

F5N Series



User's Guide

- Manual #: 26-0702000-00
- Revision: 00



FSN Series • User's Guide

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Company Address



Barco, Inc.
11101 Trade Center Drive
Rancho Cordova, California 95670
USA

- Phone: (916) 859-2500
- Fax: (916) 859-2515
- Website: www.barco.com

Barco N.V.
Noordlaan 5
8520 Kuurne
BELGIUM

- Phone: +32 56.36.82.11
- Fax: +32 56.35.16.51
- Website: www.barco.com

Technical Support

- Tech Line: (866) 374-7878 — 24 hours per day, 7 days per week
- E-mail: folsomsupport@barco.com

Operators Safety Summary

The general safety information in this summary is for operating personnel.

Do Not Remove Covers or Panels

There are no user-serviceable parts within the unit. Removal of the top cover will expose dangerous voltages. To avoid personal injury, do not remove the top cover. Do not operate the unit without the cover installed.

Power Source

This product is intended to operate from a power source that will not apply more than 230 volts rms between the supply conductors or between both supply conductor and ground. A protective ground connection by way of grounding conductor in the power cord is essential for safe operation.

Grounding the Product

This product is grounded through the grounding conductor of the power cord. To avoid electrical shock, plug the power cord into a properly wired receptacle before connecting to the product input or output terminals. A protective-ground connection by way of the grounding conductor in the power cord is essential for safe operation.

Use the Proper Power Cord

Use only the power cord and connector specified for your product. Use only a power cord that is in good condition. Refer cord and connector changes to qualified service personnel.

Use the Proper Fuse

To avoid fire hazard, use only the fuse having identical type, voltage rating, and current rating characteristics. Refer fuse replacement to qualified service personnel.

Do Not Operate in Explosive Atmospheres

To avoid explosion, do not operate this product in an explosive atmosphere.

Terms In This Manual and Equipment Marking



WARNING

Highlights an operating procedure, practice, condition, statement, etc., which, if not strictly observed, could result in injury to or death of personnel.

Note

Highlights an essential operating procedure, condition or statement.
--



CAUTION

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



AVERTISSEMENT!

Le point d'exclamation dans un triangle équilatéral signale à alerter l'utilisateur qu'il y a des instructions d'opération et d'entretien très importantes dans la littérature qui accompagne l'appareil.



VORSICHT

Ein Ausrufungszeichen innerhalb eines gleichwinkligen Dreiecks dient dazu, den Benutzer auf wichtige Bedienungs- und Wartungsanweisungen in der dem Great beiliegenden Literatur aufmerksam zu machen.

Change History

The table below lists the changes to the FSN Series User's Guide.

Table 0-1. Change History

Rev	Date	ECP #	Description	Approved By
00	3/24/09	567874	FSN Series User's Guide	R. Pellicano

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1. Introduction

In This Chapter

This chapter is designed to introduce you to the FSN Series User's Guide. Areas to be covered are:

- [Software Version](#)
- [Chapter Structure](#)
- [How to Use This Guide](#)
- [Conventions](#)
- [Glossary of Switcher Terms](#)
- [About the FSN Series](#)
- [Connectivity Diagrams](#)
- [Application Questions](#)

1. Introduction

Software Version

Software Version

This version of the FSN Series User's Guide is based on software version 1.00.

Chapter Structure

The following chapters provide instructions for all aspects of FSN Series operations:

- Chapter 1, "[Introduction](#)" provides a system overview, a list of features, and system connectivity diagrams.
- Chapter 2, "[FSN-1400 Orientation](#)" on page 27 provides detailed explanations of the system's chassis and internal cards.
- Chapter 3, "[Control Panel Orientation](#)" on page 57 provides detailed explanations of each control panel's sections and functions.
- Chapter 4, "[Installation](#)" on page 91 provides comprehensive system installation instructions.
- Chapter 5, "[Menu Orientation](#)" on page 117 provides menu trees, plus comprehensive explanations of each menu and function.
- Chapter 6, "[System Setup](#)" on page 241 provides detailed instructions for setting up system inputs, outputs and communications.
- Chapter 7, "[Operations](#)" on page 263 provides comprehensive system operating instructions.
- Chapter 8, "[Updating Software](#)" on page 301 outlines procedures for upgrading system software components.
- Appendix A, "[Specifications](#)" on page 307 lists the FSN Series' specifications.
- Appendix B, "[Contact Information](#)" on page 325 lists important Barco contact, RMA, warranty and technical support details.

How to Use This Guide

This section provides important tips for streamlining your use of this User's Guide in its electronic "PDF" form.

Navigating

Use Acrobat Reader's "bookmarks" to navigate to the desired location. All chapter files have the same bookmark structure for instant navigation to any section. Please note:



- Extensive hyperlinks are provided within the chapters.
- Use Acrobat's "**Go to Previous View**" and "**Return to Next View**" buttons to trace your complete navigational path.
- Use the "**Previous Page**" and "**Next Page**" buttons to go to the previous or next page within a file.
- Use Acrobat's extensive search capabilities, such as the "**Find**" tool and "**Search Index**" tool to perform comprehensive searches as required.

Table of Contents and Index

Use the **Table of Contents** bookmarks to navigate a desired topic. Click any item to instantly jump to that section of the guide. You can also use the **Index** to jump to specific topics within a chapter. Each page number in the **Index** is a hyperlink.

Conventions

The following conventions are used throughout this guide:

- The symbol ■ denotes an operations procedure.
- The symbol ▲ denotes an example.
- Entries written in bold-face letters denote physical buttons, chassis connectors and "sections" on the control panel.
 - ▲ Press **DSK** to ...
- Entries written between braces denote buttons on the Touch Screen.
 - ▲ Press {**Edge Color**} to ...
- A sequence of button presses on the control panel is denoted by the button names, separated by commas.
 - ▲ Press **STORE, M/E 1, #, ENTER** to ...
- A sequence of button presses on the Touch Screen is denoted by the button names, separated by arrows.
 - ▲ Press {**System**} > {**Input Setup**} to ...

1. Introduction

Glossary of Switcher Terms

Glossary of Switcher Terms

The following terms and abbreviations are used throughout this guide:

- **3G** — A 3 Gbit/s serial digital 10-bit or 12-bit video interface (SMPTE 424M and 425M).
- **AUX** (Auxiliary) Bus — AUX buses are extra switching buses that allow video signals connected to the switcher to be routed to external equipment such as VTRs, monitors, projectors, etc.
- **Bank** — a name for the three *combined* individual buses in an M/E, including the PGM bus, the PST bus and the KEY bus.
- **BG** (Background) — The switcher bus on an M/E bank that selects the on-line (or on-air) output signal.
- **Chroma Key** — A type of key where the hole-cutting information is derived from a color rather than from a video level. An common example on television, is when the weatherman appears to be standing in front of a map. The map itself is a video signal, and the weatherman is in fact standing in front of a green (or blue) screen. On the switcher, the Chroma Key process electronically subtracts the color from the foreground image, and replaces it with video from the background image to form a composite image.
- **Clip, Gain, Opacity** — In switcher terminology, the process of fine-tuning a key of any type (luminance, linear, or chroma). Clipping sets the threshold for the hole-cutting circuitry, while "gain" defines the range and sensitivity of adjustment. The "opacity" is the transparency or density of the key, as revealed over a background.
- **Chassis Cards** — In addition to the required **M/E** and **System** cards, the following cards that can be installed in the chassis, enabling you to configure the switcher in many flexible ways. These cards are abbreviated as follows:
 - ~ **NIC** (Native Input Card) — provides eight native video inputs.
 - ~ **UIC** (Universal Input Card) — provides two universal scaler inputs.
 - ~ **UOC** (Universal Output Card) — provides two universal auxiliary outputs.
 - ~ **NAC** (Native Aux Output Card) — provides eight native auxiliary outputs.
 - ~ **DVE** (Digital Video Effects) — provides two "2D" DVE channels.
- **CLN** (Clean Feed) — An output of an M/E that originates upstream of the M/E's keyers. For example, if the output of M/E 1 is Camera 1 plus a key, the "clean" output is Camera 1 only, minus the key.
- **Computer Video** — A generic term indicating video that originates from a computer platform. A progressive scan signal that follows VESA (Video Electronics Standards Association) standards, with typical resolutions of 800 x 600, 1024 x 768, 1280 x 1024, etc.
- **Crosspoint** — The video switch (or button) that selects the input required on a particular switcher bus.
- **Cut** — an instantaneous switch from one video source to another.
- **DA** (Distribution Amplifier) — A video device that inputs one video signal, and outputs multiple "identical" signals.
- **DSK** (Downstream Keyer) — A DSK is a key that is electronically located after all other switcher functions — visually on top of all other layers and buses. Any operations performed "upstream" on the switcher M/Es will not affect the downstream key video.

- **EXT** (External) — A digital key input that is dedicated to the DSK.
- **Fader** — see **T-Bar**.
- **FTB** (Fade to Black) — The button which enables the TD (Technical Director) to fade everything on Program, including the DSK, to or from black.
- **GPIO** (General Purpose Input/Output) — One or more communications ports that control input and output "triggering." For example, with a **GPI** (input) trigger, an external peripheral device can trigger a specified switcher function. With a **GPO** (output) trigger, the switcher can trigger an external device.
- **GUI** (Graphical User Interface) — A term that describes a status display based on graphics and icons, rather than strictly on numbers and letters.
- **HD-SDI** (High Definition Serial Digital Interface) — a high definition SDI signal (SMPTE 292M). Example formats are 720p, 1080i, and 1080p.
- **Keyframe** — In a PIP "move," a keyframe is a point where an action or change occurs. For example, when a PIP moves from the upper right corner to full screen, keyframe 1 is the upper right position, and keyframe 2 is the full screen position of the PIP.
- **Keying** — The process of superimposing video from one source (the foreground) on top of another source (the background).
- **Key Fill** — The video which fills the hole cut by the keying circuitry. Typically, switchers provide a variety of choices for the fill source — internal mattes, external video, or "self" fill are several examples.
- **Key Mask** — A key modification system that protects a portion of the foreground video from being keyed, using the switcher's internal pattern system.
- **Key Signal** — also known as **Key Source**. The signal that electronically cuts the hole in the background video signal. Key signals typically originate from external inputs such as character generators or cameras.
- **Linear Key** — a keying mode in which the edges of anti-aliased key sources (such as character generators) are reproduced clearly. Typically, two separate signals are required from a linear key source: a cut and a fill.
- **M/E** (Mix/Effects) — The section (or "bank") of a video switcher where video signals are processed to select inputs and create mixes, wipes, keys and other effects. An M/E is essentially a video layer that can be combined with other M/Es (layers) to form the entire output of the switcher.
- **Menu** — A term used to describe buttons and functions on the high-resolution color LCD touch screen.
- **Mix** — also known as a **Dissolve**. A transition between two video sources in which one source fades out as the other fades in.
- **Native Resolution** — The resolution to which all processing is set within the switcher frame, e.g., SD-SDI (SMPTE 259M, Level C) or HD-SDI (SMPTE 292M).
- **NTSC** — National Television Standards Committee. The oldest standard for color picture broadcasting. NTSC is a standard definition format that operates at a frequency of 60Hz, with 525 lines, 60 fields and 30 frames per second.
- **PAL** — Phase Alternating Line. PAL is the predominant TV standard in Europe. PAL is a standard definition format that operates at a frequency of 50Hz, with 625 lines, 50 fields, and 25 frames per second.
- **PGM** (Program) — The switcher bus on the Program bank that selects the on-line (or on-air) output signal from that bank.

1. Introduction

Glossary of Switcher Terms

- **PGM Bank** — The *entire* PGM bank, including the PGM bus, PST bus, DSK, the PGM transition section and FTB.
- **PIP** (Picture-in-Picture) — An on-screen “look” in which one picture (typically of reduced size) is positioned or keyed over another background image — or another PIP. PIPs can overlap each other, depending on their visual priority.
- **PST** (Preset) — The switcher bus that selects the video that will appear next on-line (or on-air).
- **RGB** — The red, green and blue color signal components.
- **RGBHV** — Defines a connection scheme with five lines: one for red, one for green, one for blue, one for the horizontal sync and one for the vertical sync. This is the standard used in VGA and other analog PC computer monitors.
- **RGBS** — Defines a connection with four signals, to transmit video and sync information. Vertical and horizontal sync are combined on a single channel
- **RGsB** — Defines a connection with three signals, to transmit video and sync information. Here, the sync information is transmitted on the green channel.
- **SD-SDI** — (Standard Definition Serial Digital Interface) — a standard definition SDI signal with a data rate of 270 Mbit/s only (SMPTE 259M). Example formats are 480i and 525i.
- **SDI** (Serial Digital Video) — A digital representation of the video signal that is distributed via a single coaxial cable with BNC connectors.
- **T-Bar** — Also known as a Fader, the T-Bar is the lever on a switcher that manually controls the progress of an effect. The position of the fader controls the amount of the BG (Background) Bus signal and the PST (Preset) Bus signal that contributes to the mix, wipe or key.
- **TD** (Technical Director) — the person who operates the FSN Series switcher.
- **Wipe** — a transition between two video sources that uses a selected pattern to determine the edge between the two sources.
- **Y/C** — A video signal in which color and brightness information is transmitted separately (luminance Y, chrominance C).

About the FSN Series

The following topics are discussed in this section:

- [Overview](#)
- [Control Features](#)
- [System Configuration](#)

Overview

The FSN Series integrates HD, SD and computer sources in a professional multi-format production switcher. General features include:

- The ability to add computer inputs and HD/SD cross-conversion capability to traditional video switcher functionality, with seamless switching and mixing.
- The ability to select the native output video format (e.g., 480i, 576i, 720p, 1080i). In this manner, the switcher can:
 - ~ Operate as an HD-SDI switcher with internal SD and computer video conversion to HD.
 - ~ Operate as an SD-SDI switcher with internal HD and computer video conversion to SD.
- An intuitive control surface, with sections and functions that are familiar to the video production switching community.
- A user-configurable video processor (chassis) that uses field-installable cards, providing superior input and output flexibility.
- All cards, power supplies and fans are front-serviceable and hot-swappable.
- Video reference input.
- Auto-timing of reference locked sources (+/- 0.5 lines).
- Six native resolution Aux outputs as standard.
- Minimal video delay for native resolution sources that are locked to reference.
- Built-in test patterns.

Please note:

- To ensure trouble-free orientation, installation and operation of your FSN Series switcher, please follow all procedures in the following chapters:
 - ~ Chapter 2, "[FSN-1400 Orientation](#)" on page 27.
 - ~ Chapter 3, "[Control Panel Orientation](#)" on page 57.
 - ~ Chapter 4, "[Installation](#)" on page 91.
 - ~ Chapter 5, "[Menu Orientation](#)" on page 117.
 - ~ Chapter 6, "[System Setup](#)" on page 241.
 - ~ Chapter 7, "[Operations](#)" on page 263.
- Should you have any questions regarding the installation or operation of the FSN Series system, please consult with customer service. Refer to Appendix B, "[Contact Information](#)" on page 325 for details.

1. Introduction

About the FSN Series

Control Features

Two different control surfaces are available for the FSN Series:

- The **FSN-150** is a 1.5 M/E production switcher providing 20 assignable crosspoints (10 buttons plus **SHIFT**).



Figure 1-1. FSN-150 Control Panel

- The **FSN-250** is a 2.5 M/E production switcher providing 52 assignable crosspoints (26 buttons plus **SHIFT**).



Figure 1-2. FSN-250 Control Panel

Additional control features are listed below:

- A high-resolution color LCD touchscreen for setup and parameter adjustment.
- Programmable “custom” buttons, with LCD displays to indicate the current button assignments.
- Programmable LCD source labels for the switcher bus rows.

Note

The **FSN-250** is not available in release 1.0.

System Configuration

The following topics are discussed in this section:

- [Basic FSN Series System](#)
- [Required and Optional Cards](#)
- [M/E Features](#)

Basic FSN Series System

Because the FSN Series uses modular components, many flexible system configurations can be designed to suit your exact production requirements.

The basic FSN Series system consists of the following:

- One FSN-150 control panel.
- One FSN-1400 chassis.
- One **System Card** (required on all systems).
- One **Crosspoint M/E Card** (required on all systems).
- One eight-channel **NIC** (Native Input Card).
- One two-channel **UIC** (Universal Input Card).

Required and Optional Cards

Required FSN Series cards are described below.

- **System Card** — this required card includes:
 - ~ Video reference input and loop through.
 - ~ Configurable video reference output.
 - ~ Ethernet port (10/100).
 - ~ One tally connector (24 contact closures).
 - ~ One GPIO connector (four GPI ports and eight GPO ports).

In Chapter 2, refer to the “[System Card](#)” section on page 38 for details.

- **Crosspoint M/E Card** — This required card includes:
 - ~ Crosspoint matrix.
 - ~ M/E and PGM circuitry.
 - ~ Dedicated DSK cut and fill inputs.
 - ~ Six Aux outputs.
 - ~ Four PGM outputs (PGM [2x], PVW and CLN).
 - ~ Three M/E 1 outputs (PGM 1, PVW 1 and CLN 1).
 - ~ Three M/E 2 outputs (PGM 2, PVW 2 and CLN 2).

In Chapter 2, refer to the “[M/E Card](#)” section on page 43 for details.

Optional FSN Series cards are described below.

- **NIC** (Native Input Card)

The **NIC** provides eight native video input channels, which run at the switcher's selected native output resolution. In Chapter 2, refer to the “[Native Input Card](#)” section on page 47 for details.

1. Introduction

About the FSN Series

- **UIC** (Universal Input Card)
The **UIC** provides two independent universal scaler channels, each of which is used to scale input video to the switcher's selected native output resolution. In Chapter 2, refer to the "[Universal Input Card](#)" section on page 49 for details.
- **UOC** (Universal Output Card)
The **UOC** provides two independent universal scaler output channels. Each card can output scaled video and/or computer resolutions up to UXGA or 1920 x 1080, or function as an additional native auxiliary output. In Chapter 2, refer to the "[Universal Output Card](#)" section on page 52 for details.

Note

The **UOC** is not available in release 1.0.

- **DVE** (Digital Video Effects)
The **DVE** card provides two internal 2-D DVE channels which can be used to create PIPs. In Chapter 2, refer to the "[Digital Video Effects Card](#)" section on page 51 for details.

Note

The **DVE** is not available in release 1.0.

- **NAC** (Native Aux Output Card)
The **NAC** provides eight auxiliary outputs which run at the system's native resolution. In Chapter 2, refer to the "[Native Aux Output Card](#)" section on page 54 for details.

Note

The **NAC** is not available in release 1.0.

Important

In Chapter 2, refer to the "[Card Slot Allocation and I/O Flexibility](#)" section on page 29 for details on maximum card quantities and slot allocations in the FSN-1400 chassis.

M/E Features

Each M/E processor features the following capabilities:

- A/B background mixer
- Two full function keyers
- Pattern system (wipes)
- PGM, PVW and assignable CLN outputs

Each PGM bank features the following:

- A/B background mixer
- Pattern system (wipes)
- One downstream key (DSK)
- Downstream FTB (Fade to Black)
- PGM (2x), PVW and CLN outputs

Connectivity Diagrams

The following connectivity diagrams are provided in this section:

- [System 1 — Basic](#)
- [System 2 — Multiple Destinations](#)

System 1 — Basic

The figure below illustrates a basic FSN Series system:

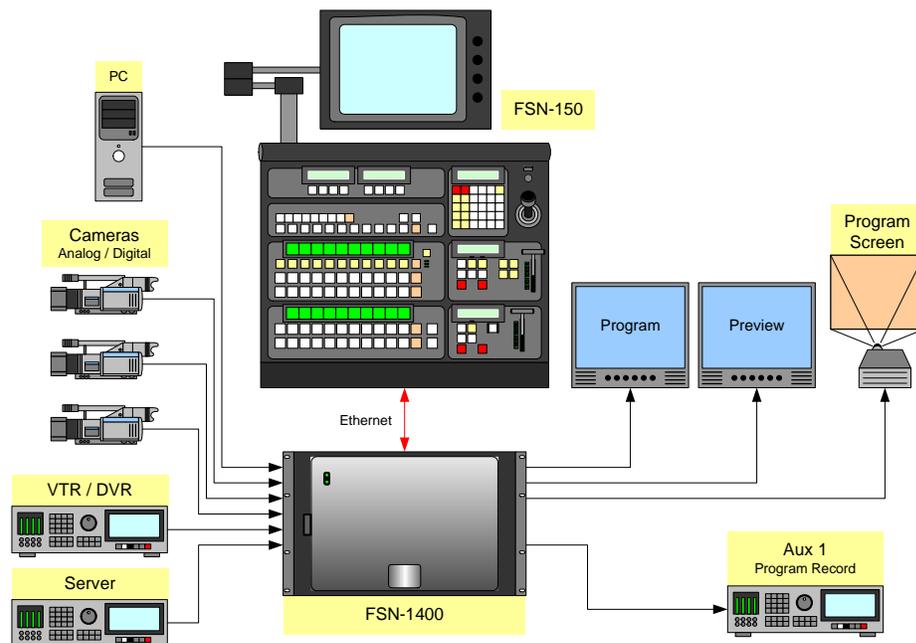


Figure 1-3. Block diagram, basic FSN Series system (sample)

This configuration is an ideal *basic* setup consisting of multiple inputs, a single destination output and a single Aux output. In the diagram:

- Multiple scaled and un-scaled sources connect to the FSN-1400, including cameras, PCs, VTRs, DVRs and servers.
- The FSN-1400 and FSN-150 control panel connect via Ethernet.
- Program and Preview monitor outputs enable the TD to view the entire output of the switcher, and preview the “look” that’s coming next on all outputs.
- The switcher’s SDI (SD-SDI or HD-SDI) Program output connects to the projector.
- One Aux output is connected to a VTR, providing the ability to record the output of the event.

1. Introduction

Application Questions

System 2 – Multiple Destinations

The figure below illustrates a sample system in which individual Aux outputs are routed to different destinations.

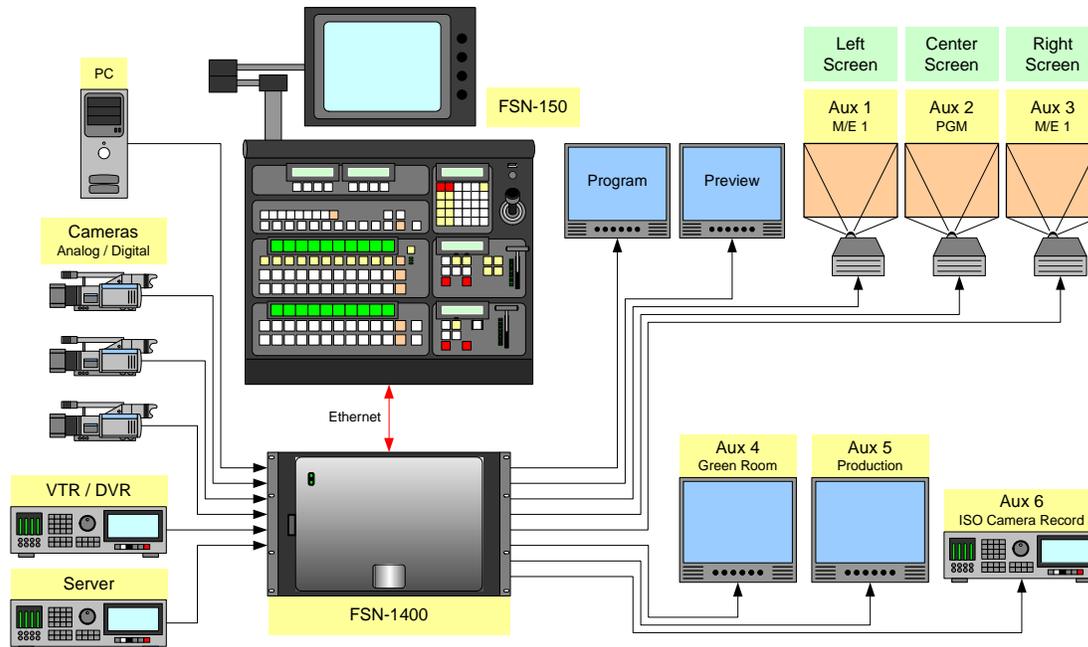


Figure 1-4. Block diagram, multiple destination FSN Series system (sample)

This configuration is ideal for a setup consisting of three projected images behind a podium. The left and right images are identical (as switched on M/E 1), and the center image can be identical, or different from the two “wing” projectors (as switched on the PGM bank). By connecting Aux outputs to different projectors, the TD has complete creative control over the look, with the ability to display different setups on the projectors.

In the diagram:

- Multiple scaled and un-scaled sources connect to the FSN-1400, including cameras, PCs, VTRs, DVRs and servers.
- The FSN-1400 and FSN-150 connect via Ethernet.
- Aux outputs 1, 2 and 3 connect to the three projectors.
- Aux outputs 4, 5 and 6 are connected to peripheral devices, such as monitors and VTRs. In practice, this enables the TD to provide completely independent stage or green room monitors, plus the ability to record the output of the entire event.

Application Questions

At Barco, we take pride in offering unique solutions to demanding technical problems. If you have application questions, require further information or would like to discuss your application requirements in more detail, please call (866) 469-8036. Our Customer Support Engineers will be happy to supply you with the support you need. Refer to Appendix B, “[Contact Information](#)” on page 325 for details.

2. FSN-1400 Orientation

In This Chapter

This chapter provides detailed explanations of the FSN-1400 chassis, including all front and rear chassis cards.

The following topics are discussed:

- [Hardware Description](#)
- [Card Descriptions](#)
- [Card LEDs](#)
- [Analog Format Connection Table](#)

Note

Once you have reviewed all of the sections in this chapter, please continue with Chapter 3, "[Control Panel Orientation](#)" on page 57.

2. FSN-1400 Orientation

Hardware Description

Hardware Description

The following topics are discussed in this section:

- [Chassis Overview](#)
- [Card Slot Allocation and I/O Flexibility](#)
- [Chassis Front Door](#)
- [Chassis Front](#)
- [Chassis Rear](#)

Chassis Overview

The FSN Series chassis (FSN-1400) permits a high degree of flexibility in terms of the number of inputs and outputs that you can configure. Please note:

- All cards are modular and hot-swappable.
- The 6RU chassis supports:
 - ~ 14 front cards, including required and optional cards.
 - ~ 14 rear slots, the configuration of which depends on the type (and number) of populated front cards.
- An internal “midplane” architecture allows cards to be plugged in from both the front and rear of the chassis.
- There are no active components on the midplane or on the plug-in rear I/O cards.
- The front door provides a seal for air flow and chassis cooling. There are no controls on the door, but two status LEDs are provided. Refer to the [“Chassis Front Door”](#) section on page 31 for details.
- The following additional features are provided:
 - ~ Optional dual redundant hot-swappable power supplies.
 - ~ One tally connector (24 contact closures).
 - ~ One GPIO connector, with four input (GPI) and eight output (GPO) ports.
 - ~ Two serial ports.

Card Slot Allocation and I/O Flexibility

Within the FSN-1400 chassis, two card slots are dedicated (**System** and **M/E**). The allocation of the remaining slots is flexible, as illustrated in the following table.

Table 2-1. FSN Series chassis card slot allocations

Card Type	Max. # of Cards per Chassis	Slot Number(s)
System (Required card)	1	14
M/E (Required card)	1	8
NIC (Native Input Card), 8-channel	4	1 through 4
UIC (Universal Input Card), 2-channel	5	3 through 7
UOC (Universal Output Card), 2-channel	2	11 and 12
NAC (Native Aux Output Card), 8-channel	3	11 through 13
DVE (Digital Video Effects) card, 2-channel	2	9 and 10

Because different combinations of cards can be installed in the FSN-1400 chassis, input and output combinations are highly flexible. Refer to the following two sections for details:

- [Input Flexibility](#)
- [Auxiliary Output Flexibility](#)

Please note:

- Refer to the “[Chassis Front](#)” section on page 33 and the “[Chassis Rear](#)” section on page 35 for detailed information on all chassis card and I/O slots.
- Refer to the “[Card Descriptions](#)” section on page 37 for in-depth information of all cards and their capabilities.

Input Flexibility

Starting with the basic system (1 x **NIC** plus 1 x **UIC**), the following table outlines the system’s input flexibility, based on the numbers of 8-channel **NICs** and 2-channel **UICs** that can be installed:

Table 2-2. FSN Series input flexibility

	Total Inputs (Installed NICs + Installed UICs)				
	1 UIC installed	2 UICs installed	3 UICs installed	4 UICs installed	5 UICs installed
1 NIC installed	10	12	14	16	18
2 NICs installed	18	20	22	24	26
3 NICs installed	26	28	30	32	
4 NICs installed	34	36	38		

2. FSN-1400 Orientation

Hardware Description

Auxiliary Output Flexibility

The following table outlines the system's auxiliary output flexibility, based on the numbers of 2-channel **UOCs** and 8-channel **NACs** that can be installed. The totals includes the six standard native Aux outputs on the M/E card.

Table 2-3. FSN Series auxiliary output flexibility

	Total Aux Outputs (6 Standard Native + Installed UOCs + Installed NACs)			
	0 NACs installed	1 NAC installed	2 NACs installed	3 NACs installed
0 UOCs installed	6	14	22	30
1 UOC installed	8	16	24	
2 UOCs installed	10	18		

Chassis Front Door

The figure below illustrates a view of the chassis front door:

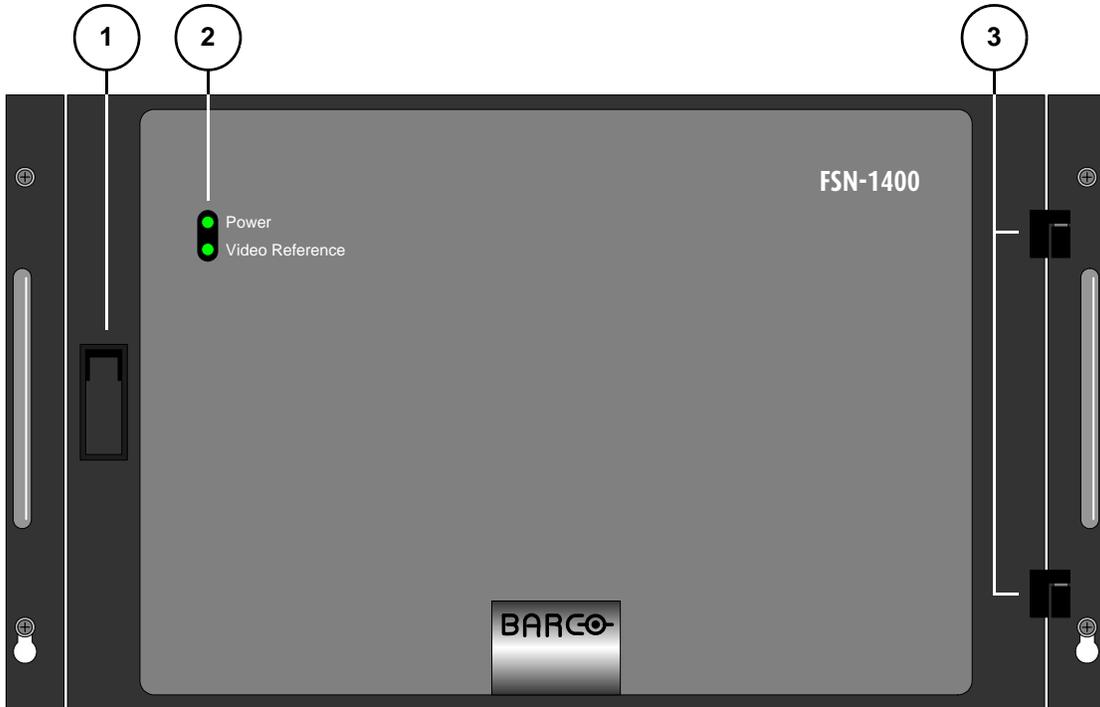


Figure 2-1. FSN Series chassis front door

1) Door Latch	2) System Status LEDs	3) Hinges
-------------------------------	---------------------------------------	---------------------------

Following are descriptions of each section.

1) Door Latch

One latch is provided to facilitate door opening and closing. See the [“Door Removal and Re-installation”](#) section on page 32 for instructions.

2) System Status LEDs

The two **System Status LEDs** are mounted on the **System Card**, but they are visible through the slot in the front door — via light pipe.

The **Power LED** indicates power status for the chassis and the system card.

- ~ **Green** = the system card has power and the card’s software is running.
- ~ **Red** = not used in release 1.0.
- ~ **Off** = one or more of the following conditions are present:
 - There is no power to the FSN-1400.
 - There is no **System Card** in the FSN-1400.
 - The **System Card** has failed.

2. FSN-1400 Orientation

Hardware Description

The **Video Reference LED** indicates the status of the system's analog video reference input, via the **Vid Ref** connector on the **System Card's** rear I/O card.

- ~ **Green** = the system is configured for **External Reference**, a video reference signal is present and the FSN-1400 is locked to the signal.
- ~ **Red** = the system is configured for **External Reference**, the signal is missing or the FSN-1400 is not locked to the signal.
- ~ **Off** = the system is configured for **Free Run**.

Note

If the **Power LED** is off, the **Video Reference LED** will also be off.

3) Hinges

Two hinges are provided on the right side of the door, to facilitate door removal and re-installation. See the "[Door Removal and Re-installation](#)" section below for door removal and installation instructions.

Air Filter

An air filter is located on the inside of the front door, in the bottom half of the door. Using the four thumb nuts, this filter can be easily removed and cleaned periodically, as required.

Door Removal and Re-installation

- Use the following steps to open and remove the FSN-1400 front door:
 1. On the **Latch**, press inwards on the top label that reads "**Push.**"
 2. Lift the lower portion of the **Latch** that reads "**Lift and Turn.**"
 3. Turn the **Latch** clockwise, and open the door.
 4. To remove the door, lift it up and off of its hinges.
- Use the following steps to re-install the FSN-1400 front door:
 1. Align the female hinges on the door with the male hinges on the FSN-1400.
 2. Set the door down on the hinges until it is fully seated.
 3. Close the door.
 4. Turn the **Latch** counter-clockwise, then push the **Latch** in to re-seat it.

Important

Operating the FSN-1400 without the door fully closed and the filter installed will cause overheating and possible damage.

Chassis Front

The figure below illustrates a sample front view of a fully-loaded chassis (door removed):



Figure 2-2. FSN Series chassis, front view (sample)

1) Power Supplies	4) Aux Output Card Slots	7) Input Card Slots
2) Fan Tray	5) DVE Card Slots	
3) System Card Slot	6) M/E Card Slot	

Following are descriptions of each section. Note that slots are numbered from right to left, to correlate with the associated rear slots.

1) Power Supplies

Two slots are provided for dual redundant hot-swappable power supplies, each with a 600W capability. Each supply has two LEDs:

- ~ DC OK LED:
 - Green = DC power (from the supply) is OK.
 - Red = DC power is bad or has failed.
- ~ AC OK LED:
 - Green = AC power (into the supply) is OK.
 - Red = AC power is bad or has failed.

2. FSN-1400 Orientation

Hardware Description

2) Fan Tray

For chassis cooling, one slot is provided for the required hot-swappable fan tray. The integral handle enables the tray to be easily removed and installed.

Important

The fan tray must be installed whenever power is applied to the chassis. Operating the unit without the fan tray will cause overheating and possible damage.

3) System Card Slot

Slot 14 is reserved for the required **System Card**. Refer to the "[System Card](#)" section on page 38 for details.

4) Aux Output Card Slots

Slots 11, 12 and 13 are reserved for two types of optional Auxiliary output cards:

- ~ **UOC** (Universal Output Card). Up to two cards can be installed. See the "[Universal Output Card](#)" section on page 52.
- ~ **NAC** (Native Aux Output Card). Up to three cards can be installed. See the "[Native Aux Output Card](#)" section on page 54.

5) DVE Card Slots

Slots 9 and 10 are reserved for optional 2-D **DVE** (Digital Video Effects) cards. Up to two cards can be installed. Refer to the "[Digital Video Effects Card](#)" section on page 51 for details.

6) M/E Card Slot

Slot 8 is reserved for the required **M/E** (Mix/Effects) card. Refer to the "[M/E Card](#)" section on page 43 for details.

7) Input Card Slots

Slots 1 through 7 are reserved two types of input cards:

- ~ **NIC** (Native Input Card). Up to four cards can be installed in slots 1 through 4. See the "[Native Input Card](#)" section on page 47 for details.
- ~ **UIC** (Universal Input Card). Up to five cards can be installed in slots 3 through 7. Refer to the "[Universal Input Card](#)" section on page 49 for details.

Chassis Rear

The figure below illustrates a rear view of the FSN Series chassis, with all slots fully loaded with both required and optional I/O cards:

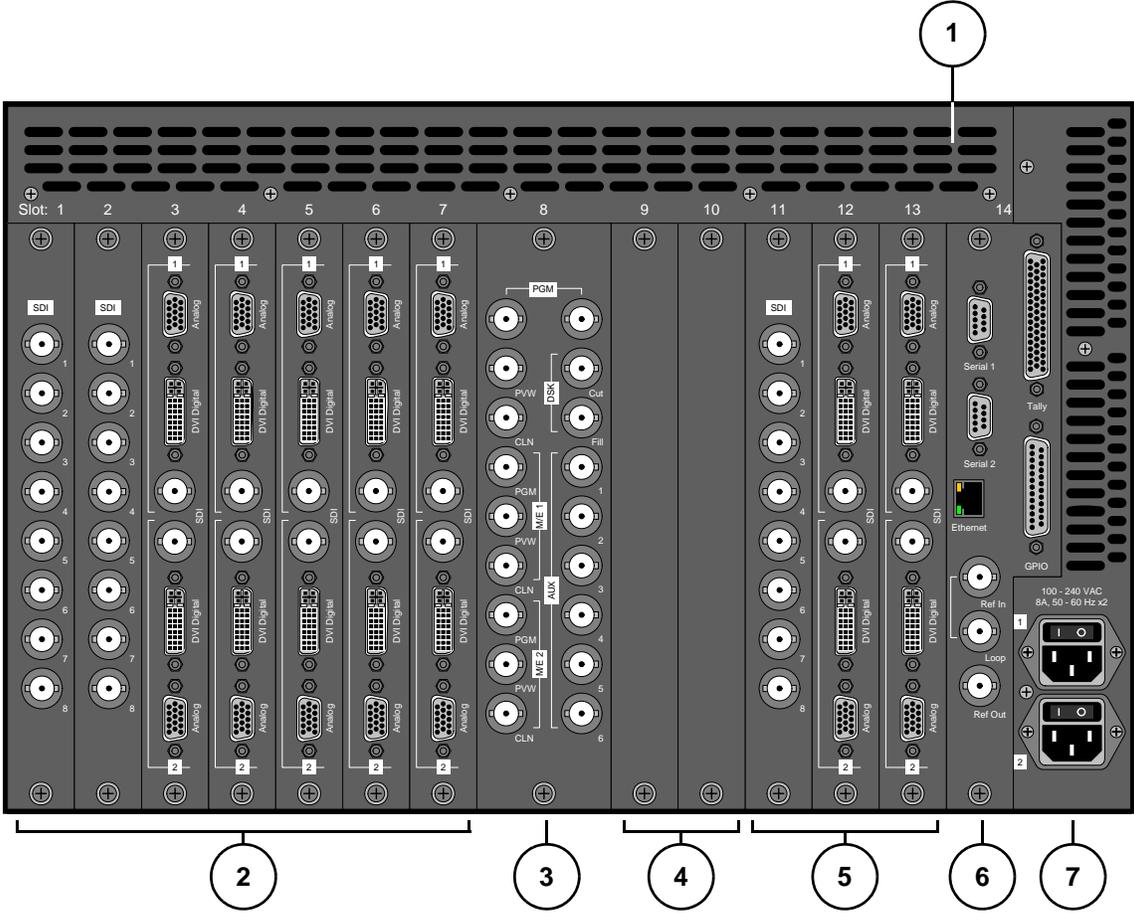


Figure 2-3. Sample FSN Series chassis, rear view

1) Air Vents	4) DVE (Blank)	7) AC Power
2) Input Card I/O	5) Aux Output Card I/O	
3) M/E Card I/O	6) System Card I/O	

In the descriptions below, slots are numbered from left to right:

1) **Air Vents**

At the top of the chassis, **Air Vents** are provided to assist with cooling. Air flows from the front of the chassis to the rear. To prevent overheating, do not block the air vents.

2) **Input Card I/O**

Slots 1 through 7 are reserved for two types of input I/O cards:

- ~ **NIC I/O Cards.** Up to four I/O cards can be installed in slots 1 through 4. See the **“Native Input Card”** section on page 47 for details.

2. FSN-1400 Orientation

Hardware Description

- ~ **UIC** I/O Cards). Up to five cards can be installed in slots 3 through 7. Refer to the "[Universal Input Card](#)" section on page 49 for details.

3) M/E Card I/O

Slot 8 is reserved for the required **M/E** I/O card. Refer to the "[M/E Card](#)" section on page 43 for details.

4) DVE (Blank)

Slots 9 and 10 are reserved for blank panels, as the optional **DVE** card does not require any I/O. See the "[Digital Video Effects Card](#)" section on page 51.

5) Aux Output Card I/O

Slots 11, 12 and 13 are reserved for two types of optional Auxiliary output I/O cards:

- ~ **UOC** (Universal Output Card). Up to two I/O cards can be installed. See the "[Universal Output Card](#)" section on page 52.
- ~ **NAC** (Native Aux Output Card). Up to three I/O cards can be installed. See the "[Native Aux Output Card](#)" section on page 54.

6) System Card I/O

Slot 14 is reserved for the **System** I/O card. Refer to the "[System Card](#)" section on page 38 for details.

7) AC Power

The **AC Power** section provides two AC power connectors with integral switches. One connector is provided for each supply, which allows the frame to be powered from two different circuit breakers in a redundant configuration.

Note

The default FSN-1400 configuration has one power supply installed in the lower slot. The bottom AC connector is used.

Important

Unused rear I/O slots must have blank panels installed for purposes of thermal management and EMI.

Card Descriptions

The following required and optional cards are discussed in this section:

- [System Card](#)
- [M/E Card](#)
- [Native Input Card](#)
- [Universal Input Card](#)
- [Digital Video Effects Card](#)
- [Universal Output Card](#)
- [Native Aux Output Card](#)
- [Card LEDs](#)
- [Analog Format Connection Table](#)

Note

On all following card descriptions, remember that all physical connectors are located on the associated rear I/O card. Note also that the **DVE** (Digital Video Effects) card does not have any associated rear I/O.

2. FSN-1400 Orientation

Card Descriptions

System Card

The **System Card** provides the following functions:

- System control, CPU, timing, and video reference (input, loop and output).
- Ethernet port 10/100, two serial outputs.
- GPIO (four input ports, eight output ports).
- Tally (24 contact closures).
- RS-232 port (diagnostics only).

The figure below illustrates the **System** card's front edge and rear I/O connectors:

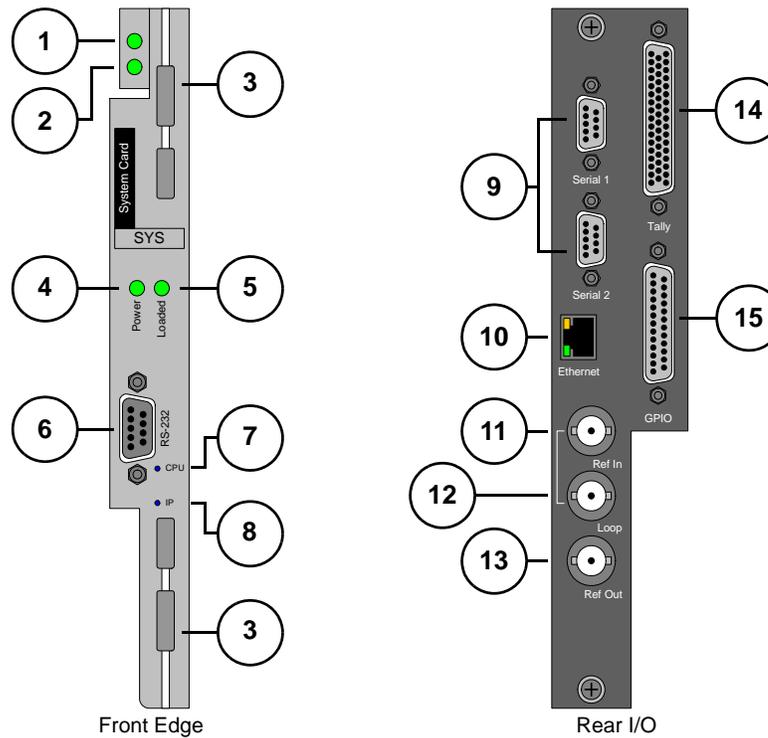


Figure 2-4. System card front edge and rear I/O connectors

1) System Power LED	6) Diagnostic Port	11) Ref In
2) Video Reference LED	7) CPU Reset Switch	12) Loop
3) Ejectors	8) IP Address Reset Switch	13) Ref Out
4) Card Power LED	9) Serial Ports	14) Tally Connector
5) Loaded LED	10) Ethernet Port	15) GPIO Connector

Following are descriptions of all components on the front edge of the **System** card:

1) System Power LED

The **System Power LED** indicates power status for the chassis and the cards.

~ **Green** = all system power is OK.

~ **Red** = one or more of the following conditions are present:

2. FSN-1400 Orientation

Card Descriptions

- DC output from one (of the two) chassis power supplies is bad or has failed.
 - Power is bad (or has failed) on one or more of the installed circuit cards.
- ~ **Off** = one or more of the following conditions are present:
- The chassis is turned off.
 - DC output from all power supplies is bad or has failed.
 - Power has failed on the **System Card**.

Note that this LED is carried through to the front door via light pipe.

2) Video Reference LED

The **Video Reference LED** indicates the status of the system's analog video reference input, via the **Vid Ref** connector on the **System Card's** rear I/O card.

- ~ **Green** = the system is configured for **External Reference**, a video reference signal is present and the FSN-1400 is locked to the signal.
- ~ **Red** = the system is configured for **External Reference**, the signal is missing or the FSN-1400 is not locked to the signal.
- ~ **Off** = the system is configured for **Free Run**.

Note

If the Power LED is off, the Video Reference LED will also be off.
--

Note that this LED is carried through to the front door via light pipe.

3) Ejectors

Use the card's top and bottom **Ejectors** to remove (and re-insert) the card.

4) Card Power LED

The **Card Power LED** indicates power status for the card. Refer to the "[Card LEDs](#)" section on page 55 for details.

5) Loaded LED

The **Loaded LED** indicates the status of all FPGAs on the card. Refer to the "[Card LEDs](#)" section on page 55 for details.

6) Diagnostic Port

One RS-232 port is provided for diagnostics. This port is not available to the user.

7) CPU Reset Switch

Using a small tool such as a paper clip, press the **CPU Reset Switch** to perform a soft system reset. This function reboots the system, but preserves all setups and memory registers, and maintains all crosspoint selections on the control panel. Please note:

- ~ This is the same as pressing **{Soft Reset System}** on the **Reset Menu**. In Chapter 5, refer to the "[Reset Menu](#)" section on page 235 for details.

8) IP Address Reset Switch

Using a small tool such as a paper clip, press the **IP Address Reset Switch** for 5 (five) seconds. This action resets the chassis IP address to the default value of **192.168.0.4**, and then performs a factory reset. Please note:

- ~ This is the same as pressing **{Factory Reset}** on the **Reset Menu**. In Chapter 5, refer to the "[Reset Menu](#)" section on page 235 for details.

2. FSN-1400 Orientation

Card Descriptions

- ~ Use the **Com Setup Menu** to change the IP address if required. In Chapter 6, refer to the [“Communications Setup”](#) section on page 247 for details.

Following are descriptions of all components on the **System** card's rear I/O:

9) Serial Ports

Two DB-9 connectors are provided for **Serial** connections. In Appendix A, refer to the [“Serial Connectors”](#) section on page 317 for details.

Note

This function is currently not implemented.

10) Ethernet Port

One RJ-45 connector is provided for a 10/100 **Ethernet** connection between the FSN Series control panel and the FSN-1400. For multiple Ethernet connections, an Ethernet switch is recommended. There are two LEDs on the connector:

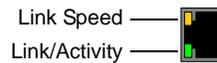


Figure 2-5. Ethernet Connector

- ~ When a valid link is present, the amber **Link Speed LED** indicates 100mb Ethernet speed when lit, and 10mb speed when off.
- ~ The green **Link/Activity LED** indicates that a link is present when lit, and link activity when blinking.

Please note:

- ~ In Appendix A, refer to the [“Ethernet Connector”](#) section on page 316 for Ethernet connector pinout details.
- ~ Use the **Com Setup Menu** to change the chassis' IP address. In Chapter 6, refer to the [“Communications Setup”](#) section on page 247 for details.
- ~ Refer to the [“FSN Series Ethernet Connections”](#) section on page 42 for more information about Ethernet.

11) Ref In

One BNC is provided for an analog **Reference Input** connection. Accepted video reference signals are black burst, SMPTE bi-level sync and tri-level sync.

Note

In Appendix A, refer to the [“Reference Video Input Specifications”](#) section on page 309 for detailed information about the allowed frame rates for the reference input.

12) Loop

One BNC connector is provided for a reference **Loop** connection, which enables you to loop the incoming reference signal to the next device in your system. If the reference **Loop** is not used, connect a 75 ohm terminator to the connector.

2. FSN-1400 Orientation

Card Descriptions

13) Ref Out

One BNC connector is provided for a **Reference Output** signal.

Note

This function is currently not implemented.

14) Tally Connector

One DB-50 connector is provided for tally, with 24 contact closures available. In Appendix A, refer to the "[Tally Connector](#)" section on page 318 for pinouts. In Chapter 6, refer to the "[Tally Setup](#)" section on page 259 for setup details.

15) GPIO Connector

One DB-25 connector is provided for GPIO, with four input ports and eight output ports. In Appendix A, refer to the "[GPIO Connector](#)" section on page 319.

Note

This function is currently not implemented.

2. FSN-1400 Orientation

Card Descriptions

FSN Series Ethernet Connections

This section provides information on all FSN Series Ethernet connections.

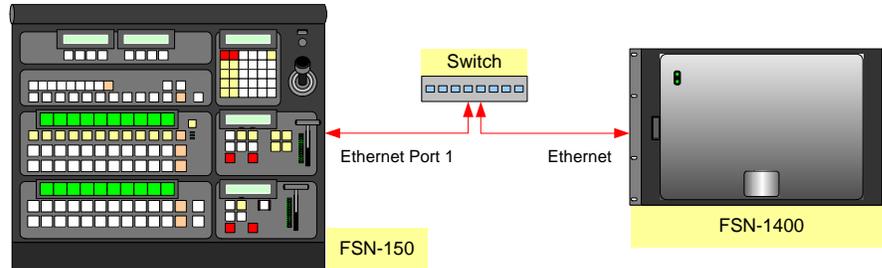


Figure 2-6. Basic system Ethernet diagram

- **FSN-1400**

The FSN-1400 has a single **Ethernet** port located on the **System** card. This port connects to **Ethernet Port 1** on the **FSN-150** or **FSN-250** control panel, either directly or via an Ethernet switch. By default, the following conditions are set:

- ~ DHCP = **OFF**
- ~ Default IP address: **192.168.0.4**
- ~ Default Netmask: **255.255.255.0**

The user can use the default address, or set a different address.

- **FSN-150** and **FSN-250** control panels

Each control panel has two Ethernet ports located on the rear panel:

- ~ **Ethernet Port 1** connects to the **FSN-1400**, either directly or via an Ethernet Switch. By default, the following conditions are set:
 - DHCP = **OFF**
 - Default IP address: **192.168.0.5**
 - Default Netmask: **255.255.255.0**

The user can use the default address, or set a different address.

- ~ **Ethernet Port 2** can be connected to an outside network, or to your facility's "house" network. By default, the following conditions are set:
 - DHCP = **ON**

An IP address can be obtained automatically from the outside network.

Use the **Com Setup Menu** to change IP addresses. In Chapter 6, refer to the "[Communications Setup](#)" section on page 247 for details.

M/E Card

The **M/E (Mix/Effects) Card** provides the following functions:

- Crosspoint matrix, M/E and PGM/PVW circuitry, six native Aux outputs.
- Dedicated DSK cut and fill inputs. These must be locked to the FSN-1400 video reference.
- Four PGM/PVW outputs (PGM [2x], PVW and CLN).
- Three M/E 1 outputs (PGM, PVW, CLN), three M/E 2 outputs (PGM, PVW, CLN).

Note

All outputs run at the system's native video format. Output video formats can not be set individually.

Note

M/E 2 outputs are not currently implemented.

The figure below illustrates the **M/E card's** front edge and rear I/O connectors:

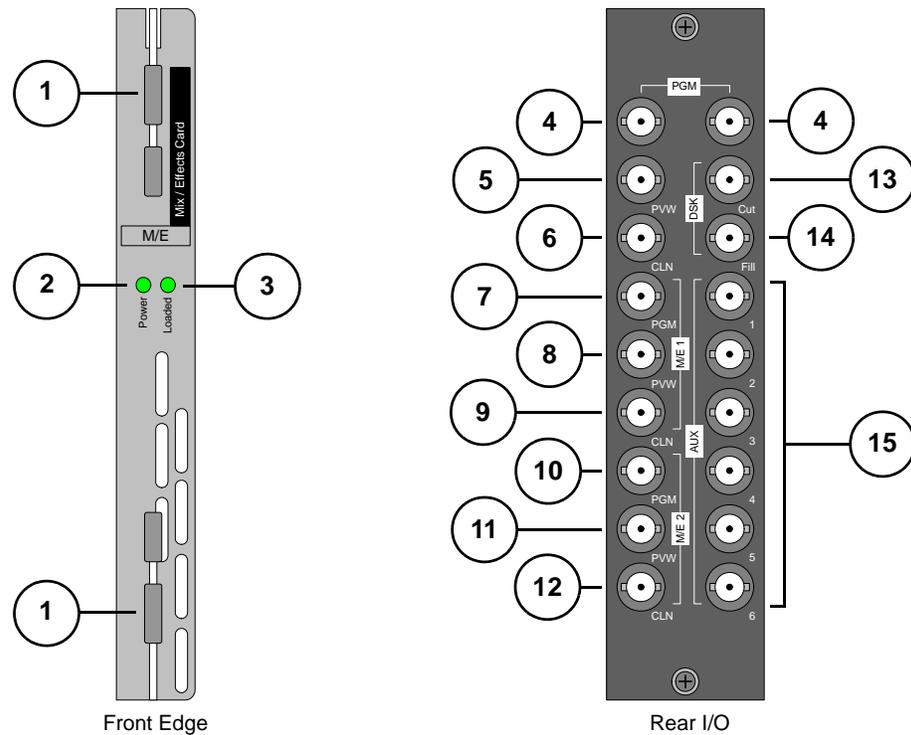


Figure 2-7. M/E card front edge and rear I/O connectors

1) Ejectors	6) Clean Feed Out	11) M/E 2 Preview Out
2) Card Power LED	7) M/E 1 Program Out	12) M/E 2 Clean Feed Out
3) Loaded LED	8) M/E 1 Preview Out	13) DSK Cut In
4) Program Out	9) M/E 1 Clean Feed Out	14) DSK Fill in
5) Preview Out	10) M/E 2 Program Out	15) Native Aux Outputs

2. FSN-1400 Orientation

Card Descriptions

Following are descriptions of all **M/E** card components:

1) **Ejectors**

Use the card's top and bottom **Ejectors** to remove (and re-insert) the card.

2) **Card Power LED**

The **Card Power LED** indicates power status for the card. Refer to the "[Card LEDs](#)" section on page 55 for details.

3) **Loaded LED**

The **Loaded LED** indicates the status of all FPGAs on the card. Refer to the "[Card LEDs](#)" section on page 55 for details.

4) **Program Out**

Two BNC connectors are provided for the system's main **Program Output**. Each output is identical.

5) **Preview Out**

One BNC is provided for the system's main **Preview Output**. This output provides the Program bank's "lookahead" preview output. In Chapter 7, refer to the "[Understanding Lookahead Preview](#)" section on page 274 for information.

6) **Clean Feed Out**

One BNC is provided for the system's main **Clean Feed Output**. Refer to the "[Clean Feed Output Selection](#)" section on page 46 for details.

7) **M/E 1 Program Out**

One BNC is provided for the system's **M/E 1 Program Output**.

8) **M/E 1 Preview Out**

One BNC is provided for the system's **M/E 1 Preview Output**. This output provides M/E 1's "lookahead" preview output. In Chapter 7, refer to the "[Understanding Lookahead Preview](#)" section on page 274 for information.

9) **M/E 1 Clean Feed Out**

One BNC is provided for the system's **M/E 1 Clean Feed Output**. Refer to the "[Clean Feed Output Selection](#)" section on page 46 for details.

10) **M/E 2 Program Out**

One BNC is provided for the system's **M/E 2 Program Output**.

11) **M/E 2 Preview Out**

One BNC is provided for the system's **M/E 2 Preview Output**. This output provides M/E 2's "lookahead" preview output. In Chapter 7, refer to the "[Understanding Lookahead Preview](#)" section on page 274 for information about lookahead preview.

12) **M/E 2 Clean Feed Out**

One BNC is provided for the system's **M/E 2 Clean Feed Output**. Refer to the "[Clean Feed Output Selection](#)" section on page 46 for details.

Note

M/E 2 functionality is currently not implemented.

13) DSK Cut In

One BNC is provided for a dedicated **DSK Cut Input**. The **DSK Cut** and **DSK Fill** inputs must be locked to the FSN-1400 video reference within ± 0.5 lines, when the **{Output V-Lock}** button is turned off (on the **Reference and Output Setup Menu**). See the **DSK Fill In** description below for an important note.

14) DSK Fill in

One BNC is provided for a dedicated **DSK Fill Input**. The **DSK Cut** and **DSK Fill** inputs must be locked to the FSN-1400 video reference within ± 0.5 lines, when the **{Output V-Lock}** button is turned off.

Important

When the **{Output V-Lock}** button is turned on (on the **Reference and Output Setup Menu**), the position of the **DSK Cut** and **DSK Fill** inputs on screen will change.

- If the user preference "**Black on Invalid Video**" is turned on, the DSK turns off — because of the change in output timing.
- If the user preference "**Black on Invalid Video**" is off, the DSK will be visible — but in a shifted position. In this condition, the video position can be adjusted by changing the output timing of the DSK source itself.

In Chapter 5, refer to the "[User Preferences Menu](#)" section on page 217 for details on the **Black on Invalid Video** mode.

15) Native Aux Outputs

Six BNCs are provided for the system's six **Native Aux Outputs**. Source selection is performed in the **Aux Assign Section** on the panel. In Chapter 3, refer to the "[Aux Section](#)" heading on page 60 for details.

2. FSN-1400 Orientation

Card Descriptions

Clean Feed Output Selection

The FSN-1400 provides three **Clean Feed Outputs**, one each for the PGM, M/E 1 and M/E 2 banks. Each output has selectable points from which the clean feed signal can be picked, as illustrated in the following diagram.

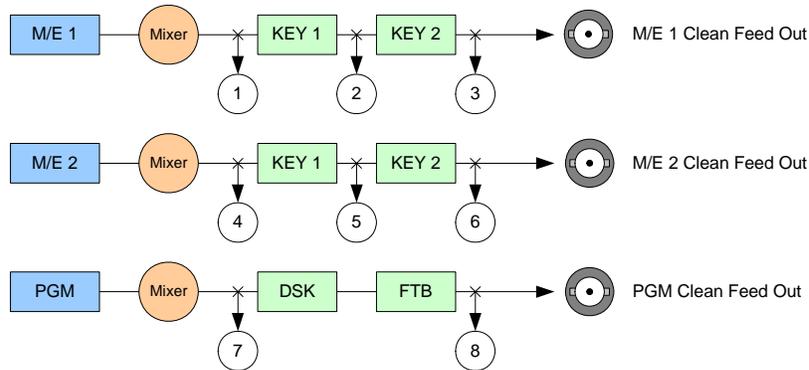


Figure 2-8. Clean Feed Output selections

The table below describes each output in detail.

Table 2-4. Clean Feed Output descriptions

Output	Description
1	M/E 1 clean out — pre KEY 1
2	M/E 1 clean out — pre KEY 2
3	M/E 1 out — post KEY 2
4	M/E 2 clean out — pre KEY 1
5	M/E 2 clean out — pre KEY 2
6	M/E 2 out — post KEY 2
7	Program clean out — pre DSK
8	Program out — Post FTB

In Chapter 7, refer to the [“Selecting Clean Feed Outputs”](#) section on page 299 for details on using the **Clean Feed Assignment Menu**.

Note

M/E 2 functionality is currently not implemented.

Native Input Card

The **NIC** (Native Input Card) is an eight-channel input card that provides the following:

- Eight native resolution video inputs (BNC).
- Frame synchronization for sources that are not locked to reference.
- +/- 0.5 line auto-timing for input sources that are locked to video reference.
- HD-SDI and SD-SDI capability.

Refer to the “[Card Slot Allocation and I/O Flexibility](#)” section on page 29 for details on **NIC** configurations in the FSN-1400.

The figure below illustrates the **NIC**'s front edge and rear I/O connectors:

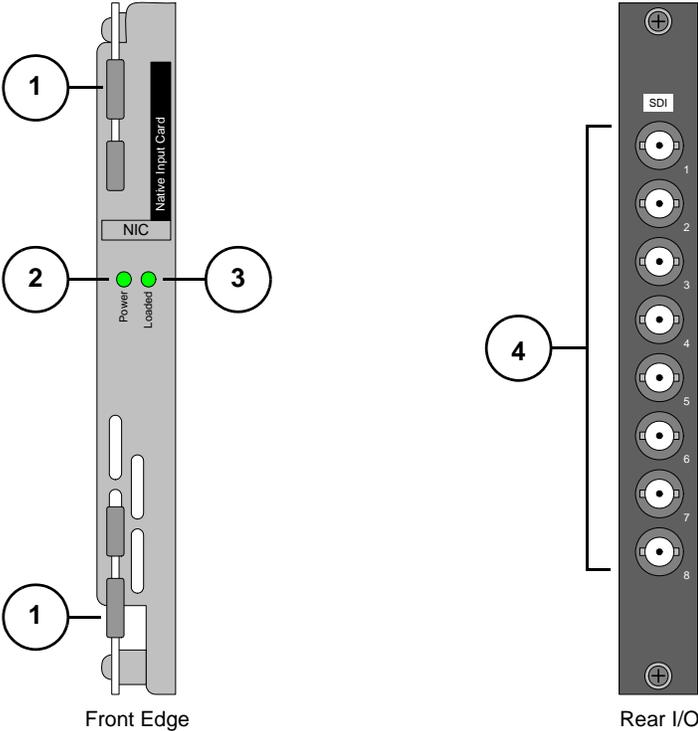


Figure 2-9. NIC front edge and rear I/O connectors

1) Ejectors	3) Loaded LED
2) Card Power LED	4) Native Inputs 1 - 8

Following are descriptions of all **NIC** components:

- 1) **Ejectors**
Use the card's top and bottom **Ejectors** to remove (and re-insert) the card.
- 2) **Card Power LED**
The **Card Power LED** indicates power status for the card. Refer to the “[Card LEDs](#)” section on page 55 for details.

2. FSN-1400 Orientation

Card Descriptions

3) Loaded LED

The **Loaded LED** indicates the status of all FPGAs on the card. Refer to the "[Card LEDs](#)" section on page 55 for details.

4) Native Inputs 1 - 8

Eight BNC connectors are provided for **Native Inputs 1 - 8**, and each connector supports HD-SDI and SD-SDI sources. The video standard of all connections to the NIC must be the same as the FSN-1400's native output resolution.

Note

In Appendix A, refer to the "[Delay Specifications](#)" section on page 313 for details on NIC delay.

Universal Input Card

The **UIC** (Universal Input Card) is a two-channel card that scales non-native inputs (up to UXGA or 1920 x 1080) to the switcher's native resolution and timing. One **UIC** provides two universal scaled video inputs, plus additional capabilities for native resolution sources:

- Frame synchronization for sources not locked to video reference.
- For SDI inputs that match the native format, +/- 0.5 line auto-timing for input sources that are locked to video reference.

Refer to the [“Card Slot Allocation and I/O Flexibility”](#) section on page 29 for details on **UIC** configurations in the FSN-1400.

The figure below illustrates the **UIC**'s front edge and rear I/O connectors:

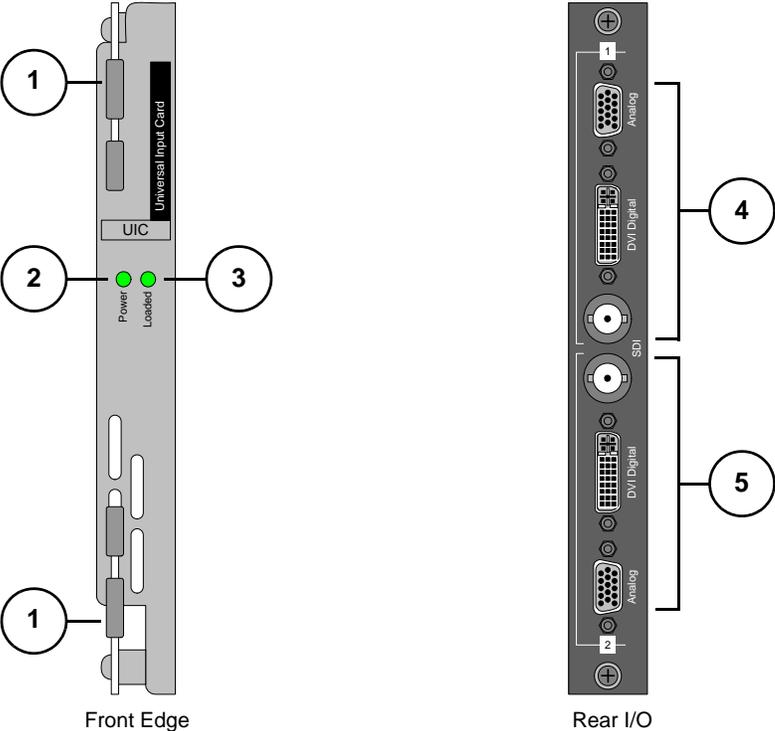


Figure 2-10. UIC front edge and rear I/O connectors

1) Ejectors	3) Loaded LED	5) Universal Input 2
2) Card Power LED	4) Universal Input 1	

Following are descriptions of all **UIC** components:

- 1) Ejectors**
Use the card's top and bottom **Ejectors** to remove (and re-insert) the card.
- 2) Card Power LED**
The **Card Power LED** indicates power status for the card. Refer to the [“Card LEDs”](#) section on page 55 for details.

2. FSN-1400 Orientation

Card Descriptions

3) Loaded LED

The **Loaded LED** indicates the status of all FPGAs on the card. Refer to the “[Card LEDs](#)” section on page 55 for details.

4) Universal Input 1

Three connectors are provided for **Universal Input 1** (1 x **HD15**, 1 x **DVI-I**, 1 x **BNC**). Using these connectors, different combinations of inputs can be connected to the FSN-1400, as outlined below, but only one of the three connectors can be used at a time on the control panel.

Cells with check marks denote the connections required for the indicated format.

Table 2-5. UIC connector combinations for selected universal input formats

Format	Connectors		
	BNC	DVI-I	HD-15
HD-SDI	✓		
SD-SDI	✓		
DVI *		✓	
CVBS			✓
Y/C			✓
YPbPr **			✓
RGsB			✓
RGBS			✓
RGBHV ***			✓

* up to 165 MHz

** NTSC, PAL or HD

*** up to 165 MHz (UXGA)

Please note the following important points regarding the **UIC**:

- ~ Refer to the “[Analog Format Connection Table](#)” section on page 56 for additional information on using the HD-15 connector.

5) Universal Input 2

Input connections for **Universal Input 2** are identical to Universal Input 1. Refer to the explanation of **Universal Input 1** for details.

Note

In Appendix A, refer to the “[Delay Specifications](#)” section on page 313 for details on UIC delay.

Digital Video Effects Card

The **DVE** (Digital Video Effects) card is an optional 2-D two-channel scaler card. When a **DVE** card is installed, you can map “internal” DVE channels to the switcher, and create PIPs to be used as straight sources or keys.

The following rules apply:

- One **DVE** card provides two internal DVE channels. This configuration enables you to map two single-channel DVEs to the panel, or one dual-channel DVE.
- Similarly, two installed **DVE** cards provide four available internal DVE channels. The configuration enables you to map the following combinations:
 - ~ Four single-channel DVEs
 - ~ Two dual-channel DVEs
 - ~ Two single-channel DVEs plus one dual-channel DVE
- The DVE output can be used on *any* switcher bank and in any keyer.

Please note:

- An I/O card is not required with the **DVE** card — a blank panel is installed instead.
- Input selection for the DVE channels is performed internally. All inputs from the **NICs** and **UICs** can be routed to the DVE cards, and all available outputs on the M/E Card can be routed to the DVE cards.
- Custom Control or Aux buttons will be provided to select DVE channels, and input assignments will be performed on the **Aux Source Row** in the normal manner.
- LEDs on the **DVE** card's front edge provide power and FPGA status. Refer to the [“Card LEDs”](#) section on page 55 for details.

Refer to the [“Card Slot Allocation and I/O Flexibility”](#) section on page 29 for details on **DVE** card configurations in the FSN-1400.

2. FSN-1400 Orientation

Card Descriptions

Universal Output Card

The **UOC** (Universal Output Card) is an optional two-channel scaler card that creates scaled video and/or computer Aux outputs up to UXGA or 1920 x 1080. Users can set the output resolution to be different from (or the same as) the system's native resolution.

When installed, each universal Aux output automatically becomes available in the **Aux Assign Section**, and the output resolutions are set using the **Aux Output Setup Menu**.

Refer to the "[Card Slot Allocation and I/O Flexibility](#)" section on page 29 for details on **UOC** configurations in the FSN-1400.

The figure below illustrates the **UOC's** front edge and rear I/O connectors:

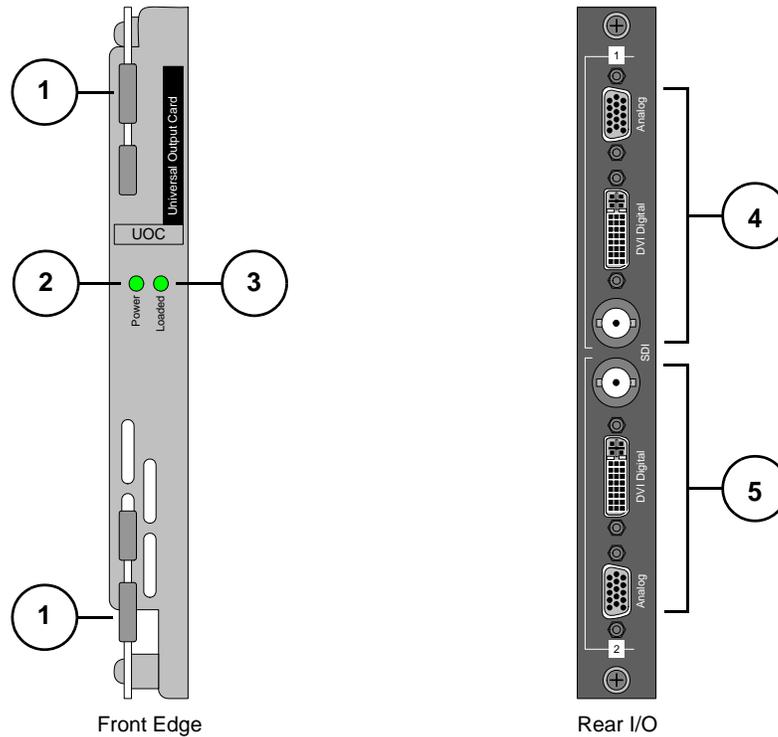


Figure 2-11. UOC front edge and rear I/O connectors

1) Ejectors	3) Loaded LED	5) Universal Output 2
2) Card Power LED	4) Universal Output 1	

Following are descriptions of all **UOC** components:

1) Ejectors

Use the card's top and bottom **Ejectors** to remove (and re-insert) the card.

2) Card Power LED

The **Card Power LED** indicates power status for the card. Refer to the "[Card LEDs](#)" section on page 55 for details.

3) Loaded LED

The **Loaded LED** indicates the status of all FPGAs on the card. Refer to the "[Card LEDs](#)" section on page 55 for details.

