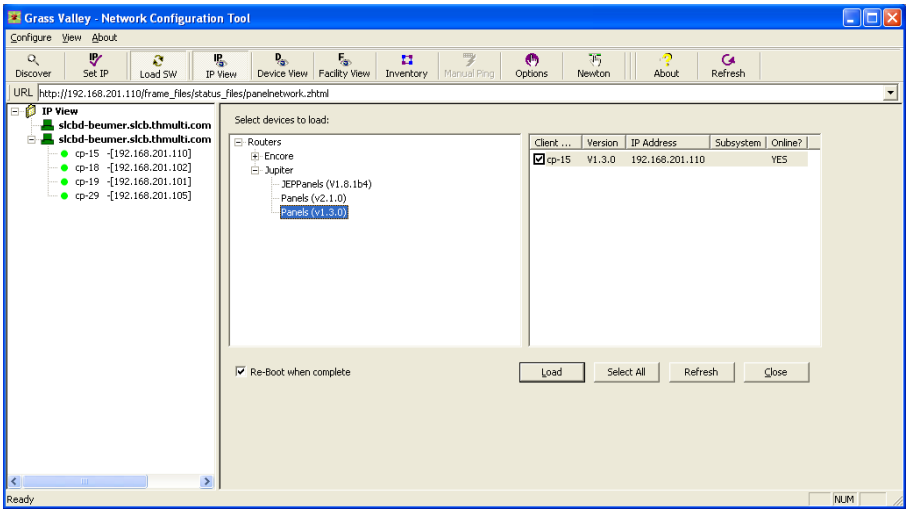
Note You only need to click the **Load SW** button to access the load software page. However, you can click the **IP View** button to see the IP addresses on the left panel (Figure 25).

Figure 24. Tool bar Row of the NetConfig Application



3. Select the panel from the navigation panel on the left hand side.
4. Select the Panels (v1.3.0) in the select devices to Load area.
5. Click the Preferred panel's check box under the Client column.
6. Select the **Re-boot when complete** check box.
7. Click the **Load** button

Figure 25. Updating the JEP-100



IP Configuration Procedure

During the following steps, you will need to know the IP address of the CM-4000 or CM-4400 that will be associated with the JEP-100. Use the Jupiter File Server JNS Control Center application to determine the IP address of the CM-4000 or CM-4400 (the Control Center application is described in the Jupiter CM-4000 or CM-4400 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 subnet 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 preferred, 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:

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 or CM-4400 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, or CM-4400, are on separate networks, the gateway connecting them must be specified.

ES Control Panel Configuration:

a. Protocol Type:

For a LAN only system: select "LAN."

For a Serial system: select "Serial" for normal operation of panel. Select “LAN” only during the software upgrade process.

For a LAN + Serial system: For panels always operated in LAN mode, select “LAN.” For panels normally operated in Serial mode, select “Serial” (select “LAN” only during the software upgrade process).

Note that this selection is identical to the “ELAN on” setting accessed 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 or CM-4400 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 Serial mode, enter a number from 1 to 16; this number must be unique on the CM-4000 or CM-4400 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 or CM-4400 associated with this panel.

d. Secondary Host ID Address: enter the IP address of the redundant CM-4000 or CM-4400 (if any).

6. Select Submit.

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

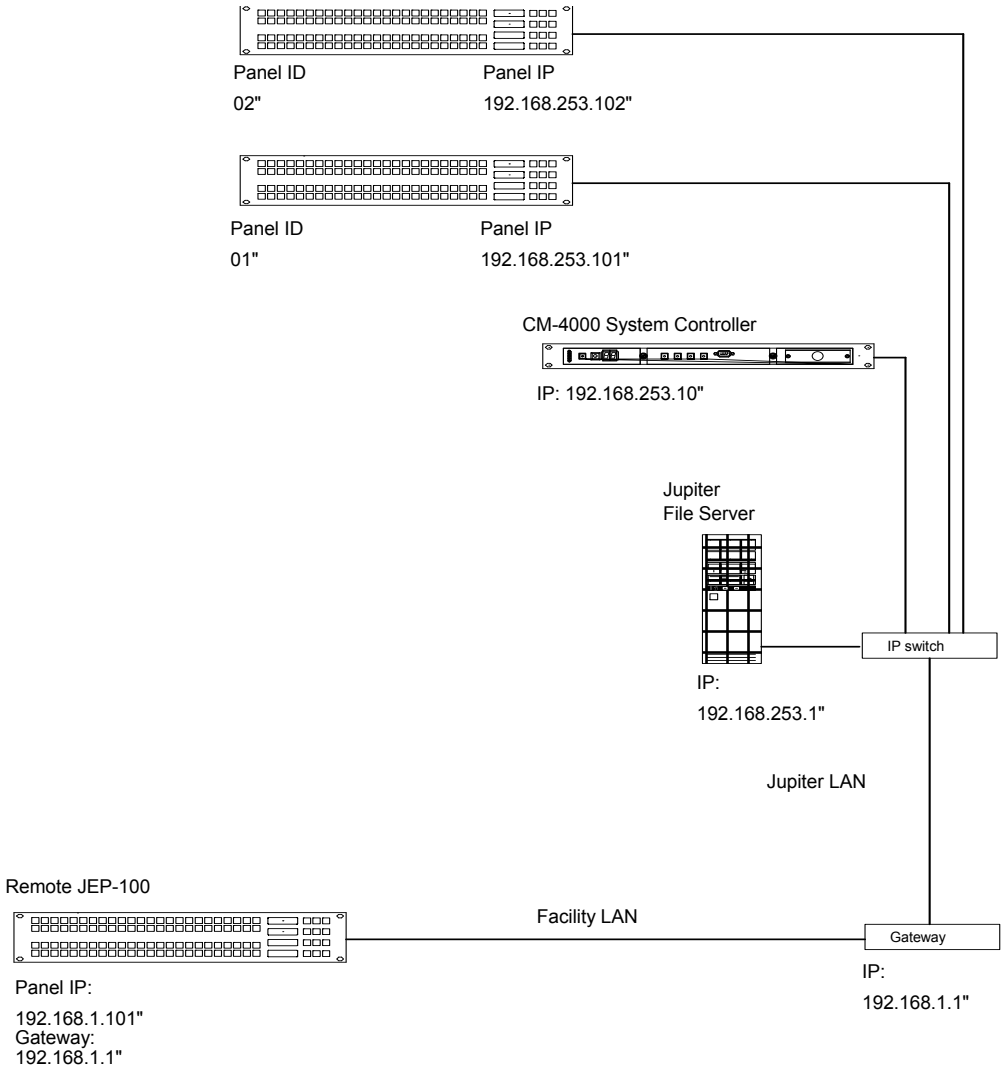
Note Once the JEP-100 reboots the panel may (depending on the address used) no longer be visible from the PC. To return to the page, enter the new IP address in the browser's URL window.

