

# Zodiak

DIGITAL PRODUCTION SWITCHER

Installation and Service Manual

SOFTWARE VERSION 6.0

071812509  
SEPTEMBER 2006



Affiliate with the N.V. KEMA in The Netherlands

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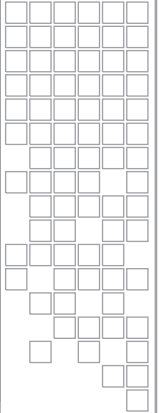
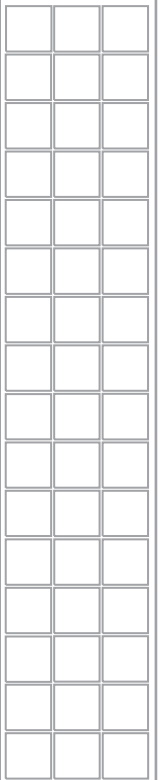
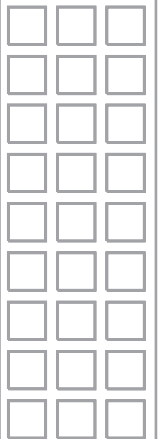
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## Grass Valley Web Site

The [www.thomsongrassvalley.com](http://www.thomsongrassvalley.com) web site offers the following:

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

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

**Software Downloads** — Software updates, drivers, and patches can be downloaded.



## END-OF-LIFE PRODUCT RECYCLING NOTICE

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

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

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



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



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# Preface

## About This Manual

This Installation and Service Manual provides installation, configuration, and service information for the Grass Valley Group Zodiak Digital Production Switcher. This manual is designed for technical personnel responsible for installing and maintaining Zodiak systems.

## Standard Documentation Set

The standard Zodiak documentation set consists of a:

- User Manual,
- Installation and Service Manual, and
- Release Notes.

The *Zodiak User Manual* contains background information about the Zodiak Digital Production switcher and describes operating procedures. This manual can be used while learning about Zodiak and for enhancing your basic knowledge of the system.

The *Zodiak Installation and Service Manual* contains information about installing, configuring, and maintaining the system.

The *Zodiak Release Notes* contain information about new features and system enhancements for a specific software version, and also includes software installation procedures. Always check the release notes for your current system software before you begin operating your system.

## Other Documentation

The *Switcher Protocols Manual* is available for developers and software engineers to use to design editor and other external interfaces to the Zodiak system.

The *Kalypso/Zodiak Remote Aux Panel Update Instruction Manual* explains how to update the software of older 32-Crosspoint Remote Aux panels.



# Safety Summary

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

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

## Safety Terms and Symbols

### Terms in This Manual

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

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

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

### Terms on the Product

The following terms may appear on the product:

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

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

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

## Symbols on the Product

The following symbols may appear on the product:



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



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



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



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



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



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

## Warnings

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

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

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

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

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



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

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

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

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

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

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

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

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

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

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

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

## Cautions

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

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

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

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

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

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

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

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

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

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

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

# *Regulatory Notices*

## **Certifications and Compliances**

### **FCC Emission Control**

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

### **Canadian EMC Notice of Compliance**

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

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

### **EN55103-1/2 Class A Warning**

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

## 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.

## Certification and Compliance

This product has been evaluated for Electromagnetic Compatibility under the EN 55103-1/2 standards for Emissions and Immunity and meets the requirements for E4 environment.

This product complies with Class A (E4 environment). In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

This product has been evaluated and meets the following Safety Certification Standards:

Category	Standard	Designed/tested for compliance with:
Safety	ANSI/UL60950	Safety of Information Technology Equipment, including Electrical Business Equipment (Third edition, 2000).
	IEC 60950	Safety of Information Technology Equipment, including Electrical Business Equipment (Third edition, 1999).
	CAN/CSA C22.2, No. 60950-00	Safety of Information Technology Equipment, including Electrical Business Equipment.
	BSEN60950	Safety of Information Technology Equipment, including Electrical Business Equipment.

# *System Overview*

## **Introduction**

The Zodiac Digital Production Switcher is optimized for mobile, post-production and broadcast facilities that need compact, easy to use, highly creative, real-time tools for video switching, effects creation and run-time device control. Powerful digital video switching, mixing, and keying with E-MEM are standard features of Zodiac, in addition to internal Still Store capability.

The switcher is available in 2.5-M/E or 3-M/E models with or without Transform Engines (internal DPMs). Zodiac's architecture provides an easy upgrade path from a 2.5-M/E to a 3-M/E; requiring the addition of a M/E module and power supply to the Video Processor frame and keycap changes to the Main panel. Reduced frame processor size (7 RU) and power consumption along with a smaller panel, sized to replace older analog Grass Valley Group switchers, make this switcher system an ideal replacement or addition to any existing or new facility.

## **Features**

### **2.5-M/E System Standard Features**

The standard features for the 2.5-M/E system are:

- 64 auto-timed SMPTE 259M inputs (configured as single inputs or video/key pairs),
- Nine Aux buses plus switched preview — up to four Aux buses can be utilized for two Effects Send pairs,
- 24 Source Selection buttons including Shift on each M/E, Key, PWV/AUX and PGM/PST bus rows,
- Program and preview outputs per M/E,
- Look ahead and other preview modes configured per each M/E,
- Two full M/Es, each with dedicated E-MEM (100 registers),

- One Utility bus per full M/E for video in borders, video wipe patterns, or masking,
- Four full function keyers with dedicated key controls per M/E,
- Two complex and four simple (in each keyer) wipe generators per M/E,
- Solarization, posterization, mosaic capabilities and YUV color correction as part of the video processors on each full M/E bus,
- Input freeze for each M/E key source and fill buses,
- PGM and PST buses with E-MEM, Downstream Keyers (DSK) with three simple linear or luminance keyers, and programmable Clean Feed,
- One pair of floating Chroma Keyers for use on any full-function keyer,
- 100 frame Still Store,
- Redundant power supplies for the Main panel and Video Processor frame,
- Four optional Transform Engines (internal DPMs) each on M/E 1 and M/E 2,
- Hot swappable Video Processor frame modules (including frame power supplies)
- Touch screen Menu Display, and
- CD-ROM (internal to the Menu panel), external USB-powered Zip drive and two Floppy drives (one in the Main panel and one in the Video Processor frame for emergency recovery procedures).

### 3-M/E System Standard Features

The standard features for the 3-M/E model are the same as the 2.5-M/E system in addition to the following:

- A third full M/E (replacing PGM/PST) with two complex and four simple wipes and four full function keyers plus three linear DSK keyers, and
- 13 Aux buses total plus switched Preview — up to eight Aux buses can be utilized for four Effects Send pairs.

### Zodiak System Options

The options listed below are for all models of Zodiak, except those dedicated to M/E 3. Selected sets of options may be combined into packages for initial purchase. Individual options can be purchased and added to a Zodiak system at a later time. Some Zodiak system options contain hardware components and some are software enabled.

The options are:

- Upgrade Kit (2.5-M/E only) adds a third full M/E (replacing PGM/PST) by changing keycaps to the Main panel, and installing a M/E module (M/E 3) and additional Video Processor frame power supply in the Video Processor frame,
- Four Transform Engines (internal DPMs) each for M/E 1, M/E 2 and M/E 3 (3-M/E only),
- KlipCache increased Still Store capacity,
- Additional floating Chroma Key pairs for use on any full-function keyer,
- RGB Color Correction for all keyer, background, and utility buses on M/E 1, M/E 2, and M/E 3 (3-M/E only),
- AMP protocol control of VDRs,
- 32- and 24-Crosspoint Remote Aux panels,
- Spare Video Processor frame power supply,
- Menu Panel Flush Mount and Adjustable Console Bracket mounting kits, and
- NetCentral SNMP Agent.

## External Interfaces Supported

All Zodiac systems have the following control interfaces:

- Ethernet Facility LAN connections allowing error reporting and upload/download capability for configurations, E-MEMs and images,
- Video Processor frame GPI interface with eight opto-isolated inputs and eight relay outputs,
- Main panel GPI interface with four opto-isolated inputs and four relay outputs,
- 32 programmable tally contact closures and serial tally,
- Two USB ports on the Menu panel (one connecting to the external Zip drive, and one spare),
- Six RS-422 serial ports for interfacing to 24- and 32-Crosspoint Remote Aux panels, Peripheral Bus II devices, edit controllers and CPL for external DPM (Krystal, GVeous) interface.

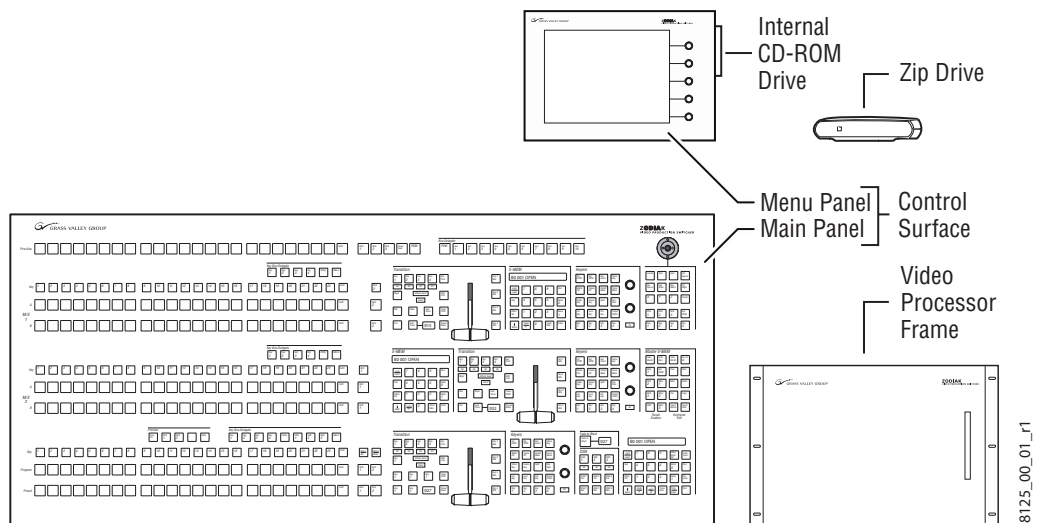
# System Components

A Zodiac system consists of a Main panel, Menu panel, Video Processor frame, CD-ROM (internal to the Menu panel), external USB-powered Zip drive, and two standard 1.4 MB 3.5 in. floppy disk drives (one in the Main panel (see [Figure 3](#)) and one in the Video Processor frame (see [Figure 5](#)).

**CAUTION** The floppy drives are used exclusively for emergency boot procedures. A 2-floppy set is provided for the Main panel and a single floppy is provided for the Video Processor frame. The boot floppies are not interchangeable between the Main panel and Video Processor frame. The boot floppies are not to be used in other facility or personal equipment as they are designed to reformat the Main panel and Video Processor frame hard drives.

The Zodiac 2.5 M/E system components depicted in [Figure 1](#) are also common to 3 M/E systems. Both systems use the same Video Processor frame and Main and Menu panels.

Figure 1. Zodiac System Components



## Control Surface

A group of panels available to a single operator is called a Control Surface. A Control Surface consists of at least two components, a Main panel and a Menu panel. The Zodiac Control Surface provides real time access to the full function M/Es through the Main panel. In addition, the Menu panel allows custom user configuration of special effects and matte settings not requiring real time operation. Optional 24- and 32-Crosspoint Remote Aux panels are also available.



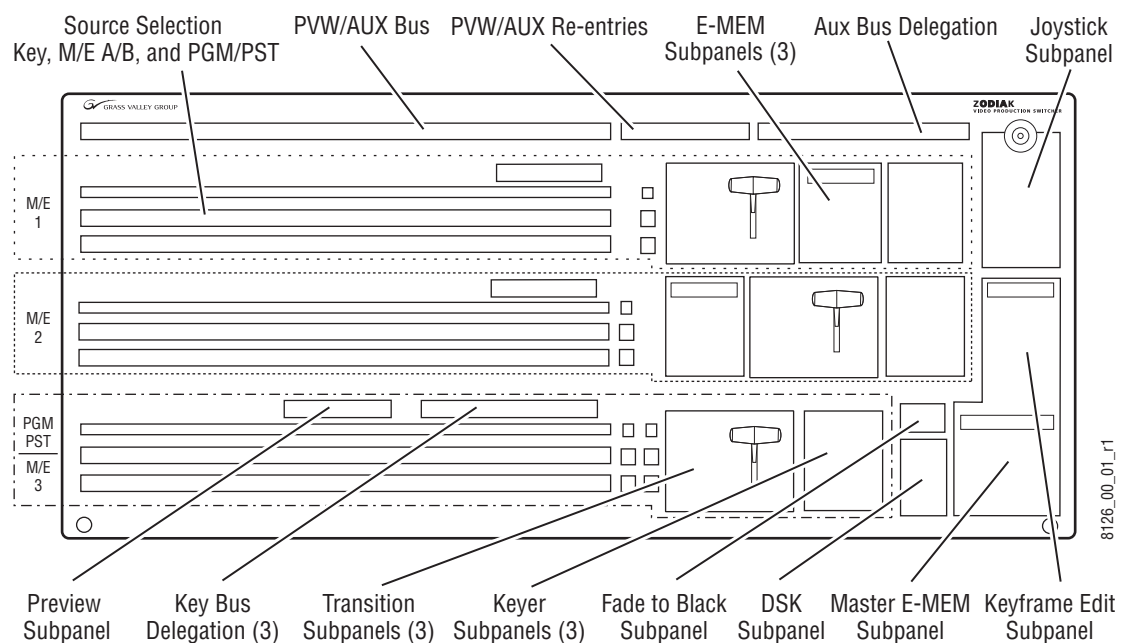
## Main Panel

The panel is organized into subpanels that contain groups of related controls (Figure 2).

The 3-M/E Main panel provides real time button, knob, and lever arm control of three full function mix/effects (PGM/PST with full M/E capability). The panel is identical to the 2.5-M/E panel except for keyer and wipe functionality in the PGM/PST rows.

The 2.5-M/E Main panel provides real time button, knob, and lever arm control of two full function mix/effects and one PGM/PST with three simple Downstream Keyers (DSKs).

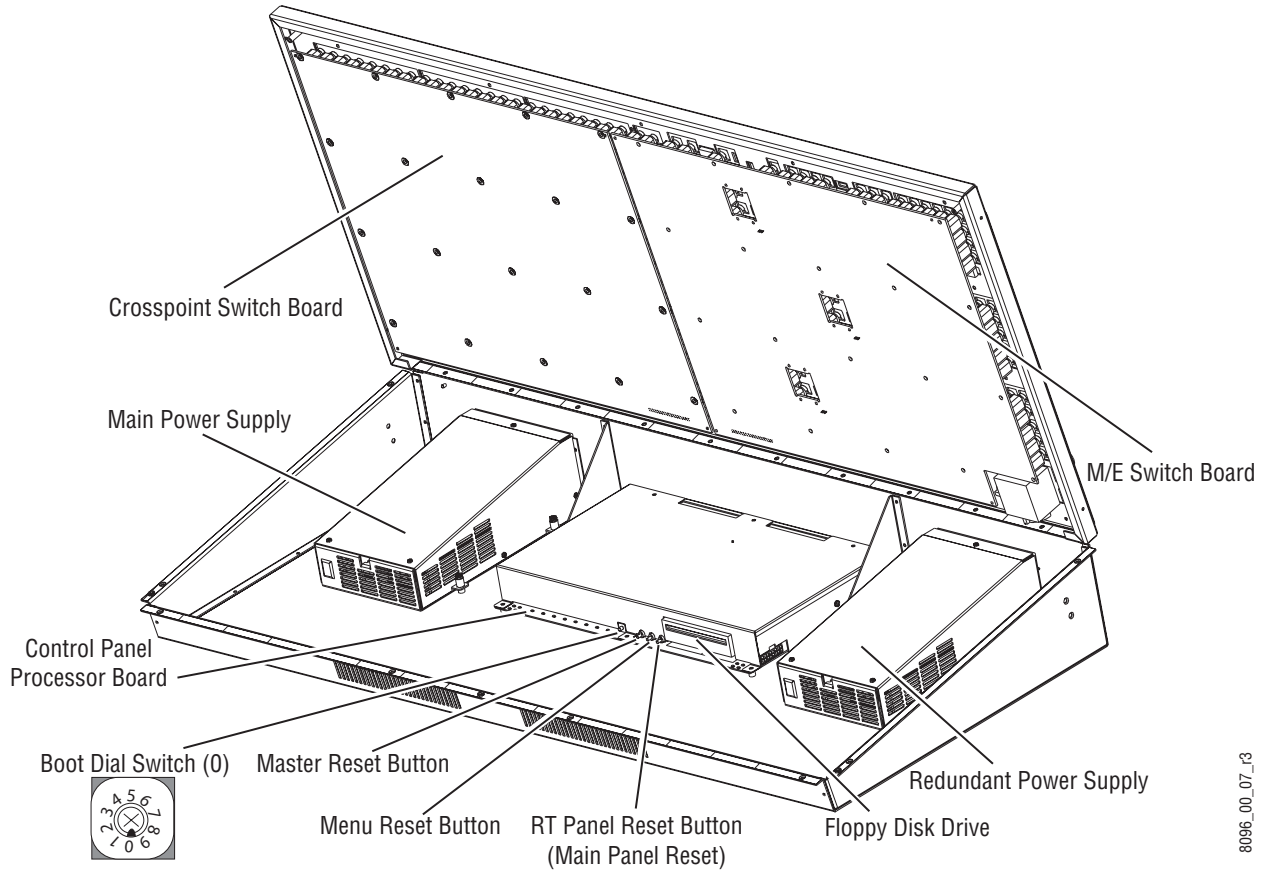
Figure 2. Zodiac Main Panel (2.5 and 3 M/E)



Connectors to the Zodiac Video Processor frame and to other components of the Zodiac Control Surface are located on the rear of the Main panel. The Main panel provides power to the separate Menu panel.

The Main panel power switches, fuses, reset buttons, and floppy drive are accessed by lifting the top of the Main panel (Figure 3).

Figure 3. Main Panel Inside View



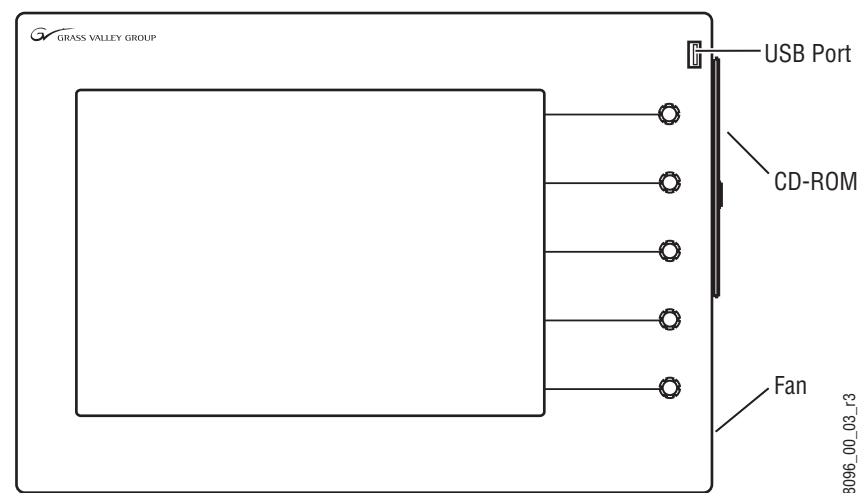
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## Menu Panel

The Menu panel provides access to additional system controls that generally do not require real time adjustment. The panel includes a touch screen display, control processor, five knobs for adjusting parameter values, built-in cooling fan, and a CD-ROM (Figure 4 on page 27).

The Menu panel can be installed behind, above, or to either side of the Main panel, and should be oriented so the screen directly faces the operator. The Menu panel can be mounted using the standard adjustable console mounting bracket or an optional flush mount kit that allows for rack mounting or mounting into a console cutout.

Figure 4. Menu Panel, Front View



Connectors to the Zodiac Main panel, Video Processor frame, an external Zip drive, and other devices are located on the bottom of the Menu panel. The latest model Menu panel has a USB port on the front and another on the rear. Previous model Menu panels have two USB ports on the rear.

## Panel Options

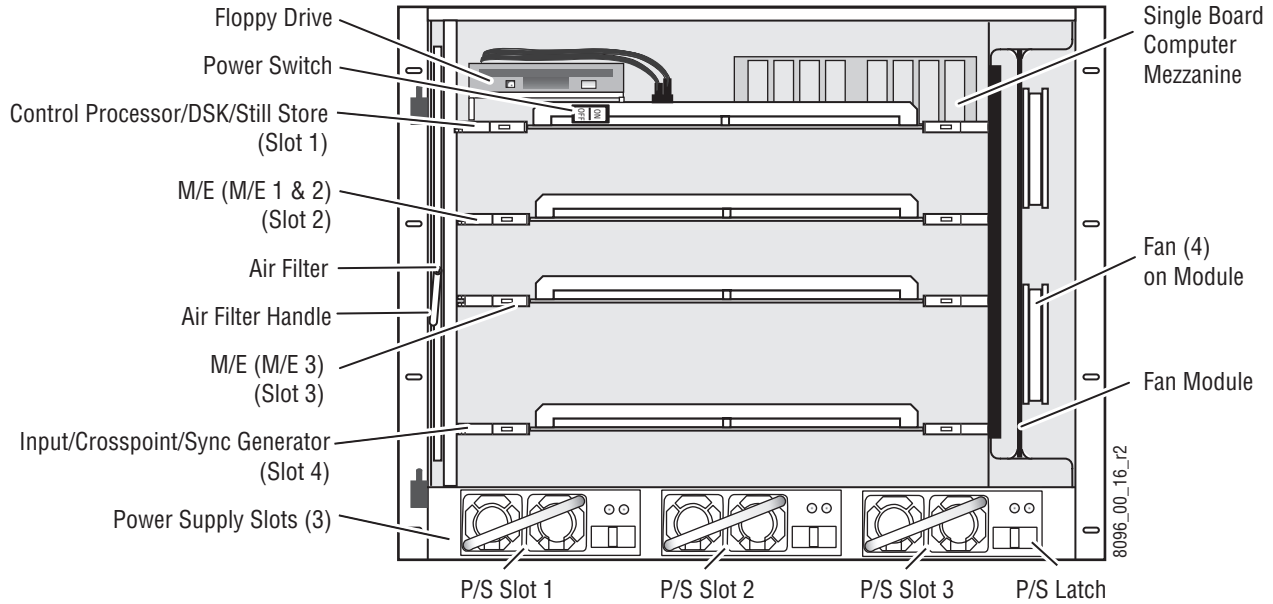
### Remote Aux Panels

Remote Aux panels provide control of selected Zodiac Aux buses from a remote location. Two 32-Crosspoint and three 24-Crosspoint Remote Aux panel types are available for Zodiac systems. Any combination of these aux panels can be used in a Zodiac system. See *Section 2 – Installation* of the *Zodiac Installation and Service Manual* for additional information.

## Video Processor Frame

The Zodiac Video Processor frame houses most of the system electronics, with horizontal slots that hold individual system control, video routing, and signal processing modules. A built-in fan system allows cooling of the frame. A fully loaded 3-M/E system is shown in [Figure 5](#).

Figure 5. Fully Equipped Zodiac Video Processor Frame Front View (Door Removed)



The Zodiac system has been designed for easy maintenance. Modules and power supplies can be removed and replaced safely from the front of the frame with the power on, simplifying troubleshooting to the module level.

The standard 2.5-M/E Zodiac Processor frame includes the following:

- Floppy disk drive,
- Control Processor/Still Store/DSK module,
- M/E module (M/E 1 and M/E 2),
- Input/Crosspoint/Sync Generator module,
- Two Video Processor frame power supplies, and
- Air filter and Fan module.

The standard 3-M/E Zodiac Processor frame includes the same modules as the 2.5-M/E system in addition to the following:

- M/E module (M/E 3), and
- Redundant power supply.

The rear of the Zodiac Processor frame provides the reference, video and system control connectors for the system.

## Video Processor Power Supply

The Zodiak Video Processor frame houses up to three slide-in modules rated at 400 watts each. (Figure 5 on page 28). Two hot-swappable power supply modules (primary and redundant) are standard with the 2.5-M/E system, and three power supply modules are standard with the 3-M/E system.

The power supplies load share such that a supply can fail and the Video Processor frame will continue to operate on the other supply/supplies.

It is recommended that each module's AC input be connected to a separate AC supply circuit. Any module(s) for which a separate supply circuit is not available can be connected to an uninterruptible power supply (UPS).

## Video Processor Frame Options

### Transform Engine Option

The Zodiak Transform Engine option available per keyer provides the following internal DPM capability:

- 2-D effects in 3-D space with perspective,
- Page turn,
- Border, outline, and extrude effects,
- Independent drop shadow,
- Glow and defocus effects, and
- Output recursive effects (such as star trails and montage).

### RGB Color Correction

In addition to the standard solarization, posterization, mosaic capabilities and YUV color correction, RGB color correction can be added to all M/E buses (background, keyer, and utility).

### Chroma Keyers

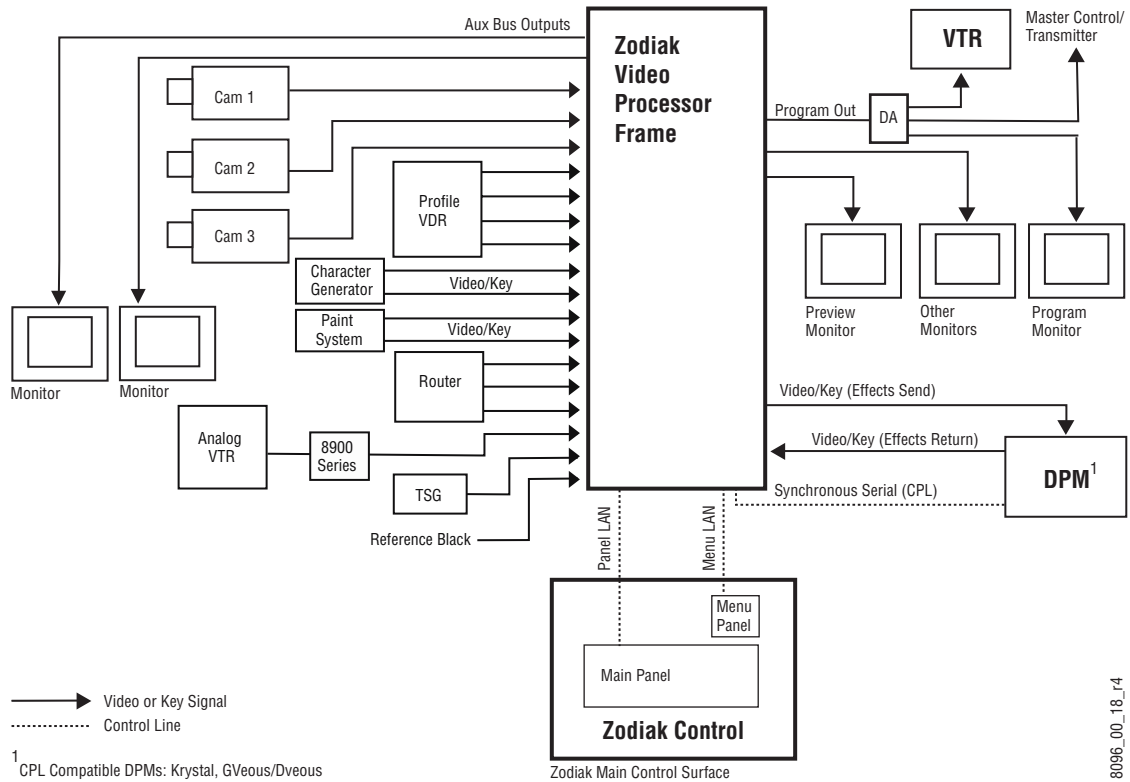
In addition to the two standard chroma keyers, two optional floating chroma keyers may be added to the system via software.

## Zodiak Facility Example

A basic facility configuration example of a Zodiak system is shown in Figure 6. Numerous types of sources can be fed to the Video Processor

frame. Each M/E, Keyer and Utility bus has internal video processing capability to correct color (including optional RGB color correction) and add effects. In addition to the optional internal Transform Engine capabilities available on each keyer, this facility also utilizes an external DPM system configured for Effects Send.

Figure 6. Basic Facility Configuration Example



# Functional Overview

## Video Signal Flow

The basic system architecture ([Figure 7](#)) of the Zodiac system has been designed for operational flexibility. For example, all the outputs from every M/E and the PGM/PST are routed back to the video crosspoint matrix, making all these signals accessible to the entire system.

The 2.5-M/E system has two full M/Es and a PGM/PST with DSK. The 3-M/E system has three full M/Es in addition to three simple DSKs and the ability to link DSK keys to any M/E.

The 64 video inputs to the Video Processor frame can be mapped to any of the 46 crosspoint buttons (23 unshifted and 23 shifted sources). Internally-generated black and two backgrounds are also available sources, as are the four Still Store outputs. This source-to-button mapping is done through a touch screen menu and can be stored as a user profile for any number of individual users. Button mapping is the same on all buses.

The selected video on each bus is deserialized and reclocked before entering the video processing circuitry. Video processing is available for each separate M/E background, Key, and Utility bus, providing built-in solarization, posterization and mosaic effects. In addition, contrast, brightness, and hue can be adjusted on a bus-by-bus basis.

Each full M/E has four full-function keyers with optional internal Transform Engine effects. Each keyer has access to its own simple wipe generator as well as a pair of standard floating chroma keyers which may be assigned to any keyers in the system. Two complex wipe generator serve each M/E, providing a wide range of wipe choices with modulation, rotation and multiplication of each one. Wipe signals can also be taken from the Utility bus on each M/E.

The outputs from each M/E Program and Preview are fed to dedicated BNCs and sent back to the crosspoint circuitry for reentry selection in the other M/Es. Either Program/Preview output can be programmed as a clean feed output or with any combination of DSK 1, 2 and 3 keyers active.

Nine Aux buses are available in the 2.5-M/E system; thirteen in the 3-M/E system. The Aux bus outputs can be utilized in a number of ways, including configuration as Effects Send pairs for interfacing to external digital effects systems.

Figure 7. Simplified Video Flow Diagram — Top Half

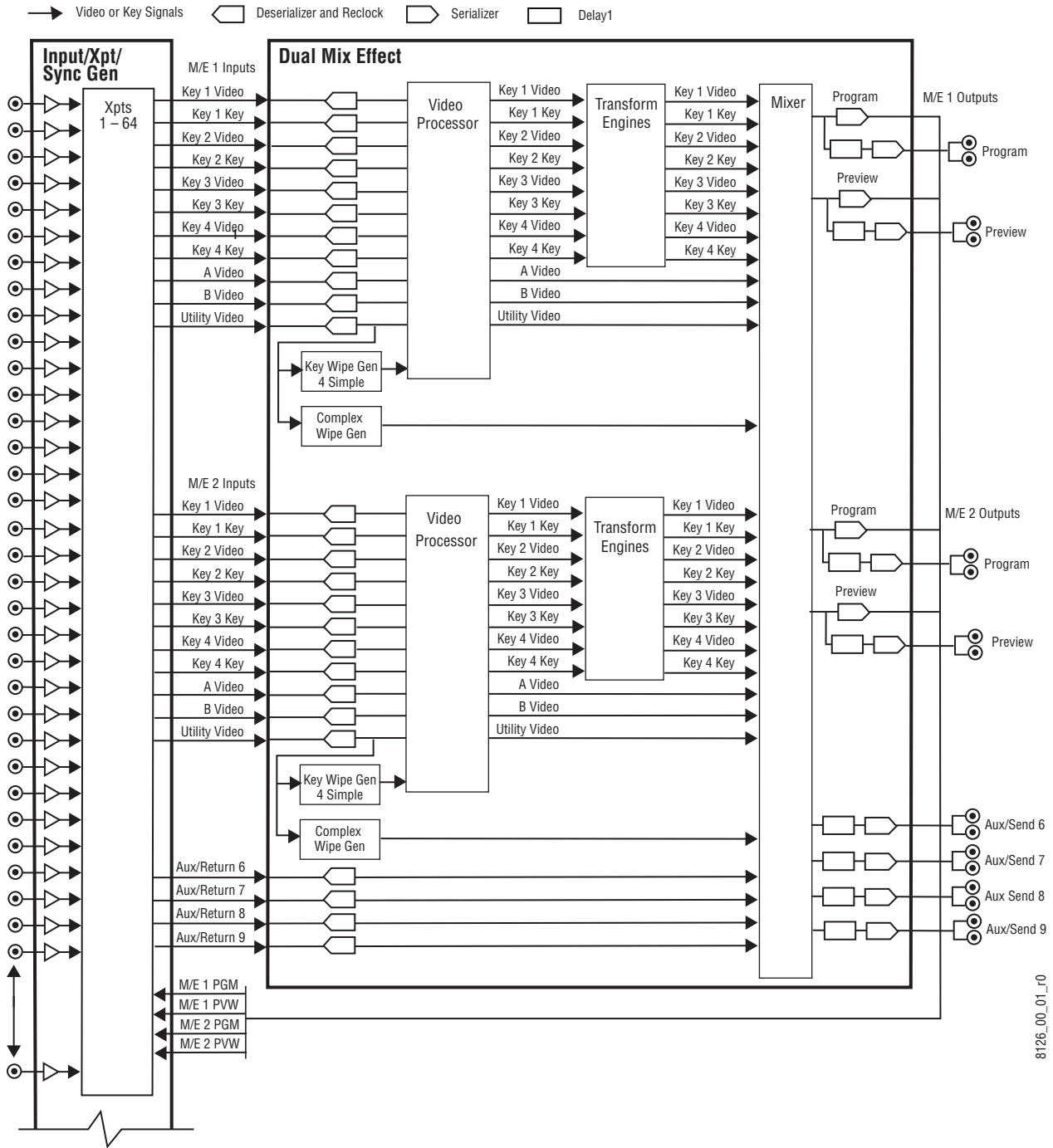
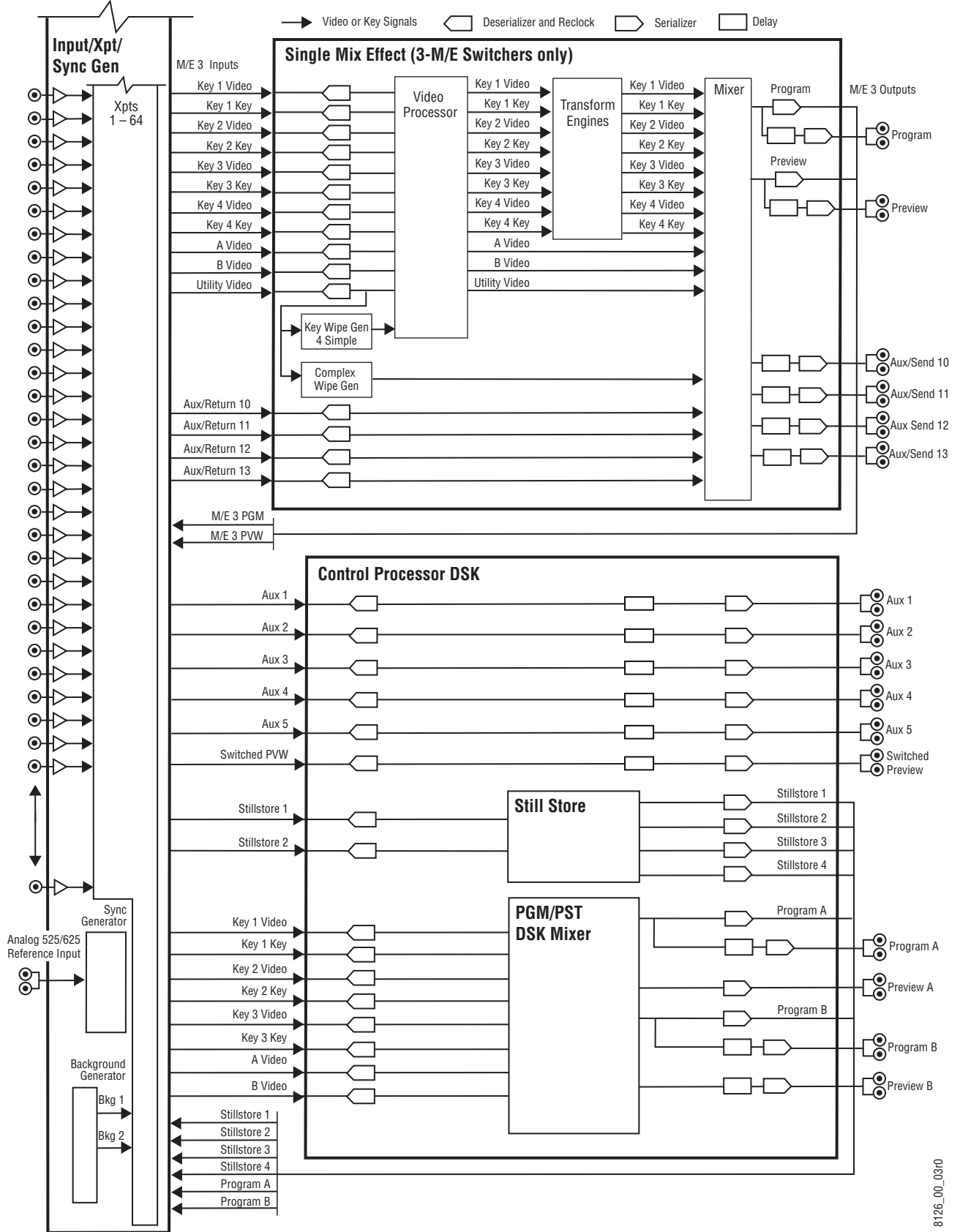




Figure 8. Simplified Video Flow Diagram — Bottom Half

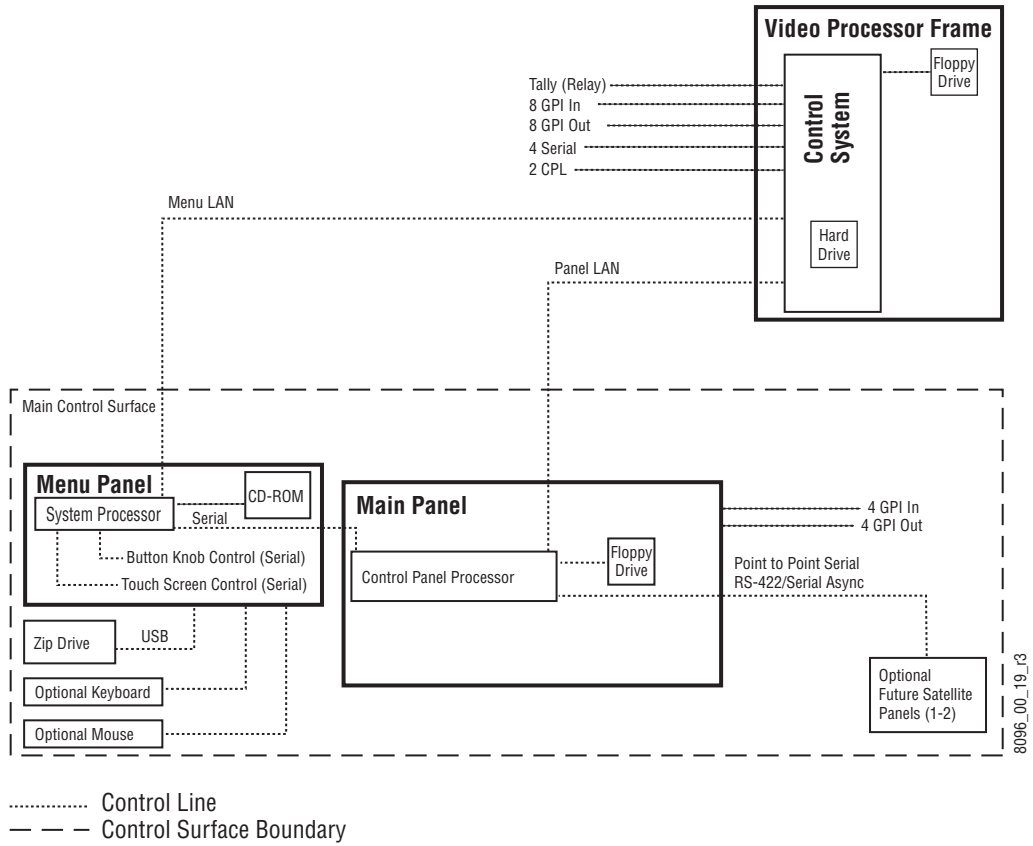


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## System Control

Zodiak system control is designed for flexibility and simplicity. Ethernet, serial, parallel, and USB are used for system component interconnections. Tally and GPI control are available. Windows drives the Menu panel touch screen. An overview of Zodiak system control is shown in [Figure 9](#).

Figure 9. Zodiak System Control



NOTE: Main Panel, Menu LAN, Panel LAN 10Base-T or 100Base-T Ethernet

# *Installation*

This section describes the installation and setup of Zodiac hardware.

## **Pre-Installation Procedures**

Before you physically install the Zodiac system, familiarize yourself with the tools required, physical specifications, and safety and power requirements covered in this section.

### **System Survey**

Check all parts received against the packing list enclosed with your shipment, and examine the equipment for any shipping damage. Immediately report any missing or damaged items to the carrier and to your Grass Valley Group Service Representative.

### **Line Voltage**

Zodiac components utilize autoranging power supplies which accommodate 115/230V (nominal). No switch settings are required, nor are any possible.

## Safety Requirements

To prevent injury or equipment damage, read, understand, and follow all installation safety precautions.

**WARNING** The Video Processor frame weighs approximately 36 kg (79 lb). Provide appropriate equipment to support the frame during installation.

**WARNING** Electrical potential is still applied to some internal components even when power to the frame is off. To prevent electrical shock when working on this equipment, disconnect the AC line cords from the AC source before working on any internal components. Residual voltage may be present immediately after unplugging the system; wait thirty seconds to allow capacitors to discharge before working on the system.

**CAUTION** To avoid static damage to sensitive electronic devices, protect the Zodiac system from static discharge. Avoid handling frame modules in a high static environment. Use a grounding strap when handling modules, and touch the frame before you remove any modules.

## Installation Tasks

After completing the Pre-Installation procedures, the recommended installation tasks given in this section are:

1. Unpack the equipment,
2. Install the Zodiac Main panel and Menu panel,
3. Install the Zodiac Video Processor frame and Video Processor frame hardware options,
4. Install the Main panel options,
5. Connect all cables between Zodiac devices,
6. Connect cables to video inputs and outputs, and
7. Connect the power cables.

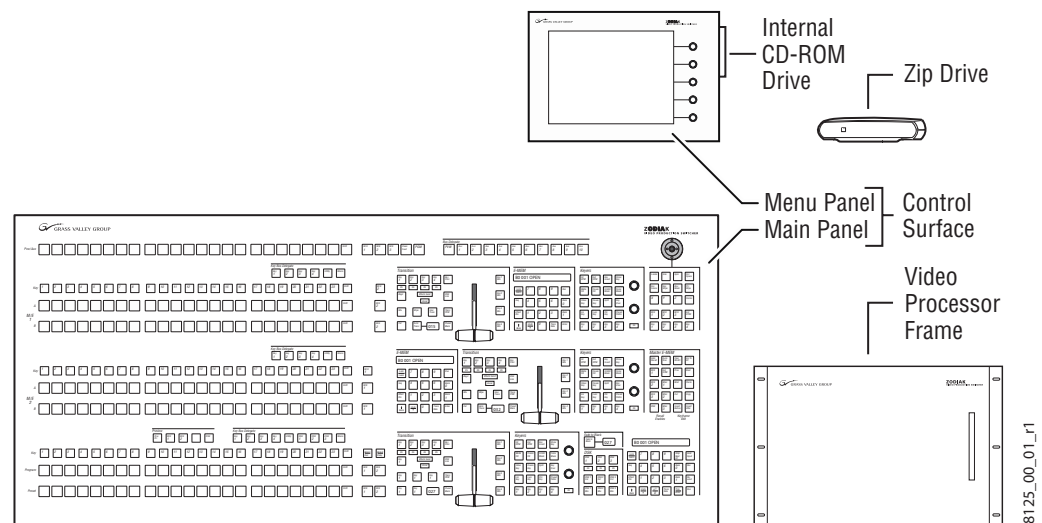
Power up and configuration, including setting IP addresses, is covered in detail in the next section, [Section 3-Configuration](#), of this manual.

# Zodiak Control Surface

The Zodiak system has a modular control panel consisting of several components (Figure 10). This approach provides flexibility for mounting component panels in various environments, and allows the addition of specialized accessory control panels.

A group of panels available to a single operator is called a Control Surface. A Control Surface consists of at least two components, a Main panel and a Menu panel.

Figure 10. Zodiak Standard Components



## Removable Media Drives

Four removable media drives are standard components of a Zodiak system. Included are a CD-ROM drive (internal to the Menu panel), an external 250 MB Zip drive (connected through and powered by the USB port on the Menu panel), and two standard 1.4 MB 3.5 in. floppy disk drives, one in the Main panel tub (Figure 14) and one on the Control Processor/DSK/Still Store module in the Video Processor frame (Figure 42).

**CAUTION** The floppy drives are used exclusively for emergency boot procedures. A 2-floppy set is provided for the Main panel and a single floppy is provided for the Video Processor frame. The boot floppies are not interchangeable between the Main panel and Video Processor frame. The boot floppies are not to be used in other facility or personal equipment as they are designed to reformat the Main panel and Video Processor frame hard drives.

## Zip Drive

No special mounting brackets or specific placement is required for the Zip drive. Placement is restricted only by cable length. A 1.83 m (6 ft) USB cable

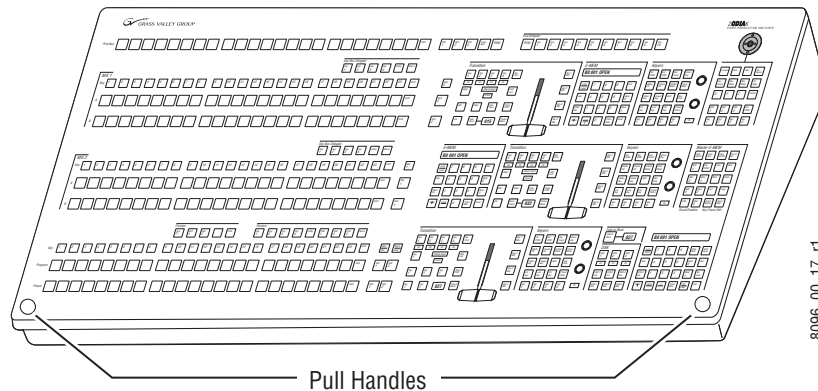
is provided. The Zip drive connects to either USB port on the Menu panel (see [Figure 32 on page 54](#)). The Zip drive accommodates 100 MB or 250 MB removable drives. One 250 MB drive is included.

## Main Panel Installation

The Main panel provides the operator with real-time button, knob, and lever arm control of the system.

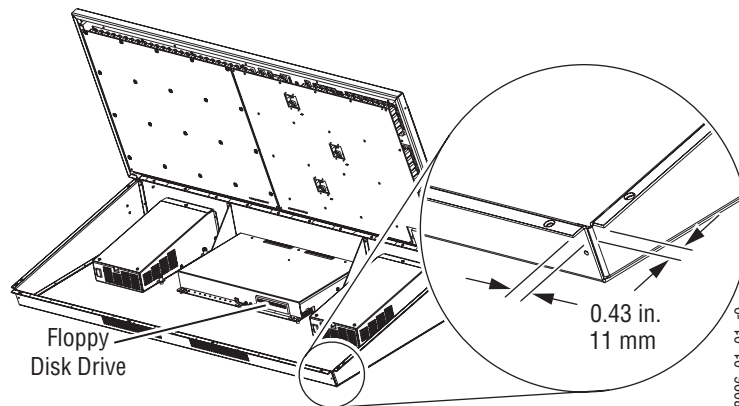
**CAUTION** To avoid damage to the lever arms, do not use the lever arms to open the Main panel lid. Instead, use the pull handles to open the panel lid ([Figure 11](#)).

Figure 11. Pull Handles



Main panel installation requires careful attention to the console support structure and the console cutout dimensions necessary to accommodate the mounting flanges located on the front and sides of the tub ([Figure 12](#)).

Figure 12. Mounting Flanges



**CAUTION** The Main panel weighs approximately 36 kg (79 lb). Prior to installation, ensure that your console is structurally capable of supporting the Main panel.

## Ventilation

Panel ventilation is accomplished by two fans located on the back of the power supplies which draw air into the panel, around the buttons, and expels it out the back. Blocking the front slots of the panel in a flush mount installation does not constrict ventilation.

## Dimensions and Connector Layout

The Main panel was designed to be flush mounted in a console, but it may also be surface mounted. [Figure 13](#) provides installation details for both flush mount and surface mount installations.

[Figure 14](#) through [Figure 16](#) provide panel dimensions and connector layout.

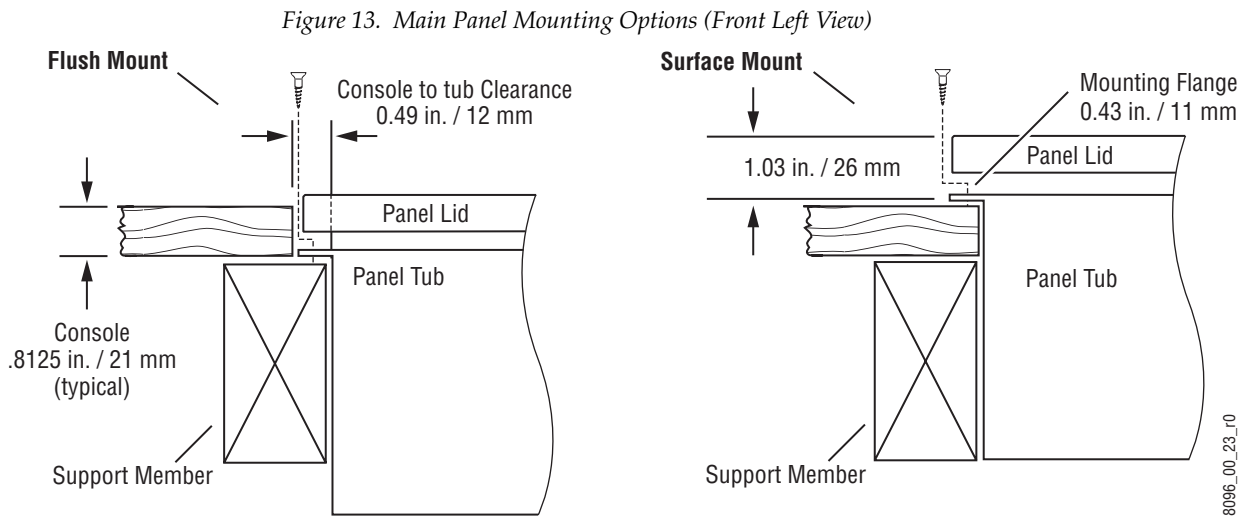


Table 1.

Mounting Option	Cutout Dimensions			
	A <sup>a</sup>	B <sup>1</sup>	C <sup>b</sup>	
Flush Mount	19.00 in. (483 mm)	42.19 in. (1072 mm)	41.16 in. (1045 mm)	
Surface Mount	18.38 in. (467 mm)	41.16 in. (1045 mm)	n/a	

**WARNING** The Main panel lid is held in the open position by two gas shock assemblies. The ability of these devices to support the lid is compromised if the installed panel tilts toward the user at an angle greater than 15 degrees.

**CAUTION** Regardless of mounting method or cutout dimensions, ensure that there is at least 6 in. (152 mm) of clear space at the rear of the Main panel below the mounting surface for proper cable clearance and air flow. Allow an extra 8 in. (203 mm) to 10 in. (254 mm) of mounting surface behind the Main panel for peripheral components.

Figure 14. Main Panel Dimensions

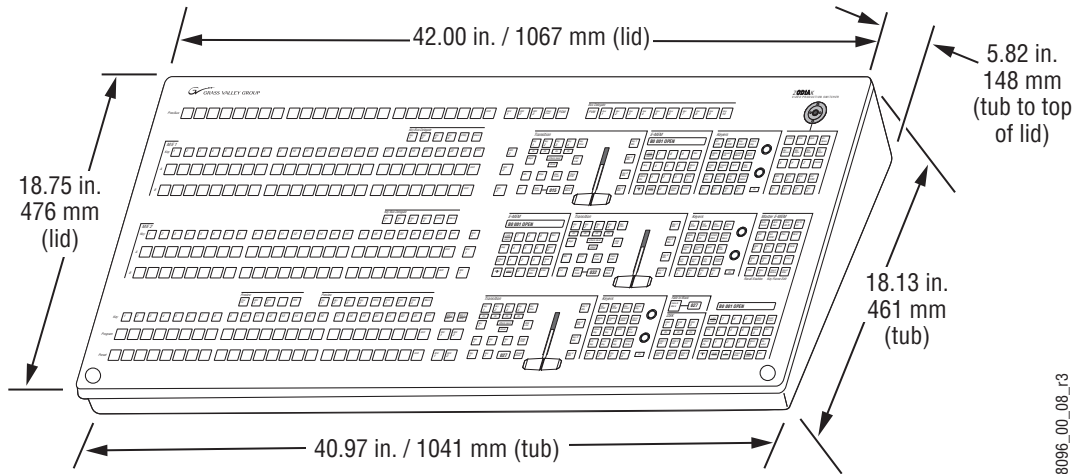


Figure 15. Main Panel Rear Dimensions

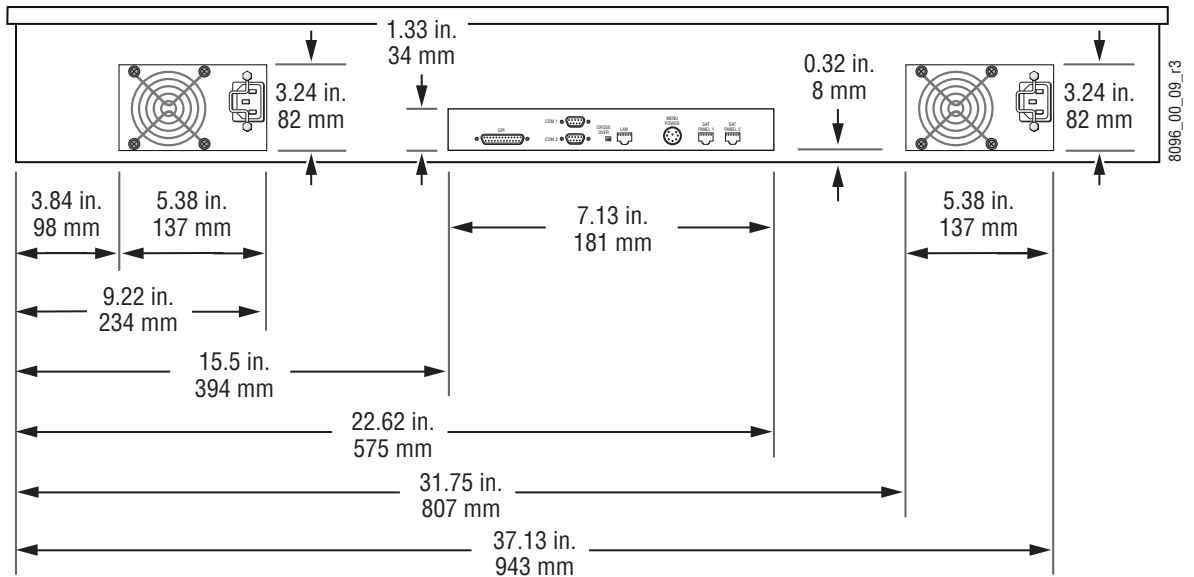
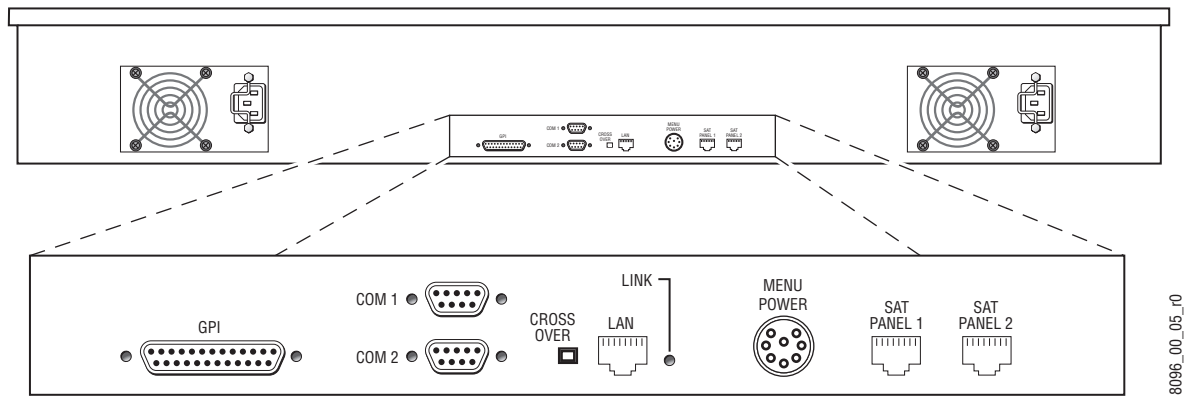




Figure 16. Main Panel Rear Connector Layout



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## Power Supply

The standard power supply configuration for the Main panel includes both +5 V and +12 V DC. A second power supply, identical to the primary, provides load sharing power supply redundancy. The power supplies are auto-ranging and will set automatically to the proper power source.

## Cabling and Pinouts

Figure 46 on page 72 shows the cabling between the Main panel and other system components. The required cable<sup>1</sup> for connection between Com 3 on the Menu panel and Com 1 on the Main panel is provided with the system. Any cables required for GPI control must be provided by the customer.

Table 1 provides pinouts for the Main panel console ports and the GPI connector pinouts are given in Table 2.

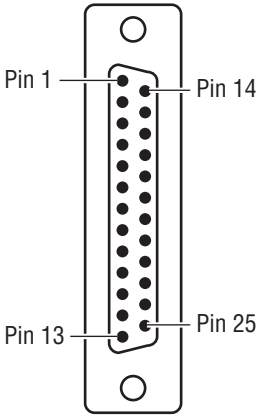
Table 1. Main Panel COM1 and COM2 Ports

Console Ports RS-232	Pin	Main Panel Proc. COM 1	Main Panel Proc. COM 2
	1	DSD	DSD
	2	TXD	TXD
	3	RXD	RXD
	4	DSR	DSR
	5	Chassis GND	Chassis GND
	6	DTR	DTR
	7	CTS	CTS
	8	RTS	RTS
	9	Menu Reset <sup>a</sup>	Reserved

<sup>a</sup> Reset is active low.

<sup>1</sup> This cable must be connected to Com 3 on the Menu panel and Com 1 on the Main Panel or it will not work.

Table 2. Main Panel GPI Inputs and Outputs

GPI	Pin	Function	Pin	Function
 <p>D-25 Female</p> <p>Pin 1</p> <p>Pin 14</p> <p>Pin 13</p> <p>Pin 25</p>	1	Chassis GND	14	IN 1B
	2	IN 1A	15	Chassis GND
	3	IN 2A	16	IN 2B
	4	Chassis GND	17	IN 3B
	5	IN 3A	18	Chassis GND
	6	IN 4A	19	IN 4B
	7	Chassis GND	20	OUT 1B
	8	OUT 1A	21	Chassis GND
	9	OUT 2A	22	OUT 2B
	10	Chassis GND	23	OUT 3B
	11	OUT 3A	24	Chassis GND
	12	OUT 4A	25	OUT 4B
	13	Chassis GND		

**Notes:**

Inputs are opto-isolated.  
 A and B are polarity independent.  
 Apply from 5 to 24 volts between A and B Inputs to turn on.  
 Outputs are normally open relay closures between A and B.

## Main Panel Options

Options currently available for the Main panel include an upgrade kit that provides 2.5-M/E to 3-M/E functionality, and 24- and 32-Crosspoint Remote Aux panels.

### 2.5-M/E to 3-M/E Upgrade

Upgrading a 2.5-M/E to 3-M/E involves the addition of a Mix Effects (M/E 3) module and power supply to the Video Processor frame and changing keycaps on the Main panel. An upgrade kit may be purchased and customer installed as an add-on anytime after system purchase.

Perform the instructions in [Keycap and Keycap Film Label Replacement](#) to replace the keycaps and the **M/E 3** keycap legend on the Main panel. See [Module Insertion on page 68](#) and [Module Removal on page 68](#) to install the Mix Effects (M/E 3) module. See [Power Supply Installation on page 67](#) to install the redundant power supply.

### Keycap and Keycap Film Label Replacement

Zodiak panels have both small and large buttons. The small buttons have imprinted labels and the large buttons have removable keycaps and film

labels. The upgrade kit contains 36 replacement buttons and a single film label for a large button.

### Small Button Replacement

Refer to [Figure 18 on page 44](#) for a map and [Table 3 on page 44](#) for a listing of each small button to be replaced. The M/E 3 Key Bus Delegate, Transition, and Keyers subpanels with multiple button replacements are illustrated in detail. You may also use the other M/E subpanels as a guide.

To replace the small buttons:

1. Turn off the Main panel power (see [Figure 3 on page 26](#)).
2. Using your fingers or adjustable jaw pliers, pull the button straight up and out of the switch ([Figure 17](#)).

**Note** To prevent scratching keycap parts, wrap plier jaws with tape before use.

3. Using your fingers, push the replacement keycap into the switch. Ensure that the keycap notches are on the front and back sides of the switch.

Figure 17. Small Button Replacement

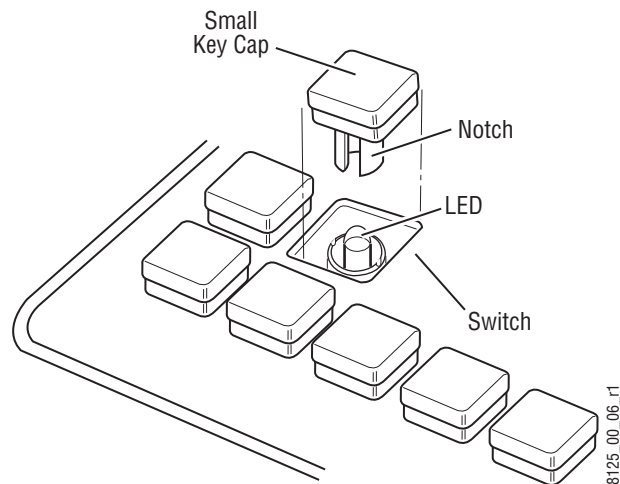
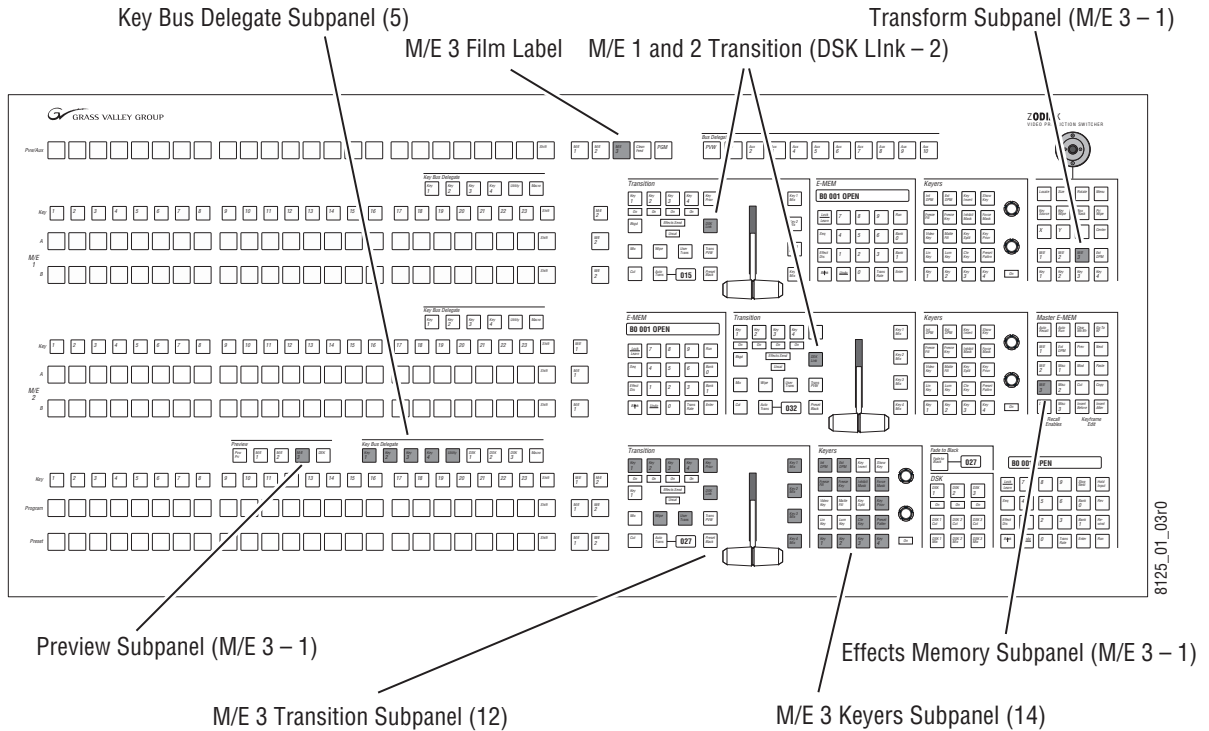
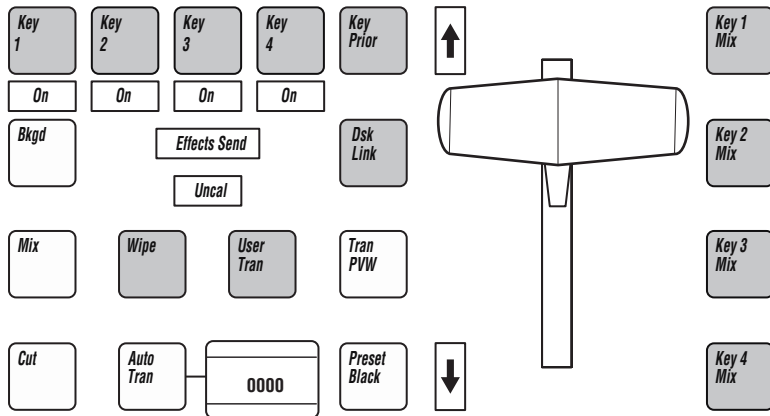


Figure 18. Keycap Replacement Map

**Key Bus Delegate**



**Transition**



**Keyers**

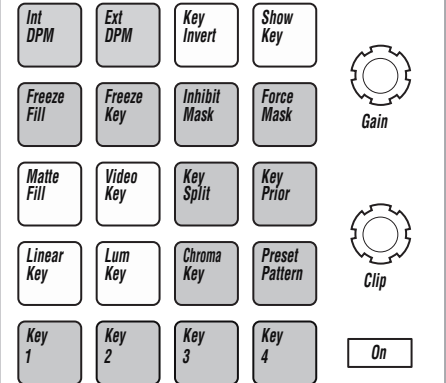


Table 3. Key Cap Replacement Locations

Location	Button Name	Button Color	Replaces
Preview Subpanel	M/E 3	White	Blank

Table 3. Key Cap Replacement Locations

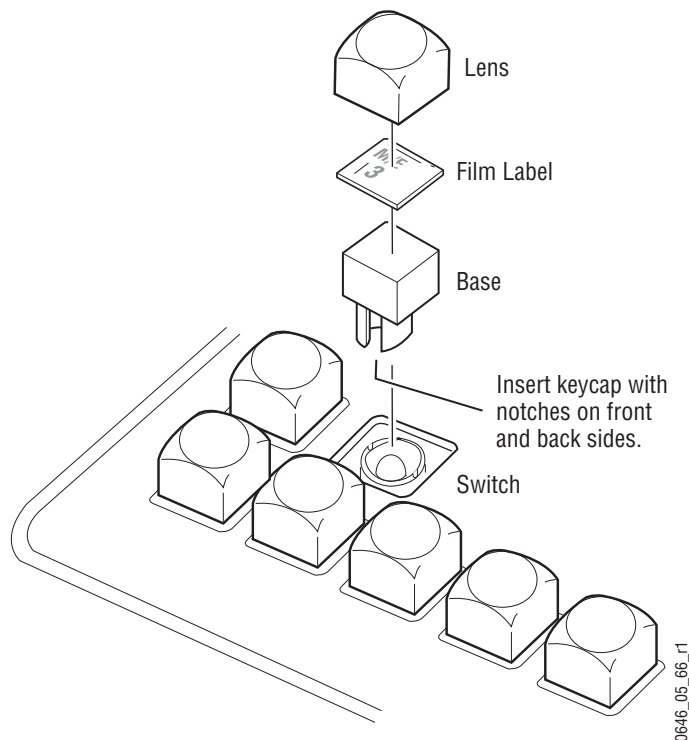
Location	Button Name	Button Color	Replaces
Key Bus Delegate Subpanel	Key 1	White	Blank
	Key 2	Green	Blank
	Key 3	Blue	Blank
	Key 4	Orange	Blank
	Util	White	Blank
M/E 1 Transition Subpanel	DSK Link	Yellow	Blank
M/E 2 Transition Subpanel	DSK Link	Orange	Blank
Transform Subpanel	M/E 3	White	Blank
Effects Memory Subpanel	M/E 3	White	PGM PST
M/E 3 Transition Subpanel	Key 1	White	DSK 1
	Key 2	Green	DSK 2
	Key 3	Blue	DSK 3
	Key 4	Orange	Blank
	Key Prior	White	Blank
	DSK Link	White	Blank
	Wipe	White	Blank
	User Trans	White	Blank
	Key 1 Mix	White	DSK 1 Mix
	Key 2 Mix	Green	DSK 2 Mix
	Key 3 Mix	Blue	DSK 3 Mix
	Key 4 Mix	Orange	Blank
M/E 3 Keyers Subpanel	Key 1	White	DSK 1
	Key 2	Green	DSK 2
	Key 3	Blue	DSK 3
	Key 4	Orange	Blank
	Chroma Key	White	Blank
	Preset Pattern	White	Blank
	Key Split	White	Blank
	Key Prior	White	Blank
	Freeze Fill	White	Blank
	Freeze Key	White	Blank
	Inhibit Mask	White	Blank
	Force Mask	White	Blank
	Int DPM	White	Blank
Ext DPM	White	Blank	

## Large Button Film Replacement

With the Main panel still powered down, replace the large button film label in the PVW / AUX M / E 3 re-entry subpanel location (Figure 18 on page 44) as follows:

1. Using your fingers or adjustable jaw pliers, pull the button straight up and out of the switch (see Figure 19).
2. Using needle nose pliers, pull the keycap base out of the lens.
3. Extract any existing film label from inside of the lens. If the parts are wedged inside, use sticky tape to remove them. Avoid using sharp tools that can scratch the lens material.
4. Insert the new film label and replace the lens on the base. Orient the label so the notches in the base are located on the front and back.
5. Re-insert the keycap so the base notches are on the front and back sides of the switch.
6. Turn on the Main panel power.

Figure 19. Large Button Film Label Replacement



## Remote Aux Panels

Remote Aux panels control Zodiac aux buses from remote locations. Three 24-Crosspoint and two 32-Crosspoint Remote Aux panel configurations are available for Zodiac systems. Refer to [Table 4](#) and the following sections for panel-specific information.

Table 4. Remote Aux Panel Summary

	24-Crosspoint Aux Panel	32-Crosspoint Aux Panel
<b>Connection</b>	Serial Port Daisy Chain	Ethernet
<b>Maximum Panels<sup>a</sup></b>	32	40
<b>External Sources Controlled</b>	48 (24 unshifted, 24 shifted)	64 (32 unshifted, 32 shifted)
<b>Available Configurations</b>	KAL-24AUX1 (1 RU, single bus)	KAL-32AUX1 (single bus)
	KAL-24AUX2 (2 RU, single bus)	KAL-32AUX2 (16 bus delegate buttons)
	KAL-24AUX3 (3 RU, 18 bus delegate buttons)	--

<sup>a</sup> A maximum of 40 Remote Aux panels, in any combination, can be connected to a 2.5-M/E or 3-M/E.

Remote aux panels may be purchased with the Zodiac system or added at a later time. For more information on Zodiac options, refer to the *Zodiac Data Sheet* or *Grass Valley Group Full Line Product Catalog*. Online documentation is available on the Grass Valley Group web site. The URL for the Grass Valley Group web site is found on the copyright page at the front of this manual.

**Note** Remote Aux panels used with Model 2200, 3000, and 4000 systems can be upgraded to 24-Crosspoint functionality for use in a Zodiac environment. See the *Kalypso Model 4000 Remote Aux Panel Upgrade Instruction Manual* for details. Online documentation is available on the Grass Valley Group web site. The URL for the Grass Valley Group website is found on the copyright page at the front of this manual.

### 24-Crosspoint Remote Aux Panels

These panels are designed to select 48 external sources (24 unshifted and 24 shifted). Thirty-two 24-Crosspoint Remote Aux panels can be daisy-chained on a single serial control port on the Zodiac Video Processor frame. Three panel configurations are available, identified by the number of rack units (RUs) each occupies in a standard 19 in. (483 mm) equipment rack (see [Figure 20](#) through [Figure 22](#)).

The 1 and 2 RU panels (KAL-24AUX1 and KAL-24AUX2) are dedicated to a single bus. The 3 RU panel (KAL-24AUX3) panel has 18 bus delegate buttons. All three panels have the same connectors and DIP switches as that depicted for the KAL-24AUX1 in [Figure 23 on page 48](#).

Figure 20. KAL-24AUX1 (1 RU)

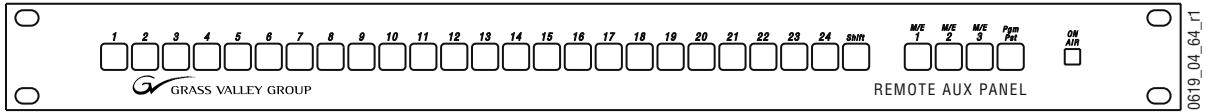


Figure 21. KAL-24AUX2 (2 RU)

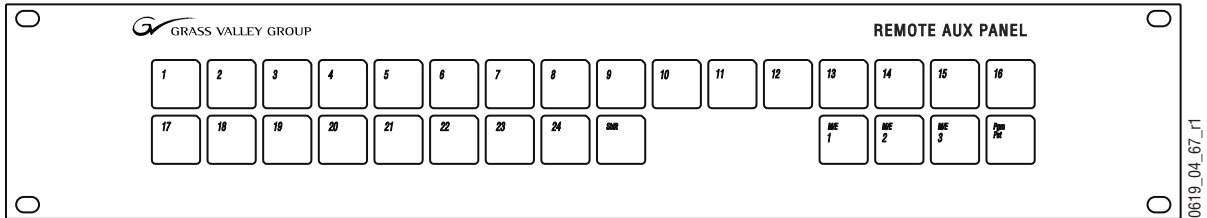
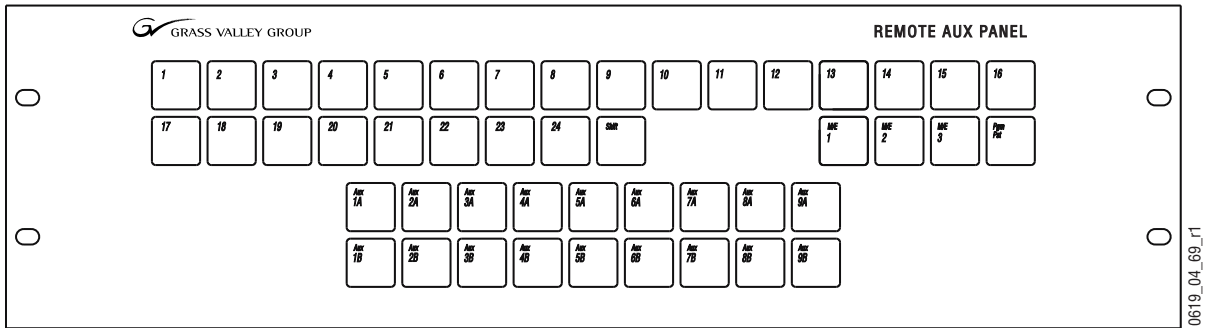


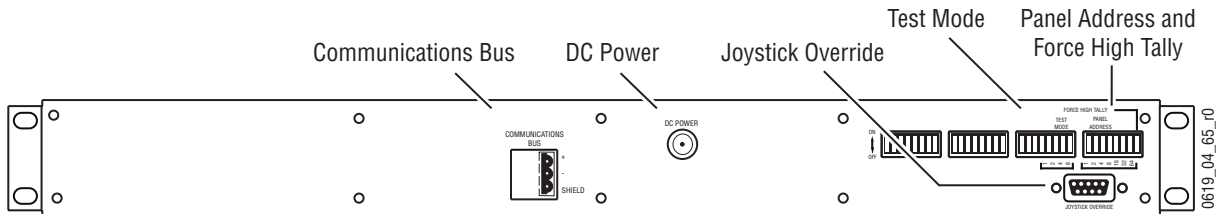
Figure 22. KAL-24AUX3 (3 RU)



### 24-Crosspoint Remote Aux Connections

The 24-Crosspoint Remote Aux rear panels have connectors for Communications Bus, DC power, and Joystick Override (Figure 23).

Figure 23. KAL-24AUX1 (1 RU), Rear View



**Note** All KAL-24AUX rear panels have similar layouts and connectors.



### Communications Bus

The communications bus cable connector shipped with each panel must be attached to the supplied serial cable or a user fabricated cable (refer to [Figure 25](#)). The supplied cable is 164 ft (50 m) long and has a pre-wired 9-pin D connector on one end. If fabricating a cable, use a shielded twisted pair cable such as Belden 8451 and refer to [Table 5 on page 50](#) for wiring connections.

Thirty-two 24-Crosspoint Remote Aux panels can be daisy-chained on a single serial control port (Serial Port 4/J7) on the Zodiac Video Processor frame, but the total length of cable in the panel daisy-chain cannot exceed 1000 ft (320 M). Allow enough cable to reach each control panel connector, plus about 3 ft (approximately 1 m) extra.

### Joystick Override

A user-fabricated cable, external switch, and a 9-pin D connector are required to implement camera joystick override. Use shielded cable and connect the shield to the metal connector shell when fabricating the joystick override cable. Refer to [Figure 24](#) for connector wiring.

Joystick override programming is done in the Button Mapping menu accessed by touching **Daily Setups, User Prefs, Button Mapping, Remote Panel** in the Zodiac Menu application. Refer to [Remote Aux Panel Configuration on page 116](#).