2. FSN-1400 Orientation

Card Descriptions

4) Universal Output 1

Three connectors are provided for **Universal Output 1** (1 x **HD15**, 1 x **DVI-I**, 1 x **BNC**). Using these connectors, different combinations of outputs can be connected to the FSN-1400, as outlined below.

Note

Multiple outputs on a single **UOC** channel can be active at the same time, provided that the selected format is compatible. For example, 1920 x 1080i @ 59.94 is a compatible format on all three output connectors.

Cells with check marks denote the connections required for the indicated format.

Table 2-6. UOC connector combinations for selected universal output formats

Format	Connectors		
	BNC	DVI-I	HD-15
HD-SDI	✓		
SD-SDI	✓		
DVI *		✓	
CVBS			✓
Y/C			✓
YPbPr **			✓
RGsB			✓
RGBS			✓
RGBHV ***			✓

* up to 165 MHz

** NTSC, PAL or HD

*** up to 165 MHz (UXGA)

Please note the following important point regarding the **UOC**:

- ~ Using the **Aux Output Setup Menu**, the BNC connectors on the **UOC** can be configured as additional native outputs. In this mode, scaling is not possible.

Refer to the "[Analog Format Connection Table](#)" section on page 56 for additional information on using the HD-15 connector.

5) Universal Output 2

Output connections for **Universal Output 2** are identical to Universal Output 1. Refer to the explanation of **Universal Output 1** for details.

2. FSN-1400 Orientation

Card Descriptions

Native Aux Output Card

The **NAC** (Native Aux Output Card) is an optional output card that provides eight additional auxiliary outputs that run at the system's native resolution. When installed, each additional Aux output automatically becomes available in the **Aux Assign Section**.

Refer to the "[Card Slot Allocation and I/O Flexibility](#)" section on page 29 for details on **NAC** configurations in the FSN-1400.

The figure below illustrates the **NAC's** front edge and rear I/O connectors:

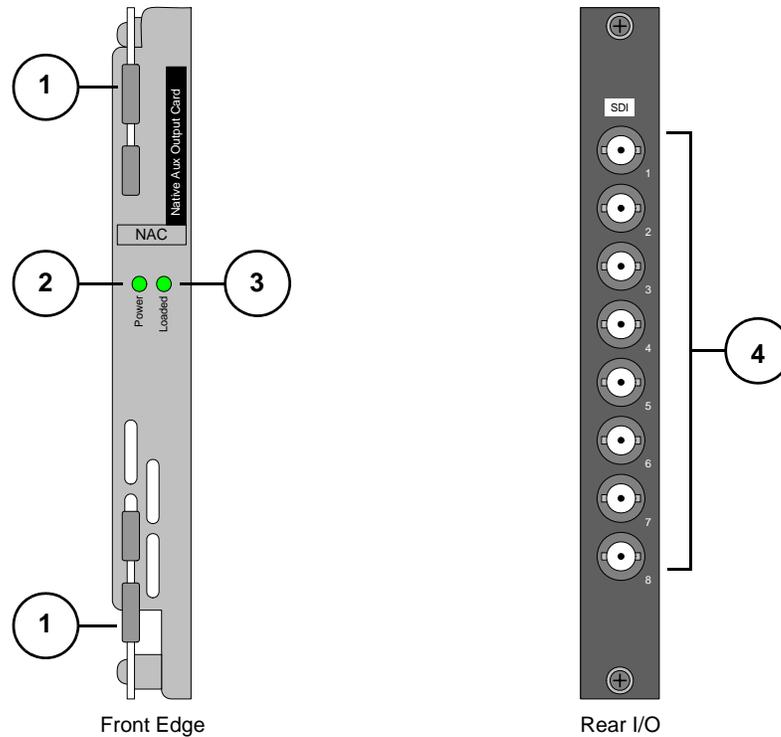


Figure 2-12. NAC front edge and rear I/O connectors

1) Ejectors	3) Loaded LED
2) Card Power LED	4) Native Aux Outputs

Following are descriptions of all **NAC** components:

1) Ejectors

Use the card's top and bottom **Ejectors** to remove (and re-insert) the card.

2) Card Power LED

The **Card Power LED** indicates power status for the card. Refer to the "[Card LEDs](#)" section on page 55 for details.

3) Loaded LED

The **Loaded LED** indicates the status of all FPGAs on the card. Refer to the "[Card LEDs](#)" section on page 55 for details.

4) Native Aux Outputs

Eight BNC connectors are provided for the optional **Native Aux Outputs**.

Card LEDs

On the front edge of all cards, two LEDs indicate the card's power status, and the status of all FPGAs on the card.

Note

An **FPGA** (field-programmable gate array) is a semiconductor device that can be configured by the engineer after manufacturing — hence the name "field-programmable."

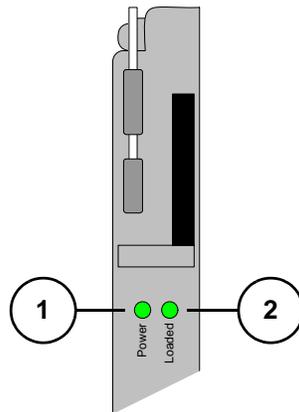


Figure 2-13. Card front edge LEDs

1) Card Power LED	2) Loaded LED
-----------------------------------	-------------------------------

Following are descriptions of the two LEDs:

1) Card Power LED

The **Card Power LED** indicates power status for the card.

- ~ **Green** = card power is OK.
- ~ **Red** = power is bad (or has failed) on the card.
- ~ **Off** = the chassis is turned off or power has failed.

2) Loaded LED

The **Loaded LED** indicates the status of all FPGAs on the card.

- ~ **Green** = all FPGAs are loaded successfully.
- ~ **Red** = an FPGA is bad, or software has not properly loaded.
- ~ **Off** = the chassis is turned off or power has failed.

2. FSN-1400 Orientation

Analog Format Connection Table

Analog Format Connection Table

Each HD-15 analog connector on both the **UIC** and **UOC** enables you to input (or output) a variety of video formats — including VGA, composite video, S-video and YUV component video.

- For RGB with H and V sync, use the HD-15 connector directly.
- Using a customer supplied HD-15 to 5 x BNC breakout cable, many combinations are possible. Cells with check marks denote the connections required for the indicated format.

Table 2-1. Analog Input and Output Combinations using Breakout Cable

Breakout Cable Wire Color	Composite Video	S-Video (Y/C)	YUV (Y _P P _r)	RGB Sync on Green	RGB Comp Sync	RGB Separate H V
R		✓ (Chrom)	✓ (P _r)	✓	✓	✓
G	✓	✓ (Lum)	✓ (Lum)	✓	✓	✓
B			✓ (P _b)	✓	✓	✓
H Sync					✓	✓
V Sync						✓

3. Control Panel Orientation

In This Chapter

This chapter provides detailed explanations of the FSN Series' control panels. The following topics are discussed:

- [Control Panel Descriptions](#)
- [Control Panel Rear](#)
- [Control Panel Bottom](#)
- [Touch Screen Connector Panel](#)

Note

Once you have reviewed all of the sections in this chapter, please continue with Chapter 4, "[Installation](#)" on page 91.

3. Control Panel Orientation

Control Panel Descriptions

Control Panel Descriptions

The following topics are discussed in this section:

- [FSN-150 Overview](#)
- [FSN-150 Control Panel Sections](#)
- [Functional Control Panel Sections](#)

FSN-150 Overview

The figure below illustrates a simplified block diagram of video flow through the FSN-1400, as controlled by the FSN-150:

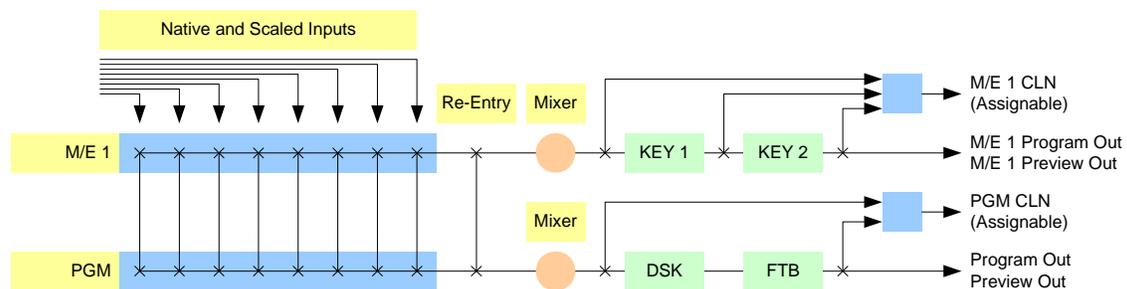


Figure 3-1. Video flow, FSN-1400 via FSN-150 control

Features include:

- Standard video production switcher "look and feel."
- 1.5 M/E overall design:
 - ~ Bus rows consist of 20 assignable buttons (10 buttons plus **SHIFT**, Black and re-entry).
 - ~ 1 M/E plus a separate PGM bank.
 - ~ PGM bank supports 1 DSK and FTB.
- Control via high-resolution color touch screen.
- Custom control functionality.
- USB port for software updates, system configuration files, etc.

FSN-150 Control Panel Sections

The figure below illustrates the FSN-150 front panel:

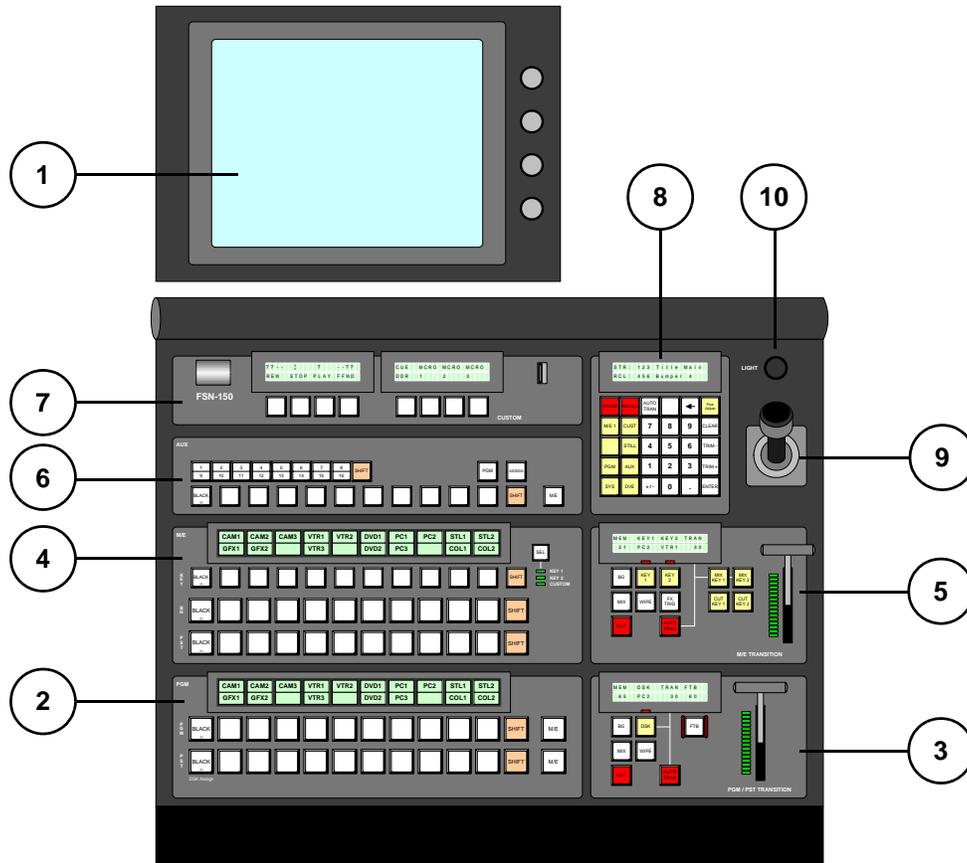


Figure 3-2. FSN-150 Control Panel

1) Display Section	5) M/E Transition Section	9) Joystick
2) PGM Bank	6) Aux Section	10) Light Control
3) PGM Transition Section	7) Custom Control Section	
4) M/E Bank	8) Memory Section	

The FSN-150 provides bus rows with 20 assignable buttons (10 buttons plus **SHIFT**) in a compact 1.5 M/E design. Following are descriptions of each section:

1) Display Section

The **Display Section** includes a high-resolution touch screen that enables you to navigate menus, set up the system, adjust parameters, view status, and manage multiple functions such as wipes and keyers. The display itself can be mounted in a variety of ways. Refer to the “[Display Section](#)” heading on page 62 for details.

2) PGM Bank

The **PGM Bank** provides two buses: **PGM** and **PST**. These buses are the switcher’s primary outputs where you can cut your show directly, or transition to effects on the M/E. Refer to the “[PGM Bank](#)” heading on page 63 for details.

3. Control Panel Orientation

Control Panel Descriptions

3) PGM Transition Section

For the switcher's primary output, the **PGM Transition Section** enables you to perform manual or automatic cuts, mixes, wipes and a DSK (downstream key). A downstream "fade to black" is also provided. Refer to the "[PGM Transition Section](#)" on page 65 for complete details.

4) M/E Bank

On the FSN-150, the **M/E Bank** includes three buses: **BG** (Background), **PST** (Preset) and **KEY**. These buses are the locations where you select sources to include in transitions and effects.

Each button on the M/E bank includes an integral multi-color LED, which is used to indicate various source states. Directly above the top **Key Bus** is a row of displays that you can program with source names. Refer to the "[M/E Bank](#)" section on page 70 for more details.

5) M/E Transition Section

The **M/E Transition Section** enables you to perform manual and automatic transitions, such as cuts, mixes, wipes and keys. Refer to the "[M/E Transition Section](#)" heading on page 72 for details.

6) Aux Section

The **Aux Section** enables you to assign sources to Aux buses. The FSN Series includes six "native" Aux bus outputs as standard, plus a variety of optional Aux outputs, both scaled and native. Refer to the "[Aux Section](#)" heading on page 78 for details.

7) Custom Control Section

The **Custom Control Section** provides eight assignable buttons that can be programmed to perform various switcher functions. See the "[Custom Control Section](#)" heading on page 80 for details.

8) Memory Section

The **Memory Section** enables you to store panel setups (and many other switcher functions) into memory registers, and recall setups from memory back to the panel. One thousand registers are provided (1 through 1000). Refer to the "[Memory Section](#)" heading on page 81 for more details.

9) Joystick

The **Joystick** is a three axis controller (X, Y and Z) that is used to adjust various switcher parameters. Refer to the "[Joystick](#)" section on page 85 for details.

10) Light Control

One **Light Control** is provided, which enables you to adjust the brightness of the script lights, which connect to the rear panel.

Functional Control Panel Sections

The following topics are discussed in this section:

- [Display Section](#)
- [PGM Bank](#)
- [PGM Transition Section](#)
- [M/E Bank](#)
- [M/E Transition Section](#)
- [Aux Section](#)
- [Custom Control Section](#)
- [Memory Section](#)
- [Joystick](#)

3. Control Panel Orientation

Control Panel Descriptions

Display Section

The figure below illustrates the **Display Section**:

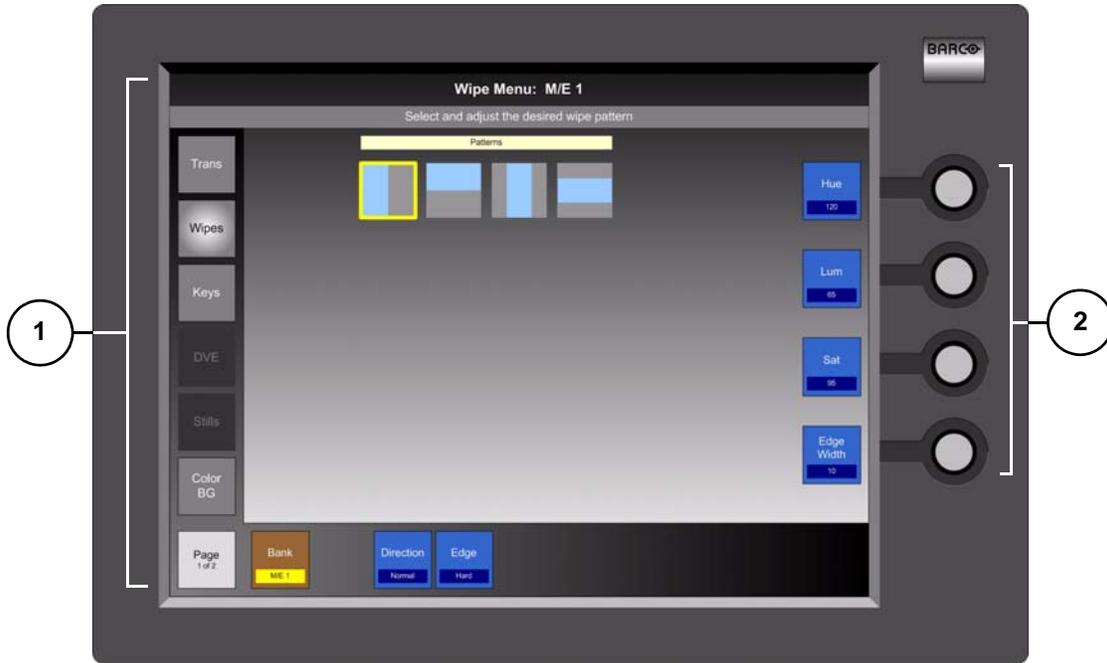


Figure 3-3. Display Section (with sample menu)

1) Touch Screen	2) Knobs
---------------------------------	--------------------------

The **Display Section** provides the controls for adjusting system parameters, and the display itself can be mounted in a variety of ways. In Chapter 4, refer to the “[Display Mount Options](#)” section on page 97 for details.

Following are descriptions of each section:

1) Touch Screen

The high-resolution **Touch Screen** is a multi-menu user interface that enables you to set up the switcher, adjust parameters, view status, and manage all functions. Refer to Chapter 5, “[Menu Orientation](#)” on page 117 for details.

2) Knobs

Four **Knobs** are provided to the right of the Touch Screen. When one or more “value buttons” appear on the Touch Screen, or when a line is drawn to a table, the adjacent knob(s) enable you to adjust those specific parameters.

Please note:

- ~ Turning a knob to the right (clockwise) increases a parameter’s value, or scrolls the highlight in a table down. Turning a knob to the left (counter-clockwise) decreases a value, or scrolls the highlight in a table up.
- ~ If you adjust a numeric value using a **Knob**, you do not need to press **Enter**. Using this method, the new value is *immediately* active.
- ~ If you enter a numeric value using the on-screen **Keypad** or the control panel’s **Keypad**, the **Enter** button must be pressed.

3. Control Panel Orientation

Control Panel Descriptions

PGM Bank

The **PGM Bank** is the switcher's top video layer. The bank includes two physical buses (**PGM** and **PST**), and one "phantom" **KEY** bus. Together, these buses are the switcher's primary location where you cut your program and transition to M/E setups. Please note:

- The **PGM Bank** has an associated **PGM Transition Section** to its right, where effects and transitions (such as mixes, wipes and keys) are set up using the sources selected in the buses.
- Using the **Memory/Transition Section**, you can store all or part of the PGM bank.
- The **PGM Bank** provides tally indications similar to the M/E. In Chapter 7, refer to the "[Understanding Tally](#)" section on page 270 for details.
- The buses in the **PGM Bank** operate in "flip-flop" mode. In Chapter 7, refer to the "[Understanding Flip-flop Mode](#)" section on page 269 for details.
- Button color has important significance in the **PGM Bank**. In Chapter 7, refer to the "[Understanding Button Color](#)" section on page 267 for details.

The figure below illustrates the **PGM Bank** on the FSN-150.

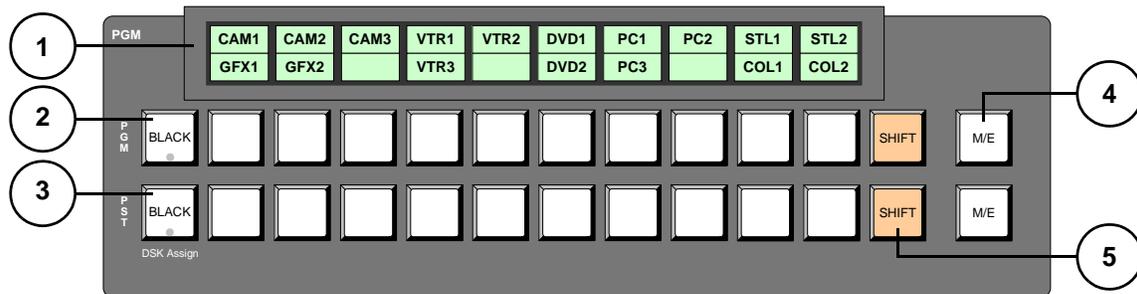


Figure 3-4. PGM Bank, FSN-150

1) Programmable Displays	4) Re-entry Buttons
2) Program Bus	5) SHIFT Buttons
3) Preset and Phantom Key Bus	

Following are descriptions of each section:

1) Programmable Displays

Above each source button on the **PGM Bus**, a **Programmable Display** shows the source names that are assigned during setup (e.g., **CAM1**, **VTR2**, etc.). The labels are dynamic — if the source is mapped to another button, the label follows.

Note

In the **Programmable Displays**, the top row is the unshifted source, the bottom row is the shifted source.

If an error occurs to either the shifted or unshifted input, the **Programmable Display** turns red. In Chapter 7, refer to the "[Understanding Error Messages](#)" section on page 271 for full details.

3. Control Panel Orientation

Control Panel Descriptions

2) Program Bus

The **Program Bus** (PGM) is the bank's bottom layer, which is used to select the switcher's primary output video. Please note:

- ~ Except for **SHIFT**, all buttons on the **PGM Bus** are mutually exclusive, including the re-entry button.

3) Preset and Phantom Key Bus

This bus has two functions:

- ~ First (just like on an M/E), the **PST Bus** is used to select the next background source.
- ~ Second, because there is no "physical" **Key Bus** in the **PGM Bank**, the **PST Bus** doubles as the **Key Assign Bus** — the bank's top layer. To assign a key source to the downstream keyer, press and hold the **DSK** button, then select the desired key source from the buttons on **PST**.

Please note:

- ~ Except for **SHIFT**, all buttons on the **PST Bus** are mutually exclusive, including the re-entry button.
- ~ When a **PST** source is taken to Program with a transition, the source "flips" to **PGM**. In Chapter 7, refer to the "[Understanding Flip-flop Mode](#)" section on page 269 for details.

4) Re-entry Buttons

At the end of each bus, the **Re-entry Button** allows you to combine the program output of the M/E into the video flow of the selected bus. For example:

- ▲ You can re-enter M/E 1 on **PGM**, **PST** or the **Phantom Key Bus**.

This re-entry capability enables you to cut, mix or wipe to an M/E, or use an M/E as a key source.

5) SHIFT Buttons

All **SHIFT** buttons are latching. Press to access additional sources as follows:

- ~ Sources 11 through 20 on the FSN-150.

In Chapter 7, refer to the "[Understanding Switcher Layers](#)" section on page 268 for a discussion of video layers within the switcher.

3. Control Panel Orientation

Control Panel Descriptions

PGM Transition Section

The **PGM Transition Section** provides controls for creating the switcher's primary output, using cuts, mixes, wipes, a downstream key and a downstream "fade to black." The figure below shows the **PGM Transition Section**:

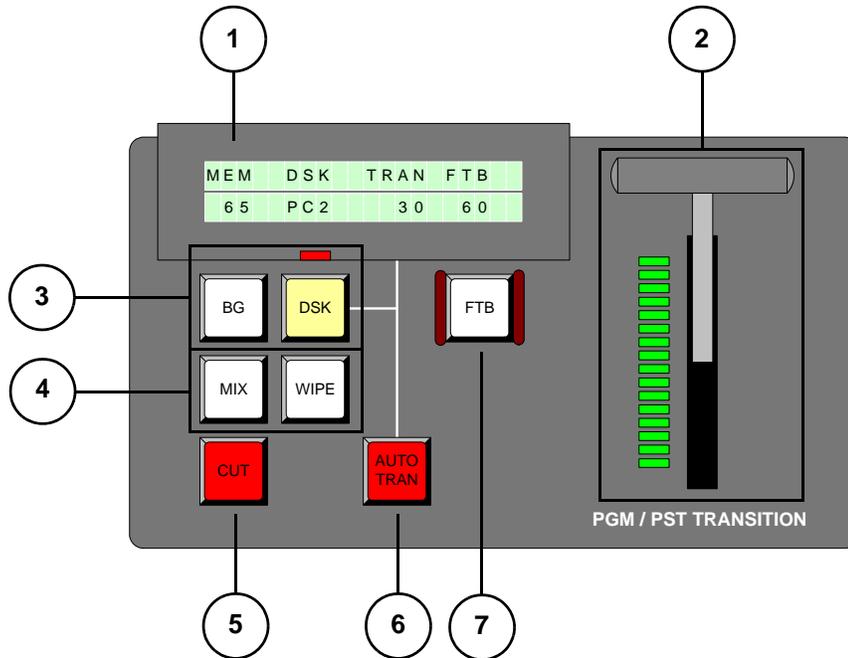


Figure 3-5. PGM Transition Section (sample)

1) PGM Transition Display	4) Effects Group	7) FTB
2) T-Bar and Transition LEDs	5) Cut	
3) Next Transition Group	6) Auto Transition	

Following are descriptions of each section:

1) PGM Transition Display

The **PGM Transition Display** provides the four important status labels:

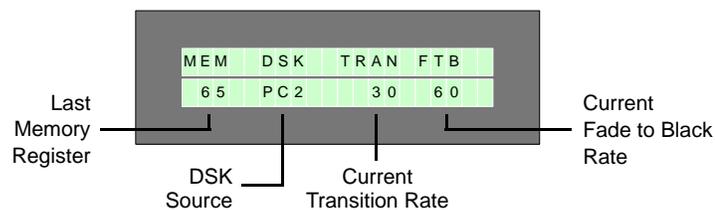


Figure 3-6. PGM Transition Display

From left to right:

- ~ **Last Memory Register** — indicates the last memory register recalled to the PGM bank. When you recall another register using the **Memory Section**, the register updates.

3. Control Panel Orientation

Control Panel Descriptions

- ~ **DSK Source** — (directly above the **DSK** button), indicates the current source assigned to the downstream keyer. When you select another source on the **Phantom Key Bus**, the source label updates.
- ~ **Current Transition Rate** — indicates the auto-transition rate loaded in the PGM bank. This rate is used by the **AUTO TRAN** and **DSK** functions. Use the **Transition Menu** to change rates. In Chapter 5, see the “[Transition Menu](#)” section on page 134 for details.
- ~ **Current Fade to Black Rate** — indicates the auto-transition rate for the fade to black (FTB) function. Use the **Transition Menu** to change rates.

2) T-Bar and Transition LEDs

The **T-Bar** provides manual transition control for the layers enabled in the **Next Transition Group**. For both manual and automatic transitions, the **Transition LEDs** indicate the position of the transition in progress.

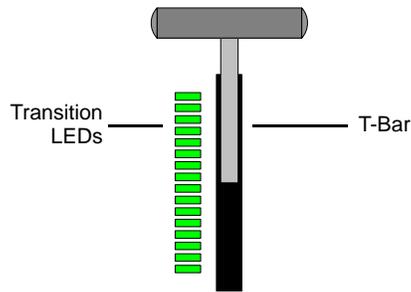


Figure 3-7. T-Bar and Transition LEDs

T-Bar functionality is identical for both the M/E bank and the PGM bank. In Chapter 7, refer to the “[Understanding the T-Bar and Transition LEDs](#)” section on page 280 for complete details.

3) Next Transition Group

The two buttons in the **Next Transition Group** indicate which specific combination of PGM bank layers is enabled (or “armed”) for the next transition. The state of these buttons affects the bank’s “lookahead” preview output.

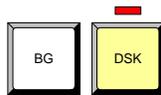


Figure 3-8. Next Transition Group

To use the group, simultaneously press the combination of buttons that you wish to enable. Any combination can be pressed. Whichever combination you enable automatic disables those buttons that were not pressed.

For example:

- ▲ If **BG** and **DSK** are currently lit, pressing **BG** turns the **BG** button on, and turns off the **DSK** button.
- ▲ If **DSK** is currently lit, pressing **BG** and **DSK** turns the **BG** and **DSK** buttons on.

3. Control Panel Orientation

Control Panel Descriptions

Following are descriptions of each button in the **Next Transition Group**:



- ~ Enable **BG** to “arm” the background layer for a transition.
 - When **BG** is enabled, the selected **PST** source appears in the bank’s preview monitor output.
 - When **BG** is not enabled, the selected **BG** source appears in the bank’s preview monitor output.

When the transition is performed, the **PST** source flips to **BG**.

If **BG** is off and **DSK** is on, the current BG source is held during the next transition — even if a different source is selected on **PST**.



- ~ Enable **DSK** to “arm” a transition to or from the **DSK** layer, using the source selected on the **Phantom Key Bus**. The red LED above the button lights when the DSK is on.
 - If the **DSK** is currently **off** and you enable it, the next transition turns the key on. The key source appears in the bank’s preview output.
 - If the **DSK** is currently **on** and you enable it, the next transition turns the key off. Here, even though the key is on, the key is removed from preview — showing the bank’s *next* look.
 - Press and hold **DSK** to display the **Key Menu**, with the DSK highlighted.

If **DSK** is off and **BG** is on, the key will not transition. If the key is currently **off**, it stays off. If the key is currently **on**, it holds.

Note

The **Key Menu** can be used at any time to adjust DSK parameters, whether or not the key is on. In Chapter 5, refer to the “[Keyer Menu](#)” section on page 143 for details.

The following rules apply to both buttons in the **Next Transition Group**:

- ~ As you enable or disable buttons in the group, the selected layer appears (or is removed) on the bank’s Preview output.
- ~ At the end of a transition (either manual or automatic), all buttons that you enabled in the group remain on. This allows you to transition back to the previous configuration.
- ~ Both buttons work in combination with the bank’s **MIX**, **WIPE**, **CUT**, **AUTO TRAN** button and the **T-Bar**. For example:
 - ▲ If you enable **BG** and **MIX**, and then press **AUTO TRAN**, the transition automatically mixes to the selected source.
 - ▲ If you enable **DSK**, **BG** and **WIPE**, and then move the **T-Bar**, the transition manually wipes to the selected source plus DSK.
 - ▲ If you enable **DSK** and then press **CUT**, the transition cuts the key on or off.

In Chapter 7, refer to the “[Understanding Lookahead Preview](#)” section on page 274 for additional information about lookahead preview functionality.

3. Control Panel Orientation

Control Panel Descriptions

4) Effects Group

The two buttons in the **Effects Group** indicate which effects are enabled (or “armed”) for the next transition in the PGM bank.



Figure 3-9. Effects Group

To use the group, press the button(s) for the transition you want to enable. Note that **MIX** and **WIPE** are mutually exclusive.

Following are descriptions of each button in the **Effects Group**:



~ Press **MIX** to arm the PGM bank for a mix, using the layers enabled in the **Next Transition Group**. The mix can be performed manually or automatically. Transition combinations are:

- **MIX + BG**: Background mix
- **MIX + DSK**: Mix DSK, on or off
- **MIX + BG + DSK**: Mix background and DSK

Note

Press and hold **MIX** to display the **Transition Menu**, which enables you to set transition rates and select transition curves. In Chapter 5, refer to the “[Transition Menu](#)” section on page 134 for details.



~ Press **WIPE** to arm the PGM bank for a wipe transition, using the layers enabled in the **Next Transition Group**. The wipe can be performed manually or automatically. Transition combinations are:

- **WIPE + BG**: Background wipe
- **WIPE + DSK**: Wipe DSK, on or off
- **WIPE + BG + DSK**: Wipe background and DSK

Note

Press and hold **WIPE** to display the **Wipe Menu**, which enables you to choose wipe patterns and adjust parameters. In Chapter 5, refer to the “[Wipe Menu](#)” section on page 137.

5) Cut



Press **CUT** to instantly cut to the PGM bank layers that are enabled in the **Next Transition Section**. For example:

- ▲ **BG** enabled — press **CUT** to cut from **PGM** to **PST**.
- ▲ **DSK** enabled — press **CUT** to cut the DSK on or off.
- ▲ **BG + DSK** enabled — press **CUT** to cut from **PGM** to **PST**, and simultaneously cut the DSK on or off.

6) Auto Transition



Press **AUTO TRAN** to trigger an automatic transition to or from the layers enabled in the **Next Transition Group**. The transition uses the “type” of transition enabled in the **Effects Group**, and the PGM bank’s current transition rate. For example:

- ▲ **BG + MIX** enabled — press **AUTO TRAN** to mix from **PGM** to **PST**.

3. Control Panel Orientation

Control Panel Descriptions

- ▲ **BG + WIPE** enabled — press **AUTO TRAN** to wipe from **PGM** to **PST**.
- ▲ **DSK + MIX** enabled — press **AUTO TRAN** to mix the DSK on or off.
- ▲ **BG + DSK + MIX** enabled — press **AUTO TRAN** to mix from **PGM** to **PST**, and simultaneously mix the DSK on or off.

Press **AUTO TRAN** *during* the transition interval to pause the transition. The **Transition LEDs** indicate the point at which the transition is paused. Press **AUTO TRAN** again to continue in the same direction. You can pause and continue repeatedly.

Note

Use the **Transition Menu** to change transition rates and to select transition curves. Remember that the bank's transition rate appears in the **Transition Display**. In Chapter 5, refer to the "[Transition Menu](#)" section on page 134 for details.

Note

You can use **AUTO TRAN** and the **T-Bar** together. For example, you can start a transition manually, and continue it automatically. In Chapter 7, refer to the "[Working with Mixes](#)" section on page 285 for full details.



7) FTB

The **FTB** (Fade to Black) button enables you to transition the switcher's Program output to black. Please note:

- ~ When pressed, the switcher fades to black, including the DSK. Once in black, the **FTB** button blinks.
- ~ While in black, the M/E bank is fully functional. Any source can be preset on any bus, and any memory register can be recalled — but the setups will not contribute to the switcher's **Program** output. However, individual M/E outputs are still functional (e.g., **M/E 1 Out**).
- ~ When **FTB** is pressed again, the switcher fades up from black to the current setup. If the DSK is enabled, it remains enabled.
- ~ Use the **Transition Menu** to change the FTB transition rate. The current transition rate appears in the **Transition Display**. In Chapter 5, refer to the "[Transition Menu](#)" section on page 134 for details

3. Control Panel Orientation

Control Panel Descriptions

M/E Bank

An **M/E** bank is essentially a video layer which, in combination with other switcher banks, enables you to create the overall “look” of your program. Please note:

- Three buses are provided for selecting sources: **BG, PST** and **KEY**.
- Sources are the *same* in each vertical column of buttons. For example, if CAM 2 is mapped to button 2, CAM 2 appears on button 2 on *all* switcher buses.
- The M/E bank has an associated **M/E Transition Section** to the right. In this section, you set up “effects” and transitions using the sources selected in the M/E.
- Using the **Memory/Transition Section**, you can store all or part of an M/E bank.
- An M/E bank provides tally indications. In Chapter 7, refer to the [“Understanding Tally”](#) section for details.
- An M/E bank operates in “flip-flop” mode. In Chapter 7, refer to the [“Understanding Flip-flop Mode”](#) section on page 269 for details.
- Button color has important significance in the M/E. In Chapter 7, refer to the [“Understanding Button Color”](#) section on page 267 for details.

The figure below illustrates the **M/E Bank** on the FSN-150.

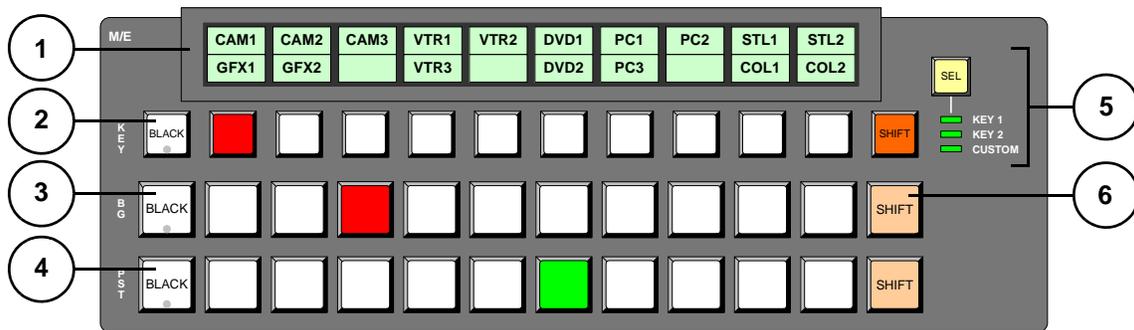


Figure 3-10. M/E Bank, FSN-150 (with sample displays)

1) Programmable Displays	3) Background Bus	5) Key Control Section
2) Key Bus	4) Preset Bus	6) SHIFT Buttons

Following are descriptions of each section:

1) Programmable Displays

Above each button on the **Key Bus**, a **Programmable Display** shows the source names that are assigned during setup (e.g., **CAM1**, **VTR2**, etc.). The labels are dynamic — if the source is mapped to another button, the label follows.

Note

In the **Programmable Displays**, the top row is the unshifted source, the bottom row is the shifted source.

When the **SEL** button is toggled to **Custom**, all displays change to show the custom control functions that have been mapped to the associated buttons. Refer to the [“Key Control Section”](#) heading on page 71 for details.

If an error occurs to either the shifted or unshifted input, the **Programmable Display** turns red. In Chapter 7, refer to the [“Understanding Error Messages”](#) section on page 271 for full details.

3. Control Panel Orientation

Control Panel Descriptions

2) Key Bus

The **Key Bus** is the M/E's top layer, which is used to select sources that can be keyed over the **BG** and **PST** buses. Please note:

- ~ Except for **SHIFT**, all buttons on the **Key Bus** are mutually exclusive.
- ~ On the M/E, the **Key Bus** is shared between **KEY 1**, **KEY 2** and **Custom Control** functions. The **SEL** button chooses the active function, as indicated by the LEDs to the right of the bus. Refer to the "[Key Control Section](#)" heading on page 71 for details.
- ~ If a key is on, you can "hot cut" key sources on the bus, provided that the bus is selected (using **SEL**).

3) Background Bus

The **Background Bus** (BG) is used to select the M/E's bottom layer — the image that is visually behind the M/E's two keyers. Please note:

- ~ Except for **SHIFT**, all buttons on **BG** are mutually exclusive.

4) Preset Bus

The **Preset Bus** (PST) is used to select the M/E's next background. Please note:

- ~ Except for **SHIFT**, all buttons on **PST** are mutually exclusive.
- ~ When a **PST** source is taken to Program, the source "flips" to **PGM**. In Chapter 7, refer to the "[Understanding Flip-flop Mode](#)" section on page 269 for details.

Refer to the "[M/E Transition Section](#)" heading on page 72 for more information about transition combinations.

5) Key Control Section

The **Key Bus** is a shared bus. The **SEL** button toggles the bus between **KEY 1**, **KEY 2** and **Custom Control** functions. The three LEDs indicate the active function.

- ~ When **KEY 1** or **KEY 2** is selected, Key sources can be selected and adjusted for the indicated keyer.
- ~ When **Custom Control** is selected, the entire row of programmable displays changes to show the custom control functions that have been mapped to the associated buttons. In this mode, pressing a button on the **Key Bus** executes the assigned function.

Note

Custom control functionality on the **Key Bus** is not available in release 1.0.

6) SHIFT Buttons

All **SHIFT** buttons are latching. Press **SHIFT** to access additional sources as follows:

- ~ Sources 11 through 20 on the FSN-150.

In Chapter 7, refer to the "[Understanding Switcher Layers](#)" section on page 268 for a discussion of video layers within the switcher.

3. Control Panel Orientation

Control Panel Descriptions

M/E Transition Section

The **M/E Transition Section** provides the controls for creating transitions, such as cuts, mixes, wipes, keys and PIPs. The figure below illustrates the **M/E Transition Section**:

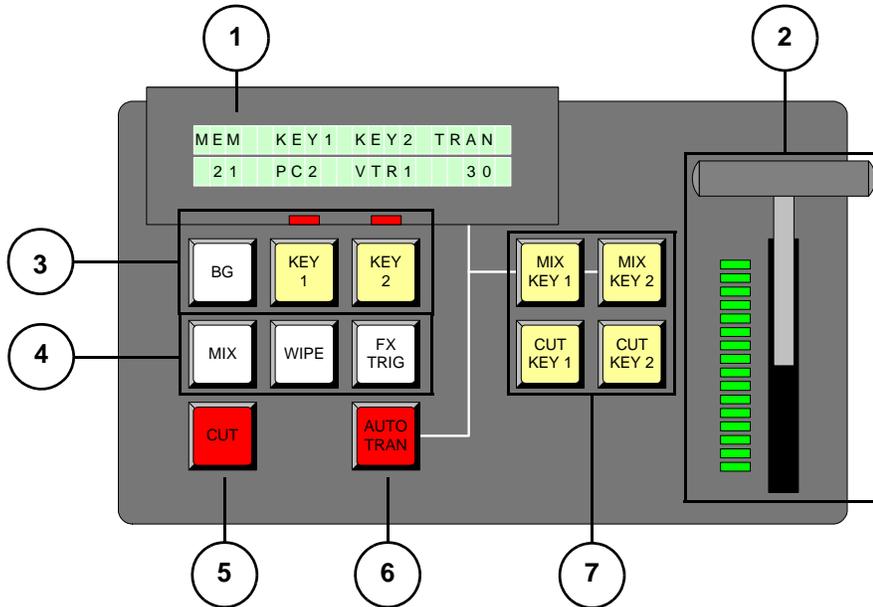


Figure 3-11. M/E Transition Section (sample)

1) M/E Transition Display	4) Effects Group	7) Direct Key Control Group
2) T-Bar and Transition LEDs	5) Cut	
3) Next Transition Group	6) Auto Transition	

Following are descriptions of each section:

1) M/E Transition Display

The **M/E Transition Display** provides four important status fields. In all cases, the top line is the field title, and the bottom line is the variable:

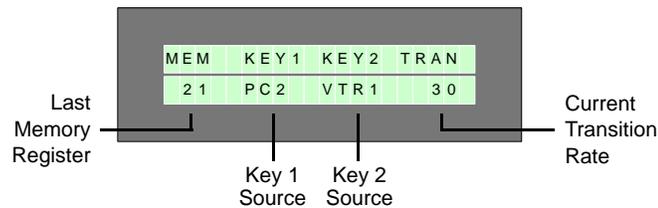


Figure 3-12. M/E Transition Display

From left to right:

- ~ **Last Memory Register** — indicates the last memory register recalled to the M/E. When you recall another register using the **Memory Section**, the register updates.
- ~ **Key 1 Source** — (directly above the **KEY 1** button), indicates the current source assigned to **KEY 1**. When you select another source for **KEY 1** on the **Key Bus**, the source label updates.

3. Control Panel Orientation

Control Panel Descriptions

- ~ **Key 2 Source** — (directly above the **KEY 2** button), indicates the current source assigned to **KEY 2**. When you select another source for **KEY 2** on the **Key Bus**, the source label updates.

Note

Remember that the **SEL** button chooses the active key bus, as indicated by the **Key Control LEDs**.

- ~ **Current Transition Rate** — indicates the auto-transition rate loaded in the M/E. This rate is used by the **AUTO TRAN**, **MIX KEY 1** and **MIX KEY 2** functions. Use the **Transition Menu** to change rates. In Chapter 5, see the “[Transition Menu](#)” section on page 134 for details.

2) T-Bar and Transition LEDs

The **T-Bar** provides manual transition control for the layers enabled in the **Next Transition Group**. For both manual and automatic transitions, the **Transition LEDs** indicate the position of the transition in progress.

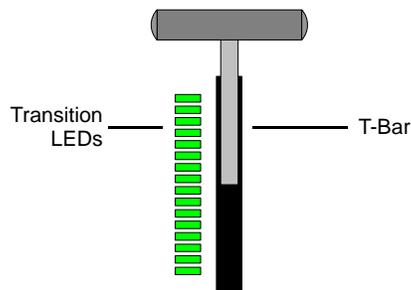


Figure 3-13. T-Bar and Transition LEDs

T-Bar functionality is identical for the M/E and PGM banks. In Chapter 7, refer to the “[Understanding the T-Bar and Transition LEDs](#)” section on page 280 for complete details.

3) Next Transition Group

The three buttons in the **Next Transition Group** indicate which specific combination of M/E layers is enabled (or “armed”) for the next transition. The state of these buttons affects the M/E’s “lookahead” preview output.

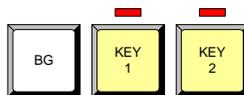


Figure 3-14. Next Transition Group

To use the group, simultaneously press the combination of buttons that you wish to enable. Any combination can be pressed. Whichever combination you enable automatic disables those buttons that were not pressed.

For example:

- ▲ If **BG**, **KEY 1** and **KEY 2** are currently lit, pressing **BG** turns the **BG** button on, and turns off the **KEY 1** and **KEY 2** buttons.
- ▲ If **KEY 1** is currently lit, simultaneously pressing **BG** and **KEY 2** turns the **BG** and **KEY 2** buttons on, and **KEY 1** off.

3. Control Panel Orientation

Control Panel Descriptions

Following are descriptions of each button in the **Next Transition Group**:



- ~ Enable **BG** to “arm” the background layer for a transition.
 - When **BG** is enabled, the selected **PST** source appears in the M/E’s preview monitor output.
 - When **BG** is not enabled, the selected **BG** source appears in the M/E preview monitor output.

When the transition is performed, the **PST** source flips to **BG**.

If **BG** is off, the current **BG** source is held during the next transition — even if a different source is selected.



- ~ Enable **KEY 1** to “arm” a transition to or from the **KEY 1** layer, using the source selected on the **Key Bus**. The red LED above the button lights when the key is on.
 - If **KEY 1** is currently **off** and you enable it, the next transition turns the key on. The key source appears in the M/E’s preview output.
 - If **KEY 1** is currently **on** and you enable it, the next transition turns the key off. Here, even though the key is on, the key is removed from preview — showing the M/E’s *next* look.
 - Press and hold **KEY 1** to display the **Key Menu**, with Key 1 highlighted.

If the **KEY 1** button is off, Key 1 will not transition. If the key is currently **off**, it stays off. If the key is currently **on**, it holds.



- ~ Enable **KEY 2** to “arm” a transition to or from the **KEY 2** layer, using the source selected on the **Key Bus**. The red LED above the button lights when the key is on.
 - If **KEY 2** is currently **off** and you enable it, the next transition turns the key on. The key source appears in the preview output.
 - If **KEY 2** is currently **on** and you enable it, the next transition turns the key off. Even though the key is on, the key is removed from preview — indicating the M/E’s *next* look.
 - Press and hold **KEY 2** to display the **Key Menu**, with Key 2 highlighted.

If the **KEY 2** button is off, Key 2 will not transition. If the key is currently **off**, it stays off. If the key is currently **on**, it holds.

Note

The **Key Menu** can be used at any time to adjust key parameters, whether or not the key is on. In Chapter 5, refer to the “[Keyer Menu](#)” section on page 143 for details.

The following rules apply to all three buttons in the **Next Transition Group**:

- ~ As you enable or disable buttons in the group, the selected layer appears (or is removed) on the M/E’s Preview output.
- ~ At the end of a transition (either manual or automatic), all buttons that you enabled in the group remain on. This allows you to transition back to the previous configuration.

3. Control Panel Orientation

Control Panel Descriptions

- ~ All three buttons in the **Next Transition Group** work in combination with the M/E's **MIX**, **WIPE**, **CUT**, **AUTO TRAN** button and the **T-Bar**.

For example:

- ▲ If you enable **BG** and **MIX**, and then press **AUTO TRAN**, the transition automatically mixes to the selected source.
- ▲ If you enable **KEY 1**, **BG** and **WIPE**, and then move the **T-Bar**, the transition manually wipes to the selected source plus key.
- ▲ If you enable **BG** and **KEY 2** and press **CUT**, the transition cuts to the selected source and cuts the key on or off.

In Chapter 7, use the following section for reference:

- ~ Refer to the "[Understanding Lookahead Preview](#)" section on page 274 for additional information about lookahead preview functionality.
- ~ Refer to the "[Understanding Switcher Layers](#)" section on page 268 for a discussion of video layers within the switcher.

4) Effects Group

The three buttons in the **Effects Group** indicate which effects are enabled (or "armed") for the next transition in the M/E.



Figure 3-15. Effects Group

To use the group, press the button(s) for the transition you want to enable.

Note

MIX and **WIPE** are mutually exclusive.

Following are descriptions of each button in the **Effects Group**:



- ~ Press **MIX** to arm the M/E for a mix, using the layers enabled in the **Next Transition Group**. The mix can be performed manually with the **T-Bar**, or automatically with **AUTO TRAN**.

Transition combinations are:

- **MIX + BG**: Background mix
- **MIX + KEY 1**: Mix Key 1, on or off
- **MIX + KEY 2**: Mix Key 2, on or off
- **MIX + KEY 1 + KEY 2**: Mix Key 1 and Key 2, on or off
- **MIX + BG + KEY 1**: Mix background and Key 1
- **MIX + BG + KEY 2**: Mix background and Key 2
- **MIX + BG + KEY 1 + KEY 2**: Mix background, Key 1 and Key 2

Note

Press and hold **MIX** to display the **Transition Menu**, which enables you to set transition rates and select transition curves. In Chapter 5, refer to the "[Transition Menu](#)" section on page 134 for details.

3. Control Panel Orientation

Control Panel Descriptions



- ~ Press **WIPE** to arm the M/E for a wipe transition, using the layers enabled in the **Next Transition Group**. The wipe can be performed manually with the **T-Bar**, or automatically using **AUTO TRAN**.

Transition combinations are:

- **WIPE + BG**: Background wipe
- **WIPE + KEY 1**: Wipe Key 1, on or off
- **WIPE + KEY 2**: Wipe Key 2, on or off
- **WIPE + KEY 1 + KEY 2**: Wipe Key 1 and Key 2, on or off
- **WIPE + BG + KEY 1**: Wipe background and Key 1
- **WIPE + BG + KEY 2**: Wipe background and Key 2
- **WIPE + BG + KEY 1 + KEY 2**: Wipe BG, Key 1 and Key 2

Note

Press and hold **WIPE** to display the **Wipe Menu**, which enables you to choose wipe patterns and adjust parameters. In Chapter 5, refer to the "[Wipe Menu](#)" section on page 137 for details.



- ~ The **FX TRIG** button is not available in release 1.0.



5) Cut

Press **CUT** to instantly cut to the M/E layers that are enabled in the **Next Transition Section**. For example:

- ▲ **BG** enabled — press **CUT** to cut from **BG** to **PST**.
- ▲ **KEY 1** enabled — press **CUT** to cut Key 1 on or off.
- ▲ **BG + KEY 2** enabled — press **CUT** to cut from **BG** to **PST**, and simultaneously cut Key 2 on or off.



6) Auto Transition

Press **AUTO TRAN** to trigger an automatic transition to or from the layers enabled in the **Next Transition Group**. The transition uses the "type" of transition enabled in the **Effects Group**, and the M/E's current transition rate. For example:

- ▲ **BG + MIX** enabled — press **AUTO TRAN** to mix from **BG** to **PST**.
- ▲ **BG + WIPE** enabled — press **AUTO TRAN** to wipe from **BG** to **PST**.
- ▲ **KEY 1 + MIX** enabled — press **AUTO TRAN** to mix Key 1 on or off.
- ▲ **BG + KEY 2 + MIX** enabled — press **AUTO TRAN** to mix from **BG** to **PST**, and simultaneously mix Key 2 on or off.
- ▲ **KEY 1 + KEY 2 + WIPE** enabled — press **AUTO TRAN** to wipe Key 1 and Key 2 on or off.

Press **AUTO TRAN** *during* the transition interval to pause the transition. The **Transition LEDs** indicate the point at which the transition is paused. Press **AUTO TRAN** again to continue in the same direction. You can pause and continue repeatedly.

Note

Use the **Transition Menu** to change transition rates and to select transition curves. Remember that the M/E's transition rate appears in the **Transition Display**. In Chapter 5, refer to the "[Transition Menu](#)" section on page 134 for details.

3. Control Panel Orientation

Control Panel Descriptions

Note

You can use **AUTO TRAN** and the **T-Bar** together. For example, you can start a transition manually, and continue it automatically. In Chapter 7, refer to the "[Working with Mixes](#)" section on page 285 for full details.

7) Direct Key Control Group

The four buttons in the **Direct Key Control Group** enable you to *directly* control the two keyers in the M/E, without the need to "arm" them in the **Next Transition Group**. When you use these four buttons, the red LEDs above the **KEY 1** and **KEY 2** buttons function in the normal manner.



Figure 3-16. Direct Key Control Group

Following are descriptions of each button in the **Direct Key Control Group**:



~ Press **MIX KEY 1** to immediately mix **Key 1** fully on or fully off.



~ Press **MIX KEY 2** to immediately mix **Key 2** fully on or fully off.



~ Press **CUT KEY 1** to immediately cut **Key 1** fully on or fully off.



~ Press **CUT KEY 2** to immediately cut **Key 2** fully on or fully off.

Please note the following important points regarding the **Direct Control** buttons:

- ~ Unlike the **AUTO TRANS** button, the two **MIX KEY** buttons cannot be paused. Once pressed, the transition completes fully.
- ~ When the **T-Bar** is positioned between the **BG** and **PST** buses (off of a limit), almost all transitions are possible. For example:
 - ▲ **BG + MIX** enabled — if the **T-Bar** is positioned half-way between the **BG** and **PST** buses (creating a 50% mix), pressing **CUT KEY 1** cuts the key in (or out) over the mix.
 - ▲ **BG + WIPE** enabled — if the **T-Bar** is positioned half-way between the **BG** and **PST** buses (creating a split-screen wipe), pressing **MIX KEY 2** mixes in the key over the split screen.
 - ▲ **KEY 1 + MIX** enabled — if the **T-Bar** is positioned half-way between the **BG** and **PST** buses (creating a 50% mix of the key), pressing **MIX KEY 1** mixes in the key to 100%.
 - ▲ **KEY 1 + WIPE** enabled — if the **T-Bar** is positioned half-way between the **BG** and **PST** buses (wiping the key halfway on), pressing **MIX KEY 1** is inhibited. However, pressing **CUT KEY 1** can be performed.

3. Control Panel Orientation

Control Panel Descriptions

- ~ The two **MIX KEY** buttons transition at the M/E's auto transition rate. Use the **Transition Menu** to change rates. In Chapter 5, refer to the "[Transition Menu](#)" section on page 134 for complete details.
- ~ The **Transition LEDs** do not change state when **MIX KEY 1** and **MIX KEY 2** are used.

Aux Section

An Aux output is essentially a destination — a location to which you want to route a source. Examples of Aux destinations are monitors, VTRs, projectors, DVE channels, etc.

The **Aux Section** enables you to perform the following functions:

- Assign sources to native and scaled Aux outputs.
- Assign sources to the internal DVE channels (when DVE channels are mapped to the panel).
- Route an "assignable" source to an Aux destination.

The figure below illustrates the **Aux Section** on the model FSN-150:

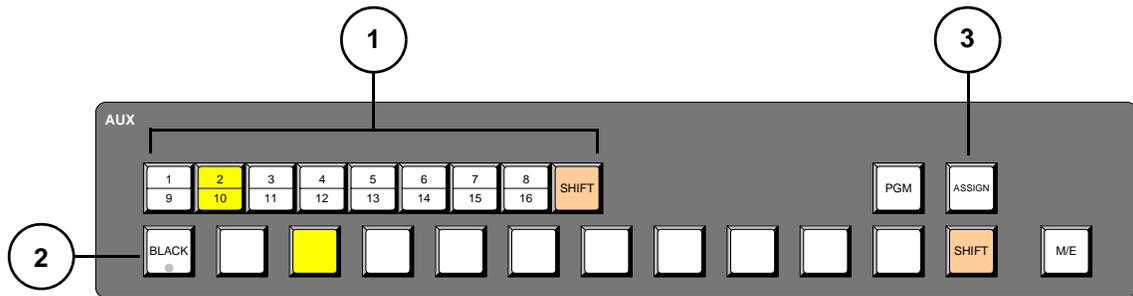


Figure 3-17. Aux Section, FSN-150 (sample)

1) Aux Output Row	3) Assignable Source
2) Aux Source Row	

Following are descriptions of each section:

1) Aux Output Row

The **Aux Output Row** enables you to select the specific Aux output to which you want to route a source. When a source is assigned to an Aux output, that source is immediately switched to the corresponding Aux output connector. Please note:

- ~ On the FSN-150, 16 Aux output assignments are provided (eight buttons + **SHIFT**).
- ~ On the **Aux Output Row**, only one button can be selected at a time. When a button is pressed, the current associated source on the **Aux Source Row** lights.

Note

Only native Aux outputs 1 - 6 are available in release 1.0.

3. Control Panel Orientation

Control Panel Descriptions

2) Aux Source Row

The **Aux Source Row** provides all the sources available on the switcher's main buses. Here, you select sources to route to the outputs that you select on the **Aux Output Row**. This is the row where you complete source-to-output assignments.

Note

The sources on the **Aux Source Row** are identical to those on the switcher's main buses. If a button map is changed on the main rows, it also changes on the **Aux Source Row**.

The following rules apply:

- ~ On the FSN-150, sources 11 through 20 are accessed via **SHIFT**.
- ~ Source assignments on the row can be changed at any time.
- ~ In addition to dedicated sources, additional clean feed sources are available via the **ASSIGN** button. See below for details.
- ~ Only one button on the **Aux Source Row** can be lit at a time. This button indicates the source that is assigned to the selected Aux output. In the figure below, source 2 is assigned to Aux output 2:

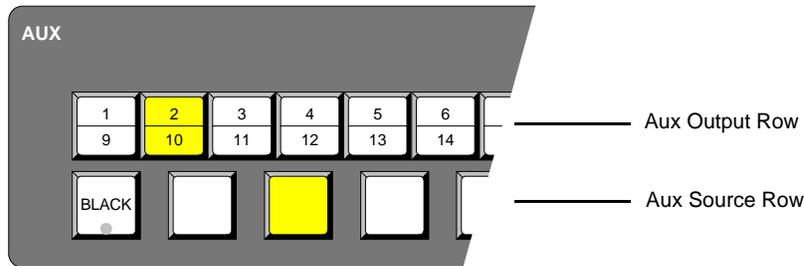


Figure 3-18. Sample source-to-output assignment, FSN-150

3) Assignable Source



In addition to dedicated sources on the **Aux Source Row**, one additional clean feed source can be mapped to the **ASSIGN** button. The following sources are available:

- ~ M/E 1 out clean — pre **KEY 1**
- ~ M/E 1 out clean — pre **KEY 2**
- ~ Program out clean — pre **DSK**

To assign a clean feed source to the **ASSIGN** button, press and hold the **ASSIGN** button, then use the **Clean Feed Setup Menu**. In Chapter 5, see the [“Clean Feed Setup Menu”](#) section on page 184 for details.

Important

Only one clean feed source can be mapped to the **ASSIGN** button for all Aux buses. For example, you cannot map “**Pre KEY 1**” to Aux 1, and “**Pre KEY 2**” to Aux 2.

In Chapter 7, refer to the [“Working with Aux Buses”](#) section on page 299 for complete instructions on using Aux buses.

3. Control Panel Orientation

Control Panel Descriptions

Custom Control Section

The **Custom Control Section** provides groups of buttons that can be programmed to perform various switcher functions such as accessing menus, running macros, running “system” functions and triggering GPOs. When internal DVE channels are mapped to the panel, the **Custom Control Section** enables you to access up to four “internal” Aux buses, which are used to route video to the DVE channels.

On the FSN-150, eight custom buttons are provided (two groups of four). The figure below illustrates the **Custom Control Section** on the FSN-150:

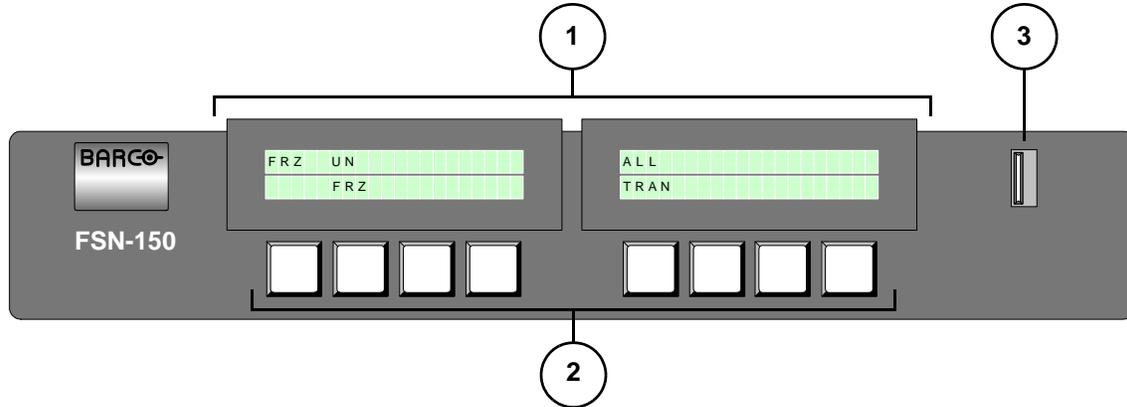


Figure 3-19. Custom Control Section, FSN-150 (sample)

1) Custom Control Displays	2) Custom Control Buttons	3) USB Port
--	---	-----------------------------

Following are descriptions of each section:

1) Custom Control Displays

One **Custom Control Display** is provided for each group of four Custom Control buttons. Each LCD display provides two lines of 20 characters each, enabling each button to be labeled with two lines of four characters. The displays *change* as different sets of custom control buttons are mapped to the panel.

2) Custom Control Buttons

Each individual **Custom Control Button** represents a programmable function that you can trigger, such as a GPO or a macro. To trigger, press the button, which lights momentarily to indicate that the function has been activated.

3) USB Port

Use the **USB Port** to connect a customer-supplied USB thumb drive, for system functions such as backup, restore, and updating software.

Please note the following important points regarding the **Custom Control Section**:

- Additional USB ports are available on the rear of the control panel. Refer to the [“Control Panel Rear”](#) section on page 86 for details.

Note

Full Custom Control functionality is not available in release 1.0. Only “system” functions such as **ALL TRAN**, **FRZ**, **UNFRZ**, etc., are available. In Chapter 7, refer to the [“Using Custom Control Functions”](#) section on page 300 for details.

3. Control Panel Orientation

Control Panel Descriptions

Memory Section

The **Memory Section** enables you to store switcher setups to memory, and recall setups from memory back to the panel. One thousand registers are provided (1 through 1000). In Chapter 7, refer to the [“Working with Memory Registers”](#) section on page 291 for details.

The figure below illustrates the **Memory Section**.

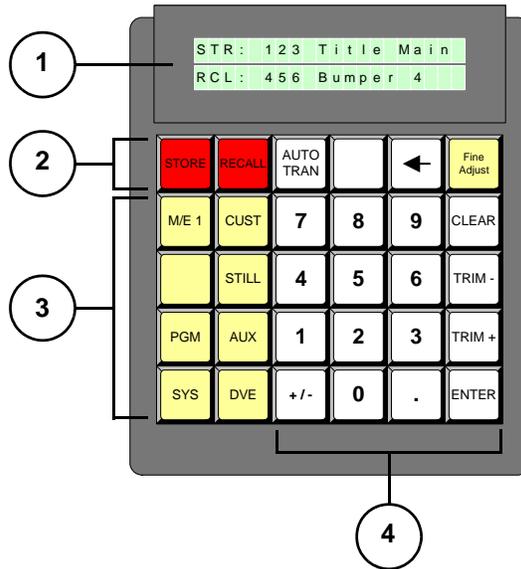


Figure 3-20. Memory Section

1) Memory Display	3) Module Section
2) Function Section	4) Keypad

Following are descriptions of each section:

1) Memory Display

The figure below illustrates the **Memory Display**.

Store Entry Register — STR: 123 Title Main
 Recall Entry Register — RCL: 456 Bumper 4

Figure 3-21. Memory Display (sample)

- ~ The top line indicates the last memory register that was stored, e.g., **STR: 123**. The letters **STR** are constant, followed by the “store” entry register, and the register description (as entered via the **Memory Menu**).
- ~ The bottom line indicates the last memory register that was recalled, e.g., **RCL: 456**. The letters **RCL** are constant, followed by the “recall” register, and the register description (as entered via the **Memory Menu**).

The following rules apply:

- ~ When you press **STORE** or **RECALL** and enter numbers from the keypad, the appropriate register clears, and digits shift left as you type.

3. Control Panel Orientation

Control Panel Descriptions

- ~ If you press **CLEAR**, the appropriate register clears and a dash appears. However, the function (store or recall) remains active, along with the selected modules.
- ~ If you turn off the **STORE** or **RECALL** button prior to pressing **ENTER**, you effectively cancel the operation, and the appropriate register returns to its previous value.

2) Function Section

The two buttons in the **Function Section** determine the memory function that you want to perform. Only one button can be selected at a time.



- ~ To store a switcher setup in memory:
 - Press **STORE** to initiate the procedure.
 - Select the module(s) to be included in the register.
 - Enter a register number.
 - Press **ENTER**.



- ~ To recall a switcher setup from memory:
 - Press **RECALL** to initiate the procedure.
 - Enter a register number.
 - Press **ENTER**.

Note

It is not necessary to select modules for a recall. When you press **RECALL** and enter digits, the module buttons associated with the stored register(s) will automatically light.

- ~ To cancel a “store” or “recall” function, turn the **STORE** or **RECALL** button off, prior to pressing **ENTER**.
- ~ To display the **Memory Menu** on the **Touch Screen**, press and hold either **STORE** or **RECALL**.

In Chapter 7, refer to the “[Working with Memory Registers](#)” section on page 291 for more information.

3) Module Section

The eight buttons in the **Module Section** select the switcher modules and functions to be included in the selected store or recall operation. Please note:

- ~ Each button is a toggle — press to enable, press again to disable. The buttons are *not* mutually exclusive.
 - For a **store** procedure, one or more modules must be selected, and any combination can be included in the memory register.
 - For a **recall** procedure, you cannot add modules to a register already stored, but you *can* remove modules from a recall.
- ~ It is not necessary to select modules for a recall procedure. When you press **RECALL** and enter digits, the modules associated with the stored register(s) will automatically light.

Following are descriptions of each button in the **Module Section**:



- ~ Press **M/E 1** to include the entire M/E 1 bank in a store procedure, or remove the bank from a recall procedure. Using the **Memory Menu**, if desired, you can elect to include or exclude certain sub-sections of M/E 1 in the procedure.

3. Control Panel Orientation

Control Panel Descriptions



~ Press **PGM** to include the entire PGM bank in a store procedure, or remove the bank from a recall procedure. Using the **Memory Menu**, if desired, you can elect to include or exclude certain sub-sections of the PGM bank in the procedure.



~ Press **SYS** to include system-related functions (such as input mappings and input setups) in the selected store procedure, or remove the functions from a recall procedure. Using the **Memory Menu**, if desired, you can elect to include or exclude certain system sub-functions.



~ The **CUST** button is not available in release 1.0.



~ The **STILL** button is not available in release 1.0.



~ Press **AUX** to include all Aux bus assignments currently on the panel in a store procedure, or remove the buses from a recall procedure. Using the **Memory Menu**, if desired, you can elect to include or exclude certain individual Aux buses.



~ The **DVE** button is not available in release 1.0.

Important

When working with memory registers, the system will not automatically display the **Memory Menu** unless you navigate to the menu on the **Touch Screen**, or press and hold the **STORE** or **RECALL** button.

Please note the following important references:

- ~ In Chapter 5, refer to the "[Memory Menu](#)" section on page 157 for complete details on all switcher memory functions.
- ~ In Chapter 7, refer to the "[Working with Memory Registers](#)" section on page 291 for more information about memory registers.

4) Keypad

The **Keypad** includes buttons that are arranged in a manner similar to the **Touch Screen**'s keypad. The following functions are context sensitive:

- ~ When **STORE** or **RECALL** is lit, you can enter memory registers (from 1 through 1000).
- ~ When a keypad appears on the **Touch Screen**, you can enter and trim values for numeric functions. In this mode, the physical **Keypad** works in parallel with the **Touch Screen**'s keypad — either can be used for entry, depending on your preference.

Following are descriptions of each **Keypad** button:



~ The **AUTO TRAN** button is not available in release 1.0.



~ Press **BACKSPACE** (←) during a numeric entry process to clear the register by one digit with each press.

3. Control Panel Orientation

Control Panel Descriptions



- ~ Press **FINE ADJUST** to change the sensitivity of the knobs and the **Joystick**.
 - When **off**, adjustment is coarse.
 - When **on**, adjustment is fine.



- ~ Press **CLEAR** during a numeric entry process to clear the entire register. A dash (–) appears in the register, but the selected mode (store or recall) and all selected modules remain lit.
Press and hold **CLEAR** to cancel the current store or recall function completely. The **STORE** or **RECALL** button automatically turns off.



- ~ Enter an offset value using the numeric buttons, then press **TRIM -** to subtract from the parameter's current value. For example, if a parameter's value is **100**, press **10**, **TRIM -**, to calculate **90**. Pressing **ENTER** is not required, and the "trim" value remains in the register, enabling you to trim repeatedly by the same offset.

In Chapter 5, see the "[Using the Keypad](#)" section for details.

Note

The **TRIM -** function is only applicable when a Touch Screen **Keypad** is active. It does not apply to memory registers.



- ~ Enter an offset value using the numeric buttons, then press **TRIM +** to add to the parameter's current value. For example, if a parameter's value is **100**, press **10**, **TRIM +**, to calculate **110**. Pressing **ENTER** is not required, and the "trim" value remains in the register, enabling you to trim repeatedly by the same offset. In Chapter 5, refer to the "[Using the Keypad](#)" section on page 130 for additional details.

Note

The **TRIM +** function is only applicable when a Touch Screen **Keypad** is active. It does not apply to memory registers.



- ~ Press the numeric buttons **0** through **9** to enter numbers for memory registers and other functions in the normal manner. Numbers shift left in the register as you enter them.



- ~ Press **+/-** to invert the numeric entry in the register. For example, to change the entry from **+ 350** to **- 350**, press **+/-**.

Note

The **+/-** button is only applicable when certain **Touch Screen** keypad functions that accept negative values are active. The **+/-** button does not apply to memory registers.



- ~ Press the decimal button (.) as required for numeric entries that accept decimal values.

Note

The decimal button is only applicable when certain **Touch Screen** keypad functions that accept decimal values are active. The button does not apply to memory registers.

3. Control Panel Orientation

Control Panel Descriptions



- ~ Press **ENTER** to complete a store, recall, or numeric entry function. For store and recall functions, once pressed, the selected modules are stored to memory or recalled to the panel, and all lit buttons in the **Memory Section** turn off.

Joystick

The **Joystick** is a three axis controller that is used to adjust a variety of switcher parameters. The figure below illustrates the **Joystick** and its three axes of control:

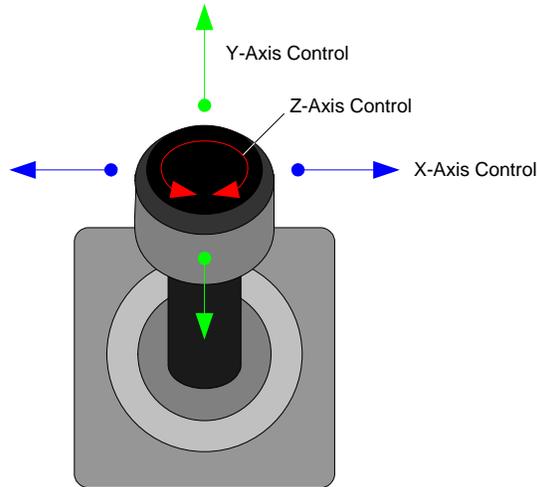


Figure 3-22. Joystick

For example, when a PIP is selected, the **Joystick** can be assigned to manipulate the PIP's size and position as follows:

- **X-Axis Control** — Move the Joystick left and right to move the PIP left and right, respectively.
- **Y-Axis Control** — Move the Joystick up and down to move the PIP up and down.
- **Z-Axis Control** — Twist the Joystick's top knob clockwise and counterclockwise to size the PIP larger or smaller.