7. Go to the next JEP-100 and repeat steps 1 through 7 above.
8. When finished, restore the file server PC to the original IP settings.
9. 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 26. Example of LAN addressing with remote JEP-100.



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.

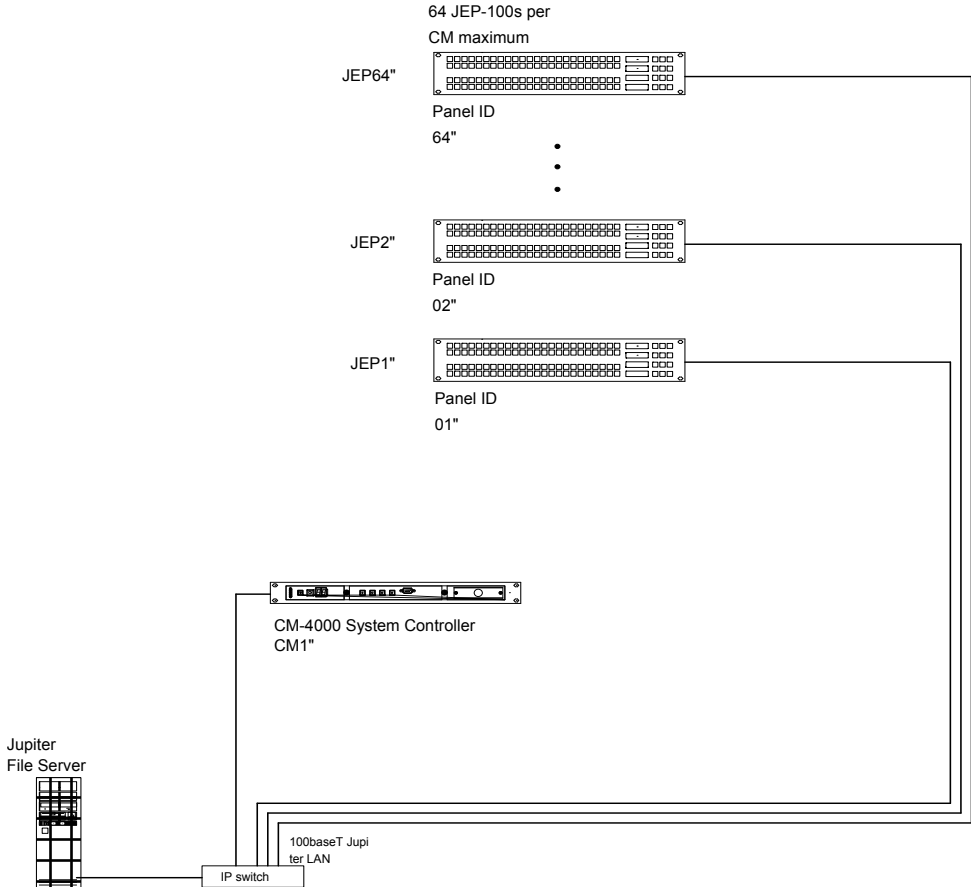
Configuration - Jupiter System

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 latest Jupiter CM-4000 or CM-4400 Installation and Operating manual.

LAN Only System

In a system that uses LAN only, the JEP is operated in Ethernet mode, where the LAN connection is used both for operation and for software upgrade purposes. (Figure 27)

Figure 27. LAN only system naming and addressing



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 example is shown in Figure 28.

Figure 28. 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		

8536_03

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. Select either "CPESXTND" or "CPES-SER" type for the latest features.

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

Password - The panel may use the password level entry to enable or disable certain control panel features.

- If the password is blank, the panel will act as normal.
- If any number from 1 to 89 will disable button assignments, and the "Change ID", and connection type menu items.

Board - Name of CM-4000 or CM-4400 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 or CM-4400.

JEP-100 panels are normally shipped with a panel address of "01." Modification of this address was discussed on page 47.

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 inputs, 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.
The panel now uses the CPEXTN type input set.

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.

The panel now uses the CPEXTN type set. The panel now has the ability to assign buttons as destinations, Using the output sets button field same as the S100 panel.

The CP output set will have to be the CPESXTND type to work with the newer features.

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. Select the CP3800 Level for the panel to work with the newer features.