Figure 24. KAL-24AUX Joystick Override Connector Cable Wiring

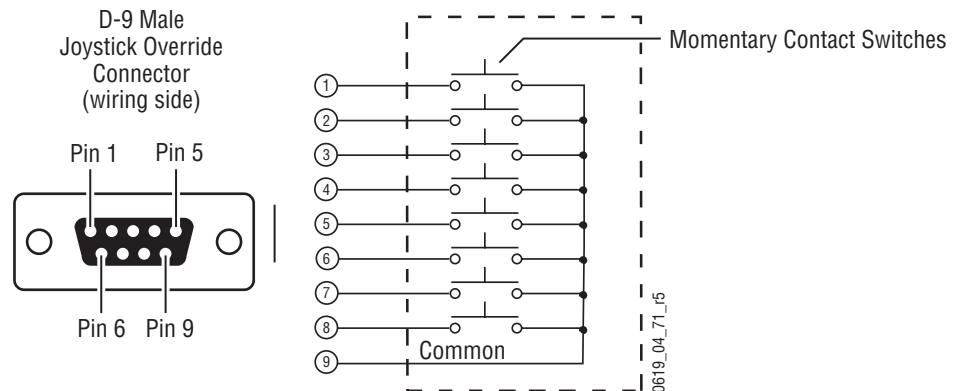
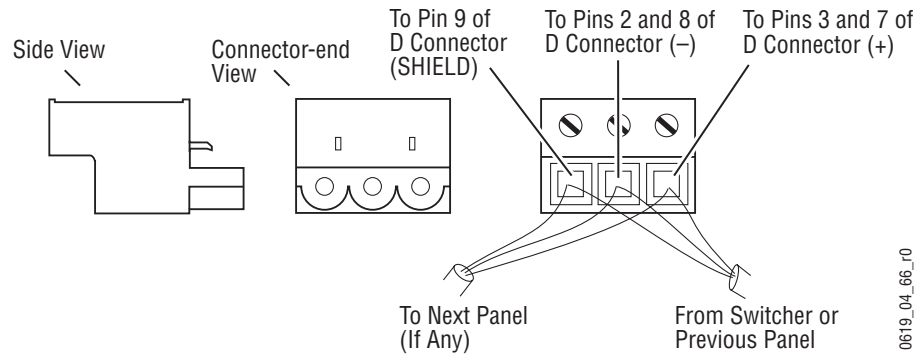


Figure 25. KAL-24 AUX Communications Bus Connector Cable Wiring



0619\_04\_66\_r0

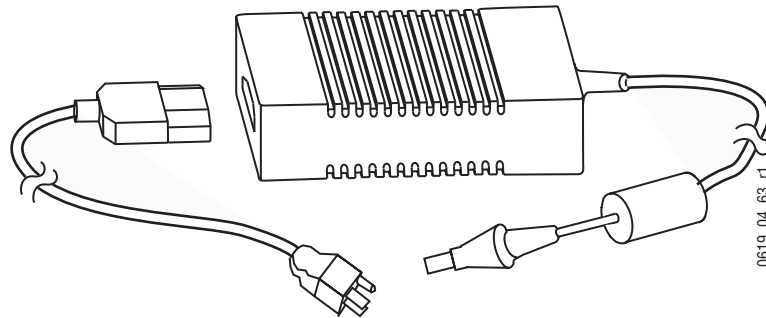
Table 5. Cable Polarity

Panel Connector	D-Connector Pins	Factory Supplied Cable
+ (Plus)	3 and 7	Red
- (Minus)	2 and 8	Black
Shield	9	Shield

### Power Supply

The 24-Crosspoint Remote Aux panel power supply (Figure 26) should be securely fastened to a horizontal surface or attached to a support inside the equipment rack. Verify that the power supply cord reaches the 24-Crosspoint Remote Aux Control panel and the AC source.

Figure 26. KAL-24AUX Power Supply



0619\_04\_63\_r1

## 32-Crosspoint Remote Aux Panels

These panels are designed to select 64 external sources (32 unshifted and 32 shifted). The number of 32-Crosspoint Remote Aux panels that can be network connected to the Zodiac Video Processor frame is 40. Two panel configurations are available, identified by the number of rack units (RUs) each occupies in the standard 19 in. (483 mm) equipment rack (see [Figure 27](#) and [Figure 28](#)). Both panels have the same connector layout as that depicted for the KAL-32AUX1 in [Figure 29](#).

The 1 RU panel (KAL-32AUX1) is dedicated to a single bus. The 2 RU panel (KAL-32AUX2) panel has 16 bus delegate buttons.

Figure 27. KAL-32AUX1 (1 RU)

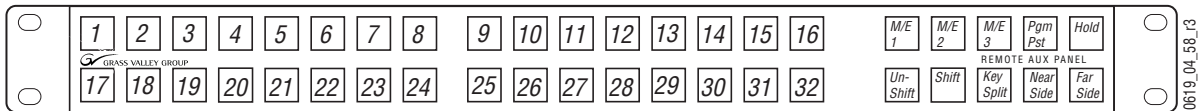
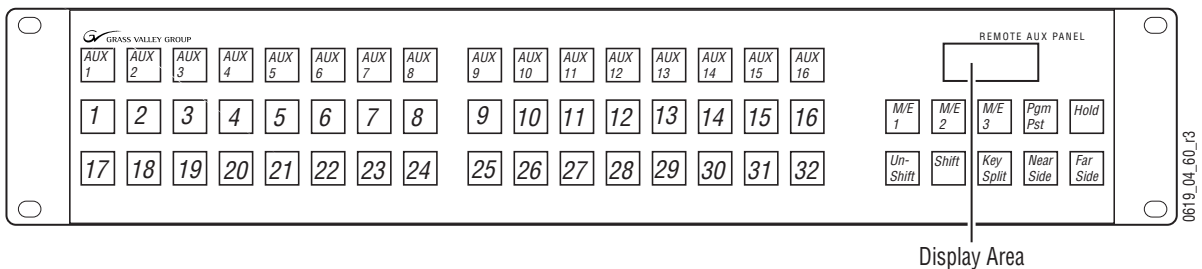


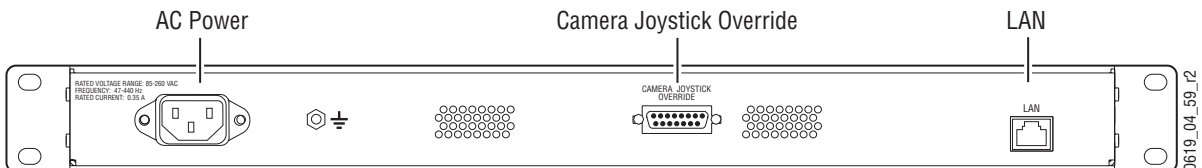
Figure 28. KAL-32AUX2 (2 RU)



## 32-Crosspoint Remote Aux Connections

The 32-Crosspoint Remote Aux rear panels have connectors for AC power, Camera Joystick Override and LAN ([Figure 29](#)).

Figure 29. KAL-32AUX1 (1 RU), Rear View



**Note** The rear panel layout is the same for both KAL-32AUX panels.

### AC Power

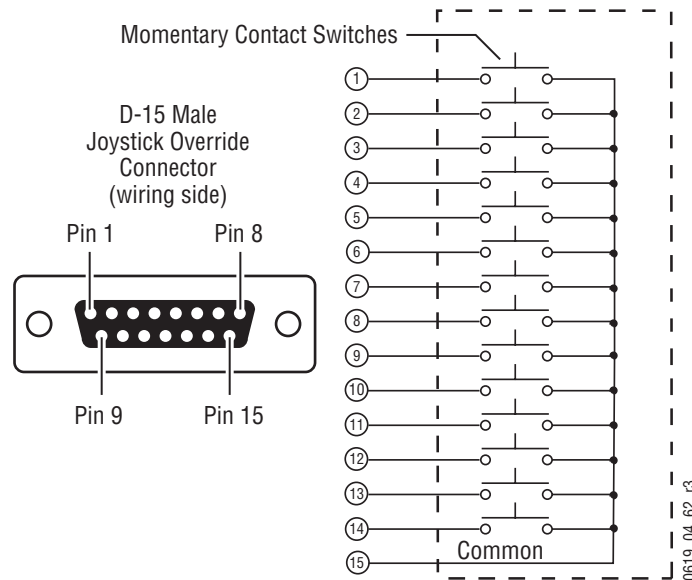
The 32-Crosspoint Remote Aux panels have internal power supplies which connect directly to facility AC power by supplied line cords.

### Joystick Override

A user fabricated cable, external switch, and a 15-pin D connector are required to implement camera joystick override. Use shielded cable and connect the shield to the metal connector shell when fabricating the joystick override cable. Refer to [Figure 30](#) for connector wiring.

Joystick override programming is done in the Button Mapping menu accessed by touching **Daily Setups, User Prefs, Button Mapping, Remote Panel** in the Zodiac Menu application. Refer to [Remote Aux Panel Configuration](#) on page 116.

Figure 30. KAL-32AUX Joystick Override Connector Cable Wiring



### LAN

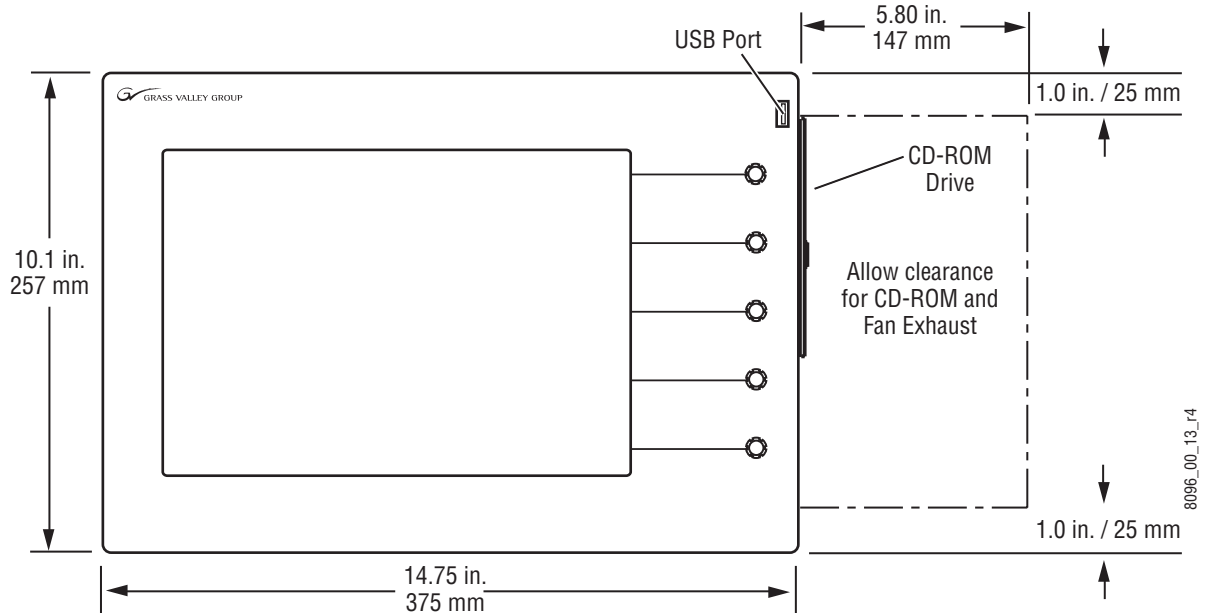
The 32-Crosspoint Remote Aux panels employ Ethernet network configuration. Refer to [Ethernet Switches and Hubs](#) on page 76 for information on system topography.

Each 32-Crosspoint Remote Aux panel must have a unique IP address to place it on the Menu (Facility) LAN. To set the IP address, refer to [Remote Aux Panel Configuration](#) on page 116.

# Menu Panel Installation

The Menu panel includes a touch screen display, control processor, five knobs for adjusting parameter values, and a CD-ROM (Figure 31).

Figure 31. Menu Panel Dimensions



## Ventilation

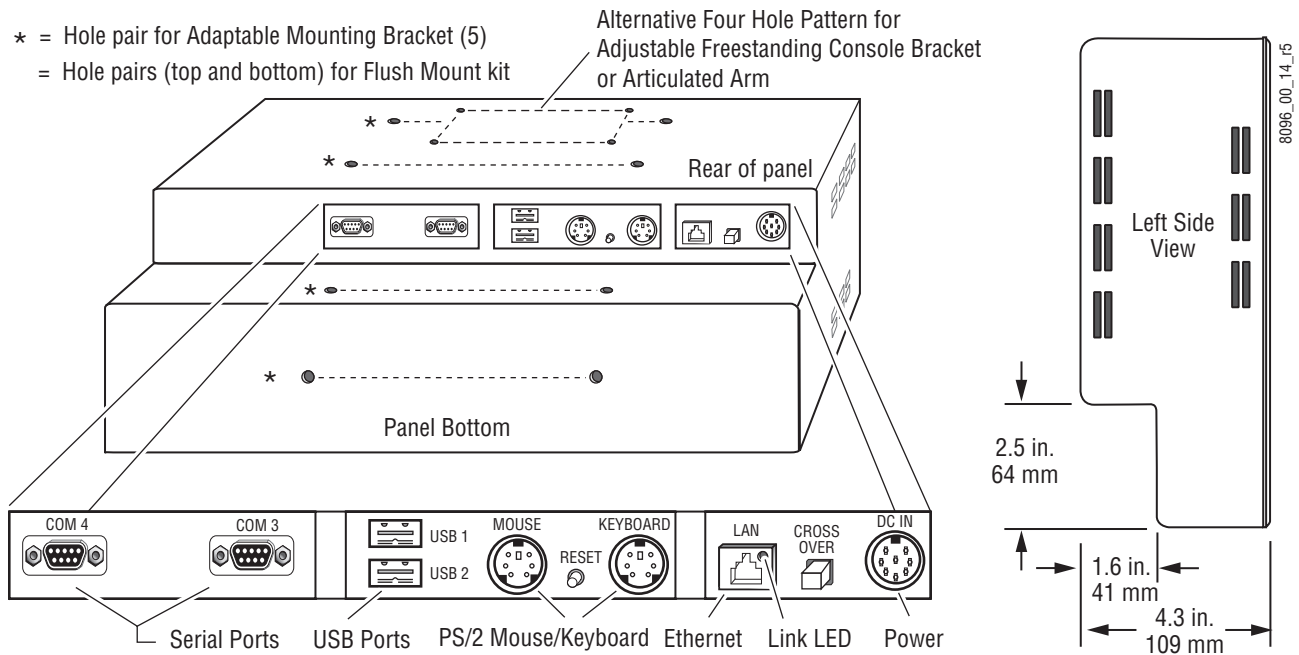
Air is drawn into the Menu panel through slots along the top and left side of the panel. Air is expelled out of the Menu panel by a fan located on the right side of the panel (see Figure 31). When mounting the panel, be sure to leave either the top or left side slots unobstructed for proper air intake. The right side of the panel requires clearance for the fan exhaust and access to the CD-ROM.

## Cable Connections

Ports located on the rear of the Menu panel (Figure 32 on page 54) provide connections to the Zodiac Main panel, Video Processor frame, an external Zip drive, a PS/2 mouse and keyboard, an optional CD-ROM drive and other devices.

The latest model Menu panel has a USB port on the front and another on the rear. Previous model Menu panels have two USB ports on the rear.

Figure 32. Menu Panel Connections



**CAUTION** All Menu panel mounting holes are tapped 10-32. Do not penetrate the case more than 0.24 in. / 6.10 mm.

## Available Mounting Brackets

Three different mounting brackets are available for mounting the Menu panel:

- Adaptable Mounting Bracket (standard),
- Adjustable Console Bracket, or
- Flush Mount Kit.

When considering mounting options, remember that the optimum viewing angle is 90 degrees in both the horizontal and vertical planes. The adaptable mounting bracket allows the Menu panel to be tilted on a horizontal axis for optimum viewing. Clamping pivot screws secure the bracket angle.

The adjustable console bracket has a friction-lock mechanism to allow the user to tilt the Menu panel to the desired horizontal position.

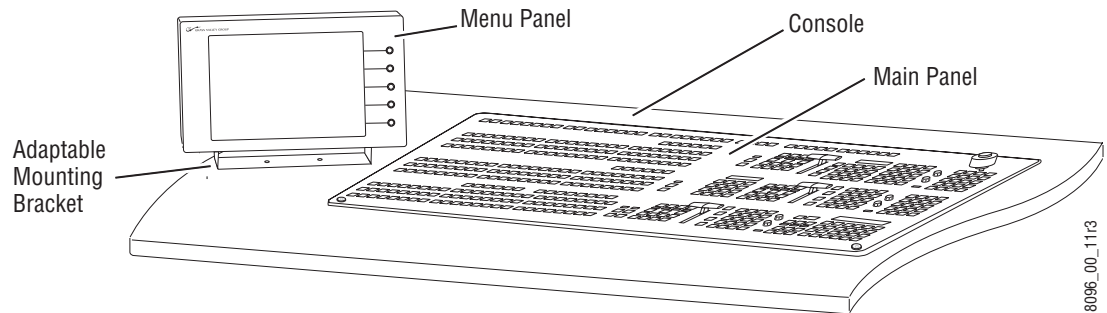
**CAUTION** When using either console mounting bracket, be sure to open the Main panel lid and check for sufficient clearance between the Menu panel and the Main panel components. Without sufficient clearance, the lever arm or joystick could damage the Touch Screen when the Main panel is opened.

## Adaptable Mounting Bracket

An adaptable mounting bracket ships with every panel. This mounting bracket allows mounting the Menu panel from above, from either side, or from the back of the Main panel (Figure 35 on page 56).

The recommended locations are to the left (Figure 33), right or behind the Main panel. These locations provide for the most comfortable reach to the Touch Screen, soft knobs, and CD-ROM, and also clears the area for better viewing of monitors beyond the Main panel.

Figure 33. Menu Panel Mounting With Adaptable Console Brackets



Attach the adaptable bracket to the desired location as shown in Figure 35 with one of the five sets of screw hole pairs (Figure 32 on page 54). The right side of the panel requires clearance for the fan exhaust and access to the CD-ROM.

## Adjustable Console Bracket Option or Articulated Arm

A four-hole pattern on the back of the panel (Figure 32 on page 54) allows connection to a Kalypso-style adjustable console bracket option (Figure 34) or, for more flexibility, a user-supplied articulated arm.

Figure 34. Menu Panel Mounting with Adjustable Console Bracket

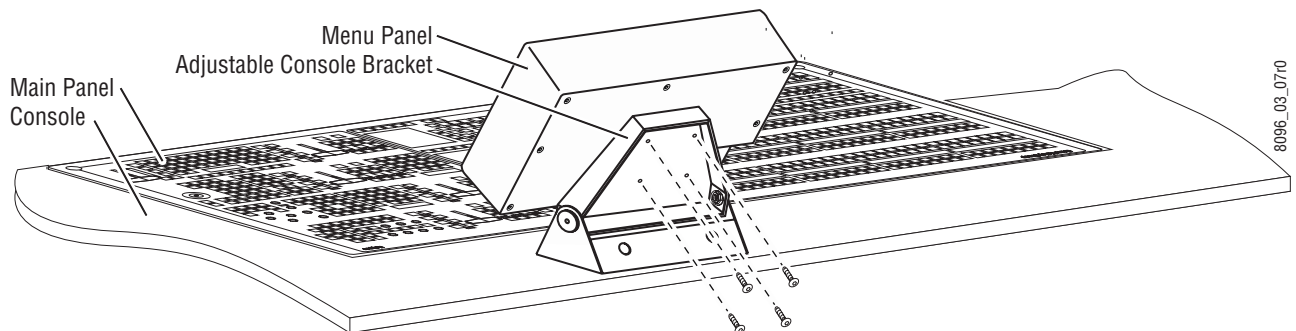
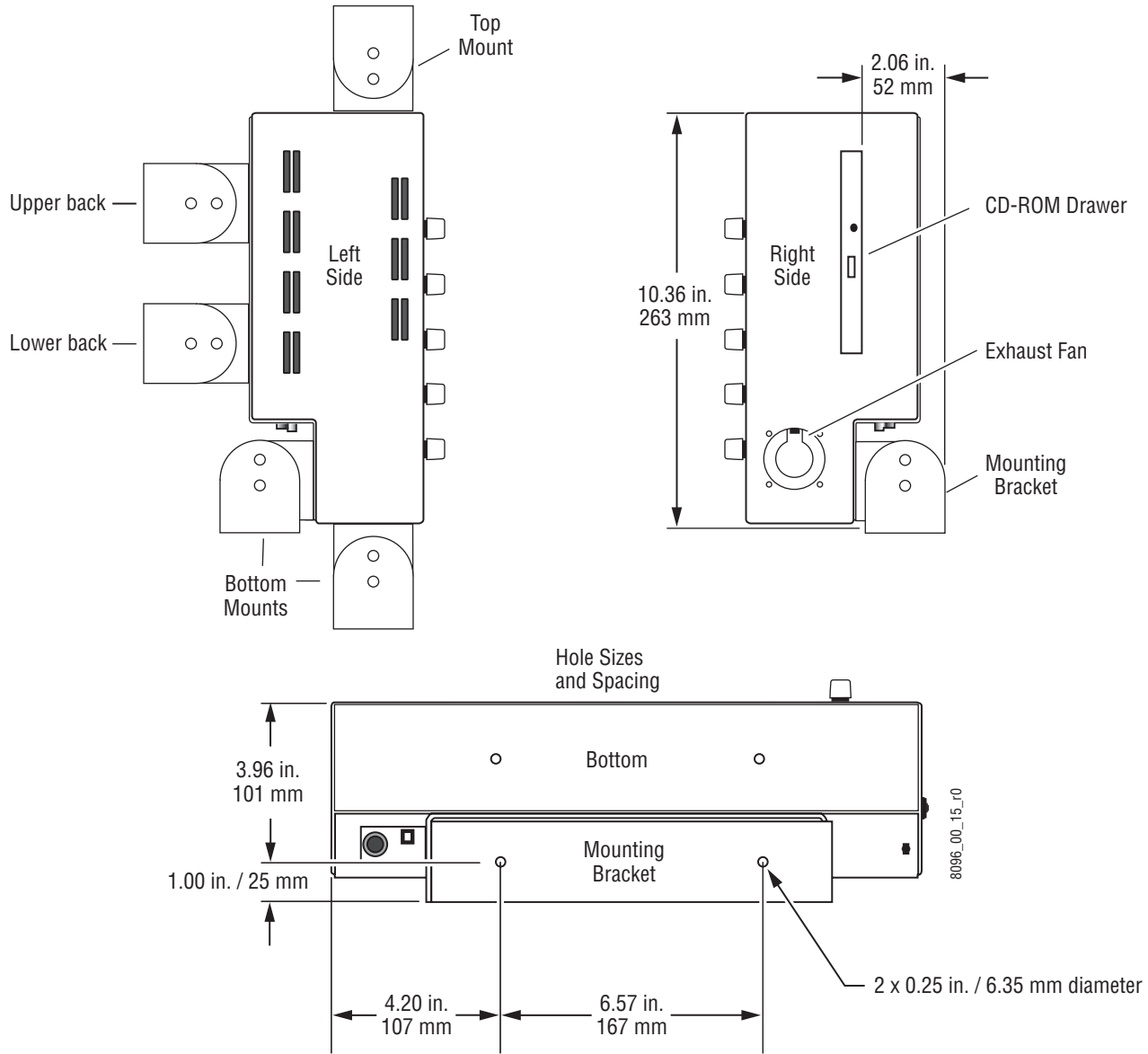


Figure 35. Optional Placement of Menu Panel Mounting Brackets





## Flush Mount Kit Option

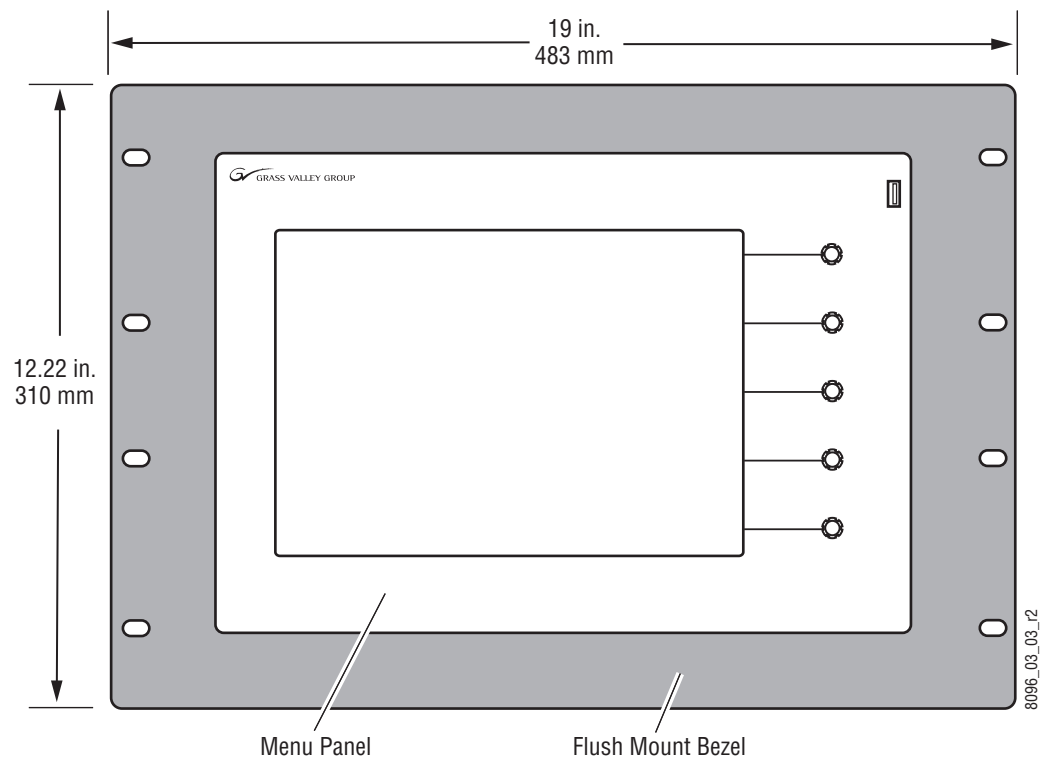
The Flush Mount kit option allows the Menu panel to be installed in a standard 19 in. (483 mm) rack using seven rack units (Figure 36). Alternatively, the Menu panel can be set into a console cutout (Figure 38 on page 59).

Access to the CD-ROM on the right side of the Menu panel is blocked with this mounting option, so an external CD-ROM with an adapter and USB cable is provided. The external CD-ROM connects to one of the two USB ports on the Menu panel and receives its power through this cable.

The Menu panel normally receives its DC power from the Main panel via a 10 ft (3 m) power cable. If a longer distance between the Main panel and Menu panel is required, the Menu panel can be powered by a separate power supply option.

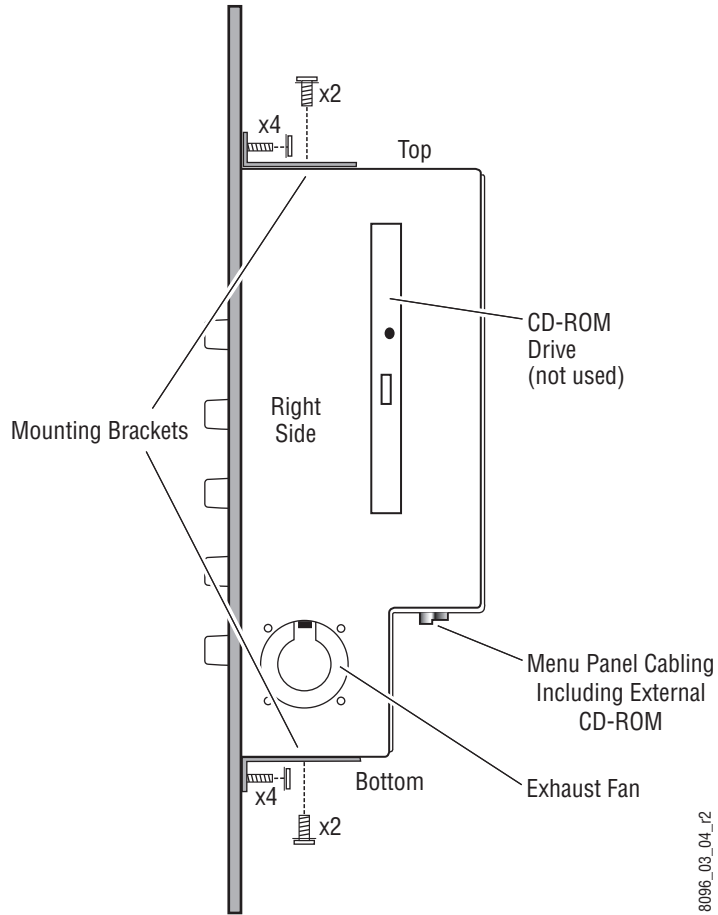
Clearance for the exhaust fan on the right side of the panel and the interconnect cables to the external CD-ROM, Main panel and Video Processor frame on the bottom of the panel must also be taken into consideration when mounting the panel in this manner.

Figure 36. Flush Mount Kit Option



The Flush Mount bezel is attached to the top and bottom of the Menu panel with two mounting brackets as shown in [Figure 37](#). Four #10 screws and eight nuts are included for attaching the Flush Mount assembly to the Menu panel.

Figure 37. Attaching Flush Mount Bezel to Menu Panel



To install the Menu panel into a console cutout, the Flush Mount bezel is removed. The mounting brackets are used to support the top and bottom of the Menu panel in the console cutout (Figure 38). Eight wood screws (not provided) secure the mounting brackets to the console. Dimensions for the console cutout without the Flush Mount bezel are given in Figure 39.

**CAUTION** Console thickness should not be less than 0.5 in./13 mm for proper support of the Menu panel.

Figure 38. Menu Panel Console Installation (No Bezel)

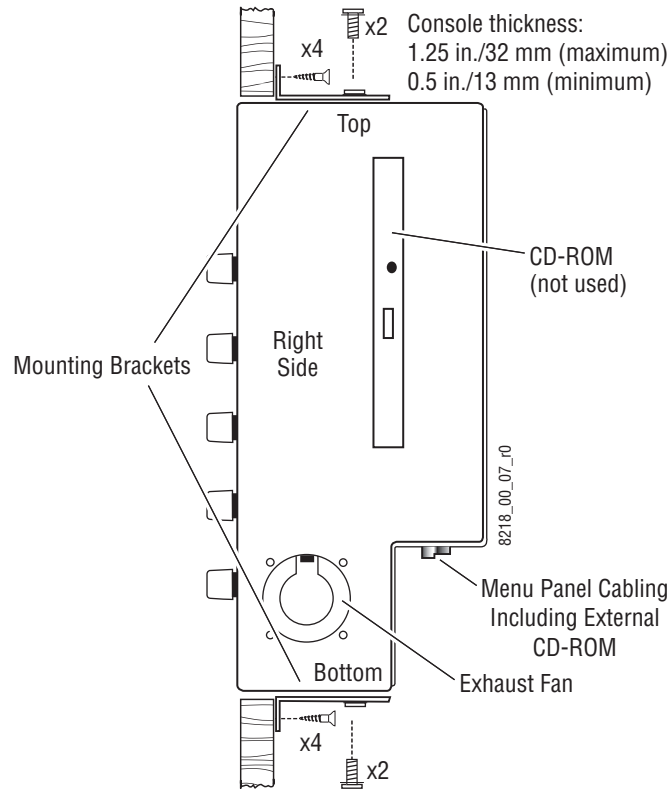
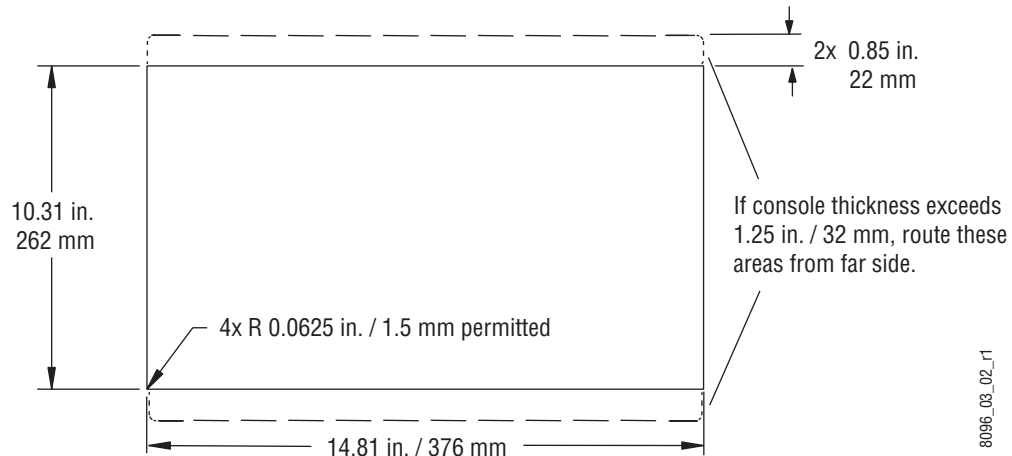


Figure 39. Menu Panel Console Cutout Dimensions (No Bezel)

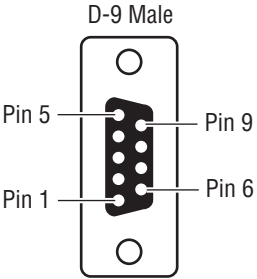


## Cabling and Pinouts

Figure 46 on page 72 illustrates the cabling between the Menu panel and other system components. The cable for connection between Com 3 on the Menu panel and Com 1 on the Main panel is provided with the system. This cable activates the Menu panel reset button located inside the Main panel.

Table 6 provides pinouts for the Menu panel console ports.

Table 6. Menu Panel Console Ports

Console Ports RS-232	Pin	Menu Proc. COM 3	Menu Proc. COM 4
 <p>D-9 Male</p> <p>Pin 5</p> <p>Pin 1</p> <p>Pin 9</p> <p>Pin 6</p>	1	DSD	DSD
	2	RXD	RXD
	3	TXD	TXD
	4	DTR	DTR
	5	Chassis GND	Chassis GND
	6	DSR	DSR
	7	RTS	RTS
	8	CTS	CTS
	9	Menu Reset <sup>a</sup>	RI (Ring Indicator)

<sup>a</sup> Open circuit or Mark (-5 to -15 volts) is run. Space (+5 to +15 volts) is reset.

## Zodiak System Control via PC

The Zodiak Menu application can be installed on a PC, which can be configured with the Zodiak network to provide an additional control point to the Zodiak system. Menu knobs are not available when running on a PC, but knob values can be input with the popup keypad.

**CAUTION** Access to the PC should be controlled when the Zodiak system is in use, to prevent accidental changes to Zodiak system operations.

### PC Requirements

The PC must have at least 128 MB RAM, a 350 MHz processor (or higher if running multiple applications), an 800 x 600 screen, and either Windows NT 4.0 with Service Pack 4 (or higher), Windows 2000, or Windows XP. The PC must also support 10Base-T or 100Base-T Ethernet.

### Hardware Installation

Connect a Category 5 Ethernet cable from the PC to the Zodiak network, via a properly configured network switch.

### Software Installation

**Note** The PC must be rebooted to complete the installation. Close all open applications before doing the install.

1. Insert the Zodiak Software CD into the PC's CD-ROM drive and accept the license agreement.
2. Select the **Menu on PC** check box and click on **Install**.
3. When you finish the installation the Zodiak Menu application icon will appear on the desktop.

### Configuration

1. Run the Zodiak Menu application, by double clicking on its icon.
2. Click on the **Eng Setup, System, Config**, to display hardware IP address fields.
3. Click on the Hardware **Frame IP** data pad and enter the IP address of the Zodiak frame you wish to control.

4. Click on the Hardware **RT Panel IP** data pad and enter the IP address of that Zodiac system's Main panel.
5. Exit the Zodiac Menu application and restart it.

### **Do Not Use Large Fonts with Menu on PC**

When running the Zodiac Menu on a PC, the menu may not be drawn correctly if the Large Fonts display setting is selected.

For Windows 2000, the Font Size setting is in the Display Control Panel. Select Settings and then Advanced. It must be set to "Small Fonts". Normal Size (96 dpi) should appear below. A Windows restart is required.

For Windows XP, the Font Size setting is in the Display Control Panel, then select the Appearance tab.

For Windows NT, the Font Size setting is in the Display Control Panel Settings tab (no Advanced subdialog).

You can use a search of "use larger or smaller display fonts" to locate the appropriate instructions in Windows Help.

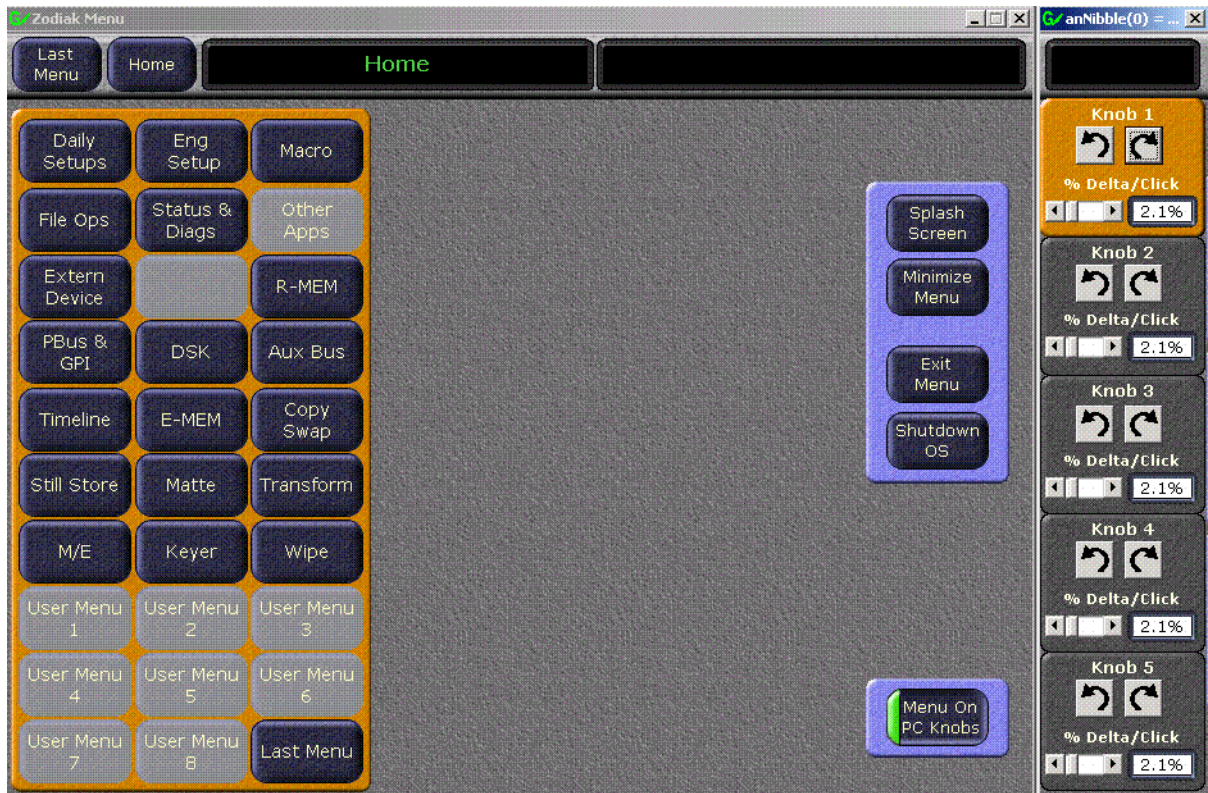
## **Operation**

Once configured, any changes made on the Zodiac Menu running on the PC will affect the Zodiac system it is communicating with. This means control can originate from the Zodiac Main panel, the Zodiac Menu panel (all of which are typically manned by a single operator), and also from the PC, which may be located anywhere in the facility. No priority is given to any of these control points. Obviously, care must be taken to coordinate Zodiac system operation when multiple control points are present, especially if the control points reside in separate locations.

## Menu on PC Knobs

Knob controls are available to users of the Menu on PC application. From the Home menu, touch the **Menu on PC Knobs** button to display the controls (Figure 40).

Figure 40. Menu on PC Knob Controls

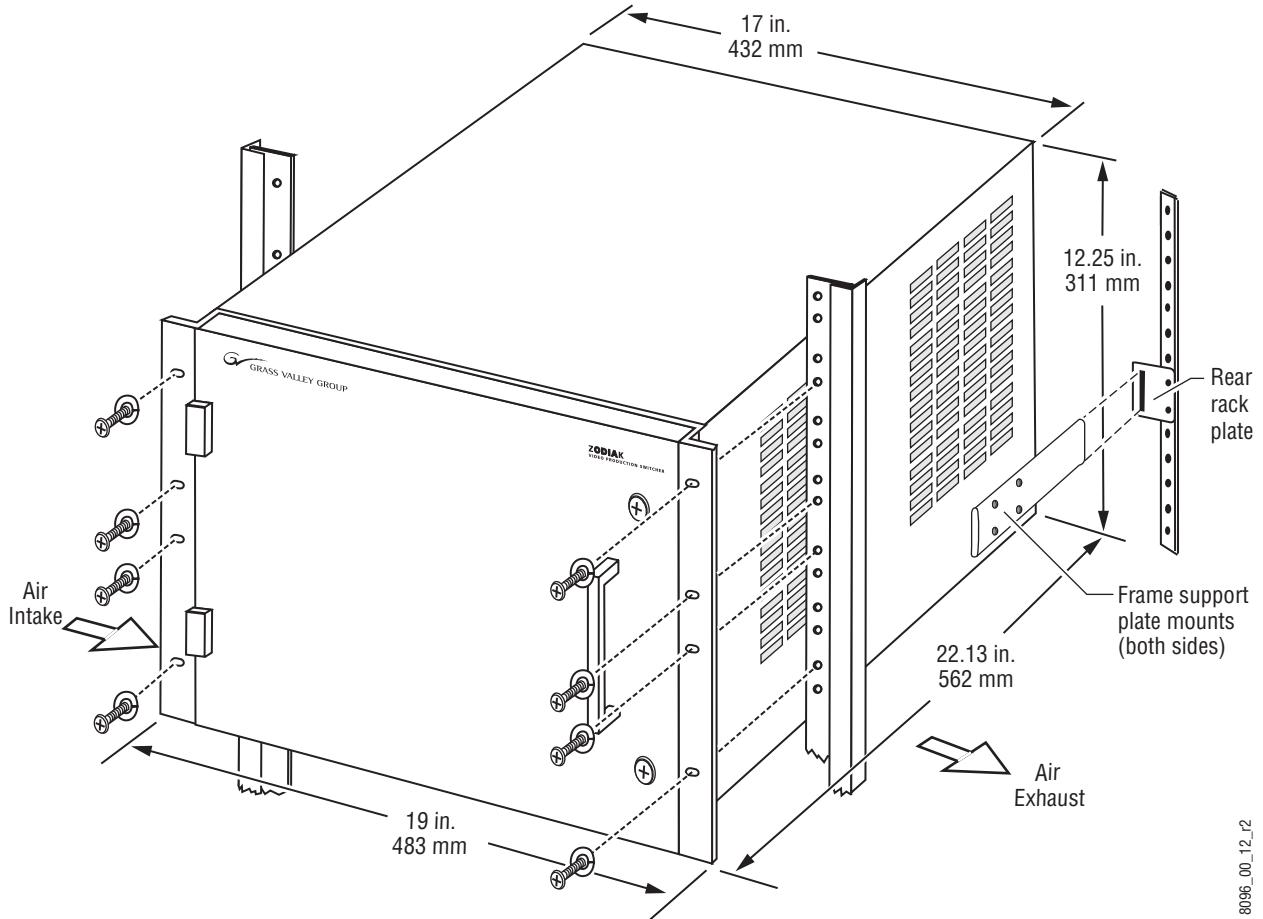


Clicking on the clockwise and counterclockwise arrows changes the associated knob value. On some parameters the **% Delta/Click** slider control can change how much the knob value changes per click. Other parameters (like menu item selections) are not affected by the delta control.

# Video Processor Frame Installation

The Zodiac Video Processor frame is a 7 rack unit chassis which mounts in a standard 19 in. (483 mm) rack (Figure 41). It has a built-in cooling system consisting of a fan/plenum mounted in the right section of the frame, and an air filter in the left section. Cooling air is drawn in at the left side of the frame, through the filter and modules, then expelled at the right of the fan/plenum unit.

Figure 41. Video Processor Frame Rack Installation



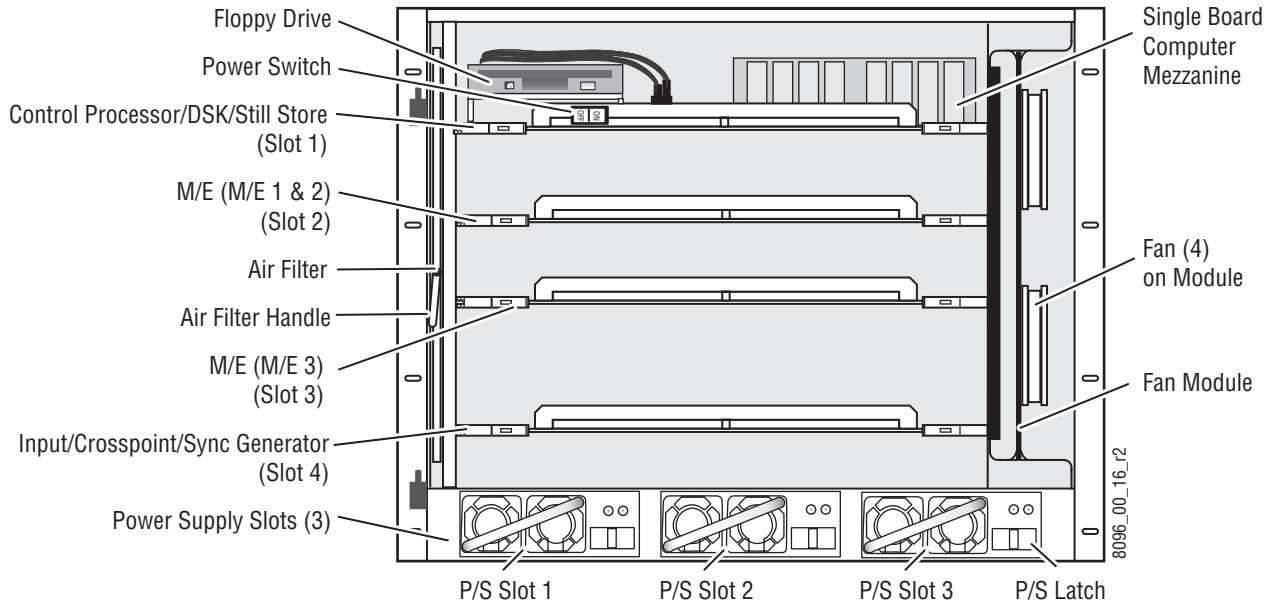
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The Zodiac Video Processor frame houses components as shown in Figure 42. The Video Processor frame is shown below with the front door removed.

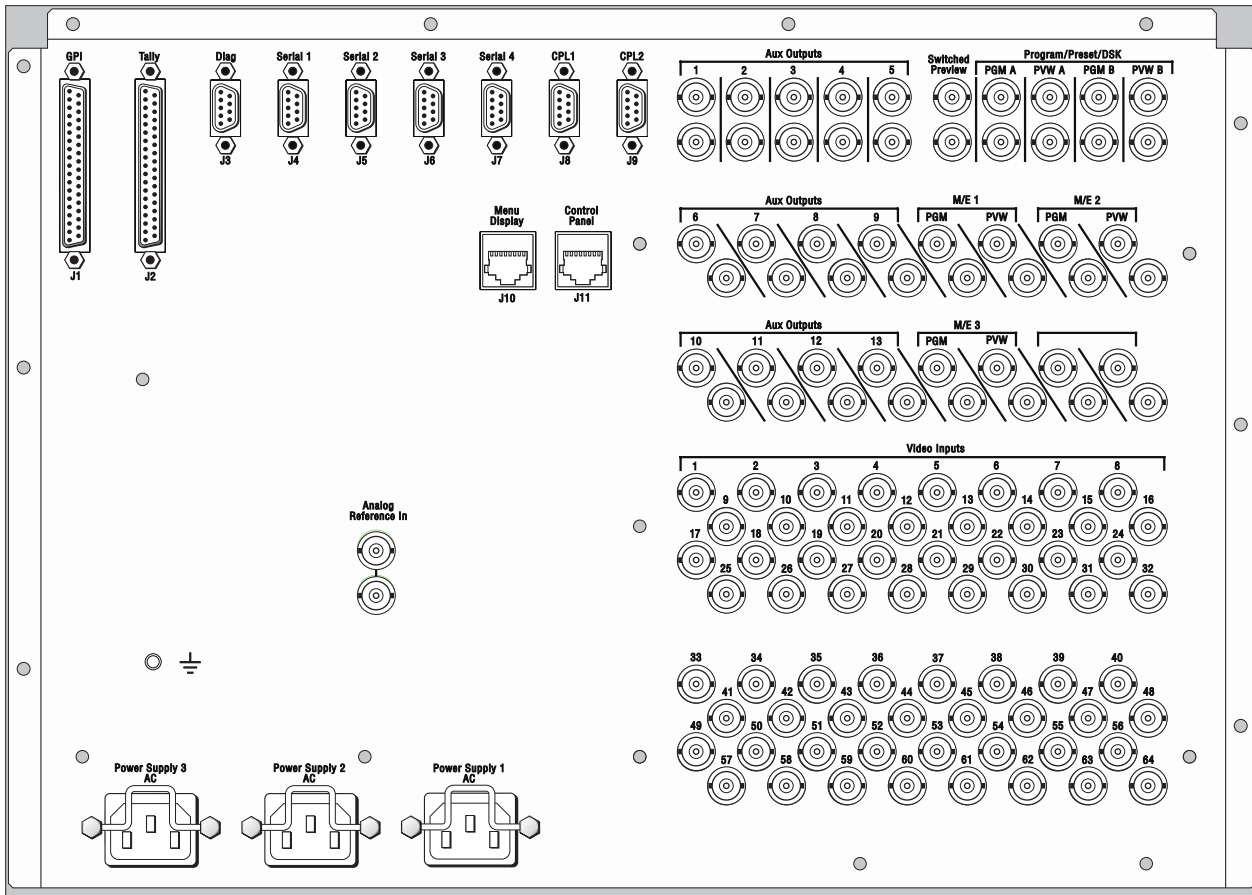
**Note** The front door must remain in place and closed during normal system operation to maintain maximum cooling efficiency.

Figure 42. Video Processor Frame, Front View



Power, control, and video connections are made at the rear of the video processor. Figure 43 shows the rear frame connectors.

Figure 43. Video Processor Frame, Rear View



## Power Supply

The Zodiac Video Processor frame houses up to three slide-in power supplies rated at 400 watts each. See Figure 42.

Each power supply has its own AC input and it is recommended that each module's AC input be connected to a separate AC supply circuit.

**CAUTION** For maximum protection, connect at least one (2.5-M/E) or two (3-M/E) power supply AC inputs to a UPS system.

Two hot-swappable power supplies (primary and redundant) are standard with the 2.5-M/E system; three are standard with the 3-M/E system. All power supplies present load share such that when any supply fails, the Video Processor frame will continue to operate.

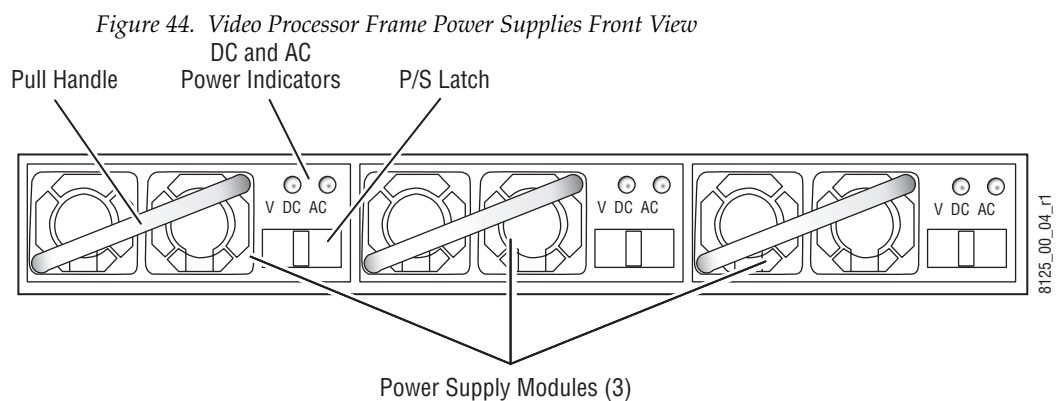
## Power Supply Installation

To install a power supply, slide the power supply gently into its slot (ensuring that it is properly seated), connect the AC line cord (see [Figure 42 on page 65](#)). Do not slam the supply into the slot. Green LED AC and DC power indicators show that the supply is working properly.

**Note** Earlier version power supplies have only one LED which indicates AC power status.

## Power Supply Removal

Refer to [Figure 44](#). To remove a power supply, push and hold the power supply latch to the left while pulling firmly on the pull handle.



## Video Processor Frame Options

Video Processor frame options include a 2.5-M/E to 3-M/E upgrade kit, a redundant power supply, and a KlipCache.

### 2.5-M/E to 3-M/E Upgrade Kit

Upgrading a 2.5-M/E to 3-M/E involves the addition of a Mix Effects (M/E 3) module and power supply to the Video Processor frame and changing keycaps on the Main panel. No retrofitting or recabling is necessary. An upgrade kit may be purchased and customer-installed as an add-on anytime after system purchase.

Verify that the upgrade kit includes:

- One Mix Effects (M/E 3) module,
- 36 replacement keycaps, one keycap legend titled **M/E 3**, and
- One Video Processor frame power supply.

See [Power Supply Installation on page 67](#) to install the power supply. See [Module Insertion on page 68](#) to install the Mix Effects (M/E 3) module. [Keycap and Keycap Film Label Replacement on page 42](#) provides instructions for replacing the keycaps and the **M/E 3** keycap legend on the Main panel.

**CAUTION** M/E Module heat sinks are required for Zodiac software version 2.1 and higher. Make sure they are installed on every module (including any spares). Running a Zodiac system without these heat sinks installed can result in overheating and damage to the M/E modules in your system. See [M/E Module Heat Sink Installation on page 150](#) for details.

## Module Insertion

**Note** It is not necessary to disconnect line power from the Video Processor frame when removing or installing Video Processor frame modules.

Modules slide into frame slots and into connectors on the frame backplane. To insert a module, slide it slowly into the correct location, avoiding contact with the modules above or below. Ensure that you are inserting a module in an appropriate slot (see [Table 7](#)) before applying pressure to seat the module. The correct location of each module is indicated on the frame door by module name, and each module is keyed to prevent installation in the wrong location. For a module to be successfully inserted in any given slot, the keyholes on the module must match the module keys on the back plane. Lock the left and right ejector tabs to secure the module.

Table 7. Module Location

Module	2.5-M/E Slot	3-M/E Slot
Control Processor/DSK/Still Store	1	1
Mix Effects (M/E 1 and M/E 2)	2	2
Mix Effects (M/E 3)	N/A	3
Input/Crosspoint/Sync Generator	4	4

## Module Removal

To remove a module from the frame, disengage the module from its connection to the back plane by unlocking and simultaneously pulling on the left and right ejector tabs. When the module has been unseated, pull it out of the frame slowly while avoiding contact with adjacent modules.

## KlipCache Option Hardware Installation

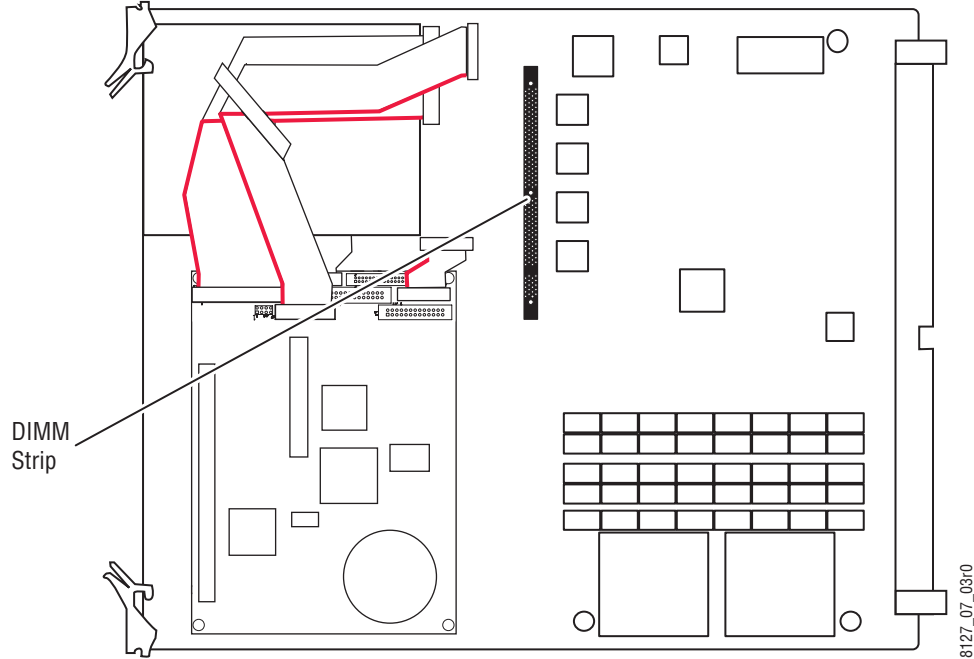
The KlipCache option includes a DIMM that significantly increases cache storage capacity.

**CAUTION** Use anti-static practices when handling the memory modules and Control Processor modules.

To install the extra memory:

1. Open the Video Frame front access door and remove the Control Processor module from slot 1.
2. Lay the Control Processor module on an anti-static surface, with the DIMM facing up (see [Figure 45](#)).

Figure 45. Control Processor DIMM Strip Location



3. Carefully remove the existing DIMM, and replace with the new DIMM provided.

**CAUTION** The Still Store DIMM requires a special access mode. Installing DIMM different from those supplied with the option will render the Still Store inoperable.

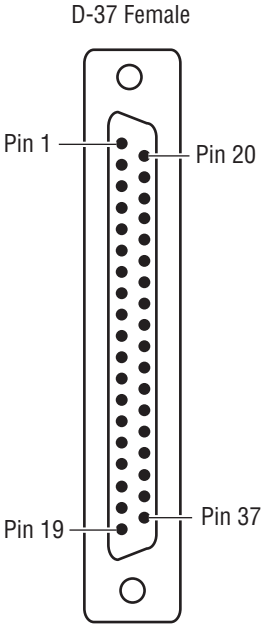
4. Replace the Control Processor module in the frame.
5. Reset the Control Processor frame.

The extra memory becomes accessible when 3.0 or later software is installed and the KlipCache feature is authorized. At that time, the Total Pages field in the Still Store Cache menu will report 900 pages. Without the extra memory or option enabled 108 pages of memory are available.

## Cabling and Pinouts

Figure 46 on page 72 illustrates the cabling between the Video Processor frame and other system components. Pinouts for the various Video Processor frame ports and connectors are given in Table 8 (GPI port), Table 9 on page 71 (Serial Ports), and Table 10 on page 71 (Tally Port). Configuration of these ports is done using the Zodiac Menu application (refer to Section 3-Configuration).

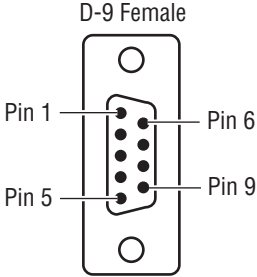
Table 8. Video Processor Frame GPI Inputs and Outputs

GPI	Pin	Function	Pin	Function
	1	Chassis GND	20	IN 1B
	2	IN 1A	21	IN 2B
	3	IN 2A	22	IN 3B
	4	IN 3A	23	IN 4B
	5	IN 4A	24	Chassis GND
	6	IN 5B	25	IN 5A
	7	IN 6B	26	IN 6A
	8	IN 7B	27	IN 7A
	9	IN 8B	28	IN 8A
	10	Chassis GND	29	OUT 1B
	11	OUT 1A	30	OUT 2B
	12	OUT 2A	31	OUT 3B
	13	OUT 3A	32	OUT 4B
	14	OUT 4A	33	Chassis GND
	15	OUT 5B	34	OUT 5A
	16	OUT 6B	35	OUT 6A
	17	OUT 7B	36	OUT 7A
	18	OUT 8B	37	OUT 8A
	19	Chassis GND		

**Notes:**

- Inputs are opto-isolated.
- A and B are polarity independent.
- Apply from 5 to 24 volts between A and B Inputs to turn on.
- Outputs are normally open relay closures between A and B.

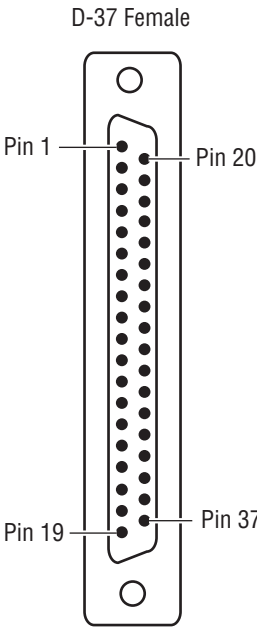
Table 9. Video Processor Frame Serial Ports

RS-422 Ports	Pin	Serial/CPL Ports J4 -J9
 <p>D-9 Female</p> <p>Pin 1</p> <p>Pin 5</p> <p>Pin 6</p> <p>Pin 9</p>	1	Chassis GND
	2	RX-
	3	TX+
	4	Chassis GND
	5	Reserved
	6	Chassis GND
	7	RX+
	8	TX-
	9	Chassis GND

**Notes:**

Ports J4 – J9: The data directions specified on pins 2&3 and 7&8 as RX and TX may be reversed in software configuration. See [Table 12 on page 74](#) for serial port usages.

Table 10. Video Processor Frame Tally Port

Tally Port	Pin	Function	Pin	Function
 <p>D-37 Female</p> <p>Pin 1</p> <p>Pin 19</p> <p>Pin 20</p> <p>Pin 37</p>	1	Tally 1	20	Tally 20
	2	Tally 2	21	Tally 21
	3	Tally 3	22	Tally 22
	4	Tally 4	23	Tally 23
	5	Tally 5	24	Tally 24
	6	Tally 6	25	Tally 25
	7	Tally 7	26	Tally 26
	8	Tally 8	27	Tally 27
	9	Tally 9	28	Tally 28
	10	Tally 10	29	Tally 29
	11	Tally 11	30	Tally 30
	12	Tally 12	31	Tally 31
	13	Tally 13	32	Tally 32
	14	Tally 14	33	Reserved
	15	Tally 15	34	Reserved
	16	Tally 16	35	Reserved
	17	Tally 17	36	Tally Common <sup>a</sup>
	18	Tally 18	37	Chassis GND
	19	Tally 19		

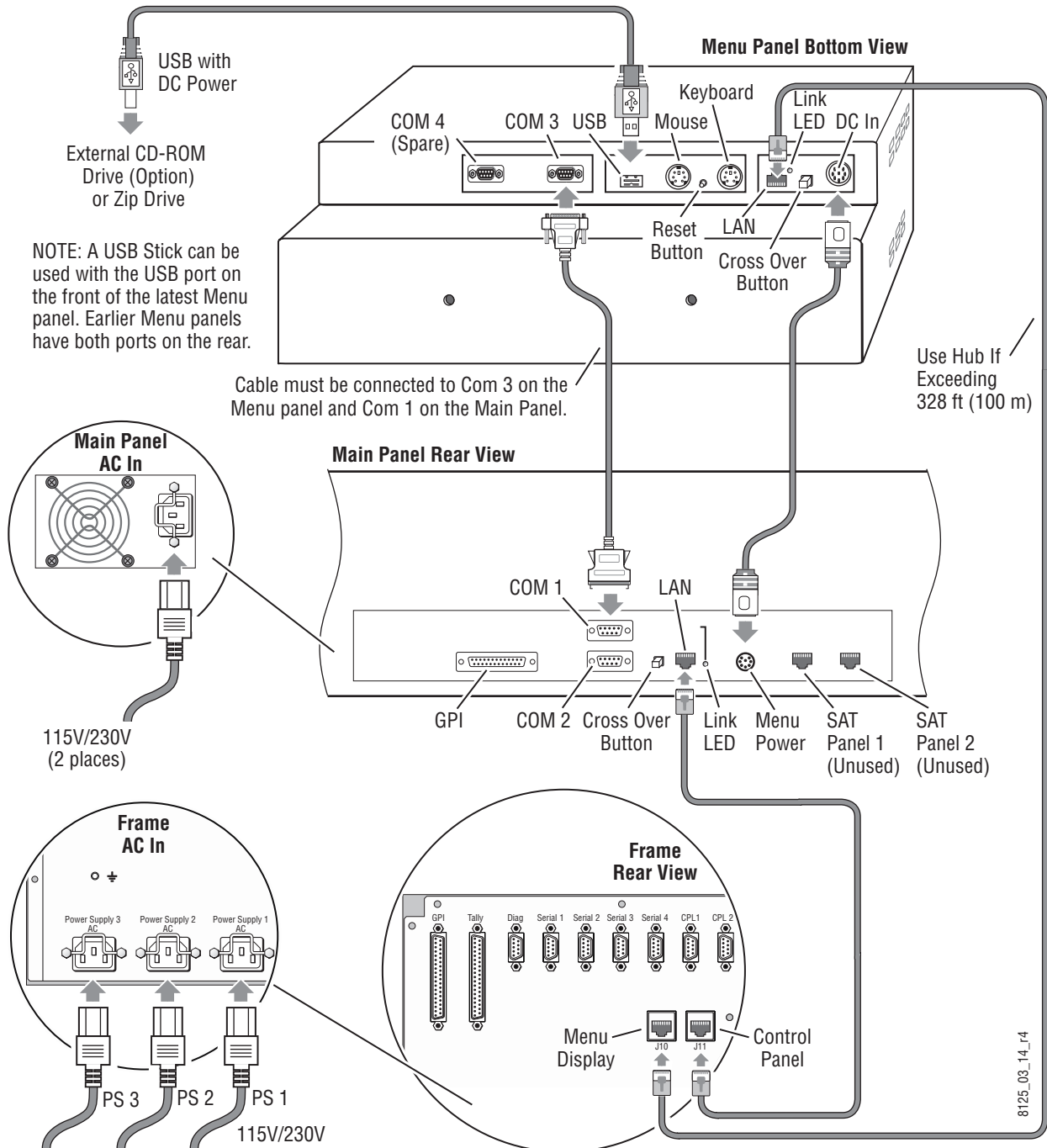
<sup>a</sup> Outputs are relay closures between the respective tally pin and Tally Common (pin 36).

# Zodiak Control Surface Cabling and Control

## Cabling

The cabling of a standard Zodiak Control Surface is illustrated in [Figure 46](#). Refer to [Table 11](#) for a list of supplied cables.

Figure 46. Zodiak Control Surface Cabling



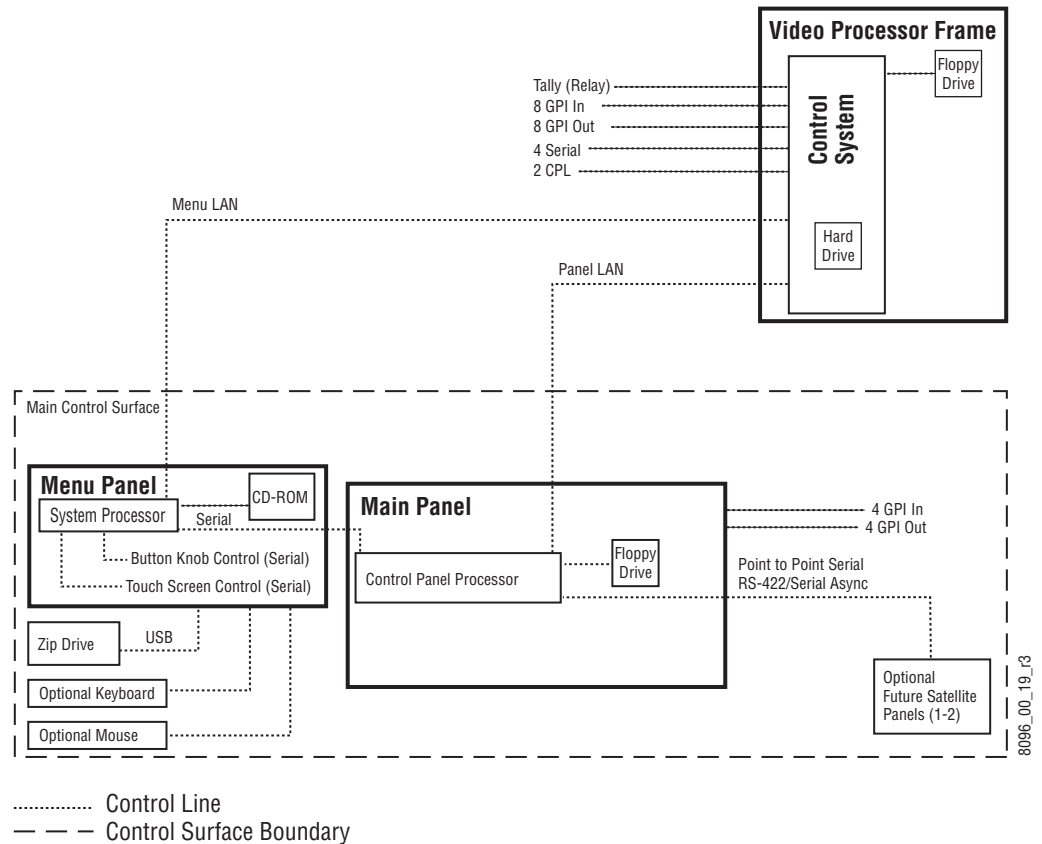


## Control Cabling

A simple Zodiak system consisting of a Main panel, Menu panel, and Video Processor frame uses point-to-point connections and does not require connection to an external Ethernet Local Area Network (LAN) (see Figure 46).

The Zodiak system uses Ethernet, serial, parallel, and USB connections. Tally and GPI control are also available (see Figure 47).

Figure 47. Simple Zodiak System Control



NOTE: Main Panel, Menu LAN, Panel LAN 10Base-T or 100Base-T Ethernet

Table 11. Supplied Cables

Cable	Description	Quantity
AC Power Supply Cable – Main Panel	AC line cord kit	2
AC Power Supply Cable – 3-M/E Frame	AC line cord kit	3 <sup>a</sup>
Main Panel to Menu Panel DC Power	8-pin DIN, male-to-male, 10 ft (3 m)	1
Menu Panel to ZIP 250 USB	USB A to B cable, 6 ft (1.8 m)	1
Menu Panel to Main Panel	9-pin D, male-to-female serial, 10 ft (3 m)	1
Panel LAN, Menu LAN	Category 5, 100 Base-T, 100 ft (30 m)	2

<sup>a</sup> Two supplied cables for a 2.5-M/E frame.

The serial ports of the rear of the frame are used for interfacing to various external devices such as an editor, optional 24-Crosspoint Remote Aux panels and PBus and CPL DPM devices. The serial port device assignments (Table 12) are assigned in the Eng Setup, Ports & Devices menu using the Zodiac Menu panel application.

Table 12. Video Processor Frame Serial Port Device Assignments

Serial Port	Device Assignment
Diag/J3	Not currently used
Serial 1/J4	Serial device assigned in Eng Setup, Ports & Devices menu
Serial 2/J5	Serial device assigned in Eng Setup, Ports & Devices menu
Serial 3/J6	Serial device assigned in Eng Setup, Ports & Devices menu
Serial 4/J7	Serial device assigned in Eng Setup, Ports & Devices menu
CPL 1/J8	External DPM device, CPL interface assigned in Eng Setup, Ports & Devices menu
CPL 2/J9	External DPM device, CPL interface assigned in Eng Setup, Ports & Devices menu

## Mouse and Keyboard Connection

A standard PS/2 mouse and keyboard can be installed to the bottom of the Menu panel if desired (see Figure 46 on page 72). Be sure to power down before installing either the mouse or keyboard.

## Cable Polarity and Cross Over Button

The point-to-point connections between the Main and Menu panels and the Video Processor frame, require that the Transmit (TX) and Receive (RX) pairs in the Ethernet cables be swapped. This is normally achieved with a special peer-to-peer (crossover) LAN cable or an Uplink port on the switch or hub. The LAN cables supplied with the Zodiac system are straight through cables. In order to swap the polarity of the TX and RX pairs in the proper manner, **Cross Over** buttons are provided on the rear of both the Menu and Main panel. Pressing the **Cross Over** button will either swap or answer the polarity of the TX and RX pairs.

Although the cables and **Cross Over** buttons for each system have been set up for proper polarity at the factory, changes to the button position can occur during handling or installation. The button itself will not indicate what state the polarity is in. Correct polarity can only be determined after power up of the system. The LAN Link LEDs at each LAN cable connector should illuminate after power up to indicate the connection is correct (see Figure 16 and Figure 32).

If no communication can be established (either LAN Link LED is off), a possible cause may be incorrect cable polarity. Polarity is reversed by pressing the **Cross Over** button on the Main and Menu panels.

## LAN Requirements

A simple Zodiak system uses point-to-point connections and does not require an external Ethernet Local Area Network (LAN) (see [Figure 48](#)).

A Zodiak system requires a LAN when components in addition to a Main panel, Menu panel, and Video Processor frame are connected or when external network access to a Still Store file system is desired. An appropriately sized Ethernet switch will be required (see [Figure 49](#)).

**CAUTION** Ethernet hubs are necessary to exceed maximum cable runs. An existing facility Ethernet switch (not hub) can support Zodiak if an adequate number of ports are available. Keep your facility network and technical network separate in order to avoid network traffic negatively affecting Zodiak system operation.

Refer to [Table 13 on page 75](#) for Ethernet specifications. For a complete explanation of networking requirements, refer to [Network Configuration on page 84](#).

**Note** All Ethernet components must be supplied by the customer.

Table 13. Ethernet Specifications

<b>Cables<sup>a</sup></b>	<b>Type</b>	10Base-T and 100Base-T compatible. Category 5 cable, 8 conductor twisted pair.
	<b>Connectors</b>	RJ-45 male connector at each end of cable.
	<b>Length<sup>b</sup></b>	10Base-T: 984 ft (300 m) maximum. 100Base-T: 328 ft (100 m) maximum.
<b>Switch<sup>c</sup></b>	<b>Speed</b>	Dual: 10 and 100 Mb
	<b>Ports</b>	RJ-45 auto-negotiating 10/100 Mb; number of ports required is dependent upon system size.
	<b>Unmanaged</b>	Recommended. Configuration not required, but do not provide remote monitoring capability.
	<b>Managed</b>	May be used. Require configuration, but offer remote monitoring capability.

<sup>a</sup> The system will work at 10Base-T with reduced performance. 100Base-T components are highly recommended.

<sup>b</sup> Use a hub when necessary to exceed maximum cable runs.

<sup>c</sup> Optional

## Ethernet Switches and Hubs

Zodiak optional components rely primarily on Ethernet switches for LAN interconnects (see [Figure 49](#)). 32-Crosspoint Remote Aux panels may be connected directly to the Zodiak switch, or through an Ethernet hub. A hub is required only if there is a need to exceed 328 ft (100 m) between a panel and Video Processor frame. If a hub is used, connect the hub to the switch via the Uplink port, or through a peer-to-peer crossover cable. Reserve a port on Zodiak’s Ethernet switch if you will be utilizing a hub or switch.

**Note** The number and type of components in your Zodiak system determines the size of the switch (number of ports) required. Refer to the following examples of system topography and the accompanying worksheet to determine the number of ports required for your system.

Figure 48. Example Topography Not Requiring an Ethernet Switch

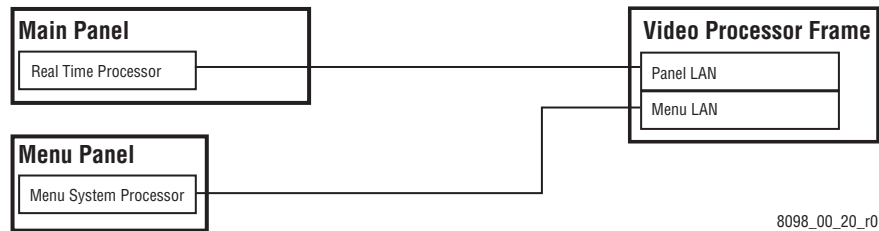
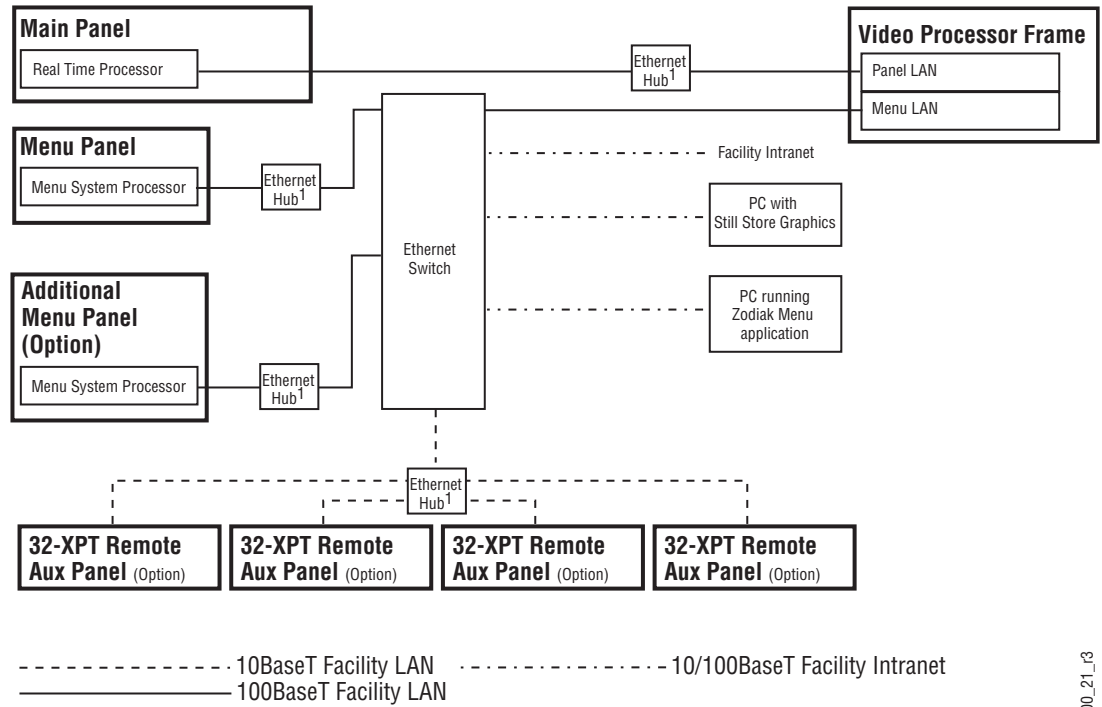


Figure 49. Example Topography Requiring an Ethernet Switch



<sup>1</sup> Use hubs to exceed 328 ft (100 m) cable limitations.

8096\_00\_21\_1\_3

Standard System Components	Ports Required		Number of Components	=	
Frame <sup>a</sup>	NA	x	--	=	--
Menu Panel	1	x	1	=	1
<b>Zodiak Options</b>					
32-Crosspoint Remote Aux Panel Hub	1 <sup>b</sup>	x	(# of Hubs)	=	
Additional Zodiak Menu Panel	1			=	
<b>Other Ethernet Devices</b>					
Facility Internet	1	x		=	
PC with Still Store Graphics	1	x		=	
PC running Zodiak Menu application	1	x		=	
<b>Total Number of Ports Required:</b>					

<sup>a</sup> The connection from the Main panel to the Video Processor frame is always a direct connection and does not require a port.

<sup>b</sup> No port required if option not installed.

## Video

Different video and control wiring configurations may be used to meet individual facility requirements. All Zodiac system video inputs and AUX outputs are configurable. For cabling configuration flexibility, each input can be mapped to any Zodiac panel source select button, and any Zodiac system video signal can be mapped to any AUX output connectors. Program and Preview bus outputs for each M/E have dedicated output connectors as well.

Refer to [Figure 6 on page 30](#) for an example of a basic Zodiac system configuration.

## Inputs

Physical inputs are the actual BNC connectors that feed a signal into Zodiac. These non-looping inputs on the back of the Video Processor frame are numbered 1 through 64. Each receives a 270 MHz serial digital video signal. All video inputs are software configurable, and each input can be mapped to any Zodiac panel source select button. For correct operation of the autotimer circuits, inputs should arrive at the switcher  $\pm 10$  microseconds of the reference input.

## Outputs

The Zodiac frame provides dedicated program and preview video output connectors for each M/E. Each 270 MHz serial output signal is available on two BNC connectors. Any Zodiac video source can be routed to any Aux bus output (1 through 13).