3. Control Panel Orientation

Control Panel Rear

Control Panel Rear

The figure below illustrates the rear of the control panel:

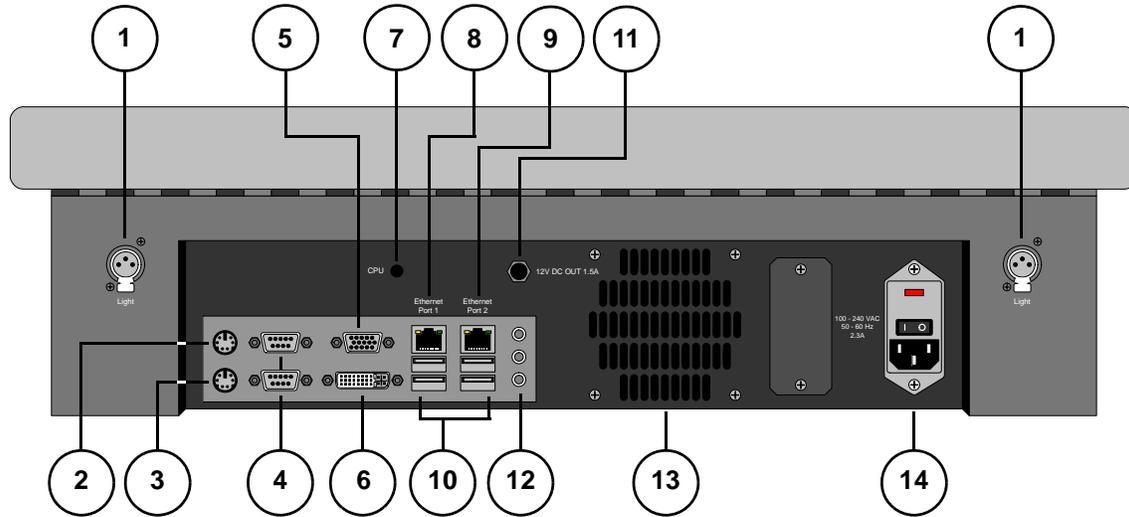


Figure 3-23. Control Panel Rear

1) Light Connectors	6) DVI Connector	11) DC Power Out
2) Mouse Port	7) CPU Switch	12) Audio Connectors
3) Keyboard Port	8) Ethernet Port 1	13) Fan
4) Com Ports	9) Ethernet Port 2	14) AC Power
5) VGA Connector	10) USB Ports	

Following are descriptions of each rear panel connector:

1) Light Connectors

One **XLR Connector** is provided on each side of the rear panel for the low-voltage “script” lights. The knob marked “**Light**” on the top of the control panel adjusts the brightness.

2) Mouse Port

The **Mouse Port** is not supported. If required, use an available **USB** port for a mouse connection.

3) Keyboard Port

The **Keyboard Port** is not supported. If required, use an available **USB** port for a keyboard connection.

4) Com Ports

The two 9-pin D **Com** connectors are not used.

5) VGA Connector

One 15-pin D **VGA** connector is provided for the control panel's analog output. The output enables you to view the menu system on an external non-touch screen monitor, if required. In Appendix A, refer to the “[Analog 15-pin D Connector](#)” section on page 314 for pinout details.

3. Control Panel Orientation

Control Panel Rear

6) DVI Connector

One **DVI** connector is provided to connect the control panel to the **Touch Screen**. Use the supplied cable harness for interconnection. In Appendix A, refer to the "[DVI-I Connector](#)" section on page 315 for pinout details.

7) CPU Switch

The **CPU Switch** is located inside the small hole. This switch is designed for qualified service personnel only.

Important

Do not use this switch unless instructed to do so by Barco Customer Service personnel.
--

8) Ethernet Port 1

One RJ-45 connector is provided for 10/100BaseT **Ethernet** communications. Port 1 connects to the **FSN-1400**, either directly or via an Ethernet Switch. By default, the following conditions are set:

- ~ DHCP = **OFF**
- ~ Default IP address: **192.168.0.5**
- ~ Default Netmask: **255.255.255.0**

The user can use the default address, or set a different address. In Appendix A, see the "[Ethernet Connector](#)" section on page 316 for pinouts.

9) Ethernet Port 2

One RJ-45 connector is provided for 10/100BaseT **Ethernet** communications. Port 2 can be connected to an outside network, or to your facility's "house" network. By default, the following conditions are set:

- DHCP = **ON**

An IP address can be obtained automatically from the outside network. In Appendix A, see the "[Ethernet Connector](#)" section on page 316 for pinouts.

10) USB Ports

Four **USB** ports are provided. Use one of the four ports to connect data to the **Touch Screen**, using the supplied cable harness for interconnection. The remaining ports can be used for connecting customer-supplied USB drives, or if required, to connect a mouse and keyboard.

11) DC Power Out

One **DC Power Out** connector is provided for the **Touch Screen** power. Use the supplied cable harness for interconnection.

12) Audio Connectors

The three audio connectors are not supported.

13) Fan

One **Fan** is provided for control panel cooling. To prevent overheating, do not block the vent.

14) AC Power

One **AC Connector** is provided for connecting the control panel to AC. The integral switch turns the panel on and off. In Appendix A, refer to the "[Physical and Electrical Specifications](#)" section on page 310 for power details.

3. Control Panel Orientation

Control Panel Bottom

Control Panel Bottom

The figure below illustrates the bottom surface of the control panel:

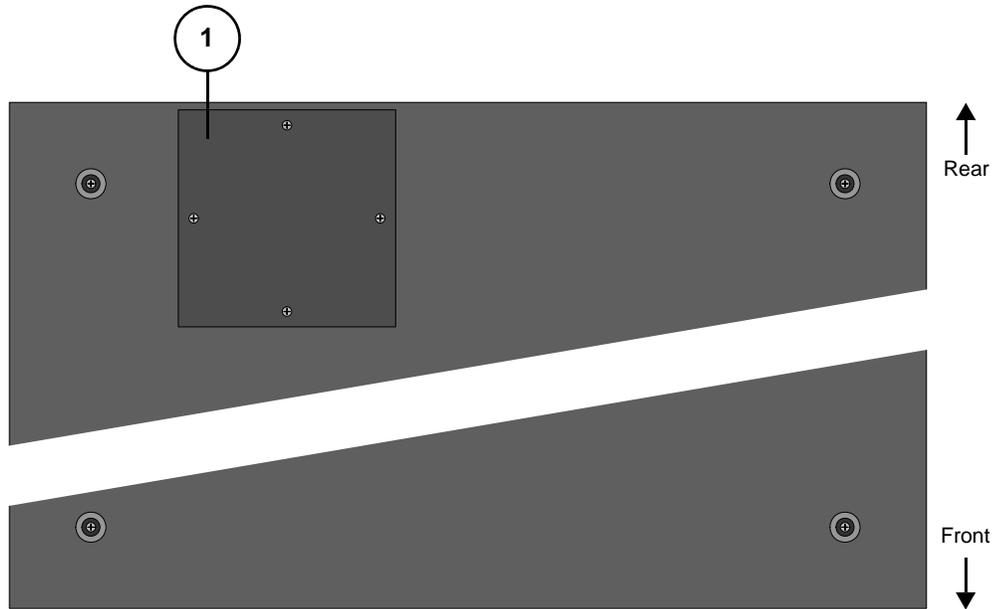


Figure 3-24. Control Panel bottom surface

1)	Access Plate	
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Following are descriptions of each bottom surface component:

1) Access Plate

One **Access Plate** is provided on the bottom of the control panel. In the event that you need to change the control panel's flash card, contact Barco **Customer Support**. In Appendix B, refer to the "[Contact Information](#)" section on page 326 for details.

3. Control Panel Orientation

Touch Screen Connector Panel

Touch Screen Connector Panel

The figure below illustrates the connector panel on the bottom of the **Touch Screen**:

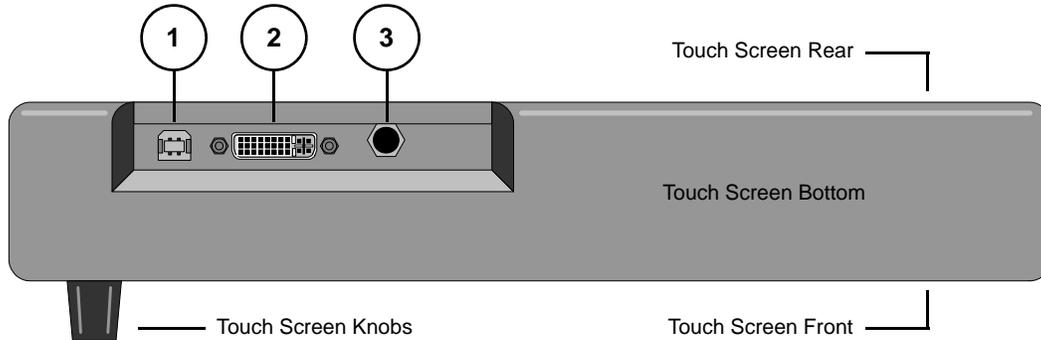


Figure 3-25. Touch Screen Connector Panel

1) USB Port	2) DVI Connector	3) CPU Switch
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Following are descriptions of each connector:

1) USB Port

One **USB Port** is provided for the Touch Screen's data input from the control panel. Use the supplied cable harness for interconnection.

2) DVI Connector

One **DVI** connector is provided for the Touch Screen's video input from the control panel. Use the supplied cable harness for interconnection. In Appendix A, refer to the "[DVI-I Connector](#)" section on page 315 for pinout details.

Note

This is a digital only input. There are no analog components on the cable.

3) DC Power In

One **DC Power In** connector is provided for the Touch Screen's power input. Use the supplied cable harness for interconnection.

3. Control Panel Orientation

Touch Screen Connector Panel

4. Installation

In This Chapter

This chapter provides detailed instructions for installing FSN Series hardware. The following topics are discussed:

- [Safety Precautions](#)
- [Shipping Information](#)
- [Unpacking and Inspection](#)
- [Site Preparation](#)
- [Cable and Adapter Information](#)
- [Control Panel Installation](#)
- [Touch Screen Installation](#)
- [Display Mount Options](#)
- [FSN-1400 Rack-Mount Procedure](#)
- [FSN-1400 System Connections](#)
- [Card and I/O Installation](#)
- [Signal Connections](#)
- [Analog Format Connection Table](#)

Please note the following important points:

- As you follow the installation instructions in this chapter, remember the following important term:
 - ~ **Native Resolution** — The resolution to which all processing is set within the switcher frame, e.g., SD-SDI (SMPTE 259M, Level C) or HD-SDI (SMPTE 292M).
- In Chapter 6, refer to the “[Reference Video and Output Setup](#)” section on page 248 for instructions on setting the native resolution.

Note

Once you have reviewed all of the sections in this chapter, please continue with Chapter 5, “[Menu Orientation](#)” on page 117.

4. Installation

Safety Precautions

Safety Precautions

For all FSN Series installation procedures, observe the following important safety and handling rules to avoid damage to yourself and the equipment:

- To protect users from electric shock, ensure that the power supplies for each unit connect to earth via the ground wire provided in the AC power cord.
- AC Socket-outlets should be installed near the equipment and be easily accessible.

Shipping Information

All FSN Series systems are shipped in separate boxes as follows:

- **Box 1**
 - ~ Control panel
 - ~ Script Lights
- **Box 2**
 - ~ Touch Screen
 - ~ Touch Screen Stand
- **Box 3**
 - ~ FSN-1400 chassis
 - ~ 1 x **M/E** card
 - ~ 1 x **System** card
 - ~ 1 x **NIC** (installed in slot 1)
 - ~ 1 x **UIC** (installed in slot 7)
 - ~ Blank panels
 - ~ 1 x power supply
- If additional **UICs** and **NICs** are ordered, each is shipped in its own box, along with its associated rear I/O panel.
- If a redundant power supply is ordered, it is shipped in its own box.

Unpacking and Inspection

Inspect the shipping boxes for damage. If you find any damage, notify the shipping carrier immediately for all claims adjustments. As you open each box, compare its contents against the packing slips. If you find any shortages, contact your Barco sales representative.

Once you have removed all the components from their packaging and checked that all the listed components are present, inspect each unit to ensure there was no damage during shipping. If there is damage, notify the shipping carrier immediately for all claims adjustments.

Site Preparation

The environment in which you install your FSN Series switcher should be clean, properly lit, free from static, and have adequate power, ventilation, and space for all components.

Cable and Adapter Information

The tables below provide information regarding cables and adapters.

- [FSN-1400 Cables](#)
- [FSN-150 Cables](#)
- [Optional Adapters](#)

FSN-1400 Cables

The following cables are included with the FSN-1400:

Table 4-1. FSN-1400 Cables

Cable / Adapter	Description	Quantity
AC Power Cord	7 foot, 10A (US Power Cord)	1
AC Power Cord	7 foot, 10A (European Power Cord)	1

FSN-150 Cables

The following cables are included with the FSN-150:

Table 4-2. FSN-150 Cables

Cable	Description	Quantity
AC Power Cord	7 foot, 10A (US Power Cord)	1
AC Power Cord	7 foot, 10A (European Power Cord)	1
Monitor Cable Harness	2 meter, harness includes 1 x DVI-D, 1 x USB, 1 x Power	1

Optional Adapters

The following adapters are optional:

Table 4-3. Optional adapters

Cable	Description
Tally "Y" Adapter	DB-50 Female to 2 x DB-25 Male

4. Installation

Control Panel Installation

Control Panel Installation

The figure below illustrates a simplified diagram of the **Control Panel's** rear connectors, and the required cabling. Use this figure for reference during installation.

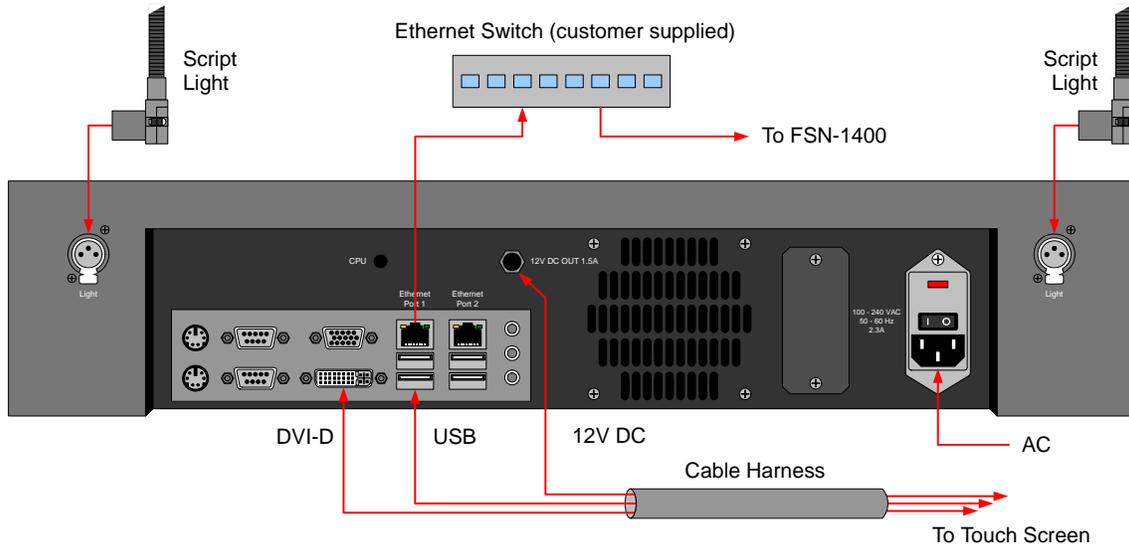


Figure 4-1. Control Panel Installation

■ Use the following steps to install the **Control Panel**:

1. Place the **Control Panel** on your desk or console. Place the assembled **Touch Screen**, stand and cable harness adjacent to the panel, in the desired location.
2. Connect the **USB**, **DVI-D** and **12V DC** cables to their respective connectors on the rear of the **Control Panel**.

Note

Although you can use any of the four available **USB** ports for the **USB** cable connection, it is recommended that you use the port closest to the **DVI-D** connector.

3. Using standard Ethernet cables, connect **Ethernet Port 1** on the **Control Panel** to the customer supplied **Ethernet Switch**. Connect the **FSN-1400's Ethernet Port** to the **Ethernet Switch**.

Note

Although the use of the **Switch** is recommended, you can use a direct Ethernet connection between the **FSN-1400** and the **Control Panel** as an alternate method.

4. Connect the two supplied **Script Lights** to the XLR connectors on the rear of the **Control Panel**.

4. Installation

Touch Screen Installation

5. Connect the supplied **AC Power Cord** to the AC connector on the rear of the **Control Panel**, and then to an AC outlet.

Note

Connect the Control Panel to a properly rated supply circuit. Refer to the "[Power Cord/Line Voltage Selection](#)" section on page 102 for details.

Touch Screen Installation

The figure below illustrates a simplified rear view of the **Touch Screen** and the supplied desk stand. Use this figure for reference during the following procedure.

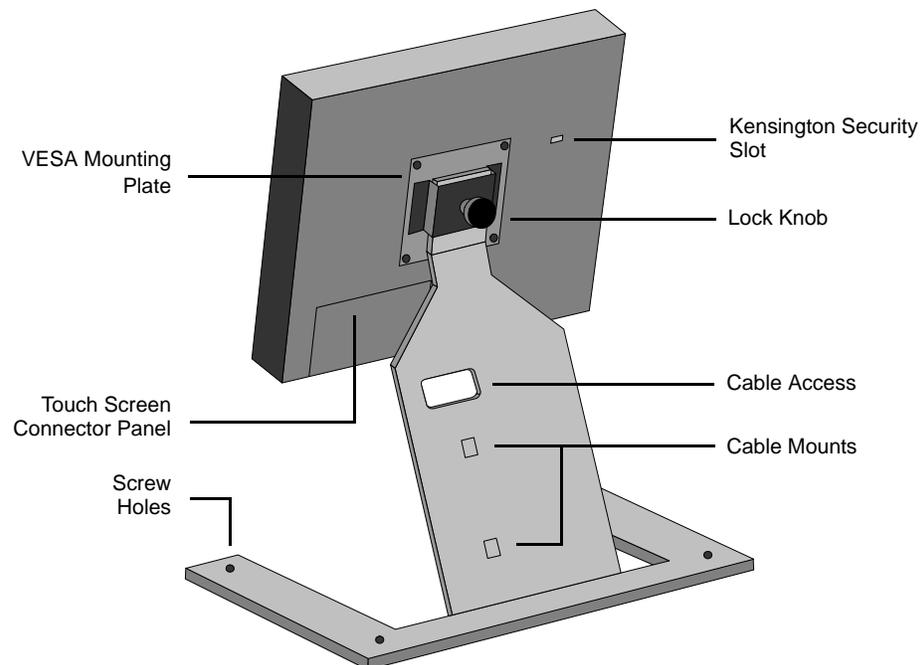


Figure 4-2. Touch Screen and Desk Stand

- Use the following steps to install the **Touch Screen** and desk stand:
 1. Using the supplied screws, attach the VESA mounting plate to the rear of the **Touch Screen**.
 2. Thread the supplied cable harness through the cable access hole in the desk stand. Ensure that the end with the large USB connector points towards the **Touch Screen**. Be sure to leave an ample service loop.

4. Installation

Touch Screen Installation

3. Place the **Touch Screen** face down on a table (careful of the knobs), and connect the **USB**, **DVI-D** and **12V DC** cables to their respective connectors on the **Touch Screen's** connector panel.

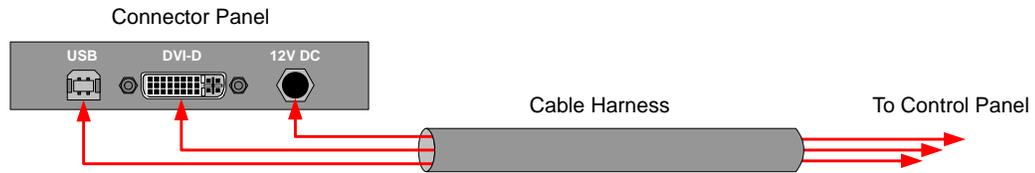


Figure 4-3. Touch Screen Connectors

4. Lift the **Touch Screen**, then carefully slide the top stem of the desk stand through the slot in the VESA mounting plate. Adjust the height of the monitor as required, then secure the mounting plate to the stand using the lock knob.
5. Secure the cable harness to the stand using the cable mounts in the desk stand. Use Velcro[®] or nylon cables ties as required.

Note

A Kensington[®] Security Slot is provided on the **Touch Screen's** rear panel. This slot can be used to attach an anti-theft system, such as a lock-and-cable apparatus. Visit your local computer retailer for details.

Display Mount Options

The FSN Series' **Touch Screen** display includes a standard VESA mount. A basic desk stand is provided with the system, but if desired, you can purchase your own VESA mount articulated monitor arm, such as the sample shown below:



Figure 4-4. Sample Monitor Arm: Ergotron® LX

For your reference, following is a partial list of manufacturers and distributors, from which you can select a VESA mount monitor arm to suit your requirements:

- **Ergotron:** www.ergotron.com
- **Humanscale:** www.humanscale.com
- **LCD Arms:** www.lcdarms.com
- **Vartech Systems:** www.vartechsystems.com
- **Peerless Mounts:** www.peerlessmounts.com

Note

An articulated monitor arm is not supplied.

4. Installation

FSN-1400 Rack-Mount Procedure

FSN-1400 Rack-Mount Procedure

The FSN-1400 chassis is designed to be rack mounted and is supplied with front rack-mount hardware. Please note the following important points:

- The FSN-1400 is 6RU in height.
 - When rack mounting the unit, remember that the maximum ambient operating temperature is 40 degrees C.
 - Leave sufficient front and rear space to ensure that airflow through the FSN-1400 is not restricted.
 - When installing equipment into a rack, distribute the units evenly to prevent hazardous conditions that may be created by uneven weight distribution.
 - Connect the FSN-1400 only to a properly rated supply circuit.
 - Reliable grounding (earthing) of rack-mounted equipment should be maintained.
 - Rack mount the FSN-1400 from the front rack ears using four rack screws (not supplied). Threads may be metric or otherwise, depending upon the rack type.
- Use the following steps to rack mount the FSN-1400:
1. At a minimum, an FSN-1400 chassis weighs 35 pounds (15.87 kg). To avoid injury, it is recommended that two people rack mount the chassis.
 2. The FSN-1400 ships with side rails installed, which when properly adjusted, assist with the distribution of chassis (and cable) weight within your rack. Use the following steps to properly adjust the side rails:

- a. Measure and install the two supplied mounting brackets on your rear rack rails.



Figure 4-5. Rear rail mounting bracket

- b. Measure the distance between the front and rear rack rails. Remove the four mounting screws that secure each side rail to the FSN-1400, then adjust the spacing of each side rail as necessary.

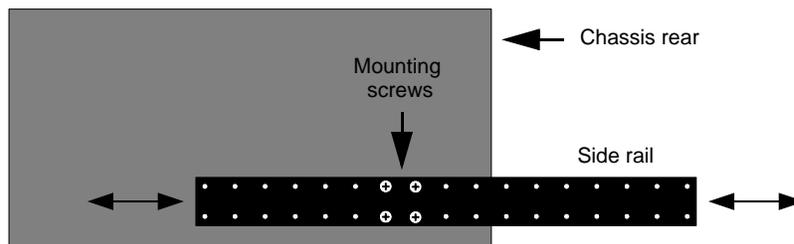


Figure 4-6. Side rail adjustment

- c. Re-install the mounting screws. When properly adjusted, the end of each side rail will protrude through the slot in the rear mounting bracket, once the chassis is rack mounted.

4. Installation

FSN-1400 Rack-Mount Procedure

3. To facilitate easy rack mounting, each rack ear on the front of the FSN-1400 is equipped with a special “keyhole” slot on the lower hole, as shown below.

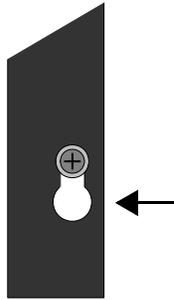


Figure 4-7. Rack Ear Keyhole

To take advantage of this feature, ensure that there is at least 1/2” of clearance above the chassis’ intended 6RU location.

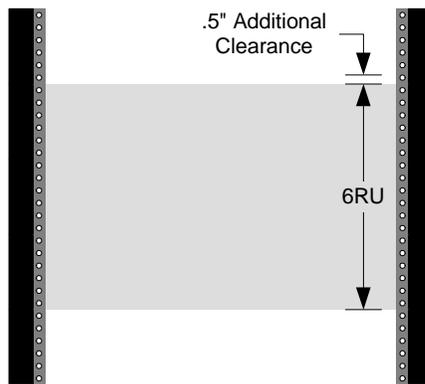


Figure 4-8. Equipment Rack Layout

4. For the FSN-1400’s two keyhole slots, measure and install two rack screws in your equipment rack’s front rails. Allow each screw to protrude approximately 3/4” from the surface of the rails.
5. Lift the chassis, and while supporting it, slide the side rails through the slots in the rear mounting brackets.
6. While continuing to support the chassis, slide the screws (in the front rails) through the two keyholes, and let the chassis settle up into the keyhole slots.
7. Tighten the two lower screws, then install and tighten the two uppers screws in the rack rail.

4. Installation

FSN-1400 System Connections

FSN-1400 System Connections

The figure below illustrates the connections on the **System** card's I/O panel, plus the power connections. Use this figure for reference during installation.

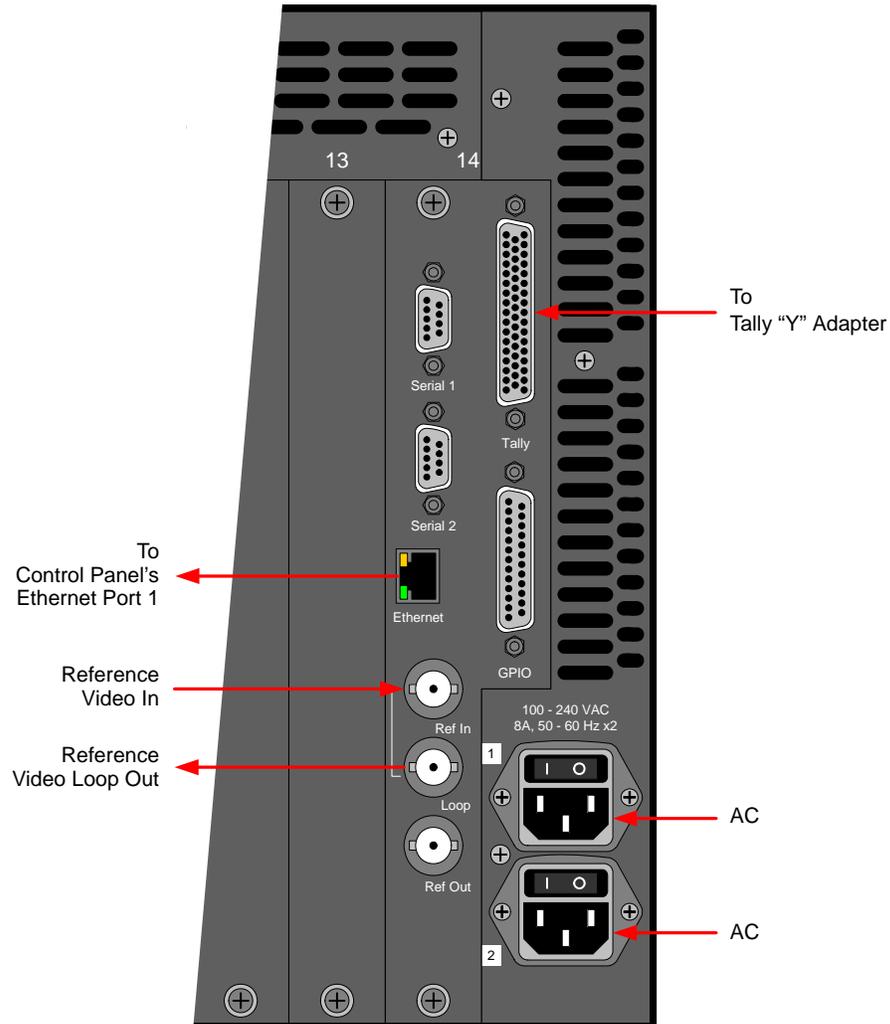


Figure 4-9. System card and power connections

- Use the following steps to install "system" connections on the **FSN-1400**:
 1. Ensure that the **FSN-1400** is properly rack mounted. If not, refer to the ["FSN-1400 Rack-Mount Procedure"](#) section on page 98 for instructions.
 2. On the **System** card's I/O panel, ensure that the **Ethernet Port** is connected to the **Ethernet Switch**, and the **Switch** is connected to **Ethernet Port 1** on the control panel.

Note

As an alternate method, you can use a direct Ethernet connection between the **FSN-1400** and the **Control Panel**.

4. Installation

FSN-1400 System Connections

3. (Optional) Using a BNC cable, connect an analog reference video input to the **Ref In** connector.
 - ~ Accepted signals are black burst, SMPTE bi-level sync and tri-level sync.
 - ~ Computer sync is not an accepted signal.

Note

In Appendix A, refer to the "[Reference Video Input Specifications](#)" section on page 309 for detailed information about the allowed frame rates for the reference input.

4. (Optional) Using a BNC cable, connect the **Loop** connector to the reference video input on the next device in your video system.

Important

If the reference **Loop** connection is not used, connect a 75 ohm terminator to the connector.

5. (Optional) Connect the supplied **Tally "Y" Adapter** to the **Tally** connector. This adapter splits the DB-50 connector into two DB-25 female connectors, in order to facilitate your individual tally connections. Next, connect the tally relays to your video devices as required. In Appendix A, refer to the "[Tally Connector](#)" section on page 318 for pinouts.
6. For AC connections, one **AC** connector is provided for each FSN-1400 power supply. Please note:
 - ~ One supply is standard, the redundant supply is optional.
 - ~ In a redundant configuration with both supplies installed, the FSN-1400 can be powered from two different circuit breakers.

Open the FSN-1400 front door and note the number of power supplies installed. If only one supply is installed, note its location (in the top or bottom slot).

7. Connect the supplied **AC Power Cord(s)** to the AC connectors on the rear of the FSN-1400, and then to AC outlet(s).
 - ~ If a power supply is installed in the top slot, use **AC Connector 1**.
 - ~ If a power supply is installed in the bottom slot, use **AC Connector 2**.

Note

Connect the FSN-1400 to a properly rated supply circuit. Reliable grounding of rack-mounted equipment should be maintained. Refer to the "[Power Cord/Line Voltage Selection](#)" section on page 102 for details.

4. Installation

FSN-1400 System Connections

Power Cord/Line Voltage Selection

The FSN-1400 is rated to operate with the following specifications:

- **Input Power:** 100-240 VAC, 50-60 Hz
- **Power Consumption:** 800 watts maximum

The FSN-150 is rated to operate with the following specifications:

- **Input Power:** 100-240 VAC, 50-60 Hz
- **Power Consumption:** 150 watts maximum

Each FSN Series component performs line voltage selection automatically, and no user controls are required. The AC power cords must be accessible so that they can be removed during field servicing.



Warning

When the FSN-1400 or FSN-150 control panel is used in the 230-volt mode, a UL listed line cord rated for 250 volts at 15 amps must be used and must conform to IEC-227 and IEC-245 standards. This cord will be fitted with a tandem prong-type plug.

The rear panel ON/OFF switch does not disconnect the unit from input AC power. To facilitate disconnection of AC power, the power cord must be connected to an accessible outlet near the unit.

Building Branch Circuit Protection (minimum requirements):
For 115 V use 20 A, for 230 V use 8 A.



Figure 4-10. Tandem Prong-type Plug

Avertissement

La choix de la ligne de voltage se réalise automatiquement par le FSN Series Transformateur Graphique. On n'a pas besoin du controller usager pour la choix de la ligne de voltage.

Warnung

Das FSN Series gerät mu beim Anschlu an 240V ~ mit einer vom VDE auf 250V/10A geprüften Netzleitung mit einem Schukostecker ausgestattet sein.

Card and I/O Installation

The following cards are pre-installed in the FSN-1400 chassis:

- **System** card: slot 14
- **M/E** card: slot 8
- 1 x **NIC**: slot 1
- 1 x **UIC**: slot 7

Additional **NICs** and **UICs** can be installed according to the table below. Please note the following important recommendations:

- Install additional **UICs** in slot 6, then 5, etc.
- Install additional **NICs** in slot 2, then 3, etc.
- In this way, the two “flexible” slots (3 and 4), can be reserved for either **NICs** or **UICs** until needed.

The table below outlines card slot allocation within the FSN-1400 chassis. Use this chart for reference during the following procedures, and remember that all cards and I/O panels are hot-swappable.

Note

Only the currently available cards are listed in the table.

Table 4-4. FSN Series chassis card slot allocations

Card Type	Max. # of Cards per Chassis	Slot Number(s)
System (Required card)	1	14
M/E (Required card)	1	8
NIC (Native Input Card), 8-channel	4	1 through 4
UIC (Universal Input Card), 2-channel	5	3 through 7

Use the procedures in the following sections to insert (and extract) cards, as required:

- [I/O Panel Insertion](#)
- [I/O Panel Removal](#)
- [Card Insertion](#)
- [Card Removal](#)

4. Installation

Card and I/O Installation

I/O Panel Insertion

- To insert an I/O panel:
 1. Use [Table 4-4](#) on page 103 to verify the slots in which the cards and their corresponding I/O panels can be installed. Front and rear slot numbers will match. For example, if you install a **NIC** in front slot **1**, its corresponding I/O panel must be installed in rear slot **1**.
 2. If a blank I/O panel is installed in the target slot, loosen the two captive thumb screws in the blank panel, remove it, and store it safely.
 3. Ensure that the selected I/O panel is properly oriented:
 - ~ **NIC**: orient the **SDI** label at the top.
 - ~ **UIC**: orient the label “**1**” at the top.
 4. Using the nylon guides in the chassis for alignment, carefully insert the I/O panel into the chassis. Be sure to push on both the top and bottom thumb screws simultaneously, until the card is fully seated in the FSN-1400 chassis connector.

Caution

Always push both thumb screws simultaneously. If you only push on one, you can damage the panel or bend a pin.

5. Once the panel is fully seated, tighten the two thumb screws.
6. Repeat from step 1 for all additional I/O panels that you want to install.

I/O Panel Removal

- To remove an I/O panel:
 1. Loosen the two captive thumb screws in the I/O panel, and carefully remove it from the FSN-1400 chassis. Store the panel safely for later use.
 2. Install a blank panel in its place.

Important

Unused rear I/O slots must always have blank panels installed.

3. Repeat from step 1 for all additional I/O panels that you want to remove.

Card Insertion

- To insert a card:
 1. Use [Table 4-4](#) on page 103 to verify the slots in which the card can be installed.
 2. Once verified, open the chassis front door and remove it (if desired). In Chapter 2, refer to the [“Chassis Front Door”](#) section on page 31 for details.
 3. Orient the card so that the label (e.g., **UIC** or **NIC**) is at the top. Ensure that both ejectors are unlatched from the slots in the card's front plate.
 4. Once unlatched, hold the top ejector up, as shown below. The bottom ejector will automatically fall away from the front of the card.

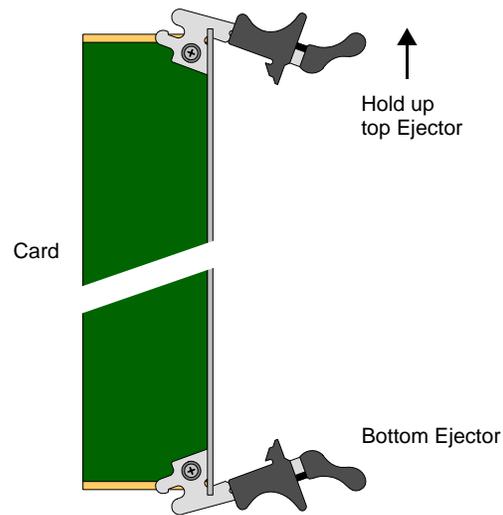


Figure 4-11. Ejector Orientation prior to card insertion

4. Installation

Card and I/O Installation

- Using the nylon guides in the chassis for alignment, carefully insert the card into the chassis until both ejectors engage the rim of the card cage. Each ejector will “automatically” angle towards the middle of the card.

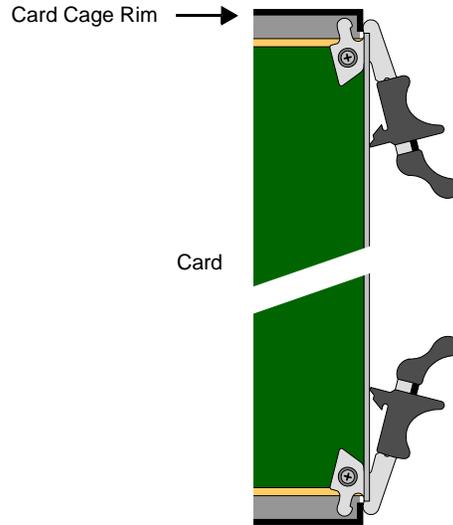


Figure 4-12. Ejectors engaged in card cage rim

- On each ejector, squeeze the two black handles together, then simultaneously push both latches into the slot on the card's front plate — until the card is fully seated in the FSN-1400 chassis.

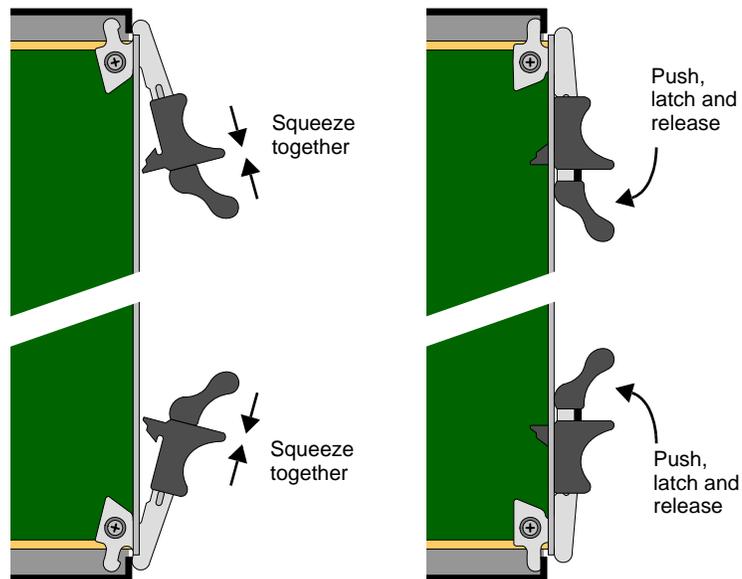


Figure 4-13. Final card insertion

Caution

Always push both latches simultaneously. If you only use one latch, you can damage the card.

4. Installation

Card and I/O Installation

7. Release the handles so that they spring back and lock into place.
8. Repeat from step 1 for all additional cards that you want to install.
9. When complete, re-install the chassis front door, close and secure.

Card Removal

- To remove a card:
 1. Open the chassis front door and remove it (if desired).
 2. For the selected card, simultaneously squeeze the two black handles together on each ejector, then pull the ejectors away from the center of the card.

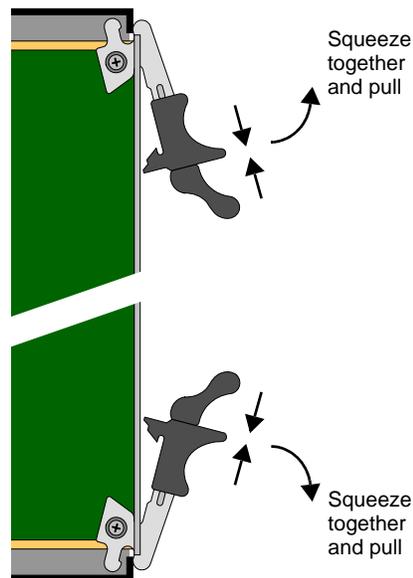


Figure 4-14. Card removal

Caution

Always pull both latches simultaneously. If you only use one latch, you can damage the card.

3. When both latches have disengaged from the chassis, remove the card completely and store it safely in an anti-static bag.

Important

Unused rear I/O slots must always have blank panels installed.

4. Repeat from step 2 for all additional cards that you want to remove.
5. When complete, re-install the chassis front door (if required), close and secure.

4. Installation

Signal Connections

Signal Connections

The following topics are discussed in this section:

- [Output Connections](#)
- [Aux Output Connections](#)
- [External DSK Input Connections](#)
- [Native Input Connections](#)
- [Universal Input Connections](#)
- [Analog Format Connection Table](#)

Output Connections

The figure below illustrates the output connections on the **M/E** card's I/O panel:

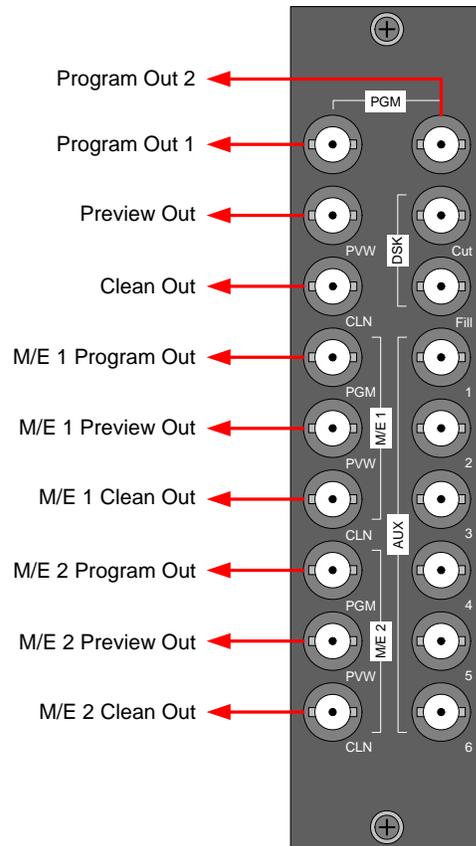


Figure 4-15. Output connections

- Use the following steps to connect output signals from the FSN-1400's **M/E** card.

Note

All connections use BNC cables. All outputs are SDI (either SD-SDI or HD-SDI).

1. The **Program Out 1** and **Program Out 2** signals are identical. Connect to a monitor, and to your target destination device as required.
2. Connect **Preview Out** to a monitor. This output provides the Program bank's "lookahead" preview video. In Chapter 7, refer to the "[Understanding Lookahead Preview](#)" section on page 274 for additional information.
3. Connect **Clean Out** to a monitor or the desired destination. This output provides the system's main clean feed signal. In Chapter 2, refer to the "[Clean Feed Output Selection](#)" section on page 46 for details.
4. Connect **M/E 1 Program Out** to a monitor or the desired destination. This output provides M/E 1's program output signal.
5. Connect **M/E 1 Preview Out** to a monitor. This output provides the Program bank's "lookahead" preview video. In Chapter 7, refer to the "[Understanding Lookahead Preview](#)" section on page 274 for additional information.

4. Installation

Signal Connections

6. Connect **M/E 1 Clean Out** to a monitor or the desired destination. This output provides M/E 1's clean feed signal. In Chapter 2, refer to the "[Clean Feed Output Selection](#)" section on page 46 for details.

Note

M/E 2 outputs are used in conjunction with the FSN-250 control panel, and are not currently implemented.

Please note the following important points:

- All outputs run at the system's selected native output resolution.
- In Chapter 6, refer to the "[Reference Video and Output Setup](#)" section on page 248 for instructions on setting the native resolution.

Aux Output Connections

Aux (auxiliary) buses are extra switching buses that allow video signals to be routed from the FSN-1400 to external equipment such as VTRs, monitors, projectors, etc. The figure below illustrates the Aux output connections on the **M/E** card's I/O panel:

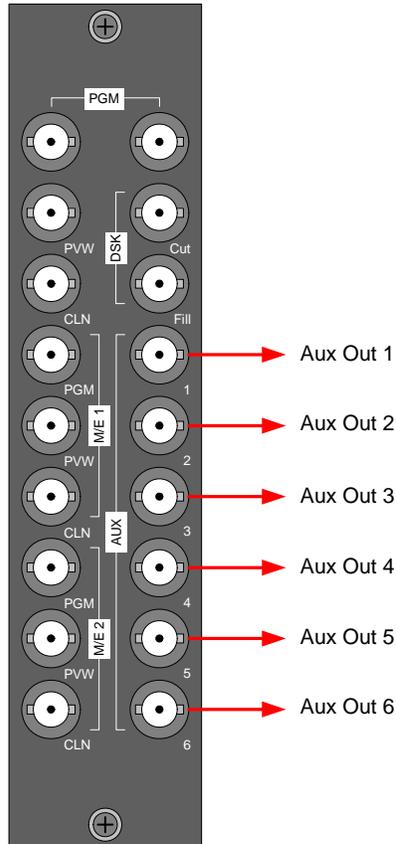


Figure 4-16. Aux output connections

- Use the following steps to connect Aux output signals from the FSN-1400's **M/E** card.

Note

All connections use BNC cables.

1. Connect **Aux Outputs 1** through **6** to your target auxiliary devices or monitors.

Please note the following important points:

- All Aux outputs run at the system's selected native output resolution. In Chapter 6, refer to the "[Reference Video and Output Setup](#)" section on page 248 for instructions on setting the native resolution.

4. Installation

Signal Connections

External DSK Input Connections

The figure below illustrates external DSK input connections on the **M/E** card's I/O panel:

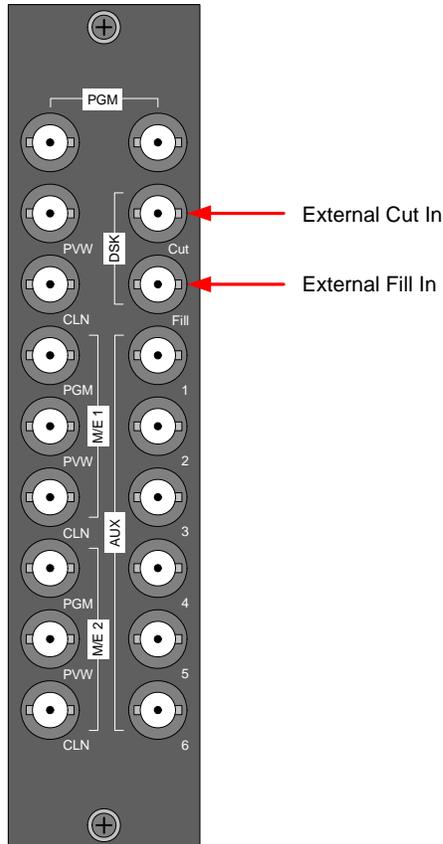


Figure 4-17. External DSK cut and fill connections

- Use the following steps to connect external DSK cut and fill signals to the **M/E** card.

Note

All connections use BNC cables.

1. Connect an external cut signal to the **Cut** connector. This type of signal typically originates from a character generator's **Cut** or **Key** output.
2. Connect an external fill signal to the **Fill** connector. This type of signal typically originates from a character generator's **Fill** or **Video** output.

Please note the following important points:

- The DSK Cut and Fill inputs must be locked to the same video reference as the FSN-1400 chassis. SAV (start of active video) must be within +/- 0.5 lines of frame reference.
- The DSK Cut and Fill signals must be set to the system's native resolution.
- Use the **External DSK Setup Menu** to set up the signals. In Chapter 5, refer to the "[External DSK Setup Menu](#)" section on page 208 for menu details.
- In Chapter 6, refer to the "[External DSK Input Setup](#)" section on page 257 for step-by-step setup instructions.

Native Input Connections

The figure below illustrates native input connections on a **NIC**'s I/O panel:

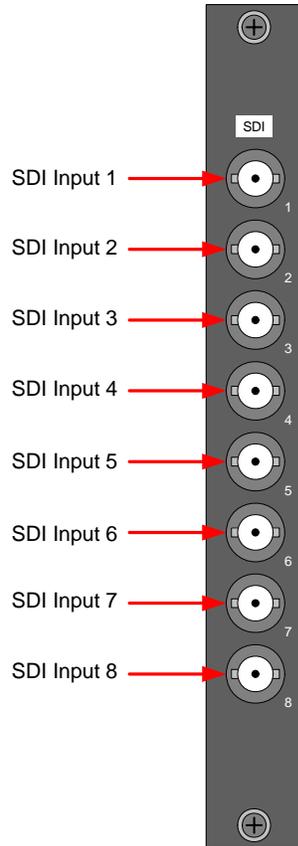


Figure 4-18. Native input connections

- Use the following steps to connect native inputs to a **NIC**.

Note

All connections use BNC cables.

1. Connect SD-SDI or HD-SDI input signals to the **NIC**'s SDI inputs **1** through **8**. All signals must match the system's native resolution, as set on the **Output Setup Menu**. In Chapter 6, refer to the "[Reference Video and Output Setup](#)" section on page 248 for instructions on setting the native resolution.

Please note the following important points:

- Use the **Input Setup Menu** to set up native SDI input signals. In Chapter 5, refer to the "[Input Menu](#)" section on page 187 for menu details.
- In Chapter 6, refer to the "[Native Input Setup](#)" section on page 252 for step-by-step setup instructions.
- If you want to connect an input to the FSN-1400 whose resolution is different than the system's native output resolution, use a **UIC**. Refer to the "[Universal Input Connections](#)" section on page 114 for details.

4. Installation

Signal Connections

Universal Input Connections

The figure below illustrates universal input connections on a **UIC**'s I/O panel:

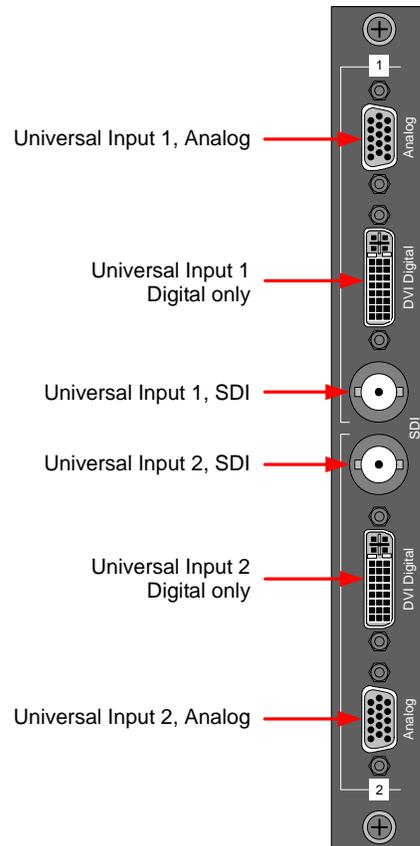


Figure 4-19. Universal input connections

- Use the following steps to connect universal inputs to a **UIC**.
 1. Using an HD-15 cable directly, or an HD-15 to 5 x BNC breakout cable, connect the desired analog input to the **Universal Input 1, Analog** connector.
 2. Using a standard DVI cable, connect the desired digital input to the **Universal Input 1, Digital** connector. The connector accepts digital signals only.
 3. Using a BNC cable, connect the desired SDI signal to the **Universal Input 1, SDI** connector.
 4. Using an HD-15 cable directly, or an HD-15 to 5 x BNC breakout cable, connect the desired analog input to the **Universal Input 2, Analog** connector.
 5. Using a standard DVI cable, connect the desired digital input to the **Universal Input 2, Digital** connector. The connector accepts digital signals only.
 6. Using a BNC cable, connect the desired SDI signal to the **Universal Input 2, SDI** connector.

Please note the following important points:

- You can connect three signals to **UIC Input 1**, and three signals to **UIC Input 2**, but you can only use one signal at a time for each input. However, you can also store setup files for different input combinations, and recall the desired setup to

4. Installation

Signal Connections

the panel. Use the **Input Setup Menu** to set up universal input signals. In Chapter 5, refer to the [“Input Menu”](#) section on page 187 for details.

- In Chapter 6, refer to the [“Universal Input Setup”](#) section on page 254 for step-by-step setup instructions.
- Refer to the [“Analog Format Connection Table”](#) section on page 116 for a chart of analog formats available when using a customer supplied breakout cable.
- In Appendix A, refer to the [“Input and Output Format Tables”](#) section on page 320 for a list of available input formats for the FSN Series.
- The two SDI inputs enable you to connect SD-SDI sources to an HD-SDI system (and vice versa), and scale the source up (or down) to the native resolution.

4. Installation

Signal Connections

Analog Format Connection Table

Each HD-15 analog connector on the **UIC** enables you to input a variety of video formats — including VGA, composite video, S-video and YUV component video.

- For RGB with H and V sync, use the HD-15 connector directly.
- Using a customer supplied HD-15 to 5 x BNC breakout cable, several input combinations are possible. Cells with check marks denote the connections required for the indicated format.

Table 4-1. Analog Input Combinations using Breakout Cable

Breakout Cable Wire Color	Composite Video	S-Video (Y/C)	YUV (YP _b P _r)	RGB Sync on Green	RGB Comp Sync	RGB Separate H V
R		✓ (Chrom)	✓ (P _r)	✓	✓	✓
G	✓	✓ (Lum)	✓ (Lum)	✓	✓	✓
B			✓ (P _b)	✓	✓	✓
H Sync					✓	✓
V Sync						✓

5. Menu Orientation

In This Chapter

This chapter describes all system menus, including the functions that are available, and descriptions of each menu tree (in block diagram format).

The following topics are discussed:

- [Menu Tree](#)
- [Using the Menu System](#)
- [Buttons, Tables and Matrices](#)
- [Using the Keypad](#)
- [Using the Pop-up Keyboard](#)
- [Transition Menu](#)
- [Wipe Menu](#)
- [Keyer Menu](#)
- [Color Background Menu](#)
- [Memory Menu](#)
- [System Menu](#)
- [Help Menu](#)

Note

Once you have reviewed all of the sections in this chapter, please continue with Chapter 6, "[System Setup](#)" on page 241.

5. Menu Orientation

Menu Tree

Menu Tree

Two menu trees are provided in this section. Please use these diagrams for reference as you learn how to operate the system.

- [High Level Menu Tree](#)
- [System Menu Tree](#)

High Level Menu Tree

The figure below illustrates a high-level view of the menu tree.

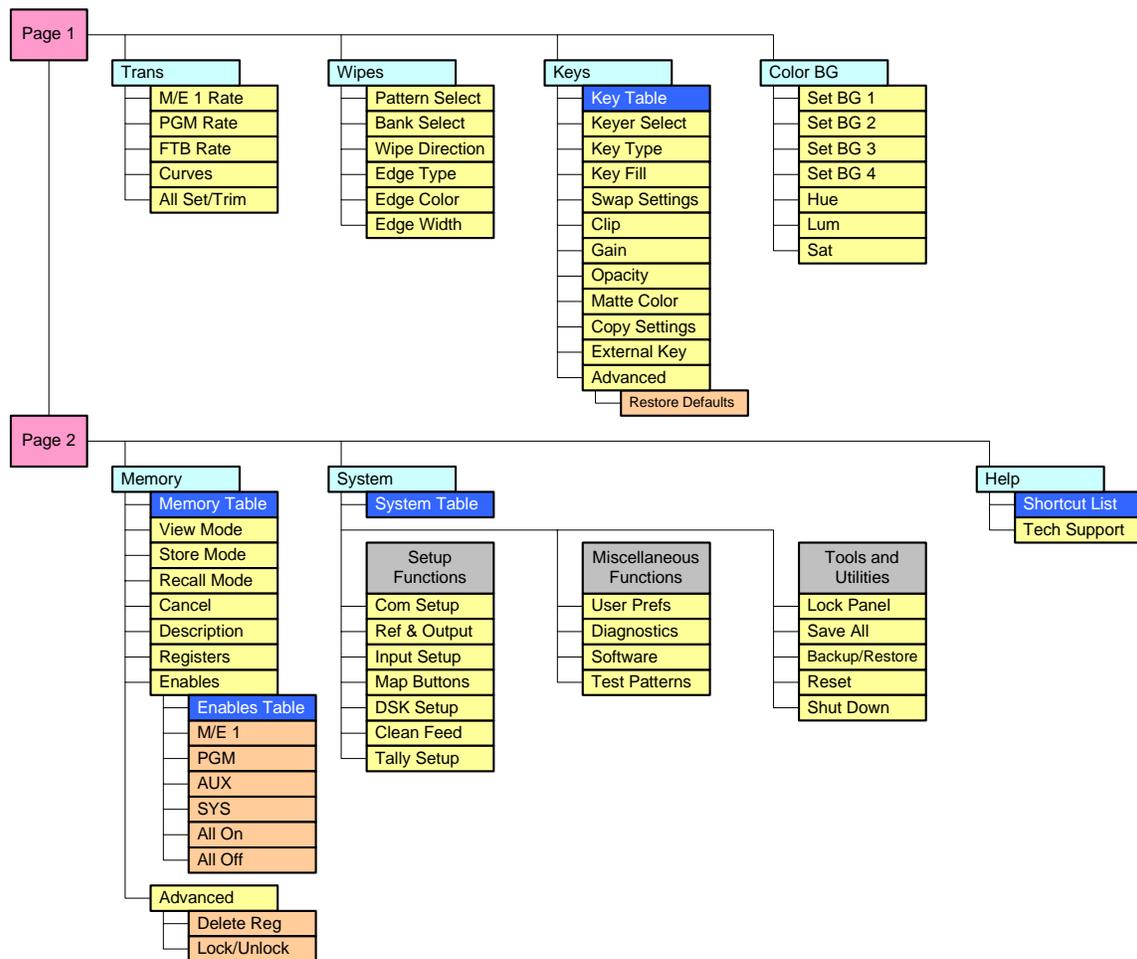


Figure 5-1. FSN Series Menu Tree

For a detailed and expanded view of the **System Menu**, refer to the [“System Menu Tree”](#) diagram on the next page.

System Menu Tree

The figure below illustrates an expanded view of the **System Menu**.

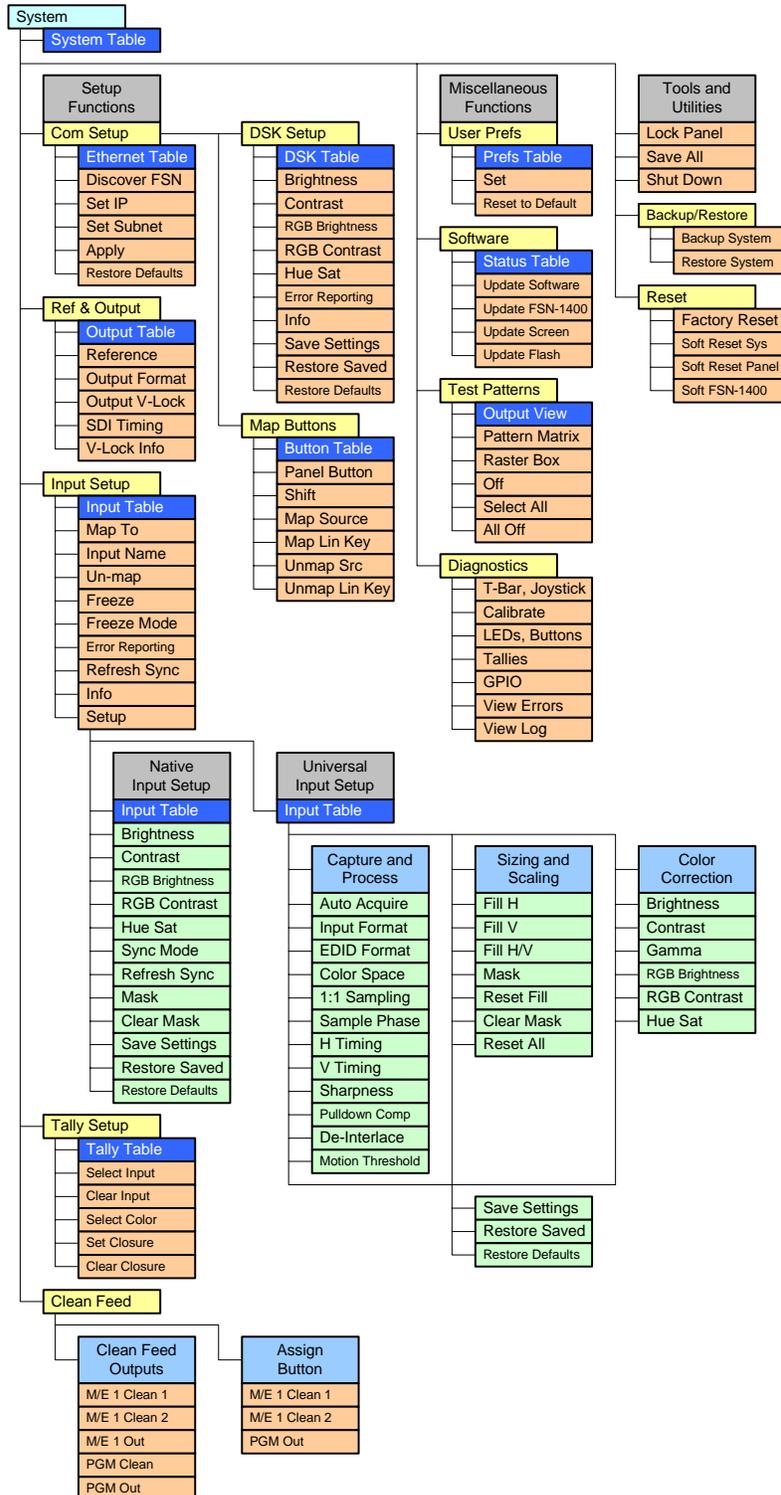


Figure 5-2. FSN Series System Menu

5. Menu Orientation

Using the Menu System

Using the Menu System

This section lists the rules and conventions for using FSN Series menus. For orientation purposes only, the figure below illustrates the various menu sections.

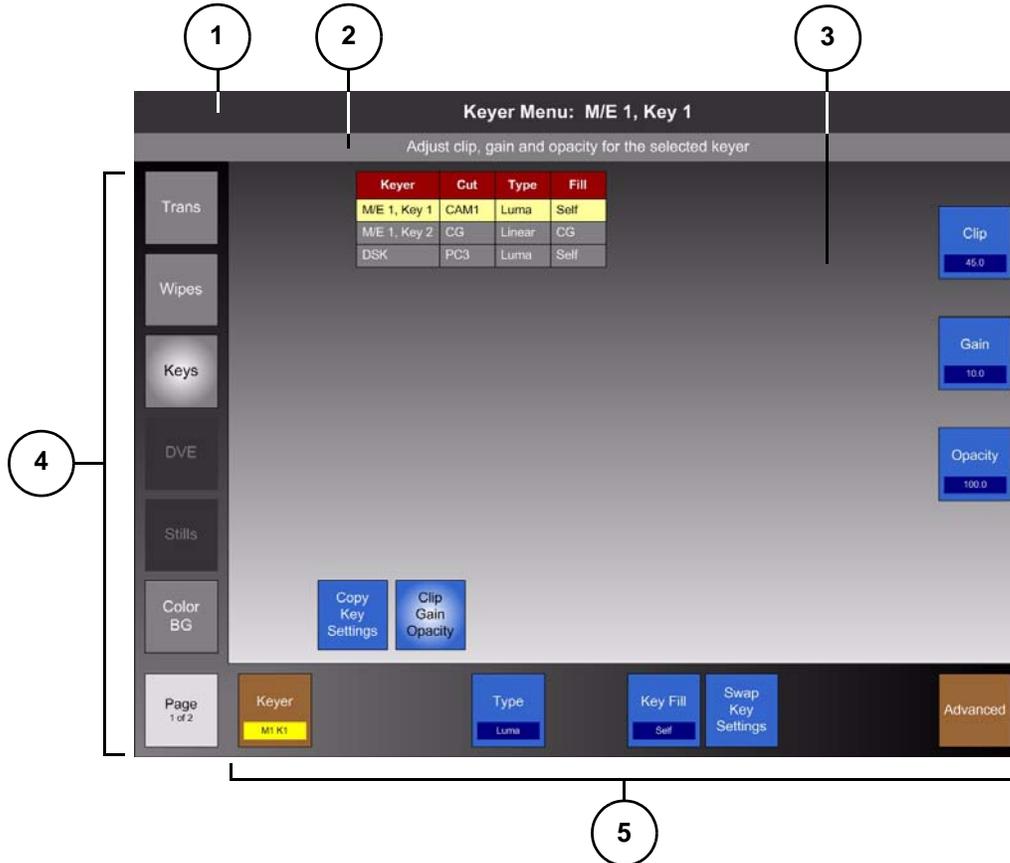


Figure 5-3. Sample Menu Layout

1) Title Bar	3) Palette	5) Tool Bar
2) Prompt Bar	4) Menu Bar	

Following are descriptions of each section and each type of button:

1) Title Bar

At the top of each menu, the **Title Bar** always names the current menu. When sub-menus are displayed, the convention of “**Parent Menu > Sub Menu**” will be used, e.g., **Keyer Menu > Advanced**.

2) Prompt Bar

Immediately below the **Title Bar**, the **Prompt Bar** provides a line of “help text” for each menu. The prompt changes according to the various functions selected on the menu.

5. Menu Orientation

Using the Menu System

3) Palette

In the center of the menu, the **Palette** provides an area for menu-specific and function-specific buttons, graphics and tables.

4) Menu Bar

Along the left side of the menu, the **Menu Bar** provides instant access to all primary menus. Each button is latching, and mutually exclusive with all other navigation buttons. When pressed, the button “lights,” and the selected menu is displayed in the **Palette**.

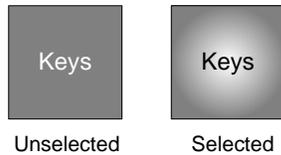


Figure 5-4. Navigation button selection

The **Menu Bar** does *not* scroll. Instead, at the bottom of the bar, press the **Page** button to change navigation pages in groups of six buttons with each press.



Figure 5-5. Page button

The **Page** button itself indicates which page you are viewing:

▲ Page 1 of 2

▲ Page 2 of 2

5) Tool Bar

The **Tool Bar** at bottom edge of the menu displays up to 10 primary functions and options for the selected menu.

Note

There are many types of buttons that can appear on the **Tool Bar** and in the **Palette**. Refer to the [“Buttons, Tables and Matrices”](#) section on page 122 for details.

5. Menu Orientation

Buttons, Tables and Matrices

Buttons, Tables and Matrices

There are a variety of button “types” that can appear in the menus, and there are also general rules that apply to button categories, colors, tables and matrices. Detailed explanations are provided below.

- [Button Categories and Colors](#)
- [Latching, Momentary and Conditional Buttons](#)
- [Value Buttons](#)
- [Toggle Buttons](#)
- [Pop-up Buttons](#)
- [Location Buttons](#)
- [Summary of Button Types](#)
- [Tables](#)
- [Matrices](#)
- [Notes and Error Messages](#)

Button Categories and Colors

General button categories and color schemes are outlined below:

- **Menu Bar Buttons** are always gray. When pressed, the button lights and the selected menu is displayed in the **Palette**.



Figure 5-6. Menu Bar Buttons

- **Function Buttons** are always blue, and there are many different types such as “pop-ups” and “toggles.” Each type performs a specific function on the current menu, and behaves in a specific manner. See below for details.



Figure 5-7. Function Buttons

Note that in some cases, a button may be “grayed out,” indicating that the function is currently not available.



Figure 5-8. Grayed Out Button

5. Menu Orientation

Buttons, Tables and Matrices

- **Navigation Buttons** are brown, and when pressed, they take you to a new location in the menu tree. For example:
 - ~ Press to switch to a sub-menu beneath the current “parent” menu. In the sub-menu, the **{Back}** button appears in the **Tool Bar**, enabling you to go “back” up one level in the menu tree.
 - ~ Press to switch to a completely different menu, or a special navigation pop-up, that enables you to choose the next destination menu.



Figure 5-9. Navigation Buttons

Note

Because its function remains constant throughout the entire menu system, the **{Back}** button will not be explained any further in this chapter.

Latching, Momentary and Conditional Buttons

Latching, momentary and conditional buttons are explained below:

- **Latching**

The figure below illustrates both states of a **Latching** function button. The name of the function is written on the button itself.

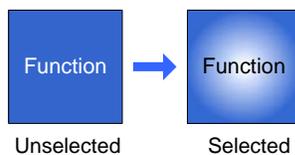


Figure 5-10. Latching button states

- ~ When **OFF**, the button is unselected, unlit, and the function is inactive.
- ~ When **ON**, the button is selected, lit, and the function is active.

- **Momentary**

Both “function” and “navigation” buttons can be momentary:

- ~ A **Momentary** blue “function” button lights briefly when pressed, performs the selected function, then returns to its default “off” condition.



Figure 5-11. Momentary Function Button Sequence

5. Menu Orientation

Buttons, Tables and Matrices

- **Conditional**

The figure below illustrates both states of a **Conditional** function button.

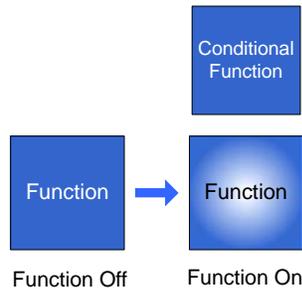


Figure 5-12. Conditional button states

Conditional buttons appear when certain conditional functions are required. They can be either momentary or latching, depending on the required function.

Value Buttons

The figure below illustrates a **Value** button.



Figure 5-13. Value button

When certain functions are enabled in a menu, value buttons appear adjacent to the four knobs on the right side of the **Touch Screen**. These buttons enable you to enter values for the selected parameter. The parameter's current value appears within the dark blue insert. There are three ways to adjust the value:

- Rotate the knob clockwise to increment the value.
- Rotate the knob counter-clockwise to decrement the value.
- Press the value button itself. When pressed, the button latches, and the **Keypad** appears. Refer to the [“Using the Keypad”](#) section on page 130 for details.

Toggle Buttons

The figure below illustrates both states of a **Toggle** button.

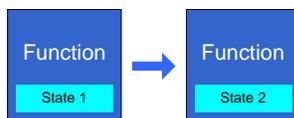


Figure 5-14. Toggle button states

Toggle buttons are two-state “function” buttons with a cyan colored insert, and the current state appears within the insert (e.g., **On** or **Off**). Pressing the button changes the state of the selected function.

Pop-up Buttons

The figure below illustrates both states of a **Pop-up** button.

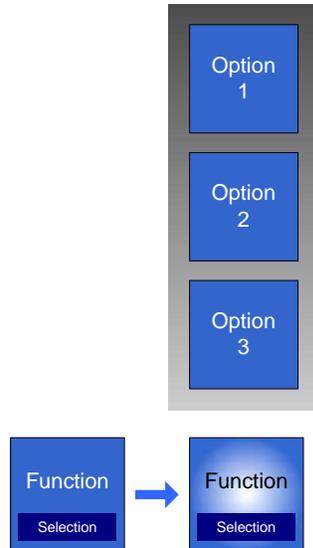


Figure 5-15. Pop-up button states (sample)

A **Pop-up** button has a dark blue colored insert, and just like a **Toggle**, the current selection appears within the insert. When pressed, the button latches, and a pop-up appears (on top of the **Palette**) with an array of options.

When you select an option, the pop-up clears and the selection appears within the insert. To cancel without making a change, simply press the pop-up button again to cancel the operation.

Location Buttons

The figure below illustrates a **Location** button.



Figure 5-16. Location button

A **Location** button is a type of **Navigation** button that takes you to a new location in the menu tree, but because the button behaves like a pop-up, there is a choice of locations within the same “parent” menu.

When pressed, the button latches, and a pop-up appears. When you select a location, the pop-up clears and the new location appears within the yellow insert.

To cancel without making a change, simply press the pop-up button again to cancel the operation.

5. Menu Orientation

Buttons, Tables and Matrices

When the switcher location changes, the label in the **Title Bar** also changes.

For example:

- ▲ On the **Wipe Menu**, the location button enables you to access and adjust wipes on M/E 1 and PGM — without leaving the menu.
- ▲ On the **Keyer Menu**, the location button enables you to access all keyers (e.g., **M/E 1 Key 1**, **M/E 1 Key 2**, **DSK**) without leaving the menu.

The figure below illustrates both states of a **Location** button.

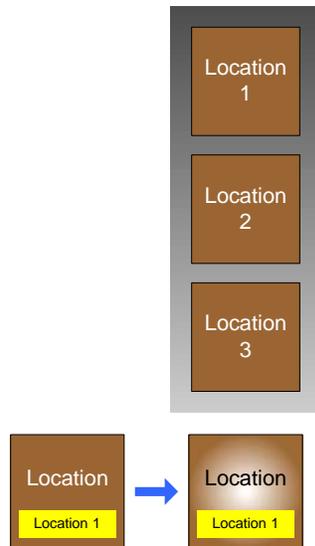


Figure 5-17. Location button states (sample)

Summary of Button Types

The table below summarizes buttons types, attributes, colors and functions.