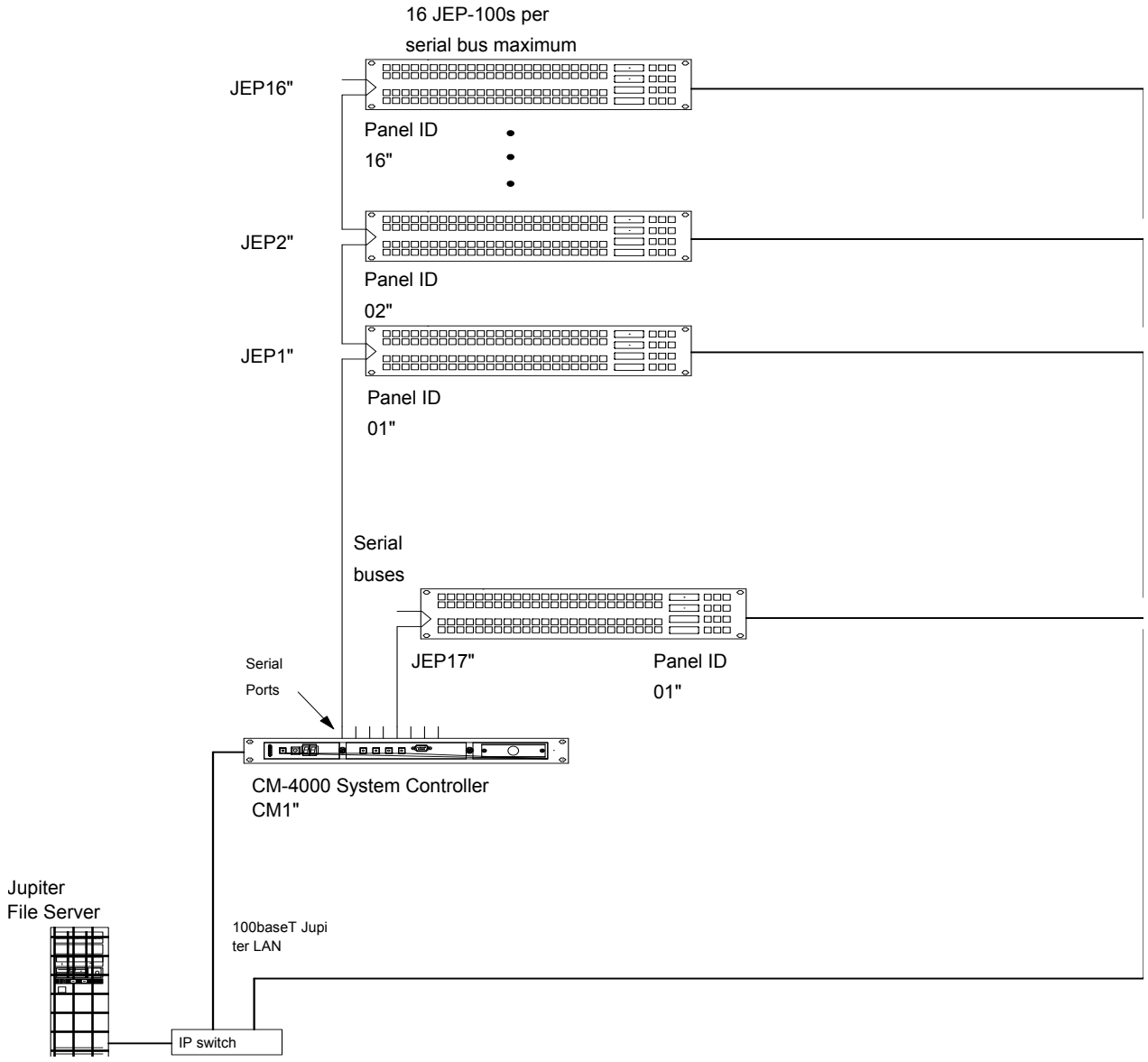
Override - Not used for JEP-100 panels.

Sequence - Now used for JEP-100 panels. Select a CP Sequence set name. A Sequence set is used to execute a list of switches with a single command.

Serial System

In this application the JEP-100 is operated in Serial mode, with the LAN connection used only for software upgrade purposes.. (Figure 29)

Figure 29. Serial System Naming and Addressing (Example)



Serial Protocol Table Entries

When a JEP-100 is connected to a CM-4000 or CM-4400 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 30.

Figure 30. MPK Devices table corresponding to 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		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		

8536_04

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. To use the extended features, you need to configure CPES-SER type.

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

Password - Passwords can be used to inhibit certain menu items and button assignments. This functionality is described in *MPK Table Entries* on page 51 of the LAN section.

Board - Name of CM-4000 or CM-4400 connected to this JEP-100. The source of this name is the Jupiter Network Description table.

Port - Number of CM-4000 or CM-4400 port connected to this JEP-100.

Address - Panel address from 1 to 16. Must be unique for panels sharing the same CM-4000 or CM-4400 serial port.

JEP-100 panels are normally shipped with a panel address of "01."

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 inputs, 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.
Use CPEXTN to use the latest features.

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 contents of the set, this would allow for full-matrix or multi-bus control. Use CPEXTND to use the latest features.

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 is the same as the LAN Only mode.

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 - Same as the LAN Only mode.