## Reference Input

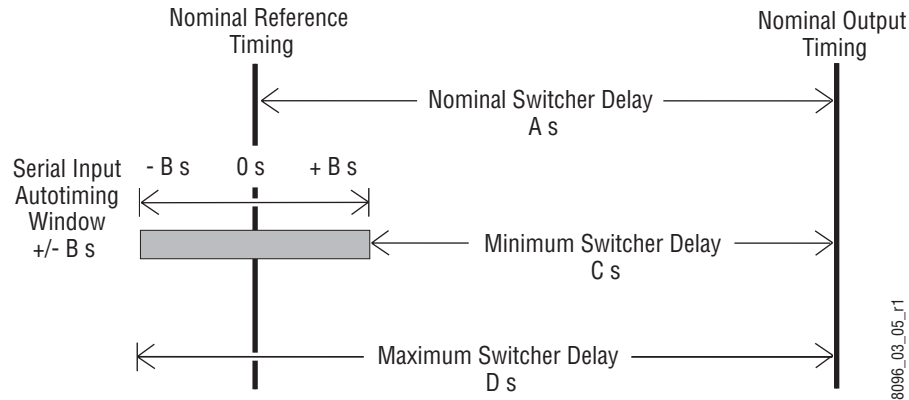
The looping reference input accepts analog 525 or 625 composite video. Burst is not required, but typically facility reference color black is used. The timing of all switcher inputs and outputs are referenced to this signal.

Zodiac automatically switches between 525 and 625 mode to match the standard of the reference input signal.

## Video Timing and Delay

The total delay of a video input to the switcher output can vary according to the relationship of the input to the switcher reference. The switcher will automatically autotime inputs by a specified amount ( $\pm B \mu\text{s}$ ). Inputs must be within this timing range to be properly timed at the output. A timing diagram for illustrating the input autotiming window and various switcher delay values is provided in [Figure 50](#).

Figure 50. Switcher Timing Diagram



**Note** For both 525 and 625 switcher operation, the approximate maximum switcher delay is one line of video.

- For inputs entering the switcher in zero time with the reference, the total delay through the switcher is expressed as the Nominal Switcher Delay ( $A \mu\text{s}$ ).
- Inputs that reach the switcher at the latest point in the autotiming window ( $+B \mu\text{s}$ ) will have a total delay that equals the length of switcher processing. This value is expressed as the Minimum Switcher Delay ( $C \mu\text{s}$ ).
- Inputs that reach the switcher at the earliest point in the autotiming window will have a total delay equal to the Nominal Switcher Delay ( $A \mu\text{s}$ ) plus the autotiming value ( $-B \mu\text{s}$ ). This value is expressed by the Maximum Switcher Delay value ( $D \mu\text{s}$ ).

Delay values for a Zodiak system are given in [Table 14](#).

Table 14. Zodiak System Video Delay Values

Nominal Switcher Delay	A	49 $\mu\text{s}$
Serial Input Autotiming Delay	B	$\pm 14 \mu\text{s}$
Minimum Switcher Delay	C	35 $\mu\text{s}$
Maximum Switcher Delay	D	63 $\mu\text{s}$

## Tally Outputs

The Zodiac Tally system has 32 relays that interface source tally information to an external tally system through the Tally Port connector, J2 (see [Table 10 on page 71](#)). Tallies are a source attribute and relays are automatically assigned to a source when source definitions are defined in the Eng Setup – Sources menu during initial system configuration. The nominal rating specification for each relay is 2 A, 30 V.

Currently, the tally output numbers follow the corresponding source numbers defined in Eng Setup. The first 32 sources defined will therefore be assigned to the corresponding 32 tally relays. Refer to [Direct Source Definition on page 110](#) in the Configuration section of this manual for information on configuring switcher sources.



# Configuration

## Introduction

This section provides system configuration information for the Zodiac Digital Production Switcher. Refer to the latest Zodiac *Release Notes* for information specific to your current software version.

## Basic Configuration Steps

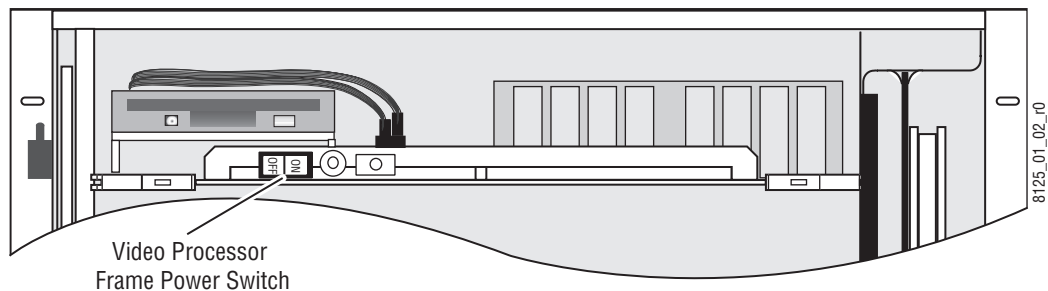
1. [Power Up](#) on page 82.
2. [Network Configuration](#) on page 84.
3. [Setting IP Addresses](#) on page 86 (if required).
4. [Software Installation](#) on page 104 (if required).
5. [Hardware Reset Procedures](#) on page 105.
6. [Engineering Setups](#) on page 106.
7. [Daily Setups](#) on page 135.
8. [Other Configuration Settings](#) on page 136.
9. [Panel Adjustments](#) on page 137.

## Power Up

The Zodiac Video Processor frame and Main panel must be powered up for full system operation. The Menu panel receives its primary power from the Main panel.

1. Set the power switch on the Video Processor frame to On (Figure 51).

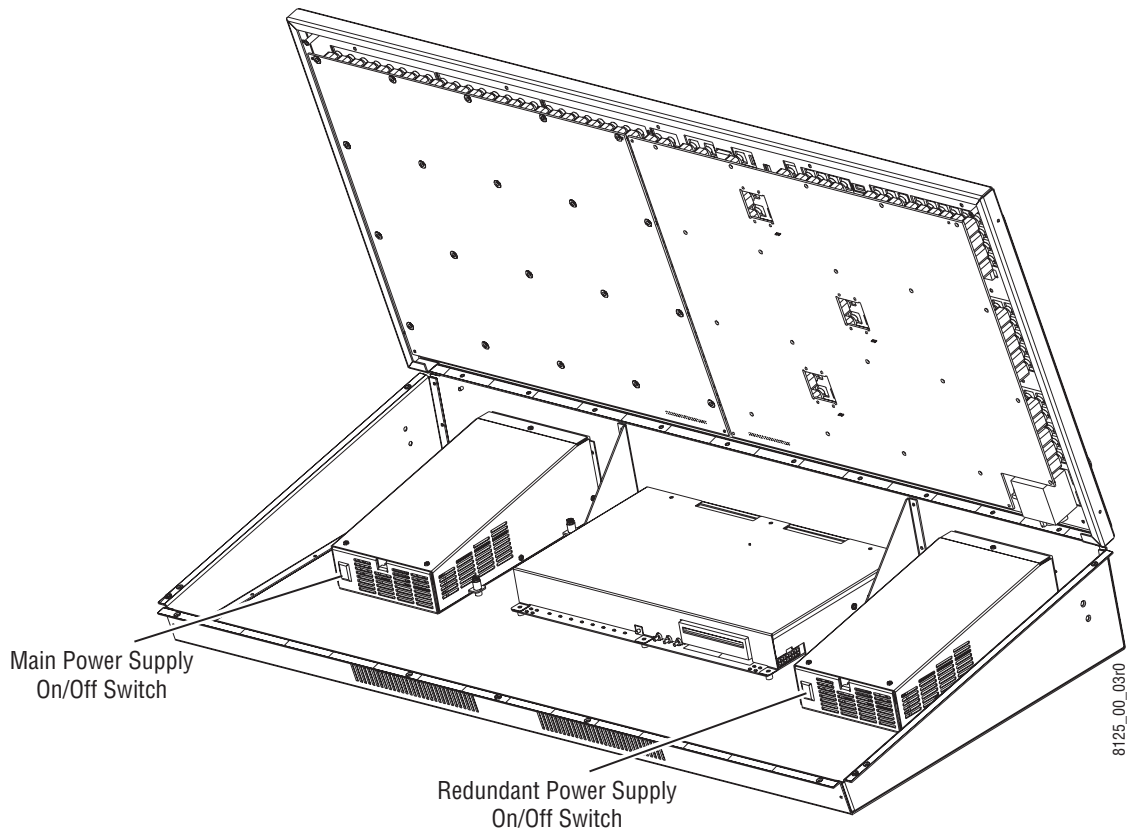
Figure 51. Video Processor Frame Front, Power Switch (Door Open)



**CAUTION** The front door of the Zodiac Video Processor frame must remain closed during normal system operation for proper cooling airflow.

2. Set the power switches in the Main panel tub to On (Figure 52).

Figure 52. Main Panel Power Switches



## Power and Initialization Indications

Power to the system is indicated by operation of the fans in the Main panel, Video Processor frame, and green lights on the Video Processor frame power supplies.

When the Zodiak system powers up or is reset, the first portions of the system activated are the PGM PST buses, transition, and keying controls. This permits rapid on-air recovery of basic system operations. Sources can be cut, mixed, and wiped, and keys taken on and off air while the rest of the system initializes. The Menu panel system is the last item to initialize after system power up. The first screen displays the Grass Valley Group logo and the menu software version, and then the entire system is fully operational.

Systems display their software versions on the Versions menu. Touch the **Status/Diags** button in the Home menu (refer to [Figure 53](#)).

**Note** If a **Frame Not Connected** or similar message appears on a panel, communication with the Video Processor frame has been interrupted. The frame may need to be powered up or reset, the IP Address may be incorrect, or some other LAN problem may exist that will need to be corrected.

Figure 53. Zodiak Status Screen



# Network Configuration

The physical communication link between Zodiac components and other devices is done through Ethernet connections. Two LANs are designed into the Zodiac system for optimal operation of the switcher, the Panel LAN and Menu (also called the Facility) LAN. This is done to isolate the Main panel network from the Menu (Facility) LAN to avoid loss of communication between the Main panel and the Video Processor frame should the Facility LAN fail. Two fundamental networking configurations are presented here; one for a standalone network with only Zodiac components, and another for connecting to an existing Ethernet network.

## Standalone Configuration

The Zodiac system default configuration includes IP addresses designed for standalone plug-and-play installation (Table 15 on page 86). This default configuration allows Zodiac components to communicate with one another with no IP address configuration necessary. However, this configuration does not allow communication with other devices in your facility if required.

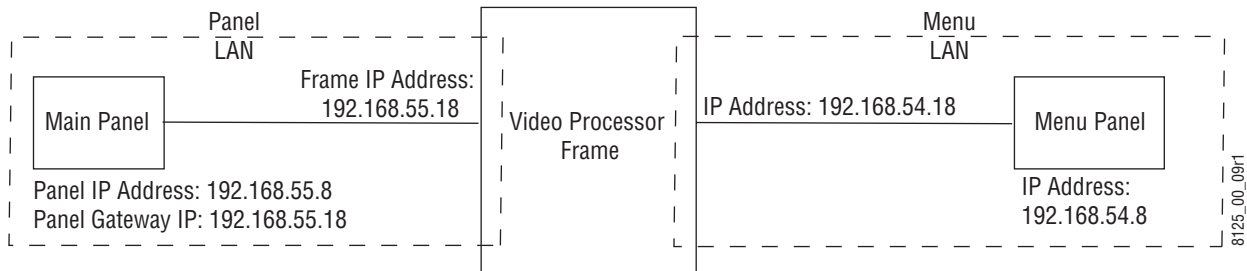
A standalone Zodiac network with default IP addresses is illustrated in Figure 54. In this configuration, both the Main panel and the Menu panel are connected directly to the Video Processor frame, each on a separate LAN. The IP addresses given are the default IP addresses set at the factory.

The two networks, Panel LAN and Menu LAN, use the Video Processor frame as a gateway for communication between the two panels. This permits a host (Main panel or Menu panel) to forward packet information to another host residing on a physically different network.

The Menu Panel has a dynamically assigned gateway address that allows the Menu panel to communicate with the Main panel. The Main panel communicates with the Menu panel via a manually configured gateway address defined in the Main panel IP configuration (Panel Gateway IP).

If you are using this standalone configuration, there is no IP address configuration necessary. Proceed to [Software Installation on page 104](#).

Figure 54. Standalone Zodiac Network



## Connecting to an Existing Network

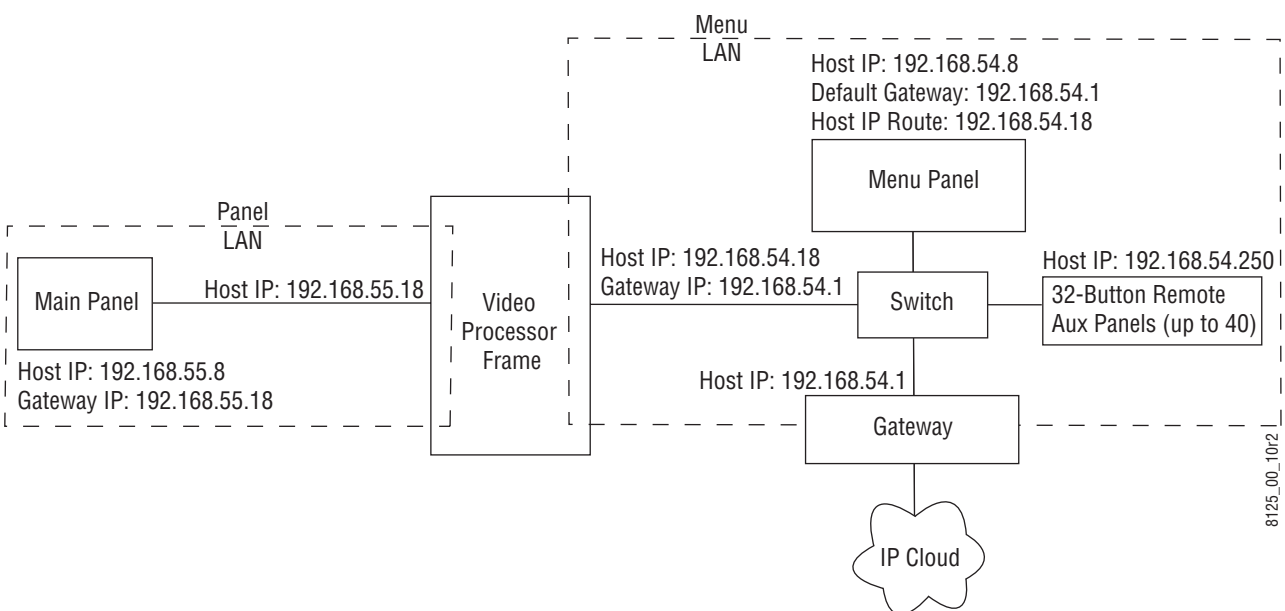
Connecting the Zodiac system to your existing facility Ethernet backbone, or adding additional Zodiac components — such as Remote Aux panels — requires additional network configuration. The approach presented here involves using an additional customer-supplied Ethernet switch and Gateway device to connect the Zodiac network to an existing LAN.

The network configuration shown in [Figure 55](#) allows the Zodiac system to be connected to an existing Facility LAN. An Ethernet switch is added between the Video Processor frame and the Menu panel. This switch is then connected to a full-featured Gateway or Router device connected to the Menu LAN. This allows the Zodiac system to talk via the Gateway device to the rest of the facility, represented as the IP Cloud.

Connecting to an existing network using this configuration, adds the requirement of setting the Gateway IP addresses in the Video Processor frame and Menu panel on the Menu LAN to communicate with the external gateway device. This allows information packets not destined for the Panel or Menu LAN to be forwarded for further routing. The IP address of the external Gateway device must be configured from an external source, usually by a Network Administrator. The default Gateway IP addresses for the Video Processor frame and Menu panel have been set at the factory to 192.168.54.1. Contact your system administrator for the correct IP addresses for your facility.

Once the Zodiac system has been connected to an external gateway that has been properly configured, it will be possible to FTP into the frame from a personal computer with a route to the external gateway. Another LAN may also be accessed from the Menu panel as well.

Figure 55. Zodiac Connection to an Existing Network



## Setting IP Addresses

The Zodiac system is shipped from the factory set with the default IP addresses given in [Table 15](#). The table also gives the location to view or set the IP addresses. An IP address has two components: the network prefix and the host number. The Subnet mask defines the dividing line between the two. In a Class C network, the first three octets of the Subnet Mask provide the network address; the fourth is the node address. Nodes with the same network address can communicate directly with each other, while nodes with different network addresses normally do not communicate directly.

The Zodiac system has two Ethernet LANs for Main panel, Menu panel, and Video Processor frame communications (Menu LAN and Panel LAN). The Menu LAN (also called the Facility LAN) is used for all system communications. The Panel LAN is used to communicate between the Main panel and the Video Processor frame. The Main panel communicates with the Menu panel via gateways through the Video Processor frame.

### Default IP Addresses

The default IP addresses shipped from the factory have been chosen to make Zodiac configuration easy. Numbers were chosen to work with other Grass Valley Group devices in a default standalone network configuration.

Table 15. Default IP Addresses

Device	IP Address	Address Set/Viewed In:
Video Processor Frame	IP Address: 192.168.54.18 (Menu or Facility LAN)	Web browser
	IP Address: 192.168.55.18 (Panel LAN)	
	Gateway IP: 192.168.54.1 (External Gateway)	
Main Panel	Panel IP Address: 192.168.55.8 (Panel LAN)	Web browser or Main Panel Configuration procedure
	Panel Gateway IP: 192.168.55.18 (To Menu Panel)	
	Frame IP Address: 192.168.55.18 (Panel LAN)	
	Menu IP Address: 192.168.54.8	
Menu Panel	IP Address: 192.168.54.8 (Menu LAN)	Windows Network and Dial Up Connections
	Default Gateway: 192.168.54.1 (External Gateway)	
	Frame IP: 192.168.54.18	Eng Setup – System – Config Menu
	RT Panel IP: 192.168.55.8	
32 Crosspoint Remote Aux panels (when hard reset with the front panel buttons)	For V0.0.2a Software: IP Address: 192.168.0.250 Frame IP: 192.168.0.251 Gateway IP: 192.168.0.1 Subnet Mask 255.0.0.0,	Web browser
	For V1.6.5 Software: IP Address: 192.168.1.2 Frame IP: 192.168.1.1 Gateway IP: 192.168.1.1 Subnet Mask 255.255.255.0,	Note that 32-Crosspoint Remote Aux panel default IP addresses must be changed to operate with a Zodiac system whose other components are configured with default IP addresses.

**Note** All Subnet mask values are the same for all nodes and are set to 255.255.255.0 (except Remote Aux panels with earlier software).

If the default network configuration does not fit your existing Ethernet configuration, they may be changed as explained in the next section to conform to the in-house standards for your facility. Make sure all nodes have unique node addresses and are placed on the appropriate network. If other devices are present on the network, ensure that each device has a unique IP address. If more than one Zodiac system resides on the same network, the IP address of each additional Zodiac system device must be changed before it is connected to the network.

See your network System Administrator before connecting the Zodiac system to an existing network or making any IP address changes. The IP addresses (including any Subnet mask) of all the Zodiac devices on the network must be known before any changes are made.

## Fundamental IP Routing Concept

In summary, there are two devices situated on either side of the Video Processor frame, the Main panel (sometimes referred to as the Real Time or RT panel), and the Menu panel. If you change the host IP address of one end node, then you must update the other end node's IP address table so that it knows how to reach the node you just changed. For example, if you change the Menu panel's host IP address from 192.168.54.8 to 192.168.54.10, then you must change the Main panel's IP address to the Menu panel to 192.168.54.10. You do not change the Main panel's host IP address in this scenario.

If, however, you change the frame's IP addresses, then you must change both the gateway addresses and the target IP addresses to the Video Processor frame for the Main panel and Menu panel. The reason you perform this step is the following:

- Each end node knows how to talk to the Video Processor frame (these are the target IP addresses to the Video Processor frame), and
- Both end nodes know how to send packets to each other by using the Video Processor frame as a gateway or conduit through which the packets flow (these are Gateway addresses).

## Changing IP Addresses

The Menu panel, Main panel, and Video Processor frame each have a different method for changing their IP addresses. Correct IP addressing is essential for proper communication between Zodiac devices. Change IP addresses with care and read the entire procedure and any notes or cautions before proceeding.

The IP addresses for each Zodiac device must be changed directly from each device through the appropriate interface. Note that in the process of setting the IP address for a particular device, the IP addresses of the other Zodiac devices on the network will also be displayed and can be edited. Editing these values does not change the other devices' IP addresses. It informs the device you are currently changing what the target and gateway IP addresses are for the other Zodiac devices on the network. Each Zodiac device must know the target and gateway IP addresses on the network to communicate properly.

After changing any of the IP addresses, each device, including the Menu panel Windows application, should be restarted to enable the new values and refresh internal routing tables which are updated dynamically when devices are restarted.

Before starting any IP address changes, determine the required IP addresses for each Zodiac device, including the Gateway values, from [Connecting to an Existing Network on page 85](#) or with your system administrator. Write these values down for reference. You will need to know each device's values for setting the IP addresses.

Follow the instructions for changing IP addresses in the order listed below:

- Determine the new IP addresses required for every device in the Zodiac network and record the values.
- Change Main panel IP addresses using web browser or Main panel configuration routine.
- Change Video Processor frame IP addresses (Panel and Menu LANs) using web browser.
- Enter the new IP addresses set for the Video Processor frame and Main panel in Zodiac Eng Setups – System – Config menu.
- Change Menu panel IP addresses using Window 2000 Internet Protocol TCP/IP interface.
- Restart Windows to refresh internal gateway routing and restart Zodiac menu for establishing new values.
- Set or change 32-Crosspoint Remote Aux panel IP addresses.

**Note** If you change the IP addresses of only one device, such as the Main panel, be sure to read carefully in the procedure for that device what other IP settings in other devices may be affected. As mentioned earlier, some device's IP addresses are used as gateway addresses for other devices.



## Main Panel IP Addresses

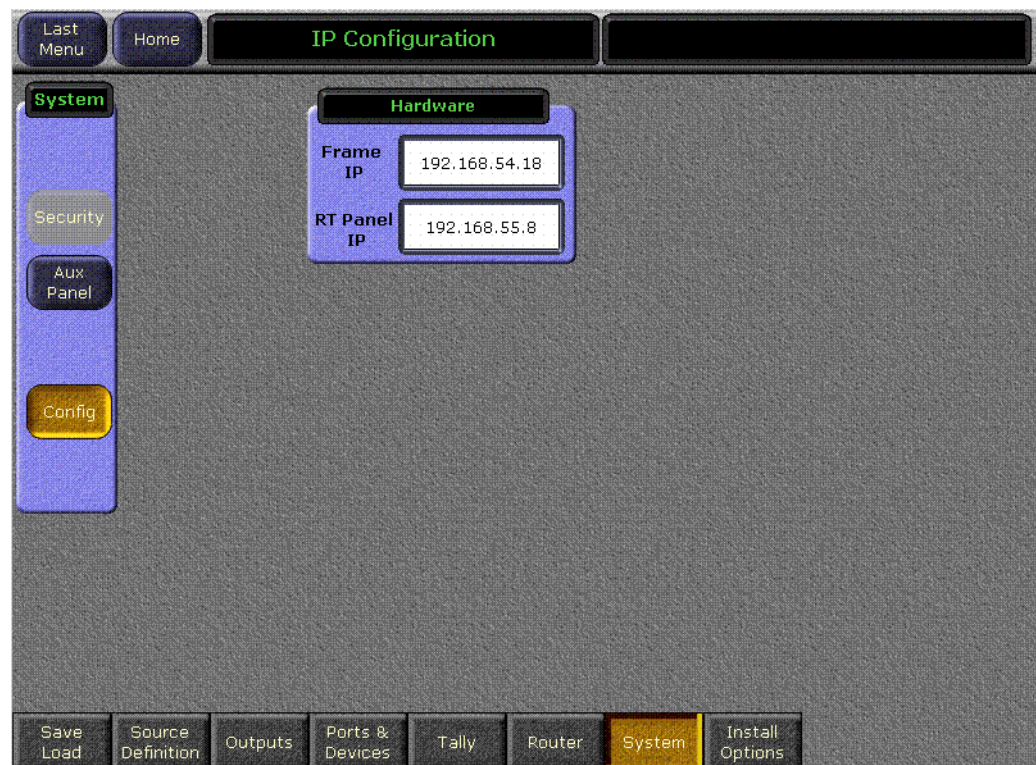
The Video Processor frame and Main panel reside on the separate Panel LAN for isolation purposes. It is highly recommended to leave the Main panel and Video Processor frame at the default values. However, if you need to change the IP addresses on the Main panel, there are two methods for changing the Main panel settings, using either a web browser with a keyboard connected to the Menu panel or directly from the Main panel.

To use the web browser, you will need to know the current IP address of the Main panel available as described in the instructions below:

1. In the Zodiac Home menu, touch the **Eng Setup** button.
2. Touch **System** at the bottom of the screen.
3. Touch the **Config** button in the System pane on the left to bring up the current IP addresses of the Video Processor frame (**Frame IP**) and the Main panel (**RT Panel IP**) displayed in the Hardware pane ([Figure 56](#)).
4. Record both IP addresses for reference.
5. Connect a mouse and keyboard to the Menu panel (if they are not already connected) as described in Zodiac Control Surface Cabling and Control in Section 2 of this manual.

**CAUTION** Do not connect the keyboard and mouse with Menu panel power on.

Figure 56. Eng Setup Menu – Current IP Addresses



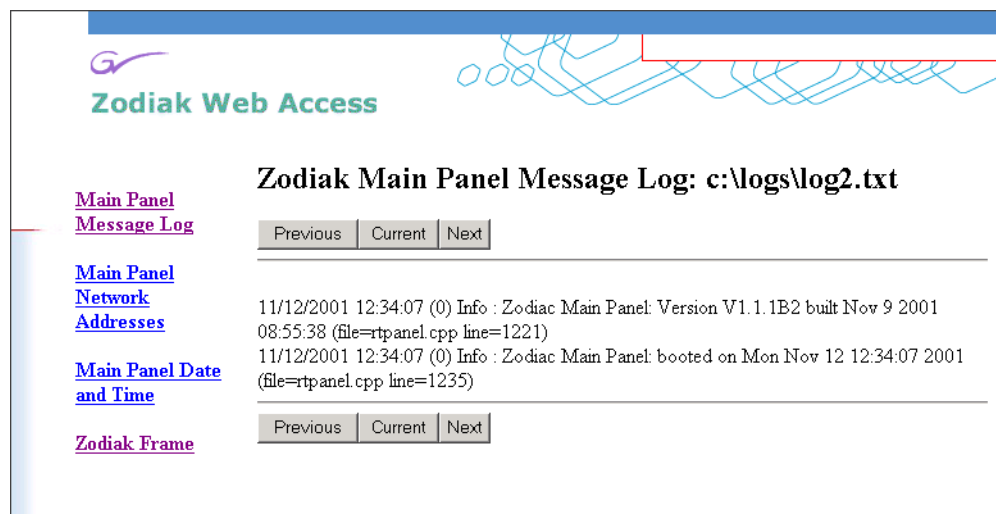
6. Open Internet Explorer (or any available web browser) from the Windows **Start** menu. Access the **Start** menu by pressing the Windows **Start** button (if present) or **Ctrl+Esc** from the keyboard. You may also close the Zodiac menu to access the Windows desktop by touching the upper right banner, but this is not necessary.
7. In the web browser Address line, type the IP address of the Main panel given in the **RT Panel IP** field in the Config Menu Hardware pane as shown below and hit **Return**:

192.168.55.8

This should bring up the Main Panel Message Log page shown in [Figure 57](#).

8. From the Main Panel Message Log page, select the **Main Panel Network Addresses** link on the left to bring up the Main Panel Configuration page with the currently assigned IP addresses ([Figure 58 on page 91](#)).

Figure 57. Zodiac Web Access Page – Message Logging



The screenshot displays the 'Zodiac Web Access' interface. At the top, there is a blue header with the 'Zodiac' logo and the text 'Zodiac Web Access'. Below the header, a navigation menu on the left contains links for 'Main Panel Message Log', 'Main Panel Network Addresses', 'Main Panel Date and Time', and 'Zodiac Frame'. The main content area is titled 'Zodiac Main Panel Message Log: c:\logs\log2.txt' and features two sets of 'Previous', 'Current', and 'Next' navigation buttons. The log entries show system information for the Zodiac Main Panel, including version details and boot times.

**Zodiac Web Access**

[Main Panel Message Log](#)

[Main Panel Network Addresses](#)

[Main Panel Date and Time](#)

[Zodiac Frame](#)

**Zodiac Main Panel Message Log: c:\logs\log2.txt**

Previous Current Next

11/12/2001 12:34:07 (0) Info : Zodiac Main Panel: Version V1.1.1B2 built Nov 9 2001 08:55:38 (file=rtpanel.cpp line=1221)

11/12/2001 12:34:07 (0) Info : Zodiac Main Panel: booted on Mon Nov 12 12:34:07 2001 (file=rtpanel.cpp line=1235)

Previous Current Next

Figure 58. Zodiac Web Access Page – Main Panel

**Zodiac Web Access**

**Main Panel Configuration**

[Main Panel](#)  
[Message Log](#)  
[Main Panel Network Addresses](#)  
[Main Panel Date and Time](#)  
[Zodiac Frame](#)

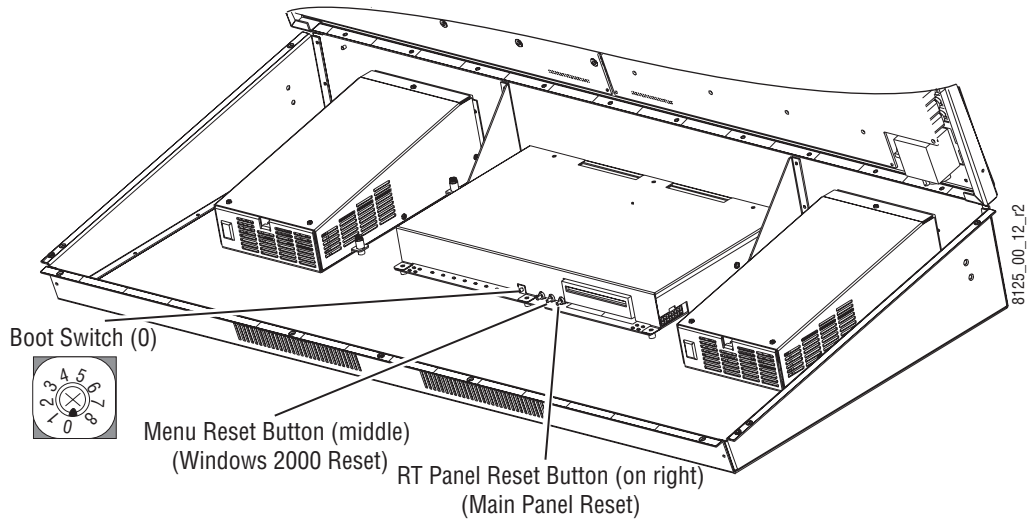
Panel IP Address : 192.168.55.8  
 Panel Subnet Mask : 255.255.255.0  
 Panel Gateway IP : 192.168.55.18  
 Frame IP Address : 192.168.55.18  
 Menu IP Address : 192.168.54.8

Save New Settings

Note: After changing IP addresses, you must reboot the panel for them to take effect  
**Caution:** Changing a network addresses to an incorrect value may render the system inoperable

9. In the Main Panel Configuration IP address fields (Figure 58), set the desired IP address as required for the Main panel in the **Panel IP Address** field. This IP address should be on the same network (Panel LAN) as the Video Processor frame in Step 12 below with a different host number.
10. Set the **Panel Subnet Mask** field to 255.255.255.0 unless directed otherwise by your system administrator.
11. Set the **Panel Gateway IP** to be the same value as the **Frame IP Address** in the next step. This allows the Video Processor frame to act as the gateway between the Main panel and the Menu panel.
12. In the **Frame IP Address** field enter the correct IP address of the Video Processor frame on the Panel LAN. This value does not change the actual Video Processor frame IP address. It informs the Main panel of the target IP address of the frame for proper communication.
13. In the **Menu IP Address** field, enter the IP address of the Menu panel on the Menu LAN. This value informs the Main panel of the target IP address of the Menu panel.
14. After you have confirmed the new IP addresses, press the **Save New Settings** button.
15. Reset the Main panel by opening the lid and pushing the Main panel reset button (labeled **RT Panel Reset**) on the front of the Control Panel Processor board (Figure 59 on page 92).

Figure 59. Main Panel Reset Button



### Setting IP Addresses Directly From the Main Panel

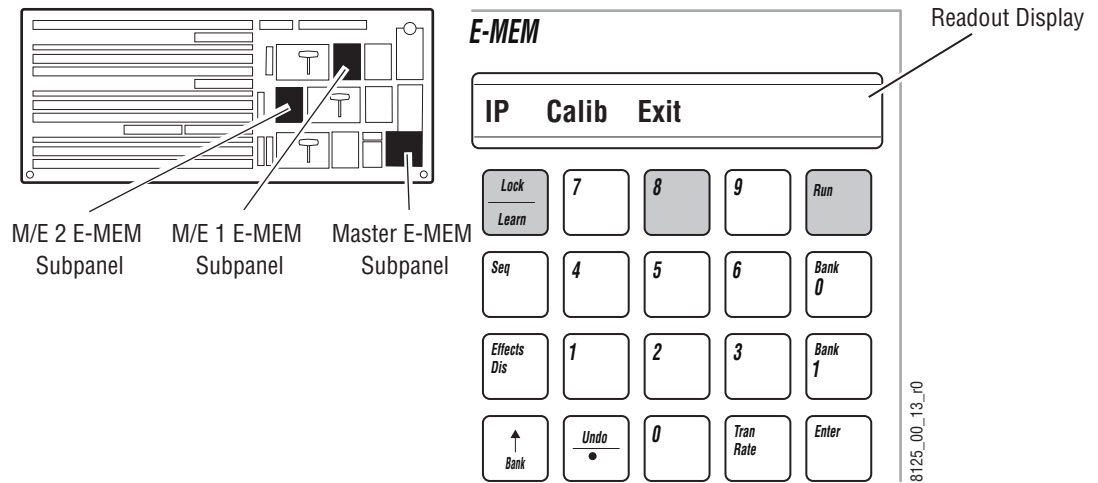
The Main panel IP addresses may also be set or viewed directly from the panel with the following procedure.

1. Open the Main panel and locate the Main panel Reset button on the right (labeled **RT Panel Reset**) and the rotary Boot Dial switch, normally set to position 0 (zero) for normal operation ([Figure 59](#)).
2. Rotate the Boot Switch to position 9 (one click right) and press the **RT Panel Reset** button to place the Main panel in a configuration mode. The panel will take about a minute to change to the other mode.
3. Close the panel and locate the E-MEM subpanels in M/E 1 and M/E 2 ([Figure 60](#)).

The E-MEM subpanel readout display in M/E 1 will indicate the message **Main Menu Select** to show that the panel is now in a calibration mode (not shown). The M/E 2 E-MEM display will show the configuration menu as illustrated in [Figure 60 on page 93](#).

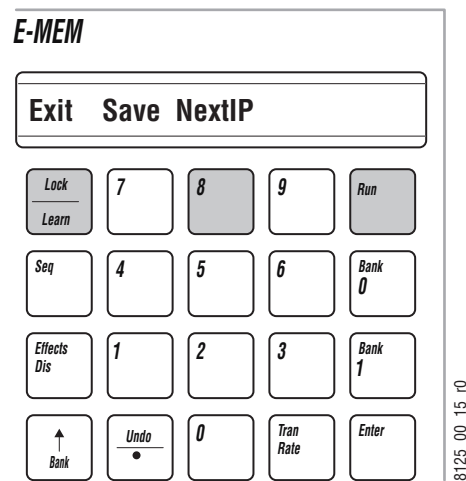
4. Press the **Lock/Learn** button (emphasized in gray in [Figure 60 on page 93](#)) below **IP** in the readout display to enter the IP addressing function.

Figure 60. Effects Memory Subpanel in Configuration Mode



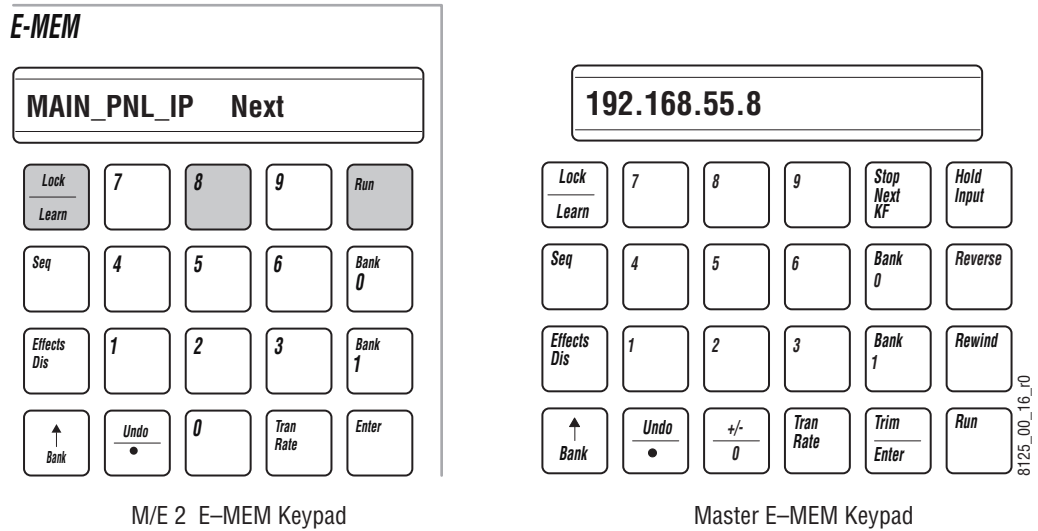
This will bring up the IP Addressing function in the M/E 2 E-MEM sub-panel. The E-MEM readout display will now appear as shown in [Figure 61](#).

Figure 61. Main Panel IP Addressing Function



5. Press the **Run** button under **Next IP** ([Figure 61](#)) to bring up the first IP address entry, MAIN\_PNL\_IP. The value of this IP address will appear in the readout display of the Master E-MEM subpanel in the lower right corner of the Main panel ([Figure 60](#)). This is the currently assigned IP Address of the Main panel on the Panel LAN.
6. To change this value, use the Master E-MEM keypad ([Figure 62](#)) to enter the desired address. You can use the **Reverse** button to backspace if you make a mistake, or scroll with **Next** (**Run** button) through the rest of the IP address selections until you reach MAIN\_PNL\_IP again.

Figure 62. Main Panel IP Address



7. Press **Next (Run button)** (Figure 62) to bring up the FRAME\_IP address selection.
8. Enter the IP address of the Video Processor frame on the Panel LAN. Change the values with the Master E-MEM keypad. Changing this value does not affect the actual frame IP address. It informs the Main panel of the target IP address of the frame for proper communication.
9. Press **Next (Run button)** to move to the MENU\_IP selection. Enter the Menu panel IP address. This value informs the Main panel of the IP address of the Menu panel for proper communication.
10. Press **Next (Run button)** to proceed to the SUBNET\_MASK entry. The subnet mask should always remain at 255.255.255.0 unless you are instructed otherwise by your system administrator.
11. Press **Next (Run button)** to go to the GATEWAY entry. The Gateway should match the Video Processor frame IP address you have entered in Step 8. The Video Processor frame acts as the gateway between the Main and Menu panels.
12. Scroll through and confirm the values you have entered. Press the **Save (8 button)** to save these values (Figure 61 on page 93).
13. Open the Main panel lid and return the Boot Switch to position 0 (zero) and press the **RT Panel Reset** button to return to normal operation.

## Video Processor Frame IP Addresses

The Video Processor frame has two IP addresses as explained in [Network Configuration on page 84](#). The IP address for the Menu LAN (also called the Facility LAN) must be on the same network as the Menu panel. In most cases, the separate Panel LAN containing the Main panel and the Video Processor frame does not require changes and it is highly recommended to leave this LAN at the default addresses if possible.

Changes to the Video Processor frame are made using a web browser connected to the Menu LAN. The current IP address of the Video Processor frame must be known to do this procedure.

To get the current IP address of the frame, do the following steps:

1. In the Zodiac Home menu, touch Eng Setup.
2. Touch **System** at the bottom of the screen.
3. Touch the **Config** button on the left of the menu to bring up the current IP addresses of the Video Processor frame (**Frame IP**) and the Main panel (**RT Panel IP**) displayed in the Hardware pane ([Figure 56 on page 89](#)).
4. Note the value of the **Frame IP** for the next steps.

To set the Video Processor frame and associated IP addresses with a web browser, do the following:

1. Connect a mouse and keyboard to the Menu panel (if they are not already connected) as described in Zodiac Control Surface Cabling and Control in Section 2 of this manual.

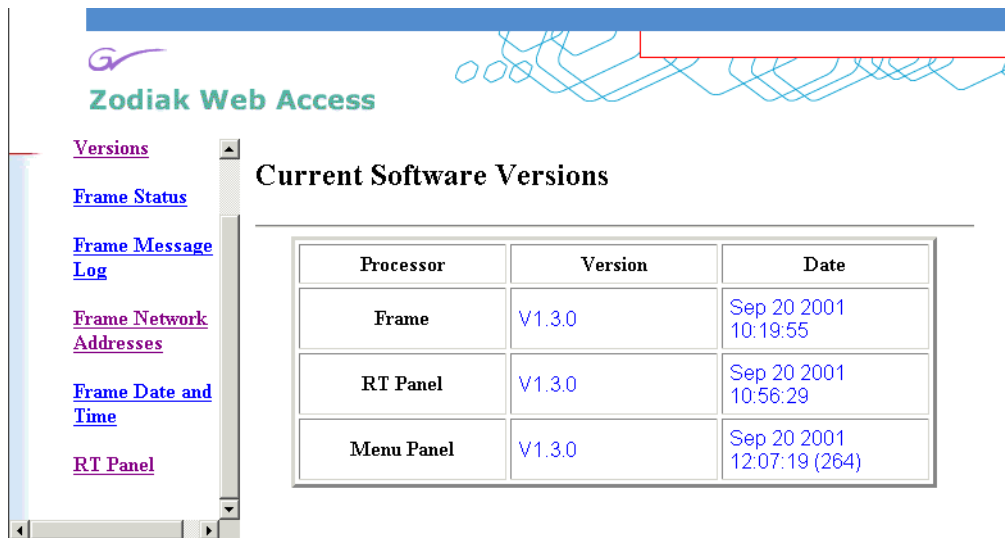
**CAUTION** Do not connect the keyboard and mouse with Menu panel power on.

2. Open Internet Explorer (or any available web browser) from the Windows **Start** menu. Access the **Start** menu by pressing the Windows **Start** button (if present) or **Ctrl-Esc** from the keyboard. You may also close the Zodiac menu to access the Windows desktop by touching the upper right banner, but this is not necessary.
3. In the web browser address line, type the IP address given in the **Frame IP** field in the Config Menu Hardware pane as shown below and hit **Return**:

192.168.54.18

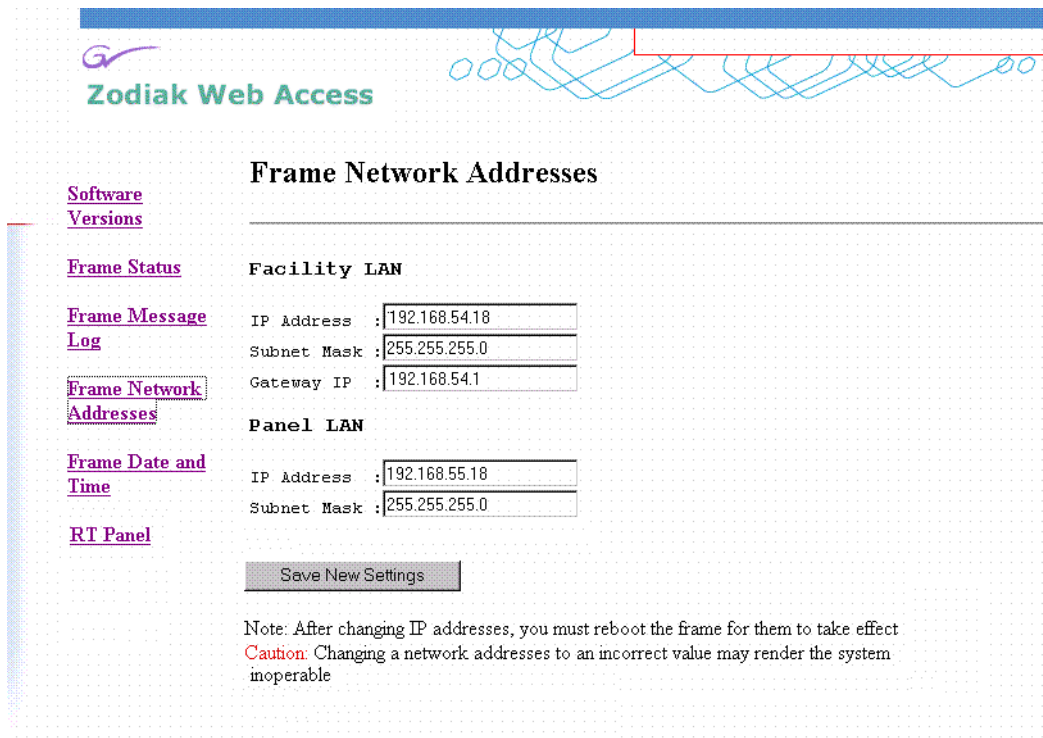
This should bring up the Zodiac Web Access page with Current Software Versions as shown in [Figure 63 on page 96](#).

Figure 63. Main Zodiac Web Access Page



4. Click on the **Frame Network Addresses** link on the left of the screen to bring up the Frame Network Addresses configuration screen with the current IP addresses (Figure 64).

Figure 64. Zodiac Web Access – Frame Network Addresses Page



5. In the **Facility LAN** section, in the **IP Address** field, enter the desired IP address for the Video Processor frame on the Menu (Facility) LAN.

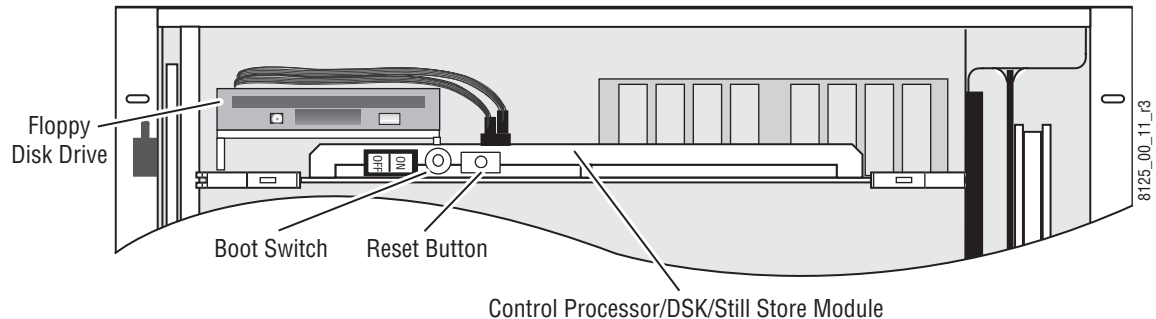


6. Enter 255.255.255.0 in the **Subnet Mask** field unless directed otherwise by your system administrator.
7. In the **Gateway IP** field, enter the IP address of the external gateway as directed by your System Administrator.
8. In the **Panel LAN** section, in the **IP Address** field, set the correct IP address for the Video Processor frame on the Panel LAN.
9. Enter 255.255.255.0 in the **Subnet Mask** field unless directed otherwise by your system administrator.

**CAUTION** When you are done filling in the addresses, double-check and record the values. This is the only access to the frame and if these IP address are lost or entered incorrectly, communication cannot be re-established with a web browser. In this case, you will need to run an emergency boot procedure using floppy disk to restore the default IP addresses. See [Section 5-Troubleshooting and Diagnostics](#).

10. After you have confirmed and recorded the new IP addresses, press the **Save New Settings** button.
11. Reset the frame by pushing the Video Processor frame **Reset** button on the front of the Control Processor/DSK/Still Store module ([Figure 65](#)).

Figure 65. Frame Reset Button Location



## Identify New IP Addresses in Menu Panel

Once the new IP addresses are set for the Main panel and Video Processor frame, the new IP addresses must be entered into the Zodiac Menu for proper communication with the Menu panel. To identify the frame and Main panel addresses in the Menu panel:

1. Run the Zodiac Menu application.
2. Touch the **Eng Setup** menu selection button.
3. Touch the **System** menu selection button at the bottom of the screen.
4. Touch the **Config** selection button in the **System** pane on the left of the screen ([Figure 66 on page 98](#)).

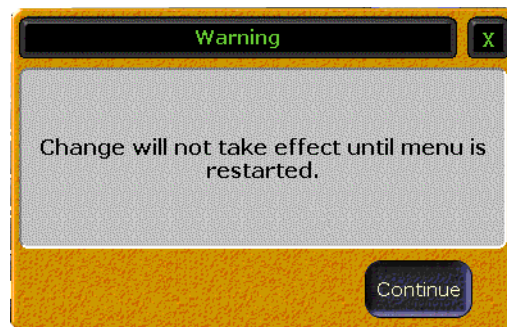
Figure 66. Eng Setups – Config Menu



5. In the **Hardware** pane, touch the **Frame IP** data pad to bring up the numeric keypad. Enter the new IP address of the Video Processor frame on the Menu LAN (Facility LAN) and touch **Enter**.

The system will show the following warning message (Figure 67) after entering the Frame IP and RT Panel values. Touch **Continue** to go on.

Figure 67. IP Address Warning Message



6. Touch the **RT Panel** data pad to bring up the numeric keypad. Enter the new Main panel IP address on the Panel LAN and touch **Enter**. Touch **Continue** in the warning message.

7. Shut down the Zodiac Menu application by touching the upper right banner, then restart the Zodiac Menu application to have these values take effect.

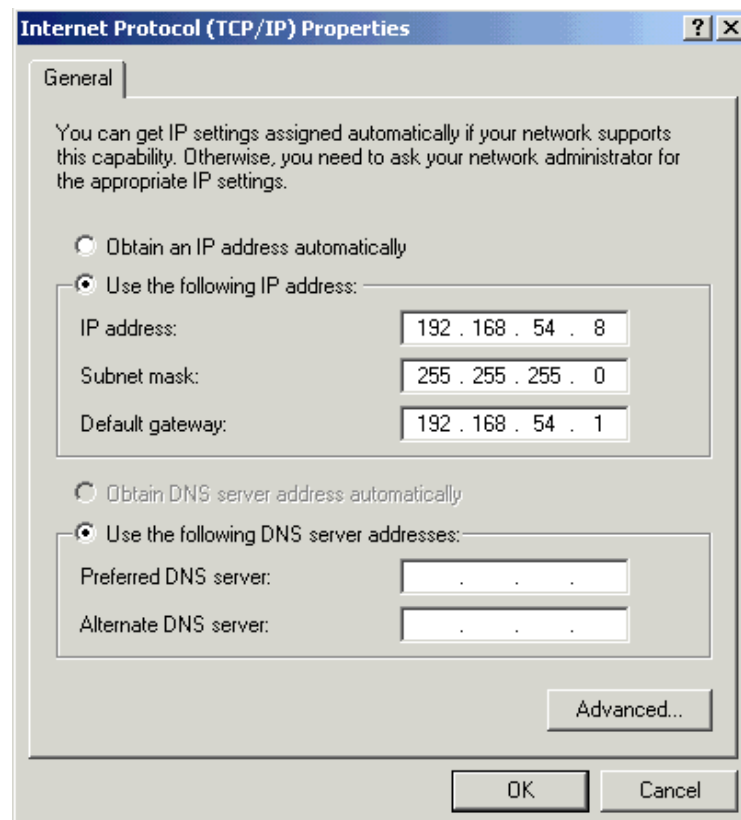
**Note** When the Video Processor frame IP addresses have been changed, you must also restart Windows at some point to refresh the internal gateway routing tables created in software. This is done in the next procedure.

## Menu Panel IP Addresses

Set the Menu panel IP addresses using the standard Windows interface. You may use the touch screen to access the Windows settings but you will need to use a mouse and keyboard connected to the Menu panel for entering the IP address values. To set the Menu panel addresses do the following.

1. Go to the following location in Windows: **Start\Settings\Network and Dial-up Connections**.
2. Touch the **Local Area Connection** icon to bring up the **Local Area Status Dialog Box**, then press the **Properties** button.
3. Touch the **Internet Protocol (TCP/IP)** line in the list window to bring up the **Internet Protocol (TCP/IP) Properties** dialog box (Figure 68).

Figure 68. Menu Panel IP Addresses



4. In the **IP address** field, enter the Menu panel IP address to conform to the network requirements for your facility.
5. Enter the **Subnet mask** as 255.255.255.0 unless advised otherwise by your system administrator.
6. In the **Default gateway** field, enter the correct IP address for connecting to the external gateway device (refer to [Connecting to an Existing Network on page 85](#)).
7. Restart Windows for the changes to take effect and to refresh the internal routing tables with the new values.

## IP Address Confirmation

To confirm your network connections, you may perform any of the following actions:

- Ping between devices from the Menu panel. To ping a device, press the Windows **Start** button, select **Programs/Accessories/Command Prompt** and enter the ping command, a space, then the exact device IP address (expressed as X's below) as follows, then select **Return**:

```
C:\>ping XXX.XXX.XXX.XXX
```

- With the Zodiac Menu application running, double-press any of the DPOP buttons to confirm the correct menu comes up on the Menu panel.
- Change Main panel crosspoints and see video changes.

If you change IP addresses and lose communication with one or more devices, refer to [Section 5-Troubleshooting and Diagnostics](#) for troubleshooting tips. If you cannot recover communication or have some form of system crash and recovery is not possible, emergency reboot floppy disks have been provided for the Main panel (2 disk set) and Video Processor frame (1 disk). These disks will reformat the hard drives in each device and reinstall the default IP addresses. Use this recovery process only after reading the Troubleshooting section of this manual.

**Note** The emergency floppy disks provided are for reformatting the hard drives on the specific devices only. Do not try to use these disks in any other computer.

## Setting 32-Crosspoint Remote Aux Panel IP Address

The 32-Crosspoint Remote Aux panels communicate with other Zodiac devices over the Menu (Facility) LAN. The 24-Crosspoint Remote Aux panels use a serial communication connection and do not require an IP address.

The default IP addresses of 32-Crosspoint Remote Aux panels are set to at the factory before shipment will not work with a Zodiac system whose other components are set to defaults. Typically, Zodiac systems are equipped with more than one Remote Aux panel. If more than one 32-Crosspoint Remote Aux panel will be used on your Zodiac system, you will need to change each panels' IP addresses so none are duplicated, and this must be done before you connect them to the network. This will require a mouse and keyboard connected to a PC disconnected from the network.

Check with your network administrator to learn what IP addresses should be used at your facility.

### Default IP Addresses

The version of software installed on a 32-Crosspoint Remote Aux panel affects its default IP addresses. Earlier version panels (generally shipped before November 2004) had V0.0.2a software, and current version panels have V1.6.5 software. The default IP addresses for these panels are listed in [Table 15 on page 86](#).

The 32-Crosspoint Remote Aux panels can also be updated in the field with software provided on CD. Default IP addresses can also be restored using a procedure described on [page 103](#).

### Setting the IP Address

A PC equipped with an Ethernet interface and a web browser is required to change 32-Crosspoint Remote Aux panel IP addresses.

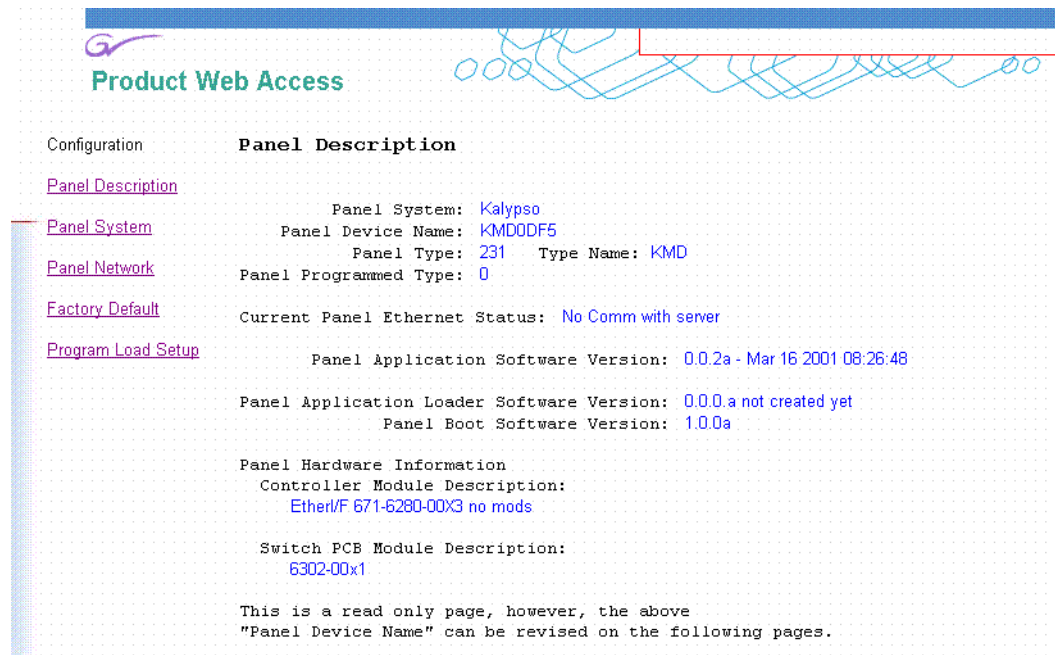
1. With the PC disconnected from all facility networks, connect the PC's Ethernet port directly to the Remote Aux panel LAN connector on the rear of the panel (refer to [32-Crosspoint Remote Aux Connections on page 51](#)).

**Note** A crossover Ethernet cable (Tx/Rx pair crossed) is needed when connecting a PC directly to the Aux panel without a hub intermediary.

2. Start the web browser, enter the default IP address (192.168.0.250) in the address field, and press **Enter**. If the address is found, a Panel Description screen similar to [Figure 69](#) will appear.

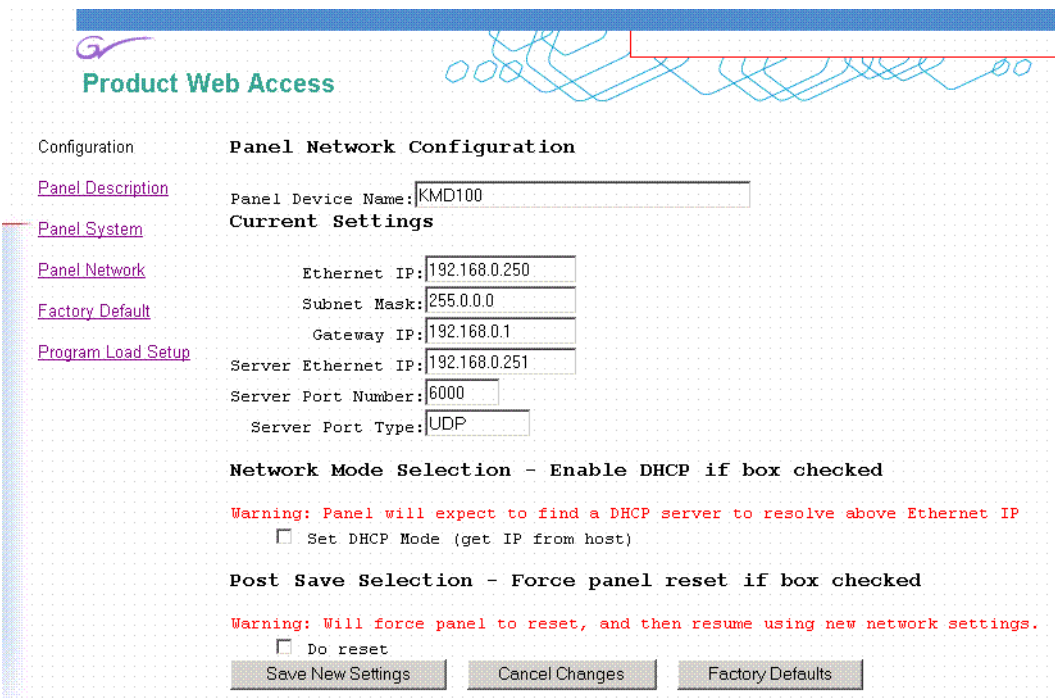
**Note** If the Remote Aux panel address is not found, you may need to reset the panel to its defaults (see [page 103](#)).

Figure 69. Panel Description Screen



3. Click on **Panel Network**. A Panel Network Configuration screen similar to Figure 70 will appear, displaying the factory default settings.

Figure 70. Panel Network Screen, Default Information



4. Enter information appropriate for your system as follows:
  - Change the **Ethernet IP** address to place the Remote Aux panel on the Menu LAN. If you are using the factory default settings, you may change the third octet (currently set to 0) to 54. Leave the Host IP set to 250 or change it to whatever number desired as long as the number is different than the other devices on the Menu LAN and does not exceed 255.
  - Set the **Subnet Mask** to 255.255.255.0.
  - Set the **Gateway IP** to 0.0.0.0 unless a Gateway address is specified by your system administrator.
  - The **Panel Device Name** is used to name the panel, for user convenience. This field does not affect the operation of the unit.
  - The **Server Ethernet IP** field should match the IP address of the Zodiac Video Processor frame on the Menu LAN (192.168.54.18 is the factory default).

**Note** Do not change the Server Port Number or Server Port Type fields. These settings need to remain at their defaults.

5. Check the **Do reset** box at the bottom of the screen, then click on **Save New Settings**. The new IP addresses will be saved and the Remote Aux panel will reset. You should label the panel with its IP address and keep a record of all IP addresses for future reference.
6. Disconnect the PC, and connect the Remote Aux panel to the Zodiac Menu LAN network.
7. Repeat this procedure on all the 32-Crosspoint Remote Aux panels to be used with your Zodiac system, entering a unique IP address for each 32-Crosspoint Remote Aux panel.

See [Remote Aux Panel Configuration on page 116](#) regarding additional configuration steps required.

## Restoring the Default IP Address

You need to know the current IP address of the 32-Crosspoint Remote Aux panel in order to change it using the Web browser. If a panel's IP address has been changed and its new value not recorded, it will be impossible to change its IP address. You can restore the panel to its factory default address, if necessary, with the following procedure.

1. Disconnect the Ethernet cable and the AC power cable from the Remote Aux panel.
2. Reconnect only the AC power cable. The panel will enter a diagnostic mode.

3. Push down and hold any panel button. After three seconds panel buttons will light up sequentially, indicating different available diagnostics.
4. When three buttons illuminate, release the held button. This places the panel in IP Address reset mode, and one button will be flashing.
5. Press the flashing button. This resets the IP address to factory defaults, which are different depending on the version of software currently installed on the 32-Crosspoint Remote Aux panel (see [Table 15 on page 86](#)).

## Software Installation

Zodiak systems are shipped with the current software version. Updates to Zodiak system software are supplied on CD-ROM, which includes an Update Tool. The Zodiak Software Update Tool installs various software components for the Menu panel, Video Processor frame, and Main panel. Software updates for Remote Aux panels is not required. For the most current software installation procedures, refer to the Release Notes shipped with the software update.



# Hardware Reset Procedures

Devices need to be reset after software installation, changing IP addresses, and for servicing or troubleshooting purposes.

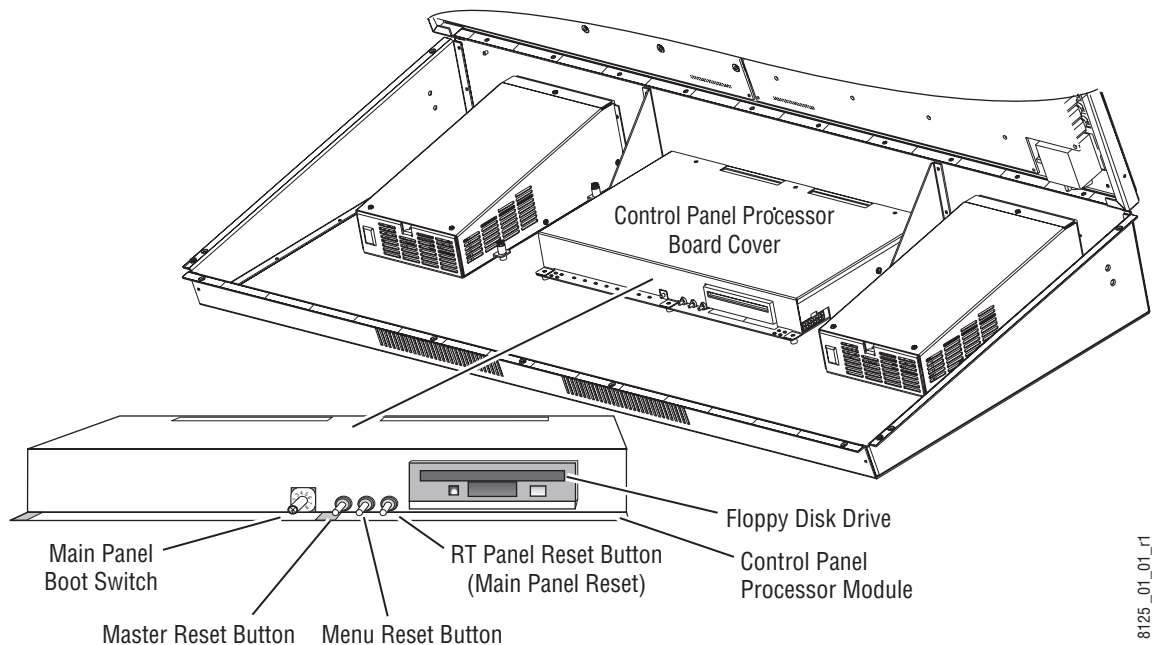
## Main Panel and Menu Panel Reset

The reset buttons for the Main panel and Menu panel are located inside the Main panel tub and are accessed by opening the top lid. There are three reset buttons, the **Master Reset** (left) resets the Menu panel and the Main panel, the **Menu Reset** (middle) resets the Menu panel only, and the **RT Panel Reset** (right), resets the Main panel only (Figure 71 on page 105).

**Note** Do not recycle power on the Main or Menu panel to reset them during a software installation. Recycling power results in an incomplete software install and produces error messages. Recycling power during a software installation necessitates a software reload, followed by a proper system reset using the **RT Panel Reset** (Main pane) button.

The rotary Boot switch next to the **Master Reset** button has a 0 (zero) default setting, which is used for normal software updates and system operation. Setting the Boot switch to position 1 (one) allows for loading boot software in the event the application crashes during installation. It boots the processor with only the operating system and an FTP server, and does not launch the Zodiac application. Setting the Boot switch to 9 (nine) and pressing the **RT Panel Reset** button puts the Main panel in configuration mode (after about 60 seconds).

Figure 71. Main Panel Reset Switches



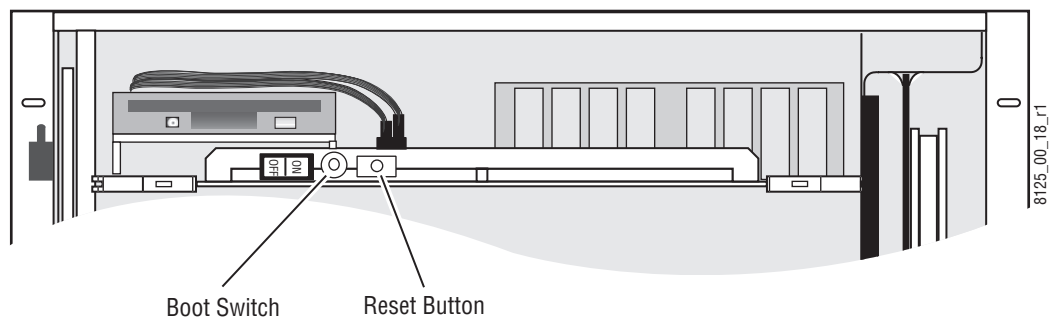
8125\_01\_01\_r1

## Video Processor Frame Reset

The **Reset** button for the Video Processor frame is located inside the front door, on the left side of the Control Processor/DSK/Still Store module in the top slot of the frame (Figure 72).

Next to the **Reset** button is a Boot switch. The Boot switch must be set to 0 (zero) for normal operation and software updates. This is the default setting. Setting the Boot Switch to 1 (one) allows for loading boot software. In this setting, in the event the application crashes during initialization, the processor boots with only the operating system and an FTP server, and does not launch the Zodiac application.

Figure 72. Frame Reset Button and Boot Switch



## Engineering Setups

Zodiac inputs and outputs are connected to the rear of the Video Processor frame. These video signals need to be configured to your facility's requirements. Engineering setups define Zodiac system components and describe how Zodiac is cabled into a facility. Engineering setups are intended to be used and maintained by technical staff, and are designed to be set once and seldom changed. Engineering setups may be loaded and saved to disk by category, or all at once.

**Note** The current Zodiac system configuration settings are automatically saved to non-volatile storage when you exit an Engineering Setups menu.

## Source Definition

### Terminology

**Source** – A collection of video signals and the information needed for the Zodiac system to use these signals properly. At its simplest a source may represent the output of a video camera connected directly to a Zodiac input. Alternatively a source might be a pair of video and key signals asso-

ciated with an external DPM, along with whatever added information is required to allow the Zodiac system to interact properly with that DPM.

**Engineering ID** – (formerly Source ID) An unchanging numeric value associated with a source. This value is used to unambiguously identify each source from an engineering perspective, regardless of how it may have been named. On-air tally uses Engineering IDs so the proper device always receives tally.

**Engineering Name** – An editable name that can be associated with a source, intended for use by facility engineers to ease source identification. An Engineering name may be that of a particular hard wired device (Cam 1), or it may indicate a patch bay location or a router source or destination. Naming sources in this manner can help engineers configure and re-configure their facility wiring. Engineering names reside in Eng Setups.

**Logical ID** – An unchanging numeric value associated with a source used in a production environment. Effects and source memory use Logical IDs.

**Logical Name** – An editable name that can be associated with a Logical ID, used as a convenience to the user to identify sources in a production environment. Logical names reside in Suite Prefs.

**Logical Nickname** – An alternative editable name that can also be associated with a Logical ID. If both a Logical name and a Logical nickname are specified, the nickname will not appear. Logical nicknames only appear when the Logical ID is blank. The Logical nicknames reside in Suite Prefs.

**Source Patch** – A table mapping Logical IDs to Engineering IDs. This makes it possible to use effects in different environments. For example, effects created in one production truck equipped with one set of devices can be used in a different truck with different devices by modifying the Source Patch table. Source Patch data resides in Suite Prefs.

## Background

Facility engineers need to know the exact routing of all the video signals connecting all the devices they are responsible for. These engineers need to be able to identify video signals in a way that will help them connect devices properly. Production personnel, on the other hand, are interested in the content they work with for their shows, and are generally not concerned about which individual device or routing path is used to make those signals available. They just need a way to identify the content and access it when they need it. To support these differing needs, two source naming mechanisms are available on Zodiac systems; Engineering and Logical.

Engineering names and Engineering IDs are intended to identify a source as it applies to a specific facility. In a truck, for example, cameras may be hard wired to the production switcher and might be given Engineering names 1, 2, and 3. Names like Patch 14 or Rtr 5 may be used for inputs that are patched or routed.

Logical names, Logical nicknames, and Logical IDs are intended to identify the use of a source for a particular show. For example, VTRs may be given Blue, Red, and Gold Logical names. DDR channels might be named A, B, and C. Cameras might be identified by the camera number and each operator's name (which may change from program to program). To support this added level of variability, both Logical names and Logical nicknames can be used to label sources differently for varying conditions.

The Zodiac system also provides a way to map Engineering source IDs to Logical source IDs, using the Source Patch feature. By default this mapping is one-to-one, but this feature can be used to quickly set up production elements for use in a different facility. For example, a show's effects, DDR clips, and taped material may have been built in one production truck with one set of devices, but the next show is scheduled for a different truck. Previously, to use effects in the other truck the Technical Director (TD) would need to edit the engineering source definitions in the new truck so they exactly matched the old truck. In some cases six settings would have to be changed, and tally outputs would also need to be repatched. With the Zodiac 6.0 release, by remapping the Engineering sources of the devices in the new truck to the Logical sources used to build the effects, all the effects can be used without having to edit them. Source Patch can also be used to quickly swap out a defective device during a show without having to reconfigure the Engineering sources. In this case Logical names seen by the production personnel would be identical for that content, even though the actual device playing the material changed.

The source definition tells the system which physical inputs or internal signals to use when a particular source is selected. The source definition, denoted by a source ID number, specifies how to process a signal, and what external devices and key signals, if any, are associated with that source.

Source definition defines what signals comprise each source. The default Source Select button definitions are set up at the factory such that Input 1 = Source 1, Input 2 = Source 2, etc. The Eng Setup – Sources menu is used to change source definitions. Touch the **Eng Setups** button on the Menu panel, then touch the **Sources** button at the bottom of the screen to display the menu ([Figure 73 on page 110](#)).

There are a total of 92 assignable sources, including internally generated signals. The sources can use, as inputs, 64 physical BNC connectors on the rear of the Video Processor frame, or internally generated signals and re-entries, such as Background mattes, black, internal Still Stores, and the Program and Preview outputs from each M/E level. The internal signals are assigned in the Button Mapping menu (see [Button Mapping on page 111](#)).

## Source Types

Each source must also be defined as a Source type. Source types include **Direct**, **Device**, **Router**, **DPM Physical**, or **DPM Logical**. Direct sources are defined as sources internally generated in the switcher or fed directly to a BNC on the

rear of the switcher. The other source types are external devices which can be configured to interface to Zodiac in a number of ways, including GPI and Peripheral Bus II controlled devices.

## Tally Outputs

The Zodiac Tally system has 32 tally relays available on the rear of the Video Processor frame for interface to an external tally device. Tally information is an attribute of each source. Currently, the first 32 sources defined in Eng Setup will correspond to the 32 tally outputs respectively. If you need tally information for a particular source at this time, configure the source as one of the first 32 sources in [Direct Source Definition on page 110](#).

## Name Display Hierarchy

Different source names may appear at different locations of the Zodiac system, depending on what names have been defined. The following rules are used to determine which name is displayed:

- Only Engineering names or Engineering ID numbers appear in the Eng Setup menus,
- If an Engineering name has not been entered, the Engineering ID number is displayed on these menus, and
- Logical names and nicknames can appear on the Menu panel.

## Naming Guidelines

It is not necessary to define an Engineering name, Logical name, and Logical nickname for every Zodiac source. It is generally a good practice to create the least number of names possible. This ensures consistency in the various menu displays and reduces the time needed to enter and edit the names. If you can create short Engineering names that work for both the production staff and engineering, complete naming consistency is assured. However, this level of simplicity is probably only feasible at a fixed installation where all the shows use the same source names.

The additional naming capabilities available on the Zodiac system can help make everyone's job easier. Operators often require program specific source names, but engineers may need technical names not of any value to the operators. Separate engineering and logical names solves this problem.

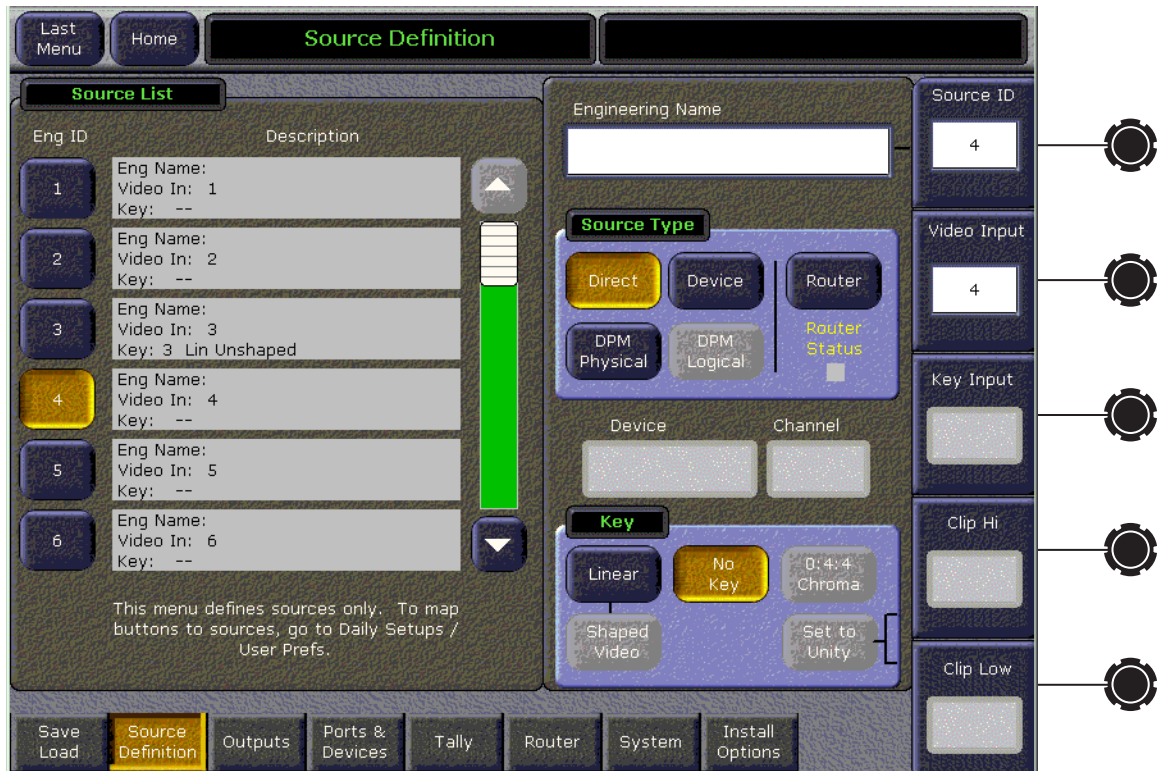
The menus use only one font size, cannot show three lines of text, and may not show nicknames. The ends of long names are truncated on the menus. Should you define long names with qualifiers at the ends, indistinguishable source names on the menu buttons can result. Check the names on the Menu buttons as you define them to ensure each one appears unique. While it is possible to define the same name for different sources, this is obviously not recommended as it will cause considerable confusion.

If logical names are limited to numbers, make them the same as the logical ID number and patch them to the appropriate engineering source. This minimizes confusion between the name and the ID number

## Source Definition Menu

Engineering sources are defined in the Source Definition menu, accessed by touching **Eng Setup, Source Definition** (Figure 73).

Figure 73. Source Definition Menu



Touch the Engineering Name data pad to bring up a keypad to enter the desired name. Name changes take effect immediately. This name appears in the Engineering Setup menus. If no Logical names are defined, this name also appears on the Zodiac Main panel, Local and Remote Aux panels, and Menu panels.

## Direct Source Definition

To define Direct sources:

1. Touch a **Source ID** button located on the left side of the screen to define. You may also use the Source ID soft knob on the right to dial up the source number.
2. In the Source Type pane, define the source as **Direct**.

3. In the Key pane, define the source as either **Linear, No Key** or **0:4:4 Chroma** with the touch buttons.

If you have selected **Linear**, touch the **Shaped** button if the incoming key signal is shaped.

If the source has been defined as a key, **Linear** or **0:4:4 Chroma** (a compressed chroma key signal processed in the GVG 8950ADC A-D Converter module), you will need to also identify the key source input.

Touch the **Key Input** data pad on the far right of the screen to bring up the numeric keypad or use the corresponding soft knob to enter the number of the BNC connector to be used.

4. Touch the **Video Input** data pad on the far right of the screen or use the corresponding soft knob to enter the number of the physical BNC connector on the rear of the frame the source will use for video. The backplane's individual video connectors are labeled sequentially as Video Inputs 1 through 64. The change is immediate and can be viewed on a connected monitor.
5. Touch the **Engineering Name** data pad at the top of the screen to name the source using the pop up alphanumeric keypad or use a standard keyboard connected to the Menu panel.
6. If desired, define Clip Hi and Clip Lo values (used when a fixed linear key is selected for that source) with the labeled soft knobs and data pads. These can be changed by selecting an adjustable linear key through the switcher controls.