Table 5-1. Button types, colors and functions

	Type	Attributes	Color	Insert	Function
	Menu Bar	Latching	Gray	—	Provides direct access to all primary menus.
	Function	Latching	Blue	—	Enables and disables the selected function. May have an associated “Conditional” button that appears when the function button is latched.
	Function	Momentary	Blue	—	Performs the selected function, then returns to its default “off” state.
	Navigation	Momentary	Brown	—	Changes your view to a new location in the menu tree.
	Value	Latching	Blue	Dark Blue	Appears adjacent to the knobs, on the right side of the Touch Screen. Enables entry of values for the selected parameter.
	Toggle	Momentary	Blue	Cyan	Toggles between two states only, for the selected function.
	Pop-up	Latching	Blue	Dark Blue	Provides a choice of two or more options for the selected function.
	Location	Latching	Brown	Yellow	Provides a choice of locations within the same “parent” menu.

5. Menu Orientation

Buttons, Tables and Matrices

Tables

The FSN Series user interface makes extensive use of tables, for a variety of functions such as keys, memory registers, tallies, etc. The figure below illustrates a sample table:

Heading	Heading	Heading	Heading
Data	Data	Data	Data
Data	Data	Data	Data
Data	Data	Data	Data
Data	Data	Data	Data

Figure 5-18. Sample Table

Each table includes a heading row at the top, and multiple data rows beneath. The “highlighted” yellow row indicates that functions can be performed to the device (or parameter) that is shown on this row.

The yellow highlight can be scrolled automatically or manually. For example:

- On the **Input Setup Menu**, the highlight *automatically* jumps to a certain row, when you touch the associated graphic of a rear-panel connector.
- On the **Memory Menu**, you can *manually* scroll the highlight to a particular register, using the adjacent knob. In this case, a gray bar is drawn from the table to the “active” knob.

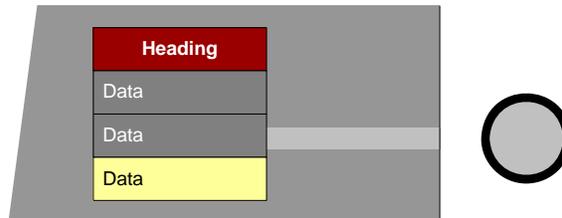


Figure 5-19. Manual table scrolling via knob

In some cases, a label appears over the gray bar, to help specify the current scrolling function.



Figure 5-20. Manual table scrolling with label

Matrices

On certain menus such as the **Wipe Menu** and the **Output Test Pattern Menu**, matrices are provided that enable you to choose a particular item (from a large group of items). A sample matrix is shown below:

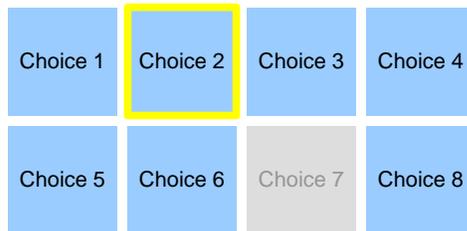


Figure 5-21. Sample Matrix

In the matrix, each function is a mutually exclusive button. To select a function, touch the desired button. The yellow border indicates the current selection. Note that in some cases (as shown above), a function may be grayed out.

Notes and Error Messages

In certain cases, notes will pop-up that provide important information about a process, a function, or a “prompt” for further action. Each note has a title box, a subject line, an “explanation” section and a **Close** button — which clears the note from the menu. Some notes also include buttons for various choices, such as “**Yes**” or “**No**.”

A sample note is shown below.

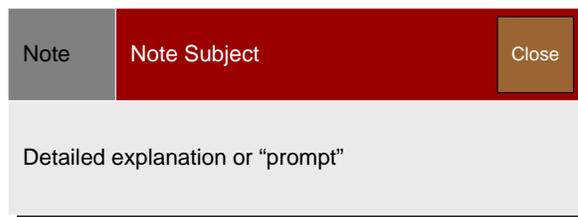


Figure 5-22. Sample note

If an error occurs, a red “**Error**” button will appear in the top right corner of the menu — superimposed over the **Title Bar**. If this occurs, press the **Error** button to display a note for more information. A sample error message is shown below.



Figure 5-23. Sample error message

If an “**LOS**” or “**Invalid Signal**” error occurs to an input, the **Programmable Display** turns red, and the red “**Error**” button appears. These error messages can be turned off, if desired. In Chapter 7, refer to the “[Understanding Error Messages](#)” section on page 271 for full details.

5. Menu Orientation

Using the Keypad

Using the Keypad

When a value button is pressed, the **Keypad** appears. The figure below illustrates a sample **Keypad**:

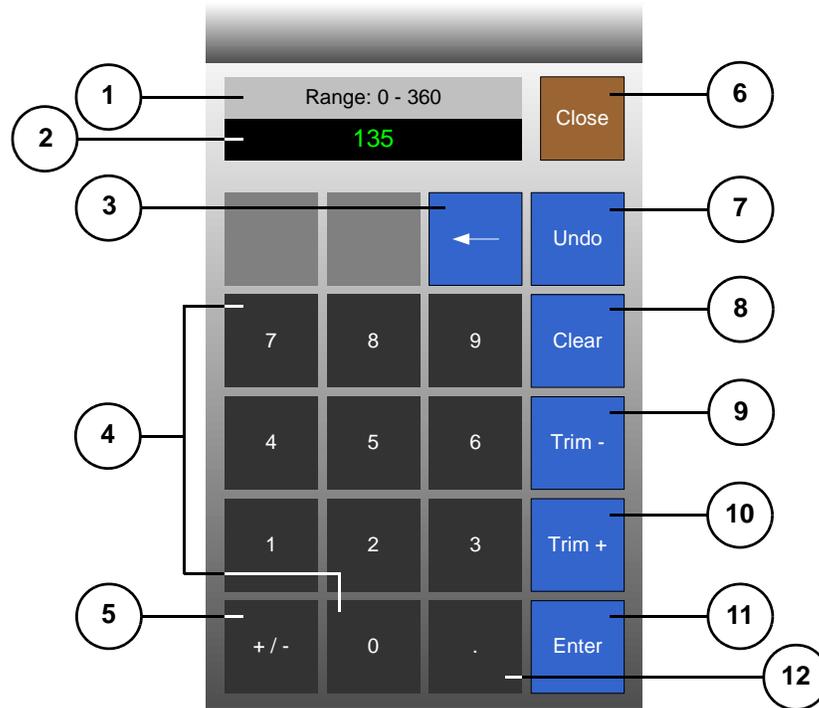


Figure 5-24. Keypad (sample)

1) Function Bar	5) +/-	9) Trim -
2) Register	6) Close	10) Trim +
3) Backspace	7) Undo	11) Enter
4) Numerics	8) Clear	12) Decimal

Following are descriptions of each section and each type of button in the **Keypad**:

1) Function Bar

The **Function Bar** displays the selected parameter's range, and when required, provides a mini-prompt for the function that you are entering. For example:

▲ If you press the **{Hue}** value button, the prompt reads:

Range: 0 - 360

▲ If you press the **{Brightness}** value button, the prompt reads:

Range: 1 - 100

2) Register

The **Register** displays a parameter's *current* value when the **Keypad** first appears. This enables you to "trim" existing values or enter new values. The

5. Menu Orientation

Using the Keypad

register clears when you begin entering numbers, and digits shift left as you enter them. You must press **{Enter}** to complete an entry.

3) Backspace

Press **Backspace** {←} during a numeric entry process to clear the register by one digit with each press.

4) Numerics

Press the numeric buttons **{0 - 9}** to enter values. Digits shift left in the **Register** as you enter them. Use the **{Decimal}** button as required for entries that include decimal values.

5) +/-

Press **{+/-}** to invert the numeric entry in the **Register** (if applicable). For example, press **{+/-}** to change **+350** to **-350**.

Note

The **{+/-}** button is only applicable when certain **Keypad** functions that accept negative values are active.

6) Close

Press **{Close}** to clear the **Keypad** from the **Touch Screen**, and “un-latch” the selected value button.

Note

If you press **{Close}** prior to pressing **{Enter}**, **{Trim +}** or **{Trim -}**, the **Keypad** clears, and the previous value is maintained.

7) Undo

Prior to pressing **{Enter}**, press **{Undo}** at any point during the numeric entry process to restore the original value, even if **{Clear}** or **{+/-}** was pressed.

Note

If **{Enter}** is pressed, that value becomes the new value to which the register will return, if **{Undo}** is pressed.

8) Clear

Press **{Clear}** during a numeric entry process to clear the register to **0** (zero).

9) Trim -

Enter an offset value using the numeric buttons, then press **{Trim -}** to subtract from the parameter's current value. Pressing **{Enter}** is not required, and the “trim” value remains in the register, enabling you to trim repeatedly by the same offset. Once the value is trimmed, you can close the **Keypad**, or perform addition trims or entries in the normal way.

For example:

- ▲ To subtract 5 frames from a transition rate, press the **Rate** button for the desired M/E, then in the **Keypad**, press **{5, Trim -}**.
- ▲ To subtract 25 pixels from a mask value, press the desired mask edge (e.g., **{Mask Top}**), then in the **Keypad**, press **{25, Trim -}**.

5. Menu Orientation

Using the Keypad

10) Trim +

Enter an offset value using the numeric buttons, then press **{Trim +}** to add to the parameter's current value. Pressing **{Enter}** is not required, and the "trim" value remains in the register, enabling you to trim repeatedly by the same offset. Once the value is trimmed, you can close the **Keypad**, or perform addition trims or entries in the normal way.

For example:

- ▲ To add 10 frames to a transition rate, press the **Rate** button for the desired M/E, then in the **Keypad**, press **{1, 0, Trim +}**.
- ▲ To add 2 pixels to a mask value, press the desired mask edge (e.g., **{Mask Bottom}**), then in the **Keypad**, press **{2, Trim +}**.

11) Enter

Press **{Enter}** to accept a new value. When pressed, the **Keypad** remains open, and the new value is immediately active.

12) Decimal

Press the decimal button **{.}** as required for numeric entries that accept decimal values.

Note

The decimal button is only applicable when certain **Keypad** functions that accept decimal values are active.

Please note the following important points regarding the **Keypad**:

- Certain **Keypad** buttons may be grayed out, if their function is not applicable for the current operation.
- Other types of **Keypads** are used in various system modes, to present arrays of functions from which to select, and to present lists from which you can select various items. For example:
 - ▲ When selecting output formats on the **Output Setup Menu**, a special "list" **Keypad** enables you to select the desired output format from a list of all available output formats.
 - ▲ When mapping sources to buttons, using the **Map Buttons Menu**, a special "list" **Keypad** enables you to select the source that you want to map to the selected control panel button.

Each of these "special" **Keypads** will be discussed in context with their respective features.

Using the Pop-up Keyboard

In several switcher menus, you can use a pop-up **Keyboard** to enter names and descriptions for various switcher functions. For example:

- ▲ On the **Input Setup Menu**, the **Keyboard** is used to name inputs, as they'll appear on the programmable displays.
- ▲ On the **Memory Menu**, the **Keyboard** is used to enter brief descriptions of memory registers.

The figure below illustrates a sample **Keyboard**, in "name" entry mode:

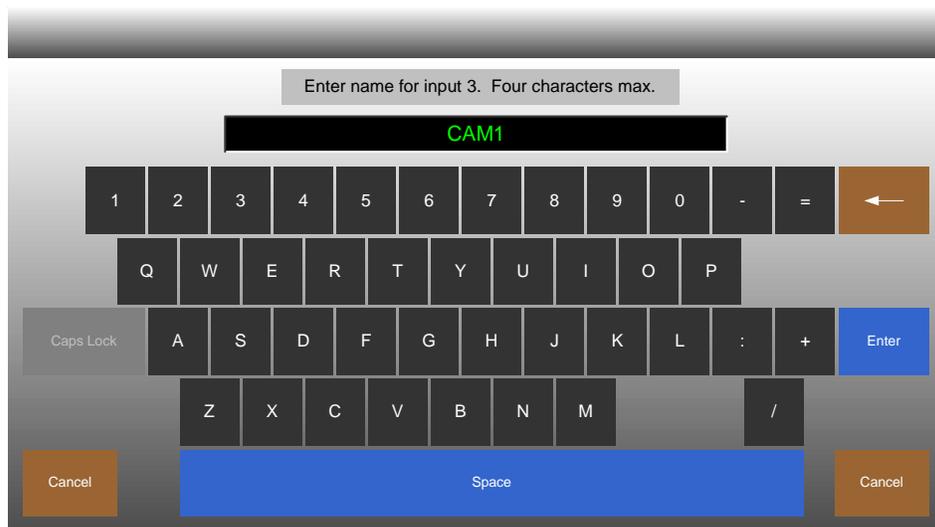


Figure 5-25. Keyboard (sample)

Please note:

- The top bar provides a prompt for the current action, e.g., entering a name or entering a description.
- Below the prompt is the entry register, where letters appear as you type.
- To use the keyboard, enter the desired text in the normal manner.
 - ~ Press **{Enter}** to complete an entry and close the **Keyboard**.

Note

In the **Memory Menu** (in **Store Mode**), the new entry will not immediately appear in the register table. Refer to the ["Naming Registers"](#) section on page 167 for details.

~ Press **{Cancel}** to cancel an entry and close the **Keyboard**.

- Press **{Caps Lock}** to switch between upper and lower case, where applicable.

Note

In some modes, such as input name entry, **{Caps Lock}** remains on, and not all letters and symbols are available.

5. Menu Orientation

Transition Menu

Transition Menu

The **Transition Menu** enables you to change auto transition rates and adjust transition “curves” throughout the switcher. The figure below illustrates a sample **Transition Menu**:

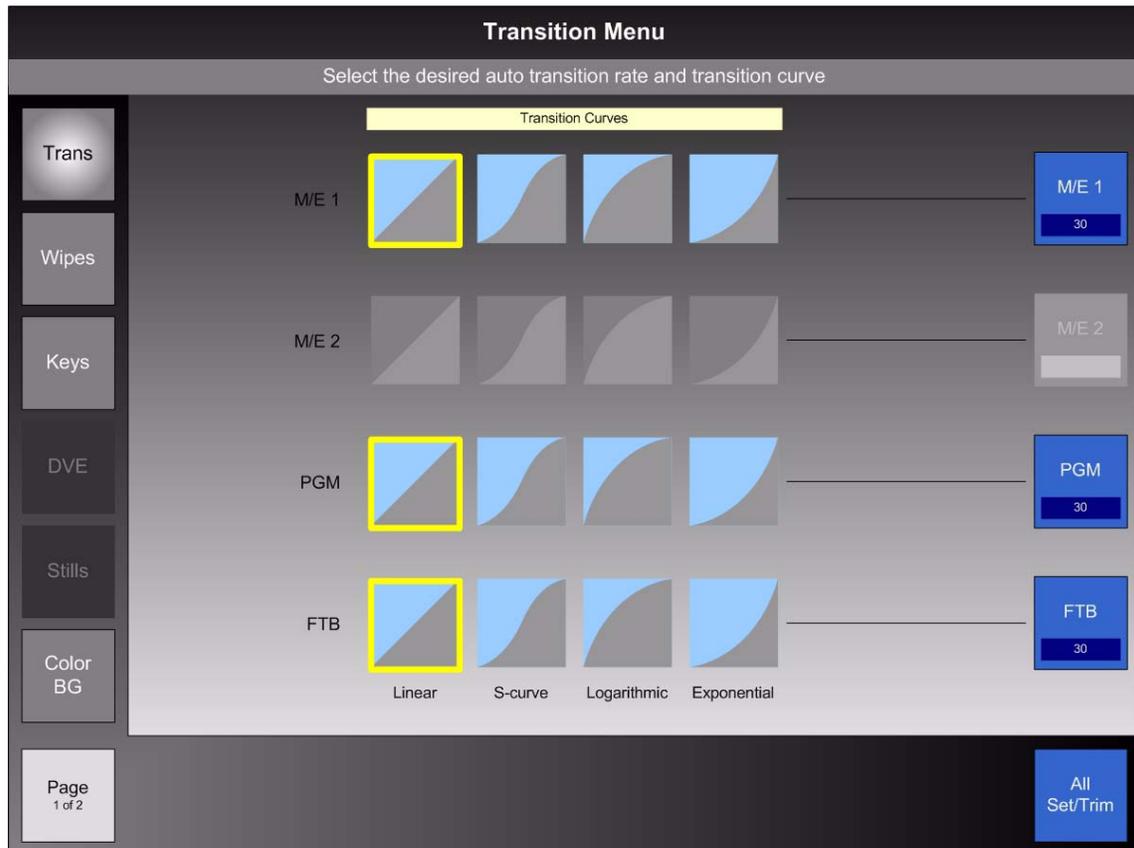


Figure 5-26. Transition Menu (sample)

On the menu, value buttons are provided for each location where a rate can be changed — either via **Knob** or **Keypad**. Each button displays the function’s current rate. In addition, transition rates and curves can be changed individually or simultaneously.

The following topics are discussed in this section:

- [Transition Menu Access](#)
- [Transition Rate Adjustment](#)
- [Transition Curve Adjustment](#)

Transition Menu Access

There are two ways to access the **Transition Menu**:

- In the **Menu Bar**, press **{Page}** to display page 1 (if required). Then, press the **{Trans}** button.
- Press and hold any **MIX** button on the control panel (e.g., **MIX** in the M/E 1 bank or the PGM bank).

Transition Rate Adjustment

Transition rates can be adjusted from 1 to 999 frames, in 1 frame increments. There are two ways to adjust rates individually:



- Turn the **Knob** adjacent to the any value button to adjust the auto transition rate (in frames) for that specific location (**M/E 1**, **PGM** or **FTB**).
 - ~ The value on the button changes as you adjust, and the associated **Transition Display** (on the panel) updates.
 - ~ Changes in rates take effect immediately.
- To “key in” an auto transition rate, press any value button to display the **Keypad** for that specific location. Enter a new rate (in frames) and press **{Enter}**, or trim the current rate using **{Trim -}** or **{Trim +}**.

You can also enter or trim all transition rates simultaneously:



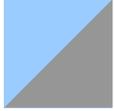
- To set all rates to the same value, press **{All/Set Trim}**. All value buttons light. Next, press any value button to display the keypad.
 - ~ To set all rates to the value in the keypad’s register, press **{Enter}**.
 - ~ To set all rates to a new value, enter the new value and press **{Enter}**.
- To trim all rates simultaneously as offsets to their current values, press **{All/Set Trim}**. All value buttons light. There are two ways to trim the value:
 - ~ Turn any **Knob** to increment or decrement all rates.
 - ~ Press any value button to display the keypad. Enter the desired “trim” value and press **{Trim +}** or **{Trim -}** as desired.

5. Menu Orientation

Transition Menu

Transition Curve Adjustment

There are four **Transition Curve** buttons for each section of the switcher. The buttons in each row are mutually exclusive:



- **Linear Curve** — Press the **{Linear}** button to apply a linear ramp to the transition. The transition rate is constant throughout the transition.



- **S Curve** — Press the **{S Curve}** button to apply a smooth curve to the transition. The transition starts slow, accelerates, then decelerates at the end.



- **Logarithmic Curve** — Press the **{Logarithmic}** button to apply a transition curve that starts fast, and then slows down at the end.



- **Exponential Curve** — Press the **{Exponential}** button to apply a transition curve that starts slow, and then accelerates at the end.

Wipe Menu

The **Wipe Menu** enables you to select and modify wipe patterns. In Chapter 1, refer to the [“Glossary of Switcher Terms”](#) section on page 18 for a definition of “wipe.”

The figure below illustrates a sample **Wipe Menu**:

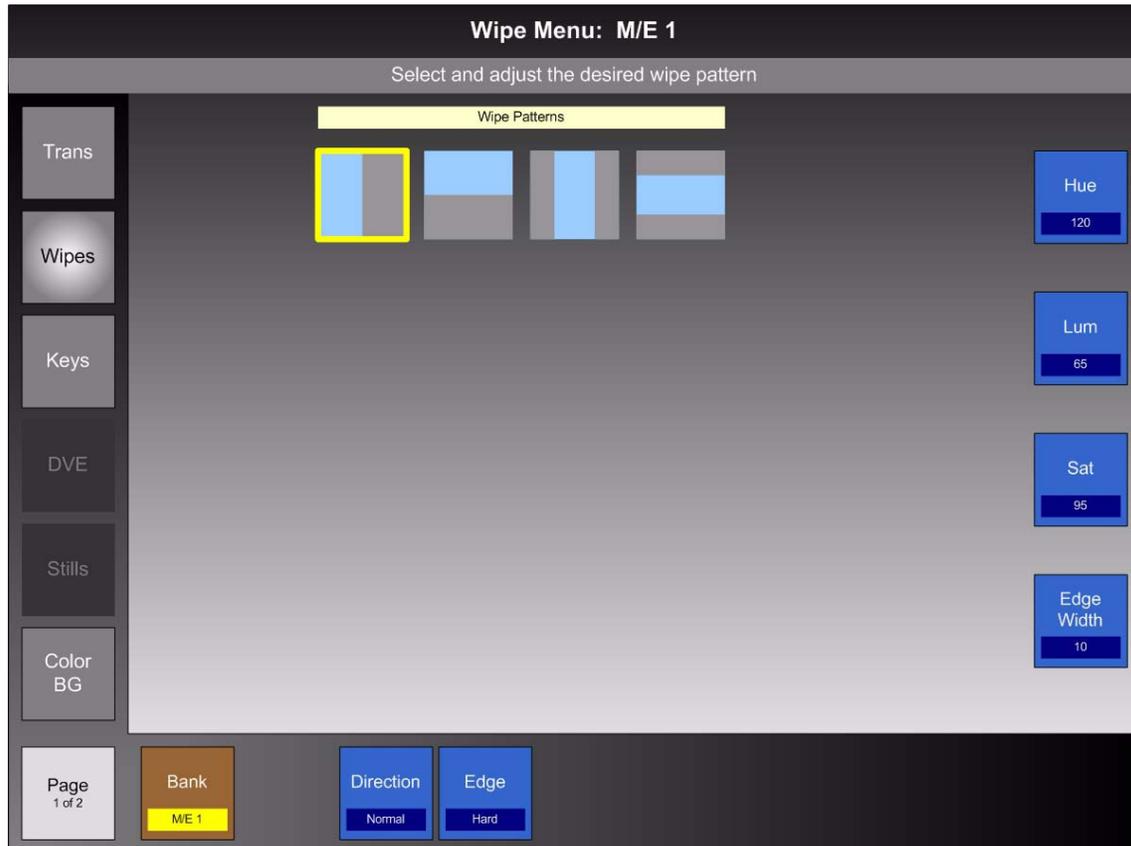


Figure 5-27. Wipe Menu (sample)

The **Wipe Menu** is the same for all switcher banks, and using the **{Bank}** button, you can adjust wipes on all banks without leaving the menu. On the menu itself, a matrix of wipe patterns are provided in the **Palette**, wipe modifiers are available on the **Tool Bar** with their associated value buttons.

The following topics are discussed in this section:

- [Wipe Menu Access](#)
- [Wipe Patterns](#)
- [Wipe Functions and Modifiers](#)

5. Menu Orientation

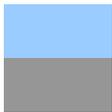
Wipe Menu

Wipe Menu Access

There are two ways to access the **Wipe Menu**:

- In the **Menu Bar**, press **{Page}** to display page 1 (if required). Then, press the **{Wipes}** button. The parameters for the last selected or modified wipe are displayed.
- Press and hold any **WIPE** button on the control panel (e.g., **WIPE** in the M/E 1 bank or the PGM bank). The parameters for that specific location are displayed, and named in the menu's **Title Bar** (e.g., **Wipe Menu: M/E 1**).

Wipe Patterns



The **Palette** provides a matrix of Wipe pattern buttons, which are all mutually exclusive. When a wipe button is pressed, the button is highlighted with a yellow border, and the selected pattern is now available for use and modification on the selected bank.

When you perform a wipe, video on the **BG** bus is replaced by video on the **PST** bus, using the selected pattern to “reveal” PST bus video. Each button represents the split between **BG** and **PST** video, with the **T-Bar** at approximately 50%, as shown below:



Figure 5-28. Wipe button representation

Wipe Functions and Modifiers

In the **Wipe Menu**, the buttons on the **Tool Bar** and in the **Palette** allow you to modify the wipe pattern in a variety of creative ways.

Important

All wipe modifiers are additive. This means that you can enable as many modifiers as desired for a selected pattern, without cancelling out any previous ones.

The following modifiers are discussed:

- [Bank](#)
- [Direction](#)
- [Edge](#)
- [Edge Color](#)

Bank

The **{Bank}** button is a “location” button that enables you to select and modify wipes on any switcher bank, without leaving the menu. Refer to the [“Location Buttons”](#) section on page 125 for additional details. Press **{Bank}** to display the **Bank Selection Pop-up**, which lists all available switcher banks.



Figure 5-29. Wipe bank pop-up

When you select another bank, the following actions occur:

- The pop-up clears.
- The name of the new bank appears on the button label and in the **Title Bar**.
- All selections and functions for the new bank appear on the **Wipe Menu**.

Direction

The **{Direction}** button is a pop-up that determines which direction the selected wipe travels, when the **T-Bar** is moved or when **Auto Tran** is pressed.

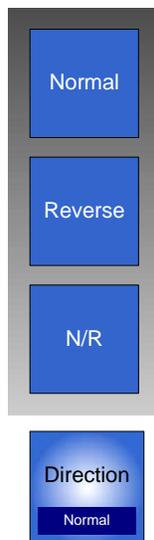


Figure 5-30. Wipe direction pop-up

5. Menu Orientation

Wipe Menu

Press **{Direction}** to display the **Direction Pop-up**, which offers three options:

- **{Normal}** — Each time **AUTO TRAN** is pressed, or each time the **T-Bar** is moved from limit to limit, wipes always travel from the left to right (for vertical wipes), or from the top to the bottom (for horizontal wipes).



Figure 5-31. Normal wipe direction

- **{Reverse}** — Each time **AUTO TRAN** is pressed, or each time the **T-Bar** is moved from limit to limit, wipes always travel from right to left (for vertical wipes), or from the bottom to the top (for horizontal wipes).



Figure 5-32. Reverse wipe direction

- **{N/R}** — On the first **AUTO TRAN** or **T-Bar** movement, direction is **Normal**. On the next **Auto Tran** or **T-Bar** movement (after the buses flip-flop), the direction is **Reverse** — and so on.

Once you select a wipe direction, the pop-up clears, and the new wipe direction appears on the button label.

Edge

The **{Edge}** function enables you to modify the edge of the wipe pattern and adjust its width. Press **{Edge}** to display the **Edge Pop-up**, which offers two options.



Figure 5-33. Wipe Edge Pop-up

- **{Hard}** — The wipe edge that divides **BG** and **PST** is a hard edge.



Figure 5-34. Hard edge wipe

- **{Soft}** — The wipe edge that divides **BG** and **PST** is a soft edge blend.



Figure 5-35. Soft edge wipe

5. Menu Orientation

Wipe Menu



- **{Edge Width}** — Use this value button to adjust the width of the hard or soft edge — from thick to thin, as desired.



Figure 5-36. Wipe edge adjustment

Edge widths can be adjusted from 0 (zero) to the current horizontal and/or vertical output resolution of the system.

Edge Color

When a hard edge is selected, use the three edge color value buttons to select the desired color. When a soft edge is selected, the buttons do not appear.

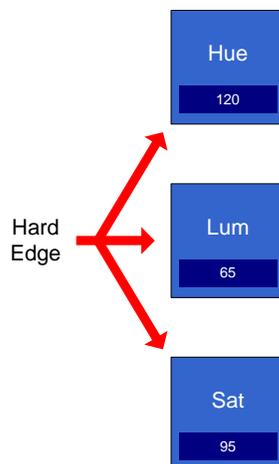


Figure 5-37. Edge color value buttons

The following adjustments are available:

- **{Hue}** — Adjust the hue of the edge. **Range:** 0 to 360
- **{Lum}** — Adjust the luminance of the edge. **Range:** 0 to 100
- **{Sat}** — Adjust the color saturation of the edge. **Range:** 0 to 100

Keyer Menu

The **Keyer Menu** enables you to modify all keyers on the control panel. Key sources are selected on the **Key Bus** in an M/E, and on the **Phantom Key Bus** on the PGM bank. In Chapter 1, refer to the "[Glossary of Switcher Terms](#)" section on page 18 for definitions of the various key terms.

The figure below illustrates a sample **Keyer Menu**:

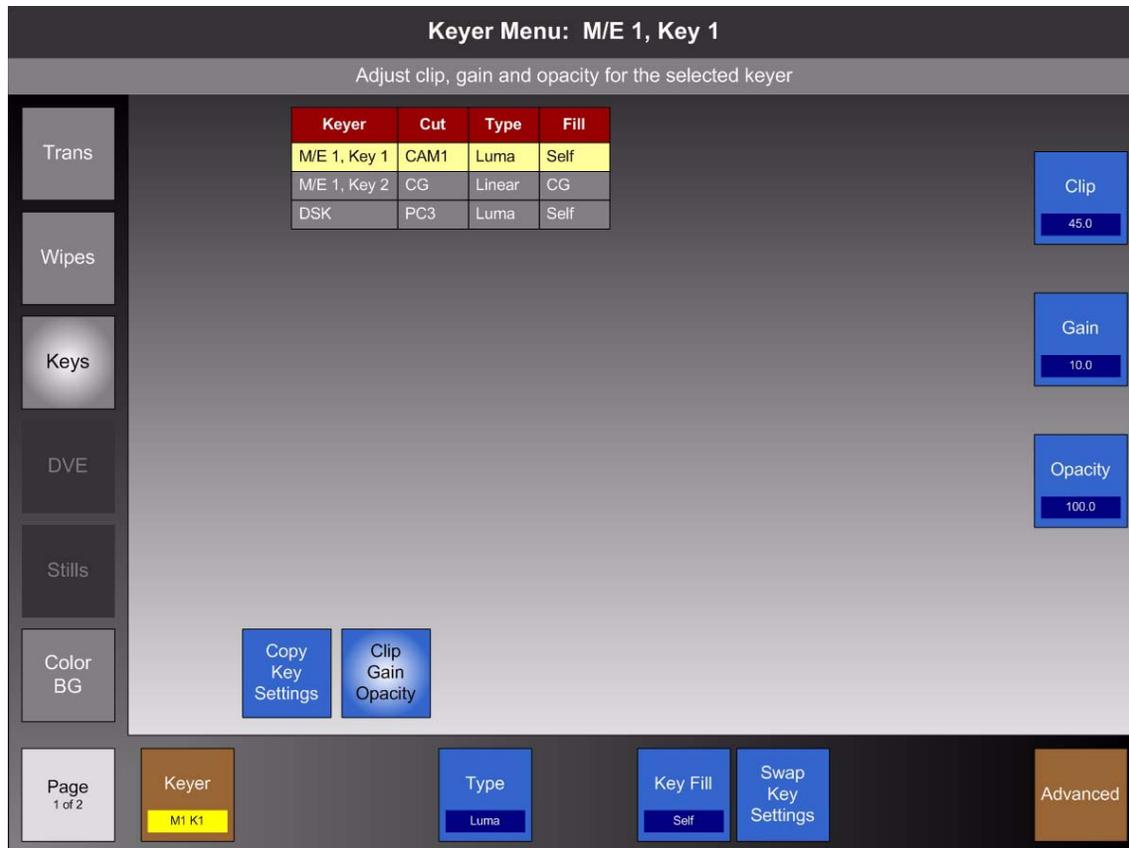


Figure 5-38. Keyer Menu: M/E 1, Key 1 (sample)

The **Keyer Menu** is virtually identical for all keyers, and using the **{Keyer}** button, you can adjust the keyers on all banks without leaving the menu. A status table is provided in the Keyer Menu's **Palette**, and key modifiers are available on the **Tool Bar** along with their associated value buttons to the right.

The following topics are discussed in this section:

- [Keyer Menu Access](#)
- [Keyer Status Table](#)
- [Keyer Functions and Modifiers](#)
- [Advanced Key Functions](#)

5. Menu Orientation

Keyer Menu

Keyer Menu Access

There are two ways to access the **Keyer Menu**:

- In the **Menu Bar**, press **{Page}** to display page **1** (if required). Then, press the **{Keys}** button. The parameters for the last selected or modified keyer are displayed.
- Arm the desired keyer first, then press and hold that Keyer button (e.g., **KEY 1** or **KEY 2** in the M/E 1 bank, or the **DSK** button in the PGM bank). The parameters for that specific keyer are displayed, and the location is named in the **Title Bar** (e.g., **Keyer Menu: M/E 1, Key 1**).

Keyer Status Table

A **Key Status Table** is displayed at the top of the **Palette**, as shown below:

Keyer	Cut	Type	Fill
M/E 1, Key 1	CAM1	Luma	Self
M/E 1, Key 2	CG	Linear	CG
DSK	PC3	Luma	Self

Figure 5-39. Key Status Table (sample)

In the table, rows are provided for each keyer on the panel, and the yellow highlight shows the active keyer. This highlight changes automatically when different keyers are selected. The following columns of information are provided:

- **Keyer** — Indicates the name of each keyer on the panel.
- **Cut** — Indicates the key's cut source, as selected on the bank's **Key Bus**.
- **Type** — Indicates the key type, either **Luma** or **Linear**, as selected with the **{Type}** button. Refer to the "[Type](#)" section on page 146 for details.
- **Fill** — Indicates the key's fill source, either **Self**, **Split**, **Matte** or **PST** (Preset Bus), as selected with the **{Key Fill}** button. If the key is split, the name of the split fill source appears in the cell. Refer to the "[Key Fill](#)" section on page 148 for details.

Keyer Functions and Modifiers

In the **Keyer Menu**, the buttons on the **Tool Bar** and in the **Palette** allow you to modify the selected keyer in a variety of creative ways. The following modifiers are discussed:

- [Keyer Selection](#)
- [Type](#)
- [Clip, Gain, Opacity](#)
- [Key Fill](#)
- [Swap Key Settings](#)
- [External Key](#)
- [Copy Key Settings](#)

Keyer Selection

The **{Keyer}** button is a “location” button that enables you to select and modify keys on any switcher bank, without leaving the menu. Refer to the “[Location Buttons](#)” section on page 125 for additional details on location buttons. Press **{Keyer}** to display the **Keyer Selection Pop-up**, which lists all available keyers on the panel.



Figure 5-40. Keyer selection pop-up

When you select another keyer, the following actions occur:

- The pop-up clears.
- The name and location of the new keyer appear on the button label and in the **Title Bar**. Note that the yellow button label is abbreviated, e.g., **M/E 1, Key 2** appears as **M1 K2** on the button.
- All selections and functions for the new keyer appear on the **Keyer Menu**.

5. Menu Orientation

Keyer Menu

Type

The **{Type}** button is a pop-up that enables you to select the processing mode for the selected keyer.

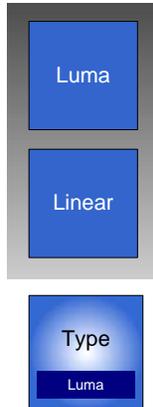


Figure 5-41. Key type pop-up

Press **{Type}** to display the **Key Type Pop-up**, which offers two options:

- **{Luma}** — Enables the **Luminance Key** mode, in which the hole-cutting information is derived from the luminance (brightness) level of the key source.
- **{Linear}** — Enables the **Linear Key** mode, which allows the edges of anti-aliased key sources (such as character generators) to be reproduced clearly. Two separate signals are required from a linear key source: a cut and a fill. Refer to the [“Map Buttons Menu”](#) section on page 210 for mapping details.

Note

When **Linear Key** mode is selected, the **{Key Fill}** button is grayed out. This occurs because the linear key cut and fill signals are pre-determined on the **Map Buttons Menu**.

Clip, Gain, Opacity

Press **{Clip Gain Opacity}** to display the **{Clip}**, **{Gain}** and **{Opacity}** value buttons.

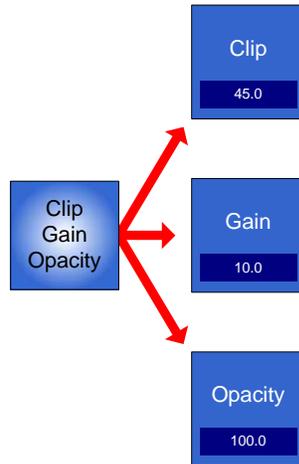


Figure 5-42. Clip, Gain and Opacity adjustments

Use these controls to adjust the appearance of the selected key:

- **{Clip}** — Adjust the threshold of the video that “cuts” into the background. A hole will be cut into the background anywhere that foreground luminance is greater than the clip level.
Range: 0.0 to 100.0, in .1 increments
Default: 50.0
- **{Gain}** — Adjust the sensitivity of the keyer, enabling you to change the sharpness of the keyed image. Gain only affects the edge of the key hole, as set by the clip.
Range: 0.0 to 100.0, in .1 increments
Default: 1.0
- **{Opacity}** — Adjusts the opacity of the keyed image, from fully opaque to fully transparent.
Range: 0.0 to 100.0, in .1 increments
Default: 100.0

5. Menu Orientation

Keyer Menu

Key Fill

Once the selected **Key Source** cuts the electronic hole in the background video, use the **{Key Fill}** button to determine the source of the video that fills the hole.

Note

These controls are only available when **Self Key** mode is selected. When **Linear Key** mode is selected, the **{Key Fill}** button is grayed out.



Figure 5-43. Key fill pop-up

Press **{Key Fill}** to display the **Key Fill Pop-up**, which offers four options:

- **{Self}** — Video from the key source itself fills the hole.
- **{PST}** — Video from the bank's **PST** (Preset) bus fills the hole.
- **{Split}** — Video from another selected source (other than the key source) fills the hole. When **{Split}** is selected, the **{Key Bus}** button appears in the Palette:



Figure 5-44. Key Bus button, with Split Fill selected

5. Menu Orientation

Keyer Menu

The **{Key Bus}** button is a toggle that changes the function of the bank's **Key Bus**, enabling you to select separate cut and fill signals.

- ~ When **{Cut}** is selected, use the **Key Bus** to select the cut video.
- ~ When **{Fill}** is selected, use the **Key Bus** to select the fill video.
- **{Matte}** — Video from an internal matte generator fills the hole. When **{Matte}** is selected, the color is fully adjustable using the three matte color buttons:

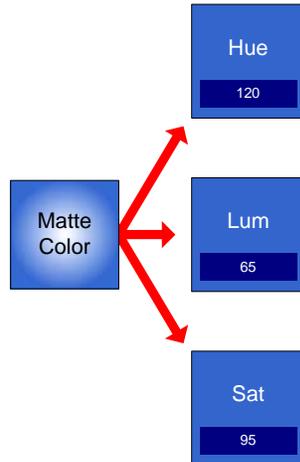


Figure 5-45. Matte color value buttons

Use these value buttons to adjust the color of the matte fill.

- ~ **{Hue}** — Adjust the hue of the matte fill. **Range:** 0 to 360
- ~ **{Lum}** — Adjust the luminance of the matte fill. **Range:** 0 to 100
- ~ **{Sat}** — Adjust the color saturation of the matte fill. **Range:** 0 to 100

5. Menu Orientation

Keyer Menu

Swap Key Settings

The **{Swap Key Settings}** button swaps the settings between **KEY 1** and **KEY 2**. The function is not available for the DSK.



Figure 5-46. Swap Key Settings Button

KEY 2 is always “over” **KEY 1** in the M/E — visually on top of, and electronically downstream of **KEY 1**, as shown below.



Figure 5-47. Key Settings, KEY 2 over KEY 1

When **{Swap Key Settings}** is pressed, the settings of the two keys are swapped. The key source that was previously in **KEY 2** moves to **KEY 1**, and now appears “under” the other key source.



Figure 5-48. Key Settings swapped

Press **{Swap Key Settings}** again to swap the settings back again.

External Key

When the **DSK** is selected, the **{External Key}** button appears in the **Tool Bar**, adjacent to the **{Type}** button, as shown below:

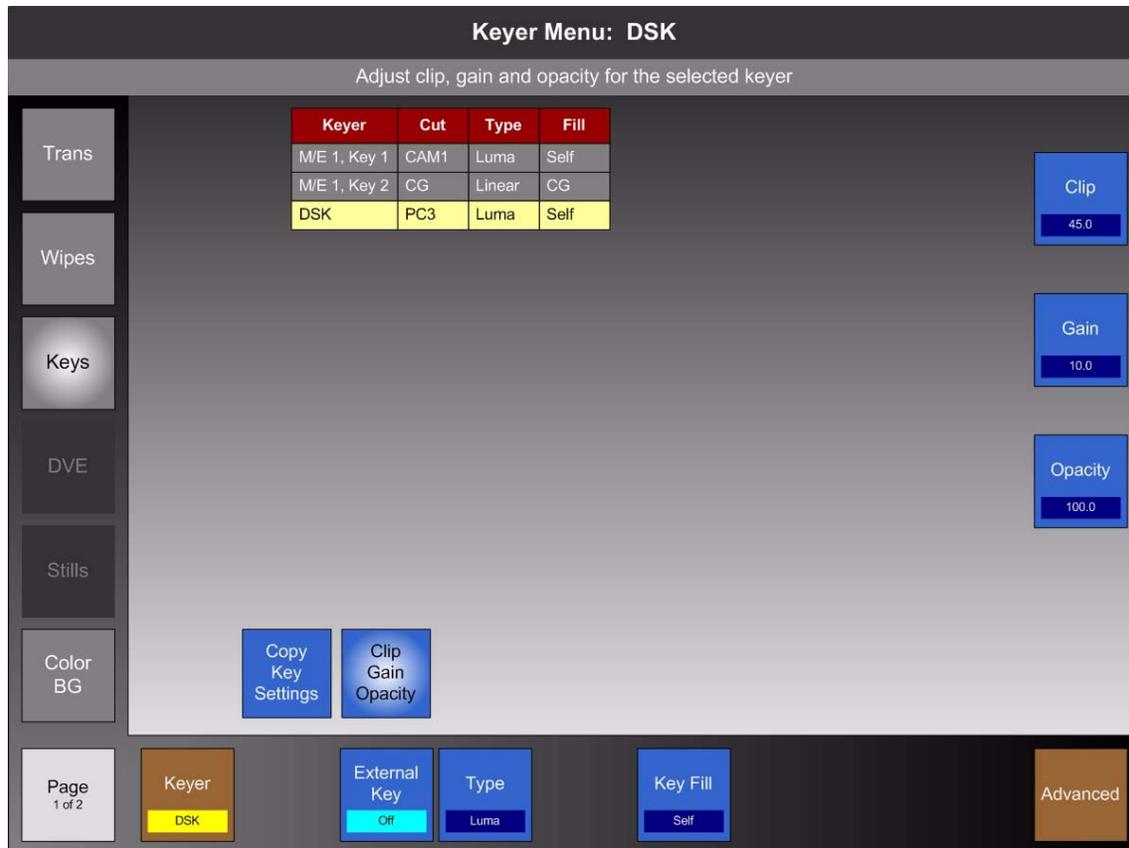


Figure 5-49. Keyer Menu: DSK (sample)



The **{External Key}** button is a toggle that enables or disables the ability to key using the external DSK **Cut** and **Fill** connections on the **M/E** card's I/O panel. In Chapter 4, refer to the "[External DSK Input Connections](#)" section on page 112 for details.

- Select **{On}** to activate both external key connections.
 - ~ The label in the **PGM Transition Display** reads "**EXT.**"
 - ~ Video from the **DSK Cut** connector cuts the key hole, and video from the **DSK Fill** connector fills the hole.
 - ~ The **Type** and **Key Fill** buttons are grayed out.

Note

In this mode, when you press and hold **DSK**, no buttons are lit on the **Phantom Key Bus (PST)**. However, when you make a selection on the **Phantom Key Bus**, the external key is automatically turned off and the new key source is accepted.

5. Menu Orientation

Keyer Menu

- Select **{Off}** to turn off the external key connections. Key sources are selected in the normal manner using the **Phantom Key Bus**.

Important

If **Free Run** is selected on the **Reference and Output Setup Menu**, the external **Cut** and **Fill** DSK inputs can not be used, and the **{External Key}** button will be grayed out.

Copy Key Settings

The **{Copy Key Settings}** button enables you to copy key parameters from one keyer to another. Press **{Copy Key Settings}** to display the **Copy Key Settings Keypad**.

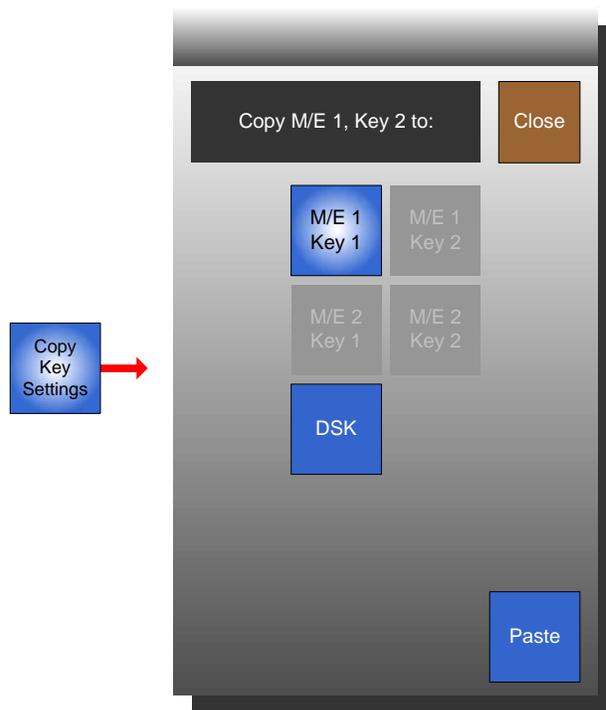


Figure 5-50. Copy Key Settings Keypad (sample)

The **Copy Key Settings Keypad** is context sensitive. The current keyer (from which you are copying) is grayed out, and the “prompt” section at the top confirms the source keyer.

To copy key parameters, press the button(s) for the keyer(s) to which you want to copy, then press **{Paste}**. Please note:

- Press **{Close}** to cancel safely without copying, and close the keypad.
- The copy function copies all parameters, including clip, gain, opacity, source, etc.
- In some cases, a keyer cannot be copied. For example, if the **External Key** is enabled in the DSK, the keyer’s parameters cannot be copied to an M/E keyer, because the **External Key** is electronically restricted to the DSK.

Note

The **{Copy Key Settings}** button is grayed out when the **{External Key}** function is enabled in the DSK.

Advanced Key Functions

From the **Keyer Menu**, press **{Advanced}** to display the **Advanced Keyer Menu**:

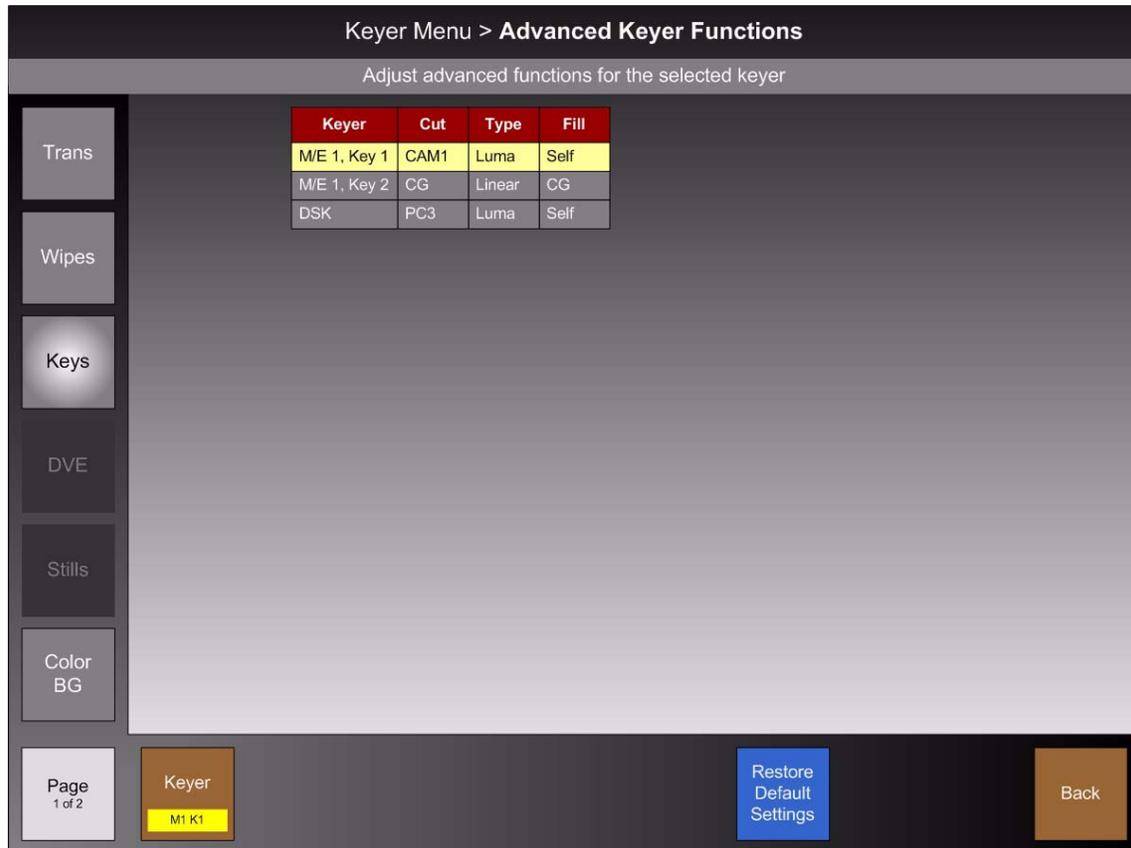


Figure 5-51. Advanced Keyer Menu (sample)

The following advanced functions are provided:

- Press **{Keyer}** to select a different keyer to adjust. Refer to the [“Keyer Selection”](#) section on page 145 for details.
- Press **{Restore Default Settings}** to return the selected keyer’s **Clip**, **Gain** and **Opacity** settings to their default values (Clip: **50.0**, Gain: **1.0**, Opacity: **100.0**). Please note:
 - ~ **Key Type** does not change.
 - ~ **Key Fill** does not change.
 - ~ **Key Source** does not change.

Note

After a factory reset, all key **Types** are set to **Luma**. All key **Fills** are set to **Self**.

5. Menu Orientation

Color Background Menu

Color Background Menu

The **Color Background Menu** enables you to select the full screen color for each color background signal that is currently mapped to the panel. Color backgrounds are internally generated signals, and up to four unique color backgrounds can be mapped to the panel using the **Map Buttons Menu**. Refer to the "[Map Buttons Menu](#)" section on page 210 for menu details.

The figure below illustrates a sample **Color Background Menu**:

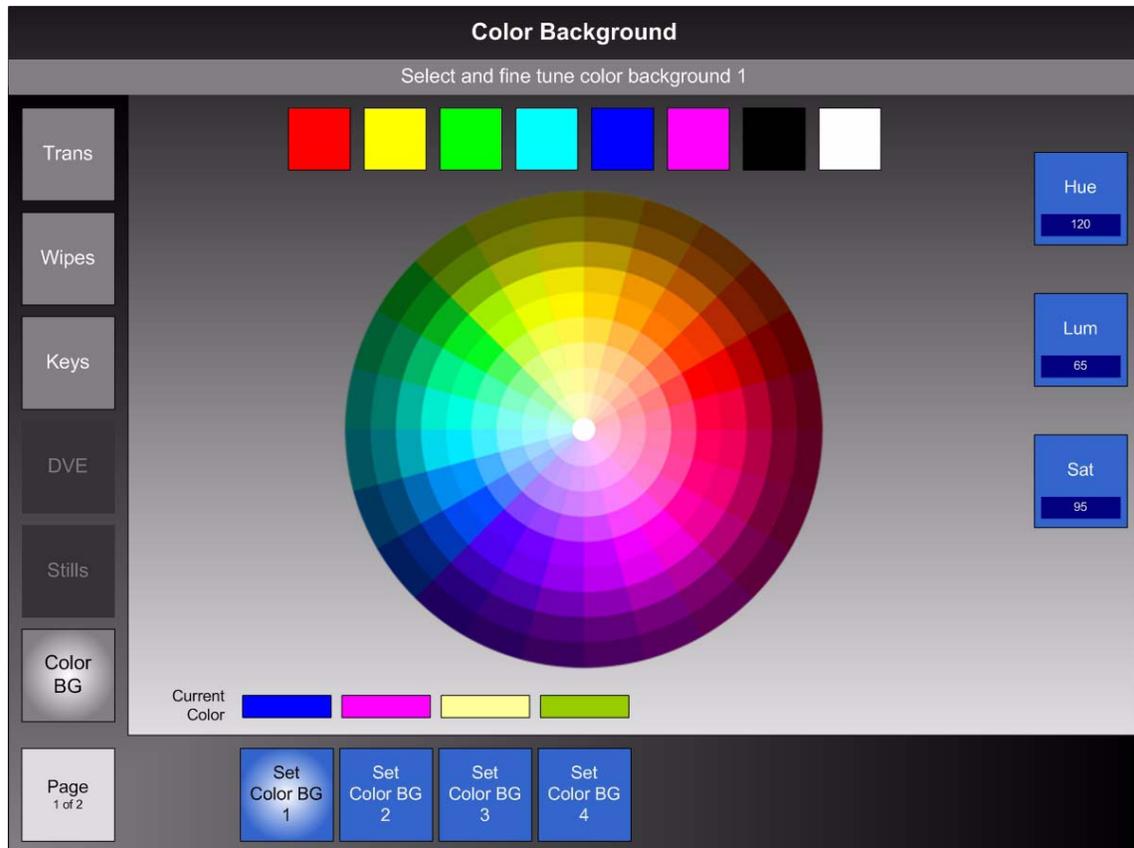


Figure 5-52. Color Background Menu (sample)

The following topics are discussed in this section:

- [Color Background Menu Access](#)
- [Color Background Functions](#)

Color Background Menu Access

To access the **Color Background Menu**:

- In the **Menu Bar**, press **{Page}** to display page 1 (if required). Then, press the **{Color BG}** button.

Color Background Functions

The **Color Background Menu** provides several ways to select and modify colors. The following functions are discussed in this section:

- [Color Background Selection](#)
- [Color Chips](#)
- [Color Wheel](#)
- [Fine Tuning](#)

Color Background Selection

Four **Color Background Selection** buttons are provided in the **Tool Bar**, one for each color background signal that can be mapped to the panel. To adjust a specific color background signal, press its button to associate the entire menu with that color.



Figure 5-53. Color Background Selection buttons (sample)

Each button has an associated “**Current Color**” box directly above. This box shows the currently selected color, and the box updates as different colors are selected or fine-tuned.

Color Chips

At the top of the **Color Background Menu**, a line of eight **Color Chips** are provided:

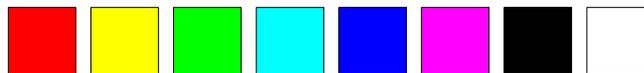


Figure 5-54. Color Chips

These chips provide one-touch access to the six primary colors, plus black and white. To choose a color, simply touch the desired chip. The “**Current Color**” box updates, and the values in the **{Hue}**, **{Lum}** and **{Sat}** controls also update.

5. Menu Orientation

Color Background Menu

Color Wheel

The **Color Wheel** enables you to select a color from the full 360 degree spectrum.



Figure 5-55. Color Wheel

To choose a color, simply touch the desired color on the wheel. The “**Current Color**” box updates, and the values in the **{Hue}**, **{Lum}** and **{Sat}** controls also update.

Fine Tuning

Three “fine tuning” controls are provided, enabling you to adjust the current color’s **Hue**, **Luminance** and **Saturation**.



Figure 5-56. Color Fine Tuning Controls

Use these value buttons to adjust the selected color background. The “**Current Color**” box updates as you adjust.

- **{Hue}** — Adjust the color background’s hue. **Range:** 0 to 360
- **{Lum}** — Adjust the color background’s luminance. **Range:** 0 to 100
- **{Sat}** — Adjust the color background’s saturation. **Range:** 0 to 100

Memory Menu

The **Memory Menu** enables you to manage your memory registers. This includes the ability to view, name, lock and delete registers, plus the ability to enable or disable Memory Modules, and the sub-sections within each module — called “**Enables**.” Remember, however, that the storage and recall modes can only be entered by pressing **STORE** or **RECALL** on the control panel.

The **Memory Menu** includes two different screens:

- The **Memory Menu** itself provides a table of all 1000 memory registers. Refer to the “[Memory Menu Description](#)” section on page 159 for details.
- The **Enables Menu** provides a close-up view of one register only, and all of its associated Enables. Refer to the “[Enables Menu Description](#)” section on page 161 for details.



The term “**Memory Modules**” itself refers to the eight yellow buttons in the control panel’s **Memory Section**, and the corresponding columns in the Memory Menu’s table of registers. These buttons select the large categories of switcher functions to be included in the selected store or recall operation.

There are three modes in which both of the menus described above can be used:

- In the **View Mode**, you can look at all memory registers, name registers, and view the status of all modules and Enables. You cannot modify the modules or Enables within a register, but you can lock registers and delete registers.
- In the **Store Mode**, you can name registers, modify modules and Enables, but you cannot lock or delete registers.
- In the **Recall Mode**, you can modify modules and Enables, but only those that were initially stored. You cannot name, lock or delete registers.

The table below summarizes the functions you can perform in each mode:

Table 5-2. Memory Menu modes and functions

Memory Menu Mode	Name Registers	Modules	Enables	Lock Registers	Delete Registers
View	Yes	View Only	View Only	Yes	Yes
Store	Yes	Modify	Modify	No	No
Recall	No	Modify	Modify	No	No

The following topics are discussed in this section:

- [Memory Menu Access](#)
- [Memory Menu Description](#)
- [Enables Menu Description](#)
- [Selecting Registers](#)
- [Naming Registers](#)
- [Advanced Memory Functions](#)

5. Menu Orientation

Memory Menu

Memory Menu Access

There are two ways to access the **Memory Menu**:

- In the **Menu Bar**, press **{Page}** to display page **2** (if required). Then, press the **{Memory}** button.
- Press and hold either the **STORE** or **RECALL** button in the control panel's **Memory Section**.

When either of the two methods above are used, the following rules apply:

- If neither the **STORE** nor the **RECALL** button is lit, you will access the menu in **View Mode**.
- If **STORE** is lit, you will access the menu in **Store Mode**.
- If **RECALL** is lit, you will access the menu in **Recall Mode**.

Note

Regardless of the mode, you will always return to the last menu used, either the **Memory Menu** or the **Enables Menu**. For example, if you are working on the **Enables Menu** and you jump over to the **Transition Menu**, you will return to the **Enables Menu**.

Important

Remember that you can store and recall memory registers by using the **Memory Section** on the control panel only — without accessing the **Memory Menu**. In this “panel only” mode, you can select registers and modules, but you cannot modify any Enables. Please note:

- If you store a register using the control panel's **Keypad** only (without using the **Memory Menu**), all Enables will be on.
- If you recall a register using the control panel's **Keypad** only (without using the **Memory Menu**), all Enables will be on — exactly as stored in the register.

Memory Menu Description

The figure below illustrates a sample **Memory Menu** in the **View Mode**.

Reg	Lock	Description	Modules								
			M/E 1	M/E 2	PGM	SYS	Cust	Still	AUX	DVE	
121	x	Show Open	x		x					x	
122	x	Bump 1 to Break	x		x					x	
123	x	Bump 2 to Break	x		x					x	
124		Computer 1 to Aux 5								x	
125		Computer 2 to Aux 5								x	
126	x	VTR 1 to all banks	x		x						
127	x	Logo to all banks	x		x						
128		Key lock 1, M/E 1	x								
129		Key lock 2, M/E 1	x								
130		Register_130	x		x					x	
131		Register_131	x		x					x	
132											
133											
134		System Map 1					x				
135		System Map 2					x				

Figure 5-57. Memory Menu, View Mode (sample)

The **Memory Menu** provides a table of all 1000 memory registers, using a view of 15 rows of registers at a time. The large register table itself is divided into two sections:

- The three left-hand columns list register numbers, locks and descriptions.
 - ~ **Reg** — indicates the register number, from 1 to 1000. Refer to the [“Selecting Registers”](#) section on page 166 for more information.
 - ~ **Lock** — indicates whether or not the register is locked, as set on the **Advanced Memory Menu**. An “x” indicates “locked.” Registers can only be locked and unlocked in **View Mode**.
 - ~ **Description** — displays a brief description (or name) of the register, as entered via the **{Description}** button. Descriptions can only be entered in **View** and **Store** modes.

Note

The space above these three columns is reserved for the large **STORE** and **RECALL** labels, which confirm each specific mode of operation. When no label is present, the menu is in **View** mode.

5. Menu Orientation

Memory Menu

- The eight right-hand columns (under the **Modules** heading) indicate which modules are included in each register. These columns correspond to the eight categories of modules available on the panel: **M/E 1**, **M/E 2**, **PGM**, **SYS** (System), **Cust** (Custom), **Still**, **Aux** and **DVE**. In Chapter 3, refer to the [“Memory Section”](#) heading on page 81 for a description of each module.

Please note:

- ~ An “**x**” in a cell indicates that the module is included in the register. The “**x**” does not indicate the status of the Enables within the module.
- ~ A blank cell indicates that the module is not part of the register.
- ~ If a column heading is grayed out, that module is not currently available.

Note

The **M/E 2**, **Cust**, **Still** and **DVE** modules are not available in release 1.0.

- In the table, the yellow highlight indicates the “selected” register. There are many ways that you can select registers, including touching, scrolling with the top knob, and pressing the **{Memory Register}** value button. Refer to the [“Selecting Registers”](#) section on page 166 for details on all register selection methods.
- Press **{Description}** to display the keyboard, which enables you to enter a register description (or name). Refer to the [“Naming Registers”](#) section on page 167 for details.
- Press **{Enables}** to display the **Enables Menu**, which allows you to view or modify the Enables within each module. Refer to the [“Enables Menu Description”](#) section on page 161 for details.
- Press **{Advanced}** to display the **Advanced Memory Menu**, which allows you to delete registers and lock registers. Refer to the [“Advanced Memory Functions”](#) section on page 168 for details.

Enables Menu Description

From the **Memory Menu**, press **{Enables}** to display the **Enables Menu**, as shown below in the **View Mode**.

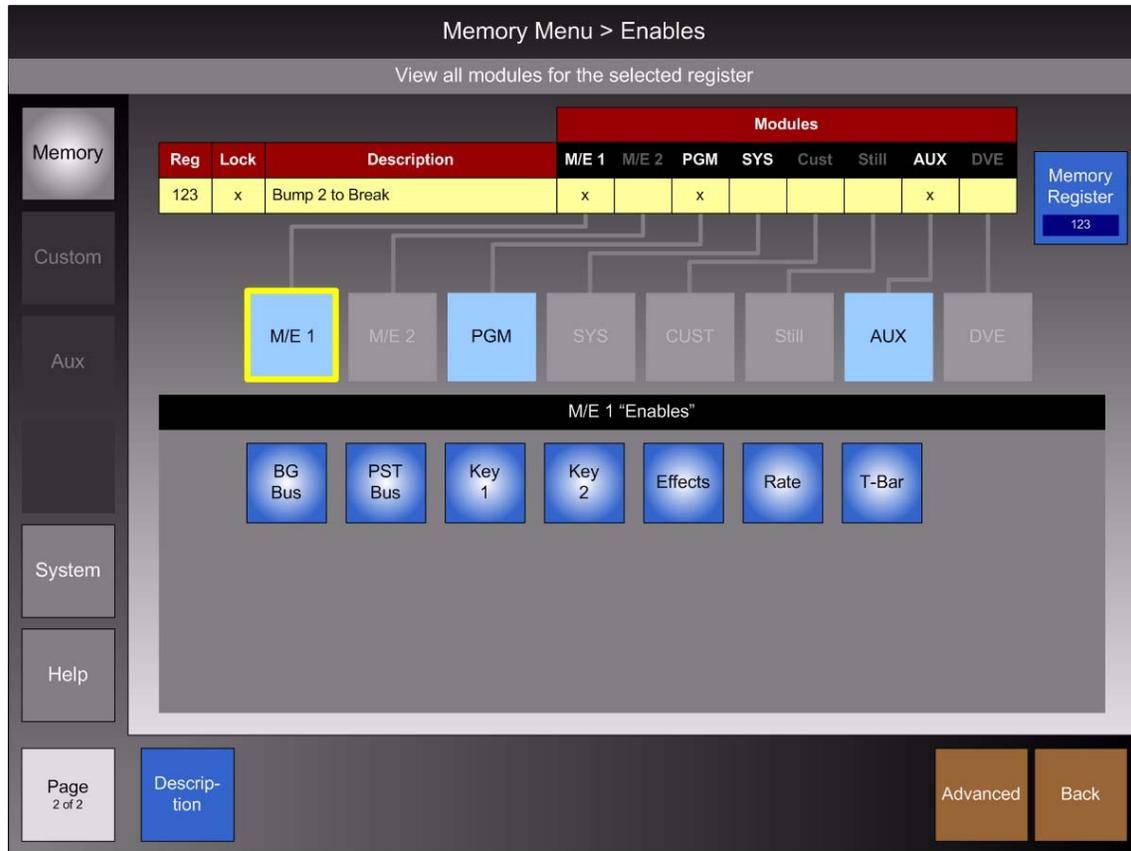


Figure 5-58. Enables Menu, View Mode (sample)

The **Enables Menu** provides a close-up view of the “selected” register only, and all of its associated Enables. The menu can be accessed in all modes (**View**, **Store** and **Recall**), but not all functions are available, depending on the selected mode.

Enables themselves are arrays of sub-functions within an individual module, which can be toggled on or off as desired. For example:

- If you store a register that includes the M/E 1 module, there are seven Enables within that module that divide the M/E into its various functional components.
- You can elect to leave all enables on (and thus store or recall the *entire* M/E), or you can elect to turn specific Enables on or off (and thus store or recall only a *portion* of the M/E). Refer to the [“Enable Descriptions”](#) section on page 163 for a complete explanation of each module’s Enables.

The **Enables Menu** is divided into three sections:

- **Register Table** — The top portion of the menu provides the same table as the **Memory Menu**, but only the selected register is shown. All column headings are identical, including the space above the three left-hand columns which is reserved for the large **STORE** and **RECALL** labels.

5. Menu Orientation

Memory Menu

- **Module Section** — Below the table is a matrix of buttons, one for each module. Lines are drawn to the corresponding cells in the table for reference. Please note:
 - ~ For release 1.0, the **M/E 2**, **CUST**, **STILL** and **DVE** buttons are permanently grayed out.
 - ~ In **Store Mode**, the **M/E 1**, **PGM**, **SYS** and **AUX** buttons are always blue, indicating their availability for storage or modification. When selected, the button is bordered in bright yellow, and its corresponding Enables appear in the **Enables Section**.
 - ~ In **Recall Mode**, if a button is grayed out, that module was not stored in the selected register. If a button is blue, it can be selected and modified.
 - ~ In **View Mode**, if a button is grayed out, that module was not stored in the selected register. If a button is blue, it can be selected and viewed.

- **Enables Section** — When a blue button is selected in the **Module Section**, the bottom portion of the menu shows all available Enables for that module. The title of this section (in the black bar) changes as different modules are selected.

Depending on the mode, the Enables can be viewed (only), or modified:

- ~ In **View Mode**, Enables can only be viewed.
- ~ In **Store Mode**, Enables can be modified. All Enables will be on by default, when you enter the **Store Mode**.
- ~ In **Recall Mode**, Enables can be modified — but only those that were originally “enabled” in the selected register.

When an Enable is modified, it can be toggled on or off as desired.

- ~ When toggled **On**, the Enable is included in the selected memory **Store** or **Recall** operation.
- ~ When toggled **Off**, the Enable is excluded from the selected memory **Store** or **Recall** operation.
- ~ When an Enable is grayed out, it was not included in a previous memory **Store** operation.

Refer to the “[Enable Descriptions](#)” section on page 163 for explanations of each category of Enables.

The following functions are also available:

- Registers can be selected with the top knob, or by pressing the **{Memory Register}** value button. Refer to the “[Selecting Registers](#)” section on page 166 for details.
- Press **{Description}** to display the keyboard, which enables you to enter a register description (or name). Refer to the “[Naming Registers](#)” section on page 167 for details.
- Press **{Advanced}** to display the **Advanced Memory Menu**, which allows you to delete registers and lock registers. The menu is only available in **View Mode**. Refer to the “[Advanced Memory Functions](#)” section on page 168 for details.
- On the **Enables Menu**:
 - ~ Press **{All On}** to toggle all Enables on during a **Store** or **Recall** operation.
 - ~ Press **{All Off}** to toggle all Enables off during a **Store** or **Recall** operation.

Enable Descriptions

This section provides descriptions of each module's Enables. The following topics are discussed:

- [M/E 1 Enables](#)
- [PGM Enables](#)
- [System Enables](#)
- [Aux Enables](#)

M/E 1 Enables

The figure below illustrates the available Enables when the **M/E 1** module is selected:

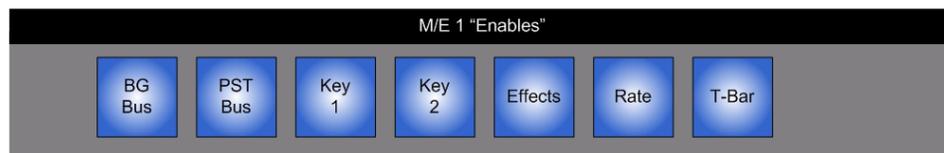


Figure 5-59. M/E 1 Enables

Following are descriptions of each M/E 1 Enable. Remember that each can be toggled on or off without restriction:

- **{BG Bus}** — stores or recalls the source selected on the M/E's BG bus.

Note

The **{BG Bus}** button does not store or recall input settings. It only stores or recalls the source. Use "**System**" enables to store and recall input settings.

- **{PST Bus}** — stores or recalls the source selected on the M/E's PST bus.
- **{Key 1}** — stores or recalls all settings for Keyer 1, plus the selected key source.
- **{Key 2}** — stores or recalls all settings for Keyer 2, plus the selected key source.
- **{Effects}** — stores or recalls the selections in the M/E's **Effects Group** and **Next Transition Group**.

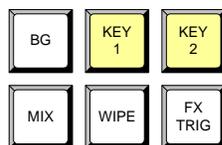


Figure 5-60. Effects Enables, M/E 1

- **{Rate}** — stores or recalls the M/E's transition rate.
- **{T-Bar}** — stores or recalls the position of the T-Bar.

Note

There is no separate "enable" button for **color background** settings. Each time you store the contents of the M/E, color background settings are automatically stored.

5. Menu Orientation

Memory Menu

PGM Enables

The figure below illustrates the available Enables when the **PGM** module is selected:



Figure 5-61. PGM Enables

Following are descriptions of each PGM Enable. Remember that each can be toggled on or off without restriction:

- **{PGM Bus}** — stores or recalls the source selected on the PGM bank's PGM bus.
- **{PST Bus}** — stores or recalls the source selected on the PGM bank's PST bus.
- **{DSK}** — stores or recalls all settings for the DSK, plus the selected key source.
- **{Effects}** — stores or recalls the selections in the M/E's **Effects Group** and **Next Transition Group**.



Figure 5-62. Effects Enables, PGM

- **{Rate}** — stores or recalls the PGM bank's transition rate.
- **{T-Bar}** — stores or recalls the position of the T-Bar in the PGM bank.

Note

There is no separate "enable" button for **color background** settings. Each time you store the contents of the M/E, color background settings are automatically stored.

System Enables

The figure below illustrates the Enables when the **SYS** (System) module is selected:

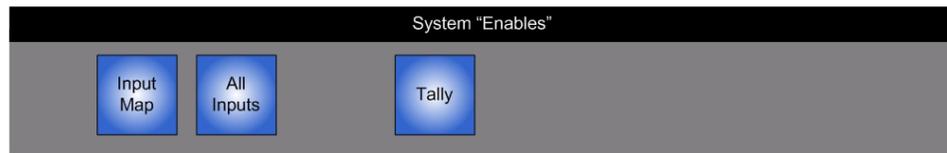


Figure 5-63. SYS Enables

Following are descriptions of each System Enable. Remember that each can be toggled on or off without restriction:

- **{Input Map}** — stores or recalls the panel's current input mapping, as set on the **Map Buttons Menu**. Refer to the "[Map Buttons Menu](#)" section on page 210 for a menu description.
- **{All Inputs}** — stores or recalls all input setup parameters (including the name) for both native and universal inputs, as set on the **Input Setup Menu**. Refer to the "[Input Menu](#)" section on page 187 for a menu description.
- **{Tally}** — stores or recalls all tally settings, as set on the **Tally Setup Menu**. Refer to the "[Tally Setup Menu](#)" section on page 214 for a menu description.