Special Entries Needed to Upgrade Serial Panels

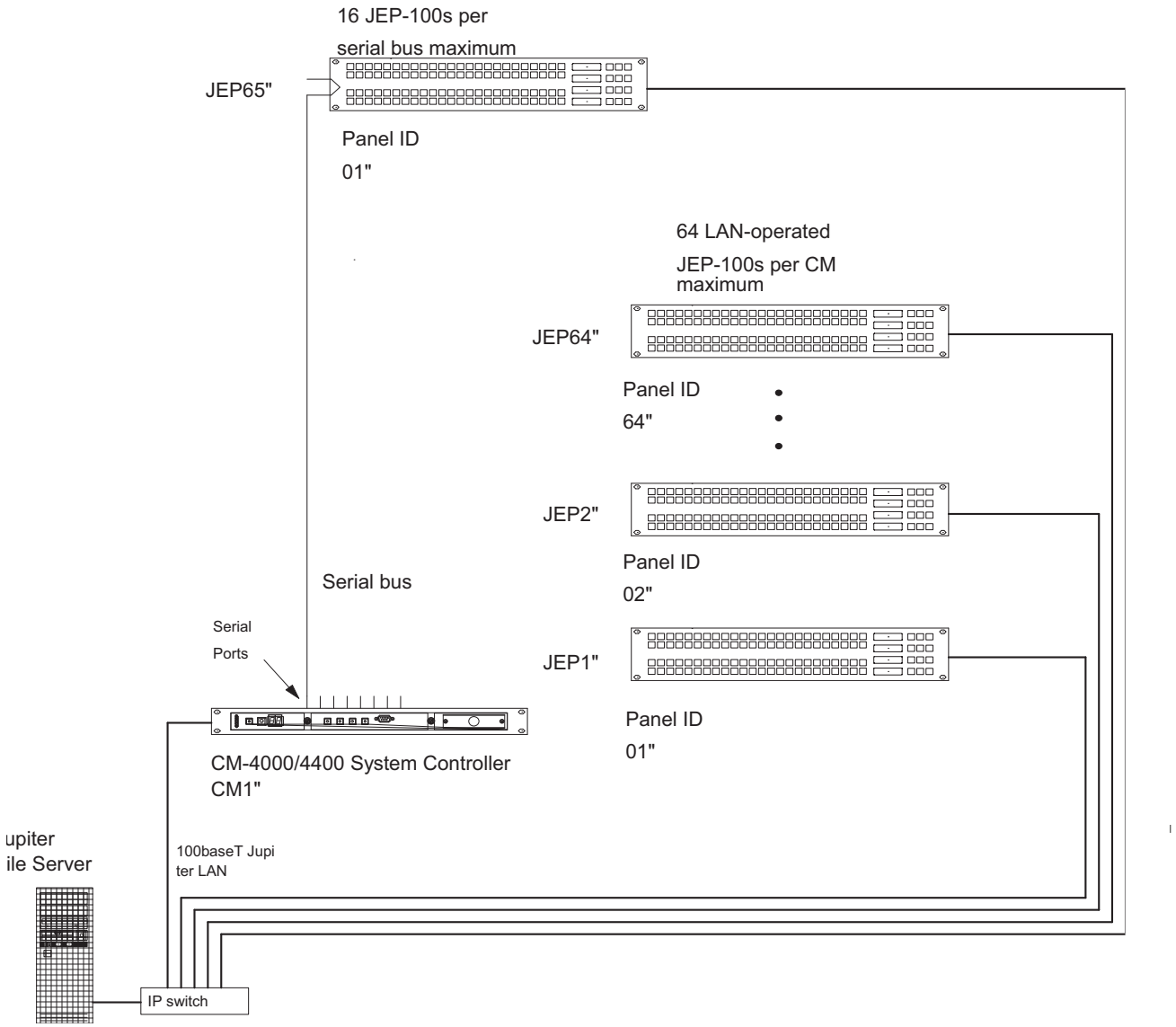
In a Serial system, downloading new software to panels normally operated in Serial mode will require IP settings. These settings are entered using the web page..

LAN + Serial System

The example shown in Figure 31 is 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 31. Example of LAN + serial system naming and addressing



Serial Protocol Table Entries

When a JEP-100 is connected to a CM-4000 or CM-4400 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 Protocol 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 32.

Figure 32. 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		

8536_05

Device Type - For the panels always operated in LAN mode, select type “ES-LAN” or “CPEXTN” 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 - Passwords can be used to inhibit certain menu items and button assignments. This functionality is described in *MPK Table Entries* on page 51 of the LAN section.

Board - Name of CM-4000 or CM-4400 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 or CM-4400 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 sharing the same CM-4000 or CM-4400 serial port.

JEP-100 panels are normally shipped with a panel address of “01.”

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 inputs, 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.

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 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 *Internet Protocol Configuration* on page 31.

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.

JEP-100 panels that are running as type CPESXTND should use CPESXTND input and output sets. These panels should also be configured with CP3800 type level sets.

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" (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-character 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, refer to the Switcher Description Table of the Jupiter CM-4000 or CM-4400 manual.

Salvo Switching

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.

Compiling

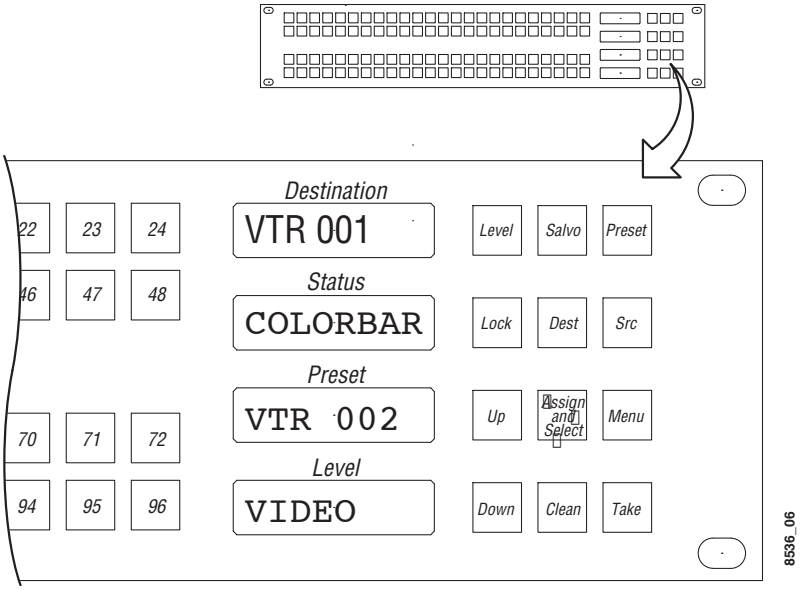
Before the panel can be used, the edited Jupiter set must be compiled and the appropriate configuration set made active using the Control Center. For more information, please refer to the “Configurator” section in either the Jupiter CM-4000 or CM-4400 manual.