When you are done defining a source, the corresponding Description field for each source will show the Engineering Name assigned, the Video Input, the Key Input (if defined), and whether the Linear key signal is defined as shaped or unshaped.

7. Do this procedure for each direct switcher source.

## External Device Source Definition

The **DPM Physical**, **Device**, and **Router** buttons are used to set up an external device as a source, including GPI and Peripheral Bus II controlled devices. Refer to [Appendix C-External Interfaces](#) for currently available device interfaces and instructions for configuring them.

## Button Mapping

After sources have been defined in Eng Setups, they can be mapped to the Main panel source selection buttons. This is done in the Button Mapping menu, accessible by touching **Daily Setups**, **User Prefs**, **Button Mapping**. Refer to Section 5 of the *Zodiak User Manual* for specific button mapping instructions. Mapped buttons can also be labeled using film inserts as described in [Section 4-Maintenance](#) of this manual.

## Output Configuration

### Program and Preview Outputs

Zodiak Program and Preview outputs are fed to dedicated BNCs on the rear of the Video Processor frame. These output destinations cannot be changed. The only configuration necessary is defining the clean feed outputs for the downstream keys that will appear on either of the Program outputs (PGM A and PGM B). This is done with the DSK menu, not part of Eng Setups. Refer to [Other Configuration Settings on page 136](#) for how to set up the clean feed outputs.

### Aux Bus Configuration

There are 9 Aux buses in the 2.5-M/E system and 13 in the 3-M/E system. The Aux Bus video outputs are fed to BNC connectors on the rear of the Video Processor frame. The physical Aux Bus output BNCs can be mapped to any of the logical Aux Buses as desired. This is done with the Eng Setup – Outputs menu.

Other Aux Bus attributes such as bus-to-panel delegation and Aux Pair configuration are covered in menus outside of Eng Setups and will be referred to in this section. Also refer to [Appendix C-External Interfaces](#) at the end of this manual for a complete Aux Bus configuration example using Aux pairs.

#### Mapping Aux Bus Physical Outputs

To map the Aux Bus physical outputs, touch the **Outputs** button at the bottom of the **Eng Setup** menu to display the Outputs menu ([Figure 74 on page 113](#)). Depending on the type of equipment the Aux Bus is feeding, some Aux Bus attributes are configurable, such as assigning Aux Pairs.

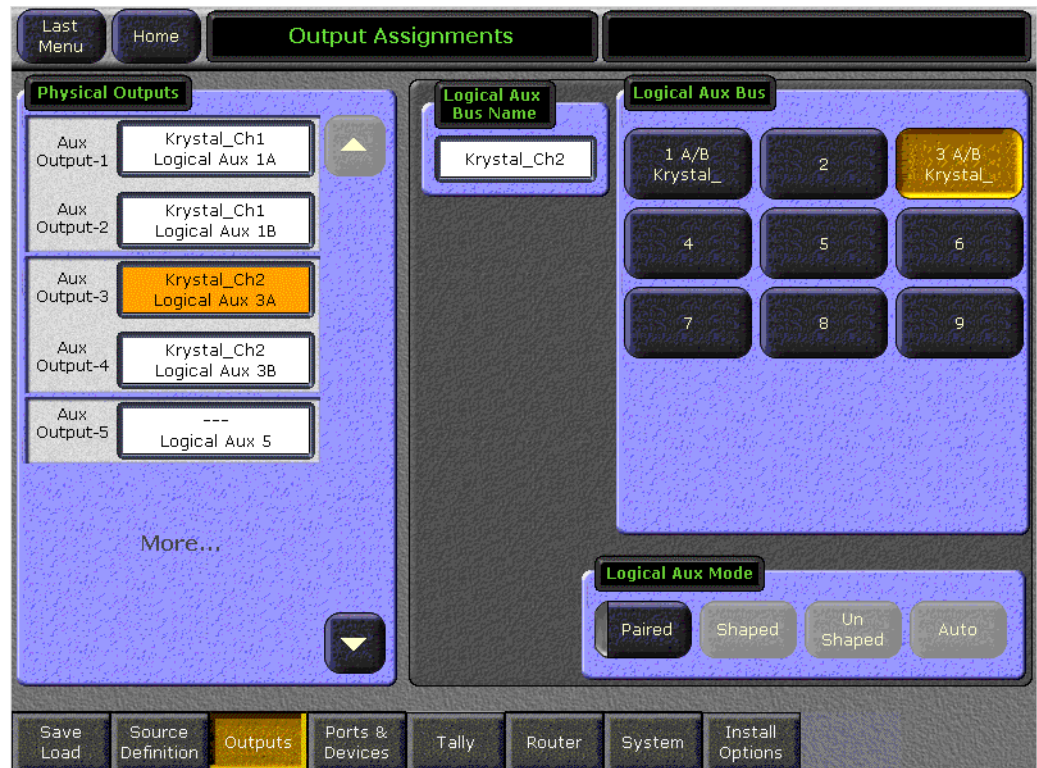
1. Select a physical Aux Bus BNC number from the Physical Outputs pane on the left of the screen.
2. Select an Aux Bus number from the Logical Aux Bus pane on the right to assign it to the physical output BNC connector.
3. Touch the Logical Aux Bus Name data pad to bring up the alphanumeric keypad. Enter the desired name of the Aux Bus and touch **Enter**. The name of the Logical Aux Bus should appear in the assigned physical output box.
4. Continue to name and assign each Aux Bus you wish to use to a physical output.

Once the Aux Bus physical assignments are made, you will need to delegate each Aux Bus to the **Aux 1 – 9** buttons on the PVW / AUX delegation subpanel. This is done in the Aux Deleg Mapping menu (accessed by



touching **Daily Setups, User Prefs, Aux Deleg Mapping**). Refer to the *Zodiak User Manual* in the User Prefs section for configuration instructions.

Figure 74. Output Mapping Menu



## Defining Aux Pairs

Physical Aux Buses can also be configured as Aux Pairs in the Outputs menu. Aux Pairs are two physical Aux Buses that have been configured to send a video and associated key signal to an external device, such as a DPM, usually for an effects send effect. Pairing of the video and key signal to be used on the Aux bus is defined in the Sources menu as explained earlier. The Aux Pair can be defined in the Outputs menu and also be named and configured for shaping or unshaping.

Aux Buses 1 and 2, 3 and 4, 6 and 7, 8 and 9, 10 and 11 (3-M/E only), 12 and 13 (3-M/E only) can be paired. Note that Aux Bus 5 cannot be paired with any other Aux Bus. In a 2.5-M/E switcher, only two pairs (6 and 7, 8 and 9) will have effects send capability. In a 3-M/E switcher, there will be four effects send pairs (6 and 7, 8 and 9, 10 and 11, 12 and 13). Effects send capability will be active in a later software release.

To define an Aux Pair, do the following:

1. Select a physical Aux Bus that can be paired (1 or 2, 3 or 4, 6 or 7, 8 or 9 and 10 or 11, 12 or 13) from the Physical Outputs list.

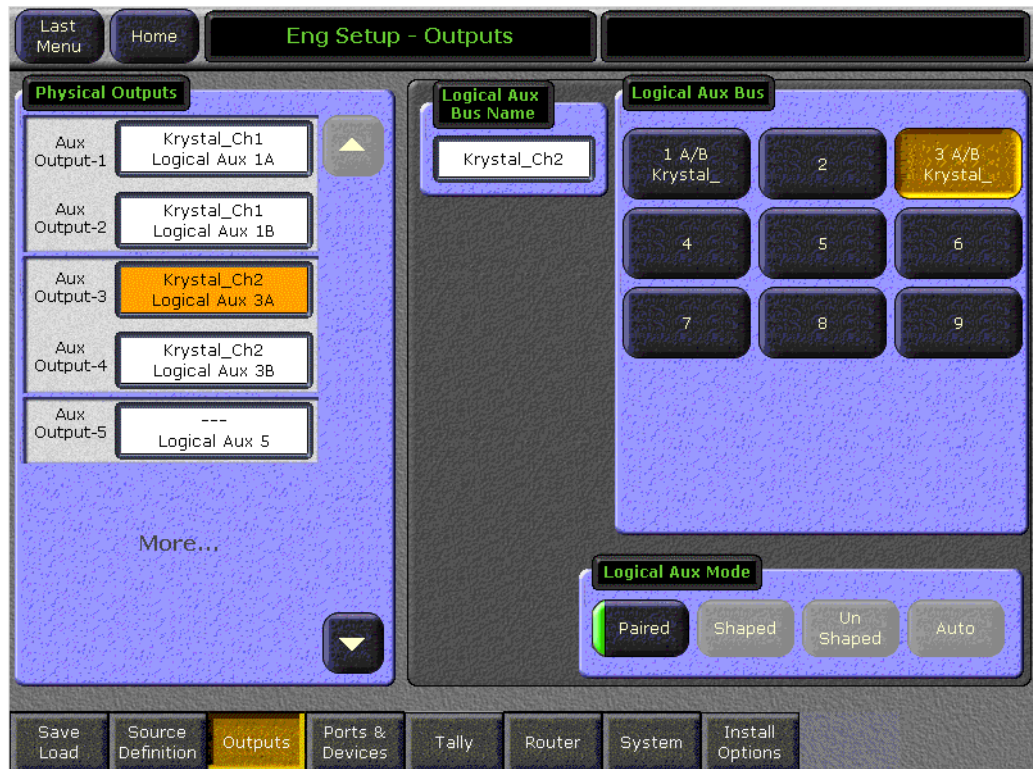
2. Select an Aux Bus from the Logical Aux Bus pane on the right and name it using the Logical Aux Bus Name data pad.
3. In the Logical Aux Mode pane at the lower right, touch the **Paired** button. This will create an Aux Pair with the adjacent Aux Bus.

The **Shaped**, **UnShaped** and **Auto** buttons are used with the effects send function and are not active at this time.

In the example shown in [Figure 75](#), Logical Aux Bus 1 has been assigned to physical Aux Bus 1 and paired with physical Aux Bus 2. This is indicated by the gray area around the two buses changing to show they are grouped. The Aux Bus name also shows the pair as DPMCh1 Logical Aux 1A and DPMCh1 Logical Aux 1B.

The Aux 1A signal is always a video signal. The Aux 1B can be defined as either video or key. This is done in the Aux Bus menu, outside of Eng Setup. To access this menu touch **Aux Bus** from the Home menu. This menu is described in detail in the Zodiac User Manual.

Figure 75. Aux Pair Example

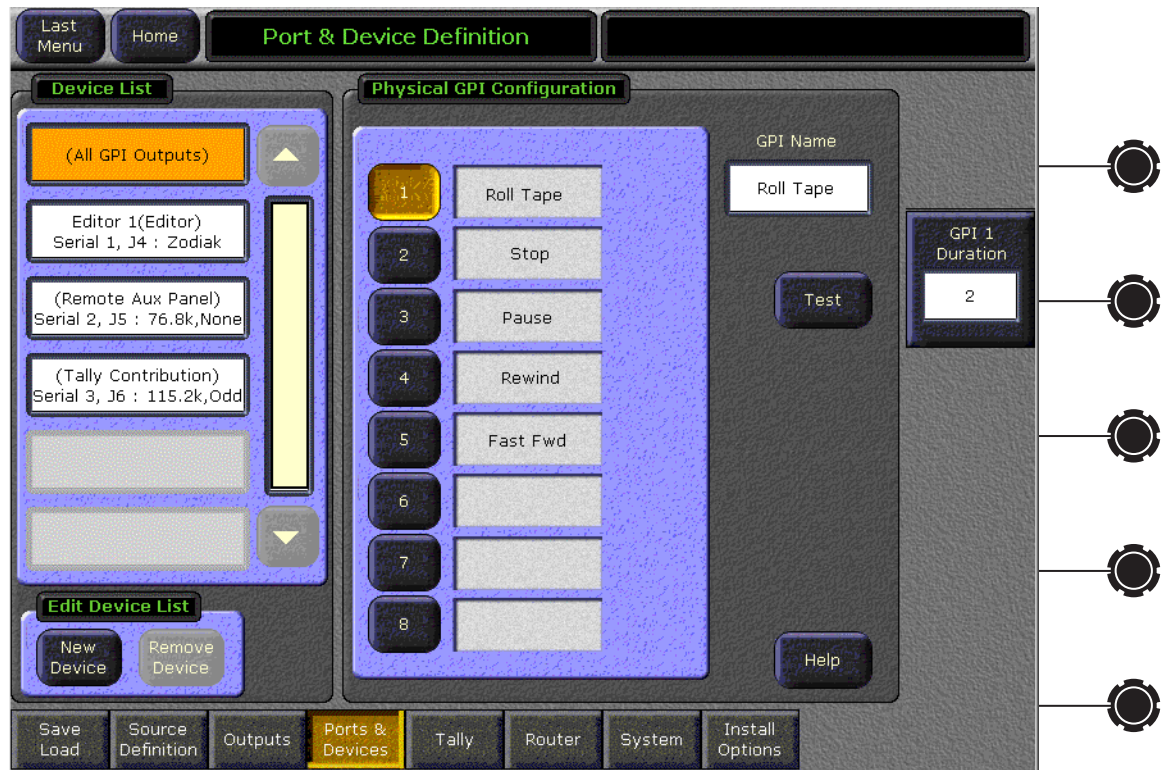


## Ports & Devices Menu

The Eng Setup Ports and Devices menu is used to configure external devices such as DDRs, VTRs, editors, 24-Crosspoint Remote Aux panel options, Tally contribution devices, Krystal and GVeous DPMs, GPI devices and Peripheral Bus II (PBus2) devices.

The external interfaces for each type of device are described in detail in [Appendix C-External Interfaces](#) at the end of this manual.

Figure 76. Eng Setup – Ports & Devices Menu



## Remote Aux Panel Configuration

After the optional Remote Aux panels are installed, powered up, and set to different addresses, they need to be configured to the Zodiac system.

The following steps are involved.

- Identify and name the Remote Aux panels in Engineering Setup,
- Map sources to Remote Aux panel buttons in Daily Setups, and on multiple destination 32-Crosspoint Remote Aux panels map the Aux buses to be controlled by the delegation buttons on each panel.
- Program joystick overrides, if appropriate.

### Identify Remote Aux Panels

The Eng Setup System menu is used to identify the type of Remote Aux panel and its name and IP or Serial device address. This menu is reached by touching **Eng Setup, System, Aux Panel, Add Panel** (Figure 77).

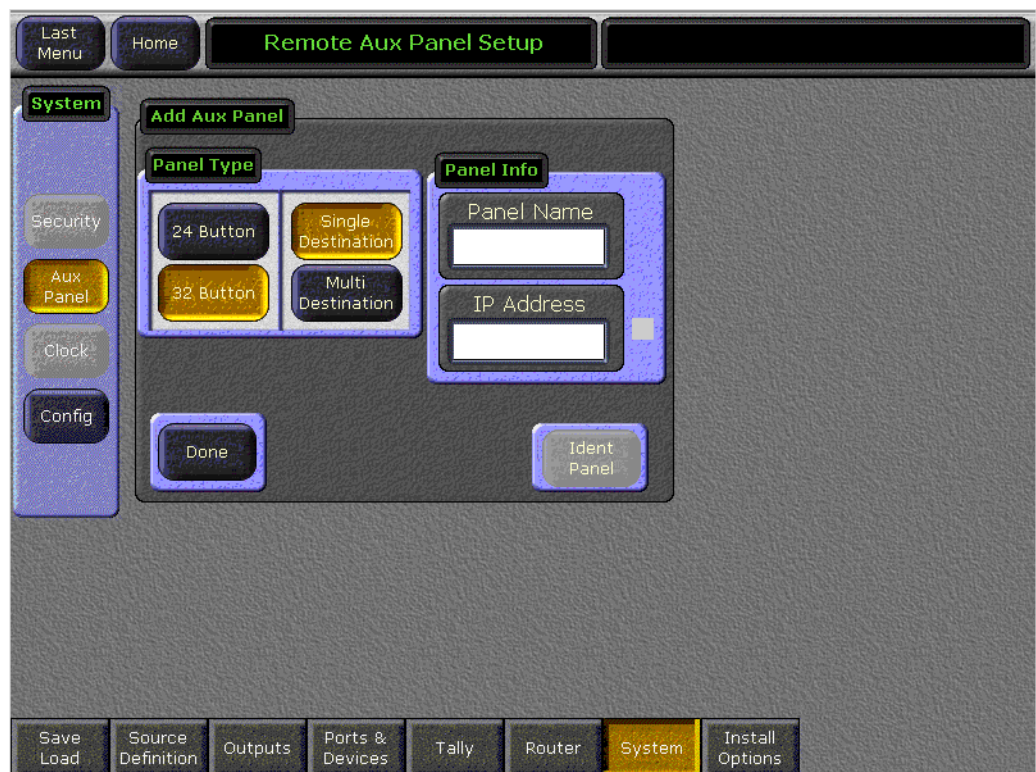
Figure 77. Eng Setup – System Menu – Aux Panels



1. Touch the type of panel in the Panel Type pad (24 or 32 Button, Single or Multi Destination) as shown in Figure 78.
2. In the Panel Info pad, touch the Panel Name data pad and bring up the alphanumeric keypad to give the panel an easily recognized name.

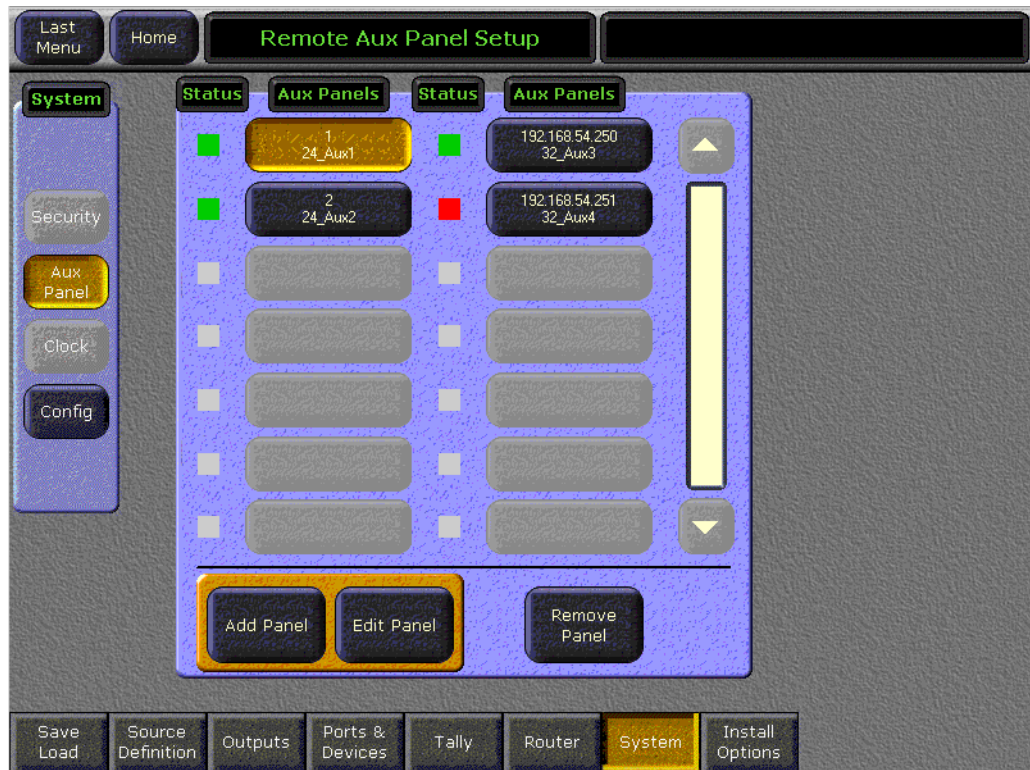
3. Enter the address of the panel. depending on the type selected as detailed below:
  - If a 24-Crosspoint panel, touch the **Panel ID** data pad (not shown) enter the Panel ID number set with the DIP switches on the Remote Aux panel.
  - If a 32-Crosspoint panel, touch the **IP Address** data pad (Figure 78) and enter the IP address of the Remote Aux panel being configured. Refer to [Setting 32-Crosspoint Remote Aux Panel IP Address on page 101](#) for information on determining and setting IP addresses.
4. Touch the **Done** button.
5. Repeat this procedure with all the Remote Aux panels to be used with your Zodiac system.

Figure 78. Add Aux Panel Menu



When you have completed all of the Remote Panel assignments, the menu will list all panels you have created as shown in [Figure 79](#).

Figure 79. Eng Setup – System – Aux Panels Assigned



**Note** 24-Crosspoint Remote Aux panels must also be defined in the Ports & Devices menu and assigned to a serial port. Refer to [Appendix C-External Interfaces](#) at the end of this manual for complete details.

## Remote Aux Panel Button Mapping

After a Remote Aux panel has been identified it will be available for button mapping.

- The Button Mapping menu (accessed by touching **Daily Setups, User Prefs, Button Mapping**) is used to map the sources associated with each source selection button. This menu is also used to program joystick override operation (see [Joystick Override](#)).
- For multi-destination panels, the Aux Deleg Mapping menu (accessed by touching **Daily Setups, User Prefs, Aux Deleg Mapping**) is used to map the aux buses to delegation buttons.

Refer to the separate *Zodiak User Manual* for specific button mapping instructions. Mapped buttons can also be labeled, using film inserts (see [Button Labeling on page 145](#)).

## Joystick Override

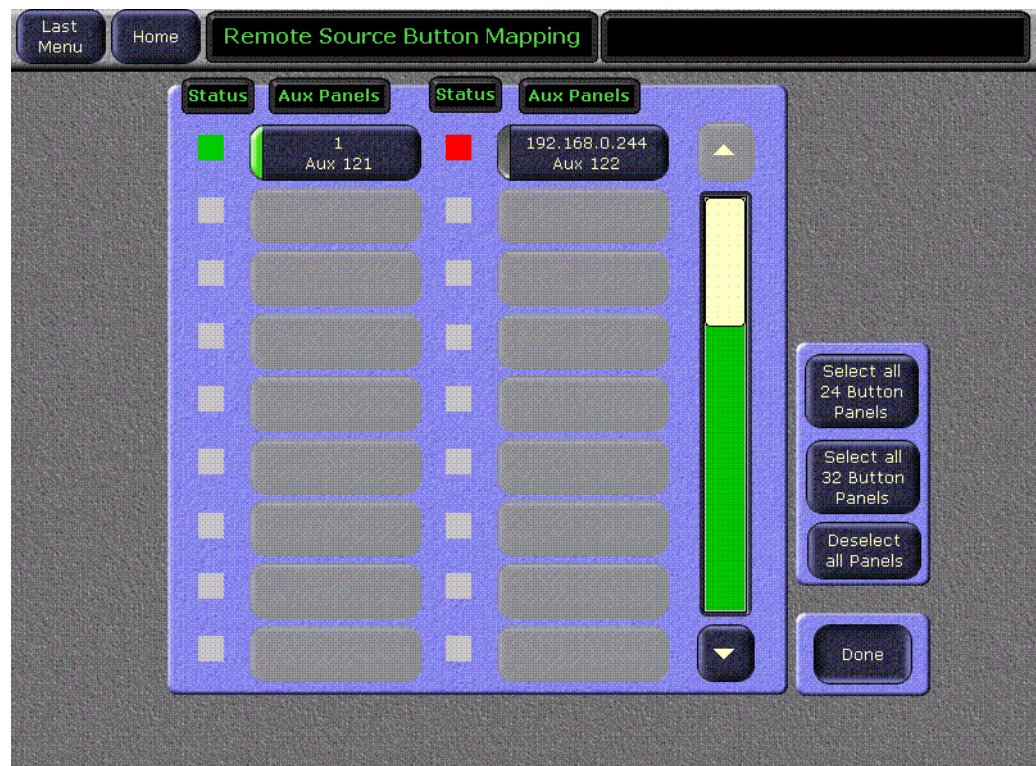
Camera joystick override allows the Aux bus to be momentarily switched to a camera for shading, then switched back to what ever source was previously selected, typically Program. Contact closures in the camera shading panels are wired to the joystick override connector on the Remote Aux panel (see [Joystick Override on page 49](#)). Remote Aux panel joystick override is programmed using the Button Mapping menu. Joystick override selections are available at the bottom of the scrolling button mapping list.

1. Select the Remote Aux panel to be programmed by touching the **Remote Panels** data pad, and then selecting the remote Aux panel from the list ([Figure 80](#)). The red Status box indicates the Remote Aux panel is not communicating with the Zodiac. If communication is taking place, the Status box will be green.

After selection you will be returned to the Button Mapping menu ([Figure 81 on page 120](#)).

**Note** Remote Aux Panels need to be configured (Panel ID or IP Address set) before joystick override can be programmed.

Figure 80. Remote Aux Panel Selection



2. In the center pane of the Button Mapping menu ([Figure 81](#)), scroll to the end of the list and touch the button for the joystick override contact pin to be programmed (**JS01 – JS014** for a 32-Crosspoint panel, **JS01 – JS08** for a 24-Crosspoint panel).

Figure 81. Button Selection for Joystick Override



3. In the right Sources pane touch the button for the camera source associated with the camera shader wired to that contact pin.
4. Repeat for all the joystick override contacts to be programmed.



## Tally Configuration

The Tally menus are used to configure the tally system. There are multiple tally calculators, three different tally calculation methods, and user assignment of tally relays. The results of the tally calculators are applied to the tally relays in the Video Frame, and those relays can control external tally lights. The menu set also allows the user to map Engineering sources to the tally relays. Each Video Frame provides 32 tally relay outputs, which are recalculated and refreshed every field.

### About Tally Systems

In general, a tally system identifies which sources to the switcher contribute to the final picture at a selected point in the video chain. The identification is communicated by activating relays in the video frame. The method by which the sources are determined is called the tally calculation.

The tally calculation begins at a point in the video path and then traces the path of the video signals upstream to their original video (and key) sources. The state of the switcher affects tally. For example, tally on a true clean feed only includes sources that contribute to the main output, but tally on a programmable clean feed can include sources that do not contribute to the main output.

When configuring a tally calculation, the user chooses the starting video path point (called a tributary) to trace back to its origin. The main On Air tally video output point is Pgm-Pst PGM A, but Pgm-Pst PGM B, Pgm-Pst C, and Pgm-Pst D are included in case these alternate programmable clean feed outputs have keys (or utility buses) that don't contribute to the PGM A output.

The On Air tally calculations are essential for switcher operation. (One calculator is reserved for On Air.) This tally calculation forms the basis for On Air indication (panel, camera tally lights, etc.), and other functions such as external device Auto Start, Off Air Advance, or router protections. On Air tally calculations normally start at the Pgm-Pst PGM A-D outputs.

User tally calculations can be used for purposes other than On Air tally. These tally calculations still trace the video path up stream from the specified points in the video path, but the starting point does not necessarily have to be a program output. For example, a Look Ahead tally begins at the Pgm-Pst Look Ahead Preview (LAP). When a transition is not in progress this virtual output is not on air.

The Output tally calculator indicates which sources contribute to designated outputs. For example, a M/E ISO tally is a user configured Output tally set up to begin at an M/E's PGM A, B, C and D. The tally would indicate what contributes to the M/E's program outputs but not anything down stream of it. The tally would be the same whether or not the M/E was On Air.

The Look Ahead tally calculator indicates which sources will be on air if a main transition is performed on the selected level. One way this can be used is for a second set of tally lamps on a camera to alert the camera operator that his camera is next to be taken on air. Many control room monitor walls also include a secondary tally indicator for Look Ahead. Look Ahead tributaries do not necessarily leave the switcher as video signals.

You can use more than one starting point for tally calculations. Programmable clean feed allows the exclusion of video signals from the main output (PGM A) that appear on the other program output (PGM B). To include both program outputs in the tally calculation use both as calculation starting points to tally all the On Air sources.

The Bus Selection tally calculator indicates which sources are selected on a specified set of switcher buses. The tally calculator using this method does not trace tributaries upstream; it only tells what sources contribute to the specified bus(es), even if the source is an M/E. For example, a Bus Selection tally calculation could be set up to indicate which source is selected on the Pgm-Pst A bus, permitting audio-follow-video selections to be run by the tally system.

## Tally Calculation Definition Menu

The Tally Calculation Definition menu is used to select calculators, methods, and levels, name User calculators, assign outputs to Tributaries, and turn the User calculators on and off. Touch **Eng Setup, Tally, Tally Calcs,**

(the Tally Calcs button is in the Function pane) to access the menu (Figure 82).

Figure 82. Tally Summary Menu



The Zodiak tally calculator may use a method other than Output On Air to compose its list of tallied sources. There are 3 tally calculation Methods or types; Output, Look Ahead, and Bus Selection.

Zodiak has five independently running tally calculators. For example, the system can calculate On Air tally, Look Ahead tally, and M/E output tallies for three M/Es at the same time. The first of the five tally calculators is reserved for On Air tally calculation.

Up to four tributaries can be included as the basis for each tally calculation. For example, both program outputs of the Pgm-Pst bank are typically included in the On Air tally calculation. The final tally source list is a union of the sources found on each of the four tributaries. If aux buses are actually used as the program outputs of the switcher, up to four aux buses can be the basis of On Air tally calculations.

Tally calculations do not require actual outputs. For example, LAP tributaries are virtual and may never leave the M/E.

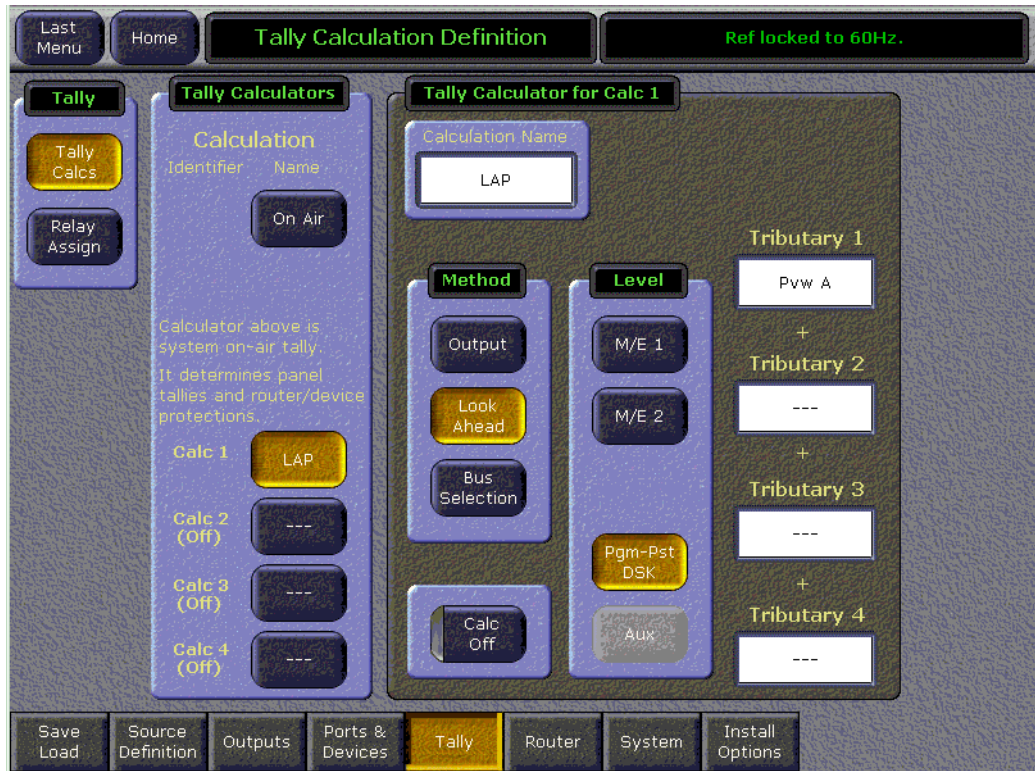
In the Tally Calculators pane, there are five available Tally Calculators. When one of the Tally Calculators is selected, then the pane to the right del-

egates to the selected calculator and shows the calculation Method, Level, and Tributaries.

The Calculation Name data box pops up the alphanumeric keyboard so that a User Button can be given a meaningful name. In this example, names have been entered for User 1, User 2 and User 3. The first tally calculator has a fixed name so the Calculation Name data box is grayed out, and the calculation name is automatically set to **On Air**. Since the On Air Calculator is restricted, the buttons for the other methods are disabled. Also, the On Air system tally is always on and can not be shut off.

A different setup is shown in [Figure 83](#). The calculator is User defined with a Look Ahead Method selected, the level is Pgm-Pst, and it uses two look-ahead preview buses as tributaries.

Figure 83. Tally Summary LAP Menu



The Method pane has three button choices so you can select between **Output**, **Look Ahead**, and **Bus Selection**. **Calc Off** is a toggling button with a red LED. If **Calc Off** is activated, the tally calculator is shut off, and (Off), is printed under User # in the Tally Calculations pane, as shown under User 3 in this example. Calculations for On Air Tally can not be shut off. When the calculation method is on, the (Off) annunciator disappears.

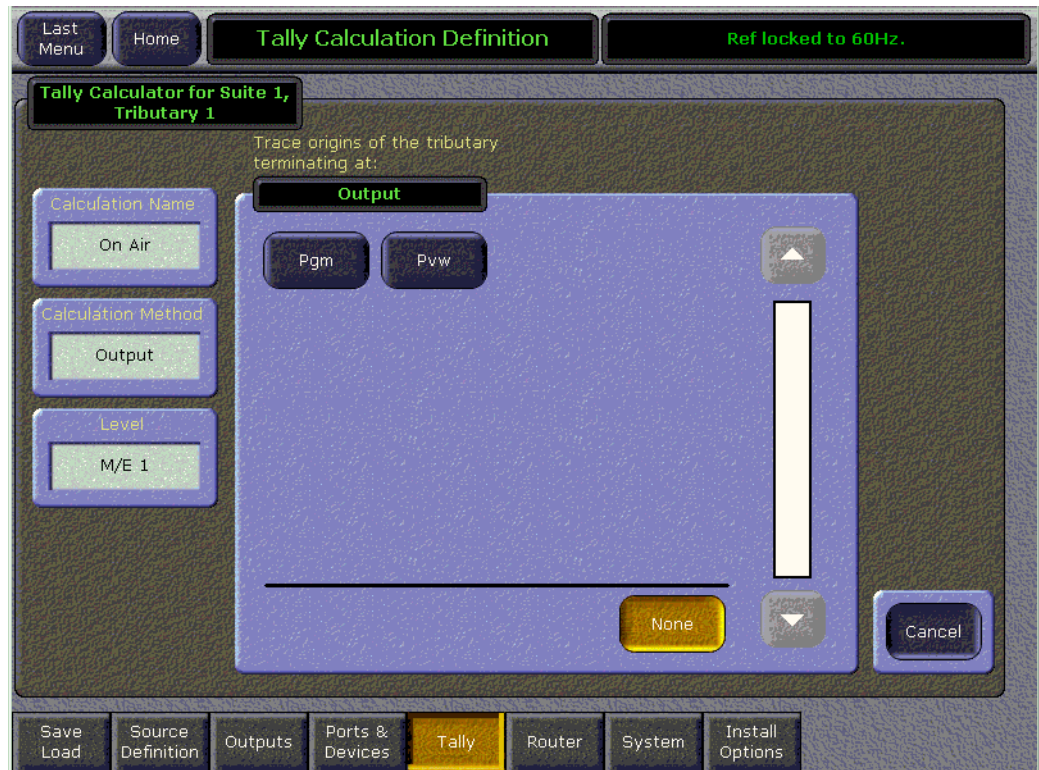
There are four Tributaries available for each tally calculator. There are plus (+) signs between each of the Tributaries to indicate they all sum (or logically OR) together to form a union of sources. Each tributary has a data box

showing the output through which the tributary is traced upstream to its source. If a tributary has not been defined or has been cleared the data box displays ---.

The Tributaries for a given Tally Calculator must all terminate in the same M/E or Aux system.

The Tributary data boxes, when touched, pop up a picker menu as shown in [Figure 84](#).

Figure 84. Tally Out Popup Menu

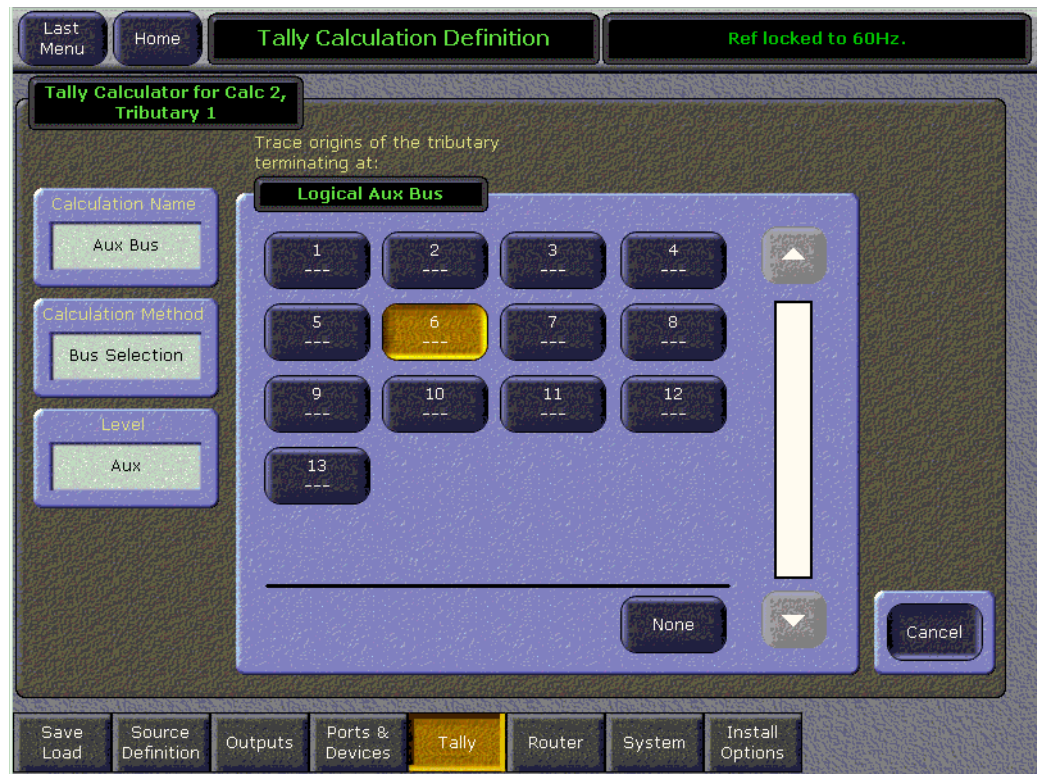


The title to the popup pane shows the calculator identifier and the Tributary number. For reference, the Calculation Name, Calculation Method, and Level are shown in non-editable data boxes.

The starting point for the tally calculation is selected in the picker pane, titled Output, when the switcher outputs are listed. This illustration shows two outputs on Zodiac for an M/E.

If the Method is Bus Selection and the Level is Aux, the pane in [Figure 85](#) would appear.

Figure 85. Tally Aux Popup Menu

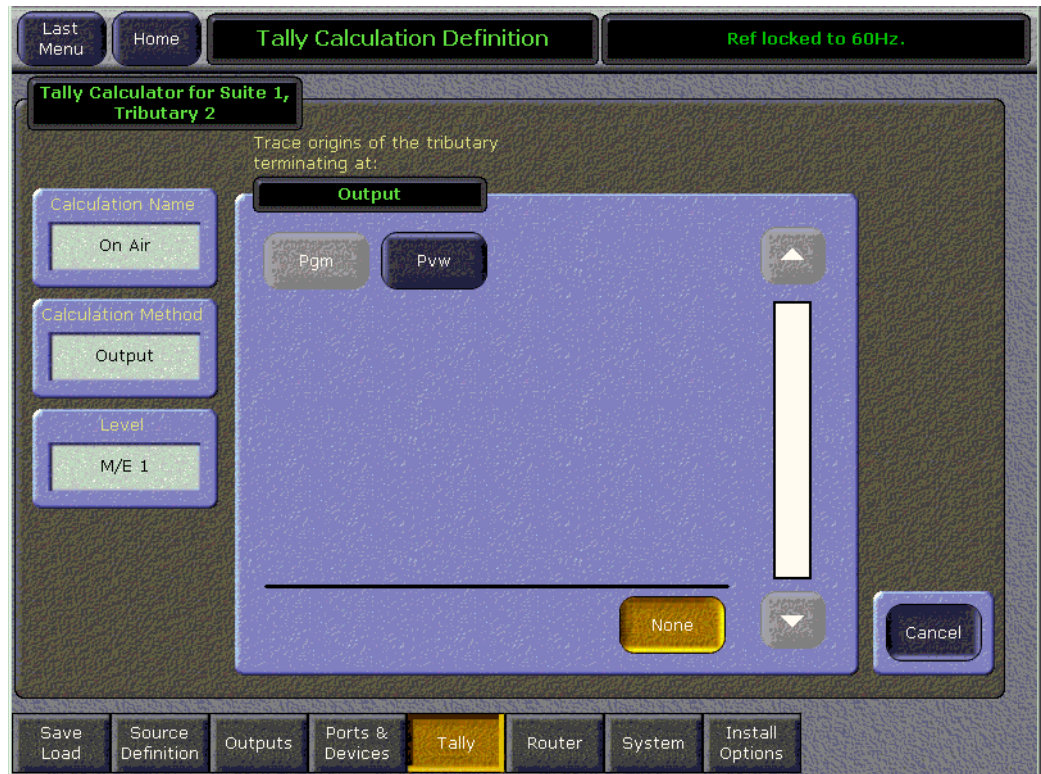


The scroll bar appears when there are more logical aux bus buttons than can fit on a single pane.

When the popup is entered for a tributary that has no assignment, the **None** button is shown lit. If the popup is entered where there is already a tributary assignment, the assigned output button is shown lit. Pressing any button in the picker selects that output and exits the popup. Pressing the **None** button in the source or aux picker clears the tributary, setting it to --- and exits the popup. Pressing the **Cancel** button exits the menu without changing the tributary assignment.

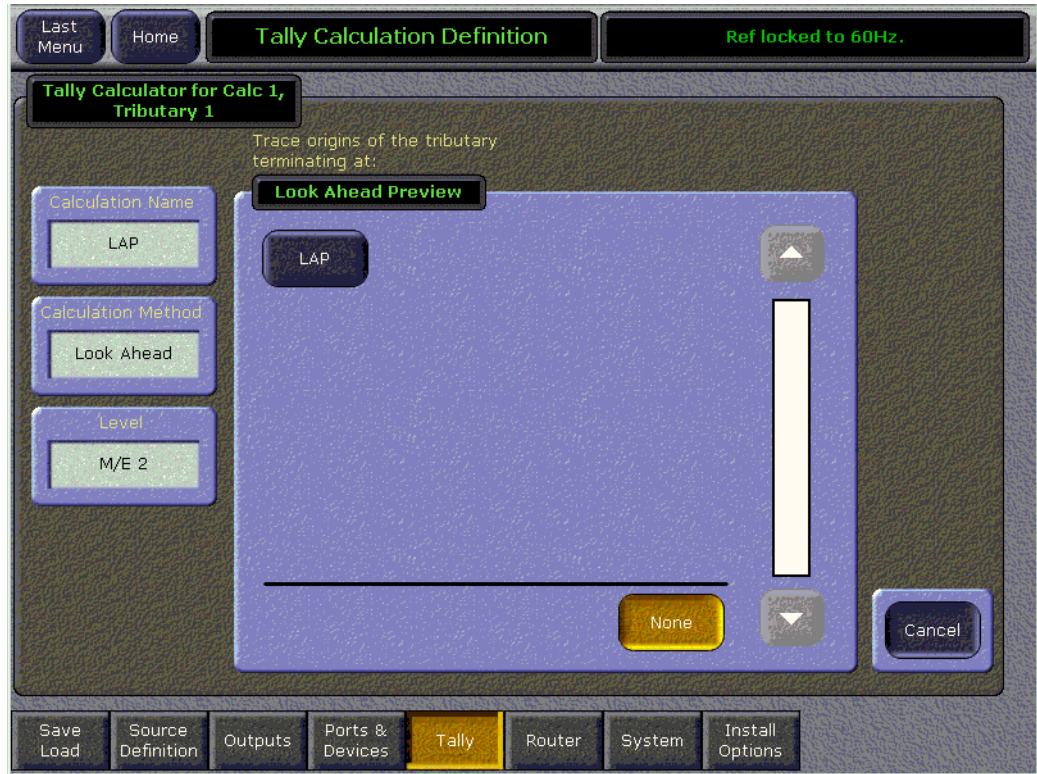
After a tributary choice has been assigned, subsequent pop-ups gray out the already selected choice(s). This is shown in Figure 86. In this example, Tributary 1 was Pgm A, so in the popup for Tributary 2, Pgm A is grayed out.

Figure 86. TallyPopupTrib2 Menu



If the Calculation Method is Look Ahead, Aux is grayed out in the Level pane, because there is no look ahead point on an aux bus. Then when a Tributary data box is touched, the following popup in [Figure 87](#) appears. The available point in the video chain for look-ahead preview is called LAP.

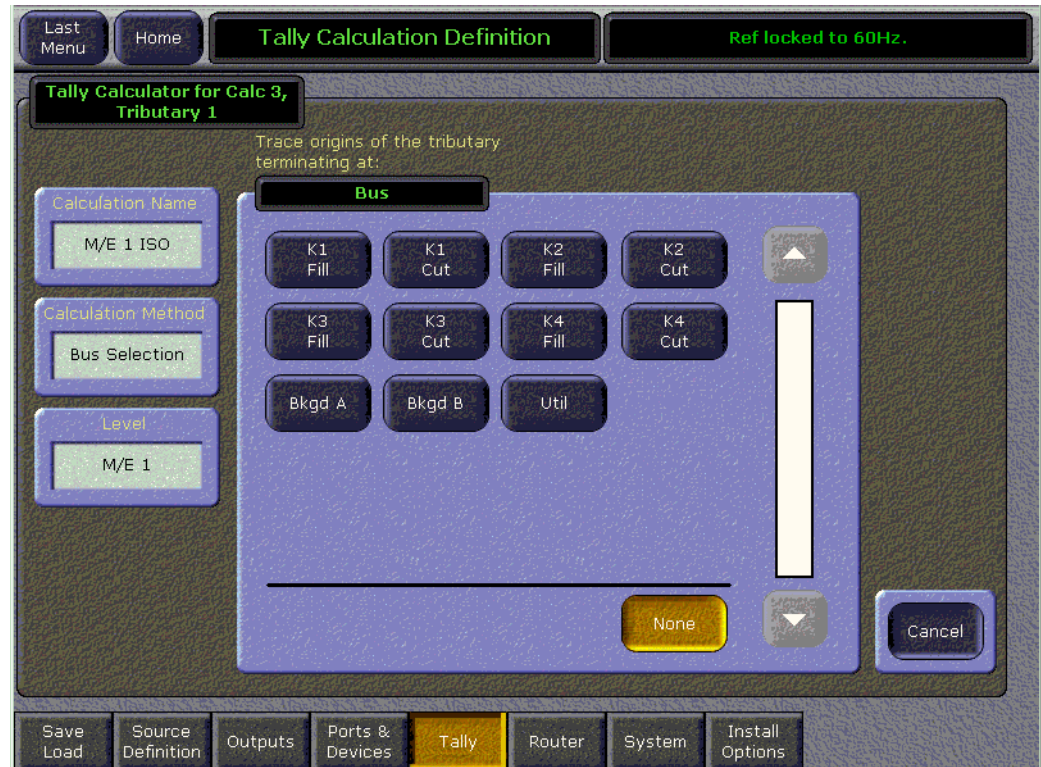
Figure 87. Tally LAP Popup Menu





If the Calculation Method is Bus Selection, and if the Level is M/E 1, M/E 2, M/E 3, or Pgm-Pst, and the user touches a Tributary data box, the following popup in [Figure 88](#) appears. All the input buses in the M/E are shown, and the key buses are shown as separate Fill (video) and Cut (key) buses.

Figure 88. Tally Bus Popup Menu



## Tally Relays

There is one group of 32 Tally relays. The group can be associated with any combination of the five tally calculations, and each relay in the group can be associated with a different source. For example, the relays could be configured for On Air tally with the first relay tallying source 14, the second tallying source 47, etc.

Combining tally calculations when configuring tally relay groups can often minimize external wiring and conserve relays. For example, if an aux bus feeds the record input to a replay device, a user tally calculation can be set up for output tally of that aux bus and combined with the On Air tally calculation. This permits Auto Start, etc. to function normally, but the On Air relay closures will include the source feeding the replay recorder.

## Assignment of Tally Relays to Sources:

Touch **Eng Setup, Tally, Relay Assign** (the Relay Assign button is in the Function pane) to access the Tally Relay Assignments menu (Figure 89).

Figure 89. Tally Relay Assign Menu



The default tally calculator is the On Air calculator, and for the standard 32 relays to tally the first 32 sources (1-32).

In the Tally Relay Source Assignment menu is a selector for the Calculator, a Relay list, and a Sources list. In addition, there are Quick Assign buttons and a Test Relay control.

Touch the Tally Calculator to be assigned to the relay group. All buttons toggle on and off independently, so you can select more than one calculator to be applied to the relay group. The text in the buttons is formatted such that the upper line shows the Calculator Identification and the bottom line shows the Calculator Name.

Touch a numbered Relay button from the list, and then assign a Source to that Relay from the list of Sources. The Source button displays the Engineering ID, and the user defined Engineering name (if an Engineering name has been entered in the Source Definition menu). Tally relays map to Engineering Sources, not Logical Sources, to ensure tally is consistent regardless of source patching. The Source name will display in the non-editable data box next to the Relay. Relays already assigned will automati-

cally show their assigned Source. If a relay is unassigned or the **None** button is selected for that Relay, --- is displayed.

The four **Quick Assign** buttons will assign the 32 relays in the group respectively to sources 1-32, 33-64, 65-96, or 97-128.

**CAUTION** When a Quick Assign button is pressed it will immediately assign the relays. To reassign the relays requires each button to be individually selected and reassigned one at a time.

The Test Relay button when toggled On causes the selected relay to flash on and off at a rate of 1 Hz as an aid in setup and troubleshooting. The test flash mode persists as long as the **Test Relay** button is on and is automatically shut off when the Tally menu is exited.

## Install Options

The Eng Setup – Install Options menu (Figure 90) is used to enter an authorization code for enabling software options that have been purchased after switcher delivery or are being tried on a temporary basis. This menu is reached by touching the **Install Options** category selection button on any Eng Install Options

Customers who have purchased options should have received an authorization code for those options. This code needs to be entered on the specific Zodiac system for which the code was generated to enable the options.

The Install Options menu has changed in appearance, see Figure 90.

Figure 90. Install Options Menu

The screenshot shows the 'Install Options' menu with the following components:

- Current Auth Code for Perm:** 17M5-6VCS-Y3P1-BEU2-V4VH
- New Auth Code for Perm:** (Empty field)
- Option Summary Table:**

Option	Enabled	Perm	Temp 1	Temp 2	Temp 3	Temp 4	New
Transform Engines	Yes	Yes					
M/E 1,2							
Transform Engines	Yes	Yes					
M/E 3							
# Chroma Keyers	12	12					
RGB Color Corrector	Yes	Yes					
NetCentral/SNMP	Yes	Yes					
AMP Protocol	---	---					
KlipCache	Yes	Yes					
Beta Software OK	Yes	Yes					
Newest S/W Version							
- System ID:** 1M204
- Start Date:** 22 Mar 05
- End Date:** (Empty)
- Maintenance Contract:** is Valid through 22 Mar 05
- With new code, Maintenance Contract:** valid through (Empty)

The Authorization Code carries with it the configuration of options you have purchased. When you enter an authorization code, those optional features are automatically enabled in software.

The System ID for your switcher is shown in the Option Summary. The authorization code you receive uses the switcher's System ID as part of its encryption and is unique to the switcher you own. Therefore, an authorization code for one switcher will not work on another switcher.

Permanent vs. Temporary Auth Codes and feature configurations: Permanent has no time limit; temporary does. The temporary or permanent status

of the authorization is encrypted into the Auth Code. Typically, a temporary Auth Code would be issued to a customer who wishes to evaluate a certain feature for a limited amount of time. The menu has room for four sets of temporary Auth Codes, and the features enabled by them combine with the Permanent features and the other Temporary features as a union.

The Option Group pane delegates the Current Auth Code data box and New Auth Code data box to the selected Auth Code Group. In addition, the enabled features are highlighted in the Option Summary table by means of a yellow background.

## To enter a new Auth Code

1. Touch the **New Auth Code for (Perm/Temp)** data box.
2. In the popup keyboard, carefully enter the authorization code. When the keyboard popup is dismissed, the results of the new Auth Code, i.e. the enabled options, appear in the New column.
3. Touch a Option Group button.
 

If the entered Auth Code is temporary, you may select any of the Temp Option Groups to install the new Auth Code.

If the Auth Code is permanent, it can be installed in the Perm Option Group only.
4. Touch the **Replace** or **Install** button to install the new code. The feature set will move from the New column to the column you selected, and installation is complete.

**Note** Note You must login as the EIC before you can enter an authorization code.

5. Check Option Operation. Authorizations can be checked by touching **Eng Setup, Install Options**. In particular, check that the correct number of Chroma Keys are enabled. Contact Grass Valley Group Customer Service if you have any problems with your authorization code.

## Save Load Menu

After defining the Eng Setups, you should save these changes to disk using the Eng Setups Save Load menu (Figure 91). This menu is reached by touching the **Save Load** category selection button on any Engineering menu. Touch **Up** to reach the top level and see the available disk locations. You may save this to the local hard drive (C) or a Zip disk. Also saving to Zip disk is highly recommended so the configuration is available in the unlikely event that a system hard drive failure should occur.

In the Save Engineering Setup pane, touch the File Name data pad and name the file with the alphanumeric keypad. Touch the **Save** button to save the file to the hard drive you have chosen or the Zip drive.

Refer to the *Zodiak User Manual* for more details on saving files.

Figure 91. Engineering Setup Save-Load Menu



# Daily Setups

Daily Setups are available to operators as well as facility engineers. These settings may need to be changed on a session by session basis. The Zodiac system supports Suite Preferences and User Preferences.

The engineer in charge of a Zodiac system may wish to create and save a standard set of Suite and User Preferences onto disk so the system can be easily restored to a known state. This can be accomplished using Zodiac Profiles (not to be confused with a Profile VDR) and the Daily Setups Disk menu. In particular, the following items will help you restore the system to a known state for troubleshooting and testing.

## Suite Preferences (Suite Profile)

- E-MEM Level Grouping,
- Default Keyframe,
- Video Settings, and
- Source Memory.

## User Preferences (User Profile)

- Button Mapping,
- Aux Delegation Mapping,
- Clip Hi–Lo Prefs, and
- Shift Prefs.

Refer to the separate Zodiac *User Manual* for information about Daily Setup configuration.

## Other Configuration Settings

### DSK Clean Feed

The PGM A and PGM B outputs of the switcher can be configured to allow any of the three downstream keys (DSK 1, 2 and 3) to appear (or not appear — clean feed) on the outputs of the switcher. This is done in the DSK menu.

From the Home menu, touch **DSK**. This will bring up the DSK Clean Feed menu shown in [Figure 92](#). Select the keys you wish to appear on the Program Out A and Program Out B signals. Touch the corresponding Keyer to enable it. Any combination is selectable. In the example shown, the Program Out A has all three downstream keyers enabled, and the Program Out B has been configured with no downstream keyers (clean feed).

Figure 92. DSK Clean Feed Menu





# Panel Adjustments

Calibration procedures exist for the Main panel lever arms and joystick and the Menu panel touch screen. It is recommended to run the Menu panel touch screen calibration procedure given below when the switcher is installed. If you experience problems with the lever arms or joystick at installation or during operation, refer to the calibration procedure in [Lever Arm and Joystick Calibration on page 200](#).

## Menu Panel Touch Screen Calibration

### Touch Screen Calibration

The Menu panel display is aligned using a software tool provided by the display manufacturer using standard Windows procedures.

To calibrate the Menu panel display, press **My Computer\Control Panel\Pointer Devices**.

Press the **Calibration** tab and then press the **Calibrate** button. Follow the instructions displayed on the screen, and when done touch **OK**.

### Display Settings

The Windows **Display** settings have been set to factory defaults as follows:

- **Screen Area:** 800 × 600 pixels
- **Colors:** High Color (16 bit)
- **Display Type:** Default Monitor

### Refresh Frequency Adjustment

To adjust the refresh frequency:

1. Open **My Computer\Control Panel\Display**.
2. Press the **Settings** tab and then press the **Advanced** button.
3. Press the **Monitor** tab and adjust the frequency rate. Refresh frequency should be set at 60 Hz or 75 Hz.



# *Maintenance*

## **Introduction**

This section provides routine maintenance information for servicing the Zodiac Digital Production Switcher, including the Video Processing frame, Control Surface components, and the Main panel and Video Processor frame power supplies.

## **Servicing Precautions**

Before performing any type of maintenance or troubleshooting of the Zodiac Digital Production Switcher, read the complete Safety Summary at the front of this manual. The Safety Summary describes all of the pertinent safety issues and recommended precautions for working with the Zodiac Digital Production Switcher.

## **Main Panel Maintenance**

The Main panel in the Zodiac Digital Production Switcher requires no routine maintenance.

### **Cleaning**

If the Main panel requires cleaning, use a damp (not wet) cloth. Do not spray anything directly on the panel surface.

### **Replacing Circuit Boards**

There are no user-serviceable circuit boards inside the Main panel. If the Crosspoint Switch board, M/E Switch board, or Control Panel Processor board ([Figure 3 on page 26](#)) needs repair, it should be removed and replaced. Follow the steps below to remove and replace circuit boards.

**WARNING** Shut off power to the Main panel when removing or replacing Main panel circuit boards.

## Crosspoint Switch Board

To remove and replace the Crosspoint Switch Board on the Main panel lid:

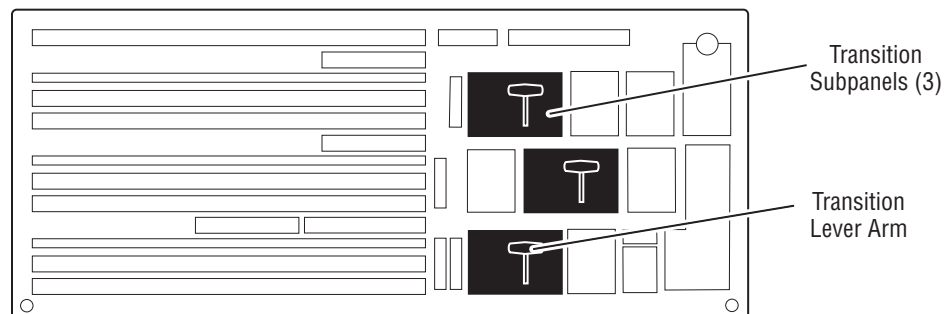
1. Turn off the power to the power supplies inside the Main panel tub (Figure 3 on page 26).
2. Remove the three screws securing the Control Panel Processor board's metal cover to the Main panel tub and remove the cover.
3. Disconnect the ribbon cable attached to the Control Panel Processor board by simultaneously pushing the cable connector's left and right ejector tabs outward and pulling the cable up and out of the connector.
4. Support the board as you remove the 20 screws that secure the Crosspoint Switch board to the Main panel lid. Carefully remove the board.
5. Install the replacement board by reversing Step 4 through Step 2 and turn the power back on to the Main panel.
6. Make sure you have not left any spare hardware or tools inside the panel and the replacement board is cabled correctly.
7. Test the new board for proper operation.

## M/E Switch Board

To remove and replace the M/E Switch board on the Main panel lid:

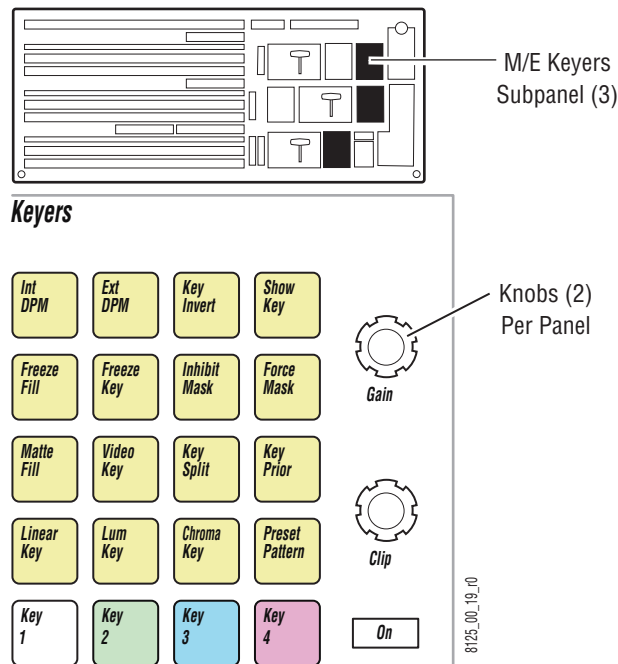
1. Turn off the power to the power supplies inside the Main panel tub (Figure 3 on page 26).
2. Using a 1/8 in. Hex wrench, remove the three Lever Arm handles on the Main panel Transition subpanels (Figure 93).

Figure 93. Main Panel Lever Arms



- Using your fingers, remove the six **Clip** and **Gain** knobs on the Main panel Keyer subpanels (Figure 94).

Figure 94. Main Panel Clip and Gain Knobs



- In order for the board to clear the tension spring that holds the Main panel open, the spring must be released. Using a 7/16 in. screwdriver, remove the 1/4 in. nut and washer on the right tension spring and lay the spring down inside the tub.
  - Remove the three screws securing the Control Panel Processor board's metal cover to the Main panel tub and remove the cover.
  - Disconnect the ribbon cable attached to the Control Panel Processor board by simultaneously pushing the cable connector's left and right ejector tabs outward and pulling the cable up and out of the connector.
  - Disconnect the Joystick cable attached to the M/E Switch board by pulling the Joystick cable connector down and out of the board connector.
- Note** The Joystick cable connector is clearly labeled on the bottom right of the M/E Switch board.
- Support the board as you remove the 20 screws that secure the M/E Switch board to the Main panel lid. Carefully remove the board.
  - Install the replacement board by reversing Step 8 through Step 2 and turn the power back on to the Main panel.

10. Make sure you have not left any spare hardware or tools inside the panel and the replacement board is cabled correctly.
11. Test the new board for proper operation.

## Control Panel Processor Board

To remove and replace the Control Panel Processor board inside the Main panel tub:

1. Turn off the power to the power supplies inside the Main panel tub (Figure 3 on page 26).
2. Disconnect all cables on the rear of the Main panel that are behind the Control Panel Processor board (Figure 16 on page 41).
3. Remove the front three screws securing the Control Panel Processor board's metal cover to the Main panel tub and remove the cover.
4. Disconnect the ribbon cables attached to the Crosspoint Switch board and M/E Switch board by simultaneously pushing the cable connector's left and right ejector tabs outward and pulling the cables up and out of the connectors.
5. Disconnect the connectors from the power supplies.
6. Remove the two screws on the middle of the board and retain.
7. Remove the two screws on the back wall of the metal enclosure and retain.
8. Carefully slide the board forward and out of the tub.
9. Install the replacement board by reversing Step 8 through Step 2 and turn the power back on to the Main panel.
10. Make sure you have not left any spare hardware or tools inside the panel and the replacement board is cabled correctly.
11. Test the new board for proper operation.

**Note** This board contains a Disk on Chip hard drive that stores the operating software and IP addresses for the Main panel. You may need to reset your IP addresses if you are not using the standard factory defaults and then reload the current version of software you are running to the Main panel.

## Power Supply Replacement

The Main panel has power supplies in the Main panel tub. The power supplies do not have user-serviceable fuses. The entire power supply must be removed and replaced if it fails. Follow the steps below to remove and replace a power supply.

To replace either power supply:

1. Turn off power to both power supplies in the Main panel ([Figure 3 on page 26](#)).
2. Disconnect the AC line cord on the rear of the Main panel ([Figure 16 on page 41](#)).
3. Disconnect the power supply connector that is attached to the side of the Control Panel Processor board.
4. Using your fingers or a flat blade screwdriver, remove the four captive screws securing the power supply to the tub.
5. Remove the power supply.
6. Install the replacement power supply by reversing [Step 5](#) through [Step 2](#) and turn the power back on to the Main panel.
7. Make sure you have not left any spare hardware or tools inside the panel and the replacement power supply is cabled correctly.

## Fuse Replacement

1. Check fuse status. LEDs located on the front of the Control Panel Processor board (Figure 135 on page 193) indicate fuse status. A red LED indicates that a fuse needs to be replaced.
2. To replace a fuse, power down the panel and remove the front three screws securing the Control Panel Processor board's metal cover, remove the enclosure, and replace the fuse.

**Note** A fuse rating is label is adjacent to each fuse.

3. Replace the metal cover and screws. Turn power back on to the panel. A green LED indicates that the fuse is working properly.

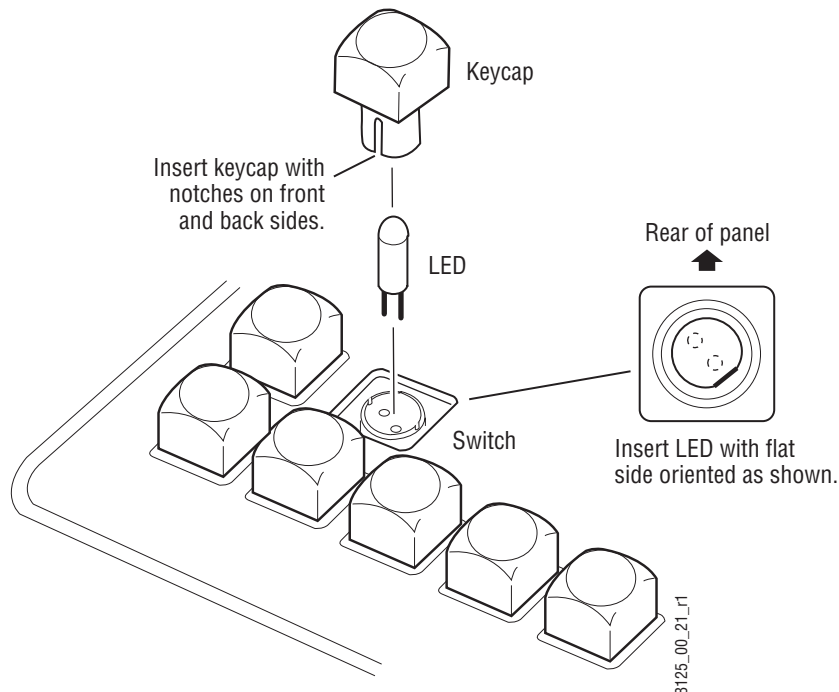
## Button LED Replacement

The large and small buttons on the Main panel use long-life Light Emitting Diodes (LEDs) which make lamp failure unlikely. If an LED fails to illuminate, it should be replaced.

To remove and install an LED:

1. Turn off the Main panel power supplies (Figure 3 on page 26).
2. Using your fingers or adjustable jaw pliers, pull the keycap up and out of the panel (Figure 95).

Figure 95. LED Replacement





3. Pull the LED out of the switch using needle nose pliers.
4. Carefully replace with a new LED. Align the pins in the switch as shown in [Figure 95](#).
5. Re-insert the keycap so the large notches are on the front and back sides of the switch.
6. Turn on the Main panel power supplies.

## Button Labeling

Many buttons on Zodiac system panels can be labeled by inserting film with printed legends (lens chips) under their keycap lenses. The Zodiac Main panel and the 24-Crosspoint Remote Aux panels are shipped with blank source selection buttons. The remaining control panel buttons have standard button legends. Custom legends can be printed onto transparency film using a laser printer, then cut to size.

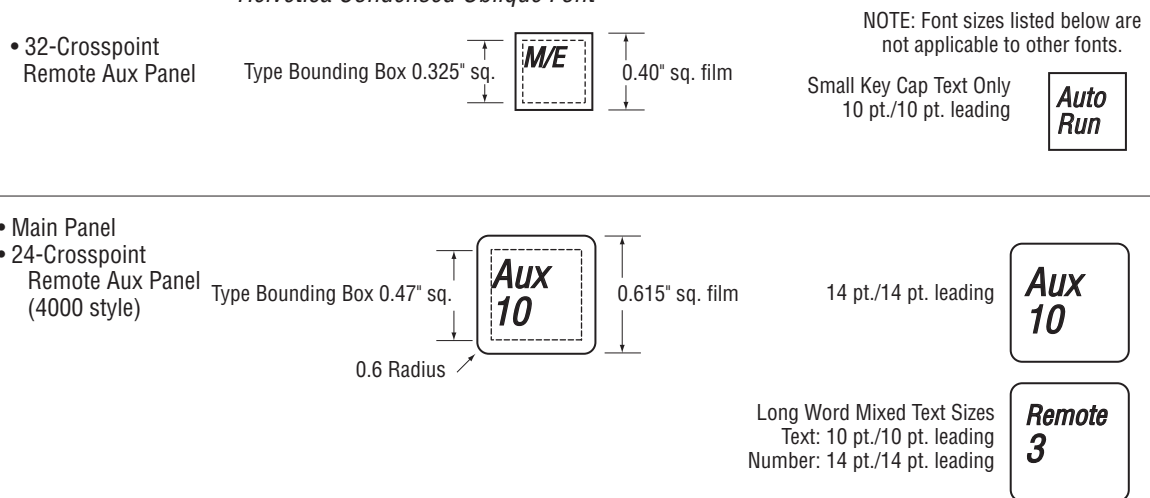
You may want to custom label the Source selection buttons on Remote Aux panels. Custom labeling may also be appropriate for the Remote Aux panel delegation buttons.

## Specifications

The following specifications ([Figure 96](#)) can be used to size the film label lens chips and match the look of the standard Zodiac system buttons.

Figure 96. Zodiac System Keycap Film Specifications

*Helvetica Condensed Oblique Font*



8125\_02\_0110

## Button Label Replacement

Different button designs are used on various Zodiac control surface panels. The following buttons have a design which provides for label replacement:

- Large buttons (used on Main and 24-Crosspoint Aux Panels), and
- 32-Crosspoint Aux Panel buttons.

A working button consists of a switch, an LED or lamp, and a removable keycap. A keycap, in turn, can consist of a base, diffuser, film label, and lens. The various button designs are similar, but their differences affect the procedures used when changing button labels.

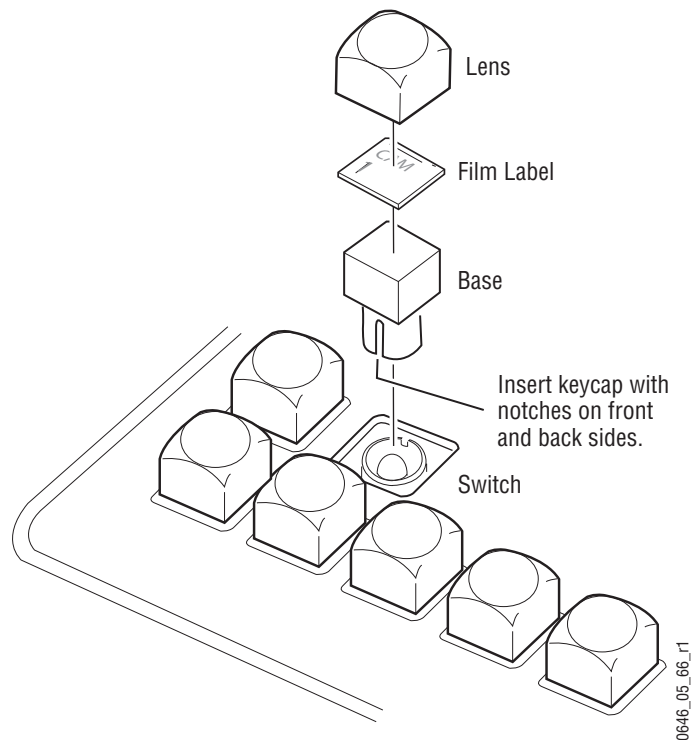
**Note** Use care when removing keycaps from a control panel. The keycaps have small parts inside that can fall out and possibly drop into inaccessible areas.

**Note** To prevent scratching button parts, wrap plier jaws with tape before use.

### Main and 24-Crosspoint Aux Panel Button Label Replacement

1. Pull the keycap out of the panel, using your fingers or adjustable jaw pliers (Figure 97).

Figure 97. Main and 24-Crosspoint Aux Panel Button Label Replacement



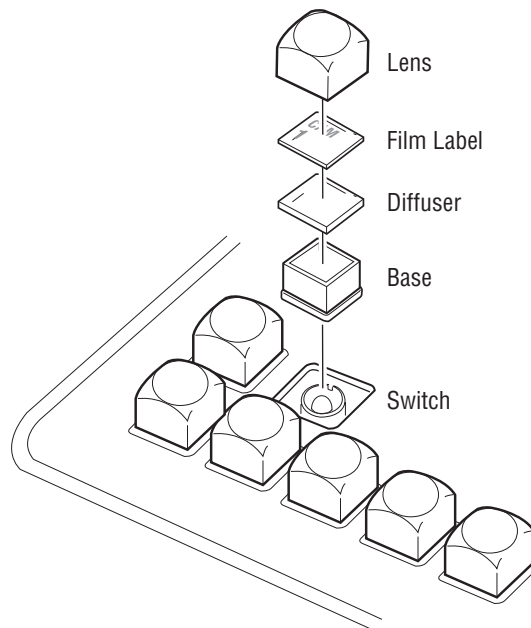
2. Using needle nose pliers, gently pull the keycap base out of the lens.

3. Extract any existing film from inside of the lens. If the parts are wedged inside, use sticky tape to remove them. Avoid using sharp tools that can scratch the lens material.
4. Insert the new film label into the lens, label first, and replace the lens on the base. Orient the label so the slots in the base are located on the front and back.
5. Re-insert the keycap so the button slots are on the front and back sides of the switch.

### 32-Crosspoint Aux Panel Button Label Replacement

1. Pull the keycap out of the panel, using your fingers or adjustable jaw pliers (Figure 98).

Figure 98. 32-Crosspoint Aux Panel Button Label Replacement



2. Extract the diffuser and any existing film from inside of the lens. If the parts are wedged inside, you can use sticky tape to remove them. Avoid using sharp tools that can scratch the lens material.
3. Insert the new film label and diffuser into the lens, label first, and replace the lens on the base.
4. Re-insert the keycap into the switch. The keycap fits into the switch in any orientation.

## Menu Panel Maintenance

The Menu panel requires no routine maintenance. Calibration procedures for the touch screen are available through Windows on the Menu panel (see [Touch Screen Calibration on page 137](#)).

### Cleaning

Clean the Menu panel and touch screen with household glass cleaner and a non-abrasive towels. Always dampen the towel and then clean the touch screen. Do not spray cleaner directly on the Menu panel or touch screen.

The Menu panel enclosure pulls air through a top vent and expels it out the right side. Make sure these areas are not blocked for air intake and exhaust.

## Video Processor Frame Maintenance

**CAUTION** Do not operate the Video Processor frame with its door open for an extended period of time. Failure to observe this precaution may result in improper air flow and cause components to overheat.

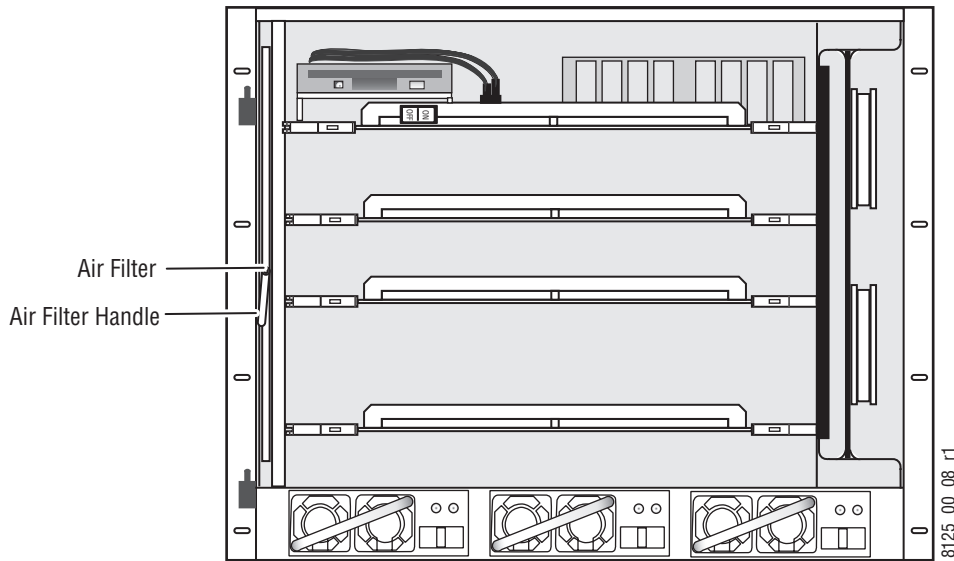
### Air Filter Cleaning

The Video Processor frame contains a removable air filter that reduces the accumulation of dust on the circuit boards. The air filter should be removed and cleaned periodically.

To clean the frame air filter:

1. Open the door of the Video Processor frame and locate the air filter ([Figure 99](#)).
2. Remove the filter by pulling the white plastic handle at the front center of the filter. Pull the filter out slowly, making sure the metal netting on the right of the filter does not catch on the frame.
3. Vacuum the filter and/or wash it in a warm water soap (not detergent) solution.
4. Rinse the filter thoroughly with fresh water, and air dry completely.
5. When the filter is completely dry, reinstall it into the frame with the metal netting to the right. Close the door of the frame.

Figure 99. Video Processor Frame Air Filter



## Removing and Replacing Modules

Modules in the Zodiac Video Processor frame are not designed to be repaired in the field unless a repair is authorized by Customer Service, usually in the form of a *Field Modification Note*. Failed modules should be replaced.

**CAUTION** All modules are subject to static damage when removed from the frame. Always use recommended anti-static precautions when handling modules.

If you need to remove or replace a module in the Video Processor frame, refer to the module location illustrations in [Figure 42 on page 65](#) (frame front), [Module Insertion on page 68](#) and [Module Removal on page 68](#) in [Section 2-Installation](#). All frame modules can be removed and replaced without powering down the frame, however, removing the Control Processor board will shut down the power.

**CAUTION** M/E Module heat sinks are required for Zodiac software version 2.1 and higher. Make sure they are installed on every module (including any spares). Running a Zodiac system without these heat sinks installed can result in overheating and damage to the M/E modules in your system. See [M/E Module Heat Sink Installation on page 150](#) for details.

## Field Upgrading of Modules

Zodiac frame modules are designed with field programmable circuitry that allows firmware upgrades to be done in the field over the Facilities LAN during a software download. Any specific upgrade instructions will be included in the *Release Notes* that accompany each software update.

## M/E Module Heat Sink Installation

All Zodiac systems running software version 2.1 and later need heat sinks installed on the M/E modules in slots 2 and 3. These heat sinks were included in the software version 2.1 release FMN kit (part number 075-0693-00). Newer Zodiac systems, and 2.5 to 3 M/E upgrade kits will have these heat sinks already installed. However, you should check to make sure all Zodiac M/E modules have these heat sinks installed, especially if you are running software versions higher than 2.1.