Aux Enables

The figure below illustrates the available Enables when the **Aux** module is selected:



Figure 5-64. Aux Enables

Following are descriptions of each Aux Enable. Remember that each can be toggled on or off without restriction:

- **{Aux 1}** through **{Aux 6}** — stores or recalls the source assignment on the selected Aux Bus. For example, if **CAM 1** is assigned to **Aux 2**, that association will be stored or recalled in the memory register.

5. Menu Orientation

Memory Menu

Selecting Registers

The following methods are available for selecting memory registers:

- **Control Panel Selection** — in both **Store** and **Recall** modes, you can select registers using the **Memory Section**'s keypad. If the **Memory Menu** is visible, the highlight jumps to the new register.
- **Memory Menu, Table Selection** — In the **Store**, **Recall** and **View** modes, you can select a register simply by touching any of the 15 visible rows in the register table. The highlight jumps to the selected register.
- **Memory Menu, Knob Selection** — In the **Store**, **Recall** and **View** modes, on both the **Memory Menu** and the **Enables Menu**, you can select a register by turning the knob adjacent to the **{Memory Register}** value button.
 - ~ Turn clockwise to scroll down the list, incrementing register numbers.
 - ~ Turn counter-clockwise to scroll up the list, decrementing register numbers.



On the **Memory Menu**, note that when the highlight reaches the top or bottom of the screen, it remains there — and the entire table scrolls.

Note

The **Fine Adjust** button in the **Memory Section** affects the scrolling rate. When **Fine Adjust** is **Off**, turning the knob scrolls in very large increments. When **On**, turning the knob scrolls in small increments.



- **Memory Menu, Value Button Selection** — In the **Store**, **Recall** and **View** modes, on both the **Memory Menu** and the **Enables Menu**, you can select a register by pressing the **{Memory Register}** value button. When the **Keypad** appears, enter the desired register and press **{Enter}**. The highlight jumps to the selected register.

Please note the following important points regarding register selection and tracking:

- As you enter register numbers using the physical **Keypad**, the highlight in the table tracks the register accordingly — for each digit entered. For example, if the target register is **123**, the highlight jumps to register **1** when the first digit is entered, register **12** when the second digit is entered, and register **123** when you complete the entry.
- As you enter register numbers using the physical **Keypad** in both **Store** and **Recall** modes, the module buttons track in the **Memory Section** — for each digit entered. For example, if the target register is **123**:
 - ~ When the first digit (**1**) is entered, the modules already stored in that register light (if any).
 - ~ When the second digit (**2**) is entered, the modules already stored in register **12** light (if any). These modules may be different than those in register **1**.
 - ~ When the third digit (**3**) is entered, the modules already stored in register **123** light (if any). Again, these modules may be different than those stored in register **12**.

Description

Naming Registers

The “name register” feature is available in the following memory modes only:

- **View Mode**
- **Store Mode**

By default, new registers are named **Register_[n]**, where **[n]** is the number of the selected register. As desired, you can enter a custom description of a register.

To use the feature:

- Access the **Pop-up Keyboard**:
 - ~ From the **Memory Menu**, highlight the desired register in the table, and then press **{Description}**.
 - ~ From the **Enables Menu**, press **{Description}**.
- Enter a brief description, then press **{Enter}** to close the **Keyboard**.

Note

In **View Mode**, the new (or edited) description appears immediately in the register table. In **Store Mode**, the new (or edited) description will not appear in the table until the **ENTER** button is pressed on the **Keypad**.

Refer to the “[Using the Pop-up Keyboard](#)” section on page 133 for more information about the **Keyboard**.

5. Menu Orientation

Memory Menu

Advanced Memory Functions

Advanced

The **Advanced Memory Menu** provides access to the following memory functions:

- [Locking and Unlocking Registers](#)
- [Deleting Registers](#)

Please note the following important points regarding the **Advanced Memory Menu**:

- the **Advanced Memory Menu** is only available in **View Mode**.
- If you initiate a **Store** or **Recall** function and you are not in the **Advanced Memory Menu**, the **{Advanced}** button is grayed out.
- If you initiate a **Store** or **Recall** function and you are already in the **Advanced Memory Menu**, the system automatically takes you back to the **Memory Menu**.

These functions occur to prevent you from locking, unlocking or deleting a memory register during a **Store** or **Recall** operation.

Locking and Unlocking Registers

Lock
Unlock

The “lock/unlock register” feature is available in the following memory mode only:

- **View Mode**

By default, a newly stored memory register is unlocked. As desired, you can lock a register to prevent accidental deletion, or accidental over-writing.

To use the feature:

- From the **Memory Menu**, highlight the desired register in the table, and then press **{Advanced}**.
- From the **Enables Menu**, press **{Advanced}**.

On the **Advanced Memory Menu**, press the **{Lock Unlock}** button to toggle the mode.

- If currently unlocked, pressing **{Lock Unlock}** locks the register, and an “X” appears in the appropriate table cell under the **Lock** heading. If you attempt to delete or over-write the register, an error message pops up on screen.
- If currently locked, pressing **{Lock Unlock}** unlocks the register and removes the “X” from the table cell.

Deleting Registers

Delete
Register

The “delete register” feature is available in the following memory mode only:

- **View Mode**

All registers except “locked” registers can be deleted. This action clears the selected memory register completely. To use the feature:

- From the **Memory Menu**, highlight the desired register in the table, and then press **{Advanced}**.
- From the **Enables Menu**, press **{Advanced}**.

On the **Advanced Memory Menu**, ensure that the register is unlocked. Then, press the **{Delete Register}** button to delete the register. You will be asked to confirm.

System Menu

The following topics are discussed in this section:

- [System Menu Description](#)
- [Communications Setup Menu](#)
- [Reference and Output Setup Menu](#)
- [Output Test Patterns Menu](#)
- [Clean Feed Setup Menu](#)
- [Input Menu](#)
- [External DSK Setup Menu](#)
- [Map Buttons Menu](#)
- [Tally Setup Menu](#)
- [User Preferences Menu](#)
- [Save All](#)
- [Software Menu](#)
- [Diagnostics Menu](#)
- [Backup and Restore Menu](#)
- [Reset Menu](#)
- [System Shutdown](#)

5. Menu Orientation

System Menu

System Menu Description

The figure below illustrates a sample **System Menu**.

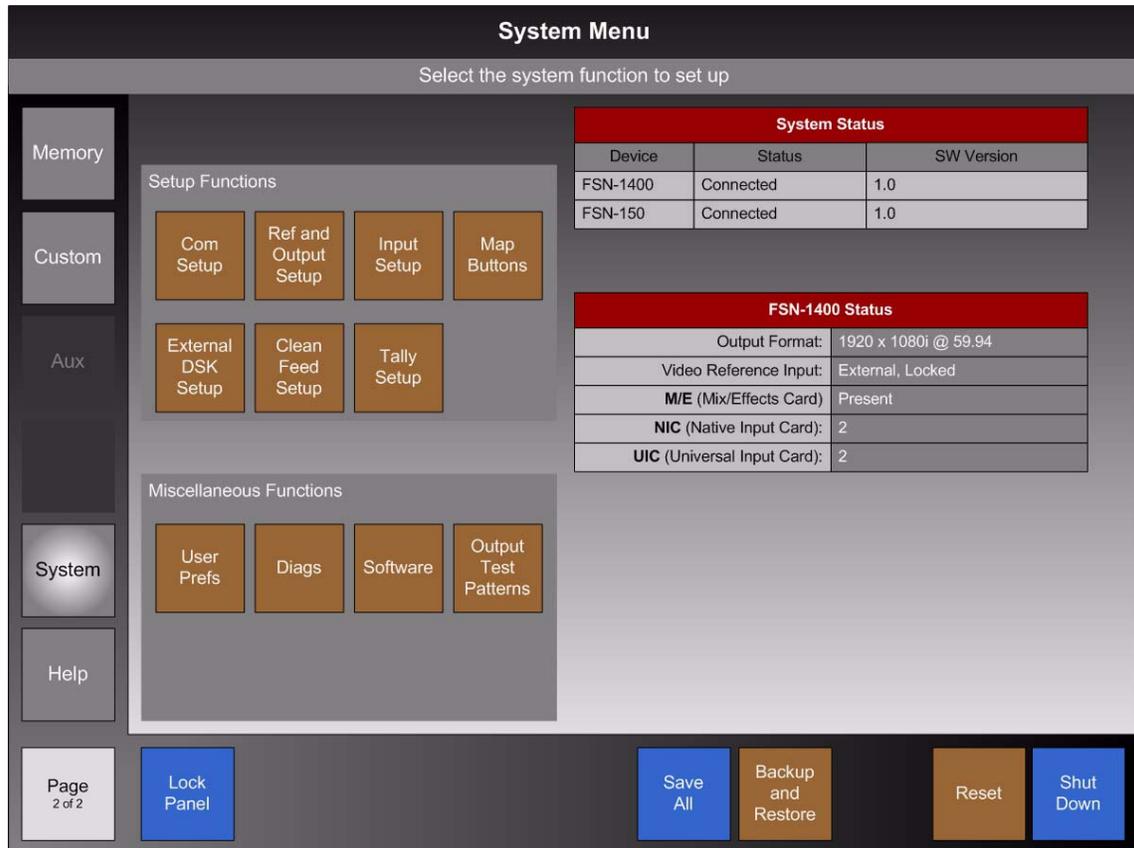


Figure 5-65. System Menu (sample)

The **System Menu** provides access to all setup functions, plus a convenient status table.

Important

For all startup conditions, the **System Menu** is always displayed first.

The following topics are discussed in this section:

- [System Menu Access](#)
- [System Menu Functions](#)
- [Status Tables](#)
- [Lock/Unlock Panel](#)

System Menu Access

To access the **System Menu**:

- In the **Menu Bar**, press **{Page}** to display page 2 (if required). Then, press the **{System}** button.

System Menu Functions

On the **System Menu**, navigation buttons are arranged in three groups:

- **Setup Functions** (at the top of the **Palette**)
- **Miscellaneous Functions** (at the bottom of the **Palette**)
- **Tool Bar** functions

Note

In the **Setup Functions** group, buttons are arranged in the *recommended* order in which the individual setup procedures should initially be performed — from left to right, and from top to bottom.

The following functions are provided in the **Setup Functions** group:

Com
Setup

- Press **{Com Setup}** to display the **Communications Setup Menu**, which enables you to “discover” an FSN-1400 chassis (if required), and set up Ethernet. Refer to the [“Communications Setup Menu”](#) section on page 175 for details.

Ref and
Output
Setup

- Press **{Ref and Output Setup}** to display the **Reference and Output Setup Menu**, which enables you to set up the system’s video reference input, native resolution and output timing mode. Refer to the [“Reference and Output Setup Menu”](#) section on page 178 for details.

Input
Setup

- Press **{Input Setup}** to display the **Input Setup Menu**, which enables you to set up both native and universal switcher inputs. Refer to the [“Input Menu”](#) section on page 187 for details.

Map
Buttons

- Press **{Map Buttons}** to display the **Map Buttons Menu**, which enables you to map inputs and internal sources to the control panel. Refer to the [“Map Buttons Menu”](#) section on page 210 for details.

External
DSK
Setup

- Press **{External DSK Setup}** to display the **External DSK Setup Menu**, which enables you to set up the **DSK Cut** and **DSK Fill** inputs. Refer to the [“External DSK Setup Menu”](#) section on page 208 for details.

Clean
Feed
Setup

- Press **{Clean Feed Setup}** to display the **Clean Feed Setup Menu**, which enables you to set clean feed outputs and the source for the **ASSIGN** button. Refer to the [“Clean Feed Setup Menu”](#) section on page 184 for details.

Tally
Setup

- Press **{Tally Setup}** to display the **Tally Setup Menu**, which enables you to set all tally relay closures. Refer to the [“Tally Setup Menu”](#) section on page 214 for complete details.

The following functions are provided in the **Miscellaneous Functions** group:

User
Prefs

- Press **{User Prefs}** to display the **User Preferences Menu**, which enables you to set a variety of important user preferences and options. Refer to the [“User Preferences Menu”](#) section on page 217 for details.

5. Menu Orientation

System Menu



- Press **{Diags}** to display the **Diagnostics Menu**, which enables you to perform a variety of diagnostic tests to the system and view system error logs. Refer to the [“Diagnostics Menu”](#) section on page 223 for details.



- Press **{Software}** to display the **Software Menu**, which enables you to update the FSN-1400 and control panel with the latest software version. Refer to the [“Software Menu”](#) section on page 221 for details.



- Press **{Output Test Patterns}** to display the **Output Test Patterns Menu**, which enables you to select and display test patterns on all system outputs. Refer to the [“Output Test Patterns Menu”](#) section on page 182 for details.

The following functions are provided in the **Tool Bar**:



- Press **{Lock Panel}** to lock and unlock the control panel. Refer to the [“Lock/Unlock Panel”](#) section on page 174 for details.



- Press **{Save All}** to save all system input and output setup parameters to non-volatile memory. Refer to the [“Save All”](#) section on page 220 for details.



- Press **{Backup Restore}** to display the **Backup and Restore Menu**, which enables you to backup and restore the system to/from a USB drive. Refer to the [“Backup and Restore Menu”](#) section on page 234 for details.



- Press **{Reset}** to display the **Reset Menu**, which enables you to perform both soft and factory resets. Refer to the [“Reset Menu”](#) section on page 235 for details.



- Press **{Shut Down}** to display a prompt for performing a system shutdown. Refer to the [“System Shutdown”](#) section on page 237 for details.

Status Tables

The **System Menu** includes two status tables, as described below.

- The **System Status Table** provides device, status and software version information:

System Status		
Device	Status	SW Version
FSN-1400	Connected	1.0
FSN-150	Connected	1.0

Figure 5-66. System Status Table (sample)

Column descriptions are as follows:

- ~ **Device** — lists the two system devices: FSN-1400 and the control panel.
 - ~ **Status** — provides device status, either **Connected** or **Not Connected**.
 - ~ **SW Version** — lists the device's software version.
- The **FSN-1400 Table** lists important system configuration information:

FSN-1400 Status	
Output Format:	1920 x 1080i @ 59.94
Video Reference Input:	External, Locked
M/E (Mix/Effects Card)	Present
NIC (Native Input Card):	2
UIC (Universal Input Card):	2

Figure 5-67. FSN-1400 Table (sample)

Row descriptions are as follows:

- ~ **Output Format** — lists the system's native resolution.
- ~ **Video Reference Input** — lists the system's video reference input and "lock" status.

Note

Refer to the "[Reference and Output Setup Menu](#)" section on page 178 for details on setting up the **Output Format** and the **Video Reference Input**.

- ~ **M/E** — lists if the **M/E** (Mix/Effect) **Card** is missing or present.
- ~ **NIC** — lists the number of **Native Input Cards** connected to the FSN-1400 chassis.
- ~ **UIC** — lists the number of **Universal Input Cards** connected to the FSN-1400 chassis.

5. Menu Orientation

System Menu

Lock/Unlock Panel

On the **System Menu**, press **{Lock Panel}** to display the following pop-up:

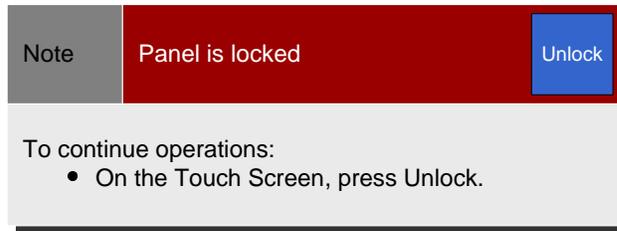


Figure 5-68. Panel Lockout pop-up

In this mode, the control panel and **Touch Screen** are locked out, and the pop-up remains on display. To unlock the control panel and **Touch Screen**, press **{Unlock}**.

Communications Setup Menu

From the **System Menu**, press **{Com Setup}** to display the **Communications Setup Menu**, which enables you to “discover” an FSN-1400 chassis, and set up Ethernet.

The figure below illustrates a sample **Communications Setup Menu**.

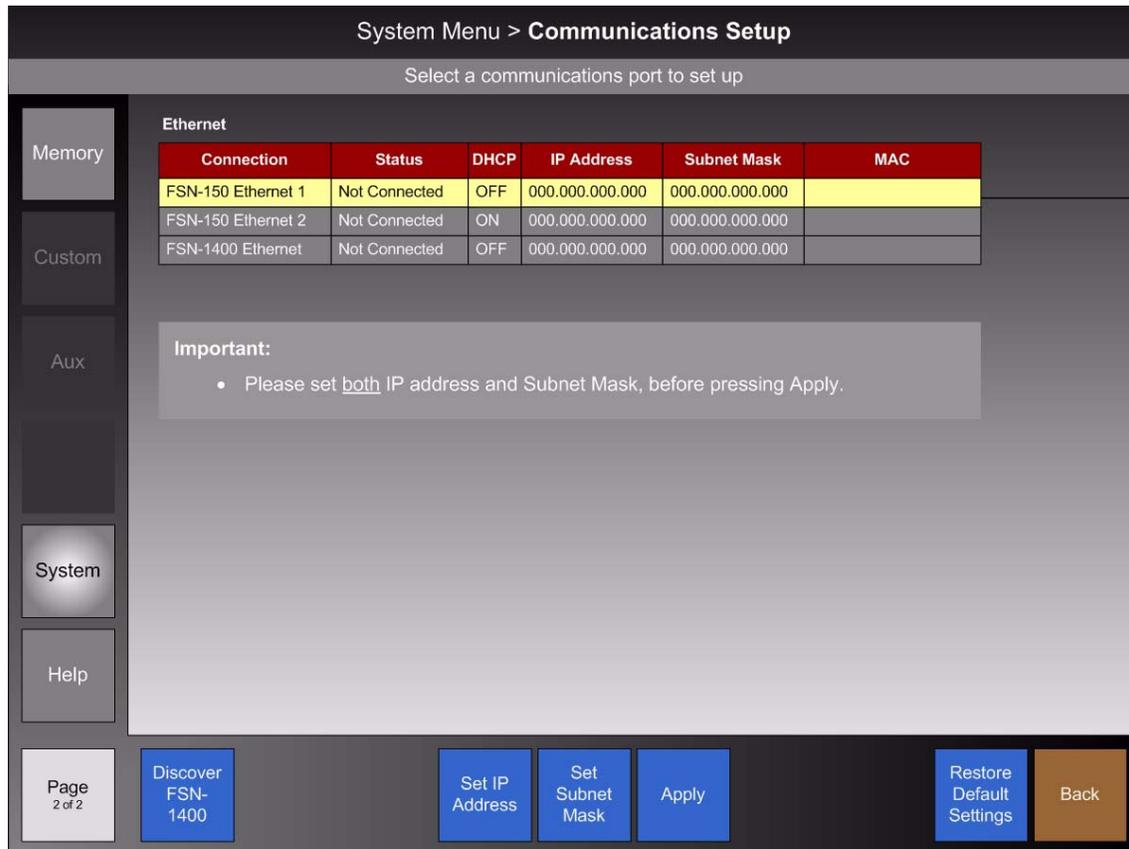


Figure 5-69. Communications Setup Menu (sample)

At the top of the menu, the **Ethernet Status Table** provides system Ethernet information, along with an important note reminding you to set both the **IP address** and the **Subnet Mask**, prior to pressing **{Apply}**.

Use the top **Knob** to scroll the yellow highlight. Changes can be made to the ports shown on the highlighted row. The following columns of information are provided:

- **Connection** — lists the two control panel Ethernet ports, and the single FSN-1400 Ethernet port.
- **Status** — provides Ethernet port status, either “**Connected**” or “**Not Connected**.”
- **DHCP** — lists DHCP status, either **ON** or **OFF**.

Note

DHCP status cannot be changed in release 1.0.

- **IP Address** — lists the IP address of the associated Ethernet port. This address can be changed using the **{Set IP Address}** button.

5. Menu Orientation

System Menu

- **Subnet Mask** — lists the subnet mask of the associated Ethernet port. This address can be changed using the **{Set Subnet Mask}** button.
- **MAC** — lists the MAC address of the associated Ethernet port.

In the **Tool Bar**, the following operations can be performed on the highlighted port:

- If the **Status** column in the **Ethernet Status Table** reads **“Not Connected”** for any reason, use the “discover” process to locate the IP address(es) of all **FSN-1400** units within your local network. This action might be required, for example, if the IP address of a particular unit was changed.

Press **{Discover FSN-1400}** to display the following pop-up:

Discover
FSN-
1400



Figure 5-70. Discover FSN-1400 pop-up

During this interval, the system searches the network for **FSN-1400** systems, and the **FSN-1400 Selection Keypad** appears:

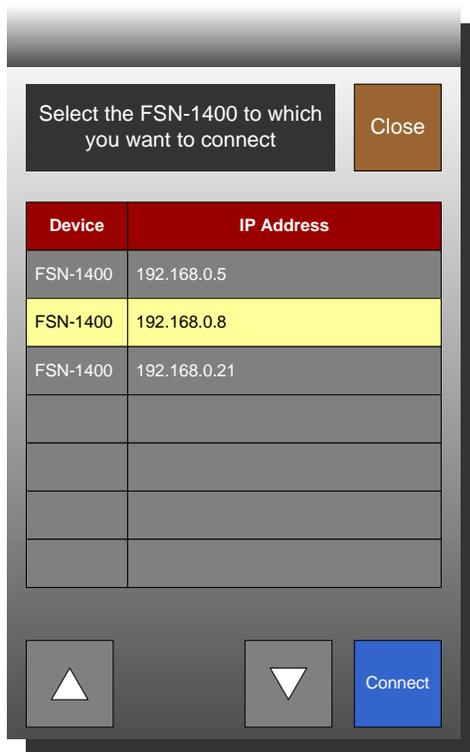


Figure 5-71. FSN-1400 selection keypad (sample)

In the **Keypad**, touch the desired **FSN-1400**, and then press **{Connect}**.

5. Menu Orientation

System Menu

Set IP
Address

- To change the **IP address** of a highlighted port, press **{Set IP Address}** to display the **IP Address Keypad**:

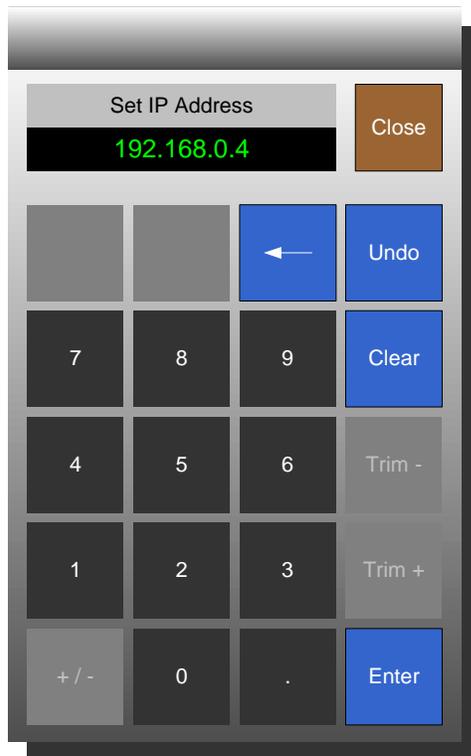


Figure 5-72. IP Address keypad (sample)

Enter the desired IP address using the decimal point as the separator between the four "octets," and press **{Enter}**.

Note

You do not have to enter all three digits in a particular octet. For example, you can enter **4** instead of **004**.

Set
Subnet
Mask

Apply

Restore
Default
Settings

- To change the **Subnet Mask** of a highlighted port, press **{Set Subnet Mask}** to display the **Subnet Mask Keypad**. Enter the desired subnet mask using the decimal point as the separator between the four "octets," and press **{Enter}**.
- After setting both the **IP address** and the **Subnet Mask**, press **{Apply}** to complete the procedure.
- To return the highlighted port's IP address and Subnet Mask to their factory default values, press **{Restore Default Settings}**.

5. Menu Orientation

System Menu

Reference and Output Setup Menu

From the **System Menu**, press **{Ref and Output Setup}** to display the **Reference and Output Setup Menu**, which enables you to set up the system's video reference input, output format (native resolution), and the output V-Lock setting.

The figure below illustrates a sample **Reference and Output Setup Menu**.

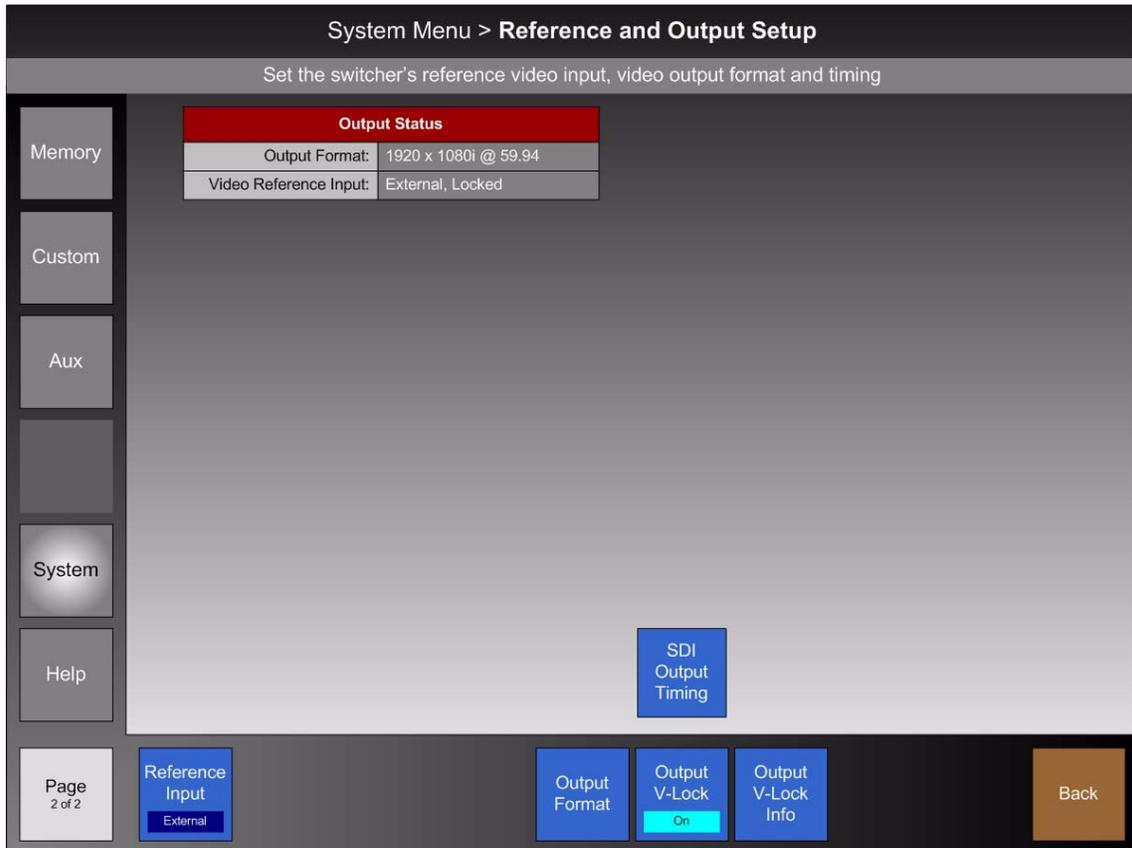


Figure 5-73. Reference and Output Setup Menu (sample)

At the top of the menu, the **Output Status Table** lists the output format (native resolution) and the reference video input.

Output Status	
Output Format:	1920 x 1080i @ 59.94
Video Reference Input:	External, Locked

Figure 5-74. Output Status Table (sample)

The following rows of information are provided:

- **Output Format** — lists the current output format (native resolution).
- **Video Reference Input** — lists the current reference video input. Please note:
 - ~ If **Free Run** is selected with the **{Reference Input}** button, the label "**Free Run**" will be shown.

5. Menu Orientation

System Menu

- ~ If **External** is selected with the **{Reference Input}** button, one of three different labels will be shown.
 - **External, Locked @ [rate]** — if reference video is detected and locked.

Note

If the reference is locked but the rate is incorrect (for the selected native format), the entire field will be red. In Appendix A, refer to the "[Reference Video Input Specifications](#)" section on page 309 for additional information about valid video reference frame rates.

- **External, Missing** — if reference video is missing. In this case, the field will be red.
- **External, Not Locked** — if a signal is detected but not locked. In this case, the field will be red.

The following functions are provided in the **Tool Bar**:



- Press **{Reference Input}** to display a pop-up which offers two reference options:
 - ~ **Free Run** — selects the FSN-1400's internal sync generator as the reference source.

Note

If **Free Run** is selected, the external **Cut** and **Fill** DSK inputs can not be used. In this condition, the **{External Key}** button on the **Keyer Menu** for the DSK will be grayed out.

- ~ **External** — selects the **REF IN** connector on the **System Card**. One of three external signals can be connected: **SMPTE bi-level sync**, **tri-level sync** or **black burst**.

Note

If **External** is selected, ensure that the proper signal is connected to the **REF IN** connector on the **System Card**. In Appendix A, refer to the "[Reference Video Input Specifications](#)" section on page 309 for detailed information about the allowed frame rates for the reference input.

5. Menu Orientation

System Menu



- Press **{Output Format}** to display the **Output Format Keypad**, which lists all available output resolutions.

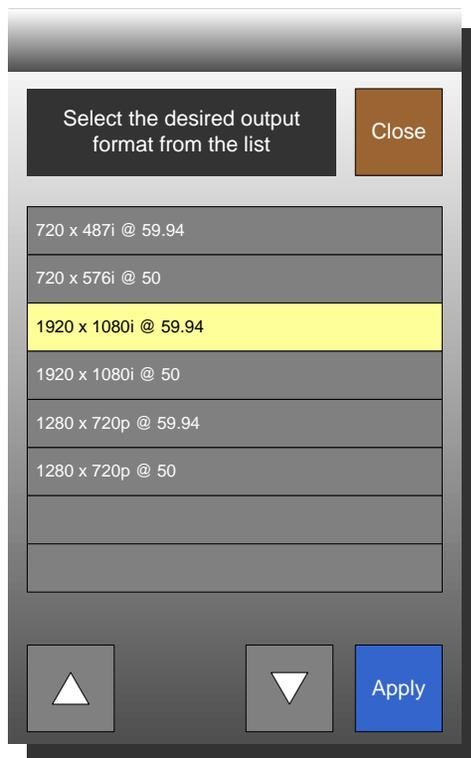


Figure 5-75. Output Format Keypad

Each entry is listed using the following convention: **Format @ Fv (Hz)**. Select the desired format and press **{Apply}** to set the system's native resolution.

Important

After you press **{Apply}**, the system displays a pop-up, asking that you confirm or cancel the procedure.



- Press the **{Output V-Lock}** button to toggle the **Output V-Lock** mode on or off. This button only appears when the **{Reference Input}** button is set to **External**.
 - ~ **On** — In this mode, the **{SDI Output Timing}** button appears, enabling you to set offsets anywhere relative to the external video reference input, with positive or negative values.

Important

When **{Output V-Lock}** is **On**, all native inputs are forced to **Frame Sync** mode, and one frame of delay will be incurred on all native inputs. In addition, on the **Input Setup Menu**, the **{Sync Mode}** button is grayed out. Refer to the "[Input Menu](#)" section on page 187 for more information.

5. Menu Orientation

System Menu

Important

When **{Output V-Lock}** is **On**, the position of the **DSK Cut** and **DSK Fill** inputs on screen will change.

- If the user preference “**Black on Invalid Video**” is turned on, the DSK turns off — because of the change in output timing.
- If the user preference “**Black on Invalid Video**” is off, the DSK will be visible — but in a shifted position. In this condition, the video position can be adjusted by changing the output timing of the DSK source itself.

~ **Off** — In this mode, you can not set H and V offsets, and the **{Sync Mode}** button is active on the **Input Setup Menu**.

Note

When **{Output V-Lock}** is turned **Off**, after having been **On**, all inputs return to **Auto Mode** on the **Input Setup Menu**.

Important

When **{Output V-Lock}** is **Off**, this mode provides the least amount of video delay through the switcher. The **DSK Cut** and **DSK Fill** inputs must be within ± 0.5 line of video reference.

SDI
Output
Timing

- When **{Output V-Lock}** is **On**, press **{SDI Output Timing}** to set **SDI H** and **V** offsets, anywhere relative to video reference. Two value buttons appear:
 - ~ Press **{SDI H Offset}** or use the adjacent **Knob** to set the desired amount of horizontal offset (in pixels) from video reference.
 - ~ Press **{SDI V Offset}** or use the adjacent **Knob** to set the desired amount of vertical offset (in lines) from video reference.
- Press the **{Output V-Lock Info}** button to display a pop-up with important information regarding the **Output V-Lock** mode. This button only appears when the **{Reference Input}** button is set to **External**.

Output
V-Lock
Info

Note **Output V-Lock Information** Close

Please note the following important information:

- When **Output V-Lock** is on, H and V offsets can be set anywhere relative to the external video reference input. All native inputs are forced to **Frame Sync** mode, and one frame of delay will be incurred on all native inputs. On the **Input Setup Menu**, the **Sync Mode** button is grayed out.
- When **Output V-Lock** is off, you can not set H and V offsets. On the **Input Setup Menu**, the **Sync Mode** button is active.

Figure 5-76. Output V-Lock Information Pop-up

5. Menu Orientation

System Menu

Output Test Patterns Menu

From the **System Menu**, press {**Output Test Patterns**} to display the **Output Test Patterns Menu**, which enables you to select and display test patterns. Any test pattern can be sent to any output, or one test pattern can be sent to all outputs simultaneously.

The test pattern selection does not alter the outputs selected on the control panel, because in the flow of video, test patterns are inserted downstream of the outputs. Once a test pattern is turned off, the originally selected video output returns.

The figure below illustrates a sample **Output Test Patterns Menu**.

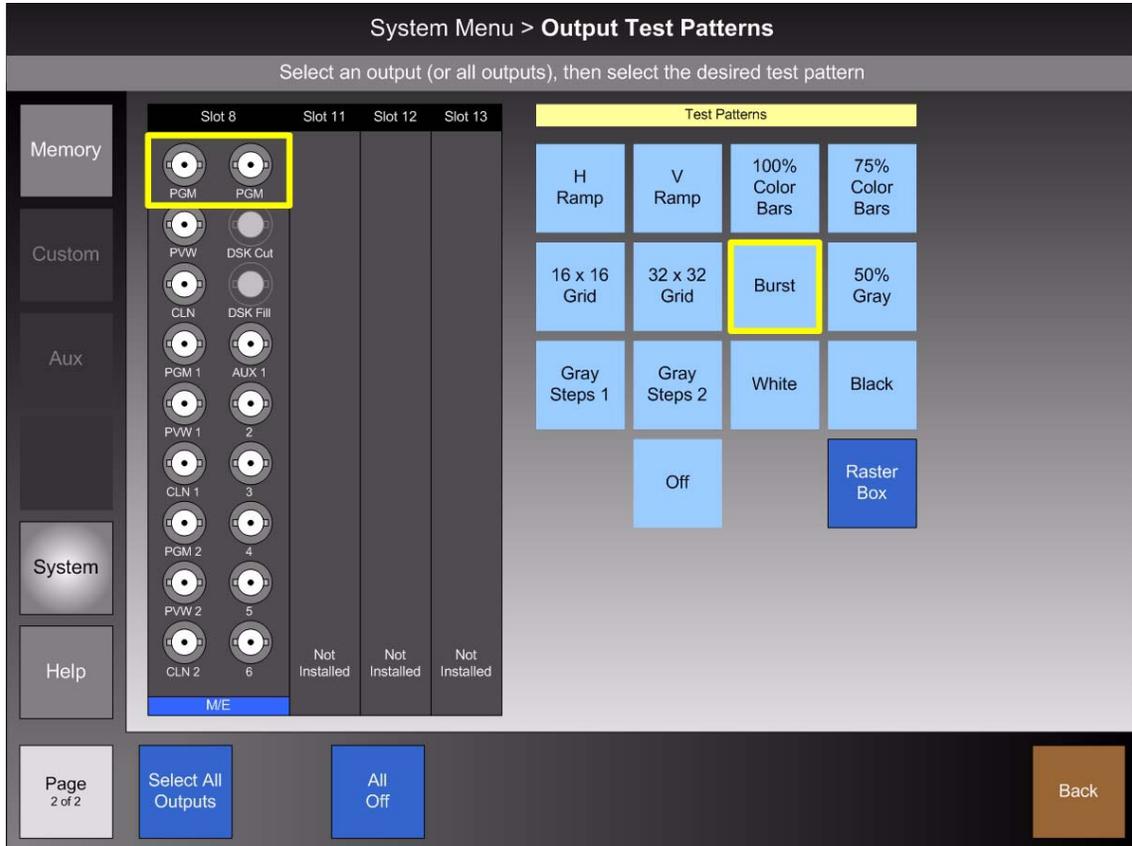


Figure 5-77. Output Test Patterns Menu (sample)

The left side of the **Palette** shows the **Rear I/O View** — specifically, slots **8, 11, 12** and **13** which include output connectors. This view will match your system configuration exactly. To select an output, touch the desired BNC to highlight it with a yellow border.

Please note:

- The number of each slot is shown along the top of the **Rear I/O View**.
- The type of each installed card is shown along the bottom (e.g., **M/E**).
- If a card is not installed, the label “**Not Installed**” appears in the slot.
- If a BNC connector is not an output (e.g., **DSK Cut**, **DSK Fill**), those BNCs will be grayed out.

The right side of the **Palette** provides a matrix of all available test patterns, plus specific buttons for {**Off**} and {**Raster Box**}.

5. Menu Orientation

System Menu

To send a test pattern to an output, touch the desired BNC in the **Rear I/O View** section, then touch the desired test pattern in the matrix.

The following 13 **Test Patterns** are provided in the matrix:

- H Ramp
- V Ramp
- 100% Color Bars
- 75% Color Bars
- 16 x 16 Grid
- 32 x 32 Grid
- Burst
- 50% Gray
- Gray Steps 1
- Gray Steps 2
- White
- Black

The following functions are provided in the matrix:

- Press **{Off}** to turn off the test pattern for the selected output.
- Press **{Raster Box}** to enable or disable a raster box for the selected output. The raster box width is fixed at 1 pixel. Note that the raster box can be enabled even if the test pattern is off.

The following functions are provided in the **Tool Bar**:

- Press **{Select All Outputs}** to highlight all outputs in the **Rear I/O View** section. When you select a test pattern in the matrix, that pattern is sent to all outputs.
- Press **{All Off}** to turn off all test patterns and all raster boxes on all outputs simultaneously.

A blue rectangular button with the text "Select All Outputs" in white.A blue rectangular button with the text "All Off" in white.

5. Menu Orientation

System Menu

Clean Feed Setup Menu

From the **System Menu**, press **{Clean Feed Setup}** to display the **Clean Feed Setup Menu**, which enables you to set clean feed outputs and the source for the **ASSIGN** button (in the control panel's **Aux Section**).

The figure below illustrates a sample **Clean Feed Setup Menu**.

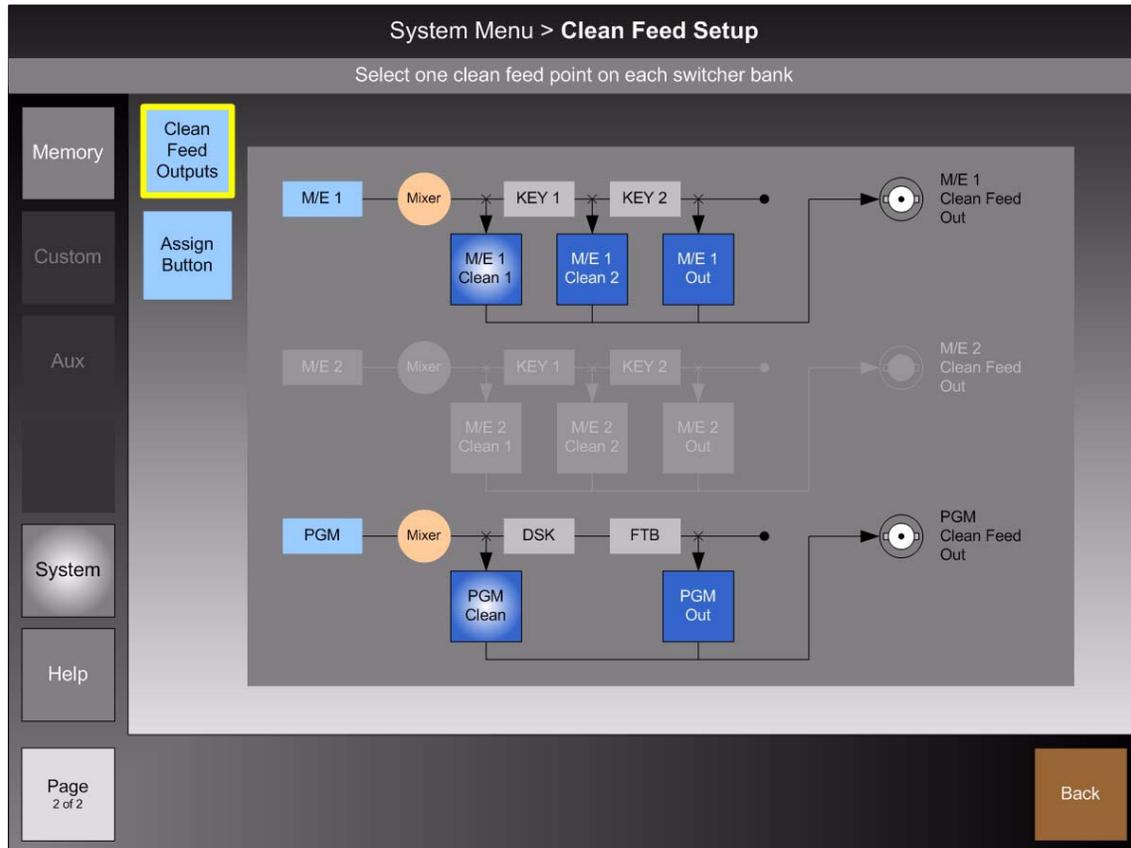


Figure 5-78. Clean Feed Setup Menu (sample)

The **Clean Feed Setup Menu** has two panels:

- [Clean Feed Outputs](#)
- [Assign Button](#)

Clean Feed Outputs

Clean Feed Outputs

Press **{Clean Feed Outputs}** to set up all physical clean feed outputs on the FSN-1400's M/E Card. The graphic on the **Palette** is a "flow-chart." It illustrates the clean feed points that can be mapped to the clean feed output connectors, with buttons provided for each selection point.

Three mutually exclusive clean feed points are provided for M/E 1's clean feed output:

- Press **{M/E 1 Clean 1}** to select the clean feed point prior to Keyer 1.
- Press **{M/E 1 Clean 2}** to select the clean feed point prior to Keyer 2.
- Press **{M/E 1 Out}** to select the M/E 1 program output.

5. Menu Orientation

System Menu

Two mutually exclusive points are provided for the PGM bank's clean feed output.

- Press **{PGM Clean}** to select the clean feed point prior to the DSK.
- Press **{PGM Out}** to select the program output (after the DSK).

Note

The M/E 2 clean feed connection points are not available in release 1.0.

Assign Button

Assign Button

Press **{Assign Button}** to select the clean feed source that is mapped to the **ASSIGN** button in the control panel's **Aux Section**. This feature enables you to place a clean feed source on the **Aux Source Row**, and select it (just as you would any other available source), and send it to an Aux bus destination.

When **{Assign Button}** is pressed, the **Palette** changes to display a different "flow-chart." This diagram represents the clean feed points that can be mapped to the **ASSIGN** button, with buttons provided for each selection point.

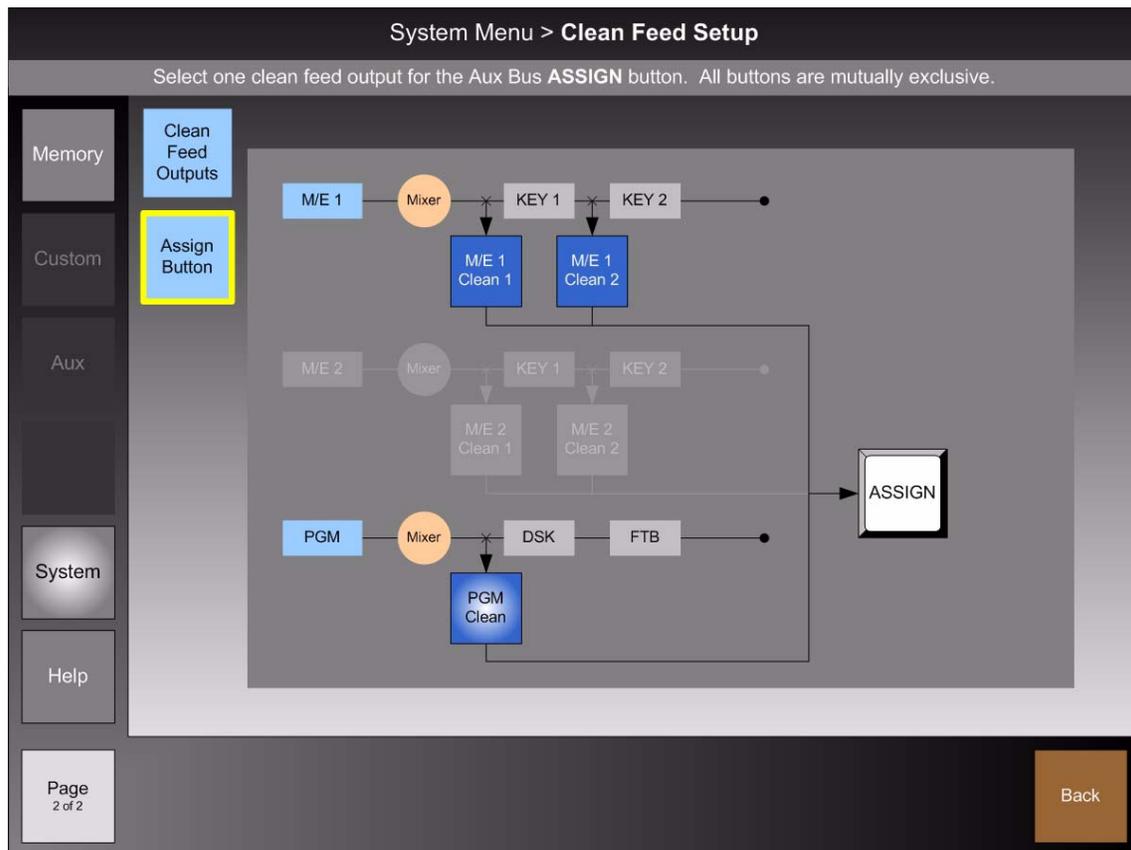


Figure 5-79. Clean Feed Setup Menu, Assign Button selection (sample)

One of three mutually exclusive clean feed points can be mapped to the **ASSIGN** button:

- Press **{M/E 1 Clean 1}** to select the clean feed point prior to Keyer 1.
- Press **{M/E 1 Clean 2}** to select the clean feed point prior to Keyer 2.

5. Menu Orientation

System Menu

- Press **{PGM Clean}** to select the clean feed point prior to the DSK.

Note

The M/E 2 clean feed connection points are not available in release 1.0.

Please note the following important points regarding the mapping of the **ASSIGN** button:

- The clean feed selection is *global* for all Aux outputs. If you change the mapping for one output, it changes for *all* outputs. For example:
 - ▲ On the **Aux Output Row**, select **Aux 1**.
 - ▲ On the **Aux Source Row**, select **ASSIGN**.
 - ▲ On the **Clean Feed Setup Menu**, press **{Assign Button}** and select **{M/E 1 Clean 1}**.
 - ▲ Now, select **Aux 2**, **ASSIGN**, and on the **Clean Feed Setup Menu**, select **{PGM Clean}**. The output on **Aux 1** also changes to **{PGM Clean}**.
- To quickly display the **Assign Button Panel** on the **Clean Feed Setup Menu**, press and hold the **ASSIGN** button.

Input Menu

From the **System Menu**, press **{Input Setup}** to display the **Input Menu**, which enables you to set up both native and universal switcher inputs. The figure below illustrates a sample **Input Menu**.

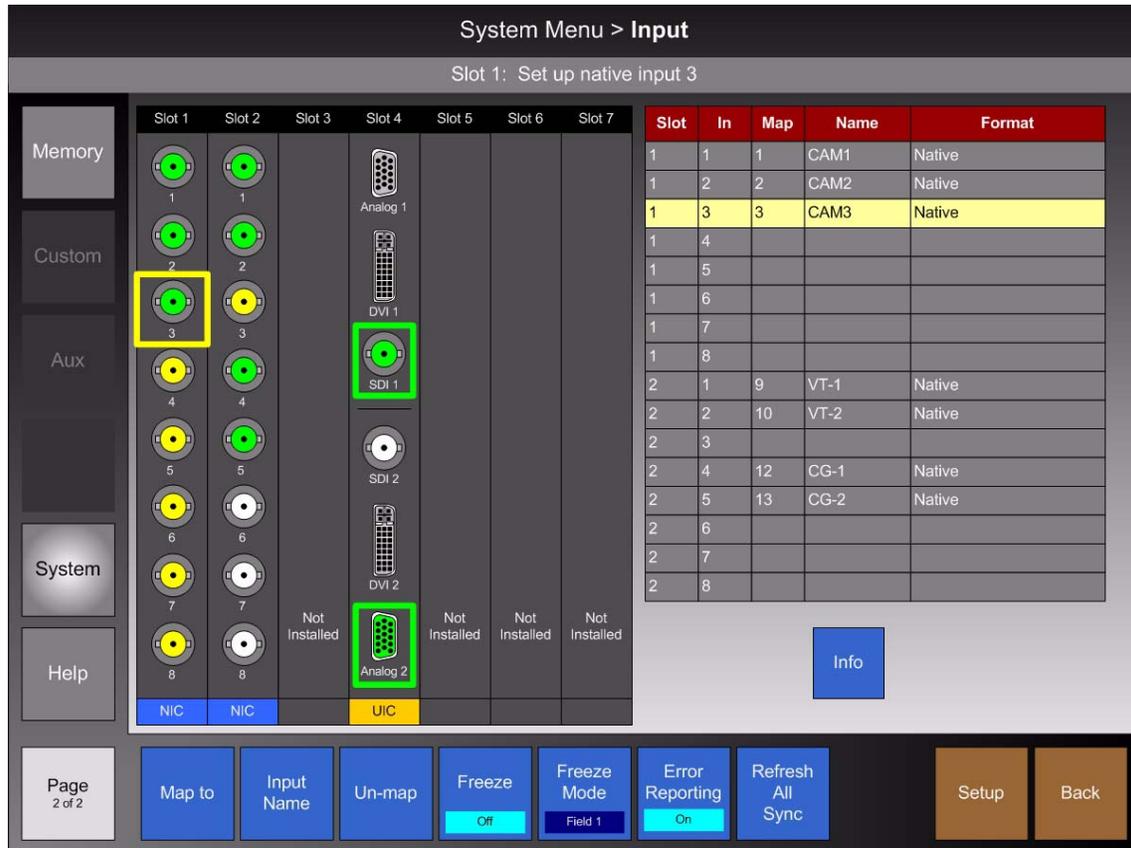


Figure 5-80. Input Menu (sample)

The **Input Menu** is divided in half. The left side of the **Palette** shows the **Rear I/O View**, while the right side shows the **Input Table**.

To set up an input, press the desired connector in the **Rear I/O View**. In the **Input Table**, the selected input is automatically highlighted. Once selected, you can name the input, map it to the control panel, and set up a variety of input parameters.

The following topics are discussed in this section:

- [Rear I/O View Description](#)
- [Connector Colors](#)
- [Input Table Description](#)
- [Input Menu Functions](#)
- [Input Setup Menu for Native Inputs](#)
- [Input Setup Menu for Universal Inputs](#)
- [Input Setup Menu Tool Bar Functions](#)
- [Input Setup Notes](#)

5. Menu Orientation

System Menu

Rear I/O View Description

The figure below illustrates a sample **Rear I/O View** on the **Input Menu**:

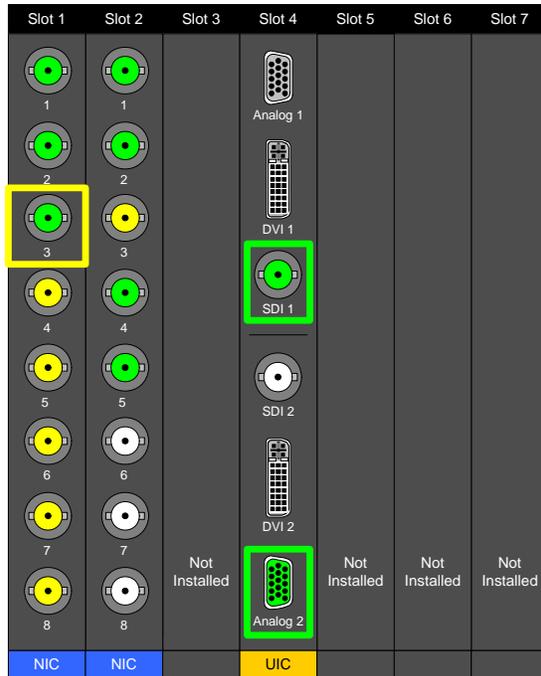


Figure 5-81. Input Menu, Rear I/O View (sample)

The **Rear I/O View** shows the I/O panels for FSN-1400 slots 1 through 7, which can be used for input cards. This view always matches your system configuration exactly — based on the installed cards. Please note:

- The number of each slot is shown along the top.
- The type of each installed card is shown along the bottom (e.g., **NIC**, **UIC**).
- If a card is not installed, the label “**Not Installed**” appears in the slot.
- To set up a native input, press the desired connector on a **NIC**. The yellow border indicates that the connector is selected, and in the **Input Table**, the input is automatically highlighted.
- To set up a universal input:
 - ~ Press any of the top three connectors to select **Input 1**, or any of the bottom three connectors to select **Input 2**. The selected input is highlighted with a yellow border around all three connectors.
 - ~ Next, press the desired connector (either **Analog**, **DVI** or **SDI**) to highlight it with a green border. This indicates that the connector is selected, and in the **Input Table**, the input is automatically highlighted.

Please note:

- ~ When you switch connectors on the **UIC**, freeze will always be turned off. If “**Black on Invalid Video**” is turned on, the input will go black as it acquires the new input.

Refer to the “[Connector Colors](#)” section on page 189 for important information about **Rear I/O View** connectors.



Connector Colors

On the **Rear I/O Views** of the **UIC**, **NIC** and **M/E** panels, the color of the individual input connectors is significant:



- **Green** indicates that the input is mapped to the control panel, and the signal is OK.



- **Red** indicates that the mapped input has an “LOS” or “Invalid Signal” error. In this situation, the input’s **Programmable Display** turns red, and the red “**Error**” button appears in the top right corner of the **Touch Screen**. Press the **{Error}** button to learn more. Refer to the “[Notes and Error Messages](#)” section on page 129 for details.

Note

For the input connectors on the **NIC** and **UIC**, this “red” condition only occurs if the input has been mapped to the panel, and the signal was previously OK.

Note

If desired, use the **{Error Reporting}** button to turn the red error message off, and return the **Programmable Display** to green. In this mode, the connector remains red. In Chapter 7, refer to the “[Understanding Error Messages](#)” section on page 271 for full details.



- **Yellow** indicates that the input is un-mapped, and a signal is present.



- **White** indicates that the input is un-mapped, and no input signal has been detected.



The above “color” information is always available on the **Input Menu** and **External DSK Setup Menu**. Press **{Info}** to display the **Input Color Legend Pop-up**:



Figure 5-82. Input Color Legend pop-up

5. Menu Orientation

System Menu

Input Table Description

The figure below illustrates a sample **Input Table** on the **Input Menu**:

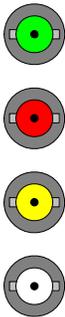
Slot	In	Map	Name	Format
1	1	1	CAM1	Native
1	2	2	CAM2	Native
1	3	3	CAM3	Native
1	4			
1	5			
1	6			

Figure 5-83. Input Table (sample)

The **Input Table** provides information about each input, and the yellow highlight automatically tracks the selected input connector in the **Rear I/O View**.

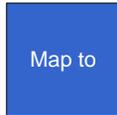
The following columns of information are provided:

- **Slot** — indicates the selected input card slot (1 through 7).
- **In** — indicates the selected input (1 through 8 for a **NIC**, 1 or 2 for a **UIC**).
- **Map** — indicates the control panel button to which the input is mapped, as defined with the **{Map to}** button. Unshifted locations are 1 through 10. Shifted locations are 11 through 20.
 - ~ If the cell is blank, the input is not mapped to the panel.
 - ~ If the input is mapped to more than one button, the last button mapped by the user is listed.
- **Name** — indicates the input's name, as defined with the **{Input Name}** button.
- **Format** — displays the following information:
 - ~ When the associated connector is green, the format is shown:
 - For a **NIC**, "**Native**" is shown.
 - For a **UIC**, the input's resolution is shown (e.g., **1920 x 1080i @ 59.94**).
 - ~ When the associated connector is red, the label "**Error**" is shown.
 - ~ When the associated connector is yellow, the cell is blank.
 - ~ When the associated connector is white, the cell is blank.



Input Menu Functions

The following functions are available in the **Tool Bar**:



- Press **{Map to}** to map the selected input to the control panel. When pressed, the **Map To Pop-up** appears.

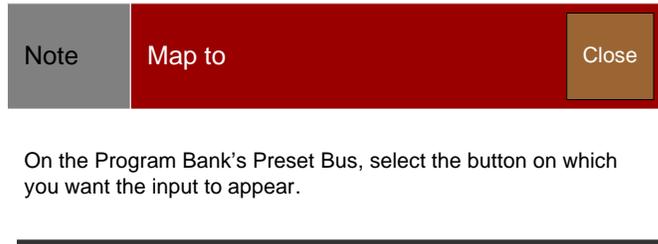


Figure 5-84. Map To Pop-up

On the Program Bank's **Preset Bus**, press the button on which you want the input to appear. Once selected, the button mapping appears in the table's "**Map**" column, and the input can now be selected on the panel.



- Press **{Input Name}** to associate a four-character name with the selected input. When pressed, the pop-up **Keyboard** appears. Enter the desired name and press **{Enter}** on the **Keyboard**. On the panel, the name appears on the display above the selected input. In the table, the name appears in the "**Name**" column.

See the "[Using the Pop-up Keyboard](#)" section on page 133 for more details about the keyboard, and the "[Default Naming Conventions](#)" section on page 193 for details about default input names.



- Press **{Un-Map}** to remove the selected input mapping from the panel. When pressed, the input is removed, and its name is also removed from the programmable display. Please note:
 - ~ If the input is mapped to more than one panel location, all locations are un-mapped and removed.
 - ~ When an input is un-mapped, the input name and all associated setup parameters are retained. Only the mapping is removed from the panel.



- For both native and universal inputs, press **{Freeze}** to toggle the freeze "state" of the selected input.
 - ~ Select **On** to freeze the input.
 - ~ Select **Off** to un-freeze the input.

Note

The button's state (**On** or **Off**) changes automatically if you perform a freeze or un-freeze using the control panel's **FRZ** and **UN FRZ** custom control functions. In Chapter 7, refer to the "[Using Custom Control Functions](#)" section on page 300 for details.



- For interlaced native resolutions only, press **{Freeze Mode}** to display the **Freeze Mode Pop-up**. The following "freeze mode" options are available:
 - ~ **Field 1** — freezes the source on field 1.
 - ~ **Field 2** — freezes the source on field 2.

5. Menu Orientation

System Menu

- ~ **Frame** — freezes an entire frame. Note that with this selection, interfield motion may be present in the frozen image.

Note

The **{Freeze Mode}** button does not appear when a progressive native resolution is set, nor does it appear when a universal input is selected.



- Use the **{Error Reporting}** button to toggle error reporting on or off on a connector by connector basis.
 - ~ When **on**, if an input experiences an error, the associated BNC turns red on the rear I/O view. In addition, the input's **Programmable Display** turns red, and the "Error" button appears.
 - ~ When **off**, the input's **Programmable Display** remains green, the red "Error" button does not appear, and the error message is removed from the list in the **View Errors Menu**. In this mode, however, the connector remains red.

Note

You can also use this button to turn error reporting off, after an error has occurred and you have acknowledged it.

In Chapter 7, refer to the "[Understanding Error Messages](#)" section on page 271 for more information.



- Press **{Refresh All Sync}** to display the **Refresh Sync Pop-up**, which can be used to refresh the input sync processing for all native inputs.

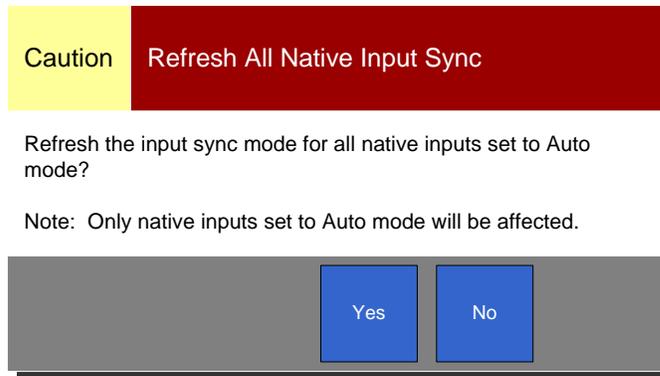


Figure 5-85. Refresh Sync Pop-up

- ~ Press **{Yes}** to refresh the sync processing for all native inputs whose sync mode is set to **Auto** (on the **Input Setup Menu**). Native inputs that are set to **Frame Sync** or **Minimum Delay** modes will not be affected.
- ~ Press **{No}** to cancel the procedure safely.



- Press **{Setup}** to display the **Input Setup Menu** for the selected input. Note that the display is different, depending if a native input is selected on a **NIC**, or a universal input is selected on a **UIC**.
 - ~ Refer to the "[Input Setup Menu for Native Inputs](#)" section for details on the menu functions for native inputs.

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System Menu

- ~ Refer to the "[Input Setup Menu for Universal Inputs](#)" section for details on the menu functions for universal inputs.

Default Naming Conventions

Each **NIC** and **UIC** input has a default name which can be left on the panel when inputs are mapped, or changed using the **{Input Name}** function.

- For **NIC** inputs, the convention is **N [slot #] - [input #]**. For example, **N2-3** indicates NIC in slot 2, input 3.
- For **UIC** inputs, the convention is **U [slot #] - [input #]**. For example, **U4-1** indicates UIC in slot 4, input 1.

5. Menu Orientation

System Menu

Input Setup Menu for Native Inputs

The figure below illustrates a sample **Input Setup Menu** when a native input is selected:

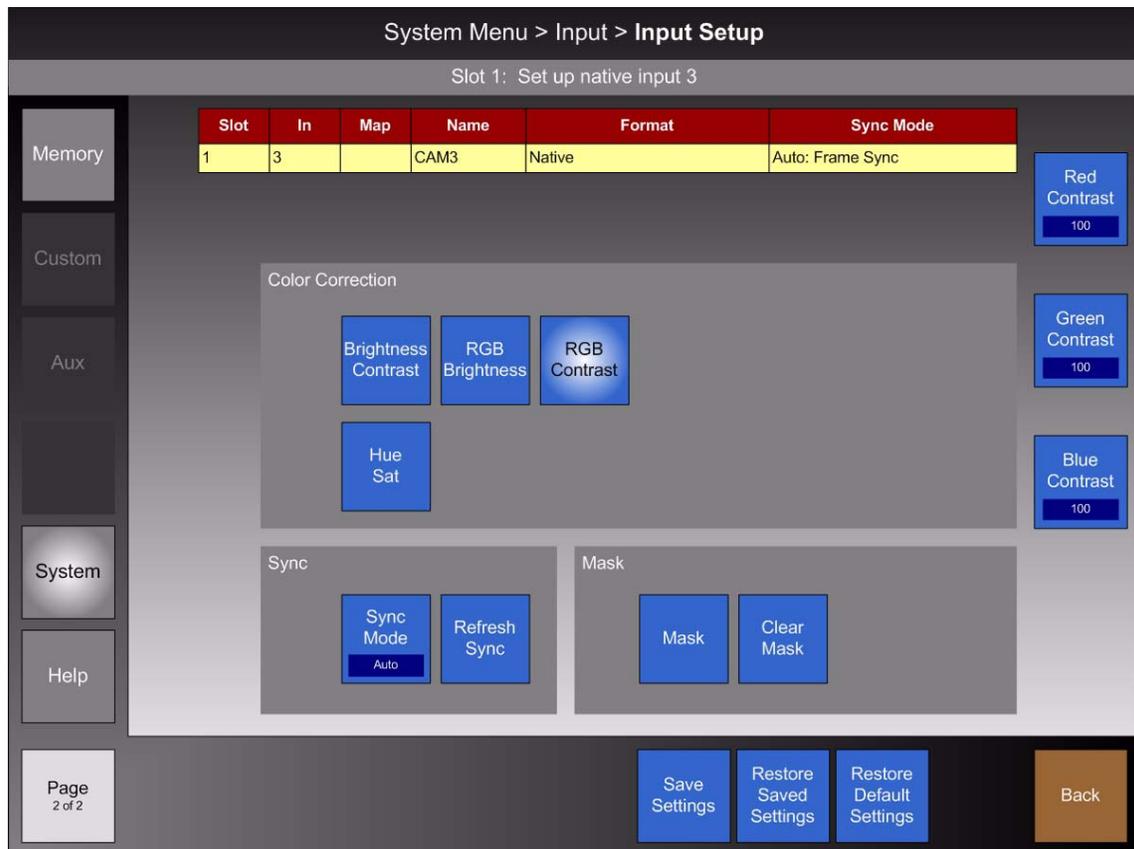


Figure 5-86. Input Setup Menu for native inputs (sample)

The top portion of the menu displays the same information as the **Input Table** on the **Input Menu** — but only the selected input is shown. Please note:

- The first five columns of information are identical.
- The **Sync Mode** column lists the mode selected with the **{Sync Mode}** button — either **Auto**, **Frame Sync** or **Minimum Delay**.
- If you select **Auto** mode for the input, the system-selected mode will be appended to the “**Auto**” prefix.

The bottom portion is divided into three sections, and additional functions are provided in the **Tool Bar**. Refer to the following sections for details:

- [Color Correction Section](#)
- [Sync Section](#)
- [Mask Section](#)

Color Correction Section

The figure below illustrates the **Color Correction Section**:



Figure 5-87. Color Correction Section

Note

The **Color Correction** controls are identical for both native and universal inputs.

The following adjustments are provided:

Brightness
Contrast

- Press **{Brightness Contrast}** to adjust overall brightness and contrast. Two value buttons appear:

~ Use the **{Brightness}** button (or knob) to set brightness.

~ Use the **{Contrast}** button (or knob) to set contrast.

Range: 50% to 150%

Default: 100%

RGB
Brightness

- Press **{RGB Brightness}** to adjust RGB brightness. Three value buttons appear:

~ Use the **{Red Brightness}** button (or knob) to set red brightness.

~ Use the **{Green Brightness}** button (or knob) to set green brightness.

~ Use the **{Blue Brightness}** button (or knob) to set blue brightness.

Range: 50% to 150%

Default: 100%

RGB
Contrast

- Press **{RGB Contrast}** to adjust RGB contrast. Three value buttons appear:

~ Use the **{Red Contrast}** button (or knob) to set red contrast.

~ Use the **{Green Contrast}** button (or knob) to set green contrast.

~ Use the **{Blue Contrast}** button (or knob) to set blue contrast.

Range: 50% to 150%

Default: 100%

Hue
Sat

- Press **{Hue Sat}** to adjust hue and color saturation. Two value buttons appear:

~ Use the **{Hue}** button (or knob) to set the hue.

Range: -90 to +90

Default: 0

~ Use the **{Sat}** button (or knob) to set the saturation.

Range: 0 to 125

Default: 100

5. Menu Orientation

System Menu

Sync Section

The figure below illustrates the **Sync Section** for native inputs:

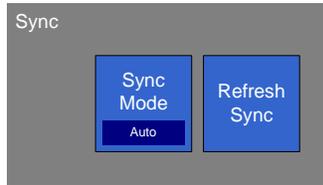


Figure 5-88. Sync Section, Native Inputs



- Press **{Sync Mode}** to display the **Sync Mode Pop-up**, which enables you to set the selected native input's sync mode.

Important

When the system's reference video input is set to **{External}** and **{Output V-Lock}** is **On** (on the **Reference and Output Setup Menu**), all native inputs are forced to **Frame Sync** mode and the **Sync Mode** button is grayed out. The button's insert reads "**Frame Sync**."

Refer to the "[Reference and Output Setup Menu](#)" section on page 178 for more information on the **Reference and Output Setup Menu**.

The following options are available when the button is active:

- ~ **Auto** — In this mode, the system automatically selects either **Frame Sync** or **Minimum Delay** mode, based on the input signal's relationship to the external reference video signal.
 - If the input is equal to or less than \pm one-half line from video reference, **Minimum Delay** mode is automatically selected. The **Sync Mode** column in the table displays **Auto: Minimum Delay**.
 - If the input is greater than \pm one-half line from video reference, **Frame Sync** mode is automatically selected. The **Sync Mode** column in the table displays **Auto: Frame Sync**.

Important

If **Frame Sync** mode is selected automatically, the **{Refresh Sync}** button is enabled. See below for details.

- ~ **Frame Sync** — In this mode, the system synchronizes the selected input to the external video reference. One frame of delay is added to the input.
- ~ **Minimum Delay** — When this mode is set, the selected input must be within \pm one-half line for minimum delay to function properly. If the input video is outside of this range, the video signal may tear or go to black — depending on how the **Black on Invalid Video** function is set on the **User Preferences Menu**. Refer to the "[User Preferences Menu](#)" section on page 217 for details.

Important

Minimum Delay mode is recommended for system setup only. It is recommended that you use "**Auto**" mode during your production.

The table below summarizes the amount of delay incurred for a selected native input in each of the three sync modes:

Table 5-3. Input delay for selected sync modes

Sync Mode	Input Delay	
	Input video is $\leq \pm 1/2$ line of reference	Input video is $\geq \pm 1/2$ line of reference
Auto	Minimum delay	1 frame delay *
Frame Sync	1 frame delay	1 frame delay
Minimum Delay	Minimum delay	Invalid video behavior **

* Remember that in **Auto** mode, if the system switches to **Frame Sync**, the system stays in the mode. To return to **Minimum Delay** mode, press the **{Refresh Sync}** button. See below for details.

** Invalid video will either tear, or go to black, depending on how the **Black on Invalid Video** function is set on the **User Preferences Menu**. Refer to the "[User Preferences Menu](#)" section on page 217 for details.

- If the selected native input's sync mode is set to **Auto** and the system switches to **Auto: Frame Sync**, the system stays in that mode until the sync detection is manually refreshed.

Press **{Refresh Sync}** to refresh the sync detection process for the selected native input. This procedure enables the **Auto** mode to switch back to **Minimum Delay** mode — provided that the signal is within range. Please note:

- ~ The button only appears when the selected input is set to **Auto** mode.
- ~ In **Auto: Minimum Delay** mode, the button is grayed out.
- ~ In **Auto: Frame Sync** mode, the button is active.

Refresh Sync

Mask Section

The figure below illustrates the **Mask Section** for native inputs:



Figure 5-89. Mask Section, Native Inputs

The following adjustments are provided:

- Press **{Mask}** to mask one or more edges of the video signal, if required. When a mask is applied on a selected edge, black is revealed in each masked section.

Four value buttons appear:

- ~ Use the **{Mask Top}** button or knob to mask the top edge.
- ~ Use the **{Mask Bottom}** button or knob to mask the bottom edge.

Range: 0 to the image's maximum number of vertical lines

Default: 0

Mask

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- ~ Use the **{Mask Left}** button or knob to mask the left edge.
- ~ Use the **{Mask Right}** button or knob to mask the right edge.

Range: 0 to the image's maximum number of horizontal pixels

Default: 0

Note

The range shown in the **Keypad's** top **Function Bar** is dynamic. For example, if you press **{Mask Left}** and mask 100 pixels from the image's left edge, when you press **{Mask Right}**, the maximum range is now 100 pixels less.

- Press **{Clear Mask}** to clear all four mask values back to 0 (zero).