Section 2

JEP-100 CP Operation

The steps needed to operate the JEP-100 manual are described in this section.

Figure 33. 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 output.

Preset - shows the new sources as they are 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 simply pressing the TAKE button.

Level - used for level breakaway (split) switching and level-by-level stausing.

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 salvo assigned to the key will be displayed in the Preset window. No actual 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.
4. When the preferred destination is displayed in the Destination window, press the **TAKE** button to select it.

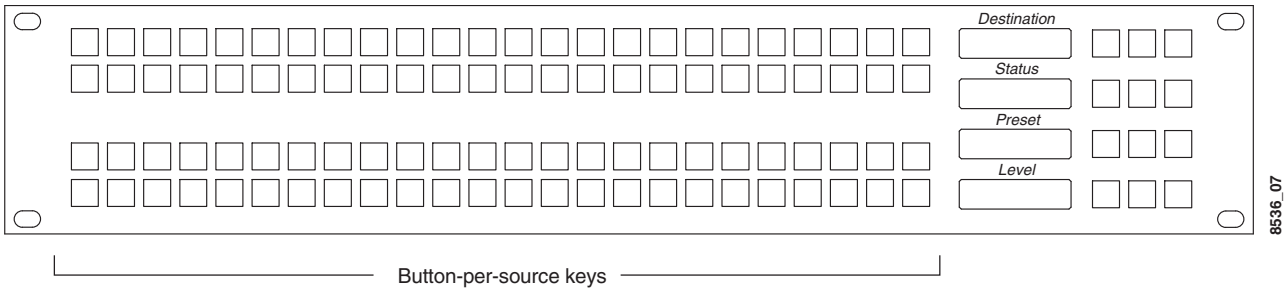
   The name of the input currently switched to this destination will be shown in the Status window.

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 preferred output, it may have been limited to certain outputs by the CP Output set used on the MPK De vices table.

Source Selection (All Levels Take)

Figure 34.



1. The **PRESET** and **LEVEL** buttons should be OFF.
2. Select the preferred 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 the **TAKE** button 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 a **BPS** button corresponds 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 but these assignments can be changed using the panel itself.

It is also possible to assign these buttons to a destination or to levels.

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 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 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 preferred 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 the TAKE button 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 preferred level. The status of the selected level will be shown in the Status window.

Button-per-Level Mode Breakaway

This method assumes that the levels have been assigned to specific buttons.

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 preferred level(s).
3. Select the preferred 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 the **TAKE** button 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.

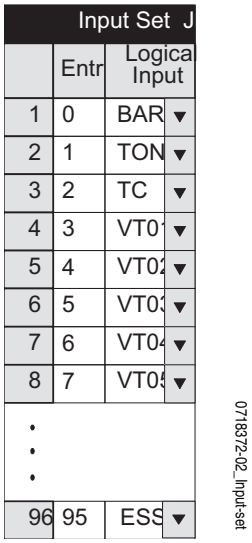
Checking Status of Selected Level

Press **CLEAR**. With the **LEVEL** button **ON**, press **UP/DOWN** to step to the preferred level. The status of the selected level will 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 CP Input set table.

Figure 35. Defining a Source Button - Input Set



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 preferred 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 preferred 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.

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 preferred 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 preferred 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.

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 preferred 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 preferred 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 *Level Breakaways (Split Switching)* on page 64.

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.

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 or CM-4400 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

Figure 36. Example of Jupiter Sequence Set table

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	...

071_8536_02_seq-table

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 or CM-4400 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 preferred sequence.

3. Press the **TAKE** button 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 sequence.

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 preferred sequence.

4. Press one of the preferred 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 initiated 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 assigned 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 command 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.

The example in Figure 37 on page 74 shows 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 optocoupler at pin 2 of the JEP-100 GPI connector, which results in a command being issued to the CM-4000 or CM-4400 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 22 (circuitry for ports 8-14 is similar).