### Identify ICs

Verify that your system has the correct heat sinks installed by doing the following:

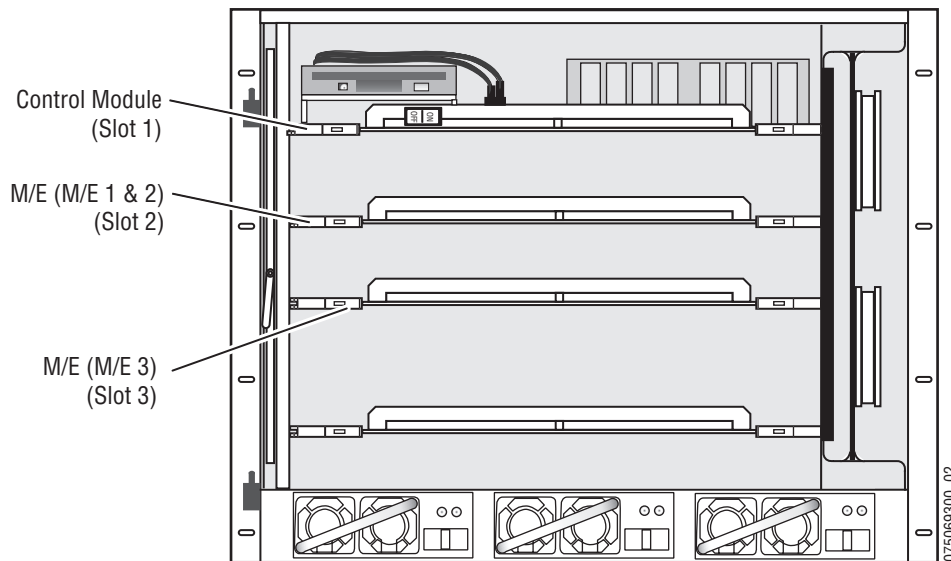
1. Remove the Dual M/E module from slot 2 in the frame. The module can be removed and reinserted with power on.
2. Locate the four large PLCC-socketed ICs labeled U12, U13, U45, and U46 on the component side of the module. Self-adhesive heat sinks should be installed on the top of each IC. See [Figure 100](#).
3. Locate the four smaller PLCC-socketed ICs labeled U54, U55, U66, and U67 to the right of the larger ICs above. Self-adhesive heat sinks should be installed on the top of each of these ICs. See [Figure 100](#).
4. For a 3-M/E system, remove the M/E module in slot 3 of the frame and verify that heat sinks are installed on ICs labeled U13, U46, U55, and U67.
5. If heat sinks are properly installed, return the modules to the frame.
6. If heat sinks are needed, contact Customer Service for FMN 075-0693-00.

### Heat Sink Installation

**CAUTION** Failure to install the correct heat sinks required for software version 2.1 and later can result in overheating and damage to the M/E modules in your system.

1. Locate the Dual M/E modules in Slot 2 of the Zodiac Video Processor frame in both 2.5-M/E and 3-M/E systems and Slot 3 in 3-M/E systems ([Figure 100](#)).
2. Remove them from the frame. The modules can be removed with the frame powered up.

Figure 100. Zodiac Video Processor Frame



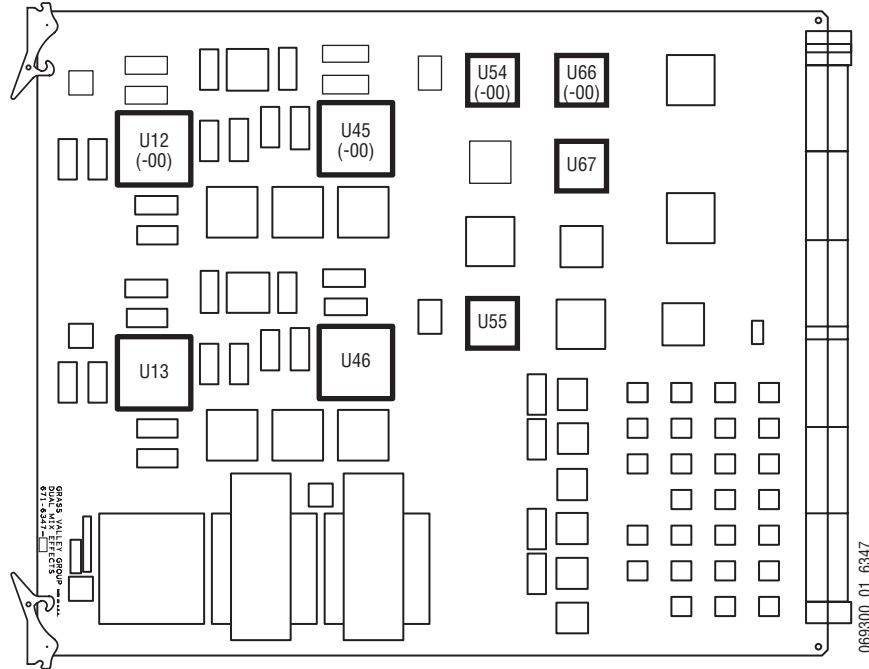
3. Confirm that the assembly number of the module is a 671-6347-00 or -10 version, letter version E1 or earlier. Modules inked as -00 F1 or -10 F1 or later have already been modified at the factory.

The assembly number is silkscreened on the component side of the circuit board as illustrated in [Figure 101 on page 152](#). The dash and letter version is inked in the white box to the right of the assembly number.

**CAUTION** The ICs on this module may be quite hot when the module is first removed from the frame. Let the module cool if necessary before proceeding.

4. On the module from Slot 2 (2.5-M/E and 3-M/E systems):
  - a. Locate ICs U12, U13, U45, and U46 highlighted in [Figure 101](#).
  - b. Install one of the four larger sized heat sinks on the top of each of these ICs by removing the protective backing from the heat sink and pressing it firmly onto the IC.
  - c. Locate ICs U54, U55, U66, and U67 highlighted in [Figure 101](#).
  - d. Install one of the four smaller sized heat sinks on the top of each of these ICs by removing the protective backing from the heat sink and pressing it firmly onto the IC.

Figure 101. Dual Mix Effects Module Component Layout



**Note** For 2.5-M/E systems there will be four extra heat sinks as there is no M/E 3 module. Keep these for spares.

5. On the module from Slot 3 (3-M/E systems only):
  - a. Locate ICs U13 and U46 highlighted in [Figure 101](#).
  - b. Install one of the four larger sized heat sinks on the top of each of these ICs by removing the protective backing from the heat sink and pressing it firmly onto the IC.
  - c. Locate ICs U55 and U67 highlighted in [Figure 101](#).
  - d. Install one of the four smaller sized heat sinks on the top of each of these ICs by removing the protective backing from the heat sink and pressing it firmly onto the IC.
6. Plug each module back into its original location in the Video Processor frame. This can be done while the frame is powered up.
7. Reset the Video Processor frame by pushing the **RESET** button on the front of the Control module ([Figure 101 on page 152](#)).

This completes the necessary modifications. You may now install the new software.



## Control Processor SBC Submodule Replacement

The SBC1000 is compatible with Zodiac software version 2.2 or later.

Control Processors shipped from the factory with the SBC1000 submodule already installed will have a part number ending in -02 and above. The submodule replacement procedure is for Control Processors with part numbers ending in -00 and -01. The part number on the Control Processor is located behind the LED banks on the right edge of the module when it is seated in the frame. The number is hard to see without unseating the module.

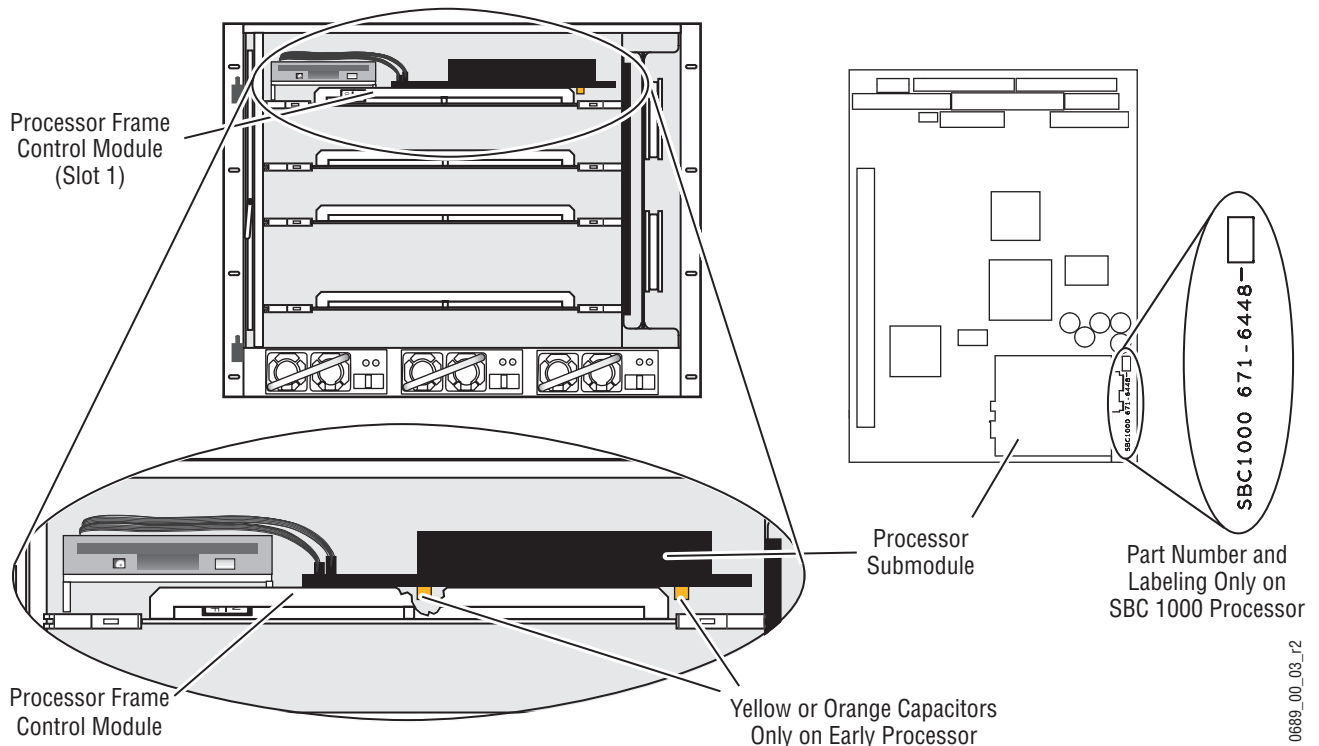
### Submodule Identification

Figure 102 will help you verify which submodule is currently installed on your Control Processor. Original submodules are not labeled, but can be identified without removing the module from the frame by locating the yellow or orange capacitors mounted on the underside of the submodule.

SBC1000 submodules are labeled as illustrated on the right of the figure, and can be identified by removing the Video Processor frame Control Module. The module can be removed and reinstalled with the frame powered up.

If a SBC submodule replacement is needed, contact Customer Service for FMN 075-0689-00.

Figure 102. Control Processor Identification



0689\_00\_03.r2

## SBC1000 Installation

Use the procedure below to install the new SBC1000 or replace the original submodule (for using older software versions, v2.0 or earlier).

**CAUTION** Removing the Video Processor Frame Control Module causes loss of Zodiac system control, and reinserting the module causes a reset that takes the Zodiac system outputs to black.

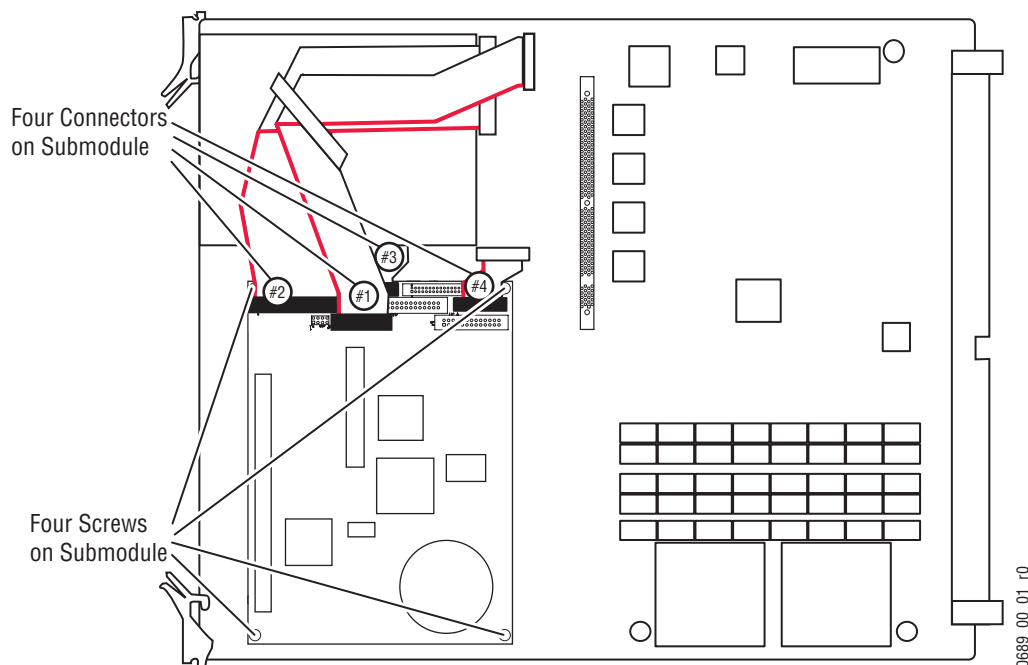
1. Verify that the system is running software version 2.2 or later.

To view the currently installed software version, select the **Status & Diag** button on the Menu panel. The currently installed software versions of the Video Processor frame, Main panel and Menu panel will be shown.

If not, contact Customer Service to acquire the current software version. Make sure to install the new software kernel when prompted in the software installation routine.

2. Once software version is installed or verified, remove the Control Processor module from slot 1 (top slot) of the Video Processor frame. The module can be removed with the frame powered up.

Figure 103. Video Processor Frame Control Processor Module



3. Disconnect the four cables identified in [Figure 103](#). Cable #1 is on top of cable #2 which is on top of cable #3.
4. Use a #10 Torx screwdriver to remove the four screws identified in [Figure 103](#).
5. Remove the submodule from the Control Processor module.

**Note** The four spacers provided with the kit can be used with either the SBC1000 or the original submodule. You can discard the original spacers. Once you have installed the new spacers you can skip steps 6 and 7 when re-installing the submodule.

6. Remove the four spacers.
7. Install the four new spacers.

**CAUTION** Careful alignment between the module and submodule connectors will prevent bent pins. Check the alignment before pressing the submodule on to the Control Processor.

8. Check the connector pins on the solder side of the SBC1000 to be sure they are not bent. Align the SBC1000 submodule and press it lightly on to the Control Processor module. Do not seat the submodule yet.
9. Check the alignment.
10. Seat the SBC1000 submodule.
11. Use the four #10 Torx screws to secure the corners of the submodule.
12. Connect the four cables, see [Figure 104](#). Cable #3 must be connected before cable #2, and cable #2 before cable #1.

Figure 104. Cable Connector Location for SBC1000 and Original Submodules



13. Make a note of this change in your documentation for future reference.
14. Return the Control Processor module to its original location in the frame. You may plug the module back into the frame while it is powered up. The module will reset and take the Zodiac system outputs to black.
15. Discard the original Frame Recovery floppy disk labeled with part number 063-8067-01 that shipped with your system. This floppy disk should no longer be used. Once you have installed the new SBC1000 you will need the Frame Recovery floppy disk included with FMN 075-0689-00 for doing frame recovery.

## Power Supply Maintenance

For proper operation, the Zodiac Video Processor frame must have one power supply for the 2.5-M/E and two power supplies for the 3-M/E

installed and operating at all times. Frame power supplies are not designed to be serviced in the field. If a power supply fails, replace the entire module.

To install or remove a Video Processor frame power supply, see [Power Supply Installation on page 67](#) and [Power Supply Removal on page 67](#).

## Replacement Parts Lists

Refer to [Appendix B-Field Replaceable Units](#) in this manual for a list of replacement parts for the Zodiac system. A complete and updated Field Replaceable Units (FRUs) list is also maintained on the Grass Valley Group web site in the Service/Frequently Asked Question area for the Zodiac Digital Production Switcher. Refer to the front of this manual for the current Grass Valley URL.

# Troubleshooting and Diagnostics

## Introduction

The Zodiak Digital Production Switcher is designed for ease of service and includes a number of status indicators to allow fast and effective troubleshooting of the system.

This section is written for troubleshooting a Zodiak system that was installed and working properly prior to experiencing any failures. Use this section in conjunction with [Section 3-Configuration](#), and [Section 6-Functional Description](#). Refer to [Section 4-Maintenance](#) for information on routine maintenance and parts replacement procedures. Before replacing any part in the field, refer to [Appendix B-Field Replaceable Units](#) for lists of Field Replaceable Units (FRUs) and Critical Spares and accompanying parts replacement notes.

**Note** If a module or assembly has recently been replaced in the field, check [Appendix B-Field Replaceable Units](#) for replacement notes for that assembly. Some assemblies have special field installation instructions.

## Grass Valley Group Web Site

The URL for the Grass Valley Group web site can be found on the copyright page at the front of this manual. Visit the web site for documentation, software, on-line support (including Frequently Asked Questions), spare parts information, and a link to the File Transfer Protocol (FTP) site for available software downloads.

## Precautions

Before performing any type of maintenance or troubleshooting of the Zodiac Digital Production Switcher, be sure you have read the complete [Safety Summary](#) at the front of this manual. The Safety Summary describes all of the pertinent safety issues and recommended precautions when working with the Zodiac Digital Production Switcher.

## Zodiac Web Access

Web browser access is available to check status of several important components in the Zodiac system. Use any web browser able to access the Zodiac network, including the Menu panel Windows application (keyboard and mouse required).

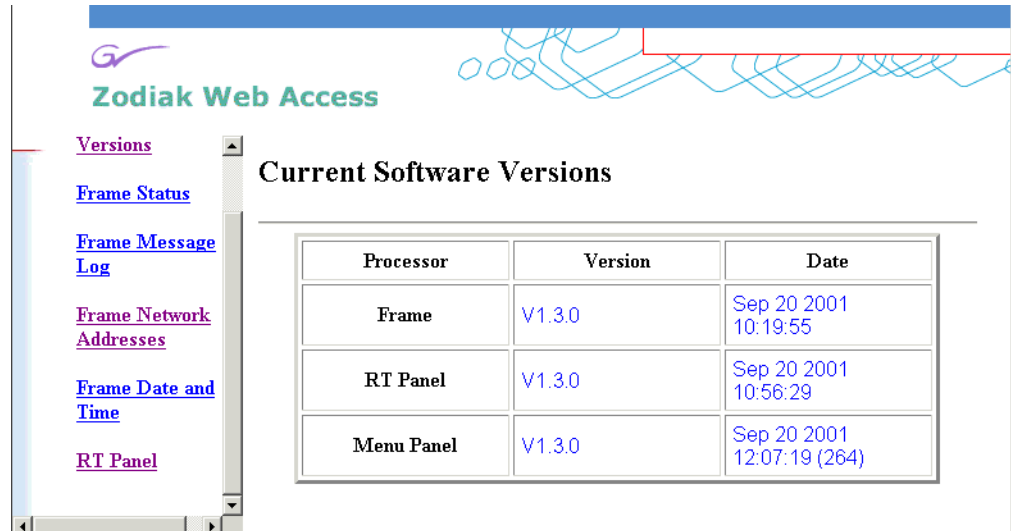
To access the status screens, type the Video Processor frame IP address in the browser's Address field as 192.168.54.18 for example, to view the following information:

- Software Versions now installed on the Zodiac system,
- Frame Status of Video Processor frame power supply, fan, and module components,
- Frame Message Log (intended for troubleshooting),
- Frame Network Addresses, which can be viewed and set,
- Frame Date and Time, which can be viewed and set, and
- RT Panel Message Log, Network Addresses, and Date and Time.

## Current Software Versions

The Versions link will bring up the current software versions installed and date of installation in the Zodiak Video Processor frame, Main panel (RT Panel), and Menu panel as shown in the screen in [Figure 105](#). These versions should all be the same.

Figure 105. Zodiak Software Versions

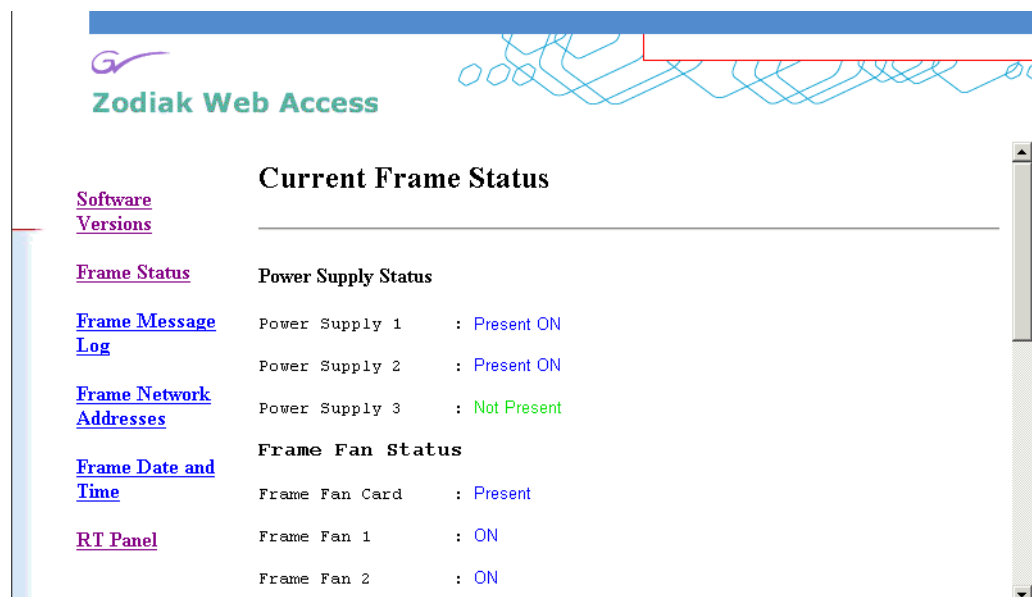


Processor	Version	Date
Frame	V1.3.0	Sep 20 2001 10:19:55
RT Panel	V1.3.0	Sep 20 2001 10:56:29
Menu Panel	V1.3.0	Sep 20 2001 12:07:19 (264)

## Frame Status

Selecting the Frame Status link brings up the Current Frame Status screen shown in [Figure 106](#).

Figure 106. Current Frame Status Screen



Current Frame Status	
<b>Power Supply Status</b>	
Power Supply 1	: Present ON
Power Supply 2	: Present ON
Power Supply 3	: Not Present
<b>Frame Fan Status</b>	
Frame Fan Card	: Present
Frame Fan 1	: ON
Frame Fan 2	: ON

Scrolling down the Frame Status screen shows the status of the following frame components:

## Power Supply Status

The Power Supply Status section (Figure 107) shows the status of Power Supply 1, 2 and 3 (optional in 2.5 M/E system) as **Present** or **Not Present**.

Figure 107. Power Supply Status

```
Power Supply Status  
  
Power Supply 1      : Present ON  
Power Supply 2      : Present ON  
Power Supply 3      : Not Present
```

## Frame Fan Status

The Frame Fan Status section (Figure 108) shows the status of the Frame Fan Card (**Present** or **Not Present**), the four fans in the frame (**On/Off**), and the frame temperature (**Normal**, **Below Normal** or **Above Normal**).

Figure 108. Frame Status Screen

```
Frame Fan Status  
  
Frame Fan Card      : Present  
Frame Fan 1         : ON  
Frame Fan 2         : ON  
Frame Fan 3         : ON  
Frame Fan 4         : ON  
Frame Temperature   : Normal
```

## Video Sync Status

The Video Sync Status section (Figure 109) reports the status of the Analog Reference In signal connected to the rear of the Video Processor frame as Reference Signal (**Present/Not Present**), Reference Lock (**Good/Bad**), and Reference Type (**60Hz/525lines** or **50Hz/625lines**).



Figure 109. Video Sync Status

**Video Sync Status**

Reference Signal : Present  
 Reference Lock : Good  
 Reference Type : 60Hz/525lines

**Frame Board Status**

The Frame Board Status section (Figure 110) gives the status of each of the modules installed in the Zodiak Video Processor frame, the module ID, hardware revision, power and state.

Figure 110. Frame Board Status

**Frame Board Status**

Slot	Board	Present	ID	Rev.	Ver.	Power	State
1	CDS	Yes	6346	0	-	OK	OK
2	TwoME1	Yes	6347	-	-	OK	OK
3	TwoME2	Yes	6347	-	-	OK	OK
4	IXS	Yes	6423	-	-	OK	OK

**Frame Message Log**

Selecting the Frame Message Log link brings up a screen with messages present in the frame log as shown in Figure 111.

Figure 111. Frame Message Log

**Zodiak Web Access**

**Zodiak Frame Message Log: c:\logs\log2.txt**

Previous Current Next

....continuation log  
 10/25/2001 14:19:37 (10330666) Non-fatal FTP error while servicing request from 192.168.54.8:  
 10/25/2001 14:19:37 (10330666) Control connection timed out

Previous Current Next

Software Versions  
 Frame Status  
 Frame Message Log  
 Frame Network Addresses  
 Frame Date and Time  
 RT Panel

## Frame Network Addresses

The Frame Network Addresses screen shows the currently assigned IP addresses for the Video Processor frame on the Facility (Menu) LAN and Panel LAN. If you need to change IP addresses, refer to [Section 3-Configuration](#) in this manual for complete details.

Figure 112. Frame Network Addresses

**Zodiak Web Access**

**Frame Network Addresses**

[Software Versions](#)

[Frame Status](#)

[Frame Message Log](#)

[Frame Network Addresses](#)

[Frame Date and Time](#)

[RT Panel](#)

**Facility LAN**

IP Address : 192.168.54.18

Subnet Mask : 255.255.255.0

Gateway IP : 192.168.54.1

**Panel LAN**

IP Address : 192.168.55.18

Subnet Mask : 255.255.255.0

Save New Settings

Note: After changing IP addresses, you must reboot the frame for them to take effect  
**Caution:** Changing a network addresses to an incorrect value may render the system inoperable

## Frame Date and Time

The Frame Date and Time link brings up the screen shown in [Figure 113](#). You may set the current date and time in the fields provided. Press the **Save New Settings** button to store the new values.

Figure 113. Frame Date and Time

**Zodiak Web Access**

[Software Versions](#)

[Frame Status](#)

[Frame Message Log](#)

[Frame Network Addresses](#)

**Frame Date and Time**

[RT Panel](#)

### Frame Date And Time

**Date**

Day :  Range 1 to 31

Month :  Range 1 to 12

Year :

**Time**

Hour :  Range 0 to 23

Minute :  Range 0 to 59

Second :  Range 0 to 59

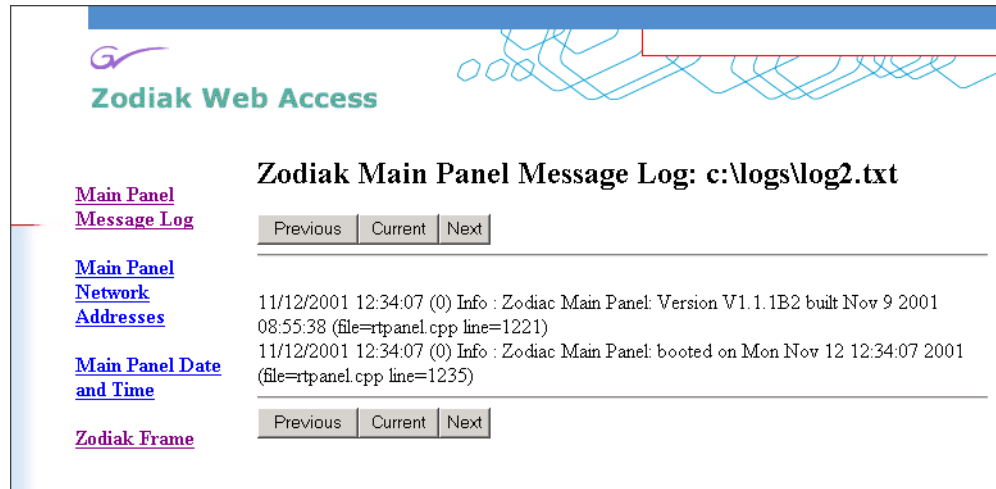
## RT Panel

Selecting the RT Panel link brings up the status screens for the Main panel. The following status screens are available for the Main panel. These screens may also be accessed by entering the Main panel IP address in the address line of the web browser.

## Main Panel Message Log

The Zodiac Panel Message Log (Figure 114) displays the status log for the Main panel.

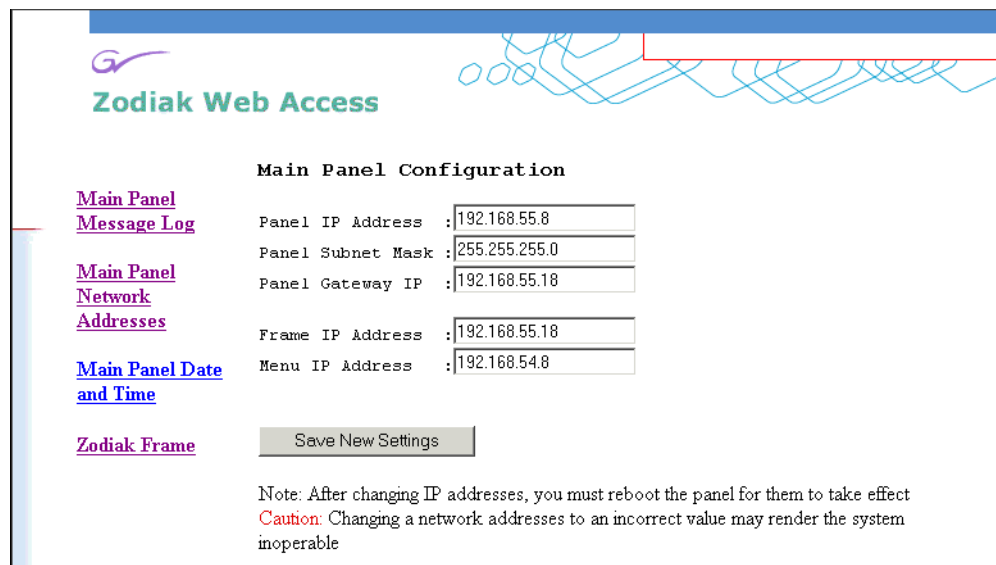
Figure 114. Zodiac Main Panel Message Log



## Main Panel Network Addresses

Selecting the Main Panel Network Addresses link brings up the Main Panel Configuration screen shown in Figure 115. This screen shows the currently assigned IP addresses for the Main panel on the Panel LAN and the Frame and Menu IP addresses that are used as gateways for the Main panel. If you need to change IP addresses, refer to [Section 3-Configuration](#) in this manual for complete details.

Figure 115. Main Panel Configuration Screen



## Main Panel Date and Time

Selecting the Main Panel Date and Time link brings up the screen shown in [Figure 116](#). You may set the current date and time in the fields provided. Press the **Save New Settings** button to store the new values.

Figure 116. Main Panel Date and Time Screen

**Zodiak Web Access**

**Main Panel Date And Time**

[Main Panel](#)  
[Message Log](#)  
[Main Panel Network Addresses](#)  
[Main Panel Date and Time](#)  
[Zodiak Frame](#)

**Date**

Day :  Range 1 to 31

Month :  Range 1 to 12

Year :

**Time**

Hour :  Range 0 to 23

Minute :  Range 0 to 59

Second :  Range 0 to 59

## Zodiak Frame

Selecting the Zodiak Frame link returns you to the Video Processor frame status screens.

## Frame Software Diagnostics Tools

### Diagnostics Data File Transfer

A **Grab SW Diag Data** button has been added to the Status and Diagnostics menu. This button provides a convenient method to save the current configuration files (Eng Setup, User Prefs, Suite Prefs), E-MEM, Macro, and also any frame software diagnostics data files that may exist (see Diagnostic Data Collection below). If you need to contact Grass Valley for assistance about any software problems, the engineering team will need these files for efficient troubleshooting.

Figure 117. Status - Versions Menu



Pressing the **Grab SW Diag Data** button opens a file browser window. After selecting the destination for the files, pressing the **Save SW Diag Data** button on this browser menu initiates the file copy process. The time required to transfer the files varies depending on the amount of data being saved, and may take a couple minutes. The Zodiac Main panel can be operated during the file transfer process. However, it is recommended not to exit from the browser menu while the files are being copied. A SW Diag Data directory will be created for the files. If a directory of that name already exists at that destination, it will be overwritten. After the files have been copied, the entire contents of the directory should be compressed into a .zip archive.

Grass Valley Customer Service can provide instructions on how to send this information to the engineering team for analysis.

## Diagnostics Data Collection

Zodiak systems incorporate internal code that gathers information should software problems occur. If the Video Processor frame crashes, extensive data detailing the current state of the frame software is automatically logged onto the frame hard drive. This data can help the Grass Valley engineering team quickly address the problem. The information is retained indefinitely, but is overwritten should another frame crash occur.

Zodiak systems running version 4.0 or later software have an additional internal diagnostic tool available that can force the logging of the state of the frame software at any time. To accomplish this, the frame software must be halted and a frame reset will be required to resume system operation.

**CAUTION** The Diagnostics Data Collection tool should only be used under the guidance of Grass Valley Customer Service or the Zodiak engineering team.

The tool is activated by turning the Zodiak Video Processor frame COM Boot Dial switch to **6** (six) and leaving it there for more than one second. Do not reset the processor at this time. The processor will halt and the status LEDs on the module will count in binary as the diagnostic information is written to the frame hard drive. When all of the data is recorded (about 30 seconds), the counting stops and all the frame's CPU status LEDs will illuminate. The COM boot dial switch should then be set back to **0** (zero) and the frame reset. The Zodiak system will then return to normal operation.

# Commonly Reported Problems

The table below lists the problems most commonly reported to Grass Valley Group Customer Support and provides direction to additional information and/or procedures for each problem.

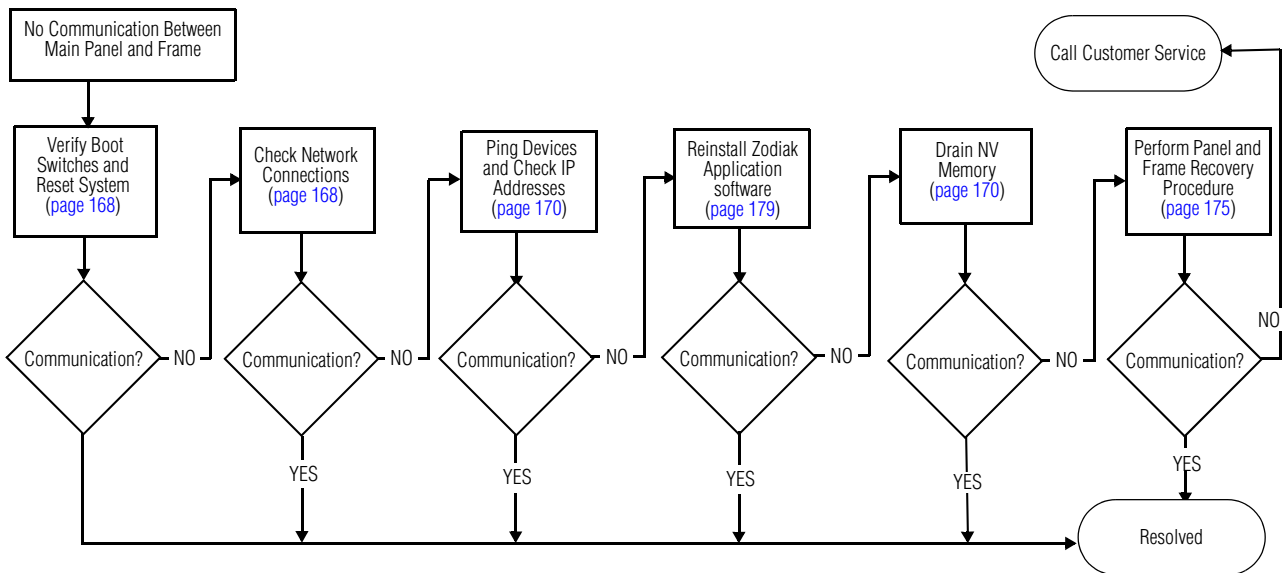
Table 16. Commonly Reported Problems

Problem	Page Number
No Communication Between Main Panel and Frame or System Lockup	<a href="#">page 168</a>
No DC Power to Zodiac Component	<a href="#">page 186</a>
Lever Arm and/or Joystick Needs Calibration	<a href="#">page 200</a>

## No Communication Between Main Panel and Frame or System Lockup

Use the troubleshooting procedure in [Figure 118](#) to find some possible causes for either of these conditions.

Figure 118. Troubleshooting No Communication Between Main Panel and Frame



### Verify Boot Switches and Reset System

Ensure that the Control/SS/DSK module Boot switch ([Figure 119](#)) in the Video Processor frame and the Main panel Boot switch inside the Main panel ([Figure 120](#)) are set to 0 (zero) and then reset the frame by pressing the Control/SS/DSK module **Reset** button on the front of the frame and the Main panel by pressing the **RT Panel Reset** button.



Figure 119. Control/SS/DSK Module Boot Switch and Reset Button

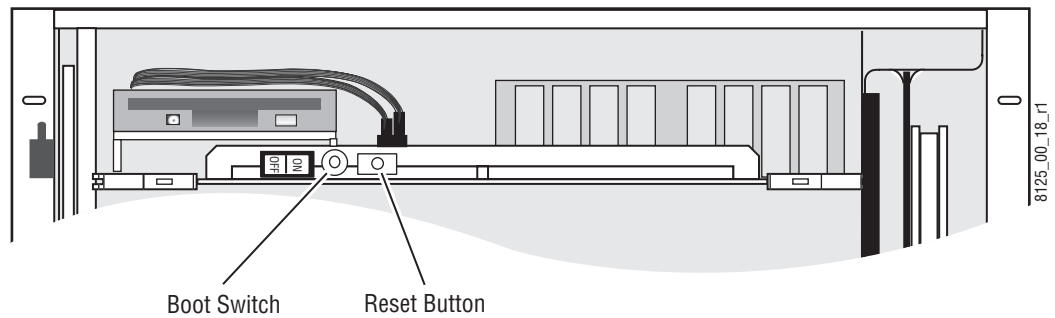
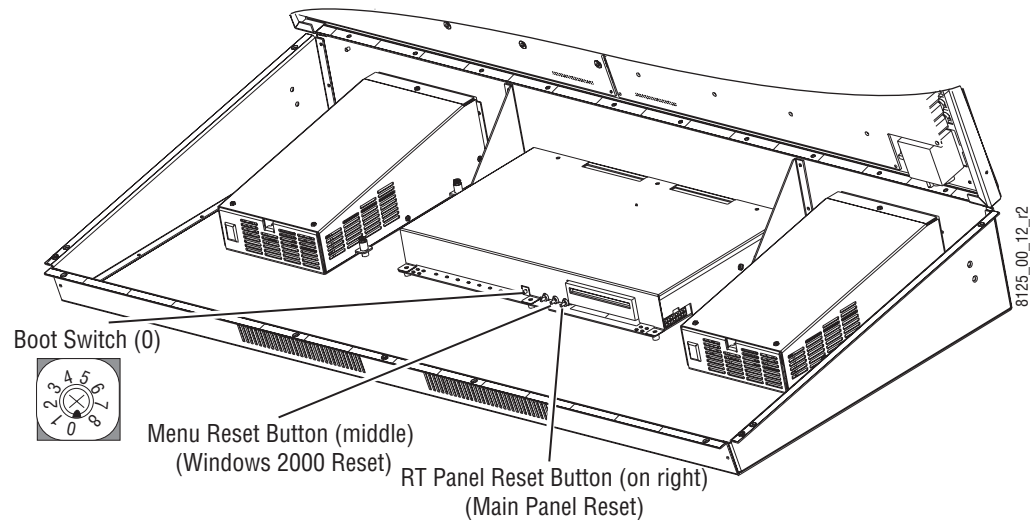


Figure 120. Main Panel Boot Switch and Reset Button



## Check Network Connections

The Main panel and Video Processor frame communicate exclusively over an Ethernet connection from the LAN connector on the rear of the Main panel to the Control Panel LAN connector on the rear of the Video Processor frame. Check that the connection is active by verifying the following:

- Verify all cabling and connections are secure between devices. If using a hub or switch in the network, verify power and communication at these devices.
- The green Link LED on the Main panel rear LAN connection is lit.

If the LINK LED is not lit, push the **Cross Over** button to the left of the LAN connector. Wait about 10 seconds and if the LED does not light, push the **Cross Over** button again to return it to the previous state.

- The green MENU and PANEL LINK LEDs on the Control Processor/DSK/Still Store module in slot 1 of the frame are lit and the green TX and RX LEDs are blinking to indicate LAN activity (see [Figure 150 on page 213](#)).

If all of the LINK LEDs are operating properly and cabling is correct and communication is still not restored, go to the next section, [Ping Devices](#).

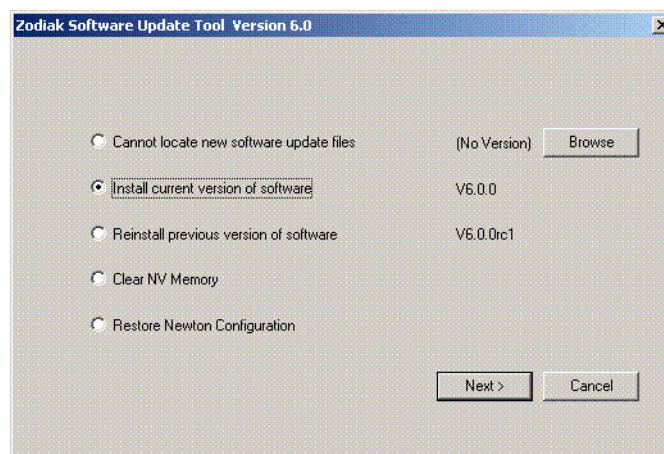
## Ping Devices

To check proper Ethernet communication between Zodiac devices, including correct IP addresses, you can ping each device from the Menu panel by using either the Zodiac Install application or the Windows Command Prompt. For a quick check of communication that requires no mouse or keyboard, ping the devices with the Zodiac Install application first.

### Ping Devices With Zodiac Install Application

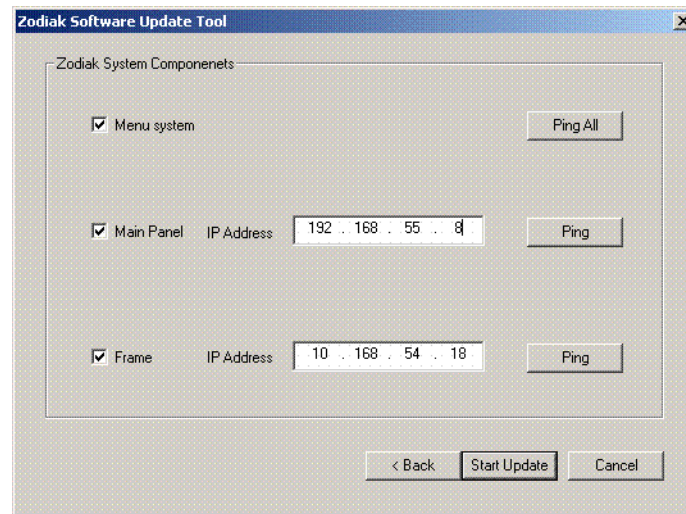
1. If the Zodiac Menu application is currently running, exit the application by touching the upper right message area of any Zodiac menu.
2. When the desktop appears, double-click the Zodiac Install icon.  
The Zodiac installation program loads and the Zodiac Software Update Tool screen appears ([Figure 121](#)).

Figure 121. Zodiac Install Versions Screen



3. Select the **Install current version** of software option and touch the **Next>** button. The third Zodiac Software Update Tool screen appears ([Figure 122](#)).

Figure 122. Zodiac Install Components Screen



4. Check the box next to the Menu system, Main Panel, and Frame System Components boxes. Touch the **Ping All** button at the top right to ping all devices. If all devices ping, the **All selected targets pinged OK** message will appear. If not, a **No reply to Ping** will appear for a particular device.

**Note** Do not press the **Start Update** button. This will begin a software update.

An **All selected targets pinged OK** message verifies that all IP addresses are correct, including the gateway addresses between the Main and Menu panel, and that all devices are communicating properly.

Touch the **Cancel** button and exit the Zodiac Installation application and restart the Zodiac Menu application.

5. If all devices pinged successfully and there is still communication failure, proceed to [Control Surface Troubleshooting on page 189](#).
6. If a device did not ping successfully, you can use the Windows Command Prompt in the next section to ping devices separately.

### Ping Devices With Command Prompt

If one or all of the devices failed to ping properly from the Zodiac Install application, try pinging the devices using the Command Prompt in Windows. This procedure requires the use of a keyboard and mouse connected to the Menu panel. Refer to Installation for connecting a mouse and keyboard.

**CAUTION** Do not connect the mouse and keyboard while the Menu panel is powered up.

This procedure also requires that you know the IP address of each of the Zodiac devices. If you are using the default IP addresses set at the factory, the values are also listed in the steps below and in [Table 15 on page 86](#).

1. Launch the Command Prompt application from the Windows **Start/Programs/Accessories/Command Prompt** menu.
2. At the prompt, enter the ping command followed by the IP address of the device and press enter.
3. Ping the Frame on the Menu LAN first by entering the ping command and the IP address (192.168.54.18 is the factory default).
4. If this is not successful, try pinging the Menu panel itself (192.168.54.8 is the factory default). If this is unsuccessful, the problem is in the Menu panel.
5. If the menu panel to Frame ping is successful, ping the Frame on the Panel LAN (192.168.55.18 is the factory default).

If this is successful, the Frame is communicating properly and acting correctly as the gateway between the Main and Menu panels.

6. Next ping the Main panel on the Panel LAN (192.168.55.8 is the factory default).

If this is successful, all IP addresses, except for the panel gateway address, are correct and network connectivity has been verified.

7. To test the gateway connection, perform a DPOP of any applicable button (such as a **Wipe** button) on the Main panel to bring up the corresponding menu in the Zodiac Menu application.
8. If communication between the Main panel and the frame is still not restored, and devices ping properly, perform the [Drain NV Memory Procedure](#).

## Drain NV Memory Procedure

Zodiak system NV Memory contains Engineering, Suite, and User configuration data, and also has data for all the E-MEM registers. This data is stored as files on the Video Processor frame hard disk, and is loaded on bootup. Errors in this data could cause Zodiak system problems, which may be overcome, perhaps only temporarily, by draining the NV Memory.

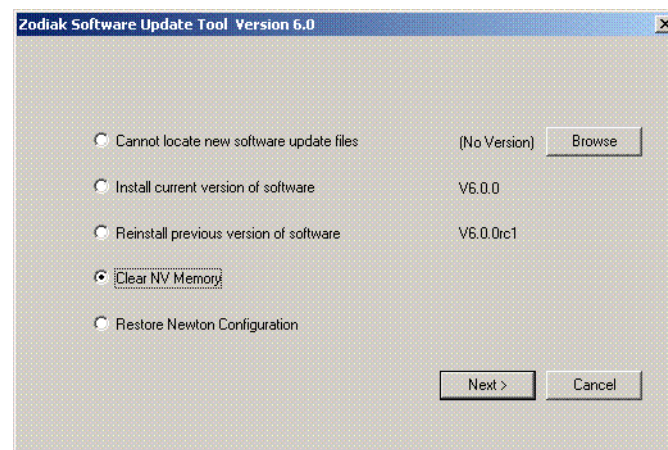
You should always maintain current backup copies of your configuration and E-MEM files compatible with your current software version, so that they can easily be restored after the NV Memory is drained. Draining NV RAM reverts the system back to default values. Installing backup files immediately returns your system to its fully operation state.

**Note** Without backup files you will need to re-enter all the Engineering, Suite, and User settings and rebuild all your effects.

### To Drain the Zodiak NV Memory:

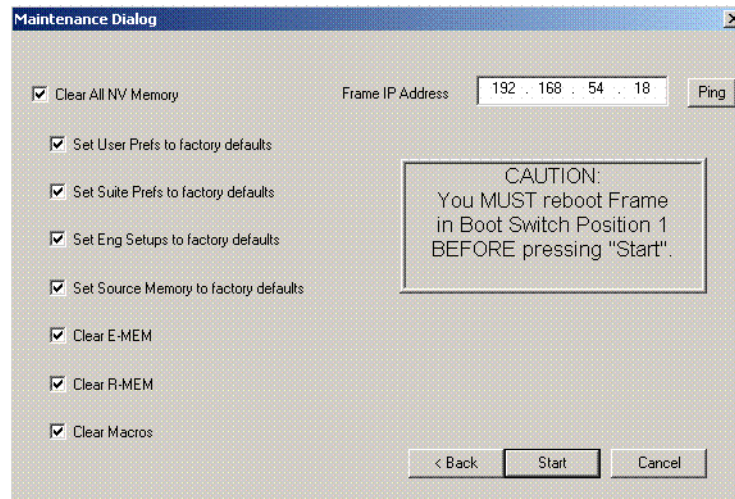
1. Reset the Video Processor Frame using the engineering Boot setting.
  - a. Turn the Control Processor/Still Store/DSK module **S2** Boot switch to position **1**. Position **1** boots the control processor operating system without launching the Zodiak application, to permit software update if the application hangs repeatedly.
  - b. Press the **Reset** button and allow at least 30 seconds for the system to reboot. The frame must be reset after changing the boot switch position. Simply moving the switch does not affect a running system.
2. Drain NV Memory.
  - a. Run the Zodiak Install program from the Menu panel desktop or from the Zodiak Software CD (the CD is not required). The Update Tool screen appears ([Figure 123](#)).

Figure 123. Zodiak Install Versions Screen



- b. Select the **Clear NV Memory** box, then press **Next**. The following screen will appear (Figure 124).

Figure 124. Drain NV Memory Screen



- c. Communications must exist between the Menu panel and the Video Processor frame, where NV RAM resides. Touch **Ping** to test the connection. If unsuccessful, the communications problem must be corrected before proceeding (it could be an incorrect IP address).
  - d. After a successful Ping, check the **Clear All Drain NV Memory** check box so all the boxes below are selected. and touch **Start**, and confirm the dialog box by touching **OK**.
  - e. A progress bar will be displayed. When done, touch **OK**.
3. Reset the Video Processor frame again, using the operation boot dial setting.
    - a. Turn the Video Processor frame Control Processor/Still Store/DSK module **S2** boot dial switch to position **0**.
    - b. Press the **Reset** button and allow at least 30 seconds for the system to reboot.
  4. Once system communication is resumed, restore your backup files in the following order:
    - a. Reload your backup Engineering Setup file and make sure it is correct by, for example, checking that the proper source names appear in the Eng Setups Sources menu.
    - b. Load a Suite Profile, and check that the Suite Preferences settings are correct.
    - c. Load a User Profile and check that the User Preferences settings are correct.

- d. Load a bin of E-MEMs and run them to check that they operate correctly.
  - e. Load Source Memory and test their defaults.
5. If there are any problems with any of the restored files, they may have become corrupted and need to be deleted and rebuilt. If a problem file locks the system, you may need to drain NV Memory again to restore system operation, but you will know what file is responsible. Contact Grass Valley Group Customer Service if you need troubleshooting assistance.

**Note** After NV Memory files are removed, the Still Store will not be prepared for use until NV Memory File Saves are enabled. This will take about 2 minutes. If you are viewing the Still Store menus at the time of a system reset, a **Still Store Not Connected** message will appear. Once the files have been saved, the Still Store menu bar will report **Still store – connected**. You can then refresh the Still Store menu manually by making a menu change on the Menu panel.

## Panel and Frame Recovery Procedures

If you are still unable to establish communication between Zodiak devices with the preceding procedures or the system is continuously locking up, you may use the following recovery procedures. These procedures place the Zodiak system in a known default state for troubleshooting purposes. These procedures should only be used after all other troubleshooting procedures have been attempted.

The recovery procedures use the recovery Boot floppy disks that were provided with the Zodiak system. The floppy disks completely reformat the Main panel disk-on-chip and Video Processor frame hard drive and restore the default IP addresses set at the factory.

Reformatting the hard drives removes any saved files including all User and Suite configuration files and saved E-MEM files. If you still have communication between the Menu panel and the Video Processor frame, it may be possible to copy these configuration files to Zip disk before doing these reformatting procedures if you have not done so already.

There are two emergency boot floppy disks for the Main panel and one for the Video Processor frame.

**CAUTION** See your network System Administrator or Facility Engineer before making any IP address changes. Make sure you know what the IP addresses should be for your facility (including any Subnet mask) of all Zodiak devices before changing them.

These procedures, described later in detail, include the following steps:

- Saving User and Suite configuration and saved E-MEM files to Zip disk (if possible),

- Shutting down Windows on the Menu panel (if operating),
- Reformatting the Main panel disk-on-chip and restoring default IP addresses,
- Reformatting the Video Processor frame hard drive and restoring default IP addresses,
- Restarting Windows,
- Reinstalling the Zodiac software,
- Verifying or changing Windows TCP/IP settings to default value,
- Setting the Menu panel default IP addresses in the Eng Setups menu,
- Verifying overall system operation,
- Reloading configuration files (if possible), and
- Reconfiguring IP addresses to match Facility IP addresses (if appropriate).

### Save Files to Zip Disk

If you still have communication between the Menu panel and the Video Processor frame, save any configuration files to Zip disk if you have not done so already (see [Save Load Menu on page 134](#)).

### Disconnect From Network

This recovery procedure will restore the Zodiac Main panel and Video Processor frame to factory default IP addresses ([Table 17 on page 180](#)). If the Zodiac system is connected to your facility network and these default addresses will cause conflicts, disconnect the Zodiac from the main network before proceeding.

### Shut Down Windows

If the Zodiac application is still running on the Menu panel, shut it down by touching the top right banner. If Windows is running on the Menu panel, press the **Start** button and shut down the computer.

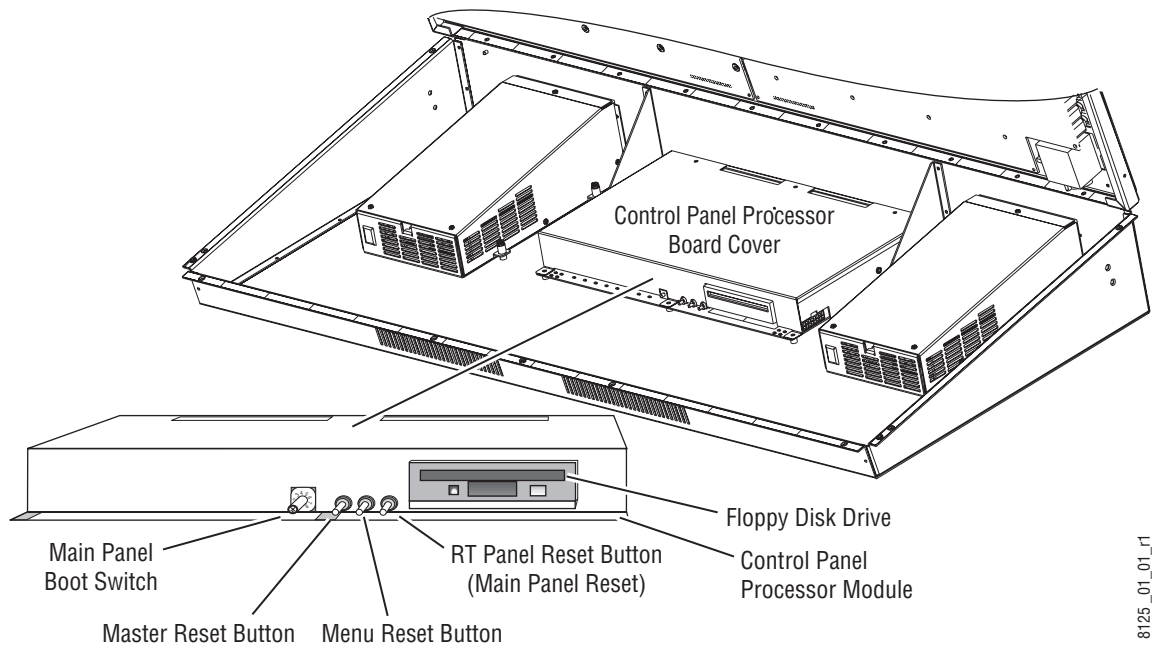
### Reformat Main Panel Hard Drive and Restore IP Addresses

Refer to [Figure 125](#) while performing the following instructions:

1. Open the Main panel and locate the rotary Boot Switch and the Main panel reset button (labeled **RT Panel Reset**).
2. Set the Main panel rotary Boot Switch to **1** (it should currently be set to **0** {zero} for normal operation).



Figure 125. Inside Main Panel



8125\_01\_01\_r1

3. Insert Main panel emergency boot Disk 1 into the floppy disk drive.

4. Press the **RT Panel Reset** button to reformat the hard drive.

It will take approximately two minutes to reformat the hard drive which is contained on a disk-on-chip on the Control Panel Processor board. The green light on the floppy disk drive will go on and off twice. There is no other indication that the process has completed, so be sure and wait at least two minutes before removing Disk 1.

5. Remove Disk 1 and insert Main panel emergency boot Disk 2.

6. Press the **RT Panel Reset** button.

This part of the process will take approximately three minutes for the reformatting to complete. The green light on the floppy disk drive will go on and off twice. There is no other indication that the process has completed so be sure and wait at least three minutes before removing Disk 2.

7. After removing Disk 2, with the rotary Boot Switch still set to 1, press the **RT Panel Reset** button.

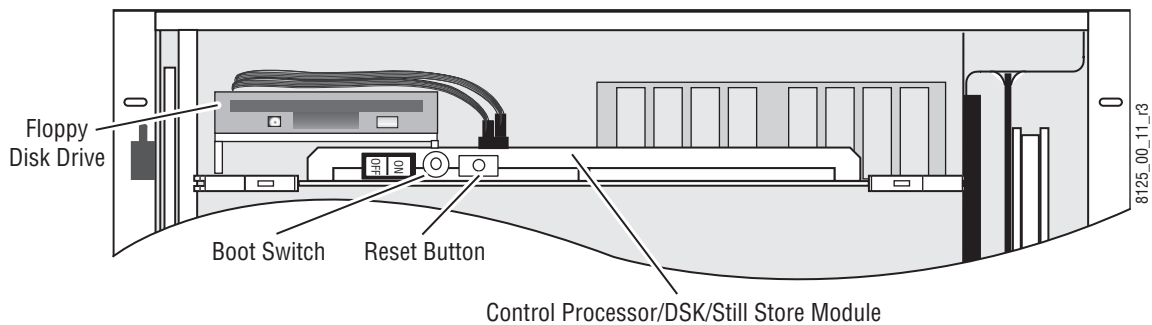
8. Leave the Main panel rotary Boot Switch set to position **1** and proceed to the following section, [Reformat Hard Drive and Restore Video Processor Frame IP Address](#).

## Reformat Hard Drive and Restore Video Processor Frame IP Address

Refer to [Figure 126](#) while performing the following instructions:

1. Open the front door to the Video Processor frame and set the Control Processor/DSK/Still Store module rotary Boot switch to position **1** (it should currently be set to **0** {zero} for normal operation).

Figure 126. Control Processor/DSK/Still Store Module



2. Insert the Video Processor frame emergency boot disk into the floppy disk drive.
3. Press the Control Processor/DSK/Still Store module **Reset** button.  
It will take approximately five minutes to reformat the hard drive. The green light on the floppy disk drive will go on and off three times. There is no other indication that the process has completed so be sure and wait at least five minutes before removing the disk.
4. When the process is complete, remove the disk and, with the rotary Boot switch still set to position **1**, press the Control Processor/DSK/Still Store module **Reset** button. Allow 45 seconds for the Video Processor frame to fully restore communications.
5. Leave the rotary Boot switch at position **1** and proceed to the following section, [Restart Windows](#).

## Restart Windows

1. Restart Windows by pressing the **Menu Reset** button (middle button) inside the Main panel ([Figure 125](#) on page 177).
2. Proceed to the following section, [Reinstall Software](#).

## Reinstall Software

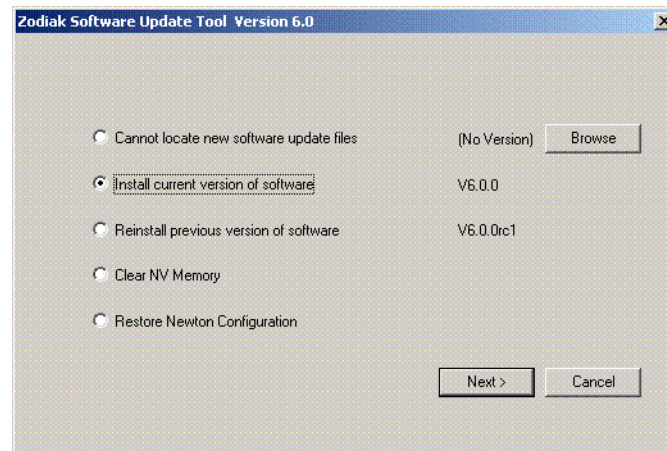
**Note** A mouse and PC computer keyboard may be required for this procedure to change IP addresses. Refer to [Mouse and Keyboard Connection on page 74](#) of this manual for instructions on installing a mouse and keyboard.

1. Press the Zodiac Install icon on the Windows desktop to open the Software Update Tool.

**Note** You may also use the CD-ROM supplied with each system containing the latest software. Insert the CD into the CD-ROM drive on the side of the Menu panel and allow the CD to auto-run to this point.

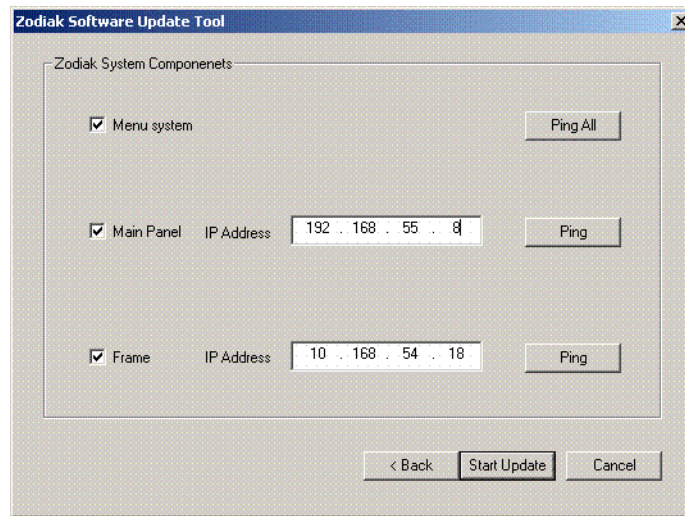
2. Select the **Install Software on a Zodiac system** radio button and then touch the **Next >** button. The following screen will appear listing the Zodiac system software installation options ([Figure 127](#)).

Figure 127. Zodiac Install Versions Screen



3. Select **Install current version of software** option then touch the **Next>** button. The following screen will appear ([Figure 128](#)).

Figure 128. Zodiac Install System Components Screen



4. Select the **Menu system**, **Main Panel**, and **Frame** boxes in the Zodiac System Components screen.

Before starting the software update, you will need to verify that each Zodiac device is communicating and set up with the proper default IP address for software loading by performing a ping test.

5. Select the **Ping All** button at the top right of the screen.
  - If communication succeeds, an **All selected targets Pinged ok** message will appear. Proceed to [Step 13](#).
  - If you do a ping test and a device fails to respond, that device will be identified with a **No reply to Ping** message.

**Note** You can test whether a single device is communicating with its individual **Ping** button.

6. If a device fails to ping properly, check that the default IP addresses in the Zodiac System Components screen are correct as given in [Table 17](#).

Table 17. Default IP Addresses

Device	Default IP Address
Menu Panel	IP Address: 192.168.54.8
Main Panel	Panel IP Address: 192.168.55.8
Frame	IP Address: 192.168.54.18

7. To check the Menu panel IP address, go to the following location in Windows: **Start\Settings\Network and Dial-up Connections**. You may do this without interrupting the software update.
8. Click on the **Local Area Connection** icon to bring up the **Local Area Status Dialog Box**, then press the **Properties** button.

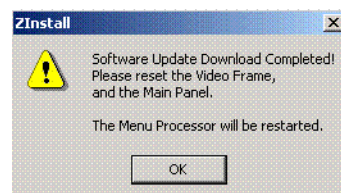
9. Click on the **Internet Protocol (TCP/IP)** line in the list window to bring up the **Internet Protocol (TCP/IP) Properties** dialog box.
10. In the **IP address** field, verify or enter the correct default Menu panel IP address shown in [Table 17](#) and close down the network window.
11. In the **IP Address** field next to the Main Panel and Video Processor frame entries, verify that the IP addresses of the Main panel and Video Processor frame are now set to the default values as shown in [Table 17](#). If they are not correct, enter the values from the table.
12. Once the IP addresses have been verified, select the **Ping All** button again.

If a device still fails to ping properly, it could be disconnected from the network, powered down, or have cabling problems (see [Section 5-Troubleshooting and Diagnostics](#)).

**CAUTION** All selected devices should Ping successfully before proceeding. If the ping test for a selected device fails, continuing installation will cause the Update Tool to exit. Contact Grass Valley Group Customer Support. Contact numbers are provided on the copyright page at the front of this manual.

13. When the Ping test is successful, touch the **Start Update** button. A Zodiac Download Status screen appears (not shown) and installation begins. During installation a progress bar is displayed and the components being loaded are identified.
14. Since you selected all devices to update, when the file transfers complete, a screen similar to [Figure 129](#) appears. Touch **OK**. The Menu panel automatically resets itself.

Figure 129. Zodiac Hardware Install Reset Prompt



15. The Main panel and Video Processor frame do not automatically reset. Return the Main panel and Video Processor frame rotary Boot switches to position **0** (zero) and reset both devices.

16. When Menu panel initialization completes (which may occur before the Video Processor frame initializes) a Windows log on window appears. You do not have to enter a user name or password; simply touch **OK**.

The Zodiac Menu application will then load, run, and display its startup screen (Figure 130).

Figure 130. Zodiac Startup Screen



## Set Eng Setups Menu Panel IP Addresses

The default IP addresses for the Main panel and Video Processor frame must now be entered into the Zodiac Menu for proper communication with the Menu panel. To set the Video Processor frame and Main panel addresses in the Menu panel:

1. Run the Zodiac Menu application.
2. Press the top left banner to bring up the Home menu.
3. From the Home menu, press the **Eng Setup** menu selection button.
4. Press the **System** category menu selection button at the bottom of the screen (see [Figure 131](#)).

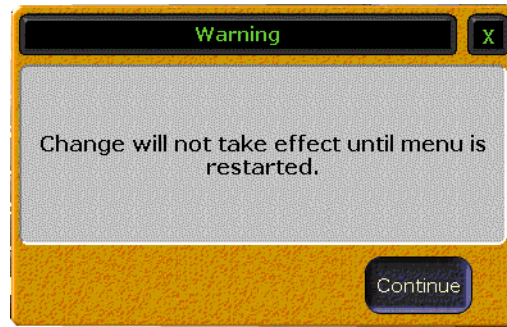
Figure 131. Eng Setups – Config Menu



5. Touch the **Config** selection button in the **System** pane on the left of the screen.
6. In the **Hardware** pane, touch the **Frame IP** data pad to bring up the numeric keypad. Enter the default IP address of the Video Processor frame from [Table 17 on page 180](#) and press **Enter**.

Press **Continue** when the following warning message appears ([Figure 132](#)):

Figure 132. IP Address Warning Message



7. Touch the **RT Panel IP** data pad to bring up the numeric keypad. Enter the default Main panel IP address from [Table 17 on page 180](#) and press **Enter**. Press **Continue** when the warning message appears ([Figure 132](#)).
8. Touch the top right banner of the Zodiac application to shut it down.
9. Restart the Zodiac application by double-clicking on the Zodiac menu application on the Windows desktop. This will reset the IP address values.

Restoration of the Zodiac system to a default state is now complete.

### Verify Overall System Operation

Do the following to verify proper system operation:

1. To verify Video Processor frame to Main panel communication, change crosspoints and make sure video changes
1. To verify Main panel to Menu panel communication (Panel Gateway) DPOP some buttons (such as any of the **Wipe** buttons) on the Main panel to make sure the proper menus come up on the Menu panel.
2. To verify Menu LAN communication, make changes on a menu in the Menu panel, such as select a matte key in one of the M/E keyers, and make sure the corresponding **Matte** button lights on the Keyer subpanel on the Main panel.

### Reload Saved Files From Zip Disk

1. If you were able to save your configuration files to Zip disk, reload the configuration files (see [Save Load Menu on page 134](#)).

If you previously saved your configuration files exclusively to the Video Processor frame hard drive (and not also to a Zip drive as recommended), the configuration files no longer exist. You will need to reconfigure your system as explained in [Section 3-Configuration](#) of this manual.



2. Save the new system configuration to both the Video Processor frame hard drive and a Zip disk and store the Zip disk in a safe place. If saving to a Zip disk that contains an older software version, do not overwrite the files in case you want to revert to a previous version.

**Note** It is recommended that you verify that your effects run properly. If there are differences, you will need to edit or rebuild the effect.

### **Reconfigure IP Addresses**

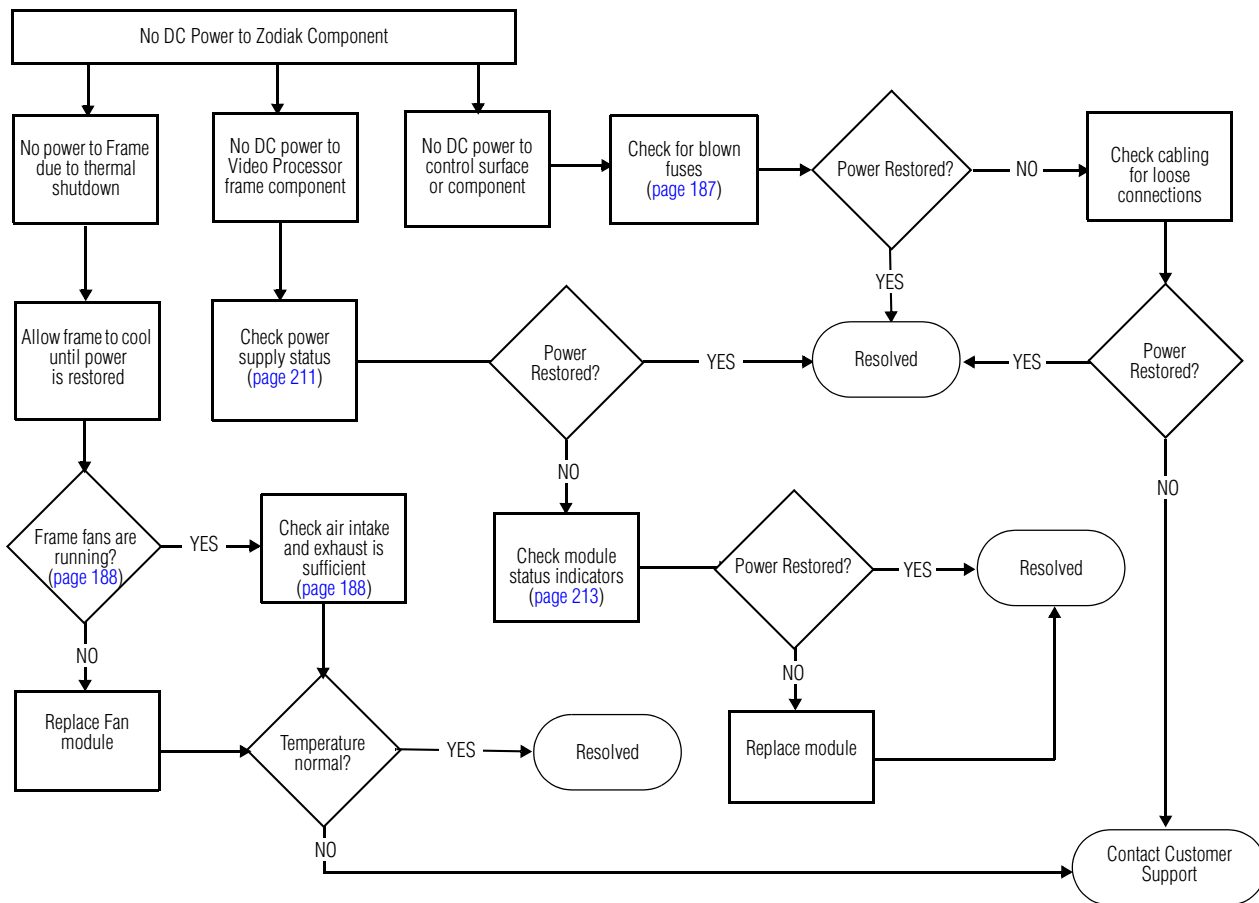
If the default network configuration that is now in place does not fit the existing Ethernet configuration for your facility, the IP addresses may be reconfigured to conform to your facility. Proceed to [Changing IP Addresses on page 88](#).

## No DC Power to Zodiac Component

The Zodiac control surface, which includes the Main and Menu panels, and the Video Processor frame are powered by completely separate power sources as described in this section. DC power can be interrupted or terminated to any Zodiac component by blown fuses, defective or loose cabling, or, in the case of the Video Processor frame, high temperature thermal shutdown.

DC power to each Zodiac component in the system is clearly indicated on every module or panel board. Use the block diagram in [Figure 133](#) to troubleshoot loss of DC power to any component in the system.

Figure 133. Troubleshooting No Power to Zodiac Component



## No DC Power to Control Surface Component

The Main panel has two power supplies, the Main and Redundant, that supply power to the Zodiac control surfaces. Power from these supplies is processed on the Control Panel Processor board inside the Main panel tub then distributed to the Crosspoint Switch and M/E Switch boards in the tub, and the standalone Menu panel through an external power connector. If a Main panel power supply fails in any manner, it should be replaced.

There are six main fuses on the Control Panel Processor module inside the Main panel that indicate power status for all power distribution. The fuses are located on the Control Panel Processor board under a metal cover. A red LED for each fuse located at the front edge of the board outside of the metal cover will light to indicate when a fuse needs to be replaced.

1. Open the Main panel lid and inspect the fuse indicators located on the front of the Control Panel Processor board inside the Main panel. Each of the fuses is clearly labeled on the front edge of the module ([Figure 135 on page 193](#)).
2. If a red fuse indicator is lit, replace the fuse as follows:
  - a. Power down the Main panel by turning off both power supplies inside the panel.
  - b. Remove the Control Panel Processor board cover by removing the three front screws holding it in place.
  - c. Replace the fuse and turn power back on to both supplies. If power is not restored or if the fuse blows again, check cabling for shorted connections.
  - d. If power is restored, turn off the power supplies and replace the cover over the Control Panel Processor board.
  - e. Turn both power supplies back on and continue operation.
3. If there is no indication that any fuses need replacement (no red LEDs are lit), and still no power to a control surface component, recheck cabling connections to each control surface component inside the Main panel.

## No DC Power to Frame

Power to the Video Processor frame is provided by up to three internal power supplies. These power supplies are internal to the Zodiac system. Each supply has a separate AC input. DC power is produced on the power supply and sent to the Video Processor frame via a passive Power Transfer board where it is distributed throughout the system by the frame motherboard. Power supplies are hot swappable and accessible from the front of the frame.

There are two major causes for loss of power to the Video Processor frame, power supply failure and thermal shutdown due to poor ventilation.

### Frame Power Supply Failure

At least one power supply for the 2.5-M/E and two power supplies for the 3-M/E must be functioning in the Video Processor frame at all times for the normal operation. Indicator LEDs on the front of each supply should be lit to indicate proper operation.

If the AC LEDs are not lit ([Figure 149 on page 211](#)), check the following:

1. Frame is receiving AC power.
2. AC line cords are plugged into the corresponding power supply rear AC connectors.
3. The AC section of the power supply is fused internally and if a fuse is blown, the front LEDV AC indicator, will not light. Power supplies should be replaced if a blown fuse is indicated.

**Note** Earlier version power supplies have only one LED indicating AC power status.

If AC LED is lit and DC LED is not:

1. Make sure the Control Processor/DSK/Still Store module in slot 1 is seating completely.
2. Make sure the power switch is on.

### Frame Thermal Shutdown

If the Video Processor frame shuts down completely, a thermal shutdown may have occurred. Thermal shutdown capability is built into the Zodiak Control Processor module in the Video Processor frame. When the ambient operating temperature of the device reaches a high limit, the switcher will shut itself off by shutting down the main power switch on the Control Processor module. Once the system has cooled sufficiently, power will be restored and the reason for overheating can be investigated.

Major reasons for overheating include fan failure and insufficient airflow space around the frame chassis. Check the following status items:

- Check operating status of the four fans on the fan module in the frame by either accessing the Frame Status web page with a web browser (see [Frame Fan Status on page 160](#)) or visually checking fan operation if you can view the fans on the right side of the frame.
- Make sure the Fan module is seated properly in the frame.
- Check the two fuses on the Fan module ( $\pm 48$  V DC).
- If a fan has failed, replace the entire Fan module.

If the fans are running and the frame still overheats, do the following:

- Check and clean the removable air filter (see [Air Filter Cleaning on page 148](#)).
- Check that there is sufficient room for air intake on the left side of the chassis and air exhaust on the right.
- Make sure the front door of the frame is kept closed at all times during operation for proper air circulation.

## No DC Power to Frame Component

DC power from the Video Processor frame power supplies is distributed to each Frame module via the motherboard. Power status LEDs are present on the front of each module (refer to [Table 23 on page 212](#) and [Frame LEDs and Test Points on page 213](#)). Each module is fused for a high current condition to prevent fire. If a module fuse is blown, replace the entire module.

# Control Surface Troubleshooting

If you are experiencing functional difficulty with one of the control panels in the Zodiac control surface, refer to the procedures below.

## Main Panel Troubleshooting

The Main panel buttons and displays illuminate when the system is operating properly (there is no lamp saver or sleep mode).

### Basic Functionality Checks

Perform the steps below in the order presented to check basic functionality of the Main panel.

1. Open the Main panel lid and reset the Main panel processor by pressing the **RT Reset** button inside the Main panel (rightmost button) shown in [Figure 135 on page 193](#).
2. Check status indicators inside the Main panel.
  - a. Check the status indicators on the Control Panel Processor board ([Figure 135 on page 193](#)). The board is protected by a metal cover. Indicators are provided outside the cover along the front edge of the board.

The Control Panel Processor board distributes the +12V and +5V from the Main panel power supplies to the Main and Menu panels.

- b. Check the status indicators on the Crosspoint Switch and M/E Switch boards ([Figure 134 on page 192](#)).

Refer to [Table 18 on page 191](#) for an overview of the status indicators for the Control Processor, Crosspoint Switch and M/E Switch boards and their meaning. The status indicators in the table are listed as they appear on each board from the left side of the board to the right.

3. If the Main panel does not appear to be communicating properly (not switching crosspoints or video, for example), check the communication configuration at the Main panel to the other Zodiac devices.

For a quick check of system communication status with other devices, check the version of Zodiac software running on the Main panel by bringing up the Version screen on the Menu panel as described in the steps below. If the Main panel is not communicating with the Menu panel, a software version will not be reported.

- a. Select the **Status/Diags** button from the Home menu on the Menu panel.
    - b. Touch the Versions data pad to bring up the software version screen.
    - c. The Version screen should report the Zodiac software version running on each device communicating in the Zodiac system (Video Processor frame, Main panel and Menu panel).
    - d. Check that all reported software versions are identical. If one of the software versions is different, reload the correct software version to that device using the Software Installation Procedure described in the current version of the *Zodiac Release Notes*.
4. Verify that the Main panel to frame LAN connection is active by checking the green LAN LINK LED on the rear of the Main panel. It should be lit to indicate the LAN connection is active. If the LED is not lit, push the **Cross Over** button next to the LAN connector. Wait about 10 seconds and see if the LED lights, if it does not, push the **Cross Over** button again to return it to the previous state. This button swaps the TX and RX polarity required for communication with the frame.

Check the Ethernet activity LEDs shown in [Figure 137 on page 194](#) and described in [Table 18 on page 191](#). To do this you will need to remove the metal cover over the Control Panel Processor board. Do this by removing the three front screws holding it in place. Carefully lift off the metal cover

Also refer to the detailed procedure, [No Communication Between Main Panel and Frame or System Lockup on page 168](#), to troubleshoot communication problems.