Input Setup Menu for Universal Inputs

The figure below illustrates a sample **Input Setup Menu** when a universal input is chosen on the **Input Menu**. The **Capture and Process Panel** is selected:

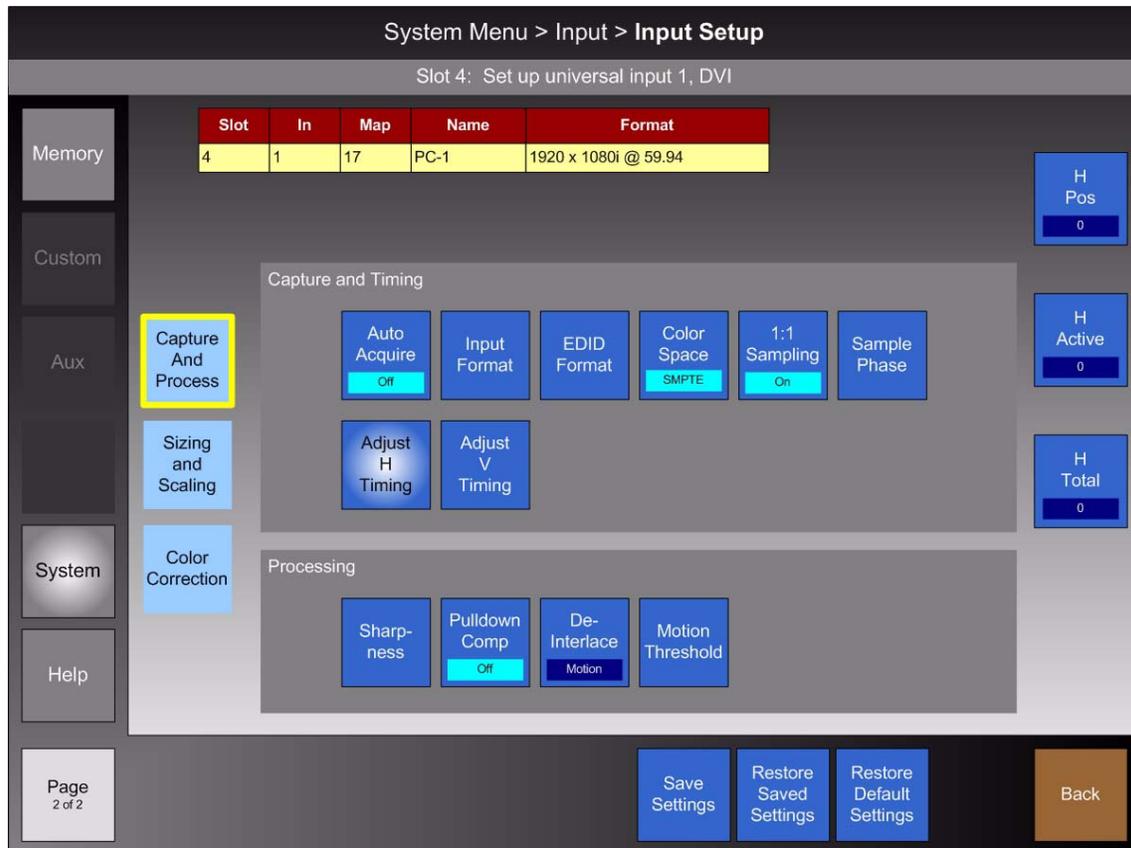


Figure 5-90. Input Setup Menu for universal inputs (sample)

The top portion of the menu displays the same information as the **Input Table** on the **Input Menu** — but only the selected input is shown. The columns of information are identical.

The bottom portion consists of three panels. Each panel, in turn, is divided into sections that pertain to specific adjustment parameters.

Refer to the following sections for details:

- [Capture and Process Panel](#)
- [Sizing and Scaling Panel](#)
- [Color Correction Panel](#)

5. Menu Orientation

System Menu

Capture And Process

Capture and Process Panel

On the **Input Setup Menu** for universal inputs, press **{Capture and Process}** to display the **Capture and Process Panel**.

The panel is divided into two sections:

- [Capture and Timing Section](#)
- [Processing Section](#)

■ Capture and Timing Section

The figure below illustrates the **Capture and Timing Section** for universal inputs:



Figure 5-91. Capture and Timing Section, Universal Inputs

The following adjustments are provided:

Auto Acquire

- Press **{Auto Acquire}** to toggle the **Auto Acquire** mode **On** or **Off**. This function is per connector on the **UIC**, and not per input.
 - ~ When **Off**, you can manually set the resolution of the incoming source using the **{Input Format}** button.
 - ~ When **On**, the system attempts to detect the input resolution. As the system auto-acquires, it compares the incoming signal to the formats stored in the **Input Format Table**. When an exact match is found, the format is applied and the **Format** field in the table is updated.

Note

If an exact match cannot be found, you may need to use **{Input Format}** button to set the format manually.

Please note the following important points regarding **Auto Acquire**:

- ~ Once the system acquires a new input format, it automatically scales the input up (or down) to the current native resolution.
- ~ The input's aspect ratio is fully maintained in this process, and no masking will be applied. For example:
 - If a 1024 x 768 input is scaled up to 1920 x 1080 (HD/1080i), the system fills vertically, leaving black "pillars" on either side of the input.
 - If a 1920 x 1080 input is scaled down to 1280 x 720 (HD/720p), the system fills horizontally, leaving black "bars" on the top and bottom edges of the input.
- ~ After the input has been acquired, you can manually change the method by which the system fills the screen, and you can also mask any edge

5. Menu Orientation

System Menu

and re-scale the input. Refer to the "[Sizing and Scaling Panel](#)" section on page 204 for details.



- Press **{Input Format}** to display the **Input Format Keypad**. Use the up (▲) and down (▼) arrows to locate the desired format in the list, then press **{Apply}** to accept. In Appendix A, Refer to the "[Input and Output Format Tables](#)" section on page 320 for the complete list of formats.



- Press **{EDID Format}** to display the **EDID Format Keypad**, which enables you to update the preferred EDID (Extended Display Identification Data) resolution for the selected input. EDID is a VESA standard data format that contains information about a display device and its capabilities, including the preferred (as well as the allowed) device resolutions.

Note

This function is available for analog and DVI inputs only. The button does not appear when an SDI input is selected on the **UIC**.

The selected input's EDID file is stored in non-volatile memory. This file is read by a computer's DVI graphics card during boot-up, when its DVI output is connected to a DVI-I input connector on the FSN-1400. The FSN-1400 must be powered on first for the EDID information to be read.

Important

This feature is designed for advanced users only. Do not program the EDID unless it is necessary.

In the **EDID Format Keypad**, use the up (▲) and down (▼) arrows to locate the desired EDID format in the list, then press **{Apply}** to program the EDID.



- Press **{Color Space}** to toggle between **SMPTE** and **RGB** processing. Note that the system automatically sets the Color Space based on the selected format, but the color space can be changed if desired.

- ~ Select **SMPTE** to process the input signal in the SMPTE color space (4:2:2), in which the two chroma components are sampled at half the sample rate of luminance component. This mode is commonly used for cameras, video servers, etc.
- ~ Select **RGB** to process the input signal in RGB color space (4:4:4), in which the individual red, green and blue signals are sampled at the same rate. The **RGB** mode is typically used for computer and graphic sources.

Note

This function is available for DVI and analog inputs only, with the exception of NTSC and PAL. The button does not appear when an SDI, NTSC or PAL input is selected on the **UIC**.



- Press **{1:1 Sampling}** to toggle the 1:1 sampling mode on or off.
 - ~ Select **On** to process the input with pixel-for-pixel sampling to provide better image quality.

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System Menu

- ~ Select **Off** to process the input with multiple samples for every pixel. This mode generally results in a “softer” image.

Note

This function is available for analog inputs only, with the exception of NTSC and PAL. The button does not appear when SDI, DVI, NTSC or PAL inputs are selected on the **UIC**.

Sample Phase

- Press **{Sample Phase}** to display the **Sample Phase** value button. Use the button (or knob) to adjust the input's A/D converter, allowing you to select where pixels are sampled (ideally, on the pixel's peak).

Range: -16 to 15

Default: 0

For optimum visual results when adjusting high-resolution sources, output a burst test pattern from the source, and adjust for minimum noise.

Note

This function is available for analog inputs only, with the exception of NTSC and PAL. The button does not appear when SDI, DVI, NTSC or PAL inputs are selected on the **UIC**.

Adjust H Timing

- Press **{Adjust H Timing}** to adjust the image's horizontal timing. Three value buttons appear:
 - ~ Use the **{H Pos}** button (or knob) to set the start of the active area's horizontal offset from H sync.
 - ~ Use the **{H Active}** button (or knob) to set the width of the active area.
 - ~ Use the **{H Total}** button (or knob) to set the total pixel count per line.

Note

This function is available for analog inputs only, with the exception of NTSC and PAL. The button does not appear when SDI, DVI, NTSC or PAL inputs are selected on the **UIC**.

Adjust V Timing

- Press **{Adjust V Timing}** to adjust the image's vertical timing. Two value buttons appear:
 - ~ Use the **{V Pos}** button (or knob) to set the start of the active area's vertical offset from V sync.
 - ~ Use the **{V Active}** button (or knob) to set the number of vertical lines in the image.

Note

This function is available for analog inputs only, with the exception of NTSC and PAL. The button does not appear when SDI, DVI, NTSC or PAL inputs are selected on the **UIC**.

Note

V Total is a fixed value which cannot be adjusted.

■ Processing Section

The figure below illustrates the **Processing Section** for universal inputs:

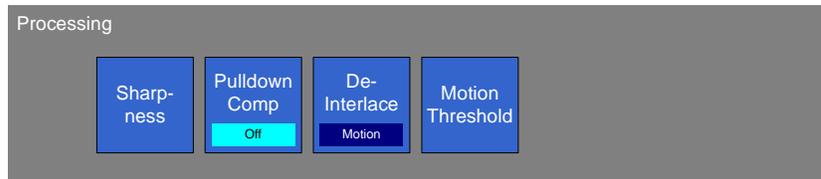


Figure 5-92. Processing Section, Universal Inputs

The following adjustments are provided:



- Press **{Sharpness}** to display the **Sharpness** value button. Use the button (or knob) to set the input's sharpness.

Range: -16 (very smooth) to 15 (very sharp)

Default: 0



- Press **{Pulldown Comp}** to toggle the Pulldown Compensation mode on or off.

~ Select **On** to apply pulldown compensation, in order to process video derived from film material.

~ Select **Off** to disable the mode. This is the default mode.

Note

This function applies only for standard video (component, s-video, composite) inputs.



- Press **{De-Interlace}** to display the **De-Interlace Pop-up**. If the input is interlaced, this function enables you to set how the system processes the input. The following options are available:

~ Select **Motion Adaptive** to use motion adaptive de-interlacing. In this mode, the **{Motion Threshold}** button appears. See below for details.

~ Select **Field to Frame** to use field-to-frame de-interlacing. This mode avoids motion artifacts by converting individual input fields to progressive output frames.

Note

This function is available for interlaced formats only. The button does not appear for progressive scan inputs.



- If **Motion Adaptive** de-interlacing is selected, press **{Motion Threshold}** to adjust the threshold of the motion adaptive de-interlacer. Because adjustment is rarely required, it is recommended that you leave the function at its default setting.

Range: 0 to 15

Default: 15

5. Menu Orientation

System Menu

Sizing and Scaling

Sizing and Scaling Panel

On the **Input Setup Menu** for universal inputs, press **{Sizing and Scaling}** to display the **Sizing and Scaling Panel**. This panel enables you to scale a non-native resolution input up (or down) to the system's native resolution, and fill the screen with the image. The panel also enables you to mask the image if required.

The panel has one section, as shown below:

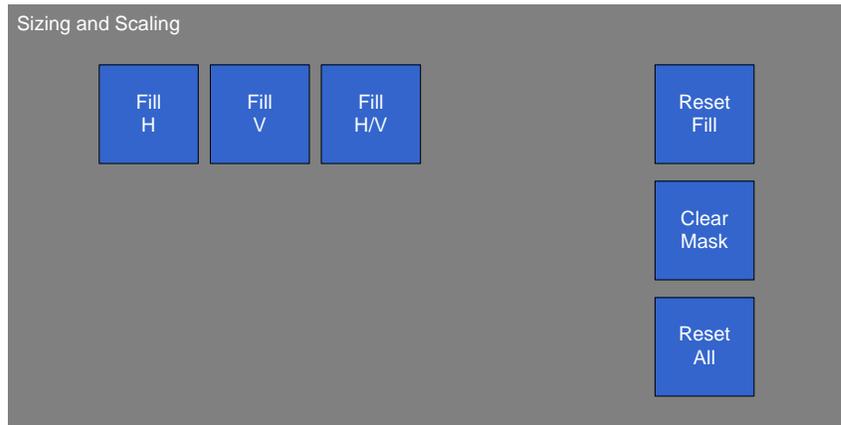


Figure 5-93. Sizing and Scaling Section

The following adjustments are provided:

Fill H

- Press **{Fill H}** to scale the selected universal input up (or down) to the current native **horizontal** resolution. Please note:
 - ~ Aspect ratio is maintained.
 - ~ If the left and/or right edges of the image are manually masked, those edges are used for the **Fill H** calculations.
 - ~ Black bars are visible above and below an image, for example, when a 16:9 image is scaled down to 4:3.
 - ~ The top and bottom portions of an image may fall outside of the raster, for example, when a 4:3 image is scaled up to 16:9.

The images below represent two examples of **Fill H**.

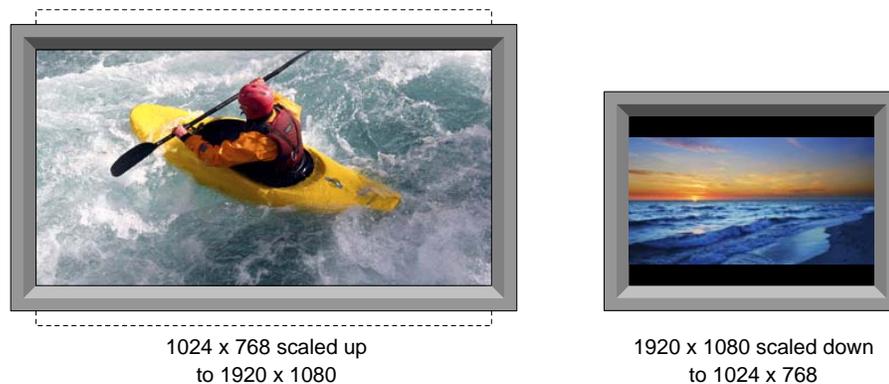


Figure 5-94. Fill H examples

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System Menu



- Press **{Fill V}** to scale the selected universal input up (or down) to the current native **vertical** resolution. Please note:
 - ~ Aspect ratio is maintained.
 - ~ If the top and/or bottom edges of the image are manually masked, those edges are used for the **Fill V** calculations.
 - ~ Black pillars are visible to the left and right of an image, for example, when a 4:3 image is scaled up to 16:9.
 - ~ The left and right portions of an image may fall outside of the raster, for example, when a 16:9 image is scaled down to 4:3.

The images below represent two examples of **Fill V**.

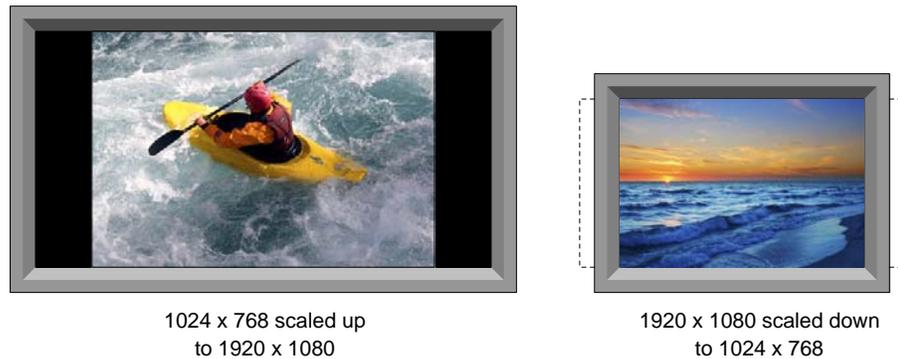


Figure 5-95. Fill V examples



- Press **{Fill H/V}** to scale the selected universal input up (or down) to the current native **horizontal** and **vertical** resolutions. Please note:
 - ~ Aspect ratio is not maintained. Non-proportional image stretching or compression will occur.
 - ~ If any edges of the image are manually masked, those edges are used for the **Fill H/V** calculations.

The images below represent two examples of **Fill V**.



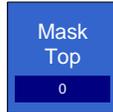
Figure 5-96. Fill HV examples



- If one of the three **Fill** functions was performed, press **{Reset Fill}** to return the input to its previous scaling. The input's current mask settings are retained.

5. Menu Orientation

System Menu



- Press **{Clear Mask}** to return all mask settings to 0 (zero). The image's current scaling is maintained.
- Press **{Reset All}** to return the input to its previous scaling, and return all mask settings to 0 (zero).

The four **Mask** value buttons are always active in this panel. Use these four buttons to mask one or more edges of the video signal, if required. When a mask is applied on a selected edge, black is revealed in each masked section.

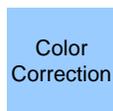
- Use the **{Mask Top}** button or knob to mask the top edge.
- Use the **{Mask Bottom}** button or knob to mask the bottom edge.
Range: 0 to the image's maximum number of vertical lines
Default: 0
- Use the **{Mask Left}** button or knob to mask the left edge.
- Use the **{Mask Right}** button or knob to mask the right edge.
Range: 0 to the image's maximum number of horizontal pixels
Default: 0

Once the image is masked as desired, use the **{Fill H}**, **{Fill V}** or **{Fill H/V}** functions to scale the image to full screen.

Note

For each mask function, the range shown in the **Keypad's top Function Bar** is dynamic. For example, if you press **{Mask Left}** and mask 100 pixels from the image's left edge, when you press **{Mask Right}**, the maximum range is now 100 pixels less.

Color Correction Panel



On the **Input Setup Menu** for universal inputs, press **{Color Correction}** to display the **Color Correction Panel**. All functions except for the **Gamma** function are identical to those for native inputs. Refer to the "[Color Correction Section](#)" heading on page 195 for details.

- Press **{Brightness Contrast Gamma}** to adjust the input's overall brightness, contrast and gamma. Three value buttons appear:
 - ~ Use the **{Brightness}** button (or knob) to set brightness.
Range: 50% to 150%
Default: 100%
 - ~ Use the **{Contrast}** button (or knob) to set contrast.
Range: 50% to 150%
Default: 100%
 - ~ Use the **{Gamma}** button (or knob) to set gamma.
Range: 0.5 to 3.0 (in increments of .01)
Default: 1.0

Input Setup Menu Tool Bar Functions

For both native and universal inputs, the following functions are provided in the **Tool Bar**:



Save
Settings



Restore
Saved
Settings



Restore
Default
Settings

- Press **{Save Settings}** to save the selected input's setup parameters in non-volatile memory.
- Press **{Restore Saved Settings}** to recall the selected input's setup parameters from non-volatile memory. This function effectively allows you to return to the saved settings, after making temporary adjustments.
- Press **{Restore Default Settings}** to recall the selected input's default setup parameters back into the input's "temporary" settings. This function does not over-write the "saved" settings.

Input Setup Notes

Please note the following important points regarding input setup:

- Because you can install and set up either a **NIC** or a **UIC** in input slots **3** and **4**, many creative input combinations are possible. However, if you move or change input card assignments in these two slots during the setup procedure, the setup is invalidated, and must be repeated once the final card configuration is reached.

5. Menu Orientation

System Menu

External DSK Setup Menu

From the **System Menu**, press **{External DSK Setup}** to display the **External DSK Setup Menu**, which enables you to set up the **DSK Cut** and **Fill** inputs on the **M/E Card**. These two inputs are only used on the **DSK** when **{External Key}** is enabled.

The figure below illustrates a sample menu, with the **DSK Fill** connector selected.

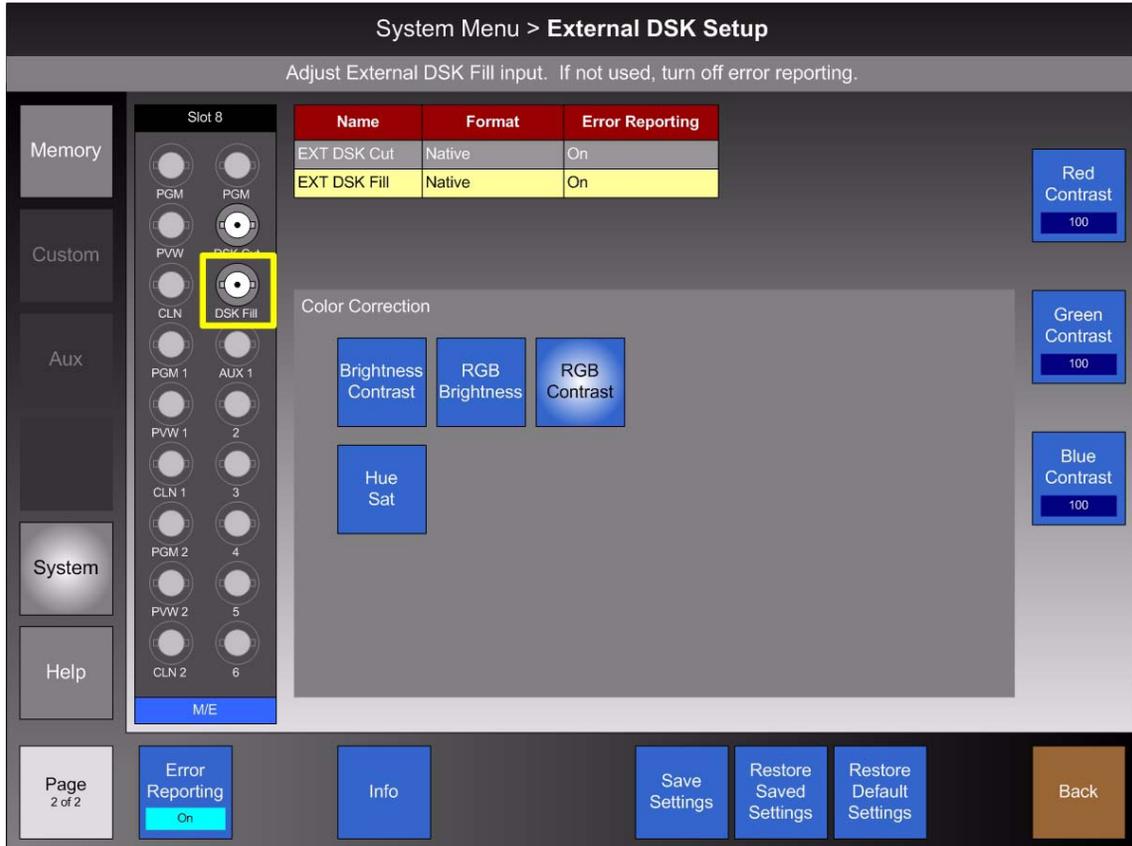


Figure 5-97. External DSK Setup Menu, DSK Fill selected (sample)

The **External DSK Setup Menu** is divided in half:

- The left side of the **Palette** shows the **Rear I/O View**, in which only the two **DSK** input connectors are active. All other output connectors are grayed out.
- The right side of the **Palette** shows the **External DSK Table**, which provides information about each input.

To set up an external DSK input, press the desired connector in the **Rear I/O View**. In the **External DSK Table**, the selected input is automatically highlighted.

Note

The **DSK Cut** input can not be adjusted. To prevent error messages, if the input is not used, turn off error reporting.

The following topics are discussed in this section:

- [External DSK Table](#)
- [DSK Fill Setup](#)

External DSK Table

The **External DSK Table** provides information about each input. The yellow highlight automatically tracks the selected input connector in the **Rear I/O View**.

Name	Format	Error Reporting
EXT DSK Cut	Native	On
EXT DSK Fill	Native	On

Figure 5-98. External DSK Table (sample)

The following columns of information are provided:

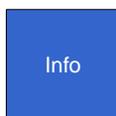
- **Name** — indicates the name of the selected connector (**DSK Cut** or **DSK Fill**).
- **Format** — displays the input's format.
- **Error Reporting** — “**On**” indicates that the connector is enabled and error reporting is active. “**Off**” indicates that error reporting is prevented. Use the **{Error Reporting}** toggle button to toggle the function.

DSK Fill Setup

To set up the **DSK Fill** input, touch its connector in the **Rear I/O View**. The menu changes to display the input's setup functions. In the **Color Correction** section, all functions are identical to those for native inputs. Refer to the [“Color Correction Section”](#) heading on page 195 for details.

In the **Tool Bar**, the following adjustments are provided:

- Toggle the **{Error Reporting}** button to either **On** or **Off**:
 - ~ When on, the label “**On**” appears in the table in the **Error Reporting** column, and error reporting is active.
 - ~ When off, the label “**Off**” appears in the table, and error reporting is prevented.
- Press **{Info}** to display the **Input Color Legend Pop-up**. Refer to the [“Connector Colors”](#) section on page 189 for details.
- Press **{Save Settings}** to save the selected input's setup parameters in non-volatile memory.
- Press **{Restore Saved Settings}** to recall the selected input's setup parameters from non-volatile memory.
- Press **{Restore Default Settings}** to recall the selected input's default setup parameters.



5. Menu Orientation

System Menu

Map Buttons Menu

From the **System Menu**, press **{Map Buttons}** to display the **Map Buttons Menu**, which enables you to map inputs, test patterns and color background signals to buttons on the control panel. The figure below illustrates a sample menu.

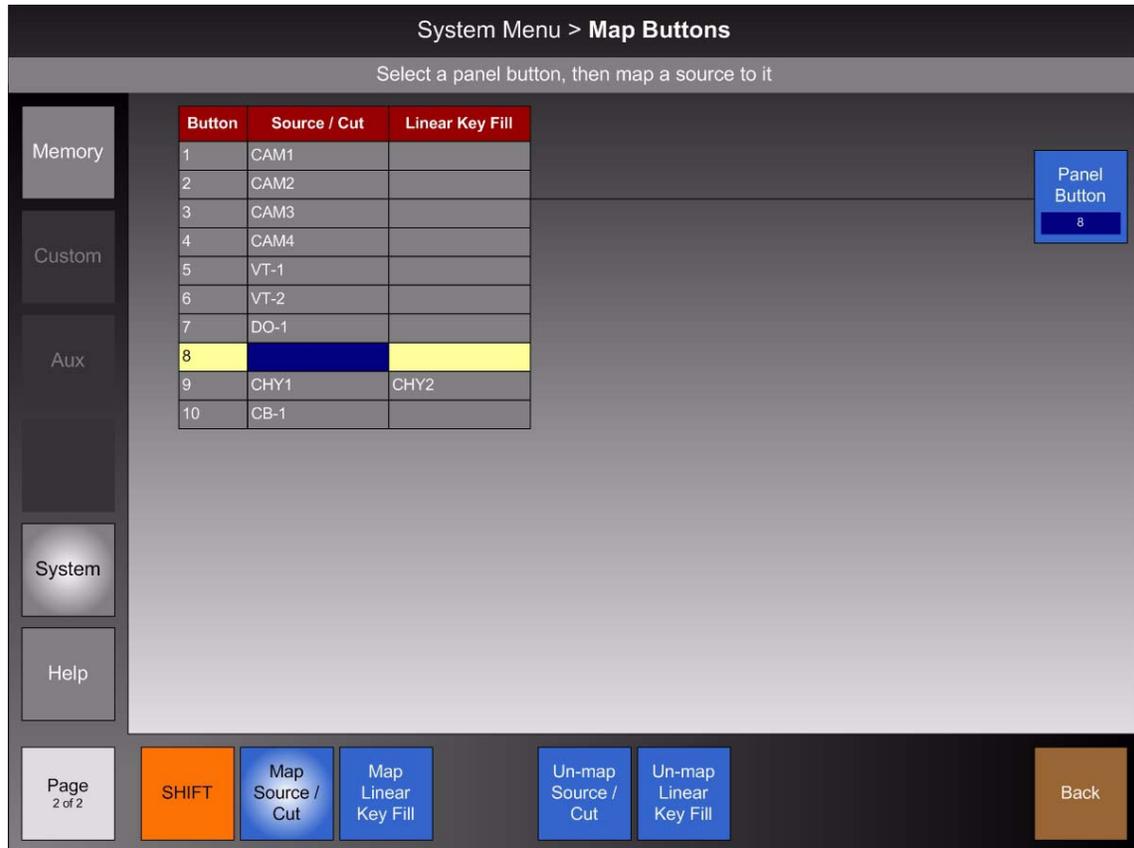


Figure 5-99. Map Buttons Menu (sample)

Although individual inputs can be mapped to the panel (one at a time) using the **Input Menu**, the **Map Buttons Menu** gives you mapping access to the entire control panel on one menu. In addition, the menu also enables you to map linear key cut and fill signals, test patterns and color background signals.

The following topics are discussed in this section:

- [Button Map Table](#)
- [Map Buttons Menu Functions](#)
- [Map Buttons Keypad](#)
- [Mapping Luma Keys and Linear Keys](#)

Button Map Table

The figure below illustrates the **Button Map Table**:

Button	Source / Cut	Linear Key Fill
1	CAM1	
2	CAM2	
3	CAM3	
4	CAM4	
5	VT-1	
6	VT-2	
7	DO-1	
8		
9	CHY1	CHY2
10	CB-1	

Figure 5-100. Button Map Table (sample)

On the **Palette**, the **Button Map Table** lists the current mapping for all shifted and unshifted buttons. Please note:

- The yellow highlight indicates the selected shifted or unshifted button to which a source can be mapped. The highlight tracks the selection that is made with the **{Panel Button}** knob.
- The blue highlight indicates whether you are mapping a source/cut or a linear key fill. This highlight tracks the two button selections in the **Tool Bar** — **{Map Source/Cut}** and **{Map Linear Key Fill}**.

The following columns of information are provided in the table:

- **Button** — indicates the selected shifted or unshifted button. Press **{SHIFT}** to change the column labels from **1 - 10** to **11 - 20**.
- **Source/Cut** — displays the source (or linear key “cut” signal) that is mapped to the selected panel button. Press **{Map Source/Cut}** to select and highlight the field in blue.
- **Linear Key Fill** — displays the linear key “fill” signal that is mapped to the selected panel button. Press **{Map Linear Key Fill}** to select and highlight the field in blue.

Refer to the “[Mapping Luma Keys and Linear Keys](#)” section on page 213 for additional information.

Map Buttons Menu Functions

The following adjustments are provided in the **Map Buttons Menu**:

- Press **{Panel Button}** (or use the knob) to select the button that you wish to map. Note that selecting buttons in this manner automatically affects the state of the **{SHIFT}** button.
- Press **{SHIFT}** to switch between mapping un-shifted buttons and shifted buttons on the panel:
 - ~ When **{SHIFT}** is off, you can map buttons **1 - 10**, and the labels in the **Button** column read **1 - 10**.



5. Menu Orientation

System Menu

~ When **{SHIFT}** is on, you can map buttons **11 - 20**, and the labels in the **Button** column read **11 - 20**.

Map
Source /
Cut

Map
Linear
Key Fill

Un-map
Source /
Cut

Un-map
Linear
Key Fill

- Press **{Map Source/Cut}** to map an input (source) or a linear key “cut” signal to the selected panel button. On the highlighted row in the table, the cell under the **Source/Cut** column highlights in blue, and the **Map Buttons Keypad** appears. Refer to the “[Map Buttons Keypad](#)” section below for details.
- Press **{Map Linear Key Fill}** to map a linear key “fill” signal to a panel button. On the highlighted table row, the cell under the **Linear Key Fill** column highlights in blue, and the **Map Buttons Keypad** appears. Refer to the “[Map Buttons Keypad](#)” and “[Mapping Luma Keys and Linear Keys](#)” sections for details.
- On the highlighted row, press **{Un-map Source/Cut}** to un-map the source in the **Source/Cut** column. Once pressed, the source is removed from the panel.
- On the highlighted row, press **{Un-map Linear Key Fill}** to un-map the source in the **Linear Key Fill** column. Once pressed, the source is removed from the panel.

Map Buttons Keypad

The figure below illustrates the **Map Buttons Keypad** with the **{Sources}** button selected.

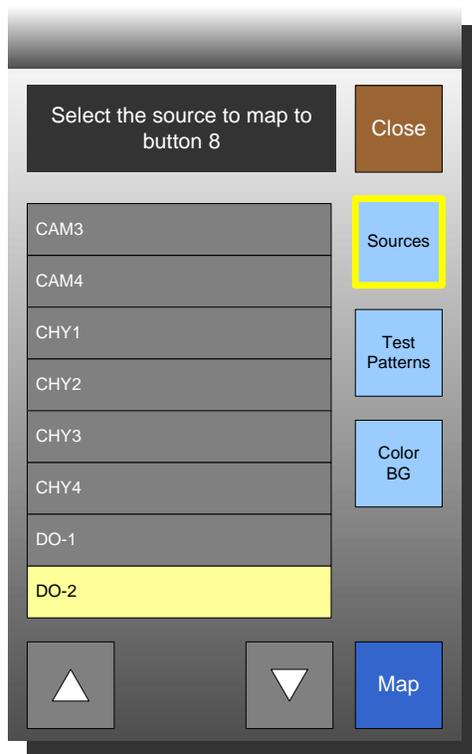


Figure 5-101. Map Buttons Keypad (sample)

The keypad appears when either the **{Map Source/Cut}** button or the **{Map Linear Key**

Fill} button is pressed. Please note:

- The left hand side of the **Keypad** provides a list of available sources.
- The right side provides buttons that enable you to show different source lists.
 - ~ Press **{Sources}** to display sources only.
 - ~ Press **{Test Patterns}** to display internal test patterns only.
 - ~ Press **{Color BG}** to display the four available internal color background signals.
- Use the up (**▲**) and down (**▼**) arrows to navigate through pages of sources and internal test patterns.
- Press **{Map}** to map the selected source to the selected panel button.

Mapping Luma Keys and Linear Keys

You can perform two types of keys on the FSN Series:

- A **Luma (Luminance) Key** is one in which the hole-cutting information is derived from the luminance (brightness) level of the key source. Please note:
 - ~ Any source on the **Key Bus** can be selected as the “cut.”
 - ~ On the **Keyer Menus**, you can select **Self**, **Matte**, **Preset Bus** or **Split** for the “fill” source. When **Split** is selected, any source on the **Key Bus** other than the cut can be selected to fill the key hole.

Note

When mapping **Luma** key sources to the control panel, use the **{Map Source/Cut}** button. With **Luma** keys, only one signal is needed to cut (and typically, fill) the key.

Refer to the “[Keyer Functions and Modifiers](#)” section on page 145 for more information on keying.

- A **Linear Key** is a type of split key in which one video source is designated as the “cut” and a second source is designated as the “fill.” However, with **Linear Keys**, both sources are mapped to one button on the panel for convenience.

Note

When mapping **Linear** key sources to the control panel, use the **{Map Source/Cut}** button to map the cut signal, and the **{Map Linear Key Fill}** button to map the fill signal.

5. Menu Orientation

System Menu

Tally Setup Menu

From the **System Menu**, press **{Tally Setup}** to display the **Tally Setup Menu**. The figure below illustrates a sample menu.

System Menu > Tally Setup

Assign inputs to tallies, and set tally closures for system outputs

Tally	Input	Outputs														
		PGM			PST			Installed Aux Outputs								
		PGM	ME1	ME2	PGM	ME1	ME2	1	2	3	4	5	6			
1	■ CAM1	x	x												x	
2	■ CAM1				x	x										
3	■ CAM2	x	x												x	
4	■ CAM2				x	x										
5	■ CAM3	x	x												x	
6	■ CAM3				x	x										
7																
8																
9																
10																
11																
12																
13																
14																

Select Tally

Select Output

Page 2 of 2

Select Input Clear Input Select Color Set Tally Closure Clear Tally Closure Back

Figure 5-102. Tally Setup Menu (sample)

The **Tally Setup Menu** enables you to assign inputs to the system's 24 tally relays, set tally markers, and set individual tally closures.

The following topics are discussed in this section:

- [Tally Table](#)
- [Tally Setup Menu Functions](#)

Tally Table

The figure below illustrates a sample **Tally Table**.

Tally	Input	Outputs													
		PGM			PST			Installed Aux Outputs							
		PGM	ME1	ME2	PGM	ME1	ME2	1	2	3	4	5	6		
1	■ CAM1	x	x											x	
2	■ CAM1				x	x									
3	■ CAM2	x	x											x	
4	■ CAM2				x	x									
5	■ CAM3	x	x											x	
6	■ CAM3				x	■ x									
7															
8															

Figure 5-103. Tally table (sample)

The **Tally Table** enables you to associate inputs with tally relays, and set tally closures on an output-by-output basis. One row is provided for each of the 24 available tallies.

- The yellow highlight indicates the tally that you want to set up. You can touch any row to move the highlight, or use the top **Select Tally** knob to scroll vertically.
- The blue highlight indicates the output for which you want to set (or clear) a relay closure. You can touch any cell to move the highlight, or use the **Select Output** knob to scroll horizontally. Once an output is selected, press **{Set Tally Closure}** or **{Clear Tally Closure}** as required.

The following columns of information are provided:

- **Tally** — two columns are provided for tally:
 - ~ The left-hand column indicates the selected relay (1 through 24).
 - ~ The right-hand column is simply an indication of the type of tally you wish to set: red, green or amber. Use the **{Select Color}** button to select the desired color.
- **Input** — indicates the input that you wish to associate with the highlighted tally. Use the **{Select Input}** button to select the desired input, or the **{Clear Input}** button to remove the input from the table.
- **PGM** — columns are provided for all Program outputs on the **M/E Card**. If a column heading is grayed out, that output is not available.
- **PST** — columns are provided for all Preview outputs on the **M/E Card**. If a column heading is grayed out, that output is not available.
- **Installed Aux Outputs** — columns are provided for all installed Auxiliary outputs on the **M/E Card**, and on the optional **UOC** and **NAC** cards. If the associated optional cards are not installed, those column headings do not appear.

5. Menu Orientation

System Menu

Tally Setup Menu Functions

The following functions are provided on the **Tally Setup Menu**'s tool bar:

- To associate an input with a tally on the highlighted row, press **{Select Input}** to display the **Input Selection Keypad**.

Select
Input

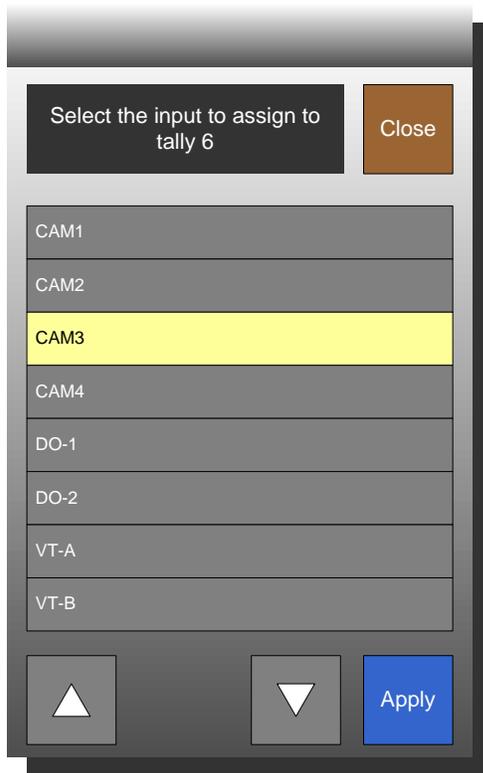


Figure 5-104. Input Selection Keypad (sample)

Use the up (▲) and down (▼) arrows to locate the desired input, then press **{Apply}** to accept. Once accepted, the input is displayed in the table.

- To clear the input-to-tally association on the highlighted row, press **{Clear Input}** to remove the input from the table.
- Press **{Select Color}** to display the **Select Color Pop-up**, which enables you to choose a red, green or amber color block to place in the column adjacent to the tally number. You can also select “**Clear**” to remove the color block.

Clear
Input

Select
Color

Note

This function is designed only to assist the engineer who is setting up tallies. It provides a visual indication on the menu of the type of tally you are configuring — red, green or amber. The function does not affect how the tally operates.

5. Menu Orientation

System Menu

Set
Tally
Closure

Clear
Tally
Closure

- Press **{Set Tally Closure}** to set a relay closure for the highlighted output. An “x” in the highlighted cell indicates that a closure is set. In this condition, when the assigned input (e.g., **CAM1**) appears on any of the designated outputs (e.g., **PGM**), the relay closes.
- Press **{Clear Tally Closure}** to clear the “x” from the highlighted output.

User Preferences Menu

From the **System Menu**, press **{User Prefs}** to display the **User Preferences Menu**. The figure below illustrates a sample menu.

Name	Description	Setting
Bus Display Brightness	Range: 1 – 4 (1 = dim, 4 = bright)	3
Control Panel Backlight	Range: 1 – 10 (1 = dim, 10 = bright)	7
Touch Screen Brightness	Range: 1 – 10 (1 = dim, 10 = bright)	9
Transition Display Brightness	Range: 1 – 10 (1 = dim, 10 = bright)	10
Transition Display Contrast	Range: 1 – 10 (1 = low contrast, 10 = high contrast)	10
Black on Invalid Video	Range: On/Off	On

Figure 5-105. User Preferences Menu (sample)

The **User Preferences Menu** enables you to set various control panel and Touch Screen modes, plus other important system preferences.

The following topics are discussed in this section:

- [User Preferences Table](#)
- [User Preferences Functions](#)

5. Menu Orientation

System Menu

User Preferences Table

The figure below illustrates a sample **User Preferences Table**.

Name	Description	Setting
Bus Display Brightness	Range: 1 – 4 (1 = dim, 4 = bright)	3
Control Panel Backlight	Range: 1 – 10 (1 = dim, 10 = bright)	7
Touch Screen Brightness	Range: 1 – 10 (1 = dim, 10 = bright)	9
Transition Display Brightness	Range: 1 – 10 (1 = dim, 10 = bright)	10
Transition Display Contrast	Range: 1 – 10 (1 = low contrast, 10 = high contrast)	10
Black on Invalid Video	Range: On/Off	On

Figure 5-106. User Preferences table (sample)

The **User Preferences Table** lists all available preferences, except for those provided in the **Tool Bar**. The yellow highlight indicates the preference that can be changed. To move the highlight, touch any row or use the top knob.

The following columns of information are provided:

- **Name** — lists the name of the user preference.
- **Description** — lists the range of the selected user preference.
- **Setting** — lists the preference's current setting.

The **{Set}** button always applies to the highlighted preference, and the value shown in the button's insert *changes* as different preferences are selected.

Press **{Set}** to display the keypad for the selected preference in the table, enabling you to change its value.



User Preferences Functions

The following user preferences are provided:

- **Bus Display Brightness** — controls the brightness of the programmable displays above the PGM and M/E banks.
Range: 1 (dim) to 4 (bright)
- **Control Panel Backlight** — controls the overall brightness of all buttons on the control panel.
Range: 1 (dim) to 10 (bright)
- **Touch Screen Brightness** — controls the brightness of the Touch Screen.
Range: 1 (dim) to 10 (bright)
- **Transition Display Brightness** — controls the brightness of the LCD displays above the **M/E Transition Section**, **PGM Transition Section**, **Memory Section** and **Custom Section**.
Range: 1 (dim) to 10 (bright)
- **Transition Display Contrast** — controls the contrast of the LCD displays above the **M/E Transition Section**, **PGM Transition Section**, **Memory Section** and **Custom Section**.
Range: 1 (low contrast) to 10 (high contrast)

5. Menu Orientation

System Menu

- **Black on Invalid Video** — when an input is selected on a bus, this preference controls how the system behaves when the input becomes invalid — such as when the input loses sync or video.
 - ~ **On** — shows black in place of the input signal, when the selected signal becomes invalid.
 - ~ **Off** — shows the input signal as is, when the selected signal becomes invalid. In this mode, non-synchronous and/or non-stable video will appear on the switcher's output.

Important

It is highly recommended that you leave the **Black on Invalid Video** preference **On** during production. The **Off** mode may be useful during setup mode only.

Reset to
Default

- Press **{Reset to Default}** to return a highlighted preference to its default value.

5. Menu Orientation

System Menu

Save All

On the **System Menu**, press **{Save All}** to save all system setup parameters to non-volatile memory. When pressed, a pop-up confirms the save:



Figure 5-107. Save All Pop-up

The following functions are saved when **{Save All}** is pressed:

- Input setups
- Output setups
- Communications setups
- Reference video settings
- Clean Feed assignments
- DSK settings
- Button mappings
- Tally assignments
- User Preferences
- The clean feed source associated with the **{ASSIGN}** button

Software Menu

From the **System Menu**, press **{Software}** to display the **Software Menu**. The figure below illustrates a sample menu.

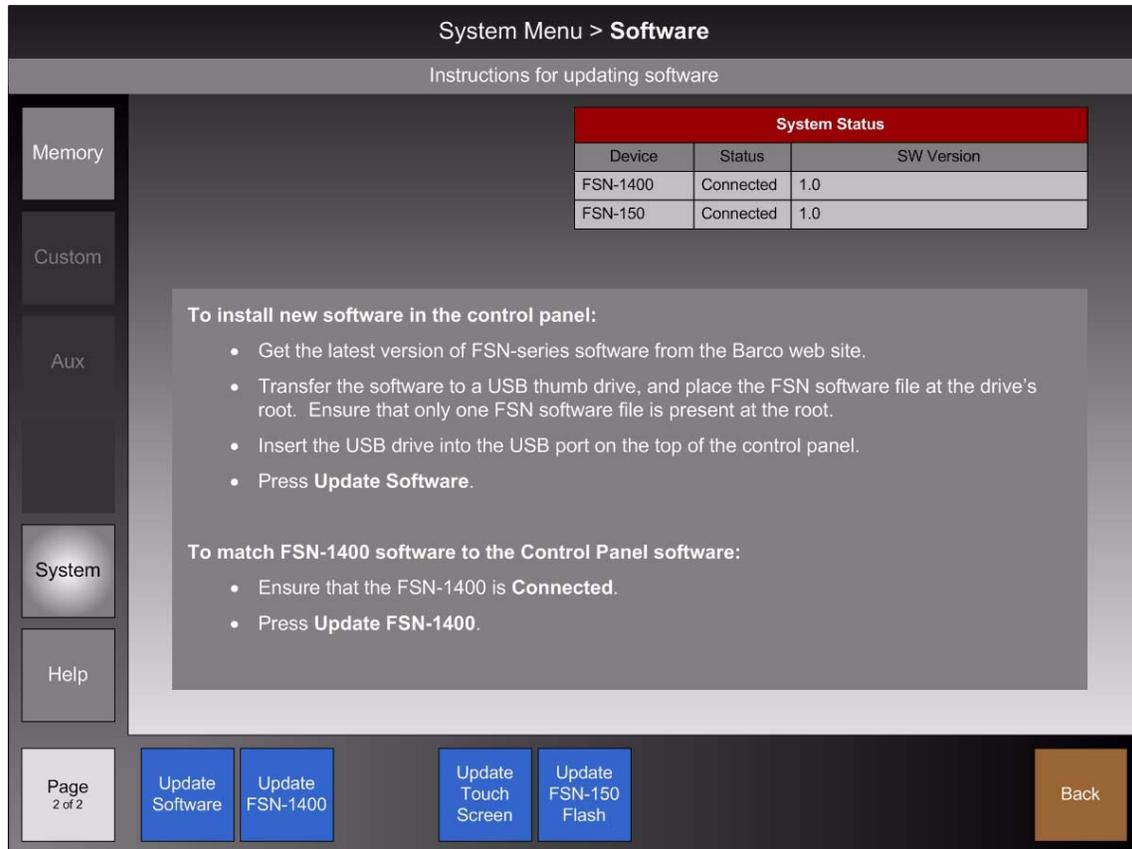


Figure 5-108. Software Menu (sample)

The **Software Menu** enables you to update the FSN-1400 and control panel with the latest software version. The menu's palette provides a table of software versions, plus concise software update instructions.

The following topics are discussed in this section:

- [Software Table](#)
- [Software Functions](#)

5. Menu Orientation

System Menu

Software Table

The figure below illustrates a sample **Software Table**.

System Status		
Device	Status	SW Version
FSN-1400	Connected	1.0
FSN-150	Connected	1.0

Figure 5-109. Software table (sample)

The **Software Table** lists the current versions of software in the FSN-1400 and control panel. The following columns of information are provided:

- **Device** — lists the system devices.
- **Status** — provides status for the device (e.g., **Connected**, **Not Connected**, **Software Mis-match**).
- **SW Version** — lists the device's software version.

Note

When the message "**Software Mismatch**" appears on the FSN-1400 line, you must update the FSN-1400 software.

Software Functions

The following software functions are provided:

- Press **{Update Software}** to install the latest version of FSN Series software in the control panel. In Chapter 8, refer to the "[Updating Control Panel Software](#)" section on page 305 for complete instructions.
- Press **{Update FSN-1400}** to match FSN-1400 software to the control panel software. In Chapter 8, refer to the "[Updating FSN-1400 Software](#)" section on page 306 for complete instructions.

The following two buttons are conditional. They only appear if a software mis-match occurs in either the Touch Screen or the control panel's flash memory. If there is no mis-match, the buttons do not appear.

- Press **{Update Touch Screen}** to update the software in the **Touch Screen**, if required. The button will only appear if a software mis-match occurs. In Chapter 8, refer to the "[Updating FSN-1400 Software](#)" section on page 306 for complete instructions.
- Press **{Update FSN-150 Flash}** to update the control panel's flash memory, if required. The button will only appear if a software mis-match occurs. In Chapter 8, refer to the "[Updating FSN-1400 Software](#)" section on page 306 for complete instructions.

Update
Software

Update
FSN-1400

Update
Touch
Screen

Update
FSN-150
Flash

Diagnostics Menu

From the **System Menu**, press **{Diags}** to display the **Diagnostics Menu**, as shown below.

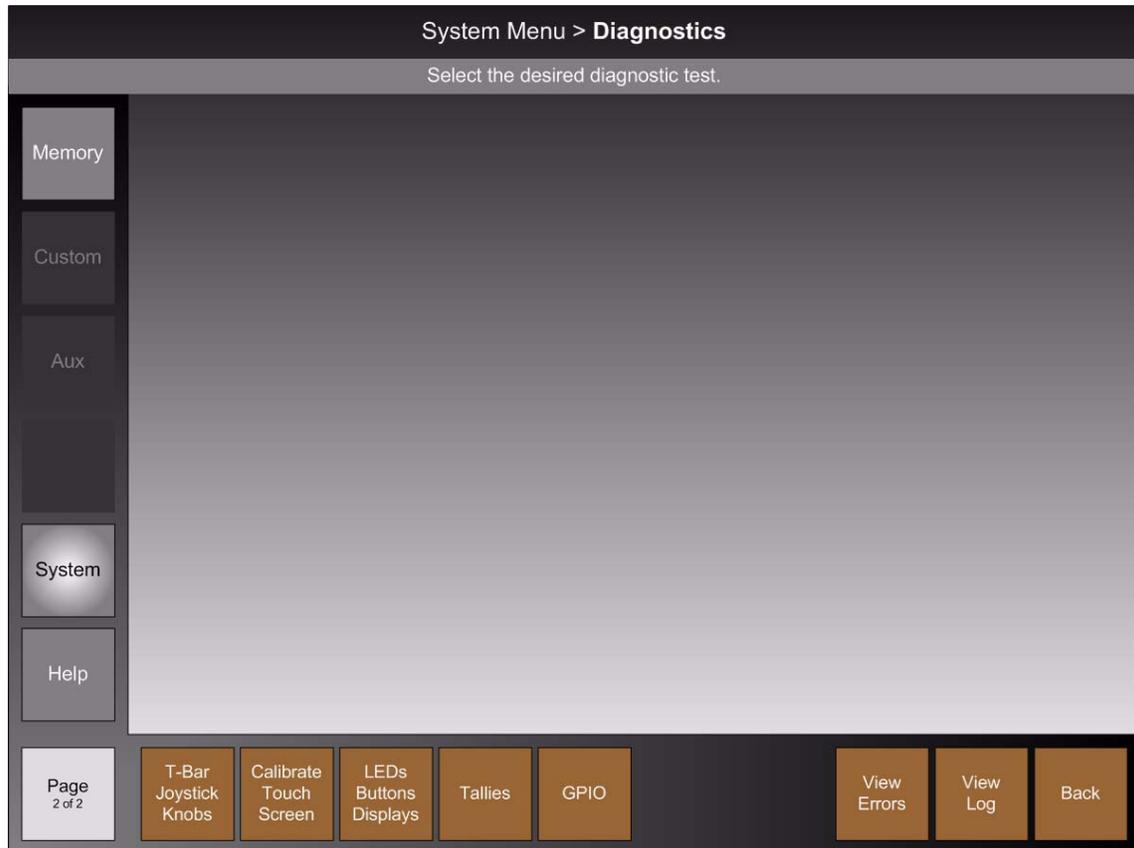


Figure 5-110. Diagnostics Menu

The **Diagnostics Menu** enables you to perform a variety of diagnostic tests. The following topics are discussed in this section:

- [T-Bar, Joystick and Knobs](#)
- [Calibrate Touch Screen](#)
- [LEDs, Buttons and Displays](#)
- [Tallies](#)
- [GPIO](#)
- [View Errors](#)
- [View Log](#)

5. Menu Orientation

System Menu

T-Bar, Joystick and Knobs

T-Bar
Joystick
Knobs

From the **Diagnostics Menu**, press **{T-Bar Joystick Knobs}** to display the **T-Bar, Joystick, Knobs Menu**. The figure below illustrates a sample menu.

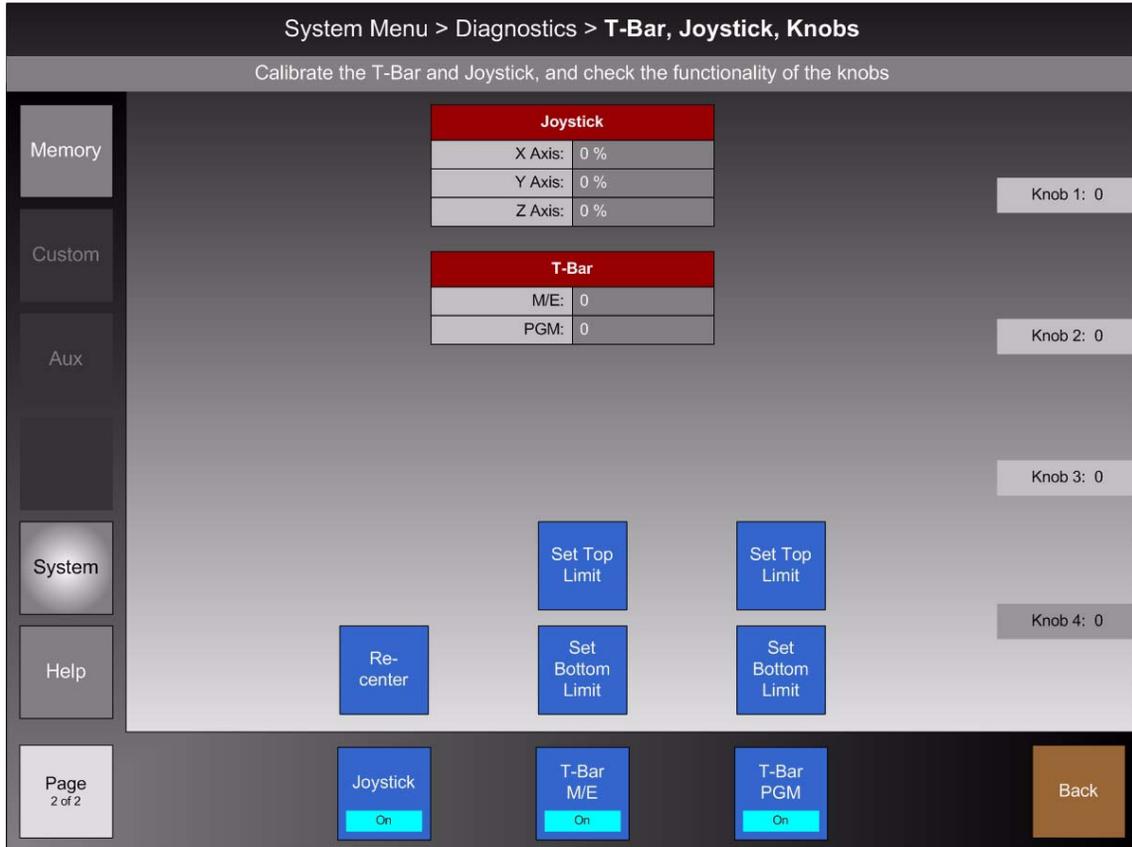


Figure 5-111. T-Bar, Joystick, Knobs Menu (sample)

The **T-Bar, Joystick, Knobs Menu** enables you to perform diagnostic tests on the **T-Bar, Joystick** and the four knobs. The two tables at the top provide **Joystick** and **T-Bar** data.

- **Joystick Table** — data is listed for the **X, Y** and **Z** axes. As you move the **Joystick** to its maximum limit along each axis, the proper range is **-100%** to **100%**. If the **Joystick** does not reach these values, or does not display **0%** when fully at rest, use the **{Re-center}** button. See below for details.
- **T-Bar Table** — data is listed for each bank's **T-Bar**. As you move each **T-Bar** to its top and bottom limits, the proper range is **0** to **100**. If the **T-Bar** does not display these values at each limit, use the **{Set Top Limit}** and **{Set Bottom Limit}** buttons. See below for details.

The following diagnostic functions are provided on the menu:

- **Knobs** — one data field is provided for each knob. As you rotate a knob, the associated value should range between **+7** and **-7**, as you rotate the knob clockwise and counter-clockwise, respectively.

5. Menu Orientation

System Menu



- Press **{Joystick}** to toggle the **Joystick** on and off. When you toggle the **Joystick** off, a pop-up asks you to confirm the procedure. When off, the **Joystick** no longer functions, and the **{Re-center}** button is grayed out.

Note

It is recommended that you leave the **Joystick** on.



- Ensure that the **Joystick** is fully at rest, then press **{Re-center}** to re-center the **X**, **Y** and **Z** axes. Use this function only if the **Joystick** does not display **0%** on all axes when fully at rest.



- Press **{T-Bar M/E}** to toggle the M/E's **T-Bar** on and off. When you toggle it off, a pop-up asks you to confirm the procedure. When off, the **T-Bar** no longer functions on the control panel, and the **{Set Top Limit}** and **{Set Bottom Limit}** buttons are grayed out.

Note

It is recommended that you leave the **T-Bar** on.

Note

The **{T-Bar PGM}** button performs the identical function for the PGM bank's **T-Bar**.



- A **{Set Top Limit}** button is provided for each **T-Bar** on the switcher. Move the selected **T-Bar** to its top limit, then press **{Set Top Limit}** to calibrate the T-Bar's top position. In the pop-up, press **{Calibrate}**.



- A **{Set Bottom Limit}** button is provided for each **T-Bar** on the switcher. Move the selected **T-Bar** to its bottom limit, then press **{Set Bottom Limit}** to calibrate the T-Bar's bottom position. In the pop-up, press **{Calibrate}**.

Calibrate Touch Screen



From the **Diagnostics Menu**, press **{Calibrate Touch Screen}** to run the Touch Screen's interactive calibration routine. A special calibration screen appears, on which you will be asked to touch certain areas, and then accept the new calibration. After you accept the calibration, the system will return to the FSN Series menus.

Tip

For a more accurate calibration, use a pencil eraser instead of your finger tip.

Important

As an alternate method, if required, you can start the **Touch Screen** calibration procedure by simultaneously pressing the **FINE ADJUST** and **ENTER** buttons on the **Keypad**.

5. Menu Orientation

System Menu

LEDs, Buttons and Displays

LEDs
Buttons
Displays

From the **Diagnostics Menu**, press **{LEDs Buttons Displays}** to display the **LEDs, Buttons and Displays Menu**. The figure below illustrates a sample menu.

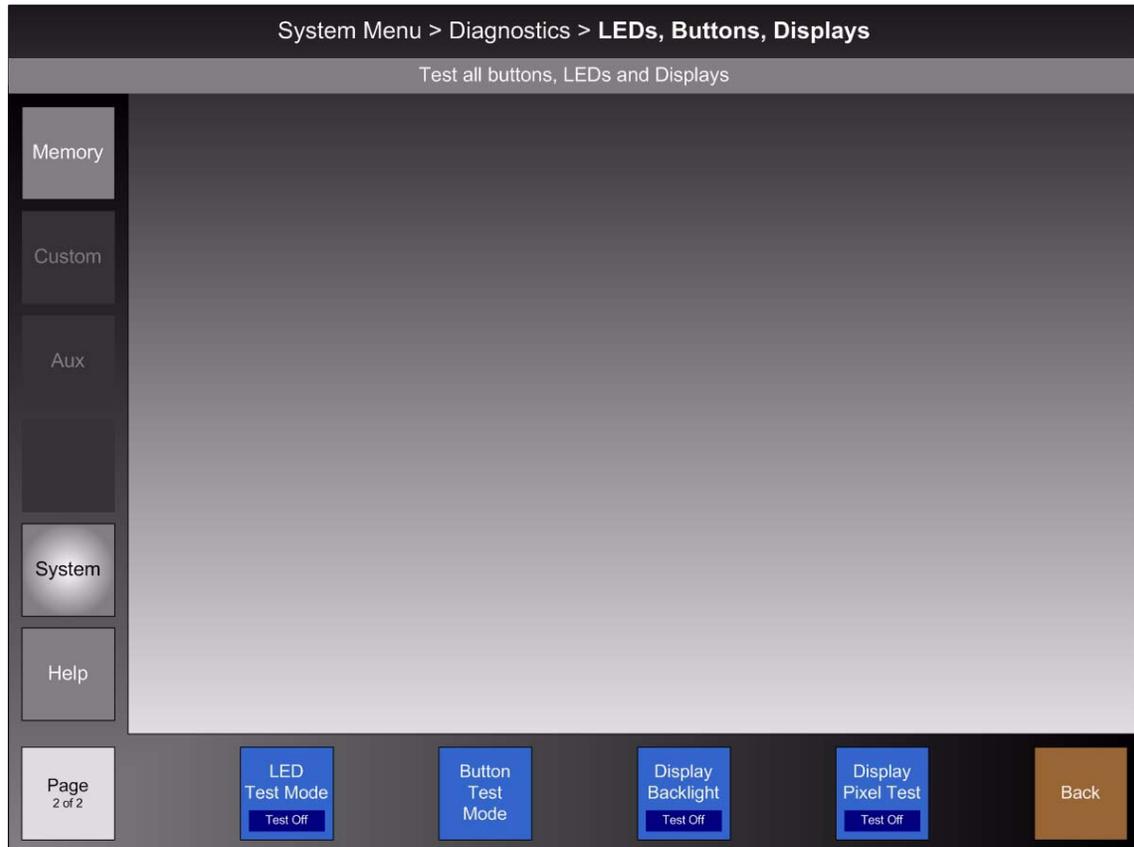
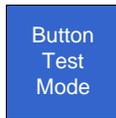


Figure 5-112. LEDs, Buttons and Displays Menu (sample)

The **LEDs, Buttons and Displays Menu** enables you to perform diagnostic tests on the control panel's LEDs, buttons, transition displays and bus displays. The following diagnostic functions are provided on the menu:



- Press **{LED Test Mode}** to display the **LED Test Mode Pop-up**, which enables you to test all LEDs on the control panel. The following options are available:
 - ~ Press **{Green}** to turn all multi-color LEDs bright green.
 - ~ Press **{Blue}** to turn all multi-color LEDs bright blue.
 - ~ Press **{Red}** to turn all multi-color LEDs bright red.
 - ~ Press **{White}** to turn all multi-color LEDs bright white.
 - ~ Press **{All On}** to turn all LEDs on the panel on.
 - ~ Press **{Test Off}** to conclude the test, and return all LEDs to their previous state, prior to test mode.



- Press **{Button Test Mode}** to display the **Button Test Mode Pop-up**.

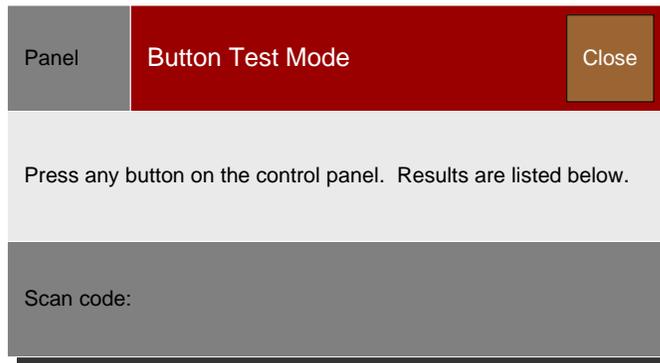


Figure 5-113. Button Test Mode Pop-up

Press any button on the panel to display its scan code in the pop-up. Press **{Close}** to conclude the test.



- Press **{Display Backlight}** to show the **Display Backlight Pop-up**, which enables you to test the backlight of all control panel displays. The following options are available:
 - ~ Press **{All On}** to turn all displays on at full brightness.
 - ~ Press **{All Off}** to turn all displays off.
 - ~ Press **{Red On}** to turn all bus displays bright red. The transition displays do not have a red component.
 - ~ Press **{Green On}** to turn all displays bright green, including the transition displays.
 - ~ Press **{Test Off}** to conclude the test, and return all displays to their previous state, prior to test mode.

Note

In this test mode, the **{Display Pixel Test}** button is grayed out.



- Press **{Display Pixel Test}** to show the **Display Pixel Test Pop-up**, which enables you to test the pixels on all control panel displays. The following options are available:
 - ~ Press **{All Pixels On}** to turn all pixels on all displays on.
 - ~ Press **{All Pixels Off}** to turn all pixels on all displays off.
 - ~ Press **{Test Off}** to conclude the test, and return all displays to their previous state, prior to test mode.

Note

In this test mode, the **{Display Backlight}** button is grayed out.

5. Menu Orientation

System Menu

Tallies



From the **Diagnostics Menu**, press **{Tallies}** to display the **Tally Diagnostics Menu**. The figure below illustrates a sample menu.

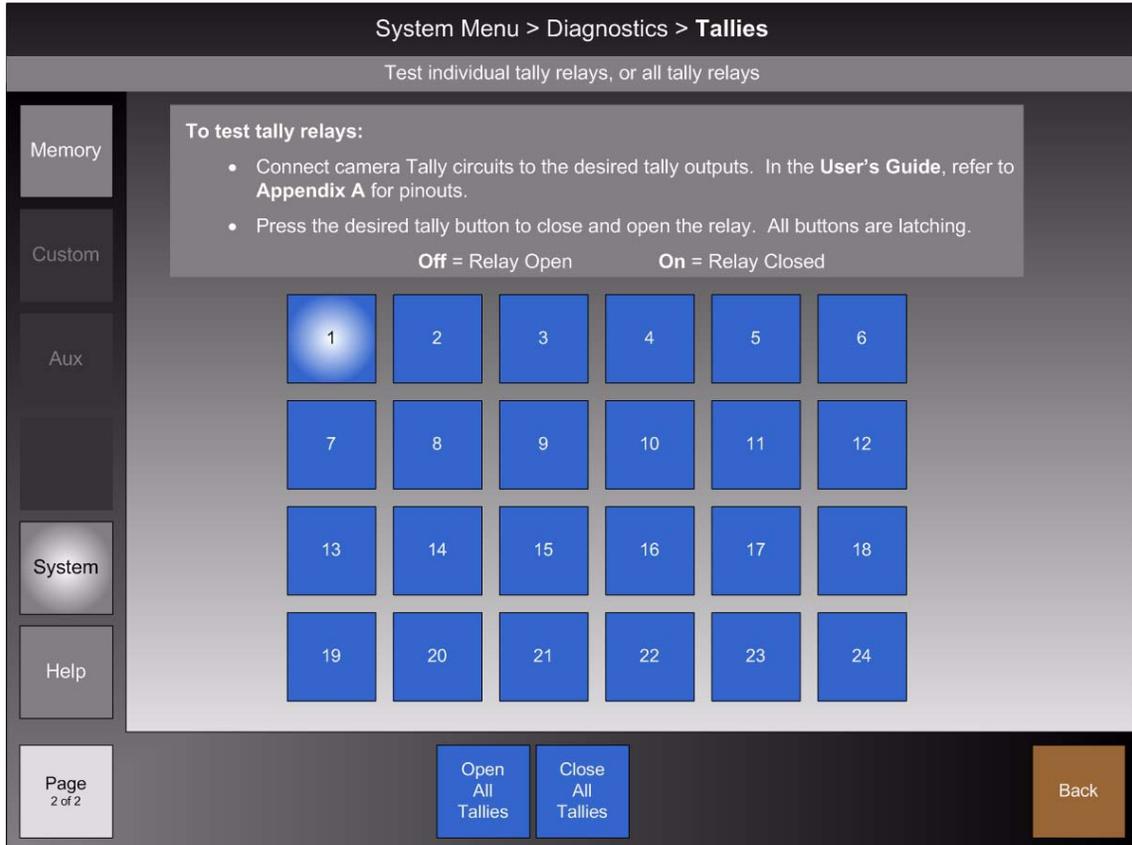


Figure 5-114. Tally Diagnostics Menu (sample)

The **Tally Diagnostics Menu** enables you to test all 24 tally relays. The **Palette** provides a brief set of instructions for conducting the tests. Please note:

- When you enter the **Tally Diagnostics Menu**, the current on/off state of all tallies are shown. While working within the menu, all settings on the **Tally Setup Menu** are disregarded.

The following diagnostic functions are provided on the menu:

- On the **Palette**, press any combination of buttons to close or open the selected tally relay. Each numbered button represents the associated tally relay. In Appendix A, refer to the "[Tally Connector](#)" section on page 318 for pinouts.
- Press **{Open All Tallies}** to open all tally relays.





- Press **{Close All Tallies}** to close all tally relays.

GPIO



From the **Diagnostics Menu**, press **{GPIO}** to display the **GPIO Diagnostics Menu**. The figure below illustrates a sample menu.

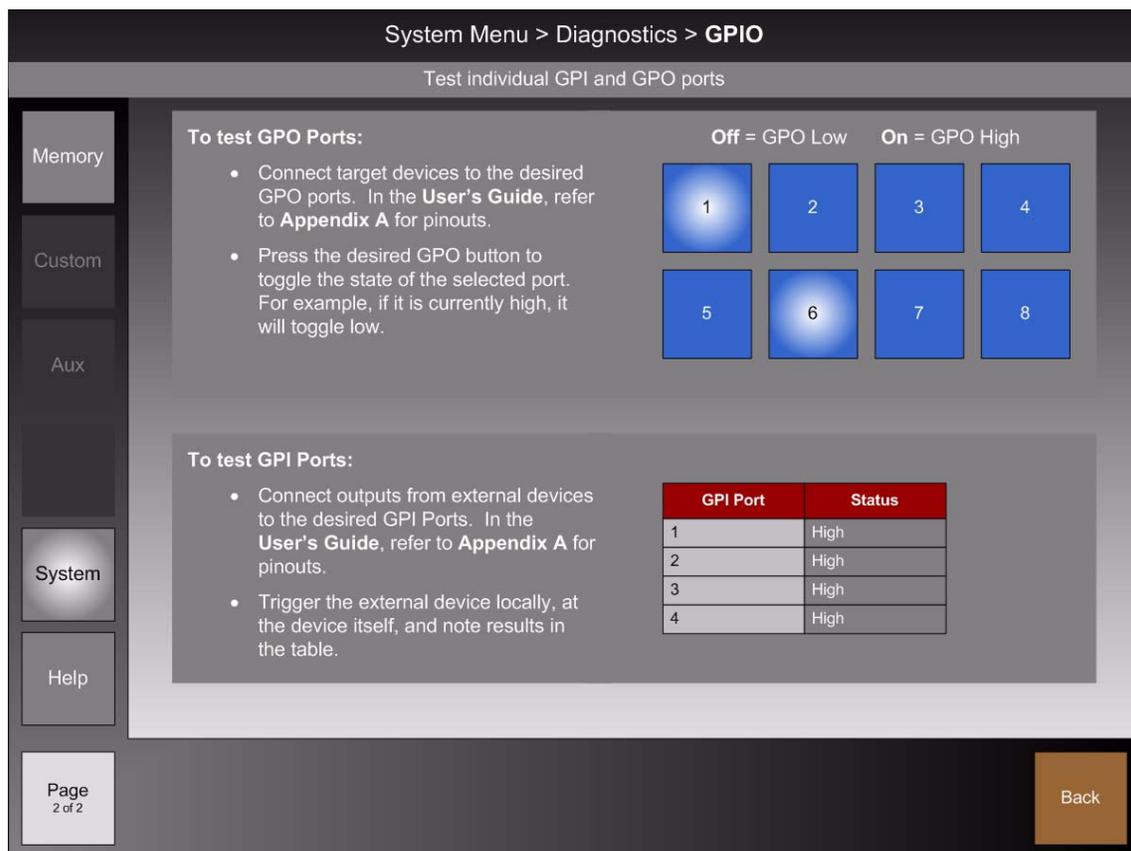


Figure 5-115. GPIO Diagnostics Menu (sample)

The **GPIO Diagnostics Menu** enables you to test all **GPI** (General Purpose Input) ports and **GPO** (General Purpose Output) ports. The **Palette** provides a brief set of instructions for conducting the tests.