Figure 37. JEP-100 Joystick Override Application

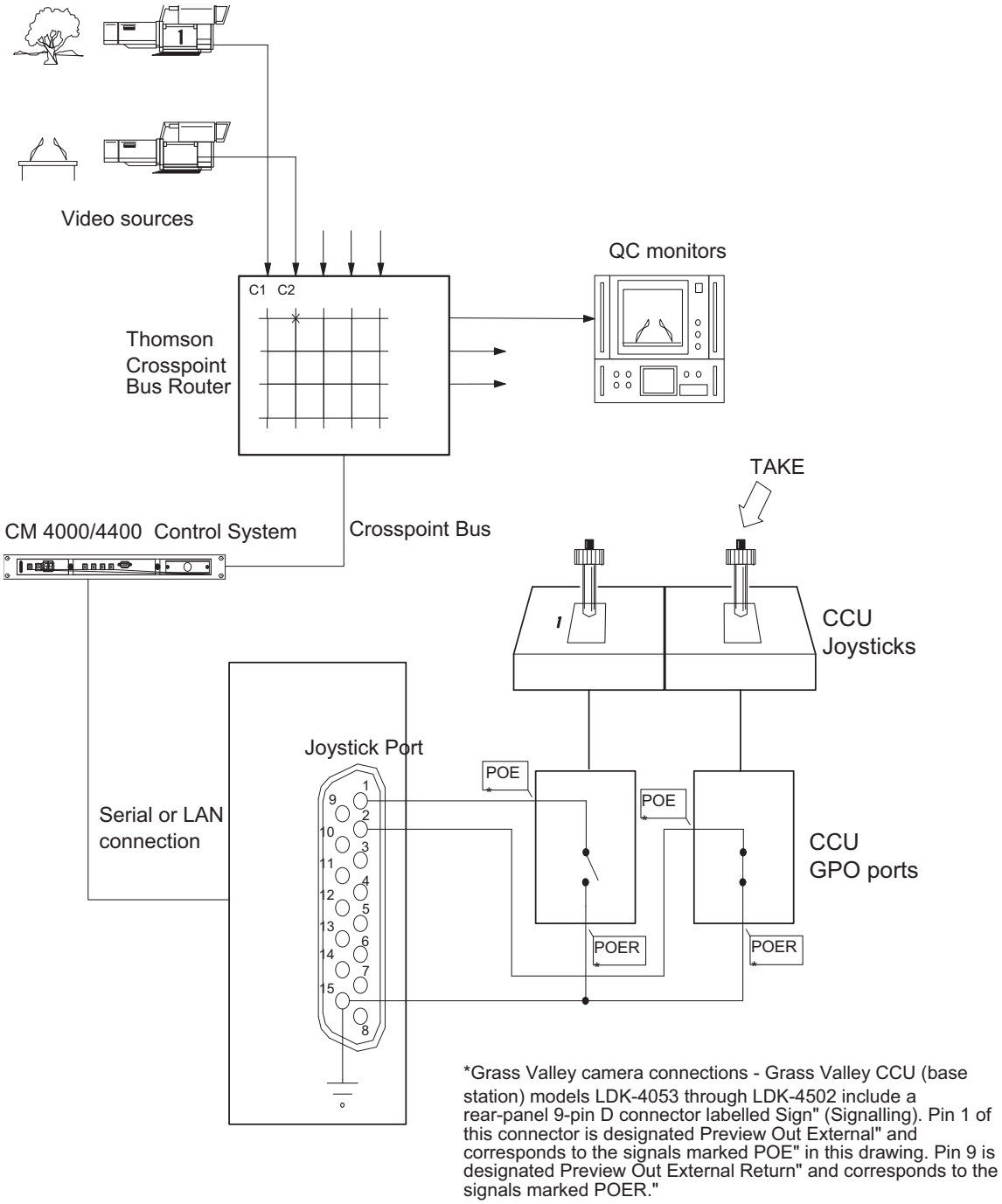
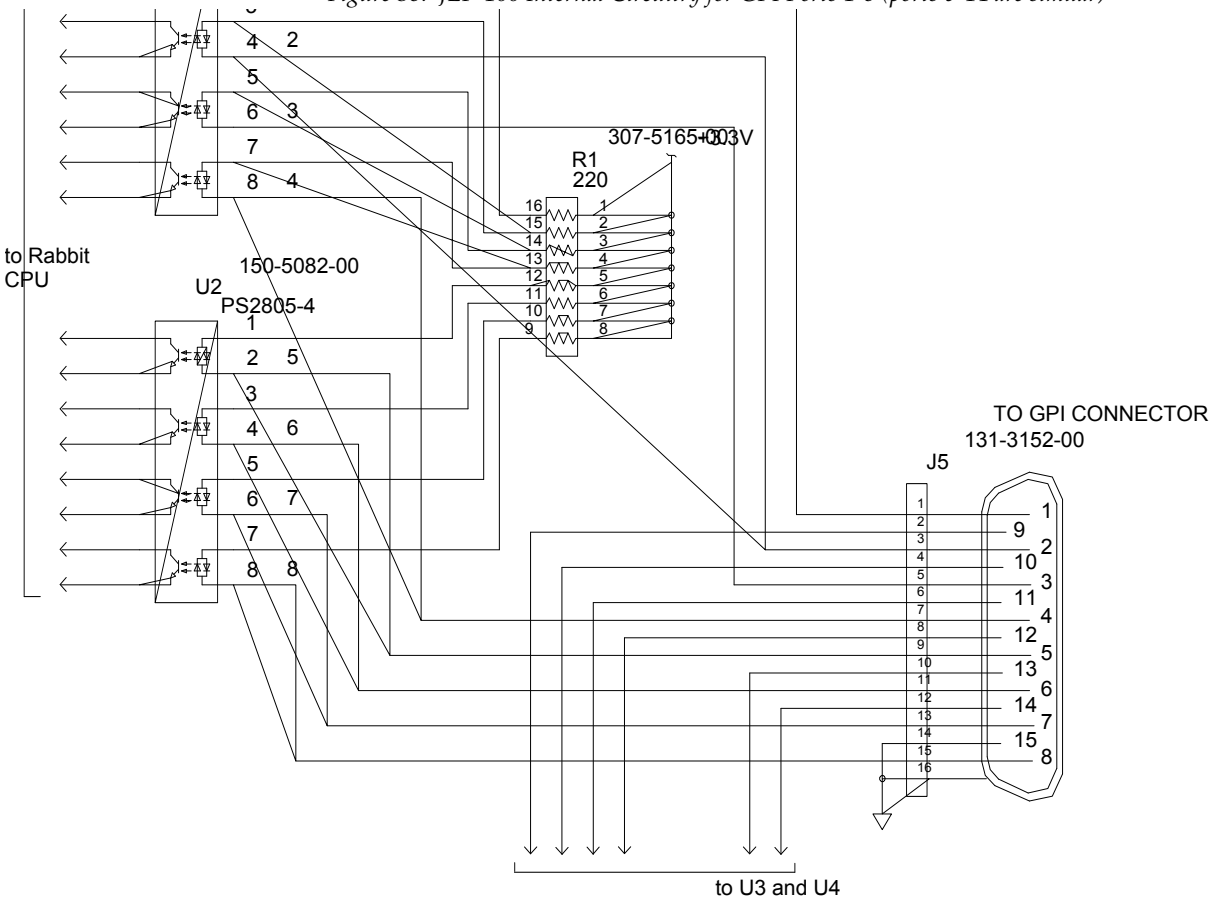


Figure 38. JEP-100 Internal Circuitry for GPI Ports 1-8 (ports 9-14 are similar)



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 the **TAKE** button.