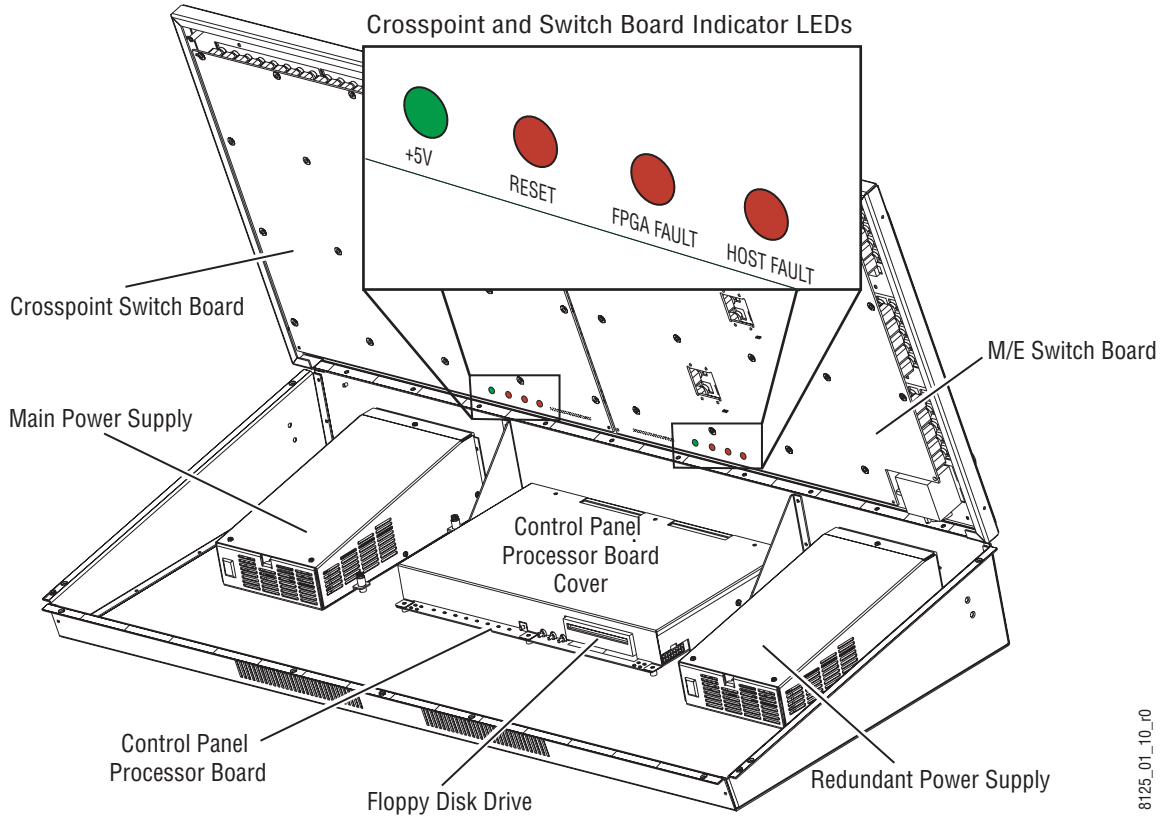
Table 18. Main Panel Status Indicators

Board Name	Indicator		LED Status	Status Meaning/Action
	Group	Name		
Control Panel Processor Front Edge Indicators (Figure 135 on page 193)	A 12V	OK	Green LED on	+12 V power present from Main power supply.
		FAIL	Red LED on	+12 V power not present from Main power supply.
	A 5V	OK	Green LED on	+5 V power present from Main power supply.
		FAIL	Red LED on	+5 V power not present from Main power supply.
	B 12V	OK	Green LED on	+12 V power present from Redundant power supply.
		FAIL	Red LED on	+12 V power not present from Redundant power supply.
	B 5V	OK	Green LED on	+5 V power present from Redundant power supply.
		FAIL	Red LED on	+5 V power not present from Redundant power supply.
	Fuse Indicators	XPT FUSE	Red LED on	+5 V to Crosspoint Switch board 5A 250V fuse is blown.
		M/E FUSE	Red LED on	+5 V to M/E Switch board 5A 250V fuse is blown.
		LOCAL FUSE	Red LED on	+5V 5A 250V fuse blown to Control Panel processor local power.
		PNL 1 FUSE	Red LED on	+5 V to Satellite Panel 1 5A 250V fuse is blown.
		PNL 2 FUSE	Red LED on	+5 V to Satellite Panel 2 5A 250V fuse is blown.
		MENU FUSE	Red LED on	+12 V to Menu panel 8A 250V fuse is blown.
	Control Panel Processor (cover removed) (Figure 137 on page 194)	N/A	+3.3V	Green LED on
+2.7V			Green LED on	+2.7 V present from Control Processor board.
+1.8V			Green LED on	+1.8 V present from Control Processor board.
FAULT			Red LED on	Fault detected on Control Processor board.
RESET			Red LED on	System reset in process.
MSB – LSB			N/A	Not Used
HDD			N/A	Not Used
TxD			Green LED on	Data is being transferred from the CPU to the Panel LAN port.
RxD			Green LED on	Data is being received from the Panel LAN port to the CPU.
LINK			Green LED on	Ethernet controller recognizes Panel LAN connection.
COLDET			Red LED on	Collision fault detected.
10M			Green LED on	Ethernet transfer from Panel LAN is in 10BaseT mode.
100M			Green LED on	Ethernet transfer from Panel LAN is in 100BaseT mode.
TxD1			Green LED on	Data is being transferred from the CPU to Satellite Panel 1.
RxD1			Green LED on	Data is being received from Satellite Panel 1 to CPU.
TxD2			Green LED on	Data is being transferred from the CPU to Satellite Panel 2.
RxD2	Green LED on	Data is being received from Satellite Panel 2 to CPU.		
Main Panel Backplane (Figure 136 on page 193)	N/A	LAN LINK	Green LED on	Ethernet controller recognizes Panel LAN frame connection.
Crosspoint Switch (Figure 134)	N/A	+5V	Green LED on	+5 V present from Control Processor board
		RESET	Red LED on	System reset in process.
		FPGA FAULT	Red LED on	FPGA did not boot properly.
		HOST FAULT	Red LED on	Fault detected from host Control Panel CPU.

Table 18. Main Panel Status Indicators - (continued)

Board Name	Indicator		LED Status	Status Meaning/Action
	Group	Name		
M/E Switch (Figure 134)	N/A	+5V	Green LED on	+5 V present from Control Processor board.
		RESET	Red LED on	System reset in process.
		FPGA FAULT	Red LED on	FPGA did not boot properly.
		HOST FAULT	Red LED on	Fault detected from host Control Panel CPU.

Figure 134. Main Panel Interior



8125\_01\_10\_r0



Figure 135. Main Panel Control Panel Processor Status Indicators

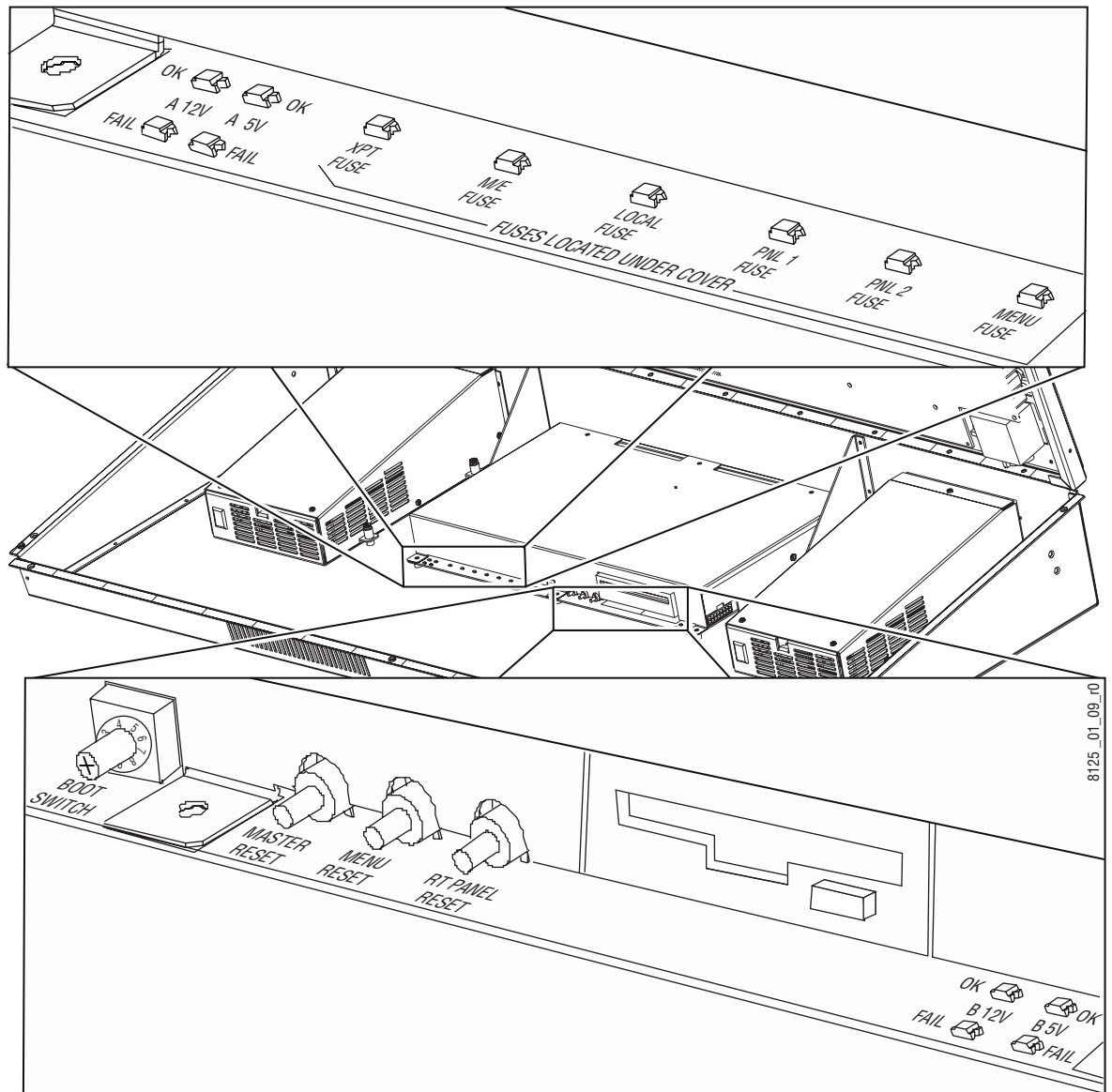


Figure 136. Main Panel Backplane LAN LINK LED

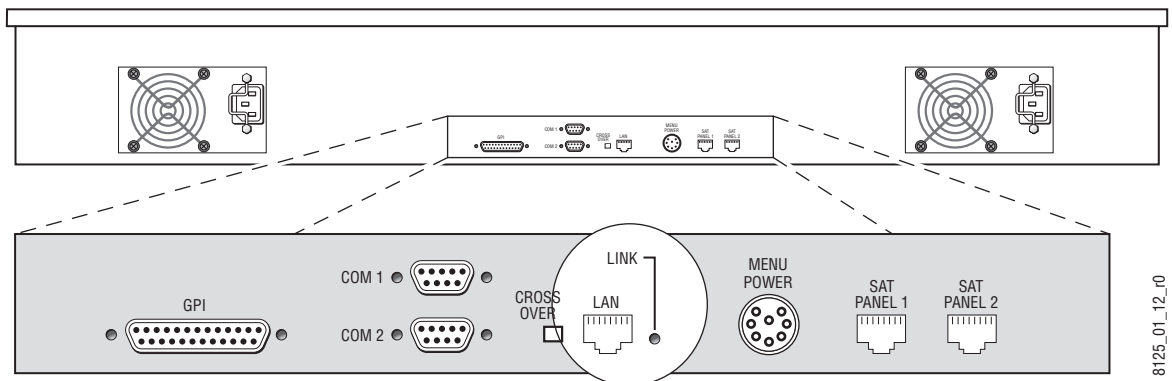
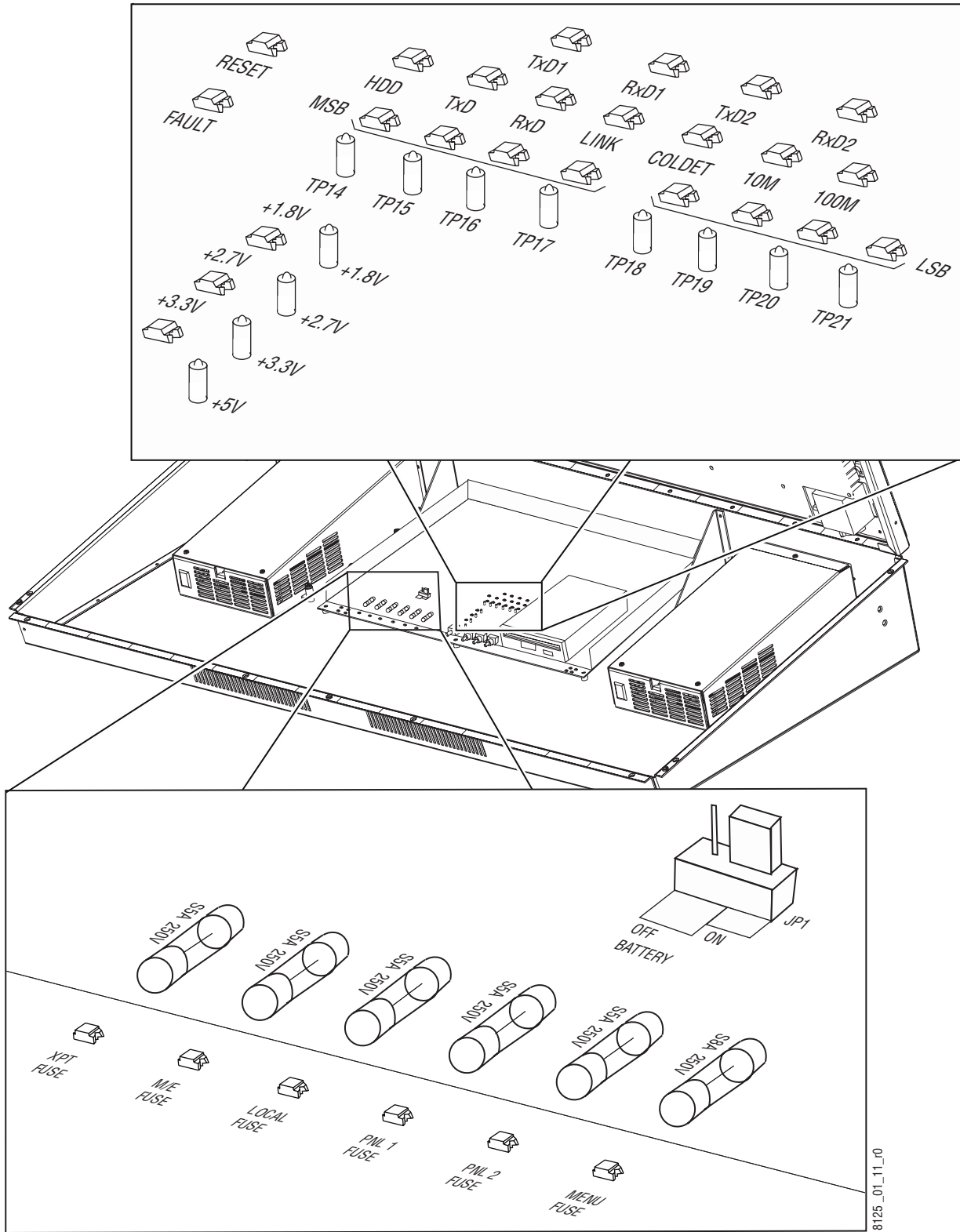


Figure 137. Main Panel Control Processor Board (Cover Removed)



8125\_01\_11\_r0

## Main Panel Diagnostics

Main panel diagnostic routines are available in version 2.0 software or later to test functionality of various components on the Main panel Crosspoint Switch, M/E Switch and Control Panel Processor boards, and the Main panel power supplies ([Figure 134 on page 192](#)).

The diagnostic routines are accessed using a RS-422 serial connection from a PC or dumb terminal to a communication port on the rear of the Main panel. You may use the Menu panel Windows application and local serial ports to do these procedures. The diagnostic routine is run with a terminal emulation program (HyperTerminal). The Effects Memory readout and the Transition Rate displays in each M/E on the Main panel are also used to view parameters for some of the diagnostics. Diagnostic testing will interrupt operations, so the Main panel should be off-air during these tests.

Refer to [Table 19](#) for an overview of the diagnostic tests available.

*Table 19. Main Panel Diagnostics Overview*

Test Group	Test Purpose
Button Board Diagnostics	Tests all switch buttons, light levels, shaft encoders, joystick, lever arms, light pipes, and text displays on Crosspoint and M/E Switch boards.
Indicators and Rotary Switch Diagnostics	Tests Fault and Ethernet communication LEDs on Control Panel Processor board.
Power Supply Diagnostics	Tests Main Panel power supplies for presence and voltage.
Serial Channel Diagnostics	Tests Satellite Ports 1 and 2 at rear of Main panel on Control Panel Processor board.

### Connecting to the Main Panel Diagnostics Port

You may use either the Menu panel or another PC to perform these tests.

1. To use the Menu panel to perform these tests, leave the serial cable already installed between Com 1 and the Menu panel in place. This will allow you to use the Menu panel Windows HyperTerminal application.
2. To use a different PC to perform these tests, disconnect the serial cable between Com 1 and the Menu panel from the Menu panel serial port and connect it to the serial port of a PC.
3. In the PC **Start** menu, select **Programs/Accessories/HyperTerminal**. In HyperTerminal, select **Properties** under the **File** pull-down. Set the PC communication port you wish to use under **Connect using**, then select **Configure** to bring up the communication settings screen. Set the communication values to those listed in [Table 20](#).

Table 20. Panel Diagnostic Port Settings

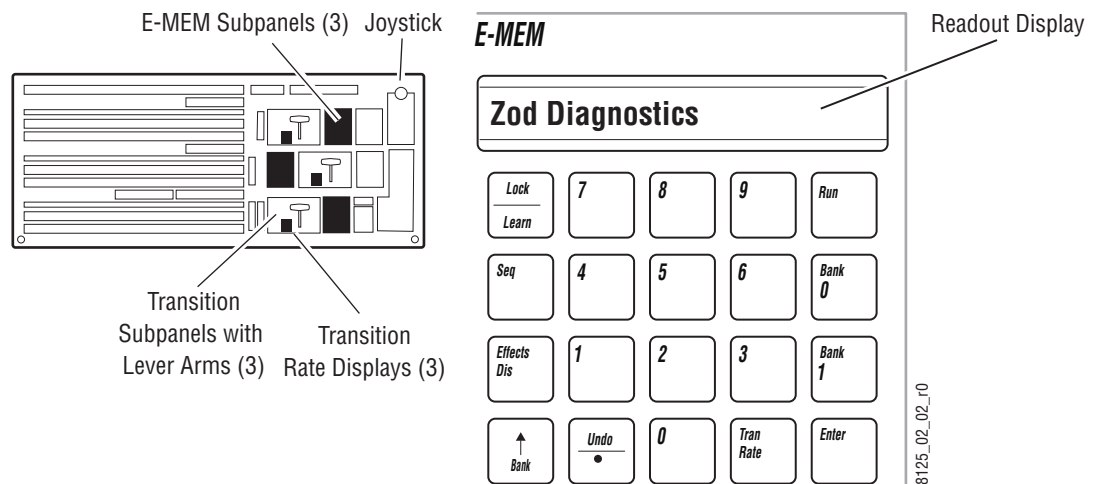
Baud Rate	38.4 kbps
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	None

4. Select the ASCII Setup box in **Settings**, and under **ASCII Setup**, check the box for Echo typed characters locally (**Local Echo – ON**). This enables the letters you type to display on the terminal screen.
5. Select **VT100 Emulation** from the pull-down menu under **Settings**.
6. Open the Main panel lid and set the **Boot** switch on the Control Panel Processor board to position **7** (seven) ([Figure 120 on page 169](#)). Press the **RT Panel Reset** button to initialize the diagnostics routine.

The E-MEM readout displays in each of the E-MEM subpanels on the Main panel ([Figure 138](#)) will change to indicate that the panel is now in a diagnostic mode. The displays will indicate the following:

- M/E 1 – Zodi Diagnostics
- M/E 2 – Diagnostics version number
- M/E 3 (PGM/PST) – Com port used by diagnostics

Figure 138. Main Panel E-MEM and Transition Subpanels



## Running Main Panel Diagnostics

1. The Diagnostics User Interface menu will appear on the terminal screen after the Control Panel Processor board is reset in the panel with the following selections:

### Begin Diagnostics User Interface

#### **B** Begin Diagnostics

#### **M** Menu Display Control

#### **Q** Quit Diagnostics

2. Select **B** and press **Enter** on your keyboard to begin the diagnostics.
3. Select the letter of the Main panel area you need to troubleshoot (**B**, **I**, **P**, or **S**) outlined in [Table 21 on page 198](#) and press **Enter**.
4. Select the letter corresponding to the type of diagnostic test within the test area to perform and press **Enter** to begin the test.

Press **Enter** to exit a diagnostic. Use the **X** key to move up in the menu structure in any of the routines.

Complete instructions for each test are given on the terminal screen as the tests progress. During the tests, you will be asked to view both the terminal display and the M/E E-MEM and Transition Rate displays on the Main panel depending on the type of test. Refer to [Figure 138 on page 197](#) for an illustration of Main panel display locations.

5. When finished with all of the diagnostic tests, press **Q** to quit.
6. Remove the null modem cable from port Com 1.

7. Return the **Boot** switch on the Control Panel Processor board to position **0** (zero) and press the **RT Reset** button on the Control Panel Processor board to resume operation.

Table 21. Main Panel Diagnostics Menus

Select Test Area	Select Test Type	Test Procedure	Test Result
<b>B Button Board Diagnostics</b>	A Test All Boards Sequentially	Buttons will light in groups of eight. Press each lit button to turn it off.	After all buttons are pressed, DONE PASS or DONE FAIL will be reported to terminal.
	B Test Panel Buttons Randomly	Push each switch button individually to test.	Button should light when held down, go out when released.
	C Test Light Levels	Observe light intensity levels of buttons, text displays and light pipes.	Test will loop through until user exits.
	E Test Shaft Encoders	Turn each M/E's Clip and Gain knobs and observe corresponding M/E E-MEM display.	Clip NN and Gain NN values should vary from 0 – 99 (clockwise = positive values, counterclockwise = negative values)
	J Test Joystick	Move the joystick to the up (X axis), down (Y axis), and rotate (Z axis) limits. View each M/E E-MEM display. Axis will appear in Transition Rate display (Figure 138 on page 197). Press joystick button for beep.	The calibrated low, high and current value will be displayed. Calibration data is either factory default or latest calibrated values. Refer to <a href="#">Lever Arm and Joystick Calibration on page 200</a> .
	L Test Levers	Move each lever arm to its upper and lower limit. View corresponding M/E E-MEM display for values.	The calibrated values will be displayed. Calibration data is either factory default or latest calibrated values. Refer to <a href="#">Lever Arm and Joystick Calibration on page 200</a> .
	P Test Light Pipes	View each light pipe (Key On, Lever Arm direction, Effects Send, and Uncal) until it reaches full intensity.	Test will loop through until user exits.
<b>I Indicators and Rotary Switch Diagnostics</b>	T Test Text Displays	View each alphanumeric display on the Main panel as text scrolls across.	Test will loop through until user exits.
	I Test On-Board Indicators	Remove metal cover from Control Processor board and observe FAULT, 10M, 100M and LSB – MSB (8) LEDs blinking. Refer to <a href="#">Figure 137 on page 194</a> .	LEDs will cycle through blink sequence to indicate proper operation.
	R Test Boot Rotary Switch	Rotate the Boot rotary switch on the front of the Control Panel Processor board through all positions within 10 seconds. See <a href="#">Figure 134 on page 192</a> .	An error message will be displayed on the terminal if all switch positions are not detected.

Table 21. Main Panel Diagnostics Menus - (continued)

Select Test Area	Select Test Type	Test Procedure	Test Result
<b>P Power Supply Diagnostics</b>	A Test Power Supply A Presence	Confirm both power supplies are powered up. Observe terminal display for all tests.	Terminal will indicate PASS if power supply present.
	B Test Power Supply B Presence		Terminal will indicate PASS if power supply present and +12V is good.
	C Test Power Supply A 12V Supply		Terminal will indicate PASS if power supply present and +12V is good.
	D Test Power Supply A 5V Supply		Terminal will indicate PASS if power supply present and +5V is good.
	E Test Power Supply B 12V Supply		Terminal will indicate PASS if power supply present and +12V is good.
	F Test Power Supply B 5V Supply		Terminal will indicate PASS if power supply present and +5V is good.
	L Test All Supplies and Voltages		Results of all power supply readings will be reported in tabular form on terminal. User will be asked to confirm power supply indicators are correct.
<b>S Serial Channel Diagnostics</b>	1 Test Satellite Panel 1 Channel Internal Loopback	Observe terminal display.	Terminal will report DONE PASS or DONE FAIL after internal loopback data test is performed at each of four baud rates.
	2 Test Satellite Panel 2 Channel Internal Loopback		
<b>V Identify Diagnostics and Version</b>	N/A	Observe terminal display.	The Main panel diagnostics version and the revision number of the Control Panel Processor will be reported.

## Lever Arm and Joystick Calibration

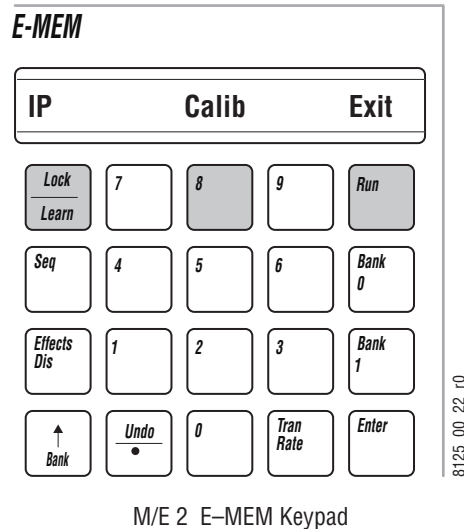
The Main panel lever arms and joystick can be calibrated from the Main panel.

1. Open the Main panel to access the Boot Switch and **Rt Panel Reset** (Main panel) button (refer to [Figure 135 on page 193](#)). Rotate the switch to position 9 (one click to the right) then reset the control panel.

After about 30 seconds, the panel will come up in a calibration mode which will be reported in the M/E 1 E-MEM display as **Main Menu Select** (not shown). Use the M/E 2 E-MEM display and buttons to step through the calibration process (see [Figure 139](#)). During the procedure, the Master E-MEM display in the lower right corner of the panel will show the current minimum and maximum values for the selected lever arm or joystick positions.

2. To enter calibration mode, push the **8** button under **Calib** on the M/E 2 E-MEM keypad as shown in [Figure 139](#). The M/E 1 E-MEM display will change to report **Calibration Mode** (not shown).

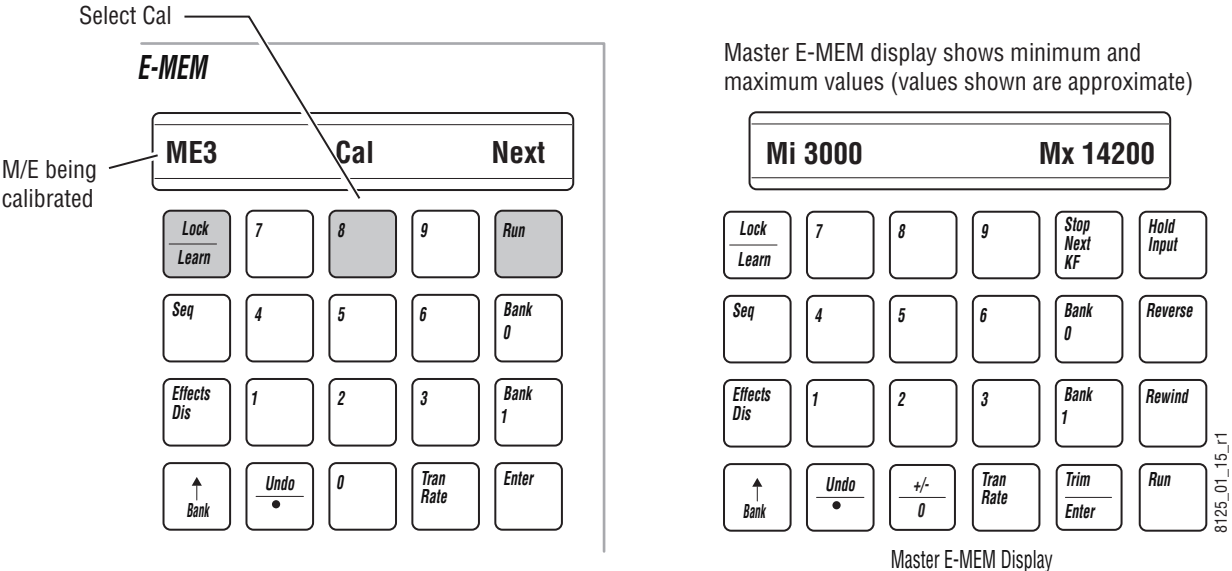
Figure 139. M/E 2 Display in Calibration Mode



3. The display will change to bring up the first calibration routine, M/E 3 (PGM/PST for 2.5-M/E systems), as shown in [Figure 140 on page 201](#).



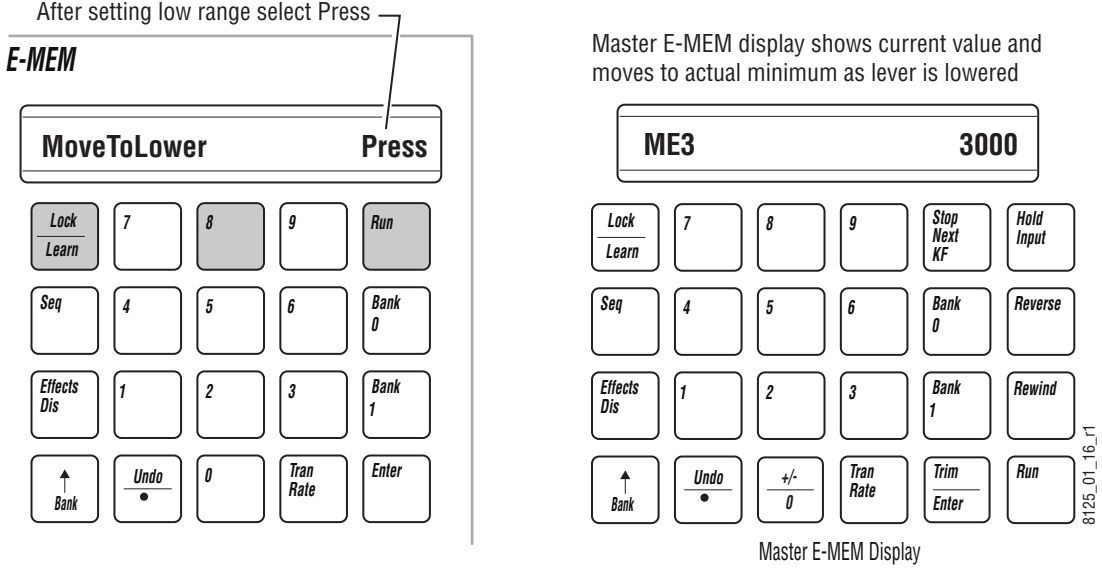
Figure 140. M/E 3 E-MEM and Master E-MEM Calibration Displays



4. Press the **8** button under **Cal** to bring up the lower limit calibration display for M/E 3 (PGM/PST) lever arm (see [Figure 141](#)).
5. Move the M/E 3 (PGM/PST) lever arm to its lower limit and press the **Run** button under **Press**. This automatically calibrates the lever arm lower limit and shows the calibrated value in the Master E-MEM display.

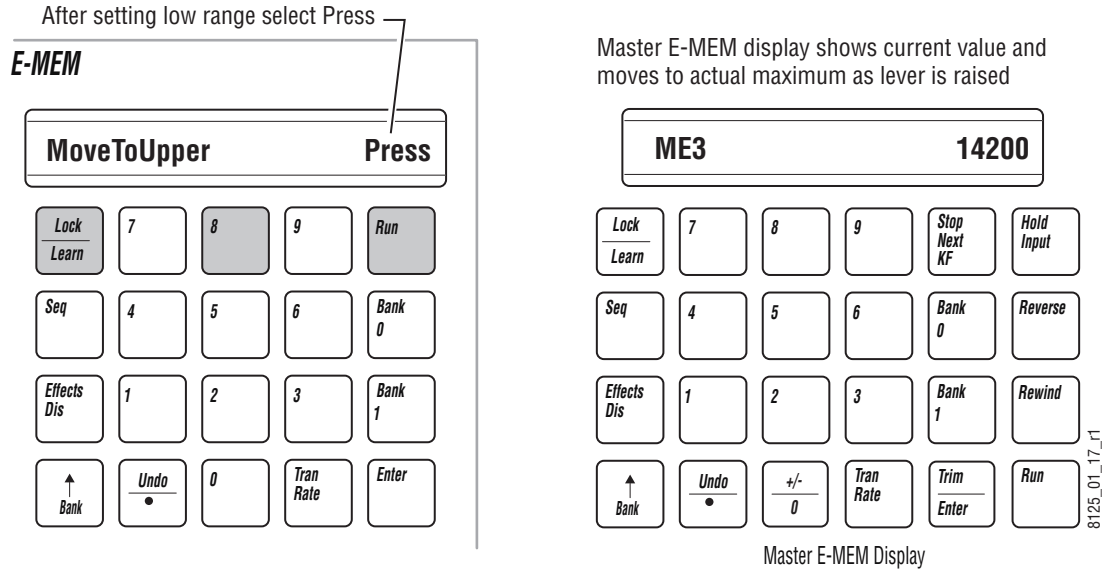
When lower limit calibration is complete, the display will increment to the upper limit calibration.

Figure 141. M/E 2 E-MEM and Master E-MEM Low Range Calibration Displays



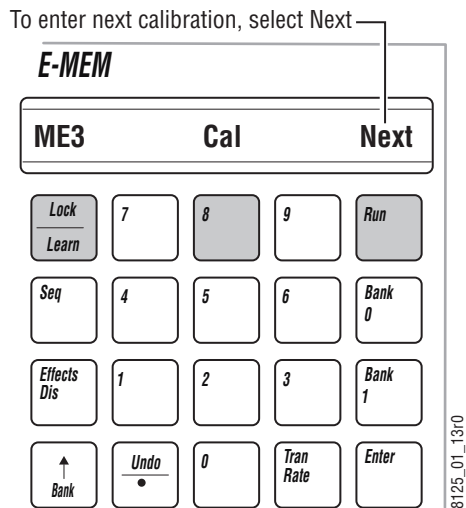
6. Calibrate the upper limit (maximum) position by moving the M/E 3 (PGM/PST) lever arm to its upper limit (see [Figure 142](#)) and pressing the **Run** button under **Press**.

Figure 142. M/E 2 E-MEM and Master E-MEM High Range Calibration Displays



7. After completion of the M/E 3 lever arm calibration, repeat the steps to calibrate M/E 2 and M/E 1 lever arms. Use the **Run** button under **Next** in the M/E 2 E-MEM display to move to the M/E 2 and the M/E 1 lever arm calibration routines ([Figure 143](#)).

Figure 143. Move to Next Calibration Procedure

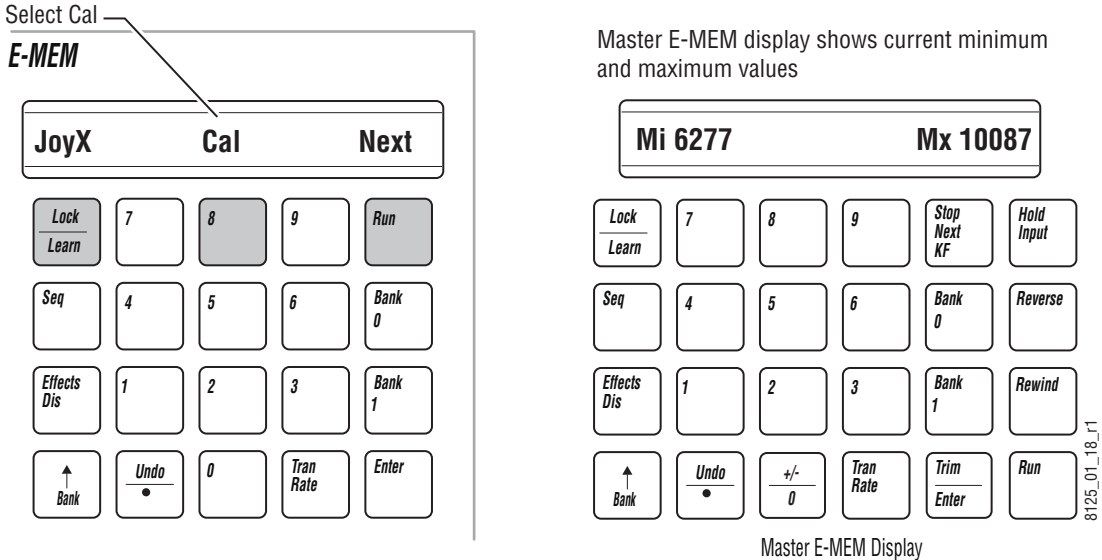


- 8. After calibrating the M/E lever arms, press the **Run** button under **Next** to access the joystick calibration routine.

The M/E 2 and Master E-MEM displays will show the joystick calibration mode, as shown in (Figure 144).

- 9. Press the **8** button under **Cal** to enter the joystick calibration routine.

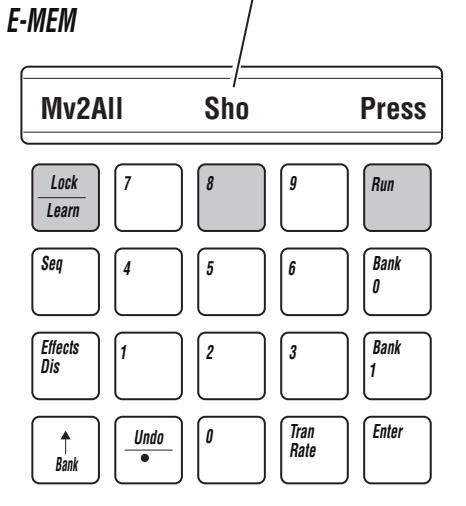
Figure 144. M/E 2 E-MEM and Master E-MEM Joystick X Axis Calibration Displays



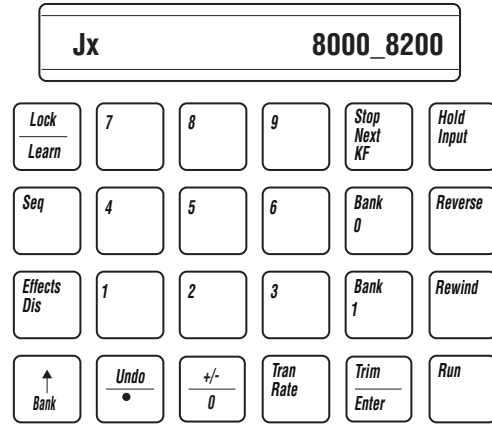
- 10. The first calibration routine is for the X axis. Move the joystick to its left and right limits to set the minimum and maximum X axis values. The joystick values will appear in the Master E-MEM display. Select the **8** button under **Sho** to move to the Y axis calibration routine.

Figure 145. Joystick X Axis Calibration Displays

Select Sho to move to the next calibration routine



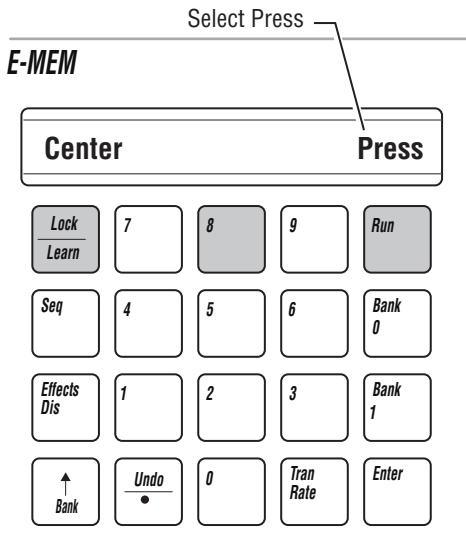
Master E-MEM display shows approximate center values then actual range as you move the joystick



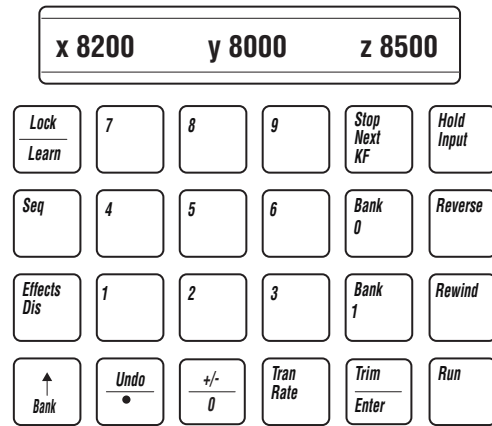
Master E-MEM Display

11. Move the joystick to its top and bottom vertical limits to set the Y axis. The Master E-MEM display will change to show the Y axis values.
12. Press the **8** button under **Sho** to access the Z axis calibration routine. Rotate the joystick clockwise and counter-clockwise to set the range.
13. After adjusting the Z axis, press the **Run** button under **Press** to view the Center display (Figure 146) that reports the center value for each axis—x, y, and z in the Master E-MEM display.

Figure 146. Center Values for Each Joystick Axis Displayed



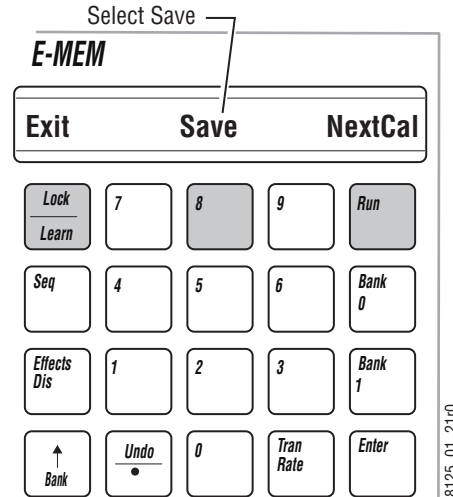
Master E-MEM display shows approximate current center values for each joystick axis



Master E-MEM Display

14. Press the **Run** button under **Press** to return to the Exit/Save/NextCal menu (Figure 147) and press the **8** button under **Save** to save the calibration values.

Figure 147. Save Calibration Values



This completes the calibration routines available for the Zodiac Main panel,

15. Return the Main panel Boot Switch to position 0 and press the **RT Panel Reset** button (Figure 135 on page 193) to reboot the control panel and return to normal operation.

## 24-Crosspoint Remote Aux Panel Troubleshooting

### Diagnostic Tests

A series of built in diagnostic tests are built into the 24-Crosspoint Remote Aux panel.

There are two ways to enter a diagnostic test:

- Setting the rear panel TEST MODE switches to something other than zero (see Table 22, column 2).
- Pressing a combination of front panel switches (see Table 22).

**CAUTION** Attempting to access test modes not listed in Table 22 may cause the system to malfunction.

## Using the Test Mode Switches

The four TEST MODE switches can be set to any of 16 different settings. Not all of these switch settings address user-accessible tests, and some of the settings may cause system malfunction. For normal operation or to activate a test using the front panel buttons, the TEST MODE switches must all be in the OFF position (zero).

Table 22 lists the test numbers and switch positions for the built-in diagnostic tests. The test number is the sum of the numbers of the TEST MODE switches that are ON.

## Tests Using the Front Panel Switches

**Note** For the front panel push-button tests to function, the rear panel TEST MODE switches must all be set to OFF (zero).

Activating a test from the front panel requires simultaneously pressing the M/E 1, M/E 2, M/E 3, PGM, and another push-button, as defined in Column 3 of Table 22 (5th Panel Button). The test will be activated for as long as all the buttons are held down.

Table 22. Remote Aux Panel Test Modes

Test Number	Test Mode 1 2 4 8	5th Panel Button	Test
0	0 0 0 0		Normal Operation
1	1 0 0 0	SHIFT	Button Lamp — Press button to light lamp
2	0 1 0 0	24	Lamp Walk — Each lamp lights in sequence; Both high and low tally are displayed
3	1 1 0 0	23	Display Controlled/Enabled Buses — Single bus panels: Displays on source buttons (1A on left, then 1B etc.); 3 RU panel: Lights the delegate button for each bus that is enabled
4	0 0 1 0	22	Display Panel Address on Source Button Lamps — Number is binary; LSB on left
5	1 0 1 0	21	Display Panel Type on Source Button Lamps — 1 = 2 RU panel, 2 = 3 RU panel, 3 = 1 RU panel; Number is binary; LSB on left
6	0 1 1 0	20	Display Panel Software Version on Source Button Lamps — Number is binary; LSB on left
7	1 1 1 0	18	Display Joystick Override Input Port on Source Button Lights; Pin 1 on source button 1 ... pin 8 on source button 8
12	0 0 1 1	n/a	Program Joystick Override Translation Table (see text)
13	1 0 1 1	n/a	Panel selects only Near side
14	0 1 1 1	n/a	Panel selects only Far side

## Menu Panel Troubleshooting

Proper operation of the Menu panel can be noted by the presence of the Windows desktop or any of the Zodiac menu screens appearing on the Menu panel touch screen. Check the following steps if experiencing problems.

### Basic Functionality Checks

1. Reset the Menu panel by doing the following:
  - a. If the Zodiac application is running, close it by touching the upper right banner.
  - b. If possible, shut down Windows properly in the Start menu.
  - c. Open the Main panel lid and locate the **Menu Reset** button (middle button) on the front of the Control Panel Processor ([Figure 135 on page 193](#)). Press this button to reset the Menu panel, restart Windows, and the Zodiac menu application.

**Note** There is also a local **Reset** button on the Menu panel if accessible ([Figure 148 on page 209](#)).

2. Check the status of power to the Menu panel on the Control Panel Processor board inside the Main panel at the Menu fuse location ([Figure 135 on page 193](#)). Power to the Menu panel (+ 12V) is provided by the Control Panel Processor inside the Main panel tub via an external power cable.
3. Check the version of Zodiac software running on the Menu panel by bringing up the Version screen on the Menu panel as described in the steps below. (This also provides a quick check of system communication status with other devices. Devices not communicating will not report a software version.)
  - a. Select the **Status/Diags** button from the Home menu on the Menu panel.
  - b. Touch the Versions data pad to bring up the software version screen.
  - c. The Version screen should report the Zodiac software version running on each device communicating in the Zodiac system (Video Processor frame, Main panel and Menu panel).
  - d. Check that all reported software versions are identical. If one of the software versions is different, reload the correct software version to that device using the Software Installation Procedure described in the current version of the *Zodiac Release Notes*.

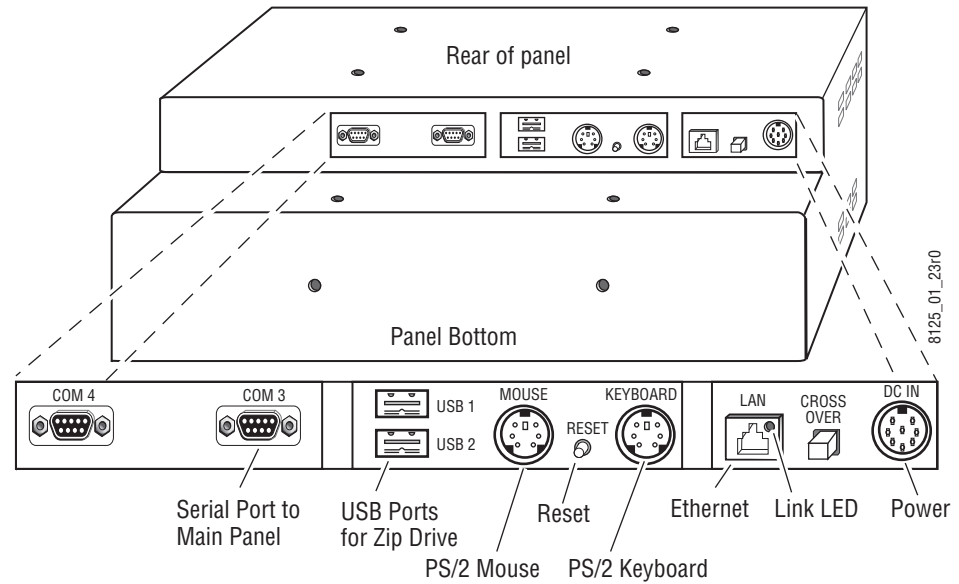
4. If one of the devices did not report a software version in Step 3 above, check Menu panel communication with other Zodiac devices with the steps below.

When the Menu panel is not communicating with the Zodiac frame, a **Frame is disconnected** message will appear in the upper right banner of the menu screen. When the Menu panel is not communicating with the Main panel, selections made on the Main panel, such as double-pressing a **Wipe** button will not bring up the correct menu on the Zodiac Menu application. Also changes made on a menu, such as assigning a matte mode to a key will not be reflected properly on the Main panel.

- a. Verify the Menu panel IP address on the Facility LAN by exiting the menu display and entering the Windows screen.
  - b. Go to the following location in Windows: **Start\Settings\Network and Dial-up Connections**. You may do this without interrupting the software update.
  - c. Click on the **Local Area Connection** icon to bring up the **Local Area Status Dialog Box**, then press the **Properties** button.
  - d. Click on the **Internet Protocol (TCP/IP)** line in the list window to bring up the **Internet Protocol (TCP/IP) Properties** dialog box.
  - e. Verify the IP address assigned is correct for a device on the Facility LAN and verify the Subnet mask IP address. Exit this function.
  - f. Run the Zodiac application on the Menu panel.
  - g. Touch the **Eng Setup** pad and select **Config**.
  - h. In the Hardware pad, make sure the frame Facility LAN IP address and RT Panel IP address (Main panel) are entered correctly.
5. Verify that the Menu panel to frame LAN connection is active by checking the green LAN LED on the bottom of the Menu panel (Figure 148). It should be lit to indicate the LAN connection is active. If the LED is not lit, push the **Cross Over** button next to the LAN connector and wait for about 10 seconds. If the LED does not light, push the **Cross Over** button again to return it to the previous state. This button swaps the TX and RX polarity required for communication with the frame.



Figure 148. Menu Panel Bottom View



Also refer to the detailed procedure, [No Communication Between Main Panel and Frame or System Lockup on page 168](#), to troubleshoot communication problems with other devices.

6. Make sure no unnecessary software applications have been loaded on the Menu panel platform. Running other applications slows the system down and may interfere with operation.

## Menu Panel Calibration

If you are unable to select items in the Menu with the touch screen, the Menu panel may need to be calibrated. The Menu panel calibration procedure is described in detail on [Touch Screen Calibration on page 137](#).

## Menu Panel Hard Drive

The Menu panel is composed of a Single Board Computer (SBC) with an internal hard drive. It may be helpful to use the Windows Disk Defragmenter utility in System Tools periodically to defragment the hard drive and allow the computer to run more efficiently.

# Video Processor Frame Troubleshooting

This section focuses primarily on problems with power to the Video Processor frame, vide path troubleshooting, and communication with other devices.

## Basic Frame Functionality Checks

1. Open the front door of the Video Processor frame and check all frame modules for any illuminated red fault LEDs. If a red fault LED is illuminated, reset the Video Processor frame by pressing the **Reset** button on the Control Processor/DSK/Still Store module in the top slot of the frame and note if any fault lights return.

If any of the fault LEDs remain lit, refer to [Table 23](#) for information on the indicator meaning.

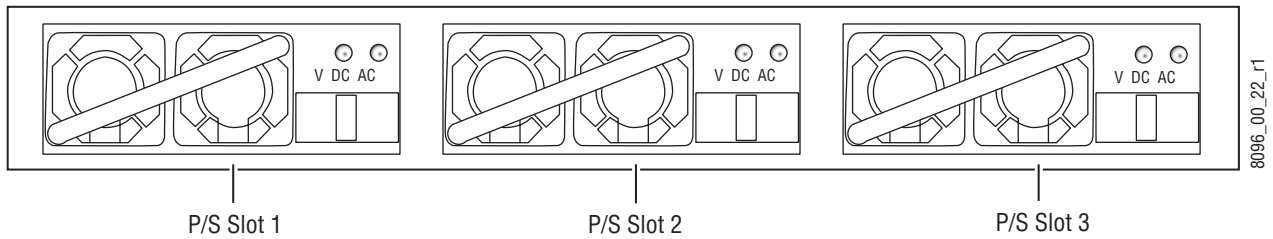
2. If the frame is not communicating with the Menu panel, source names will not appear in the Eng Setup – Sources menu. If there is no communication between the frame and the Main panel, selecting crosspoints will not change video. To verify that the frame is communicating over the Menu and Panel LAN check for blinking green TX and RX MENU and PANEL LEDs on the Control Proc/Still Store/DSK module ([Figure 150 on page 213](#)).

For a more detailed communication troubleshooting procedure, refer to [No Communication Between Main Panel and Frame or System Lockup on page 168](#).

3. Check the frame module status indicators listed in [Table 23](#) to make sure each module in the frame has correct power and other status. Modules are listed as they reside in the frame from top to bottom; indicators are listed as they appear on the front of each module from left to right.
4. Verify that there is at least one power supply for the 2.5-M/E and two power supplies for the 3-M/E functioning in the Video Processor frame at all times, each with the following indicators found at the lower front of the frame ([Figure 149](#)):
  - V AC green LED on (AC line voltage is present).
  - V DC green LED on (DC output to Video Processor frame is present).

**Note** Earlier version power supplies have only one LED which indicates AC power status.

Figure 149. Video Processor Frame Power Supply Status Indicators



Fuses for the power supplies are not accessible. Replace a power supply if an internal fuse is blown (either DC or AC LED is off).

Power to the Video Processor frame will shut off automatically if the operating temperature becomes too high. An over temperature condition can be caused by fan failure or insufficient airflow allowances. Once the system has cooled sufficiently it will restart. Once power is restored, use the web browser described in [Frame Status on page 159](#) to check fan and power supply status in the Video Processor frame.

For troubleshooting loss of DC power to the frame, also refer to the detailed procedure in [No DC Power to Zodiac Component on page 186](#).

## Video Path Troubleshooting

The video path in the Zodiac Digital Processor frame is designed to provide extremely flexible signal routing from input to output. Video paths are configured through software under the Engineering Setup menu of the Zodiac application during initial installation of the system. Although Engineering Setup is not intended to be changed in the course of operation, verification of signal routing (input to output) is important to troubleshooting loss of, or trouble with, video in the system.

### Verify Input Video

If input video is missing, begin troubleshooting by verifying the Source Definition configuration for each Crosspoint (see [Direct Source Definition on page 110](#)).

## Tally/GPI Relay Troubleshooting

There are 32 output tally relays on the Tally connector at J2. GPI outputs feed 8 relays on the GPI connector at J1. All tally relays are fused with a single 5A, 250V fuse (F1) located on the Control Processor/DSK/Still Store module in slot 1 of the frame.

Configuration of tallies and GPIs is done in the Eng Setups menus in the Zodiac Menu application. Refer to [Engineering Setups on page 106](#) for configuration details.

Table 23. Video Processor Frame Module Status Indicators

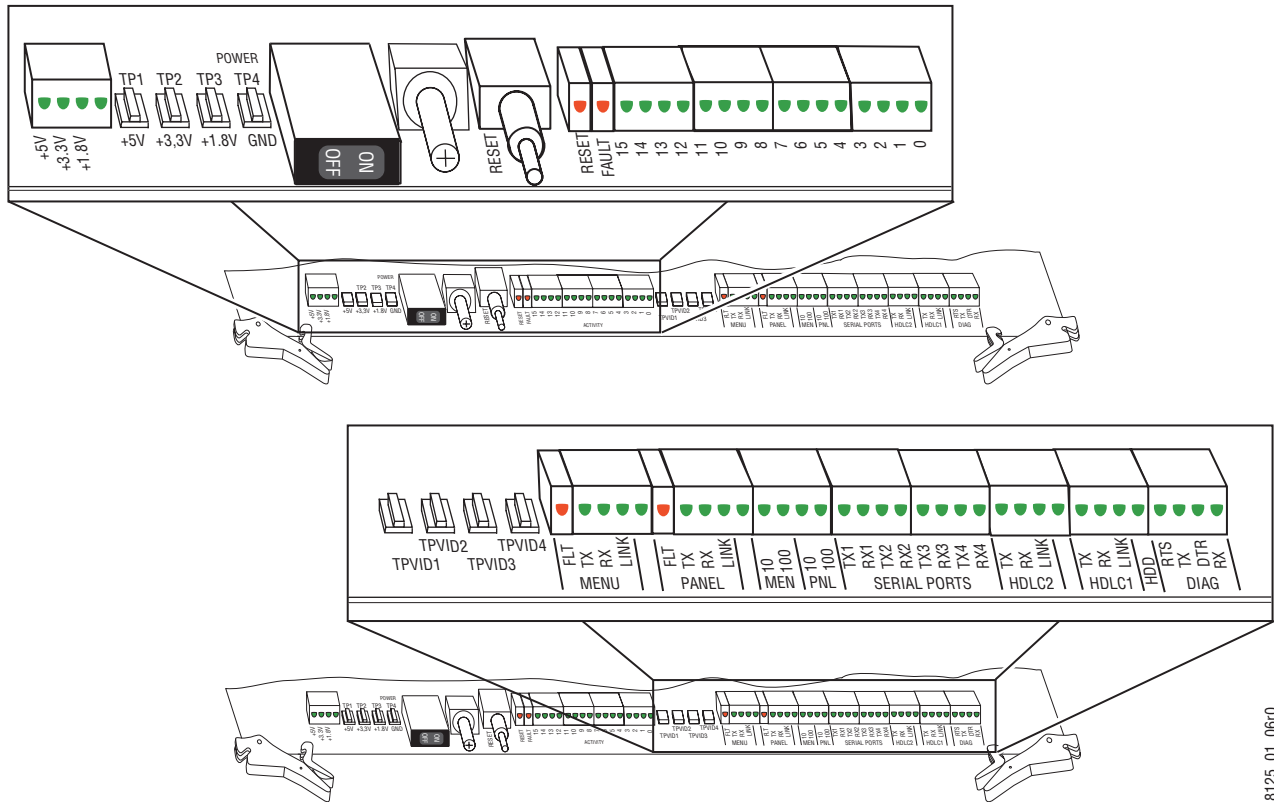
Slot	Module	Indicator		LED Status	Status Meaning/Action
		Group	Name		
1	Control Processor (Figure 150 on page 213)	POWER	+5 V	Green LED on	Designated power present.
			+3.3 V	Green LED on	
			+1.8 V	Green LED on	
		ACTIVITY	RESET	Red LED on	System reset in process.
			FAULT	Red LED on	System is initializing and loading FPGAs. LED off when complete.
			0 – 15	Green LED on	High bit of data is being received by the CPU from the Facility LAN port.
		MENU	FLT	Red LED on	Collision fault detected.
			TX	Green LED on	High bit of data is being transferred from the CPU to the Menu LAN port.
			RX	Green LED on	High bit of data is being received by the CPU from the Menu LAN port.
			LINK	Green LED on	Ethernet controller recognizes Menu LAN connection.
		PANEL	FLT	Red LED on	Collision fault detected.
			TX	Green LED on	High bit of data is being transferred from the CPU to the Menu LAN port.
			RX	Green LED on	High bit of data is being received by the CPU from the Menu LAN port.
			LINK	Green LED on	Ethernet controller recognizes Panel LAN connection.
		MEN	10	Green LED on	Indicates ethernet transfer from Menu LAN is in 10BaseT mode.
			100	Green LED on	Indicates ethernet transfer from Menu LAN is in 100BaseT mode.
		PNL	10	Green LED on	Indicates ethernet transfer from Panel LAN is in 10BaseT mode.
			100	Green LED on	Indicates ethernet transfer from Panel LAN is in 100BaseT mode.
		SERIAL PORTS	TX1 – TX4 RX1 – RX4	Green LED on	Indicates either transmit or receive activity from the four RS-232 serial ports.
		HDLC1	TX1	Green LED on	Indicates transmit activity from the HDLC1 RS-422 serial port.
			RX1	Green LED on	Indicates receive activity from the HDLC1 RS-422 serial port.
			LINK	Green LED on	Serial controller recognizes port connection.
		HDLC2	TX1	Green LED on	Indicates transmit activity from the HDLC2 RS-422 serial port.
			RX1	Green LED on	Indicates receive activity from the HDLC 2 RS-422 serial port.
			LINK	Green LED on	Serial controller recognizes port connection.
		N/A	HDD	Green LED on	Indicates hard disk drive communication.
		DIAG	RTS	Green LED on	Indicates request transfer send.
			TX	Green LED on	Indicates transmit activity from the DIAG RS-232 serial port.
DTR	Green LED on		Indicates data transfer ready from diagnostic port.		
RX	Green LED on		Indicates transmit activity from the DIAG RS-232 serial port.		
2/3	M/E (Figure 151 on page 214)	N/A	FPGA PGM OK	Green LED on	Indicates system has booted successfully and all programmable parts on the module are configured properly.
			+5 V	Green LED on	Designated power present.
			+3.3 V	Green LED on	
			+1.8 V	Green LED on	

Table 23. Video Processor Frame Module Status Indicators - (continued)

Slot	Module	Indicator		LED Status	Status Meaning/Action
		Group	Name		
4	Input/Xpt/ Sync Gen (Figure 152 on page 214)	N/A	+ 8 V	Green LED on	Designated power present
			+ 5 V	Green LED on	
			+ 3.3 V	Green LED on	
			+ 2.5 V	Green LED on	
			+ 2 V	Green LED on	
			+ 1.8 V	Green LED on	
		N/A	- 8 V	Green LED on	Not used
			LED0	Green LED on	
			LED1	Green LED on	
			LED2	Green LED on	
			LED3	Green LED on	
			LED4	Green LED on	

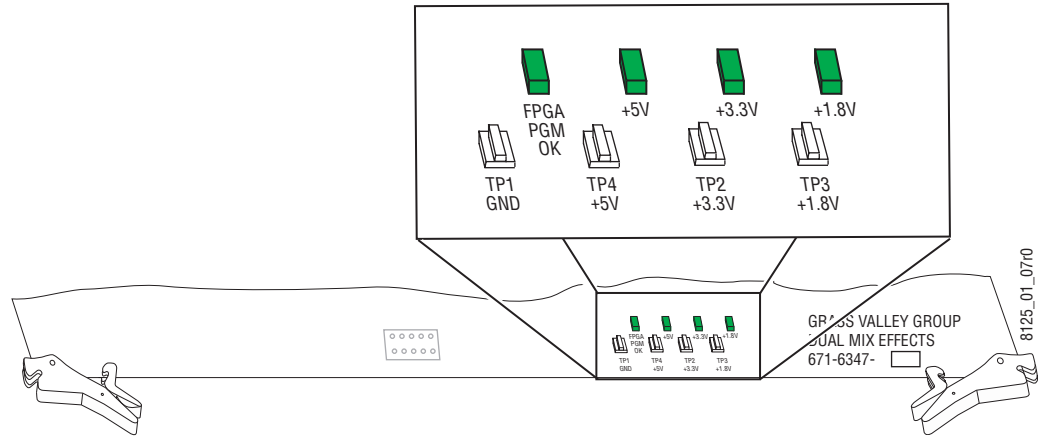
## Frame LEDs and Test Points

Figure 150. Frame Control Processor Module LEDs



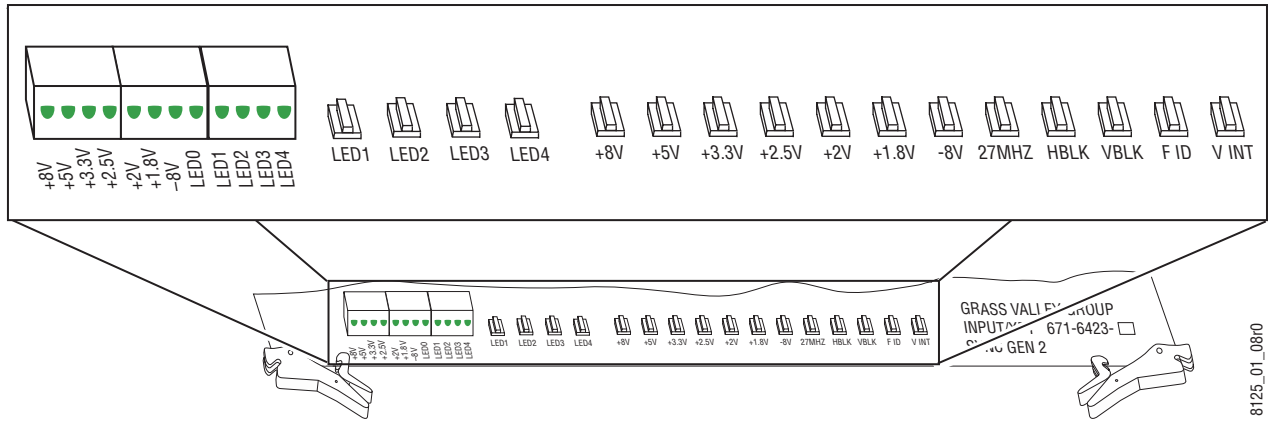
8125\_01\_06r0

Figure 151. Dual M/E Module LEDs



8125\_01\_0710

Figure 152. Input/Xpt/Sync Gen Module LEDs



8125\_01\_0810

# Local Area Network Troubleshooting

The Zodiac Digital Production Switcher is designed to utilize networking to communicate with other devices. For a detailed overview of the Control panel and Facility LAN requirements, refer to [LAN Requirements on page 75](#).

The following procedure assumes that the system has been up and running after installation. Follow the basic guidelines below for troubleshooting networking problems.

## Verify Physical Layer

Verify the physical layer (basic electrical and mechanical) is functioning properly.

- Trace the network cables to the source if possible and check functionality.
- Check that link lights at all network switch locations are on and blinking.
- Check cabling for loose connections.
- Verify that any changes made to the physical LAN since installation — such as re-wiring — have been done properly.

## Verify IP Addressing

Refer to [Network Configuration on page 84](#) for a detailed description of the IP addressing requirements of the system. Note that all Zodiac devices requiring an IP address also have requirements for knowing the other device's IP addresses that they communicate with. This is a key factor in troubleshooting a system.

Verify IP addressing for other devices that have may been added to the network, and any changes in the network itself (merged with a larger network for example).

## Ping Network Devices

Use the **ping** command to ping the device itself for verification then the other remote network devices. Pinging a remote device checks communication to that device but does not verify that an application is running on the remote device.

To issue the **ping** command:

1. If the Zodiak application is currently running on the Menu panel, exit the application by touching the upper right message area of the Zodiak menu.
2. Launch the Command Prompt application from the Windows **Start/Programs/Accessories/Command Prompt** menu.
3. At the prompt, enter the ping command followed by the IP address of the device and press enter.

```
ping [IP address]
```

## NetCentral Support

The NetCentral system is a suite of software modules, residing on one or more centrally located computers. These modules work together to monitor and report the operational status of devices (broadcast equipment such as a Zodiak system or a modular frame, etc.), using Simple Network Management Protocol (SNMP).

The Zodiak NetCentral option provides support for NetCentral (via a NetCentral agent) but does not include the actual NetCentral product, which is available separately. Once the Zodiak NetCentral agent is installed and configured, the Zodiak system can be monitored by NetCentral, or by any SNMP manager.

## NetCentral Capabilities

When the NetCentral option is installed and configured, the Zodiak system automatically sends trap messages to the NetCentral Monitoring Station, reporting Zodiak system status. The NetCentral system can be configured to listen to and respond to these trap messages. Each trap message is assigned a severity status and a response. The responses can range from log the status to sound an alarm, or send E-mail, or call someone on the phone or pager.

Zodiak trap messages are related to the condition of the Video Processing Frame, the Main Control Panel, and the software. The physical condition of the Power Supplies, the Fans, the Modules, and the overall temperature are reported. Software is monitored for version match/mismatch status, option status, license status, and operating status. A list of all the SNMP trap messages possible from a Zodiak can be generated and printed at the Monitoring Station.



## Zodiak NetCentral Option Installation

### Install Agent on Zodiak System

SNMP must be installed on the Zodiak Menu panel before the NetCentral Agent software can be installed. The SNMP is available on the official Microsoft Windows OS CD provided with your system. Use the CD to install SNMP.

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

With SNMP installed, insert the Zodiak Software CD into the Zodiak CD drive and select the **NetCentral Agent Configuration Tool** option. The Agent software package installed includes a utility used to configure the installed agent.

### NetCentral Monitoring Station Configuration

Refer to the separate *NetCentral User Guide* for specific instructions on how to install, configure, and use NetCentral with the Zodiak system.



# *Functional Description*

## **Introduction**

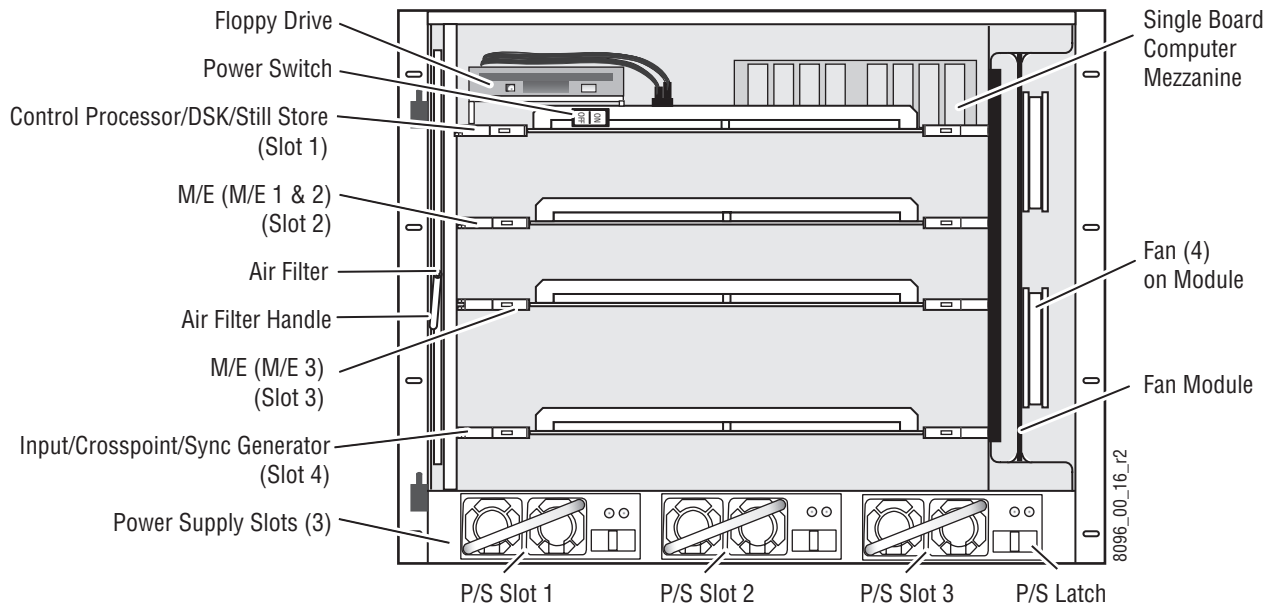
This section provides a functional description of the Zodiac Video Processor frame and modules and control panels and associated circuit boards, including their respective power supply assemblies. The intent is to provide information adequate to allow maintenance technicians to isolate problems to the frame module level and the Main panel circuit board level.

## **Video Processor Frame**

The Video Processor frame ([Figure 153 on page 220](#)) is a compact 7 RU, rack-mountable unit with a built-in cooling system. Cooling consists of a Fan module containing four fans mounted in the right side of the frame and an air filter on the left side. The cooling air is drawn through the air filter on the left and is drawn horizontally over the frame modules by the fans. It then exits out the right side of the chassis. The Fan module runs on +48 V and is fused on the  $\pm 48$  V inputs on the module.

Each fan outputs a tachometer signal to the Control Processor module where fan status can be read on the Frame Status web page. For fire protection, a thermostat switch in series with the system power on/off switch on the Control Processor module opens and removes power from the system if the frame temperature rises above a set point.

Figure 153. Video Processor Frame and Modules



## Video Processor Power Supplies

Built-in power supplies provide DC power to the Zodiac Video Processor frame. The Zodiac Video Processor frame houses up to three slide-in modules rated at 400 watts each (see [Appendix A-Specifications](#)). Two power supply modules (primary and redundant) are standard with the 2.5-M/E system, and three power supply modules are standard with the 3-M/E system.

The power supplies load share such that a supply can fail and the Video Processor frame will continue to operate on the other supply/supplies.

The Power Supply modules are hot pluggable, but should never be slammed into a slot. Each slide-in module has its own AC input and its own cooling fan. It is recommended that each module's AC input be connected to a separate AC supply circuit. Any module(s) for which a separate supply circuit is not available can be connected to an uninterrupted power supply.

### Frame Power Supply Module Indicators

Voltage LEDs on the front of the Frame Power Supply modules indicate the following status for each power supply:

- AC — (AC Good) Indicates the presence of AC line voltage, and
- DC — (DC Good) Indicates the presence of DC output to the Video Processor frame.

**Note** Earlier version power supplies have only one LED which indicates AC power status.

## Video Processor Frame Power Distribution

The + 48 V DC power from the power supplies enters a Power Transfer module before going to the switcher backplane where it is distributed to all frame modules. Each module is fused to provide protection from over-current damage. Each frame module has its own DC-to-DC voltage converter that receives the + 48 V DC as input, and outputs the necessary DC voltages for use by the particular module.

## Video Processor Frame Modules

Up to four hot-pluggable modules are installed in the front of the Video Processor frame ([Figure 44 on page 67](#)). The modules plug into a backplane where they receive DC power and the signals from each module are distributed throughout the system. All frame modules have metal guide pins to prevent errors when inserting modules. The modules are listed in [Table 24](#) and shown in [Figure 153 on page 220](#).

In some cases, “like” modules (for example, The M/E modules) have the same guide key position. “Like” modules can be placed in the wrong slot and no damage occurs. However, the module may not operate correctly.

Table 24. Frame Module Locations

Module Name	Slot #
Control Processor/DSK/Still Store	1
M/E Module (M/E 1 & M/E 2)	2
M/E Module (M/E 3)	3
Input/Crosspoint/Sync Generator	4

## Video Processor Frame Modules

A brief overview of each of the Video Processor frame modules is given here. Refer also to the simplified block diagram shown in [Figure 7 on page 32](#).

## Control Processor/DSK/Still Store Module

The Control Processor/DSK/Still Store module resides in top slot 1 of the Video Processor frame (see [Figure 153 on page 220](#)). This module provides the following functionality for the Video Processor frame:

- Control Processing (central CPU),
- DSK processing,
- Still Store effects,
- Tally relay circuitry and control,
- Serial outputs,
- Ethernet interface, and
- GPI control and input/output circuitry.

Each section of the module is described briefly below.

### Control Processor

The Control Processor section contains a single board computer (SBC) that acts as the central CPU for controlling communication between the Video Processor frame and other switcher devices and system functions.

Inputs to the Control Processor for noting switcher status include:

- Tachometer inputs for the four frame fans to identify fan failure,
- Power supply indicators for Present, AC Good, and DC Good for each power supply (up to three in the 2.5 M/E and three in the 3-M/E),
- High temperature indicators, and
- 4-bit Rotary switch for various switcher functions.

The module also has a hard drive which can be accessed from the Menu/Facility LAN for storage of system configuration and a floppy drive for use with an emergency recovery boot disk. LEDs on the front edge of the circuit board monitor power and the transfer, receipt, and control of data and resets across the system. These status indicators are shown in detail in [Figure 150 on page 213](#).

A main power switch for turning the Video Processor frame on and off is provided on the front of the module. In series with it is a thermal shutoff switch which will turn off the main power switch and shut down the power supplies when the board temperature exceeds 71 degrees C. The Control Processor status parameters such as temperature and power supply status are reported in the web browser interface to the frame. Refer to [Frame Status on page 159](#) for details on user access to Frame status.

### Still Store Effects

The Zodiac Still Store is internal to the system and provides two video inputs and four outputs. Inputs and outputs are internal Zodiac system sources, which can be mapped to any desired Source Select buttons.

The storage information is contained in one standard DIMM socket which can store up to 100 frames of video.

Supported Still Store features are:

- Two inputs and four outputs,
- Outputs video or key,
- 100 frames of live frame memory, and
- Upload/download stills in multiple formats (uncompressed format, TIFF files, and AVI movies).

### DSK

The DSK section of the module performs the mix between the two background videos and up to three simple downstream keyers. The downstream keyers can operate as external or self keys with full clip and gain and linear or non-linear shaping.

The outputs from the DSK are fed to two dedicated Program (PGM A and B) and two dedicated Preview (PVW A and B) output BNCs on the rear of the switcher frame. Clean feed configuration of both Program outputs can be defined in the DSK menu in the Zodiac Menu Panel application.

### Tally Outputs

The Tally section of the module provides 32 output relays that interface Zodiac source tally status to an external tally system. The tally outputs are fed to a 37-pin D connector labeled Tally (J2) on the rear of the frame. Tally configuration is part of source definition that is done in Engineering Setups in the Zodiac Menu application.

### GPI Inputs and Outputs

Eight GPI relay outputs and eight optically isolated GPI inputs are controlled by this module. Access to the GPI inputs and outputs is through the 37-pin D connector labeled GPI (J1) on the rear of the frame. GPI parameters are set up using the Zodiac Menu panel application.

Tally relays for both tally and GPI outputs are fused with a single 5A, 250V fuse on the Control Processor/DSK/Still Store module.

### Serial Ports

Control of the seven 9-pin D connector serial ports on the rear of the switcher ([Figure 43 on page 66](#)) is provided by this module. The following ports are available:

- Two RS-422 HDLC ports labeled CPL 1 and CPL 2 (J8 and J9),
- Four ASYNC RS-422 serial ports labeled Serial 1 – 4 (J4 – J7), and
- One RS-232 Diagnostic serial port labeled Diag (J3).

### Ethernet

The Video Processor frame connects to two separate LANs in the Zodiac system, the Panel LAN for communication with the Main panel and the Menu (also called the Facility) LAN for communication with the Menu panel. The Video Processor frame also acts as the communication gateway between the Menu panel and the Main panel.

Two RJ45 connectors on the rear of the frame, Menu Display (J10) and Control Panel (J11), provide 10/100BaseT Ethernet LAN interface to the Menu panel and the Main panel.

It is important to note that the TX and RX pairs between the frame and both control panels must be swapped for proper operation. This is normally done using peer-to-peer (crossover) cables. The cables supplied with the Zodiac system are straight-through cables and polarity of the TX and RX pairs is swapped using the **Cross Over** buttons on the rear of the Main panel and the Menu panel.

### Floppy Disk Drive

The floppy disk drive mounted on the Control Processor/DSK/Still Store module is provided for running an emergency recovery procedure loaded on a floppy disk provided with the system. The floppy disk completely reformats the Video Processor frame hard drive and restores the default IP addresses set at the factory to return the frame to a known default state for troubleshooting. The disk should only be used for the emergency recovery procedure and not for any other purpose. Refer to [Reformat Hard Drive and Restore Video Processor Frame IP Address on page 178](#).



## Dual Mix/Effects (M/E) Modules

In a Zodiac system, the mix/effects circuitry for M/E 1 and M/E 2 resides on the Dual M/E module in slot 2 (see [Figure 153 on page 220](#)). In a 3-M/E system, a second M/E module containing M/E 3 only is installed in slot 3. Mix/Effect module functionality includes the following:

- Video and key processing,
- Wipe generation,
- Transform Engine manipulation of video,
- Mixing of M/E video, and
- Effects Send outputs.