Please note

- When you enter the **GPIO Diagnostics Menu**, the current on/off state of all GPI and GPO ports are shown.

5. Menu Orientation

System Menu

- **Date/Time** — lists the date and time that the error occurred.

Note

The table is sorted by **Priority** first, then by **Date/Time**.

- **Error #** — all error “types” are assigned unique numbers. This feature is designed to assist Technical Support personnel.
- **Description** — provides a brief description of the error.

The following additional functions are provided on the **View Errors Menu**:

- Press **{Tech Support}** to display the **Technical Support Pop-up**, which provides the technical support phone number and email address.

Tech Support



Figure 5-117. Technical Support Pop-up

- If additional troubleshooting details are available for a highlighted error message in the table, the **{Show Info}** button automatically appears. Press **{Show Info}** to display a pop-up with the associated troubleshooting information.
- Press **{Page Up}** to scroll up one page of messages.
- Press **{Page Down}** to scroll down one page of messages.
- Press **{Go to Top}** to take the highlight to the top of the error list.
- Press **{Go to Bottom}** to take the highlight to the bottom of the error list.

Show Info

Page Up

Page Down

Go to Top

Go to Bottom

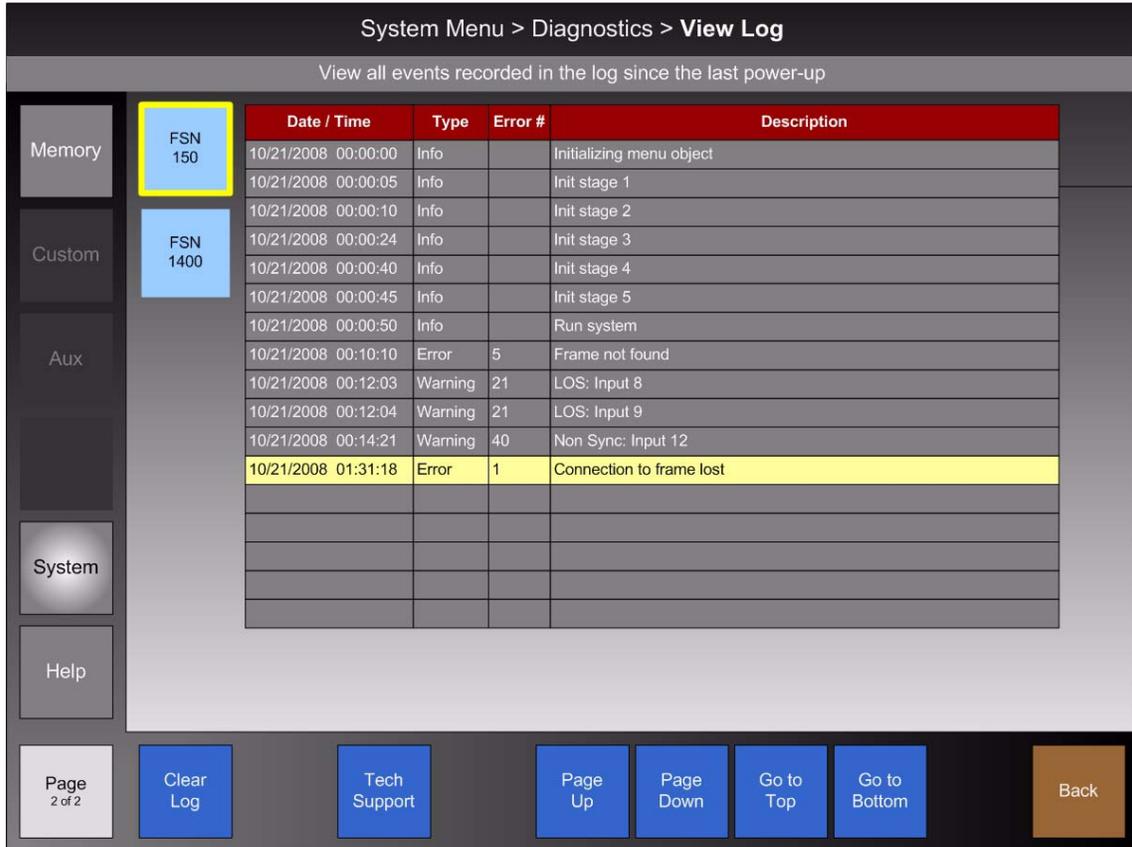
5. Menu Orientation

System Menu

View Log



From the **Diagnostics Menu**, press **{View Log}** to display the **View Log Menu**. The figure below illustrates a sample menu.



The screenshot shows the "View Log" menu within the "System Menu > Diagnostics > View Log" hierarchy. It displays a table of log events with columns for Date/Time, Type, Error #, and Description. The table is filtered for FSN 150 and FSN 1400. The bottom of the screen features navigation buttons: Clear Log, Tech Support, Page Up, Page Down, Go to Top, Go to Bottom, and Back. The page number "Page 2 of 2" is also visible.

	Date / Time	Type	Error #	Description
Memory	10/21/2008 00:00:00	Info		Initializing menu object
	10/21/2008 00:00:05	Info		Init stage 1
	10/21/2008 00:00:10	Info		Init stage 2
Custom	10/21/2008 00:00:24	Info		Init stage 3
	10/21/2008 00:00:40	Info		Init stage 4
	10/21/2008 00:00:45	Info		Init stage 5
	10/21/2008 00:00:50	Info		Run system
	10/21/2008 00:10:10	Error	5	Frame not found
Aux	10/21/2008 00:12:03	Warning	21	LOS: Input 8
	10/21/2008 00:12:04	Warning	21	LOS: Input 9
	10/21/2008 00:14:21	Warning	40	Non Sync: Input 12
	10/21/2008 01:31:18	Error	1	Connection to frame lost
System				
Help				

Figure 5-118. View Log Menu (sample)

The **View Log Menu** provides a comprehensive scrolling list of all events recorded in the log since the last power up. Two logs can be displayed — one for the FSN-1400 and one for the control panel. In the **Log Table**, four columns of information are provided:

- **Date/Time** — lists the date and time that the event was logged.
- **Type** — all log events are assigned one of four unique categories: Info, Debug, Warning or Error.
- **Error #** — all error “types” are assigned unique numbers. This feature is designed to assist Technical Support personnel.
- **Description** — provides a brief description of the event.

5. Menu Orientation

System Menu

The following additional functions are provided:

FSN
150

- Press **{FSN-150}** to switch the **Log Table** to a list of events from the FSN-150 control panel.

FSN
1400

- Press **{FSN-1400}** to switch the **Log Table** to a list of events from the FSN-1400.

Clear
Log

- Press **{Clear Log}** to clear the entire log. You will be asked to confirm this procedure in a pop-up.

Tech
Support

- Press **{Tech Support}** to display the **Technical Support Pop-up**, which provides the technical support phone number and email address.

Page
Up

- Press **{Page Up}** to scroll up one page of messages.

Page
Down

- Press **{Page Down}** to scroll down one page of messages.

Go to
Top

- Press **{Go to Top}** to take the highlight to the top of the log.

Go to
Bottom

- Press **{Go to Bottom}** to take the highlight to the bottom of the log.

5. Menu Orientation

System Menu

Backup and Restore Menu

From the **System Menu**, press **{Backup Restore}** to display the **Backup and Restore Menu**, which enables you to backup and restore the system to/from a USB drive.

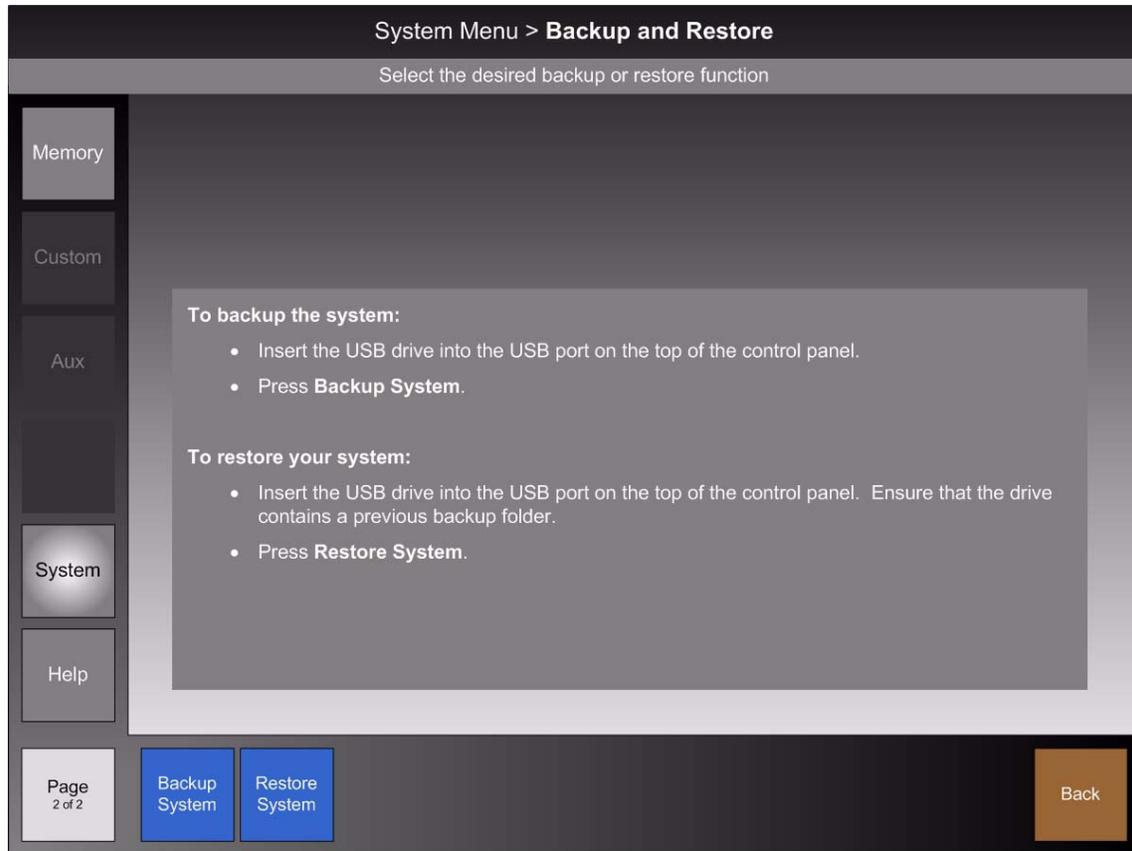


Figure 5-119. Backup and Restore Menu

On the **Palette**, brief instructions are provided for the backup and restore procedures.

The following functions are provided on the **Backup and Restore Menu**:



- Press **{Backup System}** to initiate the system backup procedure. Ensure that a USB drive is inserted into the **USB Port** on the top of the control panel. Once the drive is detected, you will be prompted to continue or cancel the procedure.
- Press **{Restore System}** to initiate the system restore procedure. Ensure that a USB drive that includes a system backup file is inserted into the **USB Port** on the control panel. Once the restore process is complete, you will be prompted to press **{Restart}**, which restarts the FSN-1400 and control panel.

Reset Menu

From the **System Menu**, press **{Reset}** to display the **Reset Menu**, which enables you to perform a factory reset and several types of “soft” resets.

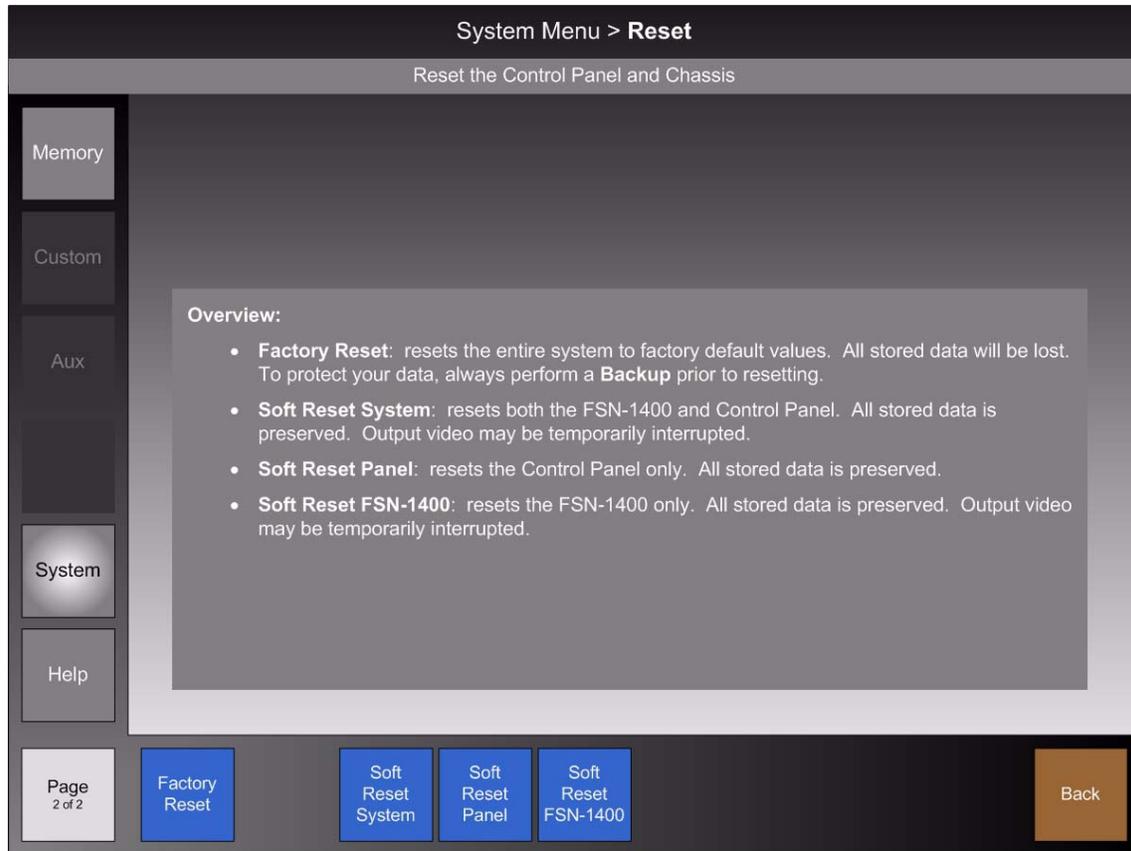


Figure 5-120. Reset Menu

On the **Palette**, brief instructions are provided for each type of reset procedure.

The following functions are provided on the **Reset Menu**:



- Press **{Factory Reset}** to reset the entire system to its factory default values. All data will be lost. After pressing the button, the **Factory Reset Pop-up Menu** appears with three options:
 - ~ Reset and save IP settings.
 - ~ Reset all IP settings to factory default values.
 - ~ Cancel the procedure

If you elect to perform one of the two factory reset options, always ensure that you have backed up your system. Refer to the [“Factory Default Settings”](#) section on page 236 for factory reset details.



- Press **{Soft Reset System}** to perform a “soft” reset on both the FSN-1400 and control panel. All stored data is preserved, but output video may be temporarily interrupted. After pressing the button, you will be prompted to continue or cancel the procedure.

5. Menu Orientation

System Menu



- Press **{Soft Reset Panel}** to perform a “soft” reset on the control panel only. All stored data is preserved. After pressing the button, you will be prompted to continue or cancel the procedure.
- Press **{Soft Reset FSN-1400}** to perform a “soft” reset on the FSN-1400 only. All stored data is preserved, but output video may be temporarily interrupted. After pressing the button, you will be prompted to continue or cancel the procedure.

Factory Default Settings

When you perform a factory reset, the following actions occur:

- All switcher buses are set to **BLACK**, and all transitions are set to **MIX**.
- Output format is set to 1920 x 1080i @ 59.94.
- All inputs on **NIC #1** are mapped to the control panel, in a 1-1 layout to unshifted buttons **1** through **8**. Default names are assigned, e.g., **N1-1**, **N1-2**, etc. No other inputs are mapped to the panel.
- All inputs on subsequent **NICs** are not mapped.
- All inputs on all **UICs** are not mapped.
- All Ethernet communications parameters are either returned to factory default settings or saved — depending on your selection in the **Factory Reset Pop-up Menu**.
- In the **Reference and Output Setup Menu**:
 - ~ The reference input is set to **External**.
 - ~ **Output V-lock** is set to **Off**.
- In the **Input Setup Menu**:
 - ~ For native inputs, **Sync Mode** is set to **Auto**.
 - ~ For universal inputs, **Auto Acquire** is set to **On**.
- In the **User Preferences Menu**, **Black on Invalid Video** is set to **On**.
- All color background signals (1 through 4) are set to black, as shown on the **Color Background Menu**.
- In the **Transition Menu**:
 - ~ All transition **Rates** are set to **30** frames.
 - ~ All transition curves are set to **Linear**.
- In the **Keyer Menus**:
 - ~ All key **Types** are set to **Luma**.
 - ~ All key **Fills** are set to **Self**.
 - ~ **External Key** is set to **Off** (in the **DSK** menu).
- In the **Wipe Menu**:
 - ~ Wipe **Direction** is set to **Normal**.
 - ~ Wide **Edge** is set to **Soft**.
 - ~ Edge **Width** is set to **100**.

System Shutdown



From the **System Menu**, press **{Shut Down}** to shut down the control panel. Once the button is pressed, you will be prompted to continue or cancel the procedure.

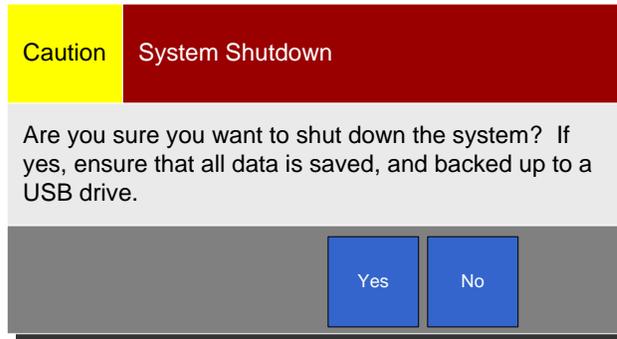


Figure 5-121. System Shutdown Pop-up

Once the control panel shuts down, turn off the power switch on the back of the control panel.

5. Menu Orientation

Help Menu

Help Menu

The figure below illustrates the **Help Menu**:

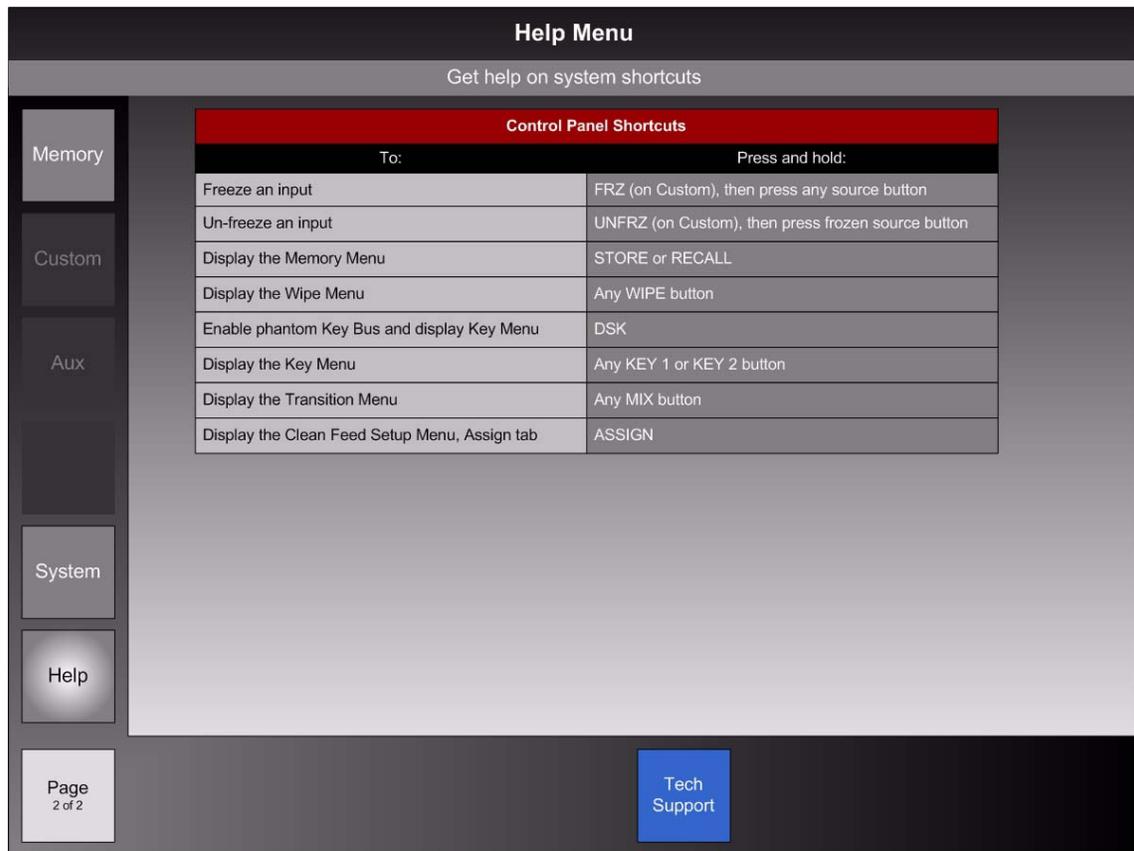


Figure 5-122. Help Menu

The **Help Menu** provides a convenient table of control panel and menu shortcuts, plus technical support information.

To access the **Help Menu**:

- In the **Menu Bar**, press **{Page}** to display page **2** (if required). Then, press the **{Help}** button.

The following functions are provided on the **Help Menu**:

- Press **{Tech Support}** to display the **Technical Support Pop-up**, which provides the technical support phone number and email address.



5. Menu Orientation

Help Menu

The table below summarizes control panel and menu shortcuts:

Table 5-4. Menu Shortcuts

To:	Press and hold:
Display the Clean Feed Setup Menu, Assign Panel	
Freeze an input	 in the Custom Control section, then press any source button 
Un-freeze an input	 in the Custom Control section, then press any frozen source button 
Display the Memory Menu	 or 
Display the Wipe Menu	 on any bank
Enable the phantom Key Bus and display the Keyer Menu . (Key must be armed first)	
Display the Transition Menu	 on any bank
Display the Keyer Menu . (Key must be armed first)	 or 

5. Menu Orientation

Help Menu

6. System Setup

In This Chapter

This chapter provides detailed instructions for setting up the FSN Series switcher. The following topics are discussed:

- [Setup Prerequisites](#)
- [System Setup Sequence](#)
- [Power Up and Status Check](#)
- [Return to Factory Default](#)
- [Touch Screen Calibration](#)
- [Restoring the System](#)
- [Communications Setup](#)
- [Reference Video and Output Setup](#)
- [Output Test Patterns](#)
- [Clean Feed Setup](#)
- [Native Input Setup](#)
- [Universal Input Setup](#)
- [External DSK Input Setup](#)
- [Button Mapping](#)
- [Tally Setup](#)
- [User Preference Setup](#)
- [Saving the Setup](#)
- [Backing up the System](#)

Note

Once you have reviewed all of the sections in this chapter, please continue with Chapter 7, "[Operations](#)" on page 263.

6. System Setup

Setup Prerequisites

Setup Prerequisites

Before setting up your FSN Series switcher, please review the following prerequisites:

- Ensure that you are familiar with the FSN-1400. Refer to Chapter 2, "[FSN-1400 Orientation](#)" on page 27 for details.
- Ensure that you are familiar with the FSN-150, including the functions of all buttons within the various sections. Refer to Chapter 3, "[Control Panel Orientation](#)" on page 57 for details.
- Ensure that all hardware is properly installed, and that all sources and peripherals are properly connected. Refer to Chapter 4, "[Installation](#)" on page 91 for details.
- Ensure that you are familiar with all menus and sub-menus. Refer to Chapter 5, "[Menu Orientation](#)" on page 117 for details.

System Setup Sequence

This section provides a top level view of the entire FSN Series setup procedure, plus links to each individual sequence.

Important

For the optimum FSN Series setup, it is recommended that you follow all procedures in the order outlined below.

1. [“Power Up and Status Check,”](#) page 244.
2. [“Return to Factory Default,”](#) page 245.
3. [“Touch Screen Calibration,”](#) page 246.
4. [“Restoring the System,”](#) page 246.
5. [“Communications Setup,”](#) page 247.
6. [“Reference Video and Output Setup,”](#) page 248.
7. [“Output Test Patterns,”](#) page 250.
8. [“Clean Feed Setup,”](#) page 251.
9. [“Native Input Setup,”](#) page 252.
10. [“Universal Input Setup,”](#) page 254.
11. [“External DSK Input Setup,”](#) page 257.
12. [“Button Mapping,”](#) page 258.
13. [“Tally Setup,”](#) page 259.
14. [“User Preference Setup,”](#) page 260.
15. [“Saving the Setup,”](#) page 261.
16. [“Backing up the System,”](#) page 262.

All of the above procedures are covered in the following sections.

6. System Setup

Power Up and Status Check

Power Up and Status Check



FSN Series system setup: **Step 1.**

- Use the following steps to power up your system and check system status.
 - ▲ **Prerequisite** — Ensure that your system is properly installed and cabled. In Chapter 4, refer to the following sections for details:
 - ~ “[Control Panel Installation](#),” page 94.
 - ~ “[Touch Screen Installation](#),” page 95.
 - ~ “[FSN-1400 System Connections](#),” page 100.
 - ▲ **Prerequisite** — Ensure that you are familiar with the **System Menu**. In Chapter 5, refer to the “[System Menu Description](#)” section on page 170 for complete details.
- 1. Power up the FSN-1400.
- 2. Power up the FSN-150 control panel. The **System Menu** is automatically displayed after boot up.

Important

If communication is not properly set up, numerous buttons will be grayed out on the **System Menu**. These buttons will activate once communication is properly set.

- 3. Power up all additional peripherals, such as monitors and sources.
- 4. On the **System Menu**:
 - ~ In the **System Status Table**, ensure that all devices are connected. If not, re-check all Ethernet connections. After checking connections, if devices still report “**Not Connected**,” use the “[Communications Setup](#)” procedure on page 247.
 - ~ Ensure that the software versions for the control panel and FSN-1400 match. If not, you may need to update control panel software or match the FSN-1400’s software to the installed control panel software. Refer to Chapter 8, “[Updating Software](#)” on page 301 for details.

Note

If the software versions on the control panel and FSN-1400 match, you do not need to upgrade.

- ~ In the **FSN-1400 Status Table**, ensure that all installed **NIC** and **UIC** cards are recognized. If not, you may need to re-seat the boards.

Return to Factory Default

2

FSN Series system setup: **Step 2.**

Prior to performing any setup procedures, it is recommended that you perform a factory reset — in order to reset all input, output and source mappings to their default values.

Particularly for customers in the events and rental marketplace, this procedure guarantees that any previous input setups and memory registers (e.g., those that may have been programmed by other users) are completely cleared from system memory.

Note

If you are continuing an event (for example, day two of a three-day event), you do not need to perform a factory reset. However, if you do elect to perform a factory reset, ensure that you have backed up your system. Refer to the “[Backing up the System](#)” section on page 262 for details.

▲ **Prerequisite** — Ensure that you are familiar with the **Reset Menu**. In Chapter 5, refer to the “[Reset Menu](#)” section on page 235.

■ Use the following steps to return the system to factory default values:

1. In the **Menu Bar**, press **{System}** to access the **System Menu**.
2. Press **{Reset}** to display the **Reset Menu**.
3. Press **{Factory Reset}** to reset the entire system to its factory default values. Remember that all data will be lost.
4. When the **Reset Confirmation Pop-up** appears, press **{YES}**.

Note

In Chapter 5, refer to the “[Factory Default Settings](#)” section on page 236 for a list of factory default settings.

6. System Setup

Touch Screen Calibration

Touch Screen Calibration

3

FSN Series system setup: **Step 3.**

The calibration procedure is an excellent starting point prior to performing a comprehensive system setup.

▲ **Prerequisite** — Ensure that you are familiar with the **Diagnostics Menu**. In Chapter 5, refer to the [“Diagnostics Menu”](#) section on page 223.

■ Use the following steps to calibrate your Touch Screen:

1. In the **Menu Bar**, press **{System}** to access the **System Menu**.
2. Press **{Diags}** to display the **Diagnostics Menu**.
3. Press **{Calibrate Touch Screen}**, then follow the prompts on screen to perform the calibration.

Tip

For a more accurate calibration, use a pencil eraser instead of your finger tip.

Restoring the System

4

FSN Series system setup: **Step 4** (optional)

In this procedure, you will restore your system configuration from a USB drive — provided that you previously backed up your system to a USB drive.

▲ **Prerequisite** — Ensure that you are familiar with the **Backup and Restore Menu**. In Chapter 5, refer to the [“Backup and Restore Menu”](#) section on page 234.

■ Use the following steps to restore your system from the USB Drive:

1. Ensure that your USB drive is properly inserted in the control panel's **USB Port**.
2. In the **Menu Bar**, press **{System}** to access the **System Menu**.
3. Press **{Backup Restore}** to display the **Backup and Restore Menu**.
4. Press **{Restore System}** to initiate the system restore procedure. Once the restore process is complete, you will be prompted to press **{Restart}**, which restarts the FSN-1400 and the control panel.

At the conclusion of this procedure, your system is completely set up — exactly the way that you left it when you performed a complete system “backup.” No further setup operations are required.

Please continue with system operations. Refer to Chapter 7, [“Operations”](#) on page 263 for details.

Communications Setup

5

FSN Series system setup: **Step 5**

In this procedure, you will set up communication between the FSN-1400 and the control panel.

▲ **Prerequisite** — Ensure that you are familiar with the **Communications Setup Menu**. In Chapter 5, refer to the “[Communications Setup Menu](#)” section on page 175.

■ Use the following steps to set up communications:

1. In the **Menu Bar**, press **{System}** to access the **System Menu**.

Important

If communication is not properly set up, numerous buttons will be grayed out on the **System Menu**. These buttons will activate once communication is properly set.

2. Press **{Com Setup}** to display the **Communications Setup Menu**.
3. Review the data in the **Ethernet Status Table**, and ensure the following:
 - ~ FSN-150 Ethernet 1: **Connected**
 - ~ FSN-1400 Ethernet: **Connected**

If status is “**Connected**,” communication is properly set up. Please continue with the “[Reference Video and Output Setup](#)” procedure on page 248.

4. If status is “**Not Connected**,” press **{Discover FSN-1400}** to locate the IP address(es) of all FSN-1400 units within your local network.
 - ~ If the pop-up alerts you that no FSN-1400 units have been discovered, check all Ethernet connections, then press **{Discover FSN-1400}** again to re-try the procedure.
 - ~ If FSN-1400 units are discovered, the **FSN-1400 Selection Keypad** appears. Select the desired **FSN-1400**, and press **{Connect}**.
5. **(Advanced)** If you need to change the IP address of a highlighted port, for example, if your system is connected to a house network, press **{Set IP Address}** to display the **IP Address Keypad**. Enter the desired address and press **{Enter}**.
6. **(Advanced)** If you need to change the subnet mask of a highlighted port, press **{Set Subnet Mask}** to display the **Subnet Mask Keypad**. Enter the desired subnet mask and press **{Enter}**.
7. **(Advanced)** If you need to return a highlighted port’s IP address and Subnet Mask to their factory default values, press **{Return to Default}**.

6. System Setup

Reference Video and Output Setup

Reference Video and Output Setup

6

FSN Series system setup: **Step 6**

In this procedure, you will set up the system's video reference input, output format (native resolution), and the output V-Lock setting.

▲ **Prerequisite** — Ensure that you are familiar with the **Reference and Output Setup Menu**. In Chapter 5, refer to the "[Reference and Output Setup Menu](#)" section on page 178.

■ Use the following steps to set up video reference input:

1. In the **Menu Bar**, press **{System}** to access the **System Menu**.
2. Press **{Ref and Output Setup}** to display the **Reference and Output Setup Menu**.
3. Press **{Reference Input}** to display two reference options:
 - ~ Press **{Free Run}** to select the FSN-1400's internal sync generator as the reference.
 - ~ Press **{External}** to select the **REF IN** connector on the **System Card**. One of three external signals can be connected:
 - SMPTE bi-level sync
 - Tri-level sync
 - Black burst

Note

If **External** is selected, ensure that the proper signal is connected to the **REF IN** connector on the **System Card**. In Appendix A, refer to the "[Reference Video Input Specifications](#)" section on page 309 for detailed information about the allowed frame rates for the reference input.

■ Use the following steps to set up the output format:

4. On the **Reference and Output Setup Menu**, press **{Output Format}** to display the **Output Format Keypad**.
5. Select the desired format and press **{Apply}**. In the confirmation pop-up, click **{Yes}** to confirm.

Important

Remember that all input settings will be reset to their default values when you change output formats.

6. System Setup

Reference Video and Output Setup

- Use the following steps to set the output V-Lock mode and SDI output timing, if desired.

Note

Remember that this mode can only be set when the **Reference Input** is set to **External**.

6. Press the **{Output V-Lock}** button to toggle the **Output V-Lock** mode on or off.
 - ~ When **On**, the **{SDI Output Timing}** button appears. All native inputs are forced to **Frame Sync** mode, and one frame of delay will be incurred on all native inputs. In addition, on the **Input Setup Menu**, the **{Sync Mode}** button is grayed out.
 - ~ When **Off**, you can not set H and V offsets, and the **{Sync Mode}** button is active on the **Input Setup Menu**. This mode provides the least amount of delay through the switcher.

Important

When **{Output V-Lock}** is **On**, the position of the **DSK Cut** and **DSK Fill** inputs on screen will change.

- If the user preference "**Black on Invalid Video**" is turned on, the DSK turns off — because of the change in output timing.
- If the user preference "**Black on Invalid Video**" is off, the DSK will be visible — but in a shifted position. In this condition, the video position can be adjusted by changing the output timing of the DSK source itself.

Refer to the "[User Preference Setup](#)" section on page 260 for User Preference Setup instructions.

7. If **{Output V-Lock}** is **On**, press **{SDI Output Timing}** to set **SDI H** and **V** offsets. Use the **{SDI H Offset}** and **{SDI V Offset}** controls to set the offsets as desired.

6. System Setup

Output Test Patterns

Output Test Patterns

7

FSN Series system setup: **Step 7** (optional)

In this procedure, you can display test patterns on selected system outputs (or all system outputs), typically for purposes of setting up external devices.

▲ **Prerequisite** — Ensure that you are familiar with the **Output Test Patterns Menu**. In Chapter 5, refer to the [“Output Test Patterns Menu”](#) section on page 182.

■ Use the following steps to select and display output test patterns:

1. In the **Menu Bar**, press **{System}** to access the **System Menu**.
2. Press **{Output Test Patterns}** to display the **Output Test Patterns Menu**.
3. To display a test pattern on one output:
 - a. Press the desired output connector in the **Rear I/O View** on the left side of the menu.
 - b. Press the desired test pattern in the matrix on the right side of the menu.
 - c. Press **{Raster Box}** to enable or disable the raster box as desired.
 - d. When complete, press **{Off}** to turn the test pattern off.

Note

Remember that you can set a different test pattern on each output.

4. To display a test pattern on all outputs:
 - a. Press **{Select All Outputs}**.
 - b. Press the desired test pattern in the matrix on the right side of the menu.
 - c. Press **{Raster Box}** to enable or disable the raster box as desired.
 - d. When complete, press **{All Off}**.

Important

Ensure that you press **{All Off}** after you have finished using any output test pattern.

Clean Feed Setup



8

FSN Series system setup: **Step 8**

In this procedure, you can set clean feed outputs, and select a source for the **ASSIGN** button (in the control panel's **Aux Section**).

▲ **Prerequisite** — Ensure that you are familiar with the **Clean Feed Setup Menu**. In Chapter 5, refer to the "[Clean Feed Setup Menu](#)" section on page 184.

■ Use the following steps to set clean feed outputs:

1. In the **Menu Bar**, press **{System}** to access the **System Menu**.
2. Press **{Clean Feed Setup}** to display the **Clean Feed Setup Menu**.
3. Press **{Clean Feed Outputs}** to display the **Clean Feed Outputs Chart**.
4. On the chart, select the desired clean feed point for M/E 1's clean feed output:
 - ~ Press **{M/E 1 Clean 1}** to select the point prior to Keyer 1.
 - ~ Press **{M/E 1 Clean 2}** to select the point prior to Keyer 2.
 - ~ Press **{M/E 1 Out}** to select the point after Keyer 2.
5. Select the desired clean feed point for the PGM bank's clean feed output:
 - ~ Press **{PGM Clean}** to select the point prior to the DSK.
 - ~ Press **{PGM Out}** to select the point after the DSK.

■ Use the following steps to select the clean feed source that is mapped to the **ASSIGN** button in the control panel's **Aux Section**:

6. Press **{Assign Button}** to display the **Assign Button Chart**.
7. Select one of three mutually exclusive clean feed points for the button:
 - ~ Press **{M/E 1 Clean 1}** to select the point prior to Keyer 1.
 - ~ Press **{M/E 1 Clean 2}** to select the point prior to Keyer 2.
 - ~ Press **{PGM Clean}** to select the point prior to the DSK.

Please note:

- The clean feed selection is *global* for all Aux routes. If you change the mapping for one route, it changes for *all* routes.
- To quickly display the **Assign Button Tab**, press and hold the **ASSIGN** button.

6. System Setup

Native Input Setup

Native Input Setup

9

FSN Series system setup: **Step 9**

In this procedure, you will perform a complete setup on all native switcher inputs. Ensure that your inputs are properly connected to the selected **NIC** before continuing.

- ▲ **Prerequisite** — Ensure that you are familiar with the following menus:
 - ~ **Input Menu** — Chapter 5, “[Input Menu](#),” page 187.
 - ~ **Connector Colors** — Chapter 5, “[Connector Colors](#),” page 189.
 - ~ **Input Setup Menu (Native Inputs)** — Chapter 5, “[Input Setup Menu for Native Inputs](#),” page 194.

■ Use the following steps for basic native input setup:

1. In the **Menu Bar**, press **{System}** to access the **System Menu**.
2. Press **{Input Setup}** to display the **Input Menu**.

Note

After a factory reset, all inputs on **NIC #1** are mapped to the control panel, in a 1-1 layout to unshifted buttons **1** through **8**. Default names are assigned. No other inputs are mapped.

3. In the **Rear I/O View**, press the connector on the **NIC** that you want to set up. In the **Input Table**, the input is highlighted.
4. Press **{Map to}** to map the selected input to the control panel, or re-map it to another button. When the **Map To Pop-up** appears, on the Program Bank's **Preset Bus**, press the button on which you want the input to appear.

Important

The system allows you to map an input to more than one button. If an input is already mapped to a button and you wish to map it to another location, use the **{Un-map}** function to remove the button from the unwanted location.

5. Press **{Input Name}** to name (or re-name) the selected input. When the pop-up **Keyboard** appears, enter the desired name and press **{Enter}** on the **Keyboard**.
6. If required, press **{Un-map}** to remove the selected input from the panel. Note that the name and all associated setup parameters are retained.
7. Press **{Error Reporting}** to turn error reporting on or off.
 - ~ When **on**, if an input experiences an error, the input's BNC turns red on the rear I/O view, the input's **Programmable Display** turns red, and the “**Error**” button appears.
 - ~ When **off**, the input's **Programmable Display** remains green and the red “**Error**” button does not appear. The connector remains red.

Note

The **{Error Reporting}** function works on a connector by connector basis. You can have reporting on for one connector, and off for another.

6. System Setup

Native Input Setup

- After a factory reset, the **Sync Mode** for all native inputs is set to **Auto Sync**. In this mode, the system automatically determines whether to set **Auto: Minimum Delay** mode or **Auto: Frame Sync** mode for each input. If **Auto: Frame Sync** is set, the system will not return to **Auto: Minimum Delay** mode until the sync processing is refreshed for the input.

To refresh sync for all inputs, press **{Refresh All Sync}**. Next, in the pop-up, press **{Yes}**. Native inputs set to **Frame Sync** or **Minimum Delay** modes will not be affected. Only inputs set to **Auto: Frame Sync** mode will be affected.

Note

If you want to refresh sync for just a selected native input, use the **{Refresh Sync}** button on the **Input Setup Menu**.

Note

This function does not apply to universal inputs.

- Use the following steps to set up native input color correction:
 - Press **{Setup}** to display the **Input Setup Menu** for the selected native input.
 - To adjust the selected input's overall brightness and contrast, press **{Brightness Contrast}**. Use the **{Brightness}** and **{Contrast}** controls as desired.
 - To adjust the input's RGB brightness, press **{RGB Brightness}**. Use the **{Red Brightness}**, **{Green Brightness}** and **{Blue Brightness}** controls as desired.
 - To adjust the input's RGB contrast, press **{RGB Contrast}**. Use the **{Red Contrast}**, **{Green Contrast}** and **{Blue Contrast}** controls as desired.
 - To adjust hue and color saturation, press **{Hue Sat}** and adjust as desired.
- Use the following steps to set up native input sync:
 - Press **{Sync Mode}** to set the input's synchronization mode. In the pop-up, select **{Auto}**, **{Minimum Delay}** or **{Frame Sync}** mode. In Chapter 5, refer to the "[Sync Section](#)" heading for a complete discussion of each sync mode.
 - Press **{Refresh Sync}** to refresh sync for the selected input only. This function is only required in **Auto Sync** mode. If the system switches from **Auto: Minimum Delay** to **Auto: Frame Sync**, the system will not return to **Auto: Minimum Delay** until the sync processing is refreshed.
- Use the following steps to set up native input mask:
 - Press **{Mask}** to mask one or more edges of the video signal, if required. Use the **{Mask Top}**, **{Mask Bottom}**, **{Mask Left}** and **{Mask Right}** controls as required. When a mask is applied on an edge, black is revealed.
 - If required, press **{Clear Mask}** to clear all four masks to their default settings.
- Use the following steps to save input settings:
 - Press **{Save Settings}** to save the selected input's setup parameters.
 - Press **{Back}** to return to the **Input Menu**.
 - Repeat from step 3 for each additional input that you wish to set up.

Important

Because you can install either a **NIC** or a **UIC** in slots 3 and 4, if you move or change card assignments in these two slots during setup, the setup is invalidated, and must be repeated once the final card configuration is reached.

6. System Setup

Universal Input Setup

Universal Input Setup

10

FSN Series system setup: **Step 10**

In this procedure, you will perform a complete setup on all universal switcher inputs. Ensure that your inputs are properly connected to the selected **UIC** before continuing.

- ▲ **Prerequisite** — Ensure that you are familiar with the following menus:
 - ~ **Input Menu** — Chapter 5, “[Input Menu](#),” page 187.
 - ~ **Connector Colors** — Chapter 5, “[Connector Colors](#),” page 189.
 - ~ **Input Setup Menu (Universal Inputs)** — Chapter 5, “[Input Setup Menu for Universal Inputs](#),” page 199.

■ Use the following steps for basic universal input setup:

1. In the **Menu Bar**, press **{System}** to access the **System Menu**.
2. Press **{Input Setup}** to display the **Input Menu**.

Note

Remember that after a factory reset, **UIC** inputs are not mapped to the panel, but default names are assigned.

3. In the **Rear I/O View**, press the input connector on the **UIC** that you want to set up. A yellow highlight is placed around all three input connectors, and in the **Input Table**, the input is highlighted.
4. Select the individual **UIC** connector — either the **BNC**, **HD-15** or **DVI**. A green highlight indicates the selection.
5. Press **{Map to}** to map the selected input to the control panel, or re-map it to another button. When the **Map To Pop-up** appears, on the Program Bank's **Preset Bus**, press the button on which you want the input to appear.

Important

The system allows you to map an input to more than one button. If an input is already mapped to a button and you wish to map it to another location, use the **{Un-map}** function to remove the button from the unwanted location.

6. Press **{Input Name}** to name (or re-name) the selected input. When the pop-up **Keyboard** appears, enter the desired name and press **{Enter}** on the **Keyboard**.
7. If required, press **{Un-map}** to remove the selected input from the panel. Note that the name and all associated setup parameters are retained.
8. Press **{Error Reporting}** to turn error reporting on or off.
 - ~ When **on**, if an input experiences an error, the connector turns red on the rear I/O view, the input's **Programmable Display** turns red, and the “**Error**” button appears.
 - ~ When **off**, the input's **Programmable Display** remains green and the red “**Error**” button does not appear. The connector remains red.

Note

The **{Error Reporting}** function works on a connector by connector basis.

6. System Setup

Universal Input Setup

- Use the following steps to set up universal input capture and timing parameters:
 9. Press **{Setup}** to display the **Input Setup Menu** for the selected universal input.
 10. Press **{Capture and Process}** to display the **Capture and Process Tab**.
 11. Press **{Auto Acquire}** to toggle the **Auto Acquire** mode **On** or **Off** as required.
 - ~ When **Off**, you can manually set the resolution using the **{Input Format}** button.
 - ~ When **On**, the system attempts to detect the resolution. When a match is found, the format is applied and the **Format** field in the table is updated. Once the system acquires a new format, it automatically scales the input up (or down) to the current native resolution.

Note

If an exact match cannot be found, you may need to use **{Input Format}** button to set the format manually.

12. If required, press **{Input Format}** to display the **Input Format Keypad**. Locate the desired format and press **{Apply}**.
13. **Analog and DVI inputs only** — Press **{EDID Format}** to display the **EDID Format Keypad**. Locate the desired EDID format and press **{Apply}** to program EDID.

Important

This function is designed for advanced users only. Do not program the EDID unless it is necessary.

14. **Analog and DVI inputs only** — Press **{Color Space}** to toggle between **SMPTE** and **RGB** processing, as required.
 15. **Analog inputs only** — Press **{1:1 Sampling}** to toggle the 1:1 sampling mode on or off, as required.
 16. **Analog inputs only** — Press **{Sample Phase}**, and use the **Sample Phase** control to adjust the input's A/D converter. For optimum visual results when adjusting high-resolution sources, output a burst test pattern from the source, and adjust for minimum noise.
 17. **Analog inputs only** — Press **{Adjust H Timing}** to adjust the image's horizontal timing. Use the **{H Pos}**, **{H Active}** and **{H Total}** controls as required.
 18. **Analog inputs only** — Press **{Adjust V Timing}** to adjust the image's vertical timing. Use the **{V Pos}** and **{V Active}** controls as required.
- Use the following steps to set up universal input processing parameters:
 19. Press **{Sharpness}**, and use the **Sharpness** control to set the input's sharpness.
 20. **Component, S-video and composite inputs only** — Press **{Pull-down Comp}** to toggle the **Pull-down Compensation** mode on or off, as required.
 21. **Interlaced formats only** — Press **{De-Interlace}** to display the **De-Interlace Pop-up**. Choose either **Motion Adaptive** or **Field to Frame** mode.
 22. If **Motion Adaptive** de-interlacing is selected, press **{Motion Threshold}** and use the control to adjust the threshold of the motion adaptive de-interlacer, if required.
 - Use the following steps to set up universal input sizing and scaling:
 23. Press **{Sizing and Scaling}** to display the **Sizing and Scaling Tab**.

6. System Setup

Universal Input Setup

24. Use the **{Mask Top}**, **{Mask Bottom}**, **{Mask Left}** and **{Mask Right}** controls to mask selected portions of the image, as required.
25. Select the method by which you want to size and scale the image. Masked edges are taken into account.
 - ~ Press **{Fill H}** to scale the selected universal input up (or down) to the current native **horizontal** resolution. Aspect ratio is maintained.
 - ~ Press **{Fill V}** to scale the input up (or down) to the current native **vertical** resolution. Aspect ratio is maintained.
 - ~ Press **{Fill H/V}** to scale the input up (or down) to the current native **horizontal** and **vertical** resolutions. Aspect ratio is not maintained.
26. If required, press **{Reset Fill}** to return the input to its previous scaling. Mask settings are retained.
27. If required, press **{Clear Mask}** to return all mask settings to 0 (zero). Scaling is maintained.
28. Press **{Reset All}** to return the input to its previous scaling, and return all mask settings to 0 (zero).
- Use the following steps to set up universal input color correction:
 29. To adjust the selected input's overall brightness and contrast, press **{Brightness Contrast}**. Use the **{Brightness}** and **{Contrast}** controls as desired.
 30. To adjust the input's RGB brightness, press **{RGB Brightness}**. Use the **{Red Brightness}**, **{Green Brightness}** and **{Blue Brightness}** controls as desired.
 31. To adjust the input's RGB contrast, press **{RGB Contrast}**. Use the **{Red Contrast}**, **{Green Contrast}** and **{Blue Contrast}** controls as desired.
 32. To adjust hue and color saturation, press **{Hue Sat}**. Use the **{Hue}** and **{Sat}** controls as desired.
- Use the following steps to save input settings:
 33. Press **{Save Settings}** to save the selected input's setup parameters.
 34. Press **{Back}** to return to the **Input Menu**.
 35. Repeat from step 3 for each additional input that you wish to set up.

Important

Because you can install either a **NIC** or a **UIC** in slots **3** and **4**, if you move or change card assignments in these two slots during setup, the setup is invalidated, and must be repeated once the final card configuration is reached.

External DSK Input Setup

11

FSN Series system setup: **Step 11**

In this procedure, you will set up the external DSK inputs.

- ▲ **Prerequisite** — Ensure that you are familiar with the following menus:
 - ~ **External DSK Setup Menu** — Chapter 5, "[External DSK Setup Menu](#)," page 208.
 - ~ **Connector Colors** — Chapter 5, "[Connector Colors](#)," page 189.

- Use the following steps to enable or disable external DSK error reporting:
 1. In the **Menu Bar**, press **{System}** to access the **System Menu**.
 2. Press **{External DSK Setup}** to display the **External DSK Setup Menu**.
 3. Enable or disable error reporting for the DSK inputs, as required. In the **Rear I/O View**, press each DSK input connector, then press **{Error Reporting}**. The table's **Error Reporting** column indicates if error reporting is on or off.
 - ~ If you elect not to use the external DSK inputs, turn error reporting off. to prevent error messages.
 - ~ If you elect to use the inputs, ensure that your inputs are properly connected to the external **DSK Cut** and **DSK Fill** connectors.
- Use the following steps to set up external DSK input color correction:

Note

Remember that the **DSK Cut** input can not be adjusted.

4. In the **Rear I/O View**, press the **DSK Fill** connector.
 5. To adjust the input's overall brightness and contrast, press **{Brightness Contrast}**. Use the **{Brightness}** and **{Contrast}** controls as desired.
 6. To adjust the input's RGB brightness, press **{RGB Brightness}**. Use the **{Red Brightness}**, **{Green Brightness}** and **{Blue Brightness}** controls as desired.
 7. To adjust the input's RGB contrast, press **{RGB Contrast}**. Use the **{Red Contrast}**, **{Green Contrast}** and **{Blue Contrast}** controls as desired.
 8. To adjust hue and saturation, press **{Hue Sat}**. Use the **{Hue}** and **{Sat}** controls as desired.
- Use the following steps to save DSK input settings:
 9. Press **{Save Settings}** to save the **DSK Fill** input's setup parameters.
 10. Press **{Back}** to return to the **System Menu**.

6. System Setup

Button Mapping

12

FSN Series system setup: **Step 12**

This procedure enables you to map individual inputs to the panel. The menu also enables you to map linear key cut and fill signals, test patterns and color background signals.

▲ **Prerequisite** — Ensure that you are familiar with the **Map Buttons Menu**. In Chapter 5, refer to the “[Map Buttons Menu](#),” on page 210.

■ Use the following steps to map buttons:

1. In the **Menu Bar**, press **{System}** to access the **System Menu**.
2. Press **{Map Buttons}** to display the **Map Buttons Menu**.
3. Use the **{Panel Button}** control to select the button you wish to map. Press **{SHIFT}** to map the button's shifted position. The table changes accordingly.
4. To map an input (source) or a linear key “cut” signal to the selected button, press **{Map Source/Cut}**. The **Map Buttons Keypad** appears.
 - ~ To map a source, press **{Source}** to display sources only. Select the desired source and press **{Map}**.
 - ~ To map a test pattern, press **{Test Patterns}** to display internal test patterns only. Select the desired test pattern and press **{Map}**.
 - ~ To map a color background signal, press **{Color BG}** to display the four available internal color background signals. Select the desired signal and press **{Map}**.
5. To map a linear key “fill” signal to the selected button, press **{Map Linear Key Fill}**. The **Map Buttons Keypad** appears.
 - ~ To map a source, press **{Source}** to display sources only. Select the desired source and press **{Map}**.
 - ~ To map a test pattern, press **{Test Patterns}** to display internal test patterns only. Select the desired test pattern and press **{Map}**.
 - ~ To map a color background signal, press **{Color BG}** to display the four available internal color background signals. Select the desired signal and press **{Map}**.
6. To clear a source from the panel, select the button you wish to clear, then press **{Clear Source/Cut}**.
7. To clear a linear key fill source from the panel, select the button you wish to clear, then press **{Clear Linear Key Fill}**.

Please note the following important points:

- When a source is mapped to a button on which another source is already mapped, the previous source is overwritten and un-assigned. On the **Input Menu**, the previous source's BNC turns yellow, but its name remains in the table.

Tally Setup

13

FSN Series system setup: **Step 13**

This procedure enables you to assign inputs to the system's 24 tally relays, set tally markers, and set individual tally closures.

▲ **Prerequisite** — Ensure that you are familiar with the following menus and connector specifications:

~ **Tally Setup Menu** — Chapter 5, "[Tally Setup Menu](#)," page 214.

~ **Tally Connector** — Appendix A, "[Tally Connector](#)," page 318.

■ Use the following steps to set up tallies:

1. In the **Menu Bar**, press **{System}** to access the **System Menu**.
2. Press **{Tally Setup}** to display the **Tally Setup Menu**.
3. Use the **Select Tally** control to select the tally you wish to set up (1 through 24).
4. Press **{Select Input}** to display the **Input Selection Keypad**. Select the desired input that you wish to tally, and press **{Apply}**.
5. Press **{Select Color}** to display the **Select Color Pop-up**, and choose a red, green or amber color block to identify the tally.

Note

Remember that this function is designed only to assist the engineer who is setting up tallies. It provides a visual menu indication of the type of tally, but the function does not affect tally operation.

6. Use the **Select Output** control to select the output for which you want to set a relay closure. All outputs are grouped in the table.
7. Press **{Set Tally Closure}** to set a relay closure for the highlighted output. An "x" in the highlighted cell indicates that a closure is set.
8. Repeat steps 6 and 7 for all outputs that you wish to set tally closures.
9. Ensure that the physical tally output is properly connected to the target device's tally input, e.g., on the camera's CCU. In Appendix A, refer to the "[Tally Connector](#)" section on page 318 for pinouts.
10. Repeat from step 3 to set additional tallies.

■ Use the following steps to clear tallies:

11. Use the **Select Tally** control to select the tally you wish to clear.
12. Press **{Clear Input}** to remove the input from the table.
13. Use the **Select Output** control to select the output that you wish to clear.
14. Press **{Clear Tally Closure}** to clear the "x" from the highlighted output.
15. Repeat from step 11 to clear additional tallies.

6. System Setup

User Preference Setup

14

FSN Series system setup: **Step 14**

This procedure enables you to set a variety of important user preferences and options.

- ▲ **Prerequisite** — Ensure that you are familiar with the **User Preference Menu**. In Chapter 5, refer to the [“User Preferences Menu”](#) section on page 217.
- Use the following steps to set user preferences:
 1. In the **Menu Bar**, press **{System}** to access the **System Menu**.
 2. Press **{User Prefs}** to display the **User Preferences Menu**.
 3. Use the top knob to select the “preference” that you wish to change, or simply touch the desired line in the table.
 - ~ Set **Bus Display Brightness**, from 1 (dim) to 10 (bright).
 - ~ Set **Control Panel Backlight**, from 1 (dim) to 10 (bright).
 - ~ Set **Touch Screen Brightness**, from 1 (dim) to 10 (bright).
 - ~ Set **Transition Display Brightness**, from 1 (dim) to 10 (bright).
 - ~ Set **Transition Display Contrast**, from 1 (low contrast) to 10 (high contrast).
 - ~ Set **Black on Invalid Video** on or off.
 4. If required, press **{Reset to Default}** to return a highlighted preference to its default value.

Saving the Setup

15

FSN Series system setup: **Step 15**

This procedure enables you to save all system setup parameters to non-volatile memory.

- ▲ **Prerequisite** — Ensure that you are familiar with the **Save All** function. In Chapter 5, refer to the [“Save All”](#) section on page 220.
- Use the following steps to save all system setup parameters:
 1. In the **Menu Bar**, press **{System}** to access the **System Menu**.
 2. Press **{Save All}** to display the confirmation pop-up.
 3. Press **{Close}** to clear the pop-up.

6. System Setup

Backing up the System

16

FSN Series system setup: **Step 16**

In this procedure, you will back up your system configuration to a USB drive.

- ▲ **Prerequisite** — Ensure that you are familiar with the **Backup and Restore Menu**. In Chapter 5, refer to the [“Backup and Restore Menu”](#) section on page 234.
- Use the following steps to back up your system to a USB Drive:
 1. Ensure that your USB drive is properly inserted in the control panel's **USB Port**.
 2. In the **Menu Bar**, press **{System}** to access the **System Menu**.
 3. Press **{Backup Restore}** to display the **Backup and Restore Menu**.
 4. Press **{Backup System}** to initiate the system backup procedure. Once the drive is detected, you will be prompted to continue or cancel the procedure

At the conclusion of this procedure, your system is completely backed up.

7. Operations

In This Chapter

This chapter provides comprehensive operating instructions for the FSN Series. The following topics are discussed:

- [Quick Setup and Operations](#)
- [Quick Function Reference](#)
- [Understanding Button Color](#)
- [Understanding Switcher Layers](#)
- [Understanding Flip-flop Mode](#)
- [Understanding Tally](#)
- [Understanding Error Messages](#)
- [Working with Pop-ups](#)
- [Using the Keypad](#)
- [Understanding Press and Hold](#)
- [Understanding Lookahead Preview](#)
- [Understanding the T-Bar and Transition LEDs](#)
- [Using Re-entry](#)
- [Working with Cuts](#)
- [Setting Transition Rates and Curves](#)
- [Working with Mixes](#)
- [Working with Wipes](#)
- [Working with Keys](#)
- [Working with Memory Registers](#)
- [Working with Aux Buses](#)
- [Selecting Clean Feed Outputs](#)
- [Using Custom Control Functions](#)

7. Operations

Quick Setup and Operations

Quick Setup and Operations

For the optimum speed in setting up and operating your FSN Series switcher, use the following steps. For reference, links are provided to the appropriate sections in this guide.

Note

Many of these steps were already covered in Chapter 4 and Chapter 6. As required, use the following list as an easy check-list for all quick setup requirements.

1. **Connect power** — Ensure that power is properly connected to all FSN Series components.
 - ~ Chapter 4, [“Control Panel Installation,”](#) page 94
 - ~ Chapter 4, [“Touch Screen Installation,”](#) page 95
 - ~ Chapter 4, [“FSN-1400 System Connections,”](#) page 100
2. **Connect inputs** — Connect all input sources to the FSN Series. (Chapter 4, [“Signal Connections,”](#) page 108.)
3. **Connect outputs** — Connect the output(s) of the FSN Series to your target devices. (Chapter 4, [“Signal Connections,”](#) page 108.)
4. **Turn on power** — Turn on power to all FSN Series components, and to all peripheral equipment. (Chapter 6, [“Power Up and Status Check,”](#) page 244.)
5. **Factory reset** — If you are using the FSN Series for the first time, or if you are using a system that has just returned from another event, perform a full factory reset. (Chapter 6, [“Return to Factory Default,”](#) page 245.)
6. **Set reference video** — Set the desired reference video mode. (Chapter 6, [“Reference Video and Output Setup,”](#) page 248.)
7. **Set output format** — Set the desired output resolution and frame rate. (Chapter 6, [“Reference Video and Output Setup,”](#) page 248.)
8. **Set clean feeds** — Set the desired clean feed output points. (Chapter 6, [“Clean Feed Setup,”](#) page 251.)
9. **Enable test patterns** — If required, use test patterns to verify outputs and make the necessary adjustments. When complete, turn off the test patterns. (Chapter 6, [“Output Test Patterns,”](#) page 250.)
10. **Set up native inputs** — As required, set up all native inputs, and perform the necessary adjustments. (Chapter 6, [“Native Input Setup,”](#) page 252.)
11. **Set up universal inputs** — As required, set up all universal inputs, and perform the necessary adjustments. (Chapter 6, [“Universal Input Setup,”](#) page 254.)
12. **Set up external DSK inputs** — As required, set up the external DSK inputs, and perform the necessary adjustments. (Chapter 6, [“External DSK Input Setup,”](#) page 257.)
13. **Complete button mapping** — Complete the button mapping on the control panel, including all inputs, color background signals and test patterns. (Chapter 6, [“Button Mapping,”](#) page 259.)
14. **Complete tally connections** — Complete all system tally relay connections. (Chapter 6, [“Tally Setup,”](#) page 259.)
15. **Set up user preferences** — Complete all user preference choices, as required. (Chapter 6, [“User Preference Setup,”](#) page 260.)

16. **Save system configuration** — After completing all “system” setups, save the configuration and back up the system.
 - ~ Chapter 6, [“Saving the Setup,”](#) page 261.
 - ~ Chapter 6, [“Backing up the System,”](#) page 262.
17. **Set up Aux bus routes** — As required, set up all Aux bus routes to peripheral destinations. ([“Working with Aux Buses,”](#) page 299.)
18. **Set up transition rates** — As required, set up all transition rates for all banks and FTB. ([“Setting Transition Rates and Curves,”](#) page 284.)
19. **Set up wipes** — Select the desired wipe patterns, and adjust direction and border type. ([“Working with Wipes,”](#) page 286.)
20. **Set up keys** — Select the desired key sources, and adjust type, fill, clip, gain and opacity as required. ([“Working with Keys,”](#) page 287.)
21. **Set up memory registers** — Set up the desired “looks” for your show, and store them in memory registers as required. ([“Working with Memory Registers,”](#) page 291.)
22. **Ready to roll** — With all output, input and system configurations saved, and all of your important “looks” stored in memory, put on your headsets and get busy!

Note

For detailed system operating procedures, specific system “tweaks” and operating descriptions on every feature, please start with the [“Quick Function Reference”](#) section on page 266, and select the function that you wish to perform.

7. Operations

Quick Function Reference

Quick Function Reference

Use the following table to quickly access the proper section in this chapter for specific operating instructions. Both hyperlinks and page numbers are provided.

Table 7-1. FSN Series Quick Function Reference Table

To learn about:	Use the Following Section:	Page
Aux buses	Working with Aux Buses	299
Button colors	Understanding Button Color	267
Clean feed outputs	Selecting Clean Feed Outputs	299
Custom Control functions	Using Custom Control Functions	300
Cuts	Working with Cuts	283
Error messages	Understanding Error Messages	271
Flip-flop mode	Understanding Flip-flop Mode	269
Keypad operations	Using the Keypad	272
Keys	Working with Keys	287
Lookahead preview	Understanding Lookahead Preview	274
Memory registers	Working with Memory Registers	291
Mixes (Dissolves)	Working with Mixes	285
Pop-ups	Working with Pop-ups	272
Press and hold functions	Understanding Press and Hold	273
Quick setup and operation	Quick Setup and Operations	264
Re-entry	Using Re-entry	283
Switcher layers	Understanding Switcher Layers	268
Switcher tally on each bank	Understanding Tally	270
T-Bar and Transition LED operations	Understanding the T-Bar and Transition LEDs	280
Transition rates and transition curves	Setting Transition Rates and Curves	284
Wipes	Working with Wipes	286

Understanding Button Color

The tables in this section explain the use of color on the buttons in the **M/E** bank and the **PGM** bank. The rules apply to the buttons on each bank's **PGM**, **PST** and **KEY** buses.

- **PGM Bank Rules**

Table 7-1. PGM bank button rules

	Button Color	Description
	Off	The button is not mapped.
	Dim Amber	The button is mapped but not selected. Brightness level in this state is set by the Control Panel Backlight function on the User Preference Menu .
	Green	<ul style="list-style-type: none"> • The button is selected on PST. • The bus is not contributing to PGM bank output.
	Red	<ul style="list-style-type: none"> • The button is selected on PGM, which always contributes to the output of the bank. • The button is selected on PST, and the bus is contributing to the output of the PGM bank — for example, during a mix or a wipe.

- **M/E Bank Rules**

Table 7-2. M/E bank button rules

	Button Color	Description
	Off	The button is not mapped.
	Dim Amber	The button is mapped but not selected. Brightness level in this state is set by the Control Panel Backlight function on the User Preference Menu .
	Green	<ul style="list-style-type: none"> • The button is selected on the M/E's PST and/or KEY bus. • The bus is not contributing to the output of the M/E bank or the PGM bank (via re-entry).
	Coral	<ul style="list-style-type: none"> • The button is selected on the M/E's BG and/or KEY bus, and the bus is contributing to the M/E bank's output only. • The button is selected on the M/E's PST bus, and the bus is contributing to the M/E bank's output only — for example, during a mix or a wipe.
	Red	<ul style="list-style-type: none"> • The button is selected on the M/E's BG and/or KEY bus, and the bus is contributing to the PGM bank's output via re-entry. • The button is selected on the M/E's PST bus, and the bus is contributing to the PGM bank's output via re-entry — for example, during a mix or a wipe.

7. Operations

Understanding Switcher Layers

Understanding Switcher Layers

To help you understand FSN Series architecture from a production perspective, and to assist with the creation of switcher “looks,” the diagram below illustrates how the various switcher banks are layered on the FSN-150.

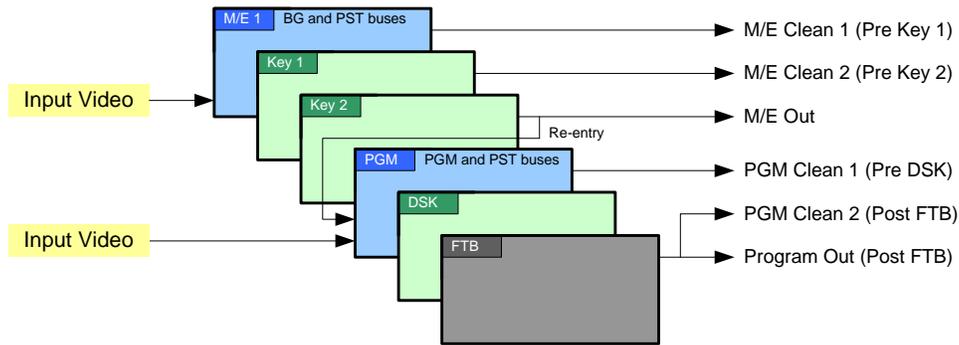


Figure 7-1. Switcher layers, FSN-150

The following rules apply:

- Input video from the FSN-1400 flows into the M/E and PGM banks across the crosspoint matrix.
- M/E 1 consists of Background (BG) and Preset (PST) buses, and two layers of keys (Key 1 and Key 2). The bank provides Program, Preview and Clean Feed outputs, plus a “re-entry” output that flows into the PGM bank. Please note:
 - ~ The BG and PST buses comprise the background layer — the farthest layer upstream, and visually, the layer that’s behind Key 1 and Key 2 (and all other switcher layers).
 - ~ Key 1 is downstream of the BG and PST layer, but upstream of Key 2. Keys created on Key 1 are visually “over” the BG and PST layer, but “under” Key 2.
 - ~ Key 2 is the farthest layer downstream on M/E 1. Keys created on Key 2 are visually “over” BG, PST and Key 1.
 - ~ Even if you swap key settings by pressing the **{Swap Key Settings}** button, the priority of the layers does not change.
- The PGM bank consist of Program (PGM) and Preset (PST) buses, and a single layer of keying (DSK). The bank provides Program, Preview and Clean Feed outputs. Please note:
 - ~ The entire PGM bank is downstream of M/E 1 — visually on top of all effects created on M/E 1.
 - ~ The PGM and PST buses comprise the bank’s background layer — the farthest layer upstream in the bank, and visually, the layer that’s behind the DSK.
 - ~ The DSK is downstream of the PGM and PST layer, but upstream of the FTB (fade to black) function. Keys created on the DSK are visually “over” PGM and PST.
 - ~ FTB is the farthest function downstream in the switcher. This function enables you to fade the entire switcher (including DSK) to black

Understanding Flip-flop Mode

On the FSN Series, the M/E and PGM banks operate in flip-flop mode. This means that when you execute a **CUT**, **WIPE** or **MIX** transition in which **BG** is enabled, the sources on **BG** and **PST** exchange places when the transition completes. For example:

- Prior to the transition, CAM3 is on **BG** and CAM1 is on **PST**.

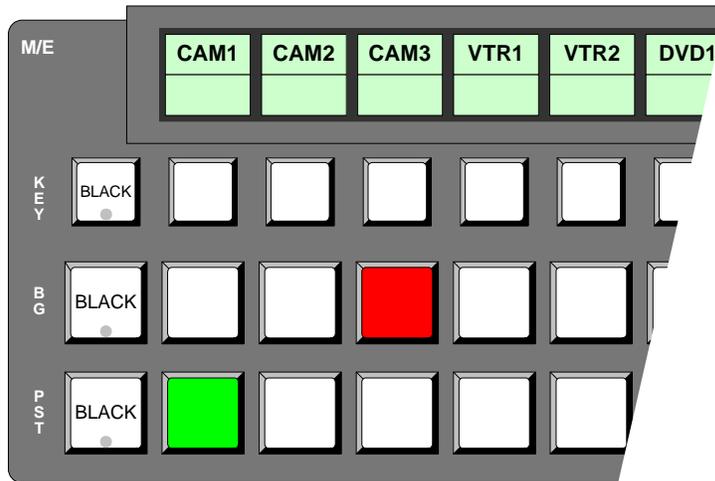


Figure 7-2. M/E prior to transition

- After the transition, the buses flip-flop. CAM1 is on **BG** and CAM3 is on **PST**.

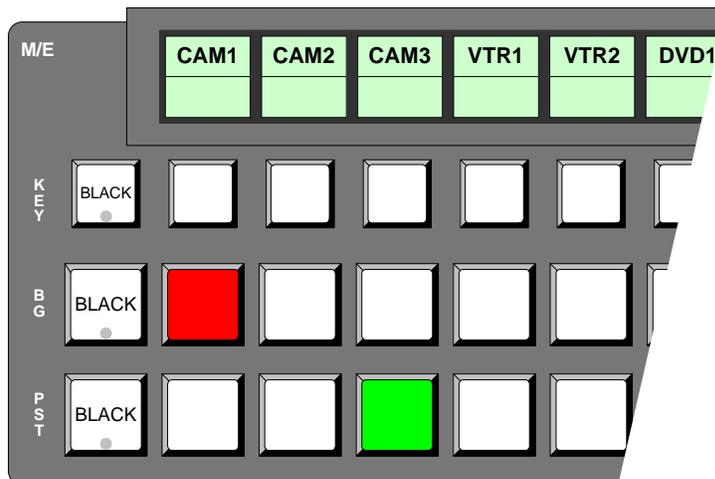


Figure 7-3. M/E after transition

In this way, if you continue to press **CUT** or **AUTO TRAN**, the last-selected **BG** source will always be available on **PST** as the next *source* — until you change that source as required.

7. Operations

Understanding Tally

Understanding Tally

Buttons on the **KEY**, **BG** and **PST** buses obey the following rules with regard to tally:

- **Backlight** — All buttons in the bus rows are normally dim, at the selected backlight level (as set on the **User Preferences Menu**). When a button is selected, it turns bright.
- **Tally — PGM Bank**
 - ~ Selected buttons on **PGM** are bright red.
 - ~ Selected buttons on **PST** are bright green.
 - ~ Selected buttons on the phantom key bus are bright green when the **DSK** is off. When the **DSK** is on, selected buttons are bright red.
 - ~ During the transition interval of a **MIX** or **WIPE**, selected buttons on **PST** are bright red. The source turns red the moment the **PST** bus contributes to the bank's output, and stays red until the transition completes.