   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** buttons.

   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 the **CLEAR** button must be pressed twice.)
4. Use **UP/DOWN** to display the number of the preferred 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 preferred 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 sequence that will be executed when this port receives a start command (i.e., is pulled low).
8. To apply the setting, press the **TAKE** button.
9. To save the setting, the number of the port ("GPI 1," etc.) must be highlighted. Press the **TAKE** button. 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 preferred item in the Preset window.

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

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.

See Section 5: The Configurator Application in the CM-4400 Jupiter manual for the steps needed to make these button assignments. **Button assignments** must be made *prior* to entering Alternate mode:

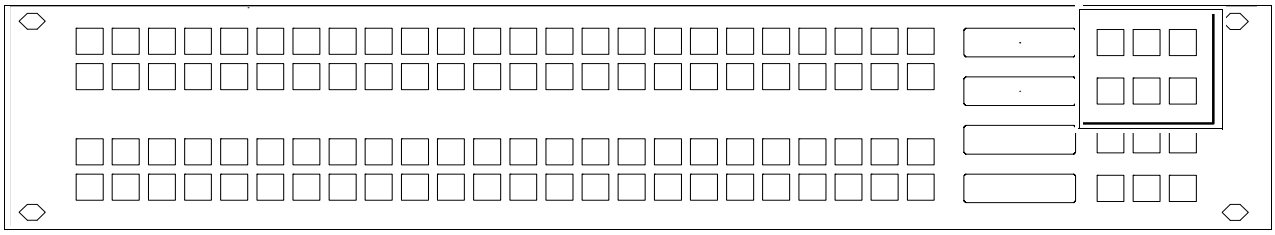
- Assigning a source
- Assigning a destination
- Assigning a level

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 the **TAKE** button is pressed.
3. Press the **TAKE** button.

   This activates the six "temporary level" buttons (the outlined but tons in Fig. Lighted buttons initially indicate defined levels.

Figure 39. Example of the Six "Temporary Level" Buttons



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

6. Press the **TAKE** button to complete the switch on the selected levels.

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 either the Jupiter CM-4000 or CM-4400 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 the **TAKE** button is pressed.
5. Press the **TAKE** button.

   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 preferred pair, press the **TAKE** button. If not, use **UP/DOWN** to select the appropriate audio pair, and then press the **TAKE** button.

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

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

8. Press the **TAKE** button.
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 the **TAKE** button is pressed.
3. Press the **TAKE** button.

   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 preferred pair, press the **TAKE** button. If not, use **UP/DOWN** to select the appropriate audio pair, and then press the **TAKE** button.

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

Locking or Unlocking an Output

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 the **TAKE** button. Sticky mode is now active.
4. Perform a breakaway switch

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

   For example, if Sticky mode is on, and the operator makes a video-only switch, the next switch will also be video only unless specified 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 the **TAKE** button and then **UP/DOWN**. The Level window will show the levels that will switch. If the Level buttons have been assigned, the appropriate buttons will illuminate.

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

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 command. The following procedure assumes that destination buttons have been assigned.

To turn on Multiple Output mode:

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

   The breakaway pattern of subsequent switches will remain in effect after the TAKE command 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 the **TAKE** button.

ELAN - Ethernet Mode On/Off

Ethernet mode enables communication through a LAN cable connection. The ELAN OFF setting enables communication through a serial connection.

Note This feature is disabled if the password in the MPK Devices table is 1-95.

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 or CM-4400. The clock is synchronized with the CM-4000 or CM-4400 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 if the password entered in the MPK Devices table is set high enough.

When "Chg Id?" is displayed, press the **TAKE** button; 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 preferred 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 preferred 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. The panel ID is called “Address” on the MPK Devices table.

v - Version Number Display

Displays the panel software version. Exit by pressing the **TAKE** buttons.

Internet Protocol Address Display

Displays the IP address for reference. The address can be changed using the web page. Exit by pressing the **TAKE** or **CLEAR** buttons.

Diag - Diagnostic Mode

Provides a test of the LED character set and all button lamps. Exit this mode by pressing **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 the **TAKE** button; then use **UP/DOWN** to select the preferred brightness level. Exit this mode by pressing **TAKE** or **CLEAR**.

Output Button Assignment

An Output button's assignment can be made from the Jupiter configuration. Any Output / Destination buttons assignment can now be defined. See Section 5: The Configurator Application in the CM-4400 Jupiter manual for the steps needed to make these assignments.

You will need to use the:

- CPESEXTND type for the Output and Input button.
- CP3800 type for Level and Sequences.