Circuitry for each M/E bank is identical as described below.

### Video and Key Processing

Each M/E bank receives the selected Key 1 – 4 video (fill) and key (cut) signals, A and B background video, and Utility video (if selected) from the Input/Crosspoint/Sync Gen module. The signals are combined in FPGA (Field Programmable Gate Array) circuits according to control signals from the Main and Menu panel based on the effects defined by the switcher operator.

The video processor section of the module performs the following functions:

- Chroma Keying,
- Posterization and solarization,
- Color and hue modification,
- Modification of contrast and brightness, and
- Key clip and gain.

### Wipe Generation

Two complex and four simple wipe generators provide wipe effects for each M/E. Wipe generators are shared between the A and B background buses and the four keyers. Point of use and assignment of wipe generators is done using the Wipe menu in the Zodiac Menu application. Wipes modifiers include:

- Multiplication,
- Frequency modulation,
- Aspect,
- Position,
- Direction,

- Rotation,
- Pattern mix,
- Softness, and
- Border.

### **Transform Engines**

The key cut and fill signals feed the Transform Engine circuitry where the following internal DPM capability is provided per keyer:

- 2-D effects in 3-D space with perspective,
- Page turn,
- Border, outline, and extrude effects,
- Independent drop shadow,
- Glow and defocus effects, and
- Output recursive effects (such as star trails and montage).

### **Mixer Section**

The resultant video from the key, wipe, and Transform Engine processing circuitry enters the final mixing section where the signals are combined and sent to the M/E outputs. These outputs are routed back to the crosspoint matrix where they may be re-entered into another M/E or selected as the final Program outputs.

### **Effects Send**

Effects Send capability is provided by up to four Aux Bus pairs (2 pairs in a 2-M/E system and 4 pairs in a 3-M/E system) from the M/E modules which are sent to, and returned from, an external DPM via designated Aux Buses. The Aux Bus pair must be defined as video/video or video/key signals, and shaped or unshaped in the Zodiac Menu application.

## **Input/Crosspoint/Sync Generator Module**

The Input/Crosspoint/Sync Generator module resides in slot 4 of the Video Processor frame (see [Figure 153 on page 220](#)). It contains the circuitry for the following switcher functions:

- Accepting and processing external input video from the switcher backplane,
- Crosspoint matrix,
- Internal Background generators, and
- Sync Generator for generating the necessary timing signals for distribution throughout the system.

### **Input Section**

The input section of the module accepts 270 MHz serial digital video from the 64 non-looping physical BNCs on the rear of the Video Processor frame. These inputs conform to the SMPTE RP-259M standard. Each input is equalized and buffered before entering the Crosspoint matrix.

### **Crosspoint Matrix**

The Crosspoint circuitry on the module receives differential PECL video signals from the Input section and outputs differential PECL video signals to the Dual Mix/Effect modules based on control panel selections.

### **Background Generators**

Two separate internal background generators are available as primary sources in the Zodiac system. Each background generator has background wash and texture capability in addition to complete hue, brightness and saturation control from the Matte menu in the Zodiac Menu application.

### **Sync Generator Section**

The Sync Generator section of the module takes a black reference signal from the Analog Reference In BNC on the rear of the Video Processor frame and generates the timing signals used throughout the Zodiac system. Timing signals include the following:

- Pixel clock output,
- Horizontal blanking,
- Vertical blanking,
- Field ID, and
- Vertical interval interrupt to CPU.

## Zodiak Main Panel

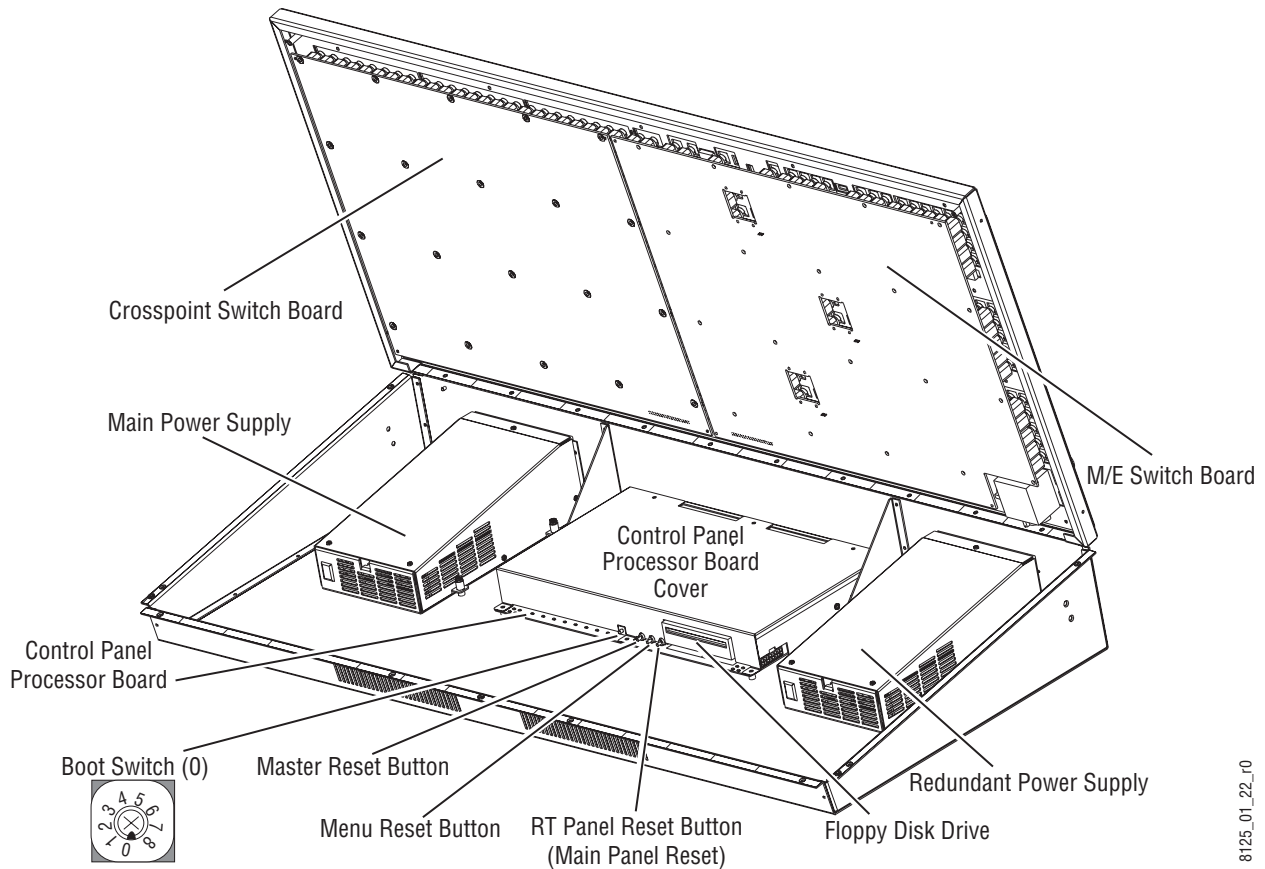
The Zodiak Main panel provides real time button, knob, and lever arm control of up to three full function mix/effects (PGM/PST with full M/E capability). The 3-M/E panel is identical to the 2.5-M/E panel except for keyer and wipe functionality in the PGM/PST rows.

Two power supplies provide DC power to the Main panel where it is regulated and distributed to other control surface components.

The Main panel (also referred to as the Real Time or RT panel) has three major circuit boards listed below and shown in [Figure 154](#):

- Control Panel Processor board,
- Crosspoint Switch board, and
- M/E Switch board.

Figure 154. Main Panel Boards and Power Supplies



8125\_01\_22\_10

## Main Panel Power Supplies

Two power supply modules are standard with each Zodiak Main panel. The Main power supply is mounted inside the panel tub on the left and the Redundant supply is mounted on the right (Figure 154 on page 228).

The supplies are identical with the features described below.

- Power on/off switch located on the front of the supply,
- Outputs of +5 V and +12 V DC (outputs are monitored by LEDs located on the Control Panel Processor board as shown in Figure 135 on page 193),
- Built-in cooling fan expels air out the rear of the Main panel, and
- Separate AC input.

## Control Panel Processor Board

The Control Panel Processor board, mounted in the Main panel tub between the two power supplies (Figure 154 on page 228), provides the control center for Main panel communication and operation. The board is protected by a metal cover that can be easily removed for troubleshooting or replacing fuses.

An on-board computer has the tasks of collecting panel switch, knob, lever arm, and joystick movements and reporting these to the frame. It also receives tally and state change information from the frame and updates tally lights and displays based on the information. Power from the two power supplies is distributed from this board to the other boards in the Main panel as well as the Menu panel.

Control Panel Processor board functionality is summarized below.

- On-board 586 Class PC for control functions,
- Disk-on-chip replaces a hard drive for storing operating software and IP addresses,
- 10/100BaseT Ethernet LAN communication with Link LED indicator for connection to Video Processor frame on Panel LAN,
- Passive crossover switch for swapping Main panel to Frame Ethernet cable TX and RX polarity,
- Floppy disk drive for use with recovery floppy disks supplied with the system,
- Data transfer FPGA for interfacing to the Crosspoint Switch and M/E Switch board controls via 8-bit parallel interfaces,
- Two RJ45 LAN connectors for control and connection to Satellite panels 1 and 2,
- Ten position boot mode selection switch (for diagnostic and setup functions),
- Reset switches for Main panel (RT panel), Menu panel and a Master reset for both,
- Power regulating, monitoring, and fusing of + 5 V and + 12 V from Main and Redundant power supplies to other required voltages and distribution to on-board areas and other boards in the panel and the Menu panel, and
- Four GPI output relays and four GPI opto-inputs for interfacing to external devices.

## Floppy Disk Drive

The floppy disk drive mounted on the Control Panel Processor board in the Main panel tub is provided for running an emergency recovery procedure loaded on two floppy disks provided with the system. The floppy disks completely reformat the Main panel hard drive disk-on-chip and restore the default IP addresses set at the factory to return the panel to a known default state for troubleshooting. These disks should only be used for the emergency recovery procedures and not for any other purpose. Refer to [Reformat Main Panel Hard Drive and Restore IP Addresses on page 176](#).

## Crosspoint Switch Board

The Crosspoint Switch board is mounted inside the Main panel lid on the left ([Figure 154 on page 228](#)). It contains the source select push buttons and control circuitry for the PVW/AUX, M/E and PGM/PST key and background buses, and the Key Bus Delegate and Preview subpanels.

Power (+5 V) and control panel data to and from the host Control Panel Processor is passed via a single 34-pin ribbon cable. The Control Panel Processor writes and reads data from the parallel slave port of a PIC microcontroller on the Crosspoint Switch board. The PIC is responsible for reading the switches and lighting their tally LEDs.

Power and status indicator LEDs are provided on the board ([Figure 134 on page 192](#)).

## M/E Switch Board

The M/E Switch board is mounted inside the Main panel lid on the right ([Figure 154 on page 228](#)). It contains circuitry for the following control panel functions:

- Pushbuttons and lamps for re-entry crosspoints and Aux Bus delegation,
- M/E Transition subpanel pushbutton and lamp controls and lever arms,
- Joystick control and transform pushbuttons and lamps,
- Shaft encoders for Clip and Gain,
- Effects Memory pushbuttons and alphanumeric displays,
- M/E Keyer subpanel LEDs, pushbutton and lamp controls,
- Fade to Black pushbutton and alphanumeric display, and
- DSK subpanel and LEDs.

Power (+5 V) and control panel data to and from the host Control Panel Processor is passed via a single 34-pin ribbon cable. The host Control Panel Processor writes and reads data from three parallel slave ports of PIC microcontrollers for M/E 1, M/E 2 and M/E 3 (PGM/PST). Any analog information from panel circuitry is first processed in A–D converters before passing to the microcontrollers.

Power and status indicator LEDs are provided on the board ([Figure 134 on page 192](#)).

## Zodiak Menu Panel

The Zodiak Menu panel is a standalone touch screen that allows fingertip control of the Zodiak Menu application for custom user configuration of special effects and matte settings not requiring real time operation. A standard keyboard and mouse supplied by the customer can also be connected for control. The Menu panel contains a single board computer (SBC) running a Windows operating system. The Zodiak Menu application runs on this platform and interfaces with the Main panel and Video Processor frame via over the Ethernet network.

Main features of, and interfaces to, the Menu panel include the following:

- Pentium class Single Board Computer (SBC) board running Windows operating system on internal hard drive,
- RJ-45 Ethernet connection to Video Processor frame and Main panel over Menu (Facility) LAN,
- Passive crossover switch for swapping Menu panel to Frame Ethernet cable TX and RX polarity,
- Built-in CD-ROM drive for installation of Zodiak software and other applications,
- Flat panel display with touch screen overlay for access to Zodiak menus,
- Standard PS/2 keyboard and mouse interface (keyboard and mouse not provided),
- External Zip drive with USB interface (250 MB Zip drive and one Zip disk included with system),
- Receives +12 V DC power from Control Panel Processor board through external power cable, and
- A built-in fan pulls cooling air through vents on the top and left sides and expels it out the right side.



# Specifications

Table 25. Zodiac System Specifications

<b>Power</b>		
Video Processor Frame	Power Supply	100-125 VAC or 200-250 VAC autorange, 50-60 Hz power factor corrected
	Power Consumption	2.5-M/E: 300 W (typical) 3-M/E: 400 W (typical)
Main Panel	Power Supply	100-125 VAC or 200-250 VAC autorange, 50-60 Hz power factor corrected
	Power Consumption	150 W (typical)
<b>Environmental</b>		
Temperature Range	Video Processor Frame, Menu Panel	Specification <sup>a</sup> : 68° to 86° F (20° to 30° C) Operational <sup>b</sup> : 32° to 104° F (0° to 40° C)
	Main Panel	Specification <sup>1</sup> : 68° to 86° F (20° to 30° C) Operational <sup>2</sup> : 32° to 95° F (0° to 35° C)
Relative Humidity		Up to 95% (non-condensing)
Mechanical Stress		ASTM D 4728, Fig. X1.1, Table X1.1, Truck Profile.
<b>Serial Digital Video Inputs</b>		
Number		64 non-looping
Type of Connectors		75 ohm BNC, (SMPTE 259M)
Nominal Amplitude		800 mV peak-to-peak terminated
Return Loss		> 15 dB, 5 MHz to 270 MHz
Channel Coding		Conforms to SMPTE RP-259M
Ancillary Data		Passed from A background to program outputs
Input Impedance		75 ohm, self terminating
Autotiming Range		± 14 microseconds
Maximum Cable Length Equalized (Belden 8281 type cable)		738 ft. (225 m)
Number of Bits		10
<b>Serial Digital Video Outputs</b>		
Number		26 outputs (3-M/E), 2 BNCs per output (52 BNCs)
Type of Connectors		75 ohm BNC, self terminating (SMPTE 259M)
Amplitude		800 mV peak-to-peak across 75 ohm ± 10% (SMPTE 259M)
Return Loss		> 15 dB, 5 MHz to 270 MHz
Rise and Fall Times (between 20% and 80% amplitude points)		Between 400 picosecond and 1.5 nanosecond across 75 ohm termination
Timing Jitter		0.2 UI (SMPTE RP184-1996 method)
Channel Coding		Conforms to SMPTE RP-259M
Output Impedance		75 ohm
Ancillary Data		Included in each M/E and DSK Program output

Table 25. Zodiac System Specifications - (continued)

DC Offset on Output	< 50 mV across 75 ohm termination
Number of Bits	10
Number of Outputs	2 BNC connectors per channel
<b>Analog Reference Input</b>	
Black	Composite Color Black (NTSC or PAL), 525 (60 Hz) or 625 (50 Hz)
Connectors	Two 75 ohm BNC
Return Loss	> 40 dB to 5 MHz
Impedance	75 ohm loop through
<b>System Timing</b>	
Switcher Output Delay	49 microseconds <sup>1</sup>

<sup>a</sup> All measurable parameters meet the specifications defined in this appendix.

<sup>b</sup> The equipment runs safely without damage, but inconsistencies with the specifications defined in this appendix may occur.

Table 26. Zodiac Mechanical Specifications

Component	Depth	Width	Height	Weight <sup>a</sup>	Rack Units
<b>Standard</b>					
Video Processor Frame	22.13 in. / 562 mm <sup>b</sup>	19.0 in. / 483 mm <sup>c</sup>	12.25 in. / 311 mm	79lb / 36 kg	7
Main Panel	18.75 in. / 476 mm <sup>d, e</sup>	40.97 in. / 1041 mm	5.82 in. / 148 mm <sup>f</sup>	86 lb / 39 kg	N/A
Menu Panel <sup>g</sup>	4.30 in. / 109 mm	14.75 in. / 375 mm <sup>h</sup>	10.1 in. / 257 mm	17 lb / 7.7 kg	N/A
<b>Options</b>					
KAL-24AUX1 Remote Aux Panel	2.0 in. / 51 mm	19.0 in. / 482 mm	1.75 in. / 45 mm	2.25 lb / 1.02 kg	1
KAL-24AUX2 Remote Aux Panel	2.5 in. / 64 mm	19.0 in. / 482 mm	3.5 in. / 89 mm	4.5 lb / 2.04 kg	2
KAL-24AUX3 Remote Aux Panel	2.5 in. / 64 mm	19.0 in. / 482 mm	5.25 in. / 133 mm	6.75 lb / 3.06 kg	3
KAL-32AUX1 Remote Aux Panel	5.25 in. / 133 mm	19.0 in. / 482 mm	1.75 in. / 44 mm	2.06 lb / 0.93 kg	1
KAL-32AUX2 Remote Aux Panel	4.25 in. / 108 mm	19.0 in. / 482 mm	3.5 in. / 89 mm	2.25 lb / 1.02 kg	2

<sup>a</sup> All weights approximate.

<sup>b</sup> Allow an extra 4.0 in. (102 mm) for cable.

<sup>c</sup> Allow an extra 4.0 in. (102 mm) on the left and right of the frame for air flow.

<sup>d</sup> Allow a minimum of 6.0 in. (152 mm) of clear space at the rear of the Main panel below the mounting surface for proper cable clearance and air flow. Allow an extra 8.0 in. (203 mm) to 10.0 in. (254 mm) of mounting surface behind the Main panel for peripheral components.

<sup>e</sup> Indicated measurement is for the lid. Refer to installation detail for tub measurements.

<sup>f</sup> Add 0.25 in. (6 mm) for rubber feet on bottom of tub if required. Indicated measurement is from bottom surface of tub to top surface of lid.

<sup>g</sup> Not including mounting bracket.

<sup>h</sup> Allow an extra 5.8 in. (147 mm) clearance for the CD drawer and fan exhaust.

# Field Replaceable Units

## Introduction

This appendix provides lists of the Field Replaceable Units (FRU) and Critical Spares Kit for the Zodiak Digital Production Switcher.

**Note** The lists given here are for general guidelines only and are subject to change at any time. They do not reflect current pricing or availability information. Always check the Grass Valley Group web site for product updates before ordering replacement parts.

Some replacement parts may be ordered on-line from the Grass Valley web site.

## Field Replaceable Units

The modules and assemblies in the Zodiak Video Processor Frame and Control Panel surfaces that can be replaced in the field and ordered from Customer Service are listed in [Table 27](#). Refer to the Replacement Notes and References column for any special replacement instructions and links or references to other manual sections.

Table 27. FRU List and Replacement Notes and References

Name	Part Number	Replacement Notes and References
<b>Video Processor Frame</b>		
Control Proc/DSK/Still Store Module	671634602	02 includes SBC 100 mezzanine. Reload configurations saved to Zip disk.
Dual Mix Effects Module	671634700	Requires heat sinks FMN 075069300
Single Mix Effects (M/E 3) Module	671634710	Requires heat sinks FMN 075069300
Input/Xpt/Sync Gen Module	671642300	
Fan Module	671635000	
Power Supply	620001500	Do not slam or force new power supply into slot.
Air Filter	390138300	
Frame Assembly	660003100	
Door Assembly	610092800	

Table 27. FRU List and Replacement Notes and References - (continued)

Name	Part Number	Replacement Notes and References
Rear Assembly	610092900	Includes rear connector, backplane and Power Transfer board.
Power Transfer Board	671634900	Part of Rear Assembly 610092900
Backplane	671635100	Part of Rear Assembly 610092900
Replacement Fan	369005600	Part of Fan module 671635000
Frame Restore Floppy Disk	063807602	Use to restore a corrupted Video Processor frame hard drive. -02 version for 1 GHz SCB1000 processor. -00, -01 versions for 400 MHz TME processor.
<b>Main Panel</b>		
Main Control Panel	660002200	
Power Supply	610094100	
Crosspoint Switch Board	671634100	
M/E Switch Board	671634200	
Control Panel Processor	671634300	May need to reconfigure IP addresses if not using factory defaults.
Ribbon Cables	174810300	
Gas Shock	105116000	
Joystick Assembly	076214-00	
Lever Arm Assembly	078915-10	
Button Set	650423500	36 button set to upgrade main panel from 2.5 M/E to 3 M/E.
Button Set	075072400	6 button set to update all main panels.
Switch, Pushbutton	260273400	
White Pushbutton LED	150505800	
Panel Restore Floppy Disks (2)	063806800	Use to restore a corrupted Main panel Disk on Chip (DOC) on the Control Panel Processor.
<b>Menu Panel</b>		
Menu Panel Assembly	660003204 660003205	Two versions of the Enhanced Menu Panel exist. The newer version (-05) has the second USB port on the front of the Menu Panel and Windows XP installed. The older version (-04) has both USB ports on the rear of the Menu Panel and Windows 2000 installed.
CD ROM Drive	119801700	In Menu panel
Fan	119634100	
Power Cable	174444710	From main panel to menu panel
9-pin D Male to Female Cable	174812700	From main panel to menu panel
USB Zip Drive	119802900	250 MB Zip drive connected to menu panel
Floppy Disk Drive	119818400	Used in both Main panel and Video Processor frame
USB Cable	174816000	
Category 5 Ethernet Cable	174812500	30.48 m (100 ft) straight through cable, RX/TX polarity is swapped using Cross Over button.
Menu Recovery CD	063808700	Used to restore Menu hard drive running Windows 2000.

Table 27. FRU List and Replacement Notes and References - (continued)

Name	Part Number	Replacement Notes and References
<b>Software</b>		
Software CD	0638069XX	Contains the currently released Zodiac software. Updates also available on-line.
<b>Manuals</b>		
Documentation CD	0718140XX	CD ROM containing Zodiac documentation in pdf format.
Release Notes	0718127XX	Contain information on the current software release.
Release Notes Addendum	0718128XX	Contain additional information about the current software release.
User Manual	0718126XX	
Installation & Service Manual	0718125XX	
Installation & Planning Guide	0718096XX	

## Critical Spares Kit List

The optional Critical Spares Kit (ZOD-2-KIT, ZOD-3-KIT) contains the spare modules and assemblies listed below that are most critical to normal system operation. Refer to the Notes column for any special replacement or installation instructions and for links or references to other manual sections.

Table 28. Critical Spares Kit

Name	Part Number	Notes
<b>Video Processor Frame</b>		
Control Prod/DSK/Still Store Module	671634602	Reload configurations saved to Zip disk.
Input/Xpt/Sync Gen Module	671642300	
Power Supply	620001500	Do not slam or force power supply into slot.
<b>Main Panel</b>		
Control Panel Processor	671634300	May need to reconfigure IP addresses if not using factory defaults.



# *External Interfaces*

## **Introduction**

This appendix provides specialized information for interfacing external devices to the Zodiac system using GPI, Serial, CPL, Peripheral Bus II, and editor control interfaces. In particular, this appendix gives information on how to configure and define the external devices from an engineering standpoint. Operation of the various interface menus is explained in more detail in the *Zodiac User Manual*.

The instructions for interfacing external devices to the Zodiac system depend on the device type and its application. Some external devices may be providing input sources to the Zodiac (DPMs, VTRs, DDRs), while others may be receiving commands from the switcher to perform various operations (GPI outputs, PBus II). In addition, external devices can control or trigger switcher operations (Editors, GPI inputs, Remote Aux Buses).

Installation and configuration information for each device type is given in the sections listed below.

- *VTR Configuration on page 243*
- *Digital Disk Recorder Configuration on page 246*
- *GPI Outputs on page 250*
- *GPI Inputs on page 252*
- *Router Interface on page 256*
- *24-Crosspoint Remote Aux Panels on page 269*
- *DPM CPL Interface on page 271*
- *Peripheral Bus II on page 285*
- *Editor Interface on page 293*
- *Tally Contribution on page 297*

## General External Device Interfacing

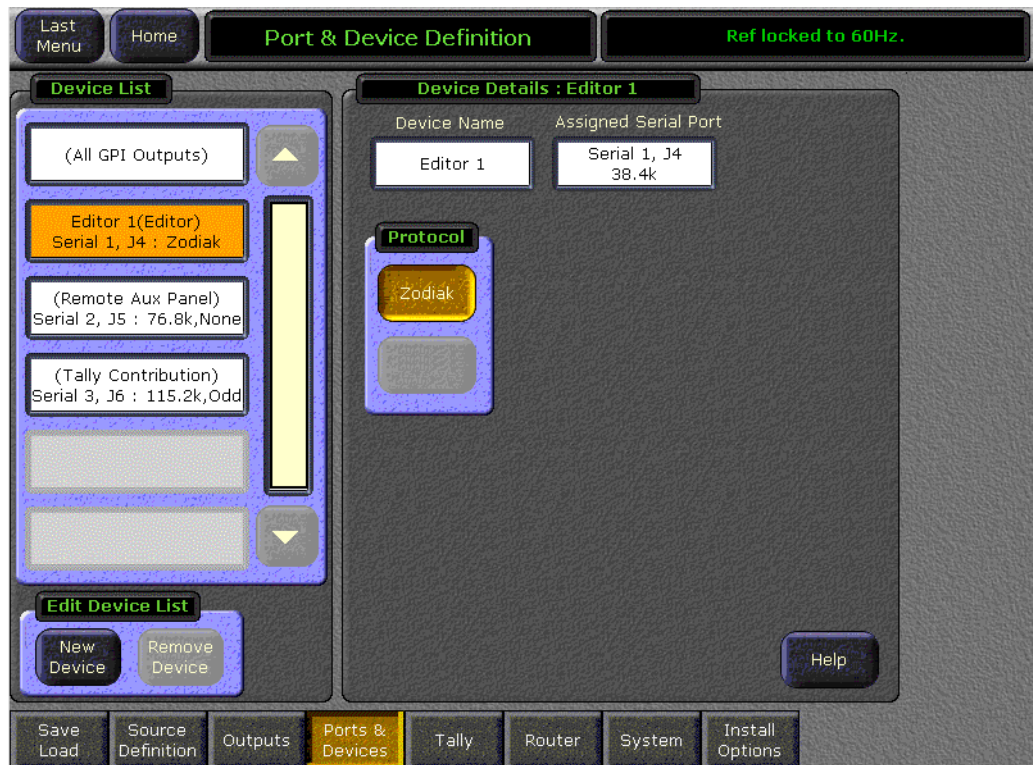
In general, interfacing an external device to the Zodiac system involves some or all of the following elements:

- Control cabling,
- Video cabling,
- Defining the device in the Zodiac Eng Setup, Ports & Devices menu (Device Name, Device Type, Protocol, Port, IP Address),
- Defining Zodiac source definition and button mapping if the device is used as an input to the switcher, and
- Defining necessary parameters in the external device to match those of the switcher when required.

The Zodiac system uses a software Device Definition object to define the capabilities of each device interfaced with the system. External Device Definitions contain the information required for that external device, (e.g., IP address). Configuration of most devices begins by defining the device in the Zodiac Eng Setup Ports and Devices menu (Figure 155). Some devices, including 32-Crosspoint Remote Aux panels and devices providing GPI inputs, do not require device definition in this menu.

**Note** To edit the Device Type or Protocol, you must remove the device by touching **Remove Device** and create a new one.

Figure 155. Eng Setup – Ports & Devices Menu





Devices requiring connection to a Video Processor frame serial or CPL port will link to a Port Configuration menu (Figure 156). The four serial ports on the rear of the Video Processor frame can be assigned and named and required serial parameters set with the **Baud Rate** and **Parity** buttons.

Figure 156. Ports & Devices – Port Configuration Menu



After definition, operation of the devices varies according to the individual type of device. The device descriptions in the following sections will provide information on what other menus to refer to for operation or interface.

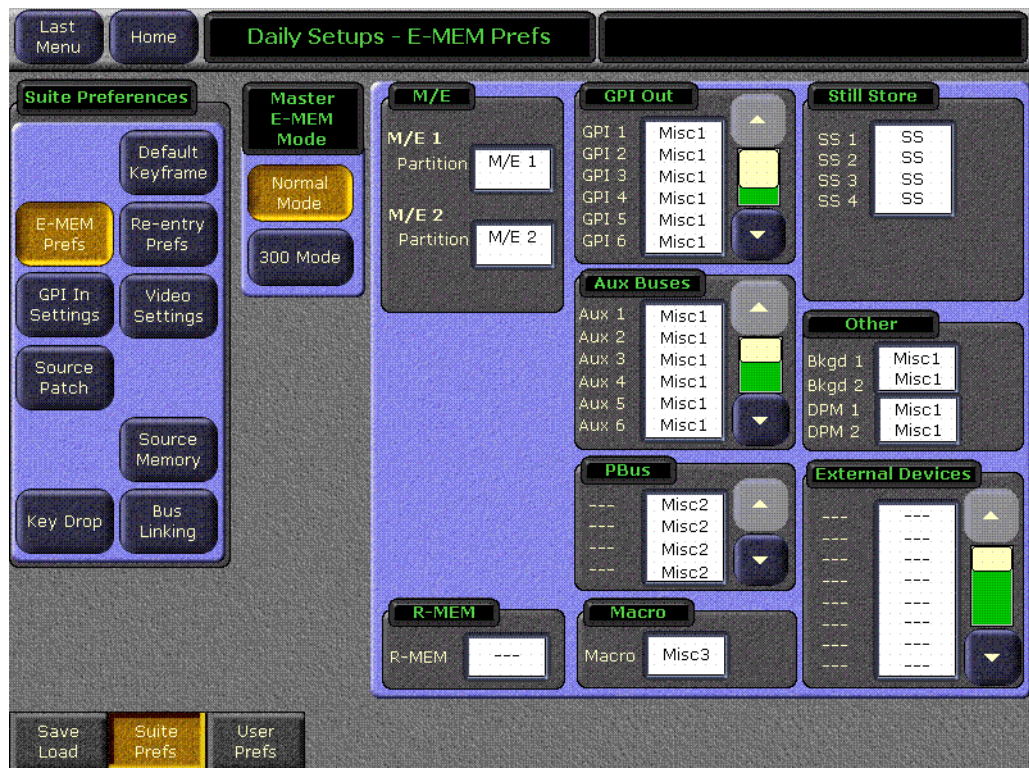
## Device E-MEM Level Assignment

Devices have different E-MEM level default assignments. Refer to the E-MEM Prefs menu, accessible by touching **Daily Setups, Suite Prefs, E-MEM Prefs**. This menu, shown in [Figure 157](#), will show the current level assignment for each type of device.

**Note** External devices such as VTRs and DDRs, do not have default E-MEM level assignments so these levels must be defined by the user.

For more information on defining E-MEM levels refer to *Section 4 – Menus Overview* in the *Zodiak User Manual*.

Figure 157. Daily Setups, Suite Prefs, E-MEM Prefs Menu



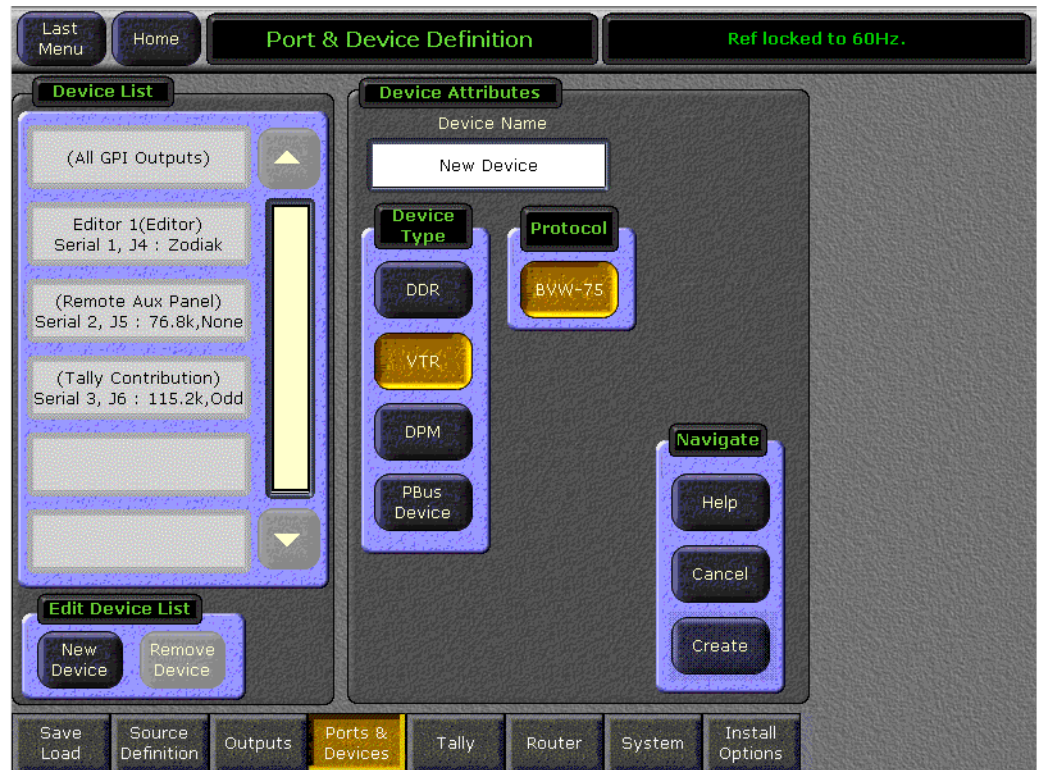
## VTR Configuration

VTR devices communicate with the Zodiac system from a serial connection on one of the four serial ports on the rear of the Video Processor frame. Connect the VTR with a standard RS-422 9-pin serial cable to any unused serial port (Serial 1 – Serial 4) on the rear of the Zodiac Video Processor frame (Figure 43 on page 66) with the pinout described in Table 9 on page 71.

Define the VTR as an external device in the Eng Setup, Ports & Devices menu as follows:

1. In the Eng Setup, Ports & Devices menu touch **New Device** in the Edit Device List data pad at the bottom left.
2. Touch **VTR** from the Device type list. The **BYW-75** protocol (the only one available) is automatically selected (Figure 158)

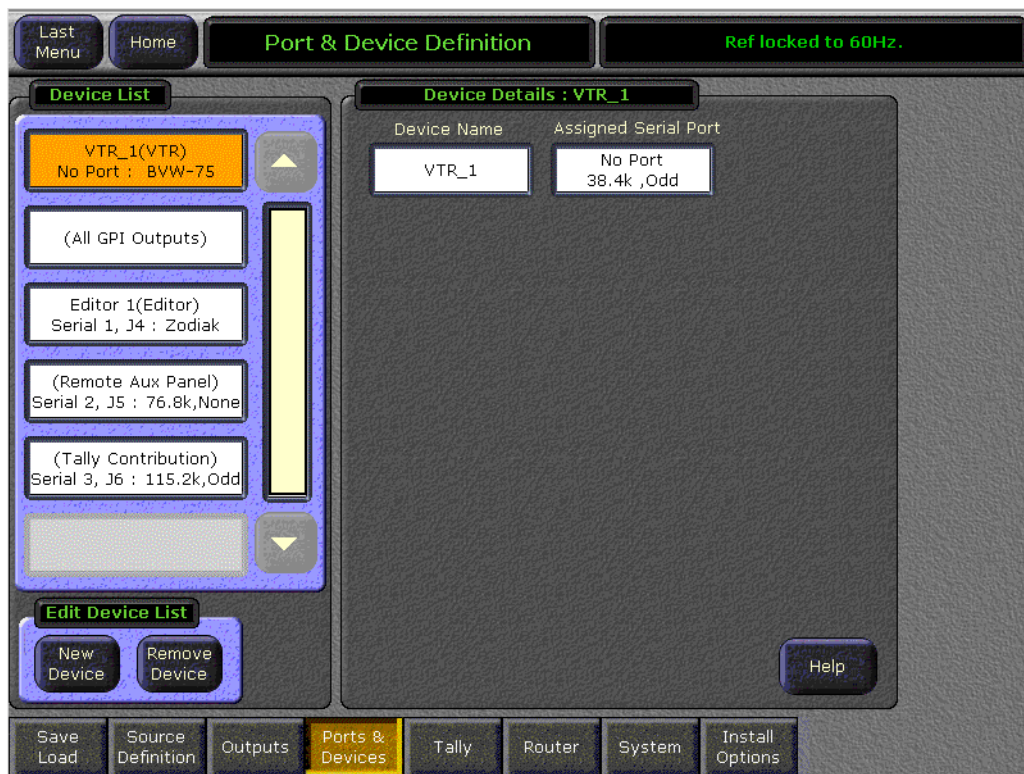
Figure 158. Ports & Devices – Define VTR Device



3. Touch the Device Name data pad to bring up the alphanumeric keypad and assign a name of up to 12 characters for the VTR device.

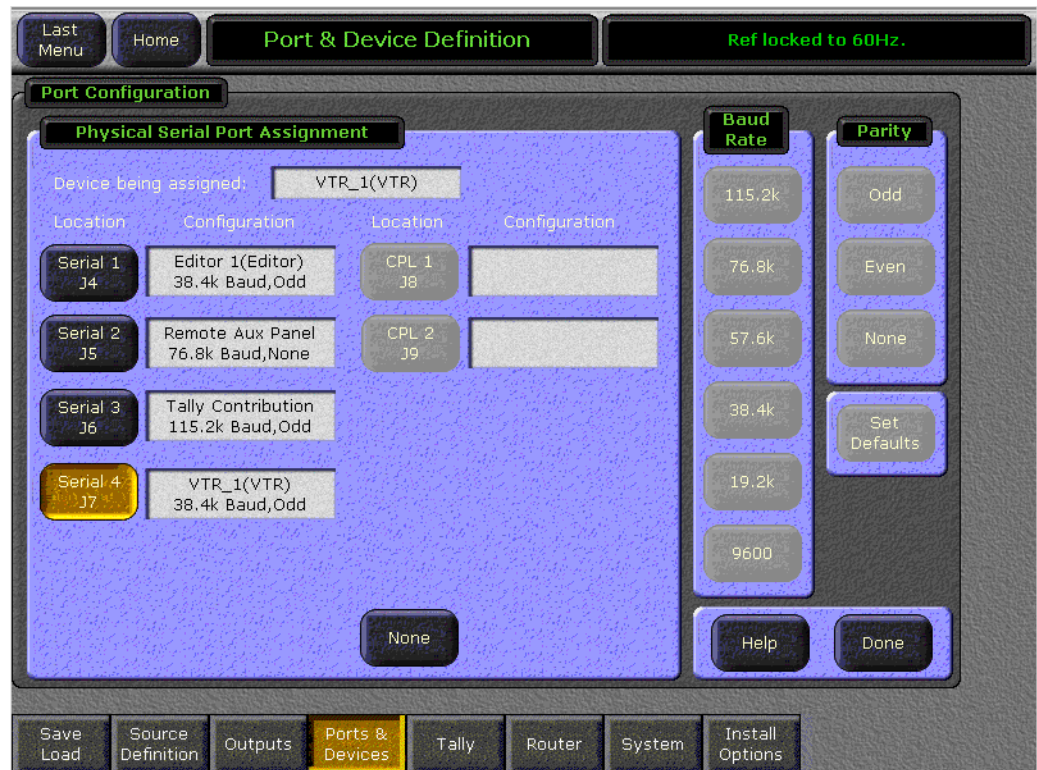
4. Touch **Create** in the Navigate pane (lower right). This will bring up the Device Details pane (Figure 159).

Figure 159. Ports & Devices – VTR Configuration



5. Touch the Assigned Serial Port data pad to bring up the Port Configuration menu (Figure 160).

Figure 160. Ports &amp; Devices – VTR Port Assignment



6. In the Physical Serial Port Assignment pane, touch the serial port the VTR is connected to on the rear of the Video Processor frame. The name of the VTR should now appear next to the serial port.

Default values of **38.4k** Baud and **Odd** parity are set in software for these devices.

7. Touch **Done** in the lower right to return to the VTR Details menu.

**Note** If you wish to edit the Device Type, you must delete the device by touching **Remove Device** and begin again. A defined Device type cannot be edited.

Once the VTR has been defined and configured in the Ports & Devices menu, it can be connected to an external input BNC then configured as a switcher source in the Eng Setup, Sources menu. Basic transport functions (Rewind, Play, Stop, Fast Fwd) can be controlled from the Zodiak Menu application and switcher E-MEM with the External Devices menu. Refer to the *Zodiak User Manual* for operation instructions.

The E-MEM level of this external device must be defined in the E-MEM Prefs menu (Figure 157 on page 242). Access this menu by touching **Daily Setups, Suite Prefs, E-MEM Prefs** in the Zodiak Menu application.

## Digital Disk Recorder Configuration

Digital Disk Recorder (DDR) devices can be connected to communicate with the Zodiac system with a serial connection on one of the four serial ports on the rear of the Video Processor frame. Connect the DDR with a standard RS-422 9-pin serial cable to any unused serial port (Serial 1 – Serial 4) on the rear of the Zodiac Video Processor frame (Figure 43 on page 66) with the pinout described in Table 9 on page 71.

### Available Protocols

Direct serial control of Profile VDRs using the BVW-75 and Odetics protocols is standard on Zodiac systems. The AMP Serial Machine Control feature is a software enabled option.

None of these protocols support negative timecode. Each controlled Profile VDR uses a Zodiac system serial port.

### BVW-75 Protocol

The BVW-75 protocol treats the device like a VTR, and so does not support clips. The BVW protocol specifies a 6 frame latency for start commands (to accommodate mechanical VTRs). This delay applies to the external device, not the Zodiac system. A Profile operating using the BVW protocol follows the specification and will delay the execution of commands by this amount, which is probably not desired.

### Odetics Protocol

The Odetics protocol supports only the default folder and DOS style eight character plus extension file names. When a Profile is set to use the Odetics protocol it will not impose a delay, and latency essentially disappears. This is the preferred setting for quick real time response with Profile VDRs. Note that DDRs from other manufacturers may or may not impose delays when operating with either protocol. Refer to the documentation provided with your DDR for specific instructions.

### AMP Protocol

The AMP protocol supports multiple clip directories and clip file names of up to 80 characters.

Once configured with the AMP protocol, touching a **Preset Clip** or **Program Clip** data pad on the External Device Control menu brings up a menu from which you can select the desired folder and then choose a clip in that folder to load for playback. A similar menu is used with the Clip Browser on the External Device Event List menu, and for loading clips in the Timeline Events menu.

## AMP Protocol Restrictions

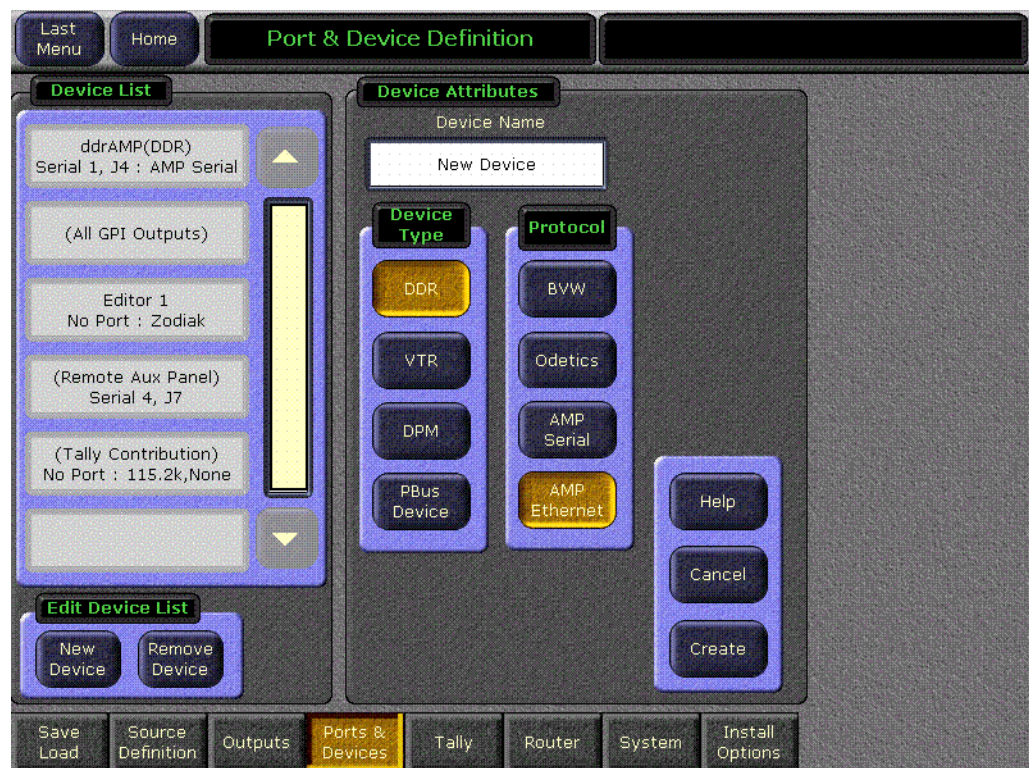
- A maximum of 20 directories can be created on the DDR.
- Each directory can contain a maximum of 200 clips.
- Directory names on the DDR cannot be longer than 10 characters.
- Do not create file names that have the pound character ( # ) along with either the dash ( - ) or underscore ( \_ ) character. This can inhibit clip access. For example, use “DeadEnd” not “Dead End”.

## Configuration Procedure

Define the DDR as an external device in the Eng Setup, Ports & Devices menu as follows:

1. In the Eng Setup, Ports & Devices menu touch **New Device** in the Edit Device List data pad at the bottom left.
2. Touch **DDR** from the Device type list. (Figure 161).

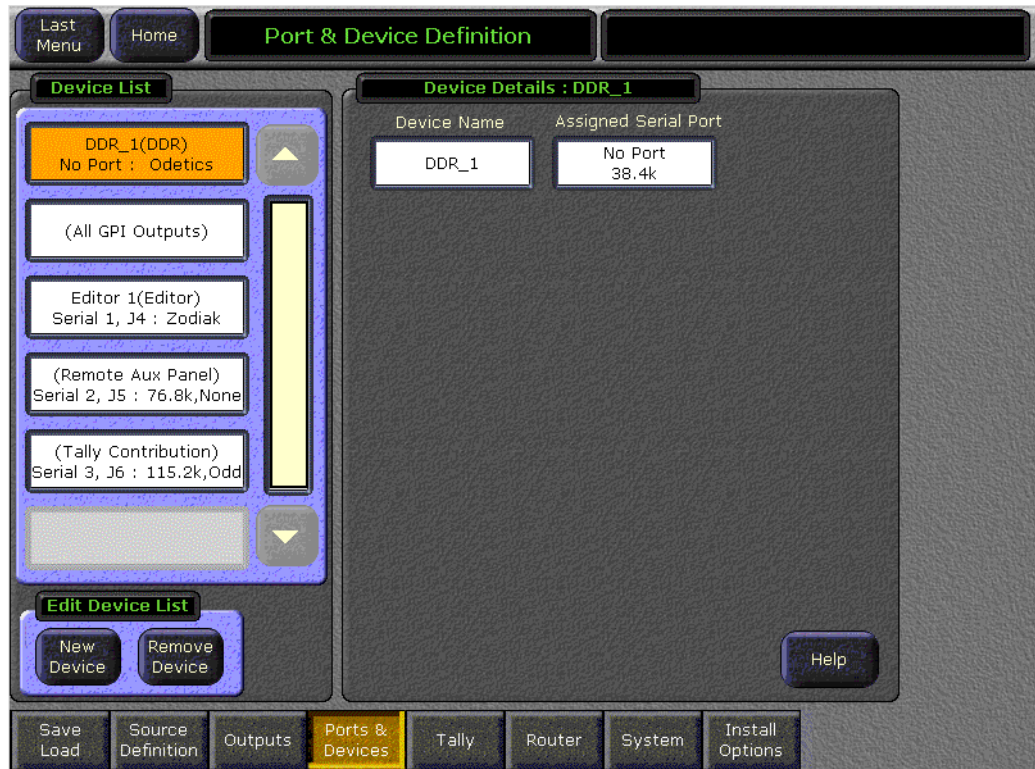
Figure 161. Ports & Devices – Define DDR Device



3. Choose the desired protocol, either **BVW**, **Odetics**, or optional **AMP Serial** or **Amp Ethernet**.

4. Touch the Device Name data pad to bring up the alphanumeric keypad and assign a name of up to 12 characters for the DDR device.
5. Touch **Create** in the Navigate pane (lower right). This will bring up the Device Details pane.
  - If you chose a serial protocol, a screen similar to (Figure 162) appears.

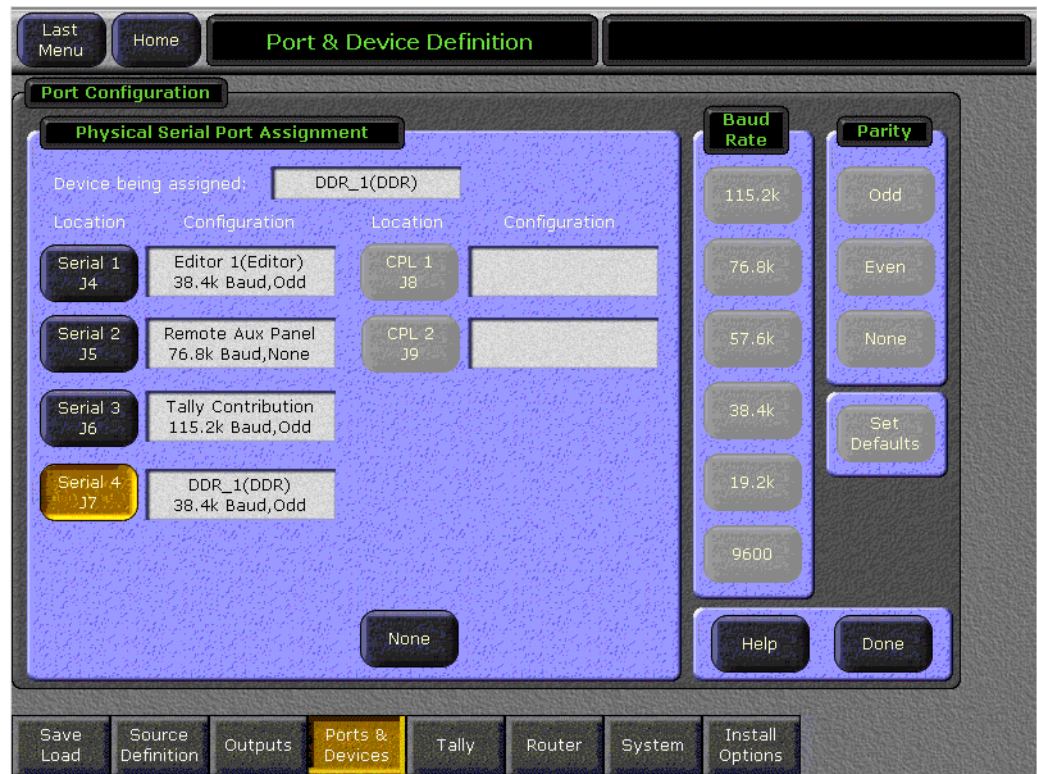
Figure 162. Ports & Devices – DDR Details



- If you chose the **Amp Ethernet** protocol, a screen with an Ethernet Address field replacing the Assigned Serial Port field appears.
6. For serial devices, touch the Assigned Serial Port data pad to bring up the Port Configuration menu (Figure 163).



Figure 163. Ports &amp; Devices – DDR Port Assignment



- In the Physical Serial Port Assignment pane, touch the serial port the DDR is connected to on the rear of the Video Processor frame. The name of the DDR should now appear next to the serial port.

The Baud Rate and Parity are set in system software to defaults of **38.4k** Baud and **Odd** parity.

- For Ethernet devices, touch the **Ethernet Address** data pad and enter the IP address of the DDR.
- Touch **Done** in the lower right to return to the DDR Details menu.

**Note** If you wish to edit the Device Type, you must delete the device by touching **Remove Device** and begin again. A defined Device type cannot be edited.

Once the DDR has been defined and configured in the Ports & Devices menu, it can be connected to an external input BNC then configured as a switcher source in the Eng Setup, Sources menu. Basic transport functions (Rewind, Play, Stop, Fast Fwd) can be controlled from the Zodiac Menu application and switcher E-MEM with the External Devices menu. Refer to the *Zodiac User Manual* for operation instructions.

The E-MEM level of the external device must be defined in the E-MEM Prefs menu (Figure 157 on page 242). Access this menu by touching **Daily Setups, Suite Prefs, E-MEM Prefs** in the Zodiac Menu application.

## GPI Outputs

GPI Output contact closures are used by the Zodiac system for simple trigger control of external devices. There are eight GPI outputs available on the rear of the Video Processor frame. See [Table 8 on page 70](#) for cabling information and pinout and voltage specifications.

**Note** Separate GPI Inputs can be used by an external device to trigger an action on the Zodiac system. See [GPI Inputs on page 252](#).

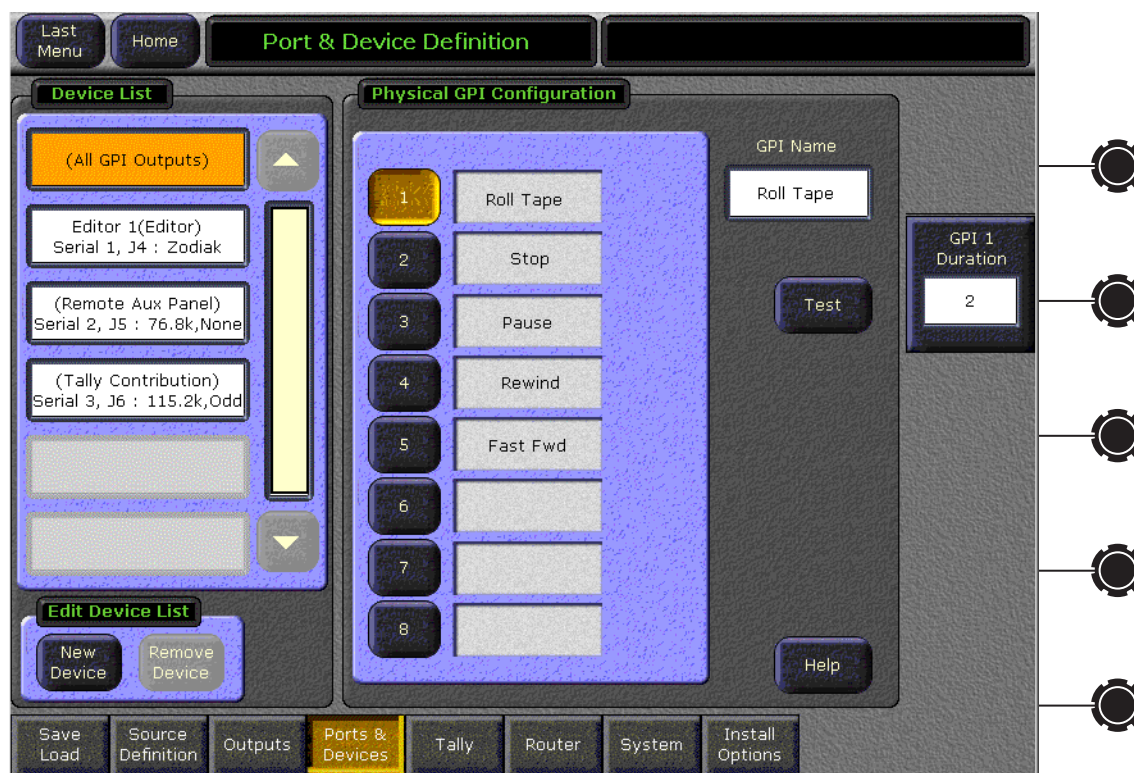
## Configuration

On the Zodiac system, GPI outputs are physically configured using the Eng Setup, Ports & Devices menu. In Eng Setups, touch the **Ports & Devices** category selection button, touch the **(All GPI Outputs)** button in the Device List pane ([Figure 164 on page 251](#)).

To configure GPI outputs follow the steps below.

1. Touch a GPI number (**1–8**) from the Physical GPI Configuration pane to define it. Give the GPI output a name by touching the GPI Name data pad to bring up the alphanumeric keypad.
2. In the Ctrl Delay Fields data pad, enter the number of fields that indicate how long it takes for the external device to respond to a command and perform the desired operation. Use the keypad or soft knob to enter a value between 0 – 60. This external device information is used by the switcher to synchronize Master E-MEM operations more accurately.
3. Set a duration time for the GPI output in the GPI Duration pane. You may test fire the selected GPI output relay at the specified duration by touching the **Test** button.

Figure 164. Ports &amp; Devices – GPI Physical Configuration



## PBus & GPI Menu

Once the GPI outputs have been configured in the Eng Setups, Ports & Devices menu, each GPI Out can be selected in the PBus & GPI menu to be triggered as part of an E-MEM recall in the GPI Out menu and enabled or disabled in the Enables menu.

Access this menu by pressing the **PBus & GPI** button on the Home menu. Refer to the *Zodiak User Manual* for how to operate the E-MEM Learn and Recall of GPIs.

## GPI Out E-MEM Level

GPI outputs are assigned by default to E-MEM level **MISC1** as shown in [Figure 157 on page 242](#). Use this E-MEM Prefs menu to change to another level is desired.

# GPI Inputs

Eight GPI inputs on the rear of the Video Processor frame can be connected to external devices to trigger an action on the Zodiac switcher. See [Table 8 on page 70](#) for cabling information and pinout specifications.

## Suite Prefs – GPI In Settings Menu

The GPI In Settings menu ([Figure 165](#)) allows programming of the eight Zodiac system GPI inputs on the Video Processor frame. Various actions can be performed on the switcher when a GPI contact closes from an external device, including selecting a source on a bus, recalling an E-MEM, triggering a transition, and running a previously set up effect. The GPI input can be given a name for easy identification. The GPI In menu is reached via **Daily Setups**, **Suite Prefs**, and touching the **GPI In Settings** button.

Figure 165. Suite Prefs – GPI In Settings Menu



To program a GPI input action, follow the steps below.

1. Touch the GPI input to program from the GPI In scrolling list in the central pane.

- Touch the type of action in the Action pane at the upper right. Each action type will bring up the appropriate qualifiers for that action.

In the example in [Figure 165](#), the **Select Source** Action button is selected and GPI 1 has been programmed to select Source 12 on the M/E 1 A bus.

- Name the GPI input by touching the GPI In Name field and entering a descriptive name with the alphanumeric keypad.

When the **Recall E-MEM** action button is selected, the menu will appear similar to the one shown in [Figure 166](#).

Figure 166. GPI In Menu – Recall E-MEM Action



- In the E-MEM Recall pane, enter the register number you wish to recall in the Register data pad. Indicate the E-MEM levels to be enabled by touching the buttons below the Register data pad. Touch **Select All** to enable all levels.

When the **Master E-MEM** button is selected, the register number in the Register data pad will be recalled from the switcher Master E-MEM.

When the **Trigger Trans** button is selected in the Action pane, a GPI In can be programmed to trigger a cut or mix switcher transition on an M/E bank or the PGM/PST bus with the menu shown in [Figure 167](#).

5. In the M/E pane touch the mix/effects or PGM-PST buses on which to do the transition. In the Transition pane, touch either the **Main** transition button (transition control area with lever arm) or an independent key control (**K1 – K4**).

When PGM-PST is chosen in the M/E pane, the key buttons in the Transition pane will change to **DSK 1 – DSK 3**.

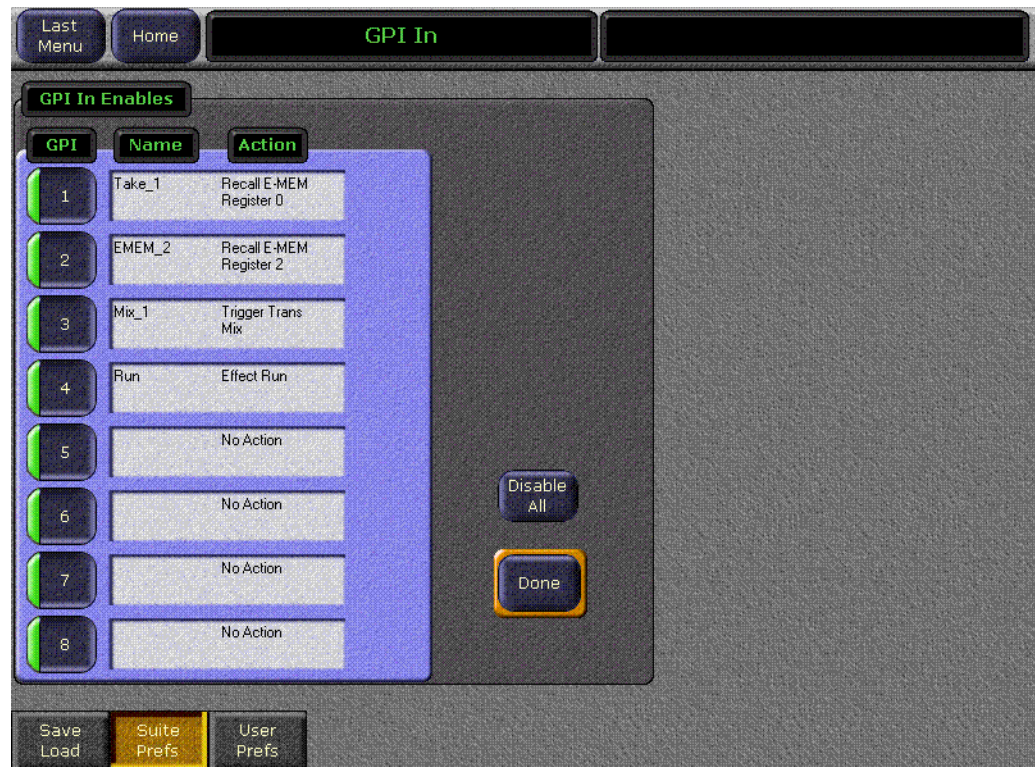
Figure 167. GPI In Menu – Trigger Transition Action



To enable or disable any of the programmed GPI inputs, touch the **GPI IN Enables** button next to the GPI In Name data pad (Figure 165 on page 252). This will bring up the GPI In Enables menu (Figure 168).

You may select the **Disable All** button to disable all GPI inputs at once or touch the GPI you wish to enable or disable with the numbered pad on the left. Touch the **Done** button to return to the GPI In menu.

Figure 168. GPI In Enables Menu

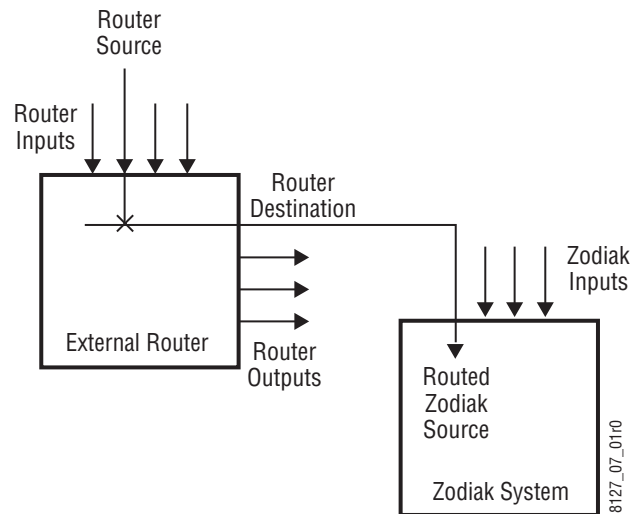


# Router Interface

## Introduction

The Zodiac system can interface with an external routing system. A routing system connects a *router source* (router input) to a *router destination* (router output). Changing the router source sends a different signal to the destination (called a *take*). A router destination can in turn be connected to a Zodiac input and be configured as a *routed Zodiac source* (called *switcher source* in this discussion and in the Zodiac menus). The router acts as a pre-selector for the switcher source, and so increases the number of inputs available to a button on a Zodiac system bus (Figure 169).

Figure 169. Router Source, Router Destination, and Routed Zodiac Source



Router signal switching is non-deterministic, as compared to source selections performed on a production switcher. For this reason, it is better to choose the desired router source in advance, then switch it on-air using switcher controls, rather than select a different router source while it is on-air.

An external router can be configured into *levels*, to allow the switching of multiple signals simultaneously. For example, video signals can be organized on one level, and key signals on another. By specifying both levels when giving a router take command, both the video and key signals of a source will be routed to their destinations.

**Note** Zodiac system router take commands are only applied to all router levels. The external routing system's destinations must be configured with all router levels selected.



Router control panels can also *protect* router destinations from being changed by other control panels. A protected router destination cannot be changed by a different control panel, but may be changed by the panel that set the protection. Protections help prevent inappropriate router source changes. The Zodiac system can be considered a type of router control panel, and so the Zodiac system can protect router destinations. Zodiac system router protect commands are applied to all router levels.

The names of router sources originate from the router system, and their text cannot be changed from the Zodiac system. If a routed Zodiac source has no connection to the router, an **X** appears in place of the router source name. If the router connection exists, but no source has yet been selected for that destination (which can occur during bootup), **No Src** appears.

## Features

- Interfaces to the Grass Valley Group SMS 7000 routing system,
- Zodiac system configuration of routed Zodiac sources,
- Protection types (None, Protect, and On Air),
- R-MEM control (see [page 262](#)), and
- Device control of routed sources (see [page 263](#)).

## Router Interface Installation

### Control Interface Cabling

Connect an Ethernet cable from the Zodiac system Ethernet switch to the SMS 7000 network. In Release 3.0, the Zodiac system can communicate with devices on different networks via a gateway router. If a gateway router is not used, the SMS 7000 router must be on the same subnet at the Zodiac system. Refer to Network Configuration in the *Zodiac Installation and Service Manual*.

### Video Interface Cabling

Connect each SMS 7000 destination to an available input connector on the Zodiac Video Frame. You will need to know the module and J number of each input connector used for each destination when you configure the Zodiac source (see below).

## Router Configuration

This procedure assumes the SMS 7000 has already been configured for basic use in your facility, and only needs to be reconfigured to interface

with the Zodiac system. If the SMS 7000 router is not already configured, you will need to define the node controller, physical matrix, virtual matrix, levels, sources, and destinations (see the *SMS 7000 Configuration Manual*).

1. Open your existing Router configuration using the SMS 7000 GUI.
2. Go to **Setup/Cfgd Np Internet** and edit **NPI1** so all the levels are selected. Only all level takes are supported.
3. If necessary, go to **Configuration/Destination** and add any new destinations that will be used for the Zodiac system. You will need to specify the proper levels if a destination is a video /key pair and note the names and connector numbers.
4. Send this configuration to SMS 7000 system.
5. Make sure the destinations to be used by Zodiac do not have any protects set on the SMS 7000 system. Protects set on the router cannot be overridden by the Zodiac system.

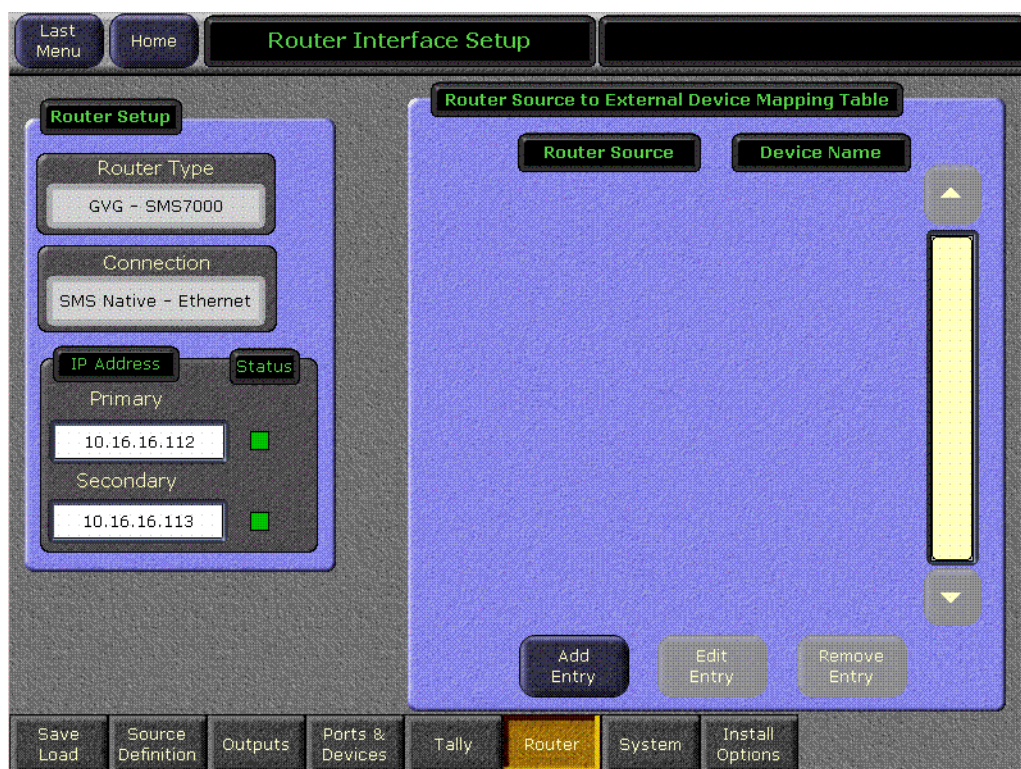
## Zodiac Router Configuration Menus

### Eng Setup Router Device Setup Menu

The Router Device Setup menu is used to set the IP Address(es) the Zodiac system will use to communicate to the external router. The SMS 7000 system can have an optional redundant, or secondary, controller which takes over should the primary fail. Both router control systems will require their own IP address settings.

Press the **Eng Setup** Menu panel button (or the touch button on the top level menu), then touch the **Router** category selection button to go to this menu ([Figure 170](#)).

Figure 170. Eng Setup Router Device Setup Menu



The Connection Status indicator is red when communication is not detected, and goes green when communication is established.

### To Set the IP Addresses:

1. Touch the **Primary** IP Address data pad and enter the primary address of the router with the pop-up keypad.
2. Touch the **Secondary** IP Address data pad and enter the secondary IP address of the router, if appropriate. If the router has only one control system, leave this address set to the blank default.

**Note** If the Zodiac system has been configured with a router IP address but a connection to the router has not been established, changing the IP address in this menu will not make the Zodiac system immediately try to connect to the new router address. The Zodiac system will automatically try to connect after about 30 seconds using the entered router IP addresses.

## Primary and Secondary Router Communications

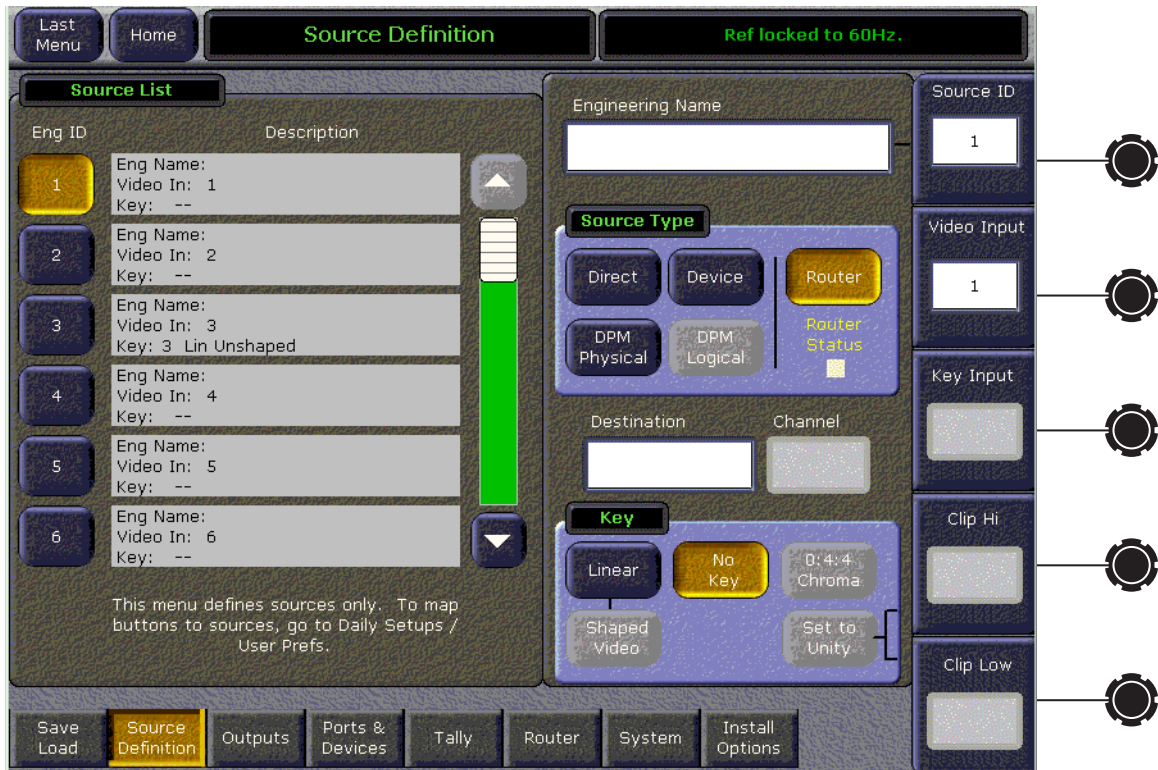
The Zodiac system will initially use the primary router IP address for communications. If the primary control system fails to respond, the Zodiac system will attempt to use the secondary IP address for router communications, and if successful will continue using it in the future. If communications then is lost to the secondary control system, the Zodiac system will

attempt to reestablish communications with the primary router control system.

## Eng Setup Source Menu

The Eng Setup Source menu is used to define routed Zodiac sources, which includes specifying which router destination will be associated with each switcher source. Press the **Eng Setup** Menu panel button, then touch the **Source Definition** category selection button, to go to this menu (Figure 171).

Figure 171. Eng Setup Source Definition Menu



1. Select the Zodiac source to be configured with the router on the scrolling Source list.
2. Touch the Video Input data pad and enter the number of the Zodiac input that will be used with the router video destination.
3. If the routed source will have an associated key signal, touch the appropriate Key Input button, then touch the Key Input data pad and enter the number of the Zodiac input that will be used with the router key signal destination.

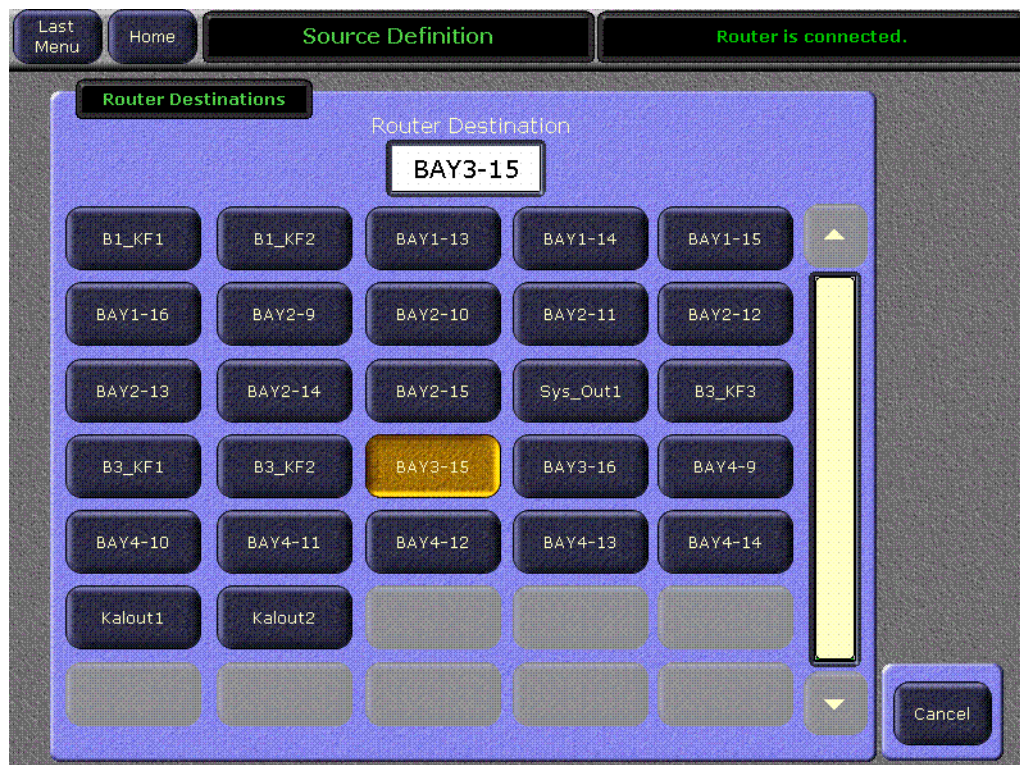
**Note** If you assign a key input, the router system needs to be configured to switch that key destination along with the video destination. Router levels can be used to accomplish this.

4. Touch the **Router** type button to identify it as a routed Zodiac source.

**Note** The adjacent status indicator is green when a router is detected, and red when there is no response. If red, you should check the Zodiac or router system configuration or the physical Ethernet connections.

5. Touch the **Destination** data pad to open the Router Destinations menu. The Zodiac Video Processor frame receives a list of destination from the router and displays them on this menu.

Figure 172. Router Destination Selection Menu



6. Touch the button for the desired destination to assign it to the previously selected Zodiac router source. Alternatively, you can touch the Router Destination data pad on this menu and enter the exact name of the router destination. After the selection you return to the previous menu.
7. Complete the source definition by entering a name, nickname, etc. using the standard source definition procedure.

## R-MEM

### Introduction

R-MEM stands for router memory. With R-MEM you can use the Zodiac system to store groups of external router source selections for use later. One or all switcher sources can be selected for control, and the router source selections for all the selected switcher sources can be recalled and enacted quickly.

R-MEM operation is similar to E-MEM, in that information is learned into a register for later recall. Each R-MEM register holds a router source name for one or more switcher sources. R-MEM allows selectively enabling router destinations for control, and has Auto Recall, both similar to E-MEMs selection of enable groups.

R-MEM, however, is actually separate from E-MEM to permit fine control over which switcher sources are affected. R-MEM can be assigned to an E-MEM enable group, if desired, to provide E-MEM control of R-MEM functions.