Note

The red LED above the DSK button (in the **Next Transition Group**) turns bright when the DSK is on and contributing to the bank's output.

- **Tally — M/E Bank (no re-entry into PGM)**
 - ~ Selected buttons on **BG** are bright coral.
 - ~ Selected buttons on **PST** are bright green.
 - ~ Selected buttons on the **KEY** bus are bright green when the key is off. When the key is on, buttons are bright coral.
 - ~ During the transition interval of a **MIX** or **WIPE**, selected buttons on **PST** are bright coral. The source turns coral the moment the **PST** bus contributes to the bank's output, and stays coral until the transition completes.
- **Tally — M/E Bank (re-entry into PGM)**
 - ~ Selected buttons on **BG** are red.
 - ~ Selected buttons on **PST** are bright green.
 - ~ Selected buttons on the **KEY** bus are bright green when the key is off. When the selected key is on, buttons are bright red.
 - ~ During the transition interval of a **MIX** or **WIPE**, selected buttons on **PST** are bright red. The source turns red the moment the **PST** bus contributes to the bank's output, and stays red until the transition completes.

Note

For both re-entry and non re-entry conditions, the red LEDs above the Key 1 and Key 2 buttons (in the **Next Transition Group**) turn bright when keys are on, and contributing to the bank's output.

Understanding Error Messages

Please note the following important rules regarding error messages.

Note

For the input connectors on the **NIC** and **UIC**, the “red” error conditions only occur if the input has been mapped to the panel, and the signal was previously OK.

LOS:

Slot 1
Input 3

- **LOS** (loss of signal): On occasion, you can experience **LOS** (loss of signal) — typically due to a poor video connection or computer connection.

If this condition occurs:

- ~ A red **Error** button appears in the upper left corner of the **Touch Screen**.
- ~ The input’s **BNC** turns red in the rear I/O view.
- ~ The input’s **Programmable Display** turns red.

During an LOS condition, if the user preference “**Black on Invalid Video**” is turned on, black will replace the lost output video. In Chapter 5, refer to the “[User Preferences Menu](#)” section on page 217 for details.

Invalid:

Slot 1
Input 2

- **Invalid Video**: On occasion, this message can appear if the input format does not match the selected native resolution, or if the input signal is not locked to the system’s video reference input.

If this condition occurs:

- ~ A red **Error** button appears in the upper left corner of the **Touch Screen**.
- ~ The input’s **BNC** turns red in the rear I/O view.
- ~ The input’s **Programmable Display** turns red.

Note

For both **LOS** and **Invalid Video** conditions, you can also navigate to the **Input Menu**, and check the color of the connector in question to verify the physical input’s condition.

If one of these types of error occurs, you have several options:

- Leave the **Error** button and red **Programmable Display** as is.
- Press the **Error** button to display a pop-up with options for more information. The pop-up also has a **{View Error Info}** button, which when pressed, takes you to the **View Errors Menu**.
- Navigate to the **Input Menu**, and note the red BNC that is experiencing the error. Press the **{Error Reporting}** button to toggle error reporting **Off** for the selected input. When **Off**, the red error message turns off, the **Programmable Display** returns to green, and the error is removed from the list in the **View Errors Menu**. In this mode, however, the connector remains red.

Error
Reporting

On

Note

The **{Error Reporting}** function works on a connector by connector basis. You can have reporting on for one connector, and off for another.

7. Operations

Working with Pop-ups

Working with Pop-ups

Please note the following important rules regarding pop-ups:

- When a pop-up includes a button, or a series of buttons (e.g., **{Yes}** or **{No}**) you must acknowledge the pop-up with a decision before any other operations can be performed on the **Touch Screen**.
- When a pop-up does not include a button, you must wait until the pop-up clears before any other operations can be performed on the **Touch Screen**. This condition only occurs on several menus, including:
 - ~ **System Menu** (during system initialization procedures)
 - ~ **Software Menu** (during the software update procedure)
 - ~ **Backup and Restore Menu** (during backup and restore procedures)
 - ~ **Reset Menu** (during various reset procedures)
- When any pop-up is displayed, physical buttons on the control panel still function properly.

Using the Keypad

There are two types of **Keypads** in the system:

- **Touch Screen Keypad** — When any **Value Button** is pressed on the **Touch Screen**, the **Keypad** appears, enabling you to make numeric entries. In this mode, you can enter, trim, clear and undo entries with accuracy. In Chapter 5, refer to the [“Using the Keypad”](#) section on page 130 for details.
- **Control Panel Keypad** — Any time that the **Keypad** is displayed on the **Touch Screen**, you can also use the **Keypad** on the control panel. Here, the “physical” **Keypad** works in parallel with the **Touch Screen Keypad** — either can be used for entry, depending on your preference.

All **Keypad** functions are the same, with the following exceptions:

- ~ The **{Undo}** button is not present on the control panel’s **Keypad**.
- ~ The **AUTO TRAN** button is not available in release 1.0.
- ~ Press **FINE ADJUST** to change the sensitivity of the knobs and the **Joystick**.
 - When **off**, adjustment is coarse.
 - When **on**, adjustment is fine.

Note

The only time the **Control Panel Keypad** is used exclusively, is for storing and recalling memory registers. Refer to the [“Working with Memory Registers”](#) section on page 291 for full details.

Understanding Press and Hold

Several buttons on the control panel offer “press and hold” functionality. These functions are essentially short-cuts around the menu. Please note the following important points:

- A “press and hold” function always takes you directly to the requested new menu, regardless of your current location in the menu system.
- If a pop-up is displayed, the selected “press and hold” function also takes you to the requested new menu. Essentially, this is the same as pressing **{No}** or **{Close}** in a pop-up, then navigating to the new menu.
- All “press and hold” functions take effect after the selected control panel button is held down for 1.5 seconds.

Following are descriptions of each “press and hold” function:



- Press and hold any **MIX** button on the control panel to display the **Transition Menu**.
- Press and hold any **WIPE** button on the control panel to display the **Wipe Menu**.
- In **M/E 1**, first enable **KEY 1** to “arm” the key, then press and hold **KEY 1** to display the **Keyer Menu** for M/E 1, Key 1. If the key is not armed, the system will not jump to the **Keyer Menu**.
- In **M/E 1**, first enable **KEY 2** first to “arm” the key, then press and hold **KEY 2** to display the **Keyer Menu** for M/E 1, Key 2. If the key is not armed, the system will not jump to the **Keyer Menu**.
- First enable **DSK** to “arm” the key, then press and hold **DSK** to display the **Keyer Menu** for the DSK, and display the phantom key bus. If the key is not armed, the system will not jump to the **Keyer Menu**, nor will the phantom key bus be displayed.
- Press and hold **STORE** to display the **Memory Menu**.
- Press and hold **RECALL** to display the **Memory Menu**.
- Press and hold the **ASSIGN** button to display the **Clean Feed Setup Menu**.
- In the **Custom Control** section, press and hold **FRZ**, then press any source button to freeze that source.
- In the **Custom Control** section, press and hold **UNFRZ**, then press any source button to un-freeze that source.

7. Operations

Understanding Lookahead Preview

Understanding Lookahead Preview

The following topics are discussed in this section:

- [Lookahead Preview Overview](#)
- [Lookahead Preview Tutorial](#)

Lookahead Preview Overview

Each bank's **PVW** (Preview) output serves as a versatile "lookahead" output. These outputs work in conjunction with the buttons in each bank's **Next Transition Group** to show you exactly how the bank's layers will appear — after the next **CUT**, **MIX**, **KEY**, **WIPE**, or **AUTO TRAN** is performed.

The figure below illustrates the **Next Transition Group** on the M/E and PGM banks:

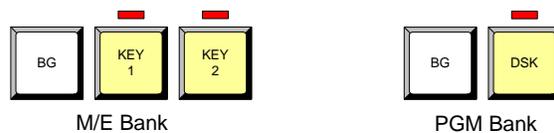


Figure 7-4. Next Transition Groups

In each **Next Transition Group**, the buttons that you enable determine the combination of layers that are "armed" for the next transition, and also determine what you "see" on each bank's **PVW** monitor. If a layer is armed, it will appear on **PVW**.

Important

A monitor must be connected to the bank's **PVW** output in order to view the "lookahead" video output.

To use the **Next Transition Group**, simultaneously press the combination of buttons that you wish to enable. Any combination of buttons can be pressed. Whichever combination you enable automatically disables those buttons that were not pressed.

- In Chapter 3, refer to the "[M/E Transition Section](#)" heading on page 72 for details on the M/E bank's **Next Transition Group**.
- In Chapter 3, refer to the "[PGM Transition Section](#)" heading on page 65 for details on the Program bank's **Next Transition Group**.

The tutorial in the next section provide examples of how selections in the **Next Transition Group** affect the lookahead preview output. In the tutorial, you'll need four sources, for example:

- A **BG** source (e.g., CAM1)
- A **PST** source (CAM2)
- A **KEY 1** source (GFX)
- A **KEY 2** source (LOGO).

Lookahead Preview Tutorial

This tutorial provides examples of **PGM**, **PST** and **KEY** bus selections, in combination with button selections in the bank's **Next Transition Group**. The steps illustrate how these selections affect the lookahead preview output.

Tip

Follow along with the tutorial at the switcher's control panel. If you follow each step, you'll see first-hand how the **PVW** output shows you what's coming next.

The tutorial also applies to the **PGM** bank. To follow along with the tutorial on the PGM bank, use the **DSK** instead of **KEY 1**.

Example 1: BG Lookahead

- Use the following steps to learn how the **BG** button affects lookahead preview.
 1. Select **CAM1** on the **PGM** bus.
 2. Select **CAM2** on the **PST** bus.
 3. In the **Next Transition Group**, press **BG**. This action arms the background layer to transition.



Figure 7-5. M/E Bank: BG lookahead

Please note:

- ~ With **BG** selected, only the background will transition.
- ~ The **PVW** output shows the source selected on **PST**.

4. Press **CUT** or **AUTO TRAN** to cut, mix or wipe **CAM2** from **PST** to the **BG** bus.

7. Operations

Understanding Lookahead Preview

Example 2: KEY 1 Lookahead

- Use the following steps to learn how the **KEY 1** button affects lookahead preview.
 1. Press **SEL** to switch the key bus to **KEY 1**.
 2. Select **GFX** on the key bus.
 3. In the **Next Transition Group**, press **KEY 1**. This action arms the KEY 1 layer to transition.



Figure 7-6. M/E Bank: KEY 1 lookahead

Please note:

- ~ With **KEY 1** selected and **BG** turned off, **KEY 1** will transition over the *current BG* source. The **PST** bus will not transition.
- ~ The source selected on **PST** does not appear on **PVW** — because it's not part of the next transition.
- ~ The lookahead **PVW** output shows the **KEY 1** source keyed over **BG**. This is the perfect time to clip and adjust the key.

Note

Once **KEY 1** is pressed (and armed), press and hold **KEY 1** to jump to the **Keyer Menu** for M/E 1, Key 1, where you can clip and adjust the key on preview.

4. Press **CUT** or **AUTO TRAN** to cut, mix or wipe **KEY 1** over the **BG** bus.

Example 3: KEY 2 Lookahead

- Use the following steps to learn how the **KEY 2** button affects lookahead preview.
 1. Press **SEL** to switch the key bus to **KEY 2**.
 2. Select **LOGO** on the key bus.
 3. In the **Next Transition Group**, press **KEY 2**. This action arms the KEY 2 layer to transition.

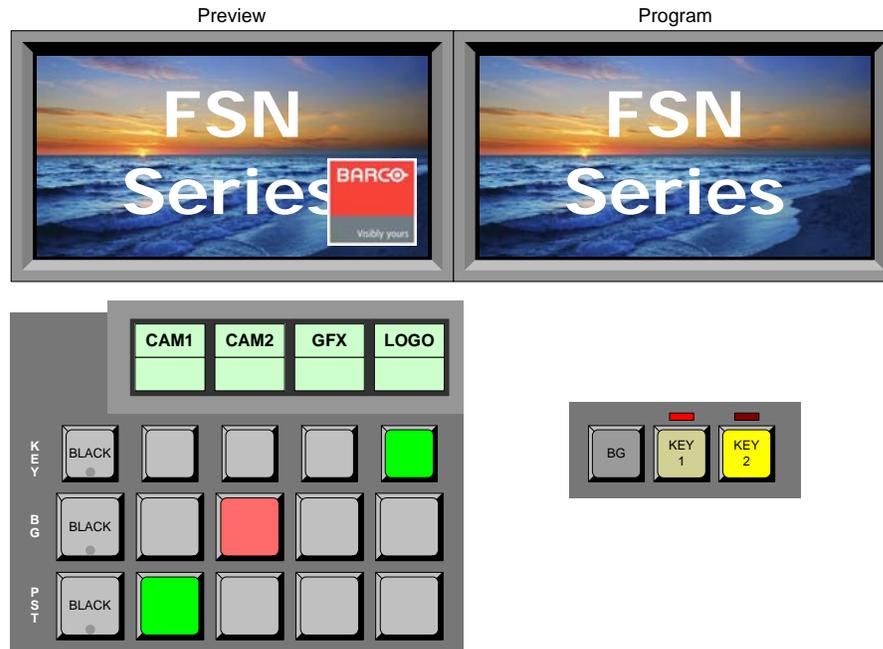


Figure 7-7. M/E Bank: KEY 2 Lookahead

Please note:

- ~ With **KEY 2** selected, and **BG** and **KEY 1** turned off, **KEY 2** will transition over the *current* **BG** and **KEY 1** source. In effect, by selecting **KEY 2** only, you are “holding” the **BG** and **KEY 1** sources.
- ~ The source selected on **PST** does not appear on **PVW** — because it’s not part of the next transition.
- ~ The lookahead **PVW** output shows the **KEY 2** source keyed over **BG** and **KEY 1**. This is the perfect time to clip and adjust the second key.

Note

Once **KEY 2** is pressed (and armed), press and hold **KEY 2** to jump to the **Keyer Menu** for M/E 1, Key 2, where you can clip and adjust the key on preview.

4. Press **CUT** or **AUTO TRAN** to cut, mix or wipe **KEY 2** over **BG** and **KEY 1**.

7. Operations

Understanding Lookahead Preview

Example 4: BG Lookahead, Transition Under Key

- Use the following steps to see how the **BG** button affects lookahead preview, when one or more keys are on.
 1. Select **CAM 1** on the **PST** bus (it should still be selected).
 2. In the **Next Transition Group**, press **BG**. This action arms the background layer to transition.



Figure 7-8. M/E Bank: BG Lookahead when keys are enabled

Please note:

- ~ With **BG** selected, and both **KEY 1** and **KEY 2** turned off, the **PST** bus will transition *under* the two keys. In effect, by selecting **BG** only, you are “holding” **KEY 1** and **KEY 2**.
 - ~ The source selected on **PST** appears on **PVW** — because it is a part of the next transition.
 - ~ The lookahead **PVW** output shows the next **BG** source underneath **KEY 1** and **KEY 2**.
3. Press **CUT** or **AUTO TRAN** to cut, mix or wipe **BG** under **KEY 1** and **KEY 2**.

Example 5: Combined Lookahead

- Use the following steps to see how a combination of buttons in the **Next Transition Group** affects lookahead preview.
 1. In the **Next Transition Group**, press **BG**, **KEY 1** and **KEY 2**. This action arms all three layers to transition.



Figure 7-9. M/E Bank: Combined Lookahead

Please note:

- ~ With **BG**, **KEY 1** and **KEY 2** selected, all three layers will transition. The background transitions, and both keys will turn off.
- ~ The source selected on **PST** appears on **PVW**.
- ~ The lookahead **PVW** output shows the next **BG** source clean, with no keys, because both keys will transition off.

2. Press **CUT** or **AUTO TRAN** to cut, mix or wipe all three layers.

Example 6: Continued Practice

Continue to practice using various sources, in combination with the buttons in the **Next Transition Group**, until you are totally familiar with lookahead preview. Be sure to try some of the following combinations:

- Transition **BG** only.
- Transition **BG** and **KEY 1**.
- Transition **BG** and **KEY 2**.
- Crossfade **KEY 1** and **KEY 2** (bring one up, bring one down).
- Transition all three layers.

7. Operations

Understanding the T-Bar and Transition LEDs

Understanding the T-Bar and Transition LEDs

This section describes the functionality of the **T-Bar** and **Transition LEDs**, which are identical for the M/E and PGM banks.

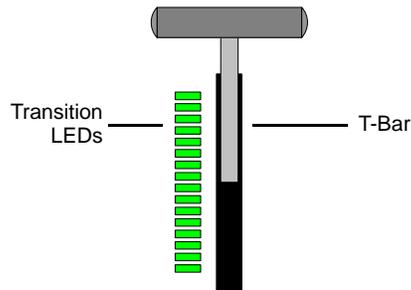


Figure 7-10. T-Bar and Transition LEDs

The **T-Bar** provides manual transition control for the layers enabled in the **Next Transition Group**. For both manual and automatic transitions, the **Transition LEDs** indicate the position of the transition in progress.

The following topics are discussed in this section:

- [Manual Transitions](#)
- [Automatic Transitions](#)
- [Physical and Virtual T-Bar Position](#)
- [Transition LED Notes](#)

Manual Transitions

When a manual transition is performed, the **T-Bar** controls the transition direction — away from (or back towards) the end-limit.

Please note:

- In general, when the **T-Bar** is resting at either the top or bottom limit and all **Transition LEDs** are off, the bank's output is full **BG** (or **PGM**) bus, and the various key layers are completely on or off.
- From either limit (when **BG** is armed), moving the **T-Bar** *always* transitions from the **BG** (or **PGM**) bus towards the **PST** bus.
- When the **T-Bar** is manually moved, the **Transition LEDs** always move in the same direction as **T-Bar** movement. The LEDs indicate the transition's position between the **BG** (or **PGM**) and **PST**.

Automatic Transitions

This section provides information about automatic transitions, and their flexibility. Please note the following important points:

- When an automatic transition is performed, the **Transition LEDs** indicate the transition's position, but the direction is always towards the **PST** bus.

7. Operations

Understanding the T-Bar and Transition LEDs

- If the **T-Bar** is at a limit, the **Transition LEDs** always move away from the **T-Bar**'s position — towards **PST**.
- Automatic transitions can be paused:
 - ~ Press **AUTO TRAN** to start the transition.
 - ~ Press **AUTO TRAN** again, during the interval, to pause the transition. Note that the **Transition LEDs** are paused in between the limits.
 - ~ Press **AUTO TRAN** to resume the transition.
 - ~ You can pause and resume repeatedly.
- Transitions can be started automatically, paused, and finished manually.
 - ~ Press **AUTO TRAN** to start the transition.
 - ~ Press **AUTO TRAN** again, during the interval, to pause the transition.
 - ~ Move the **T-Bar** to continue the transition manually.
- Transitions can be started automatically, and over-ridden manually.
 - ~ Press **AUTO TRAN** to start the transition.
 - ~ During the interval, move the **T-Bar** in the same direction as the **Transition LEDs** are moving, to continue the transition manually.
- Transitions can be started manually, and finished automatically.
 - ~ Move the **T-Bar** to perform a manual transition.
 - ~ Stop the **T-Bar** at any point before the end-limit.
 - ~ Press **AUTO TRAN** to complete the transition automatically.

Note

Using **AUTO TRAN**, you cannot return to the **BG** (or **PGM**) bus, as you can with manual transitions, unless you manually “match” physical and virtual positions, and return manually to **BG** (or **PGM**). Refer to the [“Physical and Virtual T-Bar Position”](#) section below for additional details.

Physical and Virtual T-Bar Position

The **Transition LEDs** next to the **T-Bar** reflect the state of the transition, not the position of the physical **T-Bar**. Often they will be the same — but sometimes, the physical **T-Bar** position and the “virtual” **T-Bar** position may not match.

To learn about physical and virtual **T-Bar** positions, please practice the following examples.

Example 1: Normal T-Bar movement

- Use the following steps to demonstrate physical vs. virtual **T-Bar** position, in normal “auto-trans” mode:
 1. In the M/E or the PGM bank, start with the **T-Bar** at the bottom limit.
 2. Press **AUTO TRAN** to begin the auto transition.
 3. Press **AUTO TRAN** again (during the interval) to pause the transition at 50%. Physical and virtual **T-Bar** positions do not match. In this situation, the **T-Bar** has no effect on the video unless you move it up to 50%, and match the physical position with the virtual position.

7. Operations

Understanding the T-Bar and Transition LEDs

4. Move the **T-Bar** to 50%. The **T-Bar** is now "live" again, and physical and virtual positions are matched. You can move it up or down as required.
5. Move the **T-Bar** to 75%. The **Transition LEDs** match the position of the **T-Bar**.
6. Press **AUTO TRAN** to complete the transition. The **Transition LEDs** are all off, but the physical **T-Bar** remains at 75%. In this situation, the **T-Bar** has no effect on the video until you move it to either limit.

Example 2: T-Bar movement with memory registers

- Use the following steps to demonstrate physical vs. virtual **T-Bar** position, in conjunction with the recalling of memory registers:
 1. In the M/E or the PGM bank, start with the **T-Bar** at the bottom limit.
 2. Manually move the **T-Bar** to 25%. The **Transition LEDs** match the position of the **T-Bar**.
 3. For the bank in which you are working, save the bank in memory register 100. This memory register stores the **T-Bar** position by default. The register also stores the direction in which the **T-Bar** was moving.
 4. Move the **T-Bar** to 75%. The **Transition LEDs** match the position of the **T-Bar**.
 5. Recall memory register 100 (in which the **T-Bar** position was saved at 25%). The **Transition LEDs** are at 25% and the physical **T-Bar** position is at 75%. Physical and virtual positions are not matched.
 - ~ If you move the **T-Bar** to the top limit (the direction in which the transition was originally going), it has no effect on the video — because the **T-Bar**'s physical position is already past its virtual position.
 - ~ If you move the **T-Bar** back down towards the bottom limit, you will match physical and virtual positions at 25% — at which point the **T-Bar** will again be live.

Tip

Always use the **Transition LEDs** to determine the **T-Bar**'s true virtual position.

Transition LED Notes

Please note the following important points regarding the **Transition LEDs**.

- **(M/E bank only)** The **Transition LEDs** are not affected when the two "mix" buttons in the **Direct Key Control Group** are used: **MIX KEY 1** and **MIX KEY 2**. For example:
 - ~ In the M/E bank, press **AUTO TRAN** to start an automatic transition, and then press **AUTO TRAN** again to pause the transition. The **Transition LEDs** are now paused between the limits.
 - ~ Press **MIX KEY 1** to mix on **KEY 1**. The **Transition LEDs** remain at their current location.

Refer to the "[Working with Keys](#)" section on page 287 for more details on the buttons in the **Direct Key Control Group**.

- **(PGM bank only)** The **Transition LEDs** are not affected when the **FTB** (Fade to Black) button is used. For example:
 - ~ In the PGM bank, press **AUTO TRAN** to start an automatic transition, and then press **AUTO TRAN** again to pause the transition. The **Transition LEDs** are now paused between the limits.
 - ~ Press **FTB**. The **Transition LEDs** remain at their current location.

Using Re-entry



The **Re-entry** buttons on the **PGM** bank enable you combine the contents of the M/E bank into the switcher's output. This holds true for the **PGM**, **PST** and **KEY** buses:

- When **M/E** is selected on the **PGM** bus, the entire output of the M/E bank is on program. This enables you to cut to the M/E — in the same way that you cut between cameras and other sources.
- When **M/E** is selected on the **PST** bus, the entire output of the M/E bank is available on preset. This enables you to preset the M/E, and transition to it — in the same way that you mix, cut and wipe to cameras and other sources.

Tip

In practice, user's will preset the M/E, recall a memory register to the M/E only, and then transition to the new look. Once complete, you can transition back to a straight source on PGM, and free the M/E for the next memory register recall.

- When **M/E** is selected on the **KEY** bus, the entire output of the M/E bank is available as a key source. This enables you to create a "look" on the M/E, and key that look over the PGM source.

Working with Cuts



A **Cut** is an instant switch (or "take") between two sources. There are two different ways to perform a cut:

- Use the following steps to perform a cut, without first previewing the next source:
 1. On any **PGM** or **BG** bus, simply press the button for the desired source. Use the **SHIFT** button if required to select a shifted source. Remember that on the PGM bank, the **M/E** (re-entry) button can be selected in the same way.
- Use the following steps to perform a cut using lookahead preview:
 1. In the **Next Transition Group**, press **BG**.
 2. On any **PST** bus, press the button for the desired "next" source. Use the **SHIFT** button if required to select a shifted source. Remember that on the PGM bank, the **M/E** (re-entry) button can be preset in the same way.
 3. Press **CUT**. The source on **PST** instantly cuts to **PGM** (or **BG**) and the buses flip-flop.

7. Operations

Setting Transition Rates and Curves

4. Press **CUT** again to return to the previous source, or select a new source on **PST** and repeat the procedure.

Note

You can also press **ALL CUT** (in the **Custom Control Section**) to perform a cut on all buses simultaneously.

Setting Transition Rates and Curves

The **Transition Menu** enables you to change auto transition rates and adjust transition “curves” throughout the switcher.

▲ **Prerequisite** — Ensure that you are familiar with the **Transition Menu**. In Chapter 5, refer to the “[Transition Menu](#)” section on page 134.

- Use the following steps to set transition rates and curves:



1. Navigate to the **Transition Menu** using one of the following two methods:
 - ~ Press and hold any **MIX** button.
 - ~ In the **Menu Bar**, press **{Page}** to jump to page 1 (if required), then press **{Trans}**.
2. To adjust transition rates with the knobs:
 - ~ Turn the knob adjacent to the **M/E 1** button to adjust M/E 1's transition rate. The range is 1 to 999 frames.
 - ~ Turn the knob adjacent to the **PGM** button to adjust the PGM bank's transition rate.
 - ~ Turn the knob adjacent to the **FTB** button to adjust the FTB transition rate.
3. To adjust transition rates with the **Keypad**:
 - ~ Press the **M/E 1** button to display the **Keypad**. Enter or trim the transition rate for M/E 1, then press **{Enter}** to accept.
 - ~ Press the **PGM** button to display the **Keypad**. Enter or trim the transition rate for the PGM bank, then press **{Enter}** to accept.
 - ~ Press the **FTB** button to display the **Keypad**. Enter or trim the transition rate for the FTB, then press **{Enter}** to accept.
4. To adjust all transition rates simultaneously, press **{All/Set Trim}**.
 - ~ To “set” a new rate, press any value button to display the **Keypad**.
 - To set all rates to the current value in the register, press **{Enter}**.
 - To set all rates to a new value, enter the value and press **{Enter}**.
 - ~ To trim all rates simultaneously as offsets to their current values:
 - Turn any **Knob** to increment or decrement all rates.

- Press any value button to display the **Keypad**. Enter the desired “trim” value and press **{Trim +}** or **{Trim -}** as desired.

Note

The M/E 1 transition rate applies to the buttons in the **Direct Key Control Group (MIX KEY 1 and MIX KEY 2)**.

5. Transition curves are applied when you press **AUTO TRAN** in a selected bank, or the **FTB** button. To select transition curves:
 - ~ For M/E 1 curve, press the **{Linear}**, **{S Curve}**, **{Exponential}**, or **{Logarithmic}** button in the row adjacent to the **M/E 1** button.
 - ~ For the PGM bank curve, press the **{Linear}**, **{S Curve}**, **{Exponential}**, or **{Logarithmic}** button in the row adjacent to the **PGM** button.
 - ~ For the FTB curve, press the **{Linear}**, **{S Curve}**, **{Exponential}**, or **{Logarithmic}** button in the row adjacent to the **FTB** button.

Note

Transition curves also apply to the buttons in the **Direct Key Control Group (MIX KEY 1 and MIX KEY 2)**.

Working with Mixes



A **Mix** (or “dissolve”) is a transition in which one video signal fades out as another fades in. The transition is always from the source on **PGM** (or **BG**) to the source on **PST**.

The following topics are discussed in this section:

- [Manual Mix](#)
- [Automatic Mix](#)

Manual Mix

- Use the following steps to perform a manual mix:
 1. In the **Next Transition Group**, press **BG**.
 2. On any **PST** bus, press the button for the desired “next” source. Use the **SHIFT** button if required to select a shifted source. Remember that on the PGM bank, the **M/E** (re-entry) button can be preset in the same way.
 3. Press **MIX**.
 4. Use the **T-Bar** to perform the manual mix.

Automatic Mix

- Use the following steps to perform an automatic mix:
 1. Set the desired auto transition rate and curve. Refer to the [“Setting Transition Rates and Curves”](#) section on page 284 for details.
 2. In the **Next Transition Group**, press **BG**.

7. Operations

Working with Wipes

3. On any **PST** bus, press the button for the desired “next” source. Use the **SHIFT** button if required to select a shifted source. Remember that on the PGM bank, the **M/E** (re-entry) button can be preset in the same way.
4. Press **MIX**.
5. Press **AUTO TRAN**.

Please note the following important points regarding mixes:

- You can also press **ALL TRAN** (in the **Custom Control Section**) to perform a mix on all buses simultaneously.
- Remember that there are a wide variety of auto-transition combinations available to you. Refer to the [“Automatic Transitions”](#) section on page 280 for details.

Working with Wipes



A **Wipe** is a transition in which one video signal is replaced with another signal, using a selected pattern to determine the edge between the two sources. The transition is always from the source on **PGM** (or **BG**) to the source on **PST**.

- ▲ **Prerequisite** — Ensure that you are familiar with the **Wipe Menu**. In Chapter 5, refer to the [“Wipe Menu”](#) section on page 137.

The following topics are discussed in this section:

- [Wipe Setup](#)
- [Manual Wipe](#)
- [Automatic Wipe](#)

Wipe Setup

- Use the following steps to set up the wipe:
 1. Navigate to the **Wipe Menu** using one of the following two methods:
 - ~ Press and hold **WIPE** in the bank in which you want to perform the wipe. Remember that you can change banks using the **{Bank}** button.
 - ~ In the **Menu Bar**, press **{Page}** to jump to page 1, then press **{Wipes}**.
 2. Select the desired wipe pattern, direction, edge type, edge width, and edge color (if **Hard Edge** is selected).
 3. Set the desired auto transition rate and curve.

Manual Wipe

- Use the following steps to perform a manual wipe:
 1. In the **Next Transition Group**, press **BG**.
 2. On any **PST** bus, press the button for the desired “next” source. Use the **SHIFT** button if required to select a shifted source. Remember that on the PGM bank, the **M/E** (re-entry) button can be preset in the same way.
 3. Press **WIPE**.
 4. Use the **T-Bar** to perform the manual wipe.

Automatic Wipe

- Use the following steps to perform an automatic mix:
 1. In the **Next Transition Group**, press **BG**.
 2. On any **PST** bus, press the button for the desired “next” source. Use the **SHIFT** button if required to select a shifted source. Remember that on the PGM bank, the **M/E** (re-entry) button can be preset in the same way.
 3. Press **WIPE**.
 4. Press **AUTO TRAN**.

Please note the following important points regarding wipes:

- You can also press **ALL TRAN** (in the **Custom Control Section**) to perform a wipe on all buses simultaneously.
- Remember that there are a wide variety of auto-transition combinations available to you. Refer to the [“Automatic Transitions”](#) section on page 280 for details.

Working with Keys



A **Key** is a transition in which one video signal is superimposed over a background video signal. One signal “cuts” the hole in the background, and another signal “fills” the hole.

▲ Prerequisites

- ~ Ensure that you are familiar with the **Keyer Menu**. In Chapter 5, refer to the [“Keyer Menu”](#) section on page 143.
- ~ If you are using linear keys, ensure that the key cut and fill signals are properly mapped. In Chapter 5, refer to the [“Map Buttons Menu”](#) section on page 210.

Please note:

- Using the buttons in the **Next Transition Group**, a variety of transitions are possible with full lookahead:
 - ~ Cut key on/off
 - ~ Mix key on/off
 - ~ Wipe key on/off
- Using the buttons in the **Direct Key Control Group**, two transitions are possible without lookahead:
 - ~ Cut key on/off
 - ~ Mix key on/off

The following topics are discussed in this section:

- [Key Setup](#)
- [Manual Mix Key](#)
- [Automatic Mix Key](#)
- [Manual Wipe Key](#)
- [Automatic Wipe Key](#)
- [Direct Control Keys](#)

7. Operations

Working with Keys

Key Setup

- Use the following steps to set up the key:
 1. Navigate to the **Keyer Menu** using one of the following two methods:
 - ~ Arm the keyer that you wish to transition (**KEY 1**, **KEY 2** or **DSK**). Then, press and hold that specific **Key** button. This action places the key on the PVW output for the selected bank.
 - ~ In the **Menu Bar**, press **{Page}** to jump to page 1 (if required), then press **{Keys}**. Remember that you can change keyers with the **{Keyer}** button.
 2. Select the desired key “cut” source:
 - ~ To set up **Key 1** on the M/E, press **SEL** to switch the key bus to **KEY 1**. Select the desired source on the bus.
 - ~ To set up **Key 2** on the M/E, press **SEL** to switch the key bus to **KEY 2**. Select the desired source on the bus.
 - ~ To set up the **DSK**, press and hold **DSK** to change the PST bus to the phantom key bus. Select the desired source on the bus, then release the **DSK** button. Remember that the M/E can also be a key source.
 3. On the **Keyer Menu**:
 - a. Select the desired key type: luma or linear.
 - b. Select the desired key fill: self, matte, preset or split.
 - If a matte fill is selected, set the desired matte color.
 - If a preset fill is selected, select the desired fill source on the bank’s PST bus.
 - If split key is selected, select the split cut and fill sources.
 - c. Set the key’s clip, gain and opacity.
 4. Set the desired auto transition rate and curve.
 5. Repeat for all other keys that you wish to transition.

Manual Mix Key

- Use the following steps to perform a manual mix key:
 1. Ensure that the key(s) you wish to transition are properly set up. Refer to the [“Key Setup”](#) section for details.
 2. In the **Next Transition Group**, select the layers that you wish to transition:
 - ~ On the M/E, enable **BG**, **KEY 1** and/or **KEY 2** as desired.
 - ~ On the PGM bank, enable **BG** and/or **DSK** as desired.
 3. Use the **T-Bar** to perform the manual mix key. The selected key(s) will transition up or down, depending on their current state.

Automatic Mix Key

- Use the following steps to perform an automatic mix key:
 1. Ensure that the key(s) you wish to transition are properly set up. Refer to the [“Key Setup”](#) section for details.
 2. In the **Next Transition Group**, select the layers that you wish to transition:
 - ~ On the M/E, enable **BG, KEY 1** and/or **KEY 2** as desired.
 - ~ On the PGM bank, enable **BG** and/or **DSK** as desired.
 3. Press **AUTO TRAN**.

Please note the following important points regarding automatic mix keys:

- You can also press **ALL TRAN** (in the **Custom Control Section**) to perform the transition on all buses simultaneously.
- Remember that there are a wide variety of auto-transition combinations available to you. Refer to the [“Automatic Transitions”](#) section on page 280 for details.

Manual Wipe Key

- Use the following steps to perform a manual wipe key:
 1. Ensure that the key(s) you wish to transition are properly set up. Refer to the [“Key Setup”](#) section for details.
 2. In the **Next Transition Group**, select the layers that you wish to transition:
 - ~ On the M/E, enable **BG, KEY 1** and/or **KEY 2** as desired.
 - ~ On the PGM bank, enable **BG** and/or **DSK** as desired.
 3. Select the desired wipe pattern, direction, edge type, edge width, and edge color (if a **Hard Edge** wipe is selected).
 4. Use the **T-Bar** to perform the manual wipe key. The selected key(s) will transition up or down, depending on their current state.

Automatic Wipe Key

- Use the following steps to perform an automatic wipe key:
 1. Ensure that the key(s) you wish to transition are properly set up. Refer to the [“Key Setup”](#) section for details.
 2. In the **Next Transition Group**, select the layers that you wish to transition:
 - ~ On the M/E, enable **BG, KEY 1** and/or **KEY 2** as desired.
 - ~ On the PGM bank, enable **BG** and/or **DSK** as desired.
 3. Select the desired wipe pattern, direction, edge type, edge width, and edge color (if a **Hard Edge** wipe is selected).
 4. Press **AUTO TRAN**.

Please note the following important points regarding automatic wipe keys:

- You can also press **ALL TRAN** (in the **Custom Control Section**) to perform the transition on all buses simultaneously.
- Remember that there are a wide variety of auto-transition combinations available to you. Refer to the [“Automatic Transitions”](#) section on page 280 for details.

7. Operations

Working with Keys

Direct Control Keys

In the M/E, the four buttons in the **Direct Key Control Group** enable you to *directly* control the two keyers, without the need to “arm” them in the **Next Transition Group**. The red LEDs above the **KEY 1** and **KEY 2** buttons function in the normal manner.

Note

Remember that you can use these “direct” functions regardless of where the **T-Bar** is currently positioned.

- Use the following steps to perform a direct cut key:
 1. Ensure that the key(s) you wish to transition are properly set up. Refer to the [“Key Setup”](#) section for details.
 2. Press **CUT KEY 1** to cut Key 1 on or off (depending on its current state).
 3. Press **CUT KEY 2** to cut Key 2 on or off (depending on its current state).
- Use the following steps to perform a direct mix key:
 1. Ensure that the key(s) you wish to transition are properly set up. Refer to the [“Key Setup”](#) section for details.
 2. Press **MIX KEY 1** to mix Key 1 on or off (depending on its current state).
 3. Press **MIX KEY 2** to mix Key 2 on or off (depending on its current state).

Please note the following important points regarding the **Direct Control** buttons:

- Unlike the **AUTO TRANS** button, the two **MIX KEY** buttons cannot be paused. Once pressed, the “direct” transition completes fully.
- When the **T-Bar** is positioned between the **BG** and **PST** buses (off of a limit), almost all “direct” transitions are available. In Chapter 3, refer to the [“M/E Transition Section”](#) heading on page 72 for details.

Working with Memory Registers

This section provides instructions for working with memory registers. Three modes are available: Store, Recall and View.

- ▲ **Prerequisite** — Ensure that you are familiar with the **Memory Menu**. In Chapter 5, refer to the “**Memory Menu**” section on page 157.

The following topics are discussed in this section:

- [Memory Register Overview](#)
- [Storing Memory Registers](#)
- [Recalling Memory Registers](#)
- [Viewing Memory Registers](#)
- [Locking and Unlocking Memory Registers](#)
- [Deleting Memory Registers](#)

Memory Register Overview

To understand how the memory system works on FSN Series switchers, you can think of each memory register as having a number of individual storage compartments — one for each of the available modules. These modules can be stored or recalled individually, or in combination with other modules, as desired.

In addition, each module is comprised of multiple sub-sections called “Enables” which can be toggled on or off as desired. This feature allows you to store one or more individual “parts” of a module, rather than the entire module.

When you use the memory system, you can elect to use or bypass the “Enables” feature.

- **Store — Panel only.** If you store a register using the control panel’s **Keypad** only (without using the **Memory Menu**), all Enables will be on by default.
- **Recall — Panel only.** If you recall a register using the control panel’s **Keypad** only (without using the **Memory Menu**), all Enables will be on — exactly as originally stored in the register.
- **Store — Panel + Menu.** If you store a register and you elect to set Enables using the **Memory Menu**, you can store all or part of any selected module.
- **Recall — Panel + Menu.** If you recall a register and you elect to adjust Enables using the **Memory Menu**, you can recall all or part of any selected module — but only those components that were originally stored in the register.

Note

To quickly access the **Memory Menu**, press and hold either the **STORE** or **RECALL** button.

Any combination of modules can be stored in a memory register. Please note the following important points regarding modules:



- **PGM Memory Functions**

When you include the **PGM** button in a store function, you are taking a precise snapshot of the Program bank’s complete look, including all crosspoint selections, the **T-Bar** position, wipe patterns, key parameters — and most important, the state

7. Operations

Working with Memory Registers

of the buttons in the **Program Transition Section**. This snapshot is assigned a memory register number, from 1 to 1000.

When you include the **PGM** button in a recall function, the system *immediately* replaces all (or a portion of) the current Program bank setup, based on your “enables” — using a clean vertical interval switch. You can also modify the Enables, prior to pressing **ENTER**.



- **M/E Memory Functions**

When you include an **M/E** button in a store function, you are taking a precise snapshot of the M/E bank’s complete look, including all crosspoint selections, the **T-Bar** position, wipe patterns, key parameters — and most important, the state of the buttons in the **M/E Transition Section**. This snapshot is assigned a memory register number, from 1 to 1000.

When you include an **M/E** button in a recall function, the system *immediately* replaces all (or a portion of) the current M/E bank setup, based on your “enables” — using a clean vertical interval switch. You can also modify the Enables, prior to pressing **ENTER**.



- **Aux Memory Functions**

When you include the **Aux** button in a store function, you are taking a precise snapshot of all Source-to-Aux assignments in the **Aux Section**. If you bypass the **Memory Menu**, all Aux routes on the panel will be stored. If you use the Aux “Enables,” you can elect to store any combination of Aux routes.

When you include the **Aux** button in a recall function, the system *immediately* replaces all (or a portion of) the current Aux assignments on the panel, based on your “enables” — using a clean vertical interval switch. You can also modify the Enables, prior to pressing **ENTER**.



- **System Memory Functions**

When you include the **SYS** button in a store function, you are taking a precise snapshot of all system-related functions (such as input mappings, input setups, output settings, tallies, etc.). Using the System “Enables,” you can elect to include or exclude certain system sub-functions.

When you include the **SYS** button in a recall function, the system *immediately* replaces all (or a portion of) the current System settings, based on your “enables.” You can also modify the Enables, prior to pressing **ENTER**.

Tip

It is recommended that you store **System** settings by themselves, without including other modules in the selected memory register.

The table below summarizes the functions you can perform in each mode:

Table 7-3. Memory Menu modes and functions

Memory Menu Mode	Name Registers	Modules	Enables	Lock Registers	Delete Registers
View	Yes	View Only	View Only	Yes	Yes
Store	Yes	Modify	Modify	No	No
Recall	No	Modify	Modify	No	No

Storing Memory Registers

When you store a memory register, you take a “snapshot” of the switcher and the selected modules. Once stored, you can *not* add data to that register — you can only overwrite it with new data.

- ▲ If you store **M/E 1** into register 100, you can not add **AUX** data into that register. However, you could overwrite register 100 with new data.

Storing a memory register and bypassing the Enables is an easy equation. This method stores the entire contents of the selected module(s).

- **STORE, [select modules], [select register #], ENTER**

Storing a memory register and setting Enables is also an easy equation. This method stores partial contents of the selected module(s).

- **STORE, [select modules], [select register #], [set Enables], ENTER**

The following topics are discussed in this section:

- [Store, Bypass Enables, Use Default Name](#)
- [Store, Bypass Enables, Enter Custom Name](#)
- [Store, Set Enables, Enter Custom Name](#)
- [Memory Store Notes](#)

Store, Bypass Enables, Use Default Name

- Use the following steps to store a memory register, bypass Enables, and use the default register name:
 1. Set up the switcher in the exact configuration that you want stored.
 2. On the **Keypad**, press **STORE**.
 3. Select the desired modules to include in the register.
 4. Enter the desired register number.
 5. Press **ENTER**. The register is now stored in memory, all Enables are on, and a default number has been assigned (**reg-#**). Above the **Keypad**, the selected register number and the default label “**reg-#**” appear in the **Memory Display**, adjacent to the prefix “**STR:**”

Store, Bypass Enables, Enter Custom Name

- Use the following steps to store a memory register, bypass Enables, and enter a custom register name:
 1. Set up the switcher in the exact configuration that you want stored.
 2. On the **Keypad**, press **STORE**.
 3. Select the desired modules to include in the register.
 4. Enter the desired register number.
 5. Navigate to the **Memory Menu**. The selected register will be highlighted in the table, and the “**STORE**” banner will be lit red.
 6. Press {**Description**} to display the **Pop-up Keyboard**.

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Working with Memory Registers

7. Enter the desired description and press **{Enter}**.

Note

In **Store Mode**, the description will not appear in the register table until **ENTER** is pressed on the **Keypad**.

8. Press **ENTER** on the **Keypad**. The register is now stored, all Enables are on, and the custom name has been stored with the register. Above the **Keypad**, the selected register number and the custom name appear in the **Memory Display**, adjacent to the prefix “**STR:**”

Store, Set Enables, Enter Custom Name

- Use the following steps to store a memory register, set Enables, and enter a custom register name:
 1. Set up the switcher in the exact configuration that you want stored.
 2. On the **Keypad**, press **STORE**.
 3. Select the desired modules to include in the register.
 4. Enter the desired register number.
 5. Navigate to the **Memory Menu**. The selected register will be highlighted in the table, and the “**STORE**” banner will be lit red.
 6. Press **{Enables}** to display the **Enables Menu**.
 7. On the modules row, press the light blue button for the first module in which you want to set Enables.
 8. In the “Enables” box, toggle the desired Enables on or off, as required. By default, they are all on, when you first store a register. Remember that you can also use the **{All On}** and **{All Off}** functions.
 9. Repeat steps 7 and 8 for all remaining modules in which you want to set Enables.
 10. Press **{Description}** to display the **Keyboard**.
 11. Enter the desired register description and press **{Enter}**.

Note

In **Store Mode**, the description will not appear in the register table until **ENTER** is pressed on the **Keypad**.

12. Press **ENTER** on the **Keypad**. The register is now stored, the Enables are set, and the custom name has been stored with the register. Above the **Keypad**, the selected register number and the custom name appear in the **Memory Display**, adjacent to the prefix “**STR:**”

Memory Store Notes

Please note the following important points regarding memory register storage:

- If you are in the midst of a **Store** procedure, the **{Advanced}** button is grayed out. This feature prevents you from locking, unlocking, or deleting registers in the midst of the procedure.
- At any point, prior to pressing **ENTER**, you can add or remove modules within a pending **Store** operation — even if the module buttons were not originally selected in the Keypad’s **Module Section**.

For example:

- ▲ You originally pressed the **M/E 1** module button only, and you now wish to add one or two **Aux** routes to the register.
- ▲ You originally pressed the **M/E 1** and **PGM** modules, but you now decide you want to remove the **M/E 1** module from the register.

To add modules (prior to pressing **ENTER**):

- ~ In the **Enables Menu**, press the light blue button for module you wish to add (even if it was not originally selected). All Enables will be off initially, but as soon as you toggle any Enable on, the associated module button in the **Keypad** lights. You can also press **{All On}**.
- ~ At any time in the pending **Store** procedure, simply light the desired module button in the **Keypad**. This action turn all Enables in the selected module on, and then you can “set” them in the normal way.

To remove modules (prior to pressing **ENTER**):

- ~ In the **Enables Menu**, press the light blue button for module you wish to remove, and press **{All Off}**. The associated module button in the **Keypad** turns off.
- ~ At any time in the pending **Store** procedure, simply turn off the desired module button in the **Keypad**. This action turn all Enables in the selected module off — effectively removing the module from the register.
- Remember that once **ENTER** is pressed, the module's contents are set — and you can no longer add to the register. On recall, however, you can elect to recall all of the register's contents, or part of the contents by using your Enables.

Recalling Memory Registers

When you recall a memory register, you are recalling all (or part) of the stored register's contents back to the switcher.

Recalling a memory register and bypassing the Enables is an easy equation. This method recalls the entire contents of the selected module(s).

- **RECALL, [select register #], ENTER**

Recalling a memory register and adjusting Enables is also an easy equation. This method recalls partial contents of the selected module(s).

- **RECALL, [select modules], [adjust Enables], ENTER**

The following topics are discussed in this section:

- [Recall, Bypass Enables](#)
- [Recall, Adjust Enables](#)
- [Memory Recall Notes](#)

Recall, Bypass Enables

■ Use the following steps to recall a memory register and bypass Enables:

1. On the **Keypad**, press **RECALL**.
2. Enter the desired register number. Note that the module buttons will light for the exact modules contained in the register.
3. Press **ENTER**. The entire memory register is now recalled to the panel.

7. Operations

Working with Memory Registers

Please note:

- ~ Above the **Keypad**, the selected register number and the register name appear in the **Memory Display**, adjacent to the prefix “RCL:”
- ~ If the register was recalled to an **M/E**, the **PGM** bank or both, the selected register number appears in the respective **Transition Display**, below the label “MEM.”

Recall, Adjust Enables

- Use the following steps to recall a memory register and adjust the Enables:
 1. On the **Keypad**, press **RECALL**.
 2. Enter the desired register number. Note that the module buttons will light for the exact modules contained in the register.
 3. Navigate to the **Memory Menu**. The selected register will be highlighted in the table, and the “**RECALL**” banner will be lit red.
 4. Press **{Enables}** to display the **Enables Menu**.
 5. On the modules row, press the light blue button for the first module in which you want to adjust Enables.
 - ~ Note that only the “stored” modules will be blue. All other modules will be grayed out.
 - ~ In the “Enables” box, note that the enables will appear exactly as stored. All those that were not enabled will be grayed out.
 6. Toggle the desired Enables on or off, as required. Remember that you can also use the **{All On}** and **{All Off}** functions.
 7. Repeat steps 5 and 6 for all remaining modules in which you want to adjust Enables.
 8. Press **ENTER** on the **Keypad**. The register is now recalled, using the adjusted Enables. Above the **Keypad**, the custom name appears in the **Memory Display**, adjacent to the prefix “RCL:”

Memory Recall Notes

Please note the following important points regarding memory register storage:

- If you are in the midst of a **Recall** procedure, the **{Advanced}** button is grayed out. This feature prevents you from locking, unlocking, or deleting registers in the midst of the procedure.
- At any point, prior to pressing **ENTER**, you can add or remove modules within a pending **Recall** operation — but only if the modules were originally included in the register. For example:
 - ▲ You originally stored the **M/E 1** and **PGM** modules, you removed **PGM** entirely, but you now wish to add **PGM** back in.
 - ▲ You originally stored the **M/E 1** and **PGM** modules, you adjust **M/E 1** Enables, and then you decide to remove **M/E 1** entirely.

To add modules back in to the **Recall** (prior to pressing **ENTER**):

- ~ In the **Enables Menu**, if you have toggled any Enables off, simply re-enable them, press **{All On}**, or light the module button itself — but only if the module(s) had originally been stored in the register.

To remove modules from the **Recall** (prior to pressing **ENTER**):

- ~ In the **Enables Menu**, press the light blue button for module you wish to remove, and press **{All Off}**. The associated module button in the **Keypad** turns off.
- ~ At any time in the pending **Recall** procedure, simply turn off the desired module button(s) in the **Keypad**. This action turn all Enables in the selected module off — effectively removing the module from the register.
- When you recall a register from memory to an **M/E** or the **PGM** bank, the input mapping will be recalled to the crosspoints — exactly as stored. This means that if the input mapping changes, the recall will *not* follow the input to its new location. In addition, if there is no longer an input in the recalled crosspoint location, black will be shown. For example:
 - ~ Store a register that includes **VTR1** on button **5**. Now, you change input mapping (for some strange reason), and map **GFX1** to button **5**. When you recall the register, **GFX1** will be selected.
 - ~ Store a register that includes **VTR1** on button **5**. Now, you un-map **VTR1**, leaving the button blank. When you recall the register, **Black** will be selected.

Viewing Memory Registers

In the **View Mode**, you can look at all memory registers, name registers, and view the status of all modules and Enables. You cannot modify the modules or the Enables within a register, but you can lock, unlock and delete registers.

- Use the following steps to view a memory register:
 1. Navigate the **Memory Menu** using one of the following methods:
 - ~ In the **Menu Bar**, press **{Page}** to display page **2** (if required). Then, press the **{Memory}** button.
 - ~ Press and hold either the **STORE** or **RECALL** button in the control panel's **Memory Section**.
 2. Select the desired register that you want to view. Two methods are available:
 - ~ Turn the knob adjacent to the **{Memory Register}** button to scroll to the desired register.
 - ~ Press the **{Memory Register}** button, then on the keypad, enter the desired register and press **{Enter}**.
 3. In the main **Memory Table**, note the register's lock/unlock mode, description, and the exact modules stored in the register.
 4. If desired, press **{Description}** to name or re-name the register.
 5. If desired, press **{Advanced}** to display the **Advanced Memory Menu**, where you can lock, unlock, and delete registers. Refer to the "[Locking and Unlocking Memory Registers](#)" and "[Deleting Memory Registers](#)" sections below for details.
 6. If desired, press **{Enables}** to jump to the **Enables Menu**. There, you can view the Enables within each module, name or rename the register, and jump to the **Advanced Memory Menu**. If desired, you can also view other registers within the **Enables Menu**, using the same methods outlined in step **2** above.

7. Operations

Working with Memory Registers

Locking and Unlocking Memory Registers

The **View Mode** is the only mode in which you can lock and unlock registers.

- Use the following steps to lock and unlock memory registers:
 1. Ensure that you are not in the **Store** or **Recall** modes. If so, cancel the mode.
 2. Navigate the **Memory Menu** using one of the following methods:
 - ~ In the **Menu Bar**, press **{Page}** to display page **2** (if required). Then, press the **{Memory}** button.
 - ~ Press and hold either the **STORE** or **RECALL** button in the control panel's **Memory Section**.
 3. Select the register that you want to lock or unlock. Two methods are available:
 - ~ Turn the knob adjacent to the **{Memory Register}** button to scroll to the desired register.
 - ~ Press the **{Memory Register}** button, then on the keypad, enter the desired register and press **{Enter}**.
 4. Press **{Advanced}** to display the **Advanced Memory Menu**.
 5. Press the **{Lock Unlock}** button to toggle the register's mode.
 - ~ If currently unlocked, press **{Lock Unlock}** to lock the register. An "X" appears in the table cell under the **Lock** heading. The register can not be deleted or over-written.
 - ~ If currently locked, press **{Lock Unlock}** to unlock the register and remove the "X" from the table cell. The register can now be deleted and over-written.
 6. Repeat from step **3** to lock or unlock additional registers.

Deleting Memory Registers

The **View Mode** is the only mode in which you can delete registers.

- Use the following steps to delete memory registers:
 1. Ensure that you are not in the **Store** or **Recall** modes. If so, cancel the mode.
 2. Navigate the **Memory Menu** using one of the following methods:
 - ~ In the **Menu Bar**, press **{Page}** to display page **2** (if required). Then, press the **{Memory}** button.
 - ~ Press and hold either the **STORE** or **RECALL** button in the control panel's **Memory Section**.
 3. Select the register that you want to delete. Two methods are available:
 - ~ Turn the knob adjacent to the **{Memory Register}** button to scroll to the desired register.
 - ~ Press the **{Memory Register}** button, then on the keypad, enter the desired register and press **{Enter}**.
 4. Press **{Advanced}** to display the **Advanced Memory Menu**.
 5. Ensure that the register is unlocked. If not, unlock it using **{Lock Unlock}**.
 6. Press the **{Delete Register}** button to delete the register. When the "confirm" pop-up appears, press **{Yes}**.
 7. Repeat from step **3** to lock or unlock additional registers.

Working with Aux Buses

The switcher's **Aux Section** enables you to route input sources and selected outputs to various "destinations."

- ▲ **Prerequisite** — Ensure that you are familiar with the **Aux Section**. In Chapter 3, refer to the "[Aux Section](#)" heading on page 78 for details.
- Use the following steps to assign sources to Aux bus outputs:
 1. On the **Aux Bus Row**, select the Aux output that you want to assign.
 2. On the **Aux Source Row**, select one of the following:
 - ~ Select a new source.
 - ~ Select **Black**.
 - ~ Select an output (e.g., **M/E 1**, **PGM**).
 - ~ Select a clean feed source by pressing **ASSIGN**, and choosing the desired source from the **Clean Feed Setup Menu**. Refer to the "[Selecting Clean Feed Outputs](#)" section below for details.

Note

Remember that only one clean feed source can be mapped to the **ASSIGN** button for all Aux buses. For example, you cannot map "**Pre KEY 1**" to Aux 1, and "**Pre KEY 2**" to Aux 2.

3. Repeat the procedure from step 1 to make additional assignments.

Selecting Clean Feed Outputs

The **Clean Feed Setup Menu** enables you to set clean feed outputs, and the source for the **ASSIGN** button (in the control panel's **Aux Section**).

- ▲ **Prerequisites**
 - ~ Ensure that you are familiar with the **Aux Section**. In Chapter 3, refer to the "[Aux Section](#)" heading on page 78 for details.
 - ~ Ensure that you are familiar with the **Clean Feed Setup Menu**. In Chapter 5, refer to the "[Clean Feed Setup Menu](#)" section on page 184.
- Use the following steps to select clean feed outputs and the **ASSIGN** button source:
 1. Navigate to the **System Menu**:
 - ~ In the **Menu Bar**, press **{Page}** to display page 2 (if required). Then, press the **{System}** button.
 2. Press **{Clean Feed Setup}** to display the **Clean Feed Setup Menu**.
 3. To set clean feed outputs:
 - ~ Press the blue **{Clean Feed Outputs}** button. The **Palette** changes to the **Clean Feed Outputs** flowchart.
 - ~ Select the desired clean feed point for each output.

7. Operations

Using Custom Control Functions

4. To set the **ASSIGN** button source:
 - ~ Press **{Assign Button}**. The **Palette** changes to the **Assign Button** flowchart.
 - ~ Select the desired clean feed point for the **ASSIGN** button.

Note

Remember that only one clean feed source can be mapped to the **ASSIGN** button for all Aux buses. For example, you cannot map “**Pre KEY 1**” to Aux 1, and “**Pre KEY 2**” to Aux 2.

Using Custom Control Functions

The **Custom Control Section** provides groups of buttons that can be programmed to perform various switcher functions.

- ▲ **Prerequisites** — Ensure that you are familiar with the **Custom Control Section**. In Chapter 3, refer to the “[Custom Control Section](#)” heading on page 80 for details.

Note

In release 1.0, only pre-programmed “system” functions such as **ALL TRAN**, **FRZ**, **UNFRZ**, etc., are available.

- Use the following steps to use **Custom Control** functions:
 1. To freeze a source:
 - ~ Press and hold **FRZ**, then press the desired source button (on any bus). Note that this is the same as toggling the **{Freeze}** button to “**On**” — on the **Input Menu**.
 2. To un-freeze a source:
 - ~ Press and hold **UNFRZ**, then press the button for the frozen source (on any bus). Note that this is the same as toggling the **{Freeze}** button to “**Off**” — on the **Input Menu**.
 3. To perform an auto transition on all banks simultaneously:
 - ~ Press **ALL TRAN**. All banks will transition, each at their own selected transition rate.
 4. To perform a on all banks simultaneously:
 - ~ Press **ALL CUT**. All banks will cut immediately.
 5. To save all system settings:
 - ~ Press **SAVE ALL**. All parameters under the **System Menu** will be saved to non-volatile memory. Note that this function is the same as pressing **{Save All}** on the **System Menu**. In Chapter 5, refer to the “[Save All](#)” section on page 220 for a list of the functions that are saved.

8. Updating Software

In This Chapter

This chapter provides detailed instructions for updating FSN Series system software. The following topics are discussed:

- [Software Update Overview](#)
- [Hardware Requirements](#)
- [Downloading Software](#)
- [Updating Control Panel Software](#)
- [Updating FSN-1400 Software](#)
- [Conditional Updates](#)

8. Updating Software

Software Update Overview

Software Update Overview

Firmware files for the FSN-1400 and control panel are loaded into the hardware at power-up. These files are stored in the unit's onboard flash memory. Two different update procedures can be performed:

- **Update FSN-1400 and Control Panel** — This procedure updates both the control panel and the FSN-1400. A “new” software update file is required.
 - **Update FSN-1400 only** — This procedure updates the FSN-1400 software to match the control panel software. Use this procedure if the label “**Mismatch**” appears in the **System Status Table** on the **System Menu**.
- For a “new” software update, following is an overview of the steps required:
1. Verify your hardware. Refer to the “[Hardware Requirements](#)” section below.
 2. Download the appropriate “update” file. Refer to the “[Downloading Software](#)” section on page 303.
 3. Transfer the software to a USB thumb drive.
 4. Insert the USB drive into the control panel's top USB port.
 5. In the **Navigation Bar**, press **{System}** to display the **System Menu**.
 6. Press **{Software}** to display the **Software Menu**.
 7. To update the control panel, refer to the “[Updating Control Panel Software](#)” section on page 305.
 8. To update the FSN-1400, refer to the “[Updating FSN-1400 Software](#)” section on page 306.

Hardware Requirements

The following hardware items are required for upgrading FSN Series software:

- IBM compatible computer with an available Ethernet port and USB port.
- USB thumb drive, minimum 1 GB.
- Internet connection.

Downloading Software

Two different methods can be used to download FSN Series software:

- [Via FTP Site](#)
- [Via Web Site](#)

Via FTP Site

Barco Folsom's FTP site address is: <ftp.folsom.com>

■ To download software from the FTP site:

1. Create a target folder on your PC (e.g., FSN Series), and ensure that your PC is connected to the internet.
2. Log on to the FTP site using one of the following methods:
 - a. If you are using an FTP client such as **Ipswitch WS_FTP Professional**, log on to our site as follows:
 - **FTP Site:** ftp.folsom.com
 - **User name:** anonymous
 - **Password:** your email address

▲ **Example:** johndoe@somecompany.com
 - b. If you are using a web browser, point the browser to:
ftp://ftp.folsom.com

Note

If you are using **Internet Explorer 7**, after entering the FTP address, click **Page**, and then click **Open FTP Site in Windows Explorer**.

- c. To use Windows Explorer, right-click the **Start** button, then click **Explore**. When the Explorer window opens, enter the FTP site in the address bar.
3. On the FTP site, navigate to the following directory:
ftp://ftp.folsom.com/Image Processing/FSN/
 4. Transfer the following file to the target folder on your PC:
FSN_[revision #].tar.gz
 5. Continue with the "[Updating Control Panel Software](#)" section on page 305.

Via Web Site

Barco's web site address is: www.barco.com

■ To download software from the web site:

1. Create a target folder on your PC (e.g., FSN Series), and ensure that your PC is connected to the internet.
2. On the web, navigate to:
http://www.barco.com

8. Updating Software

Downloading Software

3. Navigate to the “**Presentation Systems**” home page:
<http://www.barco.com/corporate/en/products/>
4. Log in to the **Barco Partnerzone** using your **User Name** and **Password**.
5. Locate the “**Software Updates**” section, and click “**more software updates.**”
6. Click the **Folsom Image Processing** tab.
7. Scroll to the **Presentation Systems/Switchers** section, and click the link for the **FSN Series** switcher.
8. Click the link for the latest version of code:
FSN_[revision #].tar.gz
9. Click the **Download** button.
10. When the **File Download Dialog** appears, click **Save**.
11. When the **Save As Dialog** appears, navigate to the target folder on your PC, and then click **Save**.
12. Continue with the “**[Updating Control Panel Software](#)**” section on page 305.

Updating Control Panel Software

- Use the following steps to update control panel software.
 1. Ensure that the correct version of software has been properly downloaded from the website or the FTP site. If not, refer to the "[Downloading Software](#)" section on page 303 for instructions.
 2. On your PC or laptop, transfer the software to a USB thumb drive.

Important

Place the FSN software file at the drive's root. Ensure that only one FSN software file is present at the root.

3. Insert the USB drive into the control panel's top USB port.
4. In the **Navigation Bar**, press **{System}** to display the **System Menu**.
5. Press **{Software}** to display the **Software Menu**.
6. Note the current software version in the **Status Table**.
7. Press **{Update Software}**.
8. In the confirmation pop-up, press **{Yes}**. A pop-up alerts you that the update is in progress.
9. When the file has been fully transferred, press **{Restart}**. A pop-up alerts you that the system is re-initializing.
10. Unplug the USB drive.
11. When the pop-up clears, you can continue with the "[Updating FSN-1400 Software](#)" section on page 306.



Update
Software

8. Updating Software

Updating FSN-1400 Software

Updating FSN-1400 Software

This procedure updates the FSN-1400 software to match the control panel software. This step is required:

- After installing a new software file in the control panel.
 - If the label “Mismatch” appears in the **System Status Table** on the **System Menu**.
- Use the following steps to update FSN-1400 software.
1. Ensure that the correct version of software has been installed in the control panel. Refer to the “[Updating Control Panel Software](#)” section on page 305 for details.
 2. If you are not already there, navigate to the **Software Menu**:
 - ~ In the **Navigation Bar**, press **{System}** to display the **System Menu**.
 - ~ Press **{Software}** to display the **Software Menu**.
 3. Press **{Update FSN-1400}**.
 4. In the confirmation pop-up, press **{Yes}**. A pop-up alerts you that the update is in progress.
 5. When prompted in the pop-up, press **{Restart}** to restart the system.

Update
FSN-1400

Important

If desired, press **{Close}** to clear the pop-up and display the **Software Menu**. This action will not terminate the “restart” procedure.

If the system fails to restart after several minutes, you can return to the **System Menu** and check the **Communications Setup Menu**. In Chapter 5, refer to the “[Communications Setup Menu](#)” section on page 175 for details.

6. When the pop-up clears, FSN-1400 software matches the control panel software, and your system is fully updated and ready for operation.

Conditional Updates

Two conditional updates may be required if a software mis-match occurs in either the Touch Screen or the control panel’s flash memory. If there is no mis-match, the buttons do not appear.

Update
Touch
Screen

Update
FSN-150
Flash

- Press **{Update Touch Screen}** to update the software in the **Touch Screen**, if required. Follow the directions on screen to complete the update.
- Press **{Update FSN-150 Flash}** to update the control panel’s flash memory, if required. Follow the directions on screen to complete the update.

A. Specifications

In This Appendix

This appendix provides detailed technical specifications for the FSN Series. The following topics are discussed:

- [System Specifications Overview](#)
- [Reference Video Input Specifications](#)
- [Physical and Electrical Specifications](#)
- [Communications Specifications](#)
- [Agency Specifications](#)
- [Cable Specifications](#)
- [Delay Specifications](#)
- [Pinouts](#)
- [Input and Output Format Tables](#)

A. Specifications

System Specifications Overview

System Specifications Overview

The table below provides an overview of all FSN Series specifications.

Table A-1. FSN Series Specifications Overview

System Card	Type	Format
NIC	8 x SDI inputs	292M (HDTV), 259M-C (NTSC/PAL)
UIC	2 x SDI inputs	292M (HDTV), 259M-C (NTSC/PAL)
	2 x DVI inputs	DDWG 1.0
	2 x Analog inputs	RGBHV/RGBS/RGsB, YPbPr video, S-video, Composite
M/E	1.5 M/E:13x for Program, Preset, Clean and Aux SDI Outputs	292M (HDTV), 259M-C (NTSC/PAL)
	Cut and Fill SDI Inputs	292M (HDTV), 259M-C (NTSC/PAL)
SYS	SDI ref Input/Loop/Output	SMPTE 292M(HDTV), 259M-C(NTSC/PAL)
	GPIO	4 input (GPI), 8 output (GPO)
	Tally outputs	24 contacts
	2 x Serial Com	RS-232
	Ethernet	10/100 Base-T on RJ-45

Reference Video Input Specifications

On the **Reference and Output Setup Menu**, when the **{Reference Input}** button is set to **External**, one of three external reference signals can be connected:

- SMPTE bi-level sync
- Tri-level sync
- Black burst

Following is a list of allowed frame rates for the video reference input:

- 25 Hz
- 29.97 Hz
- 50 Hz
- 59.94 Hz

The table below shows the valid video reference frame rates for each FSN-1400 native video format.

Important

Interlaced native formats are required to use interlaced video references. 30 Hz frame rate, 60 Hz frame rate and computer syncs are NOT supported video references.

Table A-2. Valid video reference frame rates for native video formats

		Native Video Formats					
		720 x 487i @ 29.97 Hz	720 x 576i @ 25 Hz	1920 x 1080i @ 29.97 Hz	1920 x 1080i @ 25 Hz	1280 x 720p @ 59.94 Hz	1280 x 720p @ 50 Hz
Valid Video Reference Frame Rates	29.97 Hz		25 Hz	29.97 Hz	25 Hz	29.97 Hz	25 Hz
						59.94 Hz	50 Hz

A. Specifications

Physical and Electrical Specifications

Physical and Electrical Specifications

FSN-1400

The table below lists FSN-1400 physical and electrical specifications.

Table A-3. FSN-1400 Physical and Electrical Specifications

Parameter	Detail	Specification
Power	Connector x 2	Standard IEC, integral on/off switch
		100-240 VAC, 50-60 Hz, 800 watts max. (each supply)
Dimensions	RU	6
	Height	10.5 inches (26.67 cm)
	Width	19.00 inches (48.26 cm)
	Depth	20.75 inches (52.70 cm)
Weight		58.0 lbs (26.5 kg)
Temperature		0-40 degrees C
Humidity		0-95% non-condensing

FSN-150

The table below lists FSN-150 physical and electrical specifications.

Table A-4. FSN-150 Physical and Electrical Specifications

Parameter	Detail	Specification
Power	Connector x 1	Standard IEC, integral on/off switch
		100-240 VAC, 50-60 Hz, 240 watts max.
Dimensions	Height	7.00 inches (17.78 cm)
	Width	22.00 inches (55.88 cm)
	Depth	24.00 inches (60.96 cm)
Weight		26.0 lbs (11.79 kg)
Temperature		0-40 degrees C
Humidity		0-95% non-condensing

Touch Screen Display

The table below lists Touch Screen Display physical and electrical specifications.

Table A-5. Touch Screen Display Physical and Electrical Specifications

Parameter	Detail	Specification
Power		1.5 amps at 12 V, 18 watts
Dimensions	Height	11.57 inches (29.38 cm)
	Width	9.65 inches (24.51 cm)
	Depth (with knobs)	2.67 inches (6.78 cm)
	Depth (without knobs)	2.00 inches (5.08 cm)
Weight		5.0 lbs (2.26 kg)
Temperature		0-40 degrees C
Humidity		0-95% non-condensing

Touch Screen Display Stand

The table below lists Touch Screen Display Stand physical specifications.

Table A-6. Touch Screen Display Stand Physical and Electrical Specifications

Parameter	Detail	Specification
Stand Dimensions	Height	12.8 inches (32.51 cm)
	Width	14.0 inches (35.56 cm)
	Depth	9.8 inches (24.89 cm)
Weight		8.0 lbs (3.62 kg)

A. Specifications

Communications Specifications

Communications Specifications

The table below lists FSN Series communications specifications.

Table A-7. FSN Series Communications Specifications

Parameter	Detail	Specification
FSN-1400	Ethernet	10/100 Mbps
	RS-232 Diagnostic	8, N, 1 @ 115.2 kbaud
FSN-150	Ethernet Port 1	1 Gbit/s
	Ethernet Port 2	1 Gbit/s
	USB	High Speed USB 2.0

Agency Specifications

The table below lists FSN Series agency specifications.

Table A-8. FSN Series Agency Specifications

Parameter	Detail	Specification
Agency Specifications	EMI/EMC	EN55103-1 E4, EN55103-2, FCC Part 15 Subpart B Class A
	Safety	EN 60950 Class 1

Cable Specifications

The table below lists the recommended specifications for digital video cable.

Table A-9. Digital video cable recommended specifications

Parameter	Detail	Specification
Digital video cable	Belden 1694A	300m at 270Mbps (SD-SDI)
	Belden 1694A	100m at 1.485Gbps and 1.485/1.001Gbps (HD-SDI)

Delay Specifications

The following specifications are provided in this section:

- [NIC Delay](#)
- [UIC Delay](#)

NIC Delay

The table below summarizes the amount of delay incurred for a selected native input in each of the three sync modes:

Table A-10. Native input delay for selected sync modes

Sync Mode	Native Input Delay	
	Input video is $\leq \pm 1/2$ line of reference	Input video is $\geq \pm 1/2$ line of reference
Auto	Minimum delay	1 frame delay *
Frame Sync	1 frame delay	1 frame delay
Minimum Delay	Minimum delay	Invalid video behavior **

* In **Auto** mode, if the system switches to **Frame Sync**, the system stays in the mode. To return to **Minimum Delay** mode, press the **{Refresh Sync}** button.

** Invalid video will either tear, or go to black, depending on how the **Black on Invalid Video** function is set on the **User Preferences Menu**.

UIC Delay

The table below summarizes the amount of delay incurred for a selected universal input:

Table A-11. Universal input delay

Universal Input Delay	Input video is $\leq \pm 1/2$ line of reference	Input video is $\geq \pm 1/2$ line of reference
	1 frame delay	2 frames delay

A. Specifications

Pinouts