Figure 40. Input and Outputs CP Sets

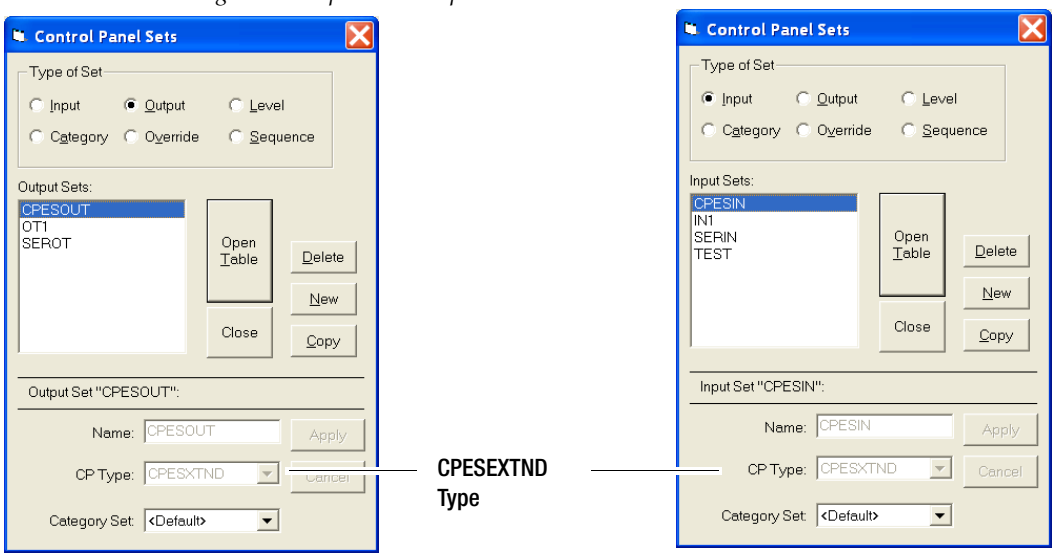
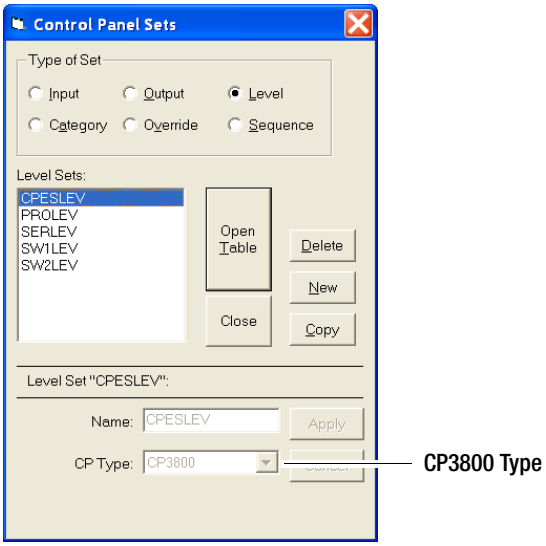


Figure 41. Levels and Sequences CP Sets



Password Protection

A password level below 90 then a operator cannot:

- Assign sources destinations, levels, or salvos to buttons.
- Change the Id of the panel
- Change the connection type of the panel.

The menu items “change ID” and “ES Lan on/off” will not be visible to the user.

A password level that is less than 95:

- The button assignment will be enabled
- The user cannot change the connection type, or the panel ID.

A password level of 95 or greater:

The button assignment is enabled and the operator can change the connection type and the panel ID from the menu of the control panel.

Setting Password Protection

Follow these steps to disable the Configuration and Setup menus on the Control panel:

1. Open the MPK Devices table.

Figure 42. Password settings of the MPLK Table

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	CPESXTND	☐		CM1		01	KXYZINP		KXYZOUT		KXYZLEV		K
2	JEP2	CPESXTND	☐	75	CM1		02	KXYZINP		KXYZOUT		KXYZLEV		
⋮														
64	JEP64	CPESXTND	☐	92	CM1		64	KXYZINP		KXYZOUT		KXYZLEV		

2. Enter the preferred setting in the Password Level column (Figure 42):

- Enter a number from 1 to 89 to disable both the Configuration and Setup menus.
- Enter a number from 90 to 94 to disable only the Setup menu.
- Enter a number 95 and higher to enable both menus.

Note If the Password Level column is left blank, both menus will be accessible.

In the example shown in Figure 42 a password level of 75 and 92 have been entered.

3. Apply the changes by compiling the appropriate sets and then activate the sets using the control center.

- For more information about applying changes in Jupiter see the Jupiter CM-4000 or CM-4400 manuals

Disabling the Configuration and Setup Menus

The Control panels buttons may be disabled. Any button can be configured to be unassigned for an input or output (Blank Buttons), which may be used as a separator.

You will need to set the mnemonic for a source or destination to be "BLANK." The panel will then disable the button for that source or destination.

Follow these steps to disable the buttons for a Source or Destination on the Control panel:

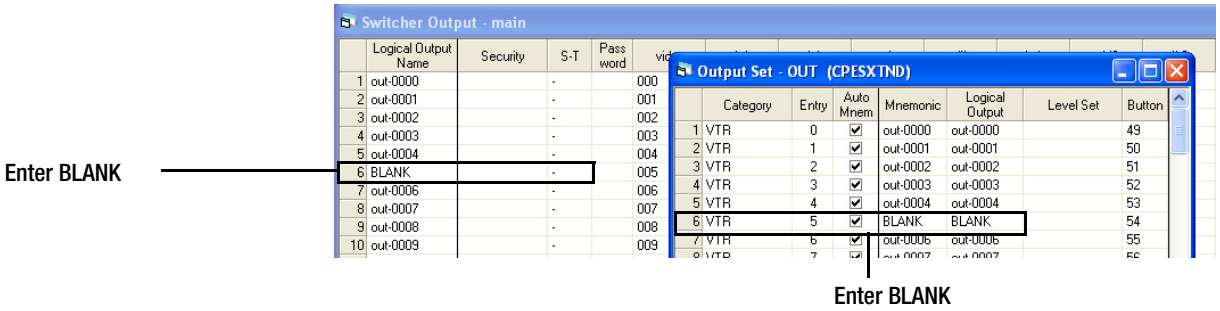
1. Open the Switcher Output table.

2. Enter the text, "BLANK" in the Logical Output Name column

3. Open the CP Output table.

4. Enter the text, "BLANK" in the mnemonic column (see Figure 43).

Figure 43. BLANK in the Output Switcher and Panel Tables



5. Enter the number of the desired button in the Button Assignment column.

6. Apply the changes by compiling the appropriate sets and then activate the sets using the control center.

See the latest CM-4400 manuals for more information about these updates.

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