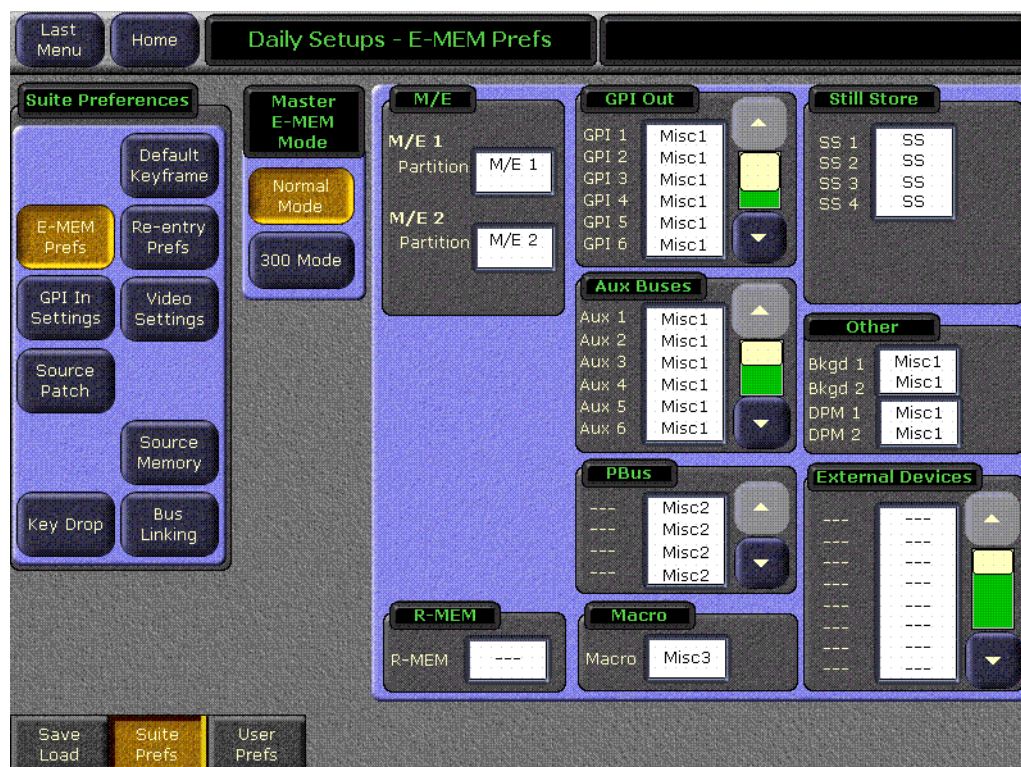
### Features

- 100 R-MEM registers,
- Select 1 or more switcher sources for R-MEM control,
- Instantaneous Learn and Recall,
- Save To and Load From Disk,
- Auto Recall,
- Preview of R-MEM register source and destination names, and
- E-MEM control of R-MEM, if desired.

## E-MEM Control of R-MEM

You can assign R-MEM to an E-MEM enable group, to permit E-MEM control. Go to the E-MEM prefs menu by touching the **Daily Setups** Menu panel button, then touching **Suite Prefs, E-MEM Prefs** (Figure 173).

Figure 173. E-MEM Prefs Menu



By default R-MEM is not assigned to any enable group. To assign, touch the R-MEM Level data pad and then choose the enable group you wish to use from those displayed.

**CAUTION** Make sure the R-MEM enable group you choose is only enabled when you actually need to use it during effect recalls. Confusing source selection button changes can occur otherwise. Using E-MEM Auto Recall can help control when groups are enabled.

## Device Control for Routed Sources

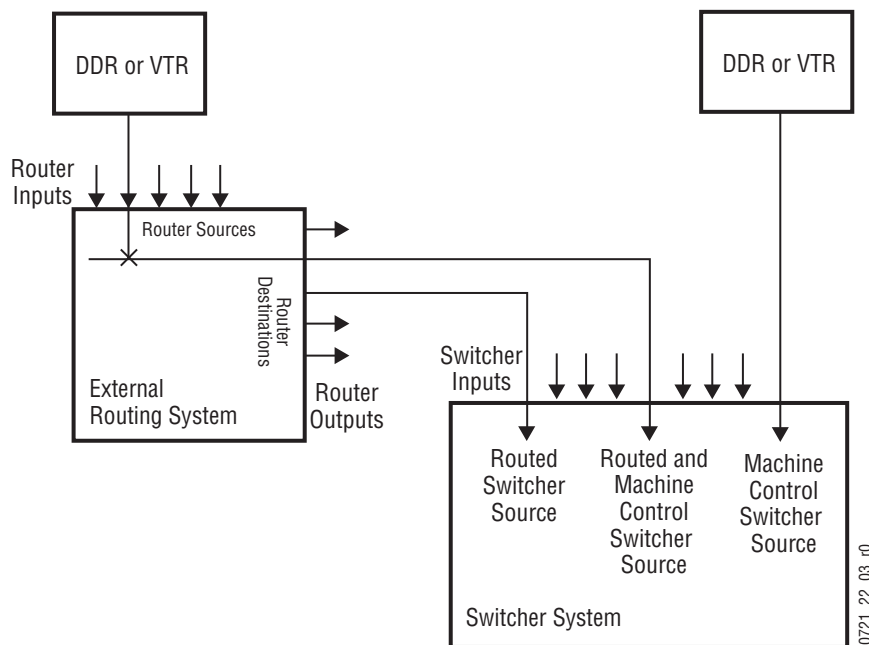
### Introduction

The Zodiac system has machine control capabilities that permit, for example, cueing and playing DDRs and VTRs. The Zodiac system can also be configured with an external routing system. By connecting router destinations (router output signals) to Zodiac source inputs (called routed

switcher sources), different router sources (router inputs) can be directed to these Zodiac inputs. The Zodiac operator can send take commands to the router from the Zodiac user interface to switch router sources that feed the Zodiac source inputs. The Zodiac system also receives the names of router sources and destinations from the external routing system for display on the Zodiac user interface.

Zodiac machine control and external routing capabilities can be combined to permit Zodiac control of external devices that feed routed Zodiac sources. When a router source associated with an external device feeds a Zodiac routed source, that device can be controlled directly from the Zodiac system. Existing machine control and router control Zodiac system capabilities also remain available separately (Figure 174).

Figure 174. Combined Machine Control and Router Control



The combination of these features has one limitation. The Zodiac system can perform ganged or linked operations on external devices connected as routed sources, but it is important to understand that the ganging is based on *devices* rather than sources. When a router source linked to an external device is changed, the ganging for that source no longer works. If you change the router source, the rules for ganging no longer apply, and the ganging no longer works.

## Configuration Overview

To make these features work together, in addition to the configuration required for their independent operation, the external devices configured for control by the Zodiac system must be mapped to the router sources they



are connected to. This information is stored in mapping table that is saved and loaded with the Engineering Setup files.

Zodiak machine control and external router configuration procedures are explained in detail in the separate *Zodiak Installation and Service Manual*.

In summary, the entire configuration process involves the following steps:

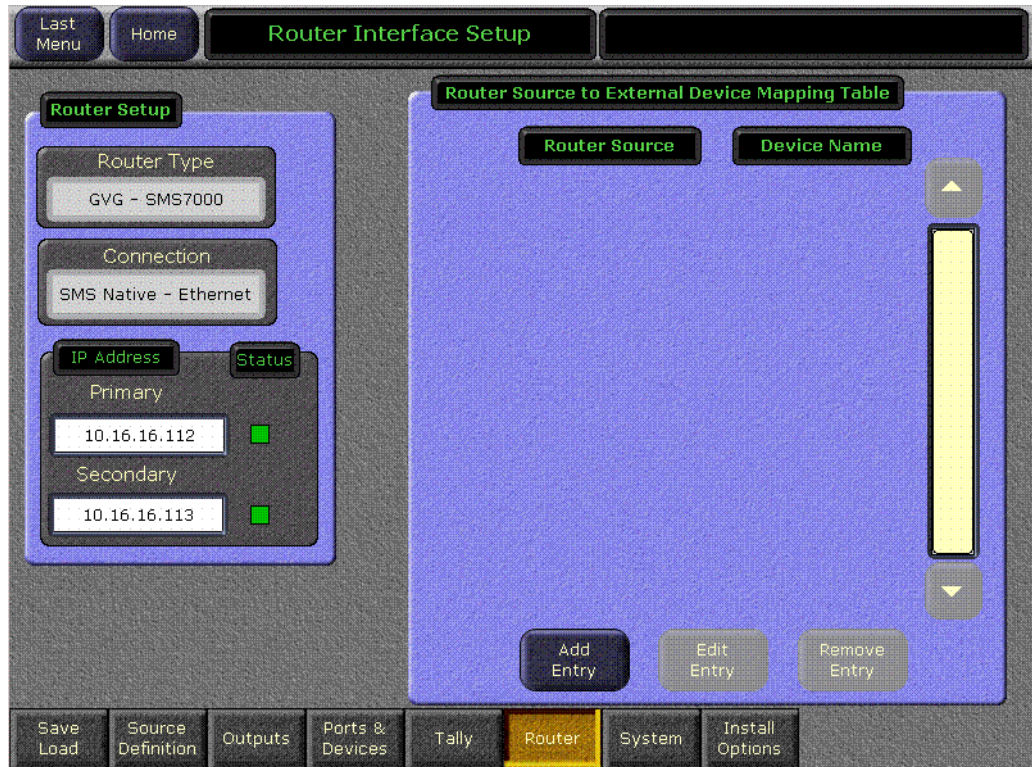
1. Configure machine control by creating, naming, and setting up devices via the Zodiak Eng Setup, Ports & Devices menu.
2. Establish communications between the Zodiak system and the external router, via the Eng Setup, Router menu, and by configuring the router itself to allow external control of it by the Zodiak system.
3. Identify the routed Zodiak sources by selecting **Router** for each of these source inputs in the Eng Setup, Source Definition menu.
4. Map each Router Source to each Device. This new step ties the two features together. The menu used for this is described below, and can be accessed from the Router Interface Setup screen in the Eng Setup, Router menu.
5. You will now be able to change router sources using the Zodiak R-MEM menus and control a device that is mapped to that router source.

As you can see, several different menus are used to combine router and machine control. Each sets up a specific link in the chain. Should one link not be configured correctly combined capabilities will not be realized, but portions of the chain that are configured correctly will continue to operate.

## Router Source to External Device Mapping

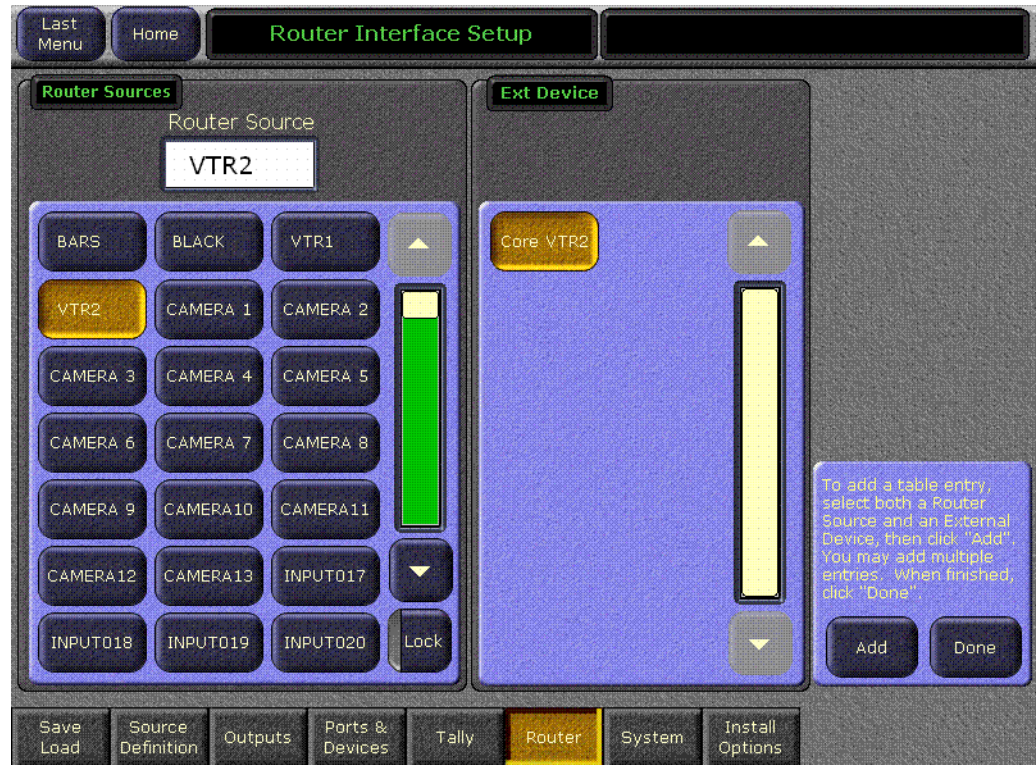
Router sources are mapped to external devices with the Router Interface Setup menu, accessed via **Eng Setup, Router** (Figure 175).

Figure 175. Router Interface Setup Menu



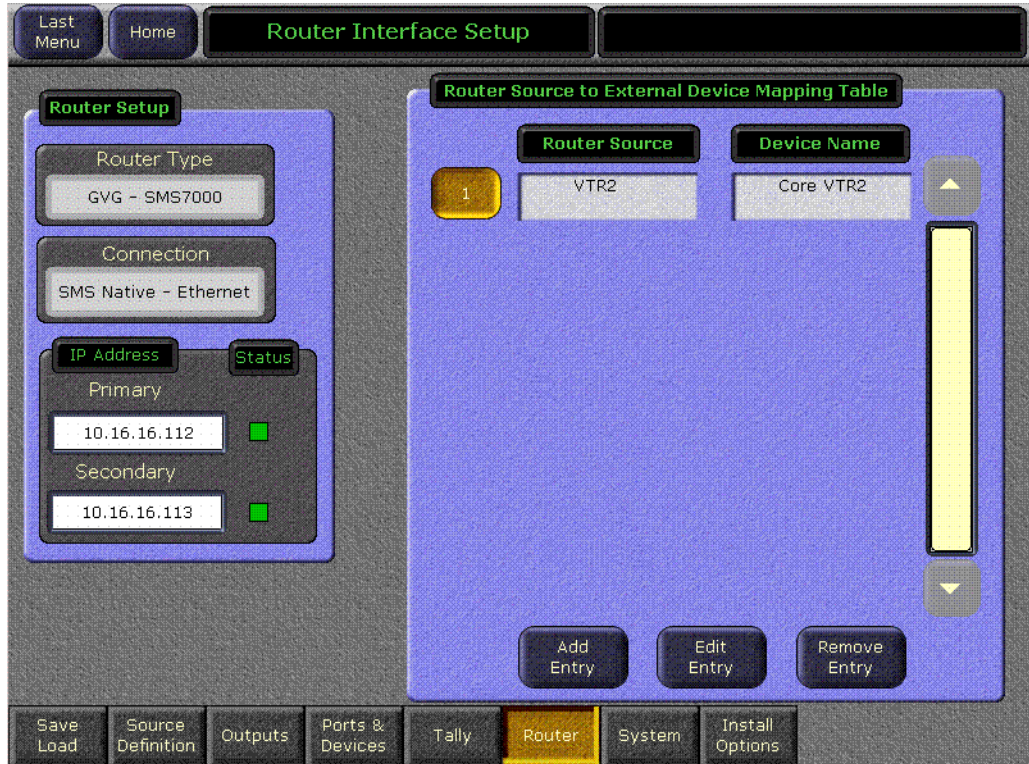
Touching the **Add Entry** button opens a menu with two selection panes. The left pane displays the names of router sources if the router is connected and properly configured to operate with the Zodiac system. Currently configured external devices are displayed in the pane on the right ([Figure 176](#)).

Figure 176. Router Source and External Device Mapping Menu



Select a router source from the scrolling list on the left and a device in the list on the right and touch **Add** to map them together. You can select additional router source/external device pairs and map each of them by pressing the **Add** button. When finished with the mapping, touch the **Done** button. You are returned to the previous menu and the current mappings will be displayed (Figure 177).

Figure 177. Router Interface Setup Menu



Entries can be edited by selecting the numbered button and touching the **Edit Entry** button. You can then remap that relationship.

Touching the **Remove Entry** button removes the selected mapped pair from the mapping table.

With the mappings established, you will now be able to change router sources with the Zodiac R-MEM menus, and if that router source is an external device (a correctly configured DDR, for example), you will be able to cue and play that device from the Zodiac Machine Control menu.

## 24-Crosspoint Remote Aux Panels

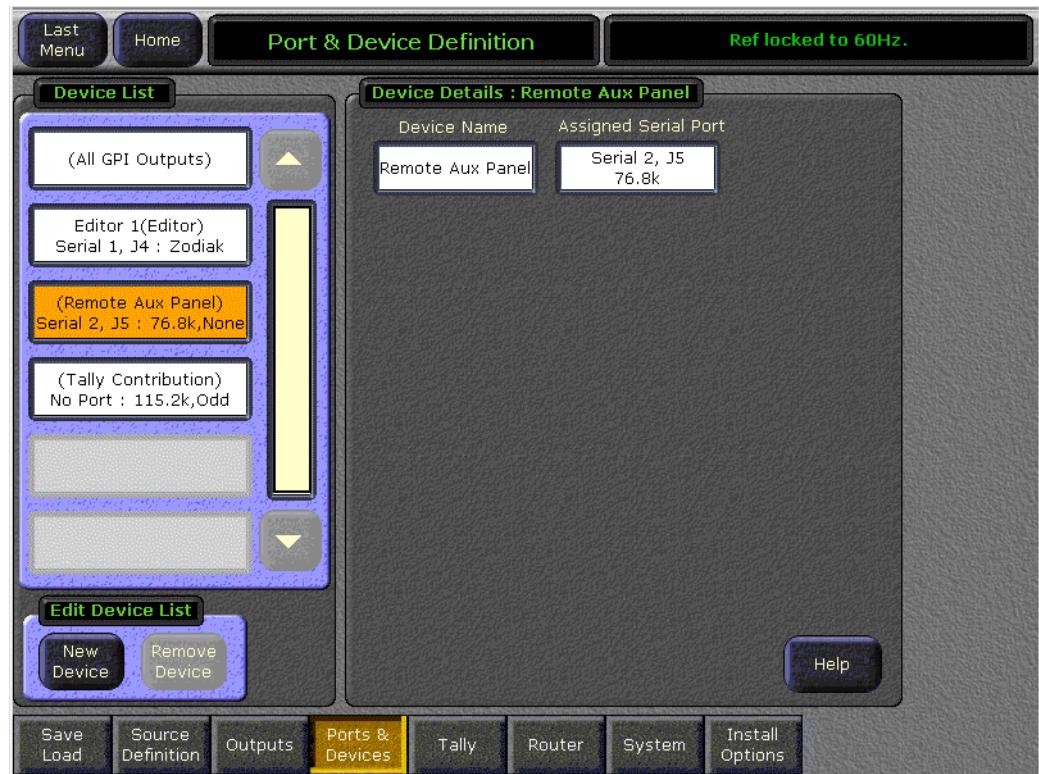
The Zodiak switcher communicates with the optional 24-Crosspoint Remote Aux panels through a serial connection. You may connect a 24-Crosspoint Remote Aux panel to any of the four serial ports (Serial 1 – Serial 4) on the rear of the Video Processor frame. Refer to *24-Crosspoint Remote Aux Panels on page 47* for physical Remote Aux panel installation and cabling information.

**Note** 32-Crosspoint Remote Aux panels communicate via the Menu LAN and do not require device definition in this menu. Refer to *32-Crosspoint Remote Aux Panels on page 51* for installation and configuration instructions.

To configure a serial port for a 24-Crosspoint Remote Aux panel, do the following:

1. Touch the **(Remote Aux Panel)** button in the Device List in the Eng Setup, Ports & Devices menu (Figure 178). The Device Name will default to Remote Aux Panel and cannot be renamed or removed.

Figure 178. Ports & Device – Remote Aux Panel Configuration



2. Touch the Assigned Serial Port data pad to bring up the Port Configuration menu.
3. Touch the serial port to which you have connected the Remote Aux panel.

4. Set the Baud Rate to **76.8k** and the Parity to **None**.

Touch the **Set Defaults** button to set the default values to **76.8k** Baud and a parity of **None**.

5. Touch **Done** to exit the menu and return to the Ports & Devices menu.

Once the 24-Crosspoint Remote Aux panel has been installed, powered up, and has a serial port configured, the following Remote Aux panel configuration is necessary in other menus:

- Identify and name the Remote Aux panels in Engineering Setup,
- Map sources to Remote Aux panel buttons in Daily Setups, and
- Program joystick overrides, if appropriate.

Refer to *Remote Aux Panel Configuration* on [page 116](#) for details.

## DPM CPL Interface

This section covers configuration of Control Point Language (CPL) control of external DPM devices. CPL control is only available from two serial ports (CPL 1/J8 and CPL 2/J9) on the rear of the Zodiac Video Processor frame.

Devices such as Grass Valley Group GVEous and Krystal DPMs offer the highest performance when configured to a Zodiac system via CPL. Interfacing to both GVEous and Krystal devices is detailed in this section. Control of these devices is also possible through Peripheral Bus II and GPI interfaces as explained in their respective sections of this appendix.

## GVEous Digital Effects CPL Interface

This section covers CPL control of a GVEous system. Also refer to the GVEous documentation set for additional information not given here.

### CPL Interface Functionality

The following interface functions are supported:

- GVEous effect recall via E-MEM,
- CPL effect run control,
- GVEous control of Zodiac Aux buses for source selection (keyframable), and
- Effects Send.

### GVEous Requirements

The GVEous system must be equipped with the CPL Protocol Converter module.

### Control Interface Cabling

Connect serial port **CPL 1/J8** or **CPL 2/J9** on the rear of the Zodiac Video Processor frame to the **HDLC** port on the GVEous frame using a standard 9-pin RS-422 machine control cable. Also connect the GVEous CPL module to the GVEous **Aux** or **Editor** port, using a custom serial cable provided with GVEous. This cable is similar to an RS-422 cable except that pins two and seven are cross-wired and one connector is 25-pin. HDLC may need to be reset.

### Video Cabling

On GVEous, when Aux Bus control is selected each GVEous channel corresponds to one external input. Each channel is dedicated to an odd-numbered GVEous input, so Zodiac Aux bus pairs 1 and 2, 3 and 4, 6 and 7, 8

and 9, 10 and 11 (3-M/E only) or 12 and 13 (3-M/E only) should therefore be connected to GVeous inputs 1, 3, 5, and 7 as shown in the example in [Table 29](#).

Table 29. *Zodiak Aux Buses and GVeous Channels*

Zodiak Aux Bus Pairs	GVeous Input	GVeous Channel
Aux 1A	1 Video	1A
Aux 1B	2 Key if in V/K mode	1B
Aux 2A	3 Video	2A
Aux 2B	4 Key if in V/K mode	2B
Aux 3A	5 Video	3A
Aux 3B	6 Key if in V/K mode	3B
Aux 4A	7 Video	4A
Aux 4B	8 Key if in V/K mode	4B

### Source Number Mapping

The mapping of Zodiak sources to DPM sources are shown in [Table 30](#).

Table 30. *Zodiak Source ID to DPM Source Mapping*

DPM Source Number	Zodiak Source Name	Zodiak Source ID Number
0	Black	118
1 through 57	1 through 57	1 through 57
58	Still Store 1	121
59	Still Store 2	122
60	M/E 1 pgA	93
61	M/E 2 pgA	99
62	M/E 3 pgA	105
63	PgPst pgA	111

**Note** The GVeous system supports Zodiak sources 1 through 69. Because Zodiak Still Store output sources are numbered 121 through 124, GVeous cannot directly change Still Store sources. Use the Zodiak E-MEM system to change Still Store sources during a GVeous effect.



## Zodiak Required Settings

A summary of the Zodiak setups is given in [Table 31](#).

Table 31. Zodiak Configuration Settings for GVeous

Menu	Pane/Category	Setting
Eng Setups - Outputs (for each Zodiak output going to Krystal)	Mode	<b>Aux Pair</b> (if desired, not a requirement)
	Aux Bus Pairs	Select Aux Bus for each output.
Aux Bus (for B Channel of any paired Aux Buses used by Krystal)	B Channel is:	<b>Key</b>
Eng Setups -Ports & Devices (define the device, then use for each source above)	Define Device	Device Name: Enter descriptive name of GVeous system.
		Assigned Serial Port: <b>CPL 1</b> or <b>CPL 2</b>
		Device Type: <b>DPM</b>
		Protocol: <b>DVEous 64 Src</b> or <b>DVEous 128 Src</b>
		Aux Bus Feeding Channel: Identify Aux Buses used by each GVeous channel.
Eng Setups - Sources (for each Krystal source)	Engineering Name	Enter descriptive name of source.
	Source Type	<b>DPM Physical</b>

## GVeous Required Settings

[Table 32](#) lists the GVeous menu settings for interfacing to the Zodiak.

Table 32. GVeous Settings

Menu	Setting
Remote Enable	Aux or Editor port - ON
	LINC - OFF
	Protocol - CPL
	Baud-38.4kb
	Parity - even
	Aux Channels - 1, 3, 5, 7
Input Menu	Select AUX control
	Select crosspoints on KF by KF basis

## GVEous Configuration Procedure

### Define GVEous Device

To define a GVEous DPM device, do the following:

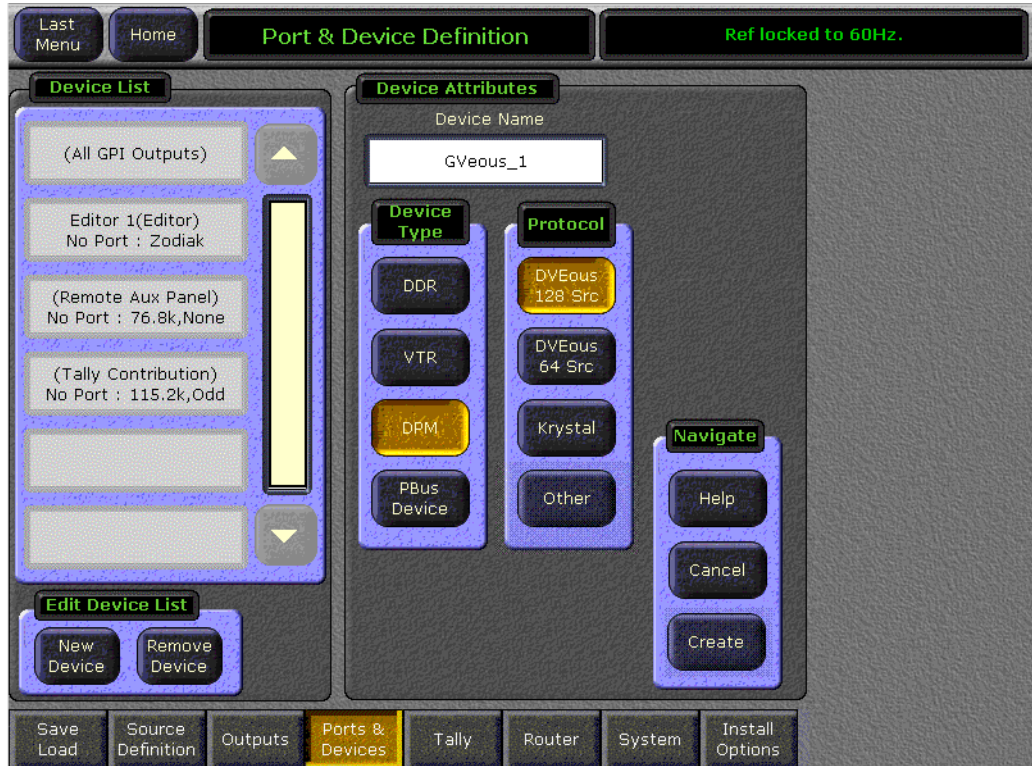
1. Touch the **Ports & Devices** category selection button at the bottom of the Eng Setups screen to access the Port & Devices menu ([Figure 179](#)).
2. Touch the **New Device** button in the Edit Device List pane to bring up the Device Attributes pane.

3. Touch **DPM** in the Device Type list and **DVEous 128 Src** or **DVEous 64 Src** in the Protocol pane.

**Note** If you are configuring a Krystal DPM, select **Krystal**.

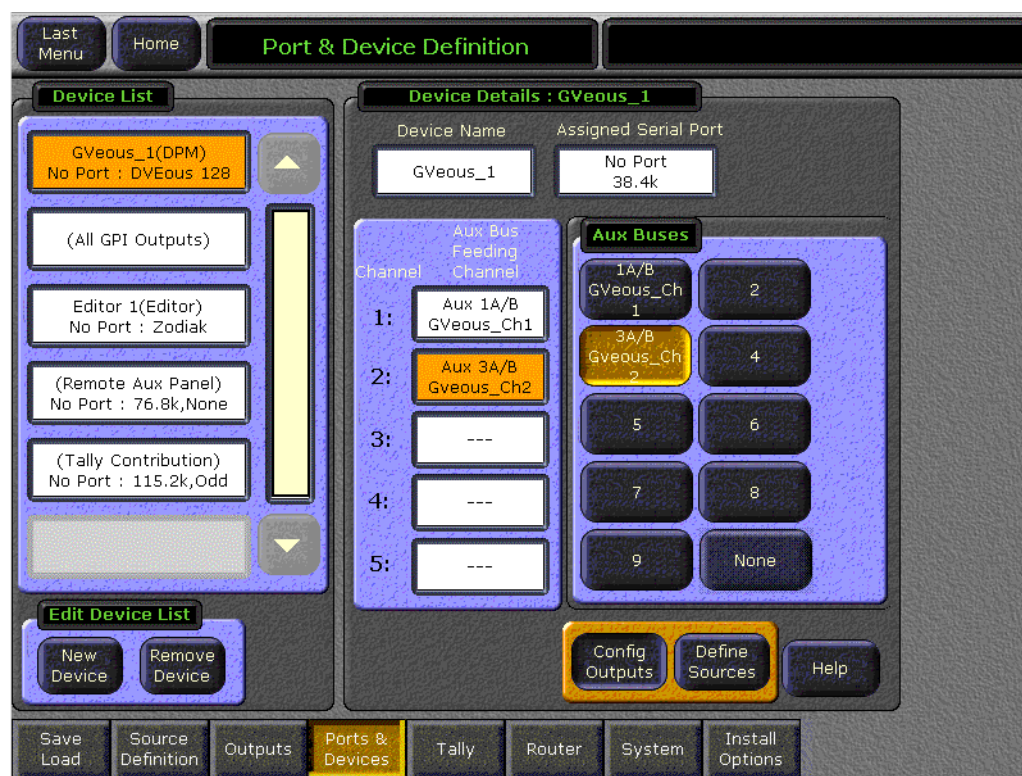
4. Touch the Device Name data pad to bring up the alphanumeric keypad and assign a name for the GVEous.

Figure 179. Ports & Devices – Define Device – GVEous



5. Select **Create** in the Navigate pane (lower right). This will bring up the Device Details pane (Figure 180).

Figure 180. Ports &amp; Devices – Device Details – GVeous



## Configure and Assign Aux Buses

In the Device Details pane for a DPM device, Zodiac Aux buses can be assigned to provide the inputs to available DPM channels. Up to five DPM channels can be fed by Zodiac Aux buses. The assignments in this menu provide information to establish a communication link between the Zodiac and the DPM for controlling Front/Back switching logic on the Aux buses.

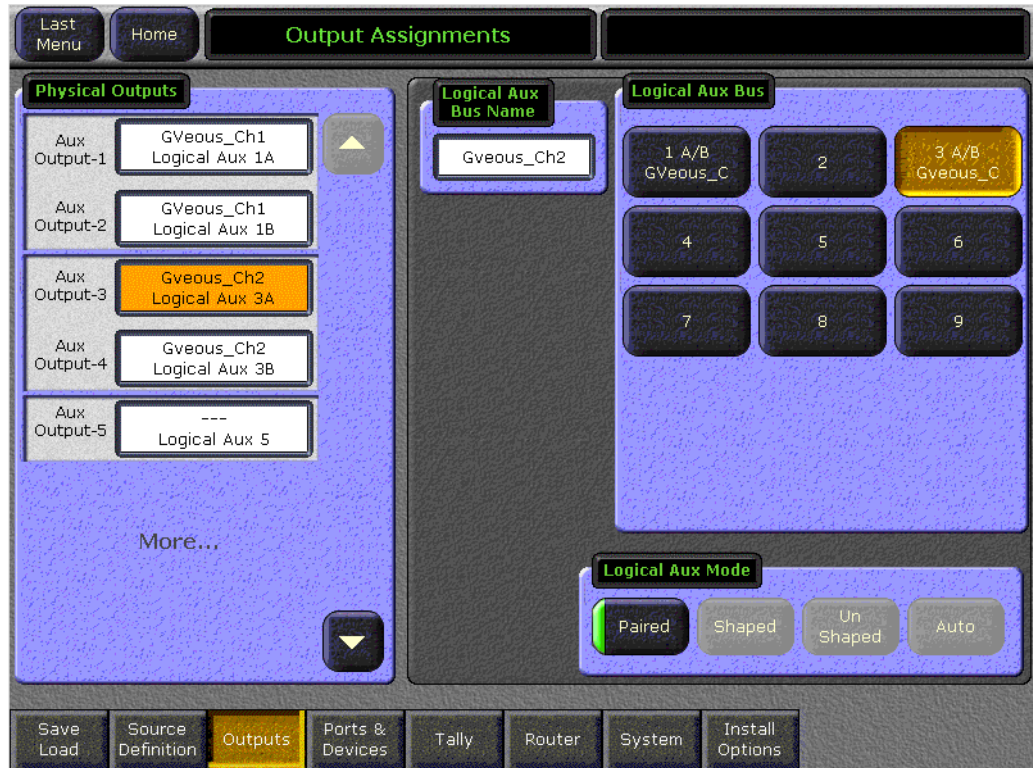
If Aux buses have not yet been configured, you will need to configure the Aux buses, then assign them to DPM channels with the steps below. If Aux buses are already configured, proceed to [Step 6](#) of this procedure.

1. In the Ports & Devices, Device Details menu ([Figure 180 on page 275](#)), touch the **Config Outputs** button below the Aux Buses data pad (or touch the **Outputs** button at the bottom of the screen) to access the Outputs menu ([Figure 181 on page 276](#)).

This menu is used to name, pair, and assign physical Aux bus outputs to the logical Aux buses in the switcher.

2. Touch an Aux bus number in the Physical Outputs pane on the left then touch a selection from the Logical Aux Bus list on the right to assign it.

Figure 181. Ports &amp; Devices – Assign Aux Buses – GVeous



3. Define Aux bus pairs if required by touching the **Paired** button.

You may also pair two Aux buses to send a Video/Video or Key pair to the DPM as shown in the example in [Figure 181](#). Pairing a set of Aux buses allows you to output the selected video source on one Aux bus and the key (or video) associated with that source (in Source Definition) on the other Aux bus in the pair.

For example, if you select Aux Output 1 above and touch the **Paired** button in the Logical Aux Mode data pad, Aux Buses 1 and 2 will be paired as shown in [Figure 181](#). A name can be given to the pair.

The video source selected on Aux Bus 1 will be sent to the Aux Bus 1 output while the key associated with the source will be sent out Aux Bus 2 simultaneously. Only Aux pairs 1 and 2, 3 and 4, 6 and 7, 8 and 9, 10 and 11 and 12 and 13 may be paired. Aux Bus 5 cannot be part of a pair.

**Note** In future releases, Aux Bus pairs 6 and 7, 8 and 9, 10 and 11 (3-M/E), and 12 and 13 (3-M/E) will have effects send capability and will allow shaping/unshaping of the signal pair.

4. Name each Aux bus or Aux bus pair by touching the Logical Aux Bus Name data pad and entering an appropriate name.

5. Return to the Ports & Devices menu by touching **Ports & Devices** at the bottom of the screen. The configured Aux bus names should now appear in the Aux Buses pane (Figure 180 on page 275).
6. Assign each GVeous channel in your system to an Aux bus by selecting the Channel number in the middle pane then an Aux bus number from the list in the Aux Buses data pad on the right.

These Aux buses are now assigned to feed the input of the selected channels. Make sure the correct physical cabling is done for each assignment.

## Aux Bus Menu

If you have defined any Aux Bus pairs, you will need to define the B Channel as either a video or key signal in the Aux Bus menu (**Key** is the default). Select the **Aux Bus** button from the Home menu to bring up the Aux Bus menu shown in the example in Figure 182.

In the Logical Aux Bus pane on the left, define the B Channel key signal by touching either the **Video** or **Key** button for the associated channel.

This Aux Bus menu also allows selection of **Near** and **Far Side** sources from the selected Aux Bus. This allows you to change the sources of both sides of an effect from this menu as there are no buttons for this function on the Zodiac Main panel.

Figure 182. Aux Bus Menu – GVeous Device



## Aux Delegation Mapping

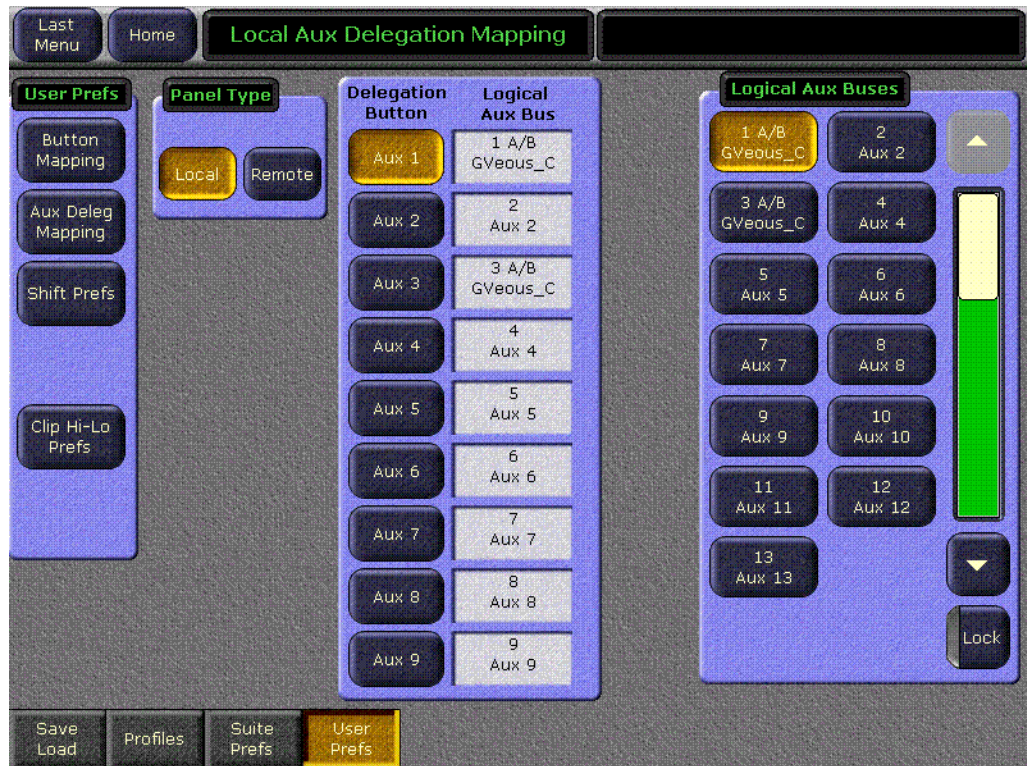
After the Physical and Logical Aux buses have been named and configured, you can assign a Logical Aux Bus to be controlled by any one of the **Aux 1 – 9** buttons in the Bus Delegation subpanel on the Main panel PVW/AUX bus.

**Note** If you will be controlling the Aux buses from the external device, you may leave the Aux Delegation at the defaults.

To assign an Aux Delegation button to control an Aux bus or Aux bus pair, touch an Aux Bus button number (**Aux 1 – 9**) from the Aux Delegation pane in the middle of the screen then touch an Aux bus from the list in the Logical Aux Buses pane on the right.

As shown in [Figure 183](#), the paired Aux buses feeding the DPM Channel 1 (Aux Buses 1 and 2 in this case) are set to be controlled by the **Aux 1** button on the Main panel. Aux Bus pairs for the DPM Channel 2 are set for control by the **Aux 3** button.

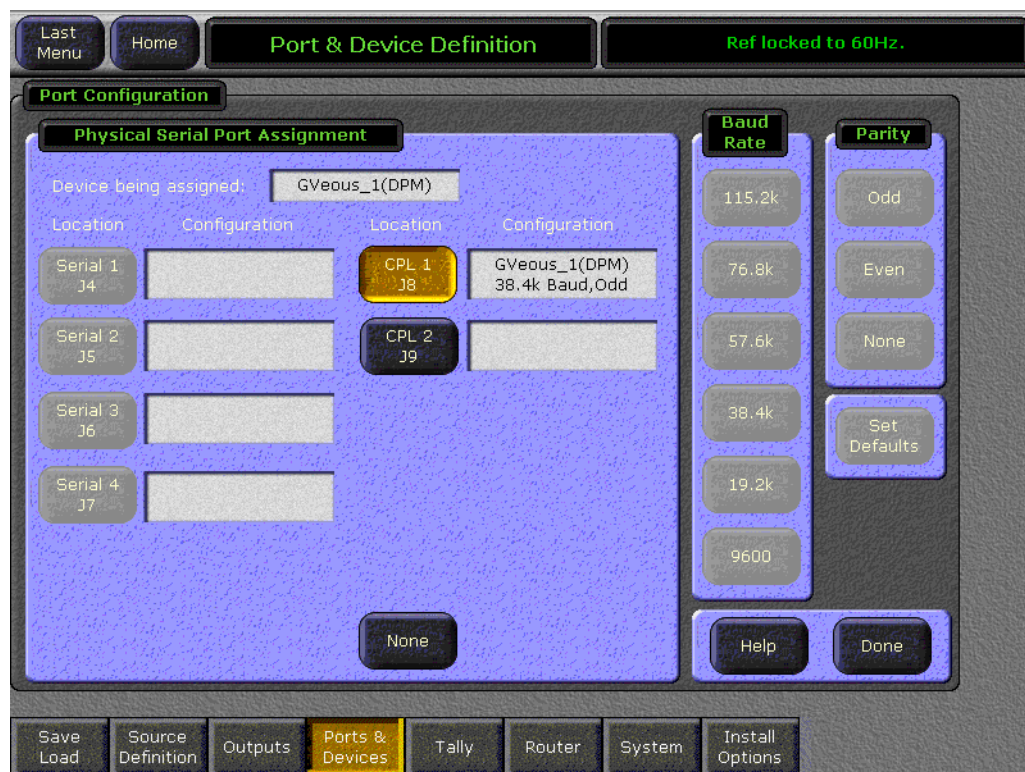
Figure 183. Aux Delegate Mapping – GVeous Device



## Assign CPL Port

1. In the Device Details pane, touch the Assigned Serial Port data pad to bring up the Port Configuration menu (Figure 184).
2. In the Physical Serial Port Assignment pane, touch the CPL port the GVeous is connected to on the rear of the Video Processor frame (CPL 1/J8 or CPL 2/J9). CPL 1/J8 and CPL 2/J9 are the only ports available; serial ports will be grayed out. The name assigned to the Gveous should now appear next to the CPL port.  
  
Baud Rate and Parity values are grayed out for CPL as these are proprietary values.
3. Touch the **Done** button in the lower right to return to the Ports & Devices menu.

Figure 184. Ports & Devices – Configure CPL Port

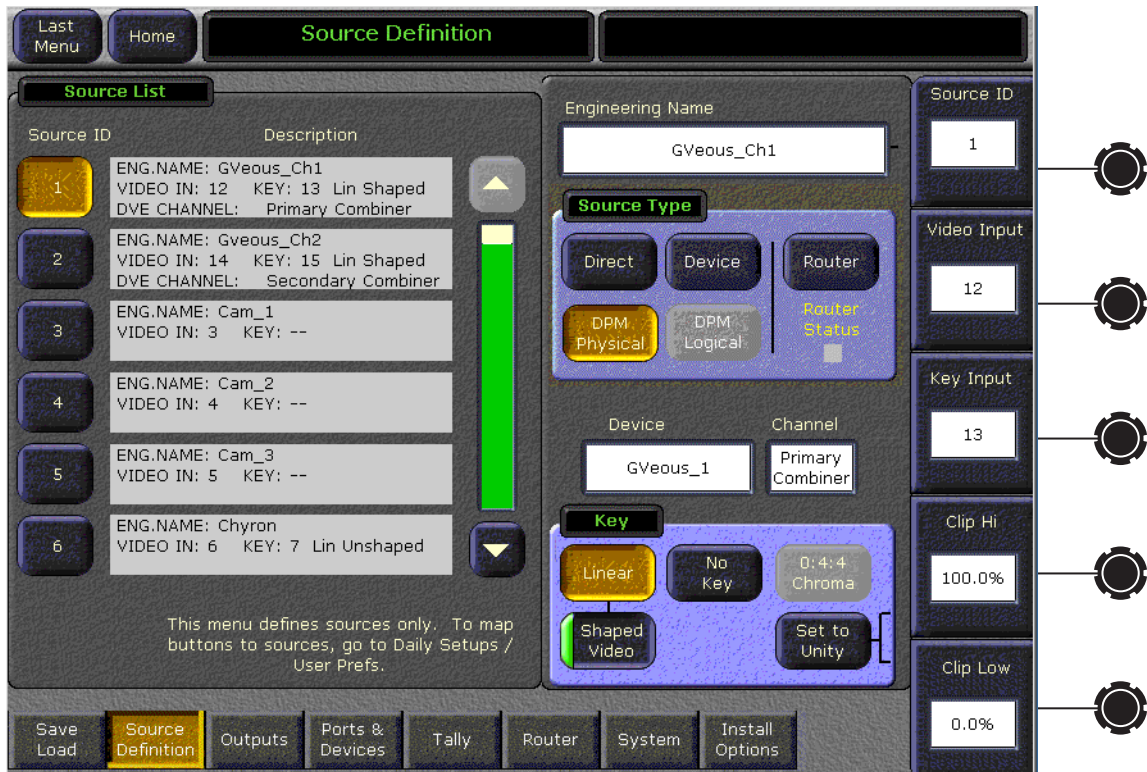


## Define GVeous Source

Return to the Ports and Devices menu (Figure 180 on page 275) and touch the **Define Sources** button (or touch the **Sources** button at the bottom of the screen) to bring up the Define Sources menu (Figure 185). Define the source(s) associated with a GVeous DPM input as follows:

1. Select the Source number you wish to use for the GVeous input in the Sources ID selections on the left.
2. Select the number of the physical BNC connector on the rear of the frame for the GVeous source with the Video Input data pad on the right of the screen using either the keypad or the soft knob on the right.
3. Select the key signal to be associated with the GVeous source with the Key Input data pad or soft knob.
4. If a key signal is defined, select the type of key in the Key data pad. For a Linear key, select either Shaped Video (on) or unshaped (off).
5. Select the **DPM Physical** button in the Source Type data pad.

Figure 185. Eng Setup – Define GVeous Source

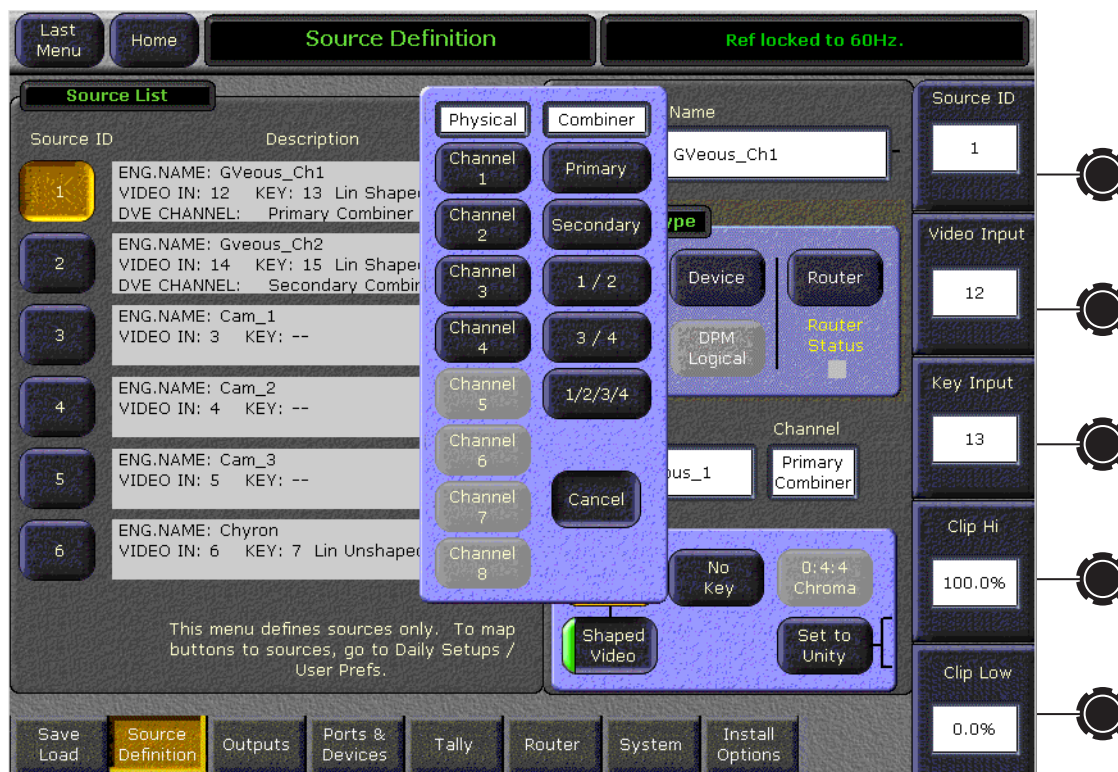


6. Touch the Device data pad below the Source Type to bring up the Defined Devices selections (not shown). Select the desired device in this menu if it appears.



- Touch the Channel data pad next to the Device Data pad to bring up the Physical Channel and Combiner selections (Figure 186). Touch the Combiner assigned to this input.

Figure 186. Eng Setup – Device Source – Select Combiner



## E-MEM Level Groups

GVEous CPL control is associated with the **MISC 1** E-MEM level group on the Zodiac Main panel by default. This can be changed in the Suite Prefs – E-MEM Prefs menu. Refer to *Device E-MEM Level Assignment* on page 242.

## Interface Operation Test

After completing the cabling and configuration, you should be able to:

- Learn a Zodiac system E-MEM specifying a GVEous effect,
- Recall that E-MEM register with the GVEous effect,
- Run the E-MEM and see the GVEous effect track, and
- Jog the GVEous effect forward and backward with **Next KF** and **Prev KF**.

## Krystal CPL Interface

The following CPL interface functions are supported in a Krystal device:

- Krystal effect recall via E-MEM,
- CPL effect run control, and
- Krystal control of Zodiac Aux buses for source selection (keyframable).

## Krystal Combiner Requirements

If the Zodiac system feeds a background video input to an optional Krystal Combiner, a serial digital delay device is needed to time the background video to the video passing through the Krystal DPM.

## Control Interface Cabling

For CPL control, connect an RS-422 cable from the **CPL 1/J8** or **CPL 2/J9** port on the rear of the Zodiac Video Processor frame to the Krystal Effect Manager I/O module **Switcher J4** port. Zodiac cable pinouts are given in [Table 9 on page 71](#).

On multiple-user systems with multiple switchers, each switcher is generally dedicated to a separate Krystal Effect Manager. Otherwise, arrangements must be made for signal control routing external to the Krystal and switcher control systems.

## Video Cabling

Currently, no Effects Send capability is enabled in the Zodiac software. In software version 1.2.0, Zodiac Aux bus outputs can be connected to Krystal inputs and controlled by the Krystal (see [Configure and Assign Aux Buses on page 275](#)). The Krystal outputs are then connected to Zodiac inputs and defined as DPM Physical sources.

### Krystal DPM Inputs

Each Krystal Video Processor frame has two pairs of serial digital video inputs (Video A, Key A, Video B, Key/Mask B). How you connect these inputs to the Zodiac system depends on whether you use the External Source Selection, Internal Switching, or A/B Input Routing features available on the Krystal DPM. These configurations provide different operational capabilities. See the *Krystal 4300 Installation and Service Manual* for more information.

Krystal inputs should be fed with Zodiac Aux bus outputs. Aux bus configuration must be performed then Aux bus assignments are made in *Define GVeous Device on page 273*.

## Krystal DPM Outputs

Each Krystal Video Processor frame has three video outputs: Key/Depth, Preview, and Program. How you connect these outputs to the Zodiac system depends on the Krystal options available (Combiners, Graphics, etc.) and your specific facility configuration. See the *Krystal 4300 Installation and Service Manual* for more information.

In software release 1.2.0, connect the Krystal outputs to Zodiac input source BNCs on the rear of the Video Processor frame and define them as DPM Physical sources (refer to *Source Number Mapping on page 284*).

## Zodiac Required Settings

The Zodiac system Inputs, Outputs, and External Interfaces must be properly configured for successful integrated DPM operation. Some of the specific settings involved are listed in [Table 33](#).

Table 33. Zodiac Configuration Settings for Krystal

Menu	Pane/Category	Setting
Eng Setups - Outputs (for each Zodiac output going to Krystal)	Mode	<b>Aux Pair</b> (if desired, not a requirement)
	Aux Bus Pairs	Select Aux bus for each output.
Aux Bus (for B Channel of any paired Aux Buses used by Krystal)	B Channel is:	<b>Key</b>
Eng Setups -Ports & Devices (define the device, then use for each source above)	Define Device	Device Name: Enter descriptive name of Krystal system.
		Assigned Serial Port: <b>CPL 1</b> or <b>CPL 2</b>
		Device Type: <b>DPM</b>
		Protocol: <b>Krystal</b>
		Aux Bus Feeding Channel: Identify Aux buses used by each Krystal channel.
Eng Setups - Sources (for each Krystal source)	Engineering Name	Enter descriptive name of source.
	Source Type	<b>DPM Physical</b>

## Krystal Required Settings

The system settings required for Krystal are summarized in [Table 34](#).

Table 34. Krystal Configuration Settings for Zodiac

Menu	Setting
External Control Prefs	Switcher Port: Enable
Src Select Device	External Switcher Device Installed
Src Select Config	[V, K] or [V, K, M] inputs assigned, depending on cabling
Port Config	Switcher CPL protocol

## Source Number Mapping

The mapping of Zodiac sources to DPM sources are shown in [Table 35](#).

Table 35. Zodiac Source ID to DPM Source Mapping

DPM Source Number	Zodiac Source Name	Zodiac Source ID Number
0	Black	118
1 through 57	1 through 57	1 through 57
58	Still Store 1	121
59	Still Store 2	122
60	M/E 1 pgA	93
61	M/E 2 pgA	99
62	M/E 3 pgA	105
63	PgPst pgA	111

### Other Settings

- Coordinate video shaping on the Switcher, Krystal Channel, and Combiner as required, and
- Set timing of channel and combiner inputs and outputs as required.

## Configuration

The configuration steps for the Krystal DPM is essentially the same as those used for GVEous, except you choose **Krystal** as the DPM device type. See *GVEous Configuration Procedure* [on page 273](#) through *Interface Operation Test* [on page 281](#) for specific instructions.

## Peripheral Bus II

In a Peripheral Bus II system, the physical devices being controlled can be connected to a common serial port and daisy chained together. The Zodiac PBus II interface protocol currently accommodates up to four peripheral devices on the same serial bus. The Zodiac system acts as the master controller on the bus. Each peripheral device needs a unique Peripheral Bus II address (0 through 23), which is generally set in software on the peripheral device itself. The Zodiac system uses these addresses to send commands to the correct peripheral device.

Peripheral Bus II commands generally are triggers sent from the Zodiac system that initiate an action on the peripheral device. Up to sixteen triggers (0 through 15) can be sent to a peripheral device. Each peripheral device supporting the Peripheral Bus II protocol will have its own set of trigger commands defined by the manufacturer. Refer to the documentation provided with the peripheral device for specific information about its capabilities.

## Zodiac System Peripheral Bus II Configuration and Operation

### Zodiac Control Interface Cabling

Connect the peripheral device(s) with a standard RS-422 9-pin serial cable to any unused serial port (Serial 1 – Serial 4) on the rear of the Zodiac Video Processor frame ([Figure 43 on page 66](#)) with the pinout described in [Table 9 on page 71](#). Up to four devices can be daisy-chained on one serial port under PBus control.

### E-MEM Level Groups

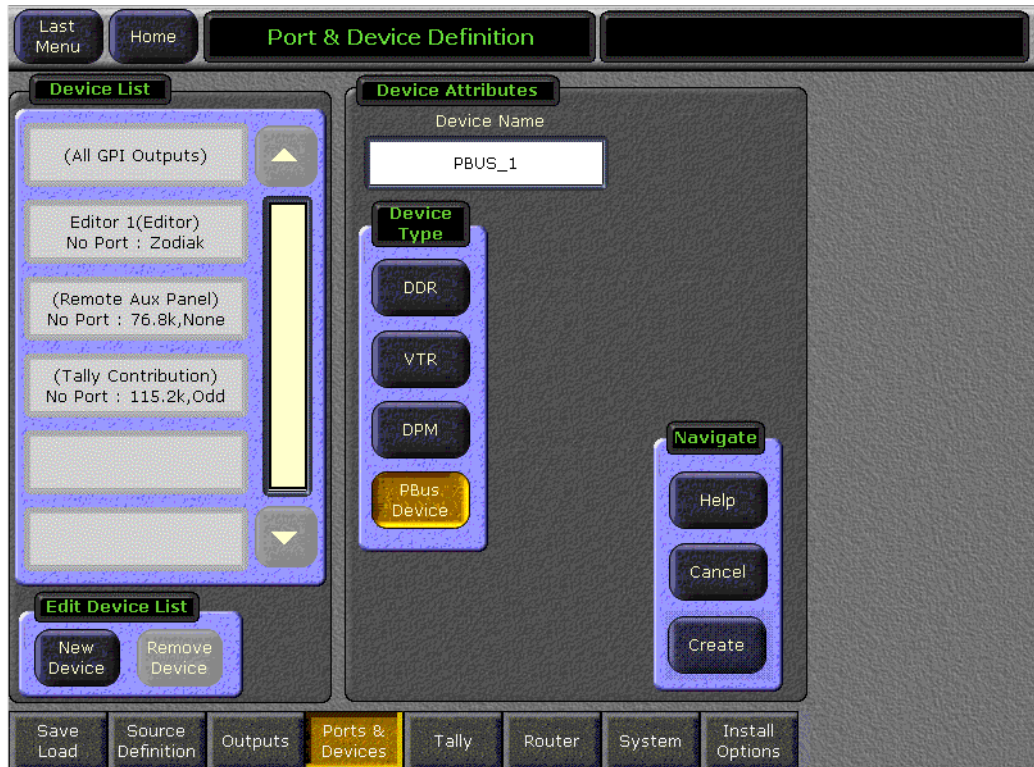
Peripheral Bus II control is associated with the **Misc 2** E-MEM level group on the Zodiac Main panel by default. This can be changed in the Suite Prefs – E-MEM Prefs menu ([Figure 157 on page 242](#)). See the *Zodiac User Manual* for details.

## Define Peripheral Bus II Device

To define a PBus device, do the following:

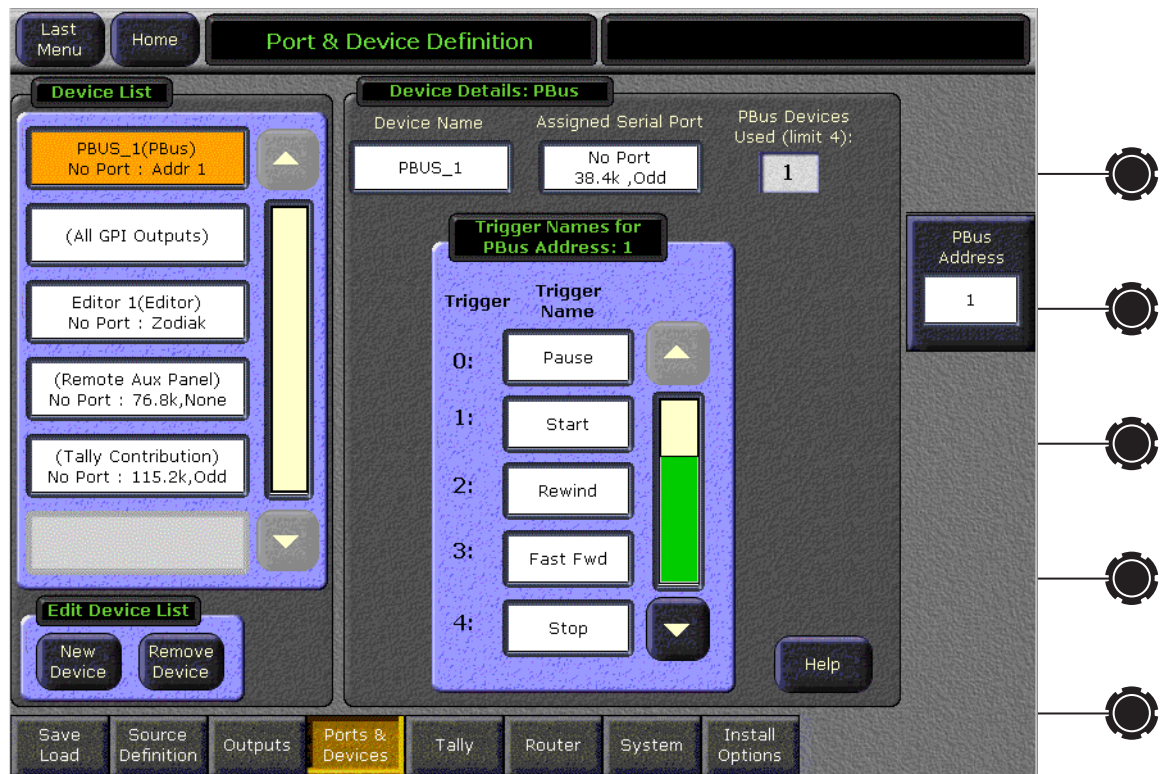
1. Touch the **Ports & Devices** category selection button at the bottom of the Eng Setups screen to access the Port & Devices menu (Figure 187).
2. Touch the **New Device** button in the Device List pane to bring up the Device Attributes pane.
3. Touch **PBus Device** in the Device Type list.

Figure 187. Ports & Devices – Define PBus 2 Device



4. Touch the Device Name data pad to bring up the alphanumeric keypad and assign a name of up to 12 characters for the device.
5. Select **Create** in the Navigate pane (lower right). This will bring up the Device Details pane for the PBus device (Figure 188).

Figure 188. Ports &amp; Devices – Peripheral Bus II Configuration



6. In the Ctrl Delay Fields data pad, enter the number of fields that indicate how long it takes for the external device to respond to a command. Use the keypad or soft knob to enter a value between 0 – 60. This external device information is used by the switcher to synchronize Master E-MEM operations more accurately.
7. Enter the PBus address (0–23) to match that of the peripheral device in the PBus Address data pad with the keypad or soft knob.
8. Enter a Trigger Name for each Trigger (0–15) according to what action will be triggered on the peripheral device (as defined by the external device manufacturer). Touch the Trigger Name data pad to bring up the keypad for entering a name.
9. Touch the Assigned Serial Port data pad at the top of the screen to bring up the Port Configuration menu (Figure 189).
10. In the Physical Serial Port Assignment pane, touch the serial port the peripheral device is connected to on the rear of the Video Processor frame. The name of the peripheral device should now appear next to the serial port.

11. Enter the correct baud Rate and Parity required for communicating with the peripheral device.

Touch the **Set Defaults** button to set the default values to **38.4k** Baud and parity to **None**.

12. Touch **Done** (lower right) to return to the Ports & Devices menu.

Figure 189. Ports & Devices – Configure PBus Port

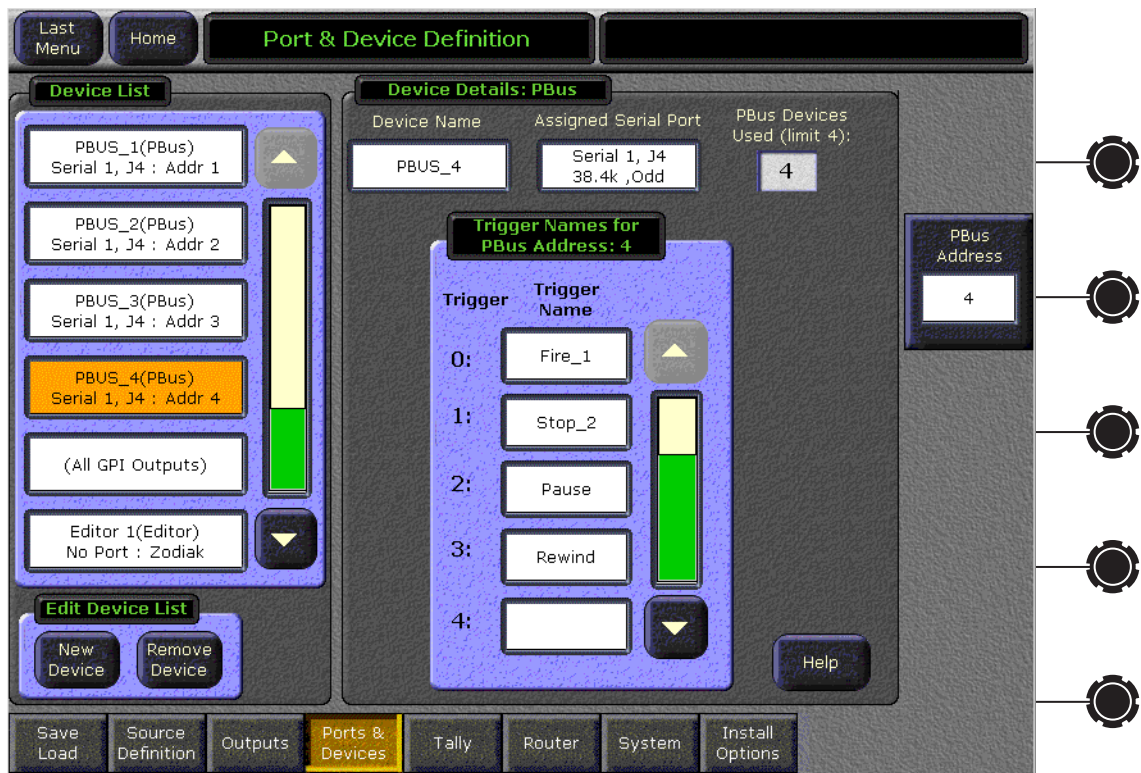




Up to four PBus devices may be daisy-chained together and assigned to the same serial port with the current Zodiac software. Each device must have a unique PBus address (**0–23**). The number of devices connected will be indicated in the PBus Devices Used data box on the Device Details menu (Figure 190). Once the maximum number of four PBus devices is used, the PBus selection as a new device will be grayed out.

Refer to Figure 190 for an example of four PBus devices connected to a single serial port. Note each PBus device is assigned to the same serial port with a unique PBus address coordinating to each of the four external devices.

Figure 190. Ports & Devices – PBus II Device Assignment



Once peripheral devices has been defined in the Ports & Devices menu, the devices can be selected in the PBus & GPI menu to be controlled by an E-MEM recall or test fired. Refer to the *Zodiac User Manual* for operation information.

Some specific external device PBus interface information has been summarized on the following pages:

- *Krystal and GVeous Peripheral Bus II Control* [on page 290](#)
- *Kaleidoscope Peripheral Bus II Control* [on page 291](#)
- *Lance Design TDC-100 Controller Peripheral Bus II Control* [on page 292](#)

## Krystal and GVeous Peripheral Bus II Control

### Configuration

Specific settings are required on Krystal and GVeous systems for Peripheral Bus II control ([Table 36](#)).

Table 36. GVeous and Krystal Settings

Menu	Setting
(Krystal) External Control Preference (GVeous) Remote Enable	Editor port - ON.
	Protocol - Peripheral
	Baud-38.4kb
	Parity - even
	Address - (same as Zodiac Device)

### Peripheral Bus II Triggers

Krystal and GVeous Peripheral Bus II triggers are listed in [Table 37](#).

Table 37. Krystal and GVeous Triggers

Number	Trigger
1	Run Fwd
2	Run Rev
3	Pause
4	Freeze
5	Unfreeze

When Peripheral Bus II is enabled on the Krystal system, Learn and Recall commands are automatic. See the following section for GVeous system limitations.

### GVeous Limitations

The following limitations reside in the GVeous system. The commands issued by the Zodiac system are formatted correctly. These limitations do not apply for Krystal.

- Under Peripheral Bus II control, GVeous correctly recognizes Zodiac registers 0 through 39. Higher Zodiac registers are not processed correctly by GVeous, even though the Zodiac system sends the correct register number out Peripheral Bus II.
- Under Peripheral Bus II control, GVeous correctly handles Peripheral Bus II Learns only when the GVeous current register is 0 through 62.

## Kaleidoscope Peripheral Bus II Control

The Zodiak system can control a Kaleidoscope DPM system using Peripheral Bus II control.

### Capabilities

The Zodiak interface with Kaleidoscope supports Learn and Recall operations. When a register is learned on Zodiak, the current Kaleidoscope effect number can be learned. Recalling that Zodiak register will then Recall and Run the Kaleidoscope effect.

## Kaleidoscope Peripheral Bus II Control

### Requirements

The Kaleidoscope system must be equipped with the Serial I/O option.

### Control Cabling

Connect the Kaleidoscope System Controller Editor Port with a standard RS-422 9-pin serial cable to any unused serial port (Serial 1 – Serial 4) on the rear of the Zodiak Video Processor frame ([Figure 43 on page 66](#)) with the pinout described in [Table 9 on page 71](#).

### Kaleidoscope Configuration

Specific settings are required on the Kaleidoscope system for Peripheral Bus II control ([Table 38](#))

*Table 38. Kaleidoscope Settings*

Menu	Setting
Resource\User Pref\Extern Cntrl\	Enable Serial
System Config\More\Serial Setup	Protocol - Periph II
	Baud - 38.4kb
	Parity - Even
	Periph Addr (same as Zodiak Device)

### Limitations

No triggers are supported, and Recall always runs the Kaleidoscope effect.

## Lance Design TDC-100 Controller Peripheral Bus II Control

### Capabilities

The Zodiac interface with the Lance Design TDC-100 controller supports Learn, Recall, and various Trigger operations.

The first 100 registers of the TDC-100 correspond to the 100 registers on the Zodiac system (numbered 0-99 on both systems). Learning a register on the Zodiac system stores the corresponding register on the TDC-100 with the current cue point and device enable information. Recalling that register on the Zodiac will recall the TDC-100 register and cue the enabled devices. Triggers from the Zodiac system can then be issued to control the devices.

### Control Cabling

Connect the P-BUS IN port on the TDC-100 frame with a standard RS-422 9-pin serial cable to any unused serial port (Serial 1 – Serial 4) on the rear of the Zodiac Video Processor frame ([Figure 43 on page 66](#)) with the pinout described in [Table 9 on page 71](#).

### TDC-100 Configuration

See [Table 39](#) for required menu settings on the TDC-100 system.

Table 39. TDC-100 Controller Menu Settings

Menu Number	Menu Name	Setting
01	DEVICE NUM FOR A = (or B, C, D)	Same as Zodiac Device
21	SWITCHER TYPE	GVG
22	P-BUS PARITY	EVEN

### Peripheral Bus II Triggers

TDC-100 Peripheral Bus II triggers are listed in [Table 40](#).

Table 40. TDC-100 Triggers

Number	Trigger
0	Normal Play
1	Recue
2	Variable Play (using displayed speed which can be learned and recalled)
3	Reverse Play at 100%
4	Stop
5	Loop Play
6	Record
7 and above	Normal Play

## Editor Interface

As of Zodiac Software Release 1.2.0, basic editor control is supported.

Zodiac protocol command capabilities include:

- Source select for all M/E, Key, Preview, and Aux buses,
- Split key on all key buses (including DSK),
- Transition Mode, Rate, and Triggers,
- All Stop command,
- E-MEM Recall and Run trigger, and
- Save and Load data and status,
- Timeline control,
- Software version,
- Switcher model features, and
- Wipe Select.

You may also use the GVG Model 4000 editor protocol but capabilities will be limited to the following:

- Source select for A, B, Key 1 & 2, Aux buses,
- Transition Mode, Rate, and Triggers,
- All Stop,
- E-MEM Recall and Run trigger, and
- Wipe Select.

In addition, as of Release 1.2.0, the Zodiac system does not respond with the same timing as a Grass Valley Group Model 4000 switcher. Edit controller adjustments need to be made to make Zodiac changes line up with other commands issued by the edit controller. See your edit controller manual for adjustment procedures.

## Editor Installation and Configuration

1. Connect the editor with a standard RS-422 9-pin serial cable to any unused serial port (Serial 1 – Serial 4) on the rear of the Zodiac Video Processor frame (Figure 43 on page 66) with the pinout described in Table 9 on page 71.
2. Set the editor to use either the Zodiac Editor Protocol or the GVG Model 4000 Editor Protocol.
3. Set the editor to use the following serial communications settings:

Table 41. Editor Serial Communication Settings

Serial Settings	
Baud Rate	38400
Parity	Odd
Stop Bits	1
Data Bits	8

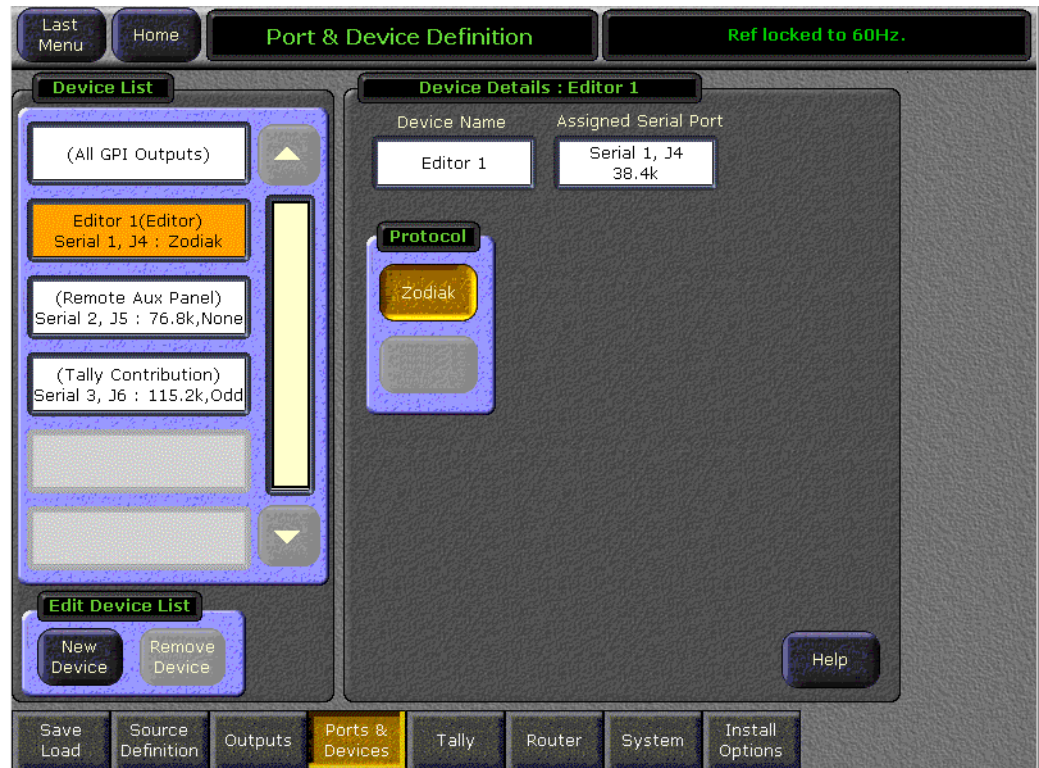
**Note** You must use the 38.4 baud rate (which is the default setting on the Zodiac system) for proper operation with an editor. Changing the baud rate to different values can cause Zodiac frame communications failures with the editor.

The Editor protocol for controlling the Zodiac Digital Production Switcher is given in a separate Kalypso/Zodiac Protocol Manual. This manual is available on-line in .pdf format or is orderable in hard copy through Grass Valley Group Customer Service (GVG part # 071-8063-XX).

## Define Editor Device

1. In the Eng Setups, Ports & Devices menu, touch the **Editor 1** button in the Device List pane (Figure 191) to bring up the Device Details pane.

Figure 191. Ports & Devices – Editor Configuration



2. Touch the Device Name data pad to bring up the alphanumeric keypad and enter a name of up to 12 characters for the editor.
3. Touch the Assigned Serial Port data pad to bring up the Port Configuration menu (Figure 192).

Figure 192. Ports & Devices – Editor Configuration



4. In the Physical Serial Port Assignment pane touch the serial port the editor is connected to on the rear of the Video Processor frame. The name of the editor should now appear next to the serial port.
5. Set the Baud Rate and Parity to the same values as the editor if they are not at the correct values (Table 41 on page 294).  
Touch the **Set Defaults** button to set the default values to **38.4k** Baud and **Odd** parity.
6. Touch **Done** to exit the menu when the configuration is complete.

The defined editor name and its port assignment should now appear in the Editor 1 field in the Device List in the Ports & Devices menu.



# Tally Contribution

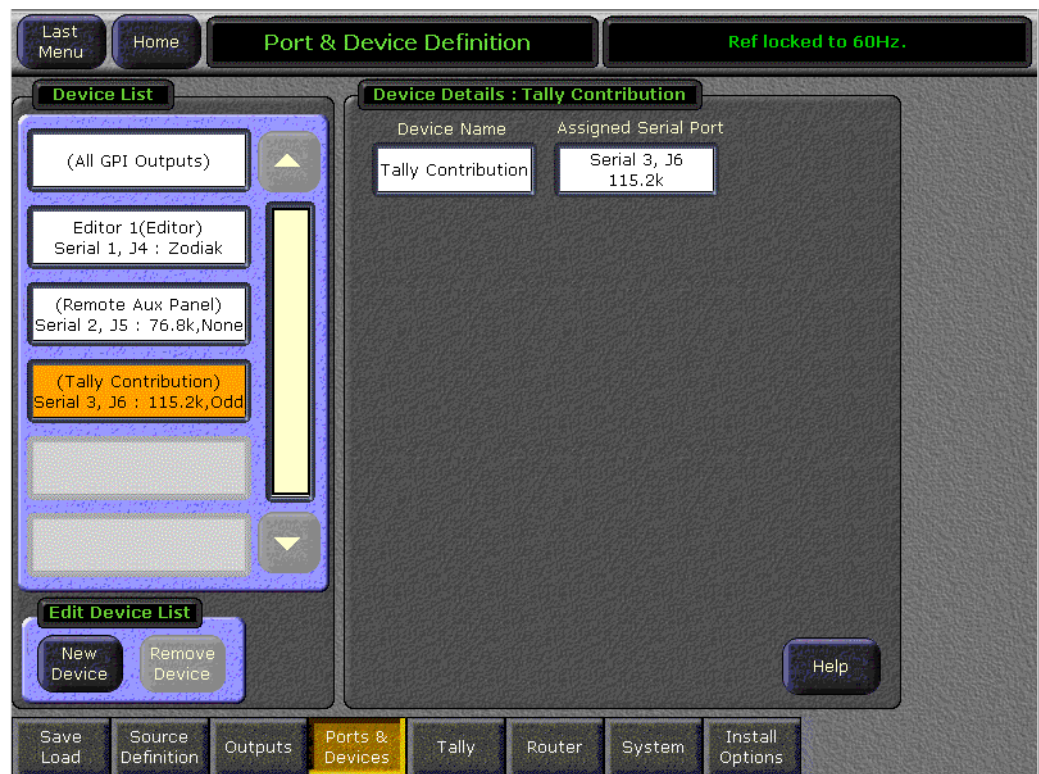
Contribution tally information is available in serial format from any one of the four serial ports (Serial 1 – Serial 4) on the rear of the Video Processor frame. This output reports all tally information from the switcher. An external device can be programmed to interpret this information for the desired type of tally reporting.

Connect the external tally device with a standard RS-422 9-pin serial cable to one of the unused serial ports on the rear of the Zodiac Video Processor frame (Figure 43 on page 66) with the pinout described in Table 9 on page 71.

To configure a serial port to output Tally Contribution information, do the following:

1. Touch the **(Tally Contribution)** button in the Device List in the Eng Setup, Ports & Devices menu (Figure 193). The Device Name will default to Tally Contribution and cannot be renamed or removed.

Figure 193. Ports & Devices – Tally Contribution Configuration



2. Touch the Assigned Serial Port data pad to bring up the Port Configuration menu.
3. Touch the serial port to which you have connected the external tally device. This will assign it as the Tally Contribution output.

4. Set the Baud Rate and Parity parameters of the port to match the external device.

Touch the **Set Defaults** button to set the default values to **76.8k** Baud and parity of **None**.

5. Touch **Done** to exit the menu and return to the Ports & Devices menu.

For a complete explanation of types of tally information available and the Contribution Tally protocol, refer to the Kalypso/Zodiak Protocol Manual available on-line in .pdf format or orderable in hard copy from GVG Customer Service (GVG part # 071-8063-XX).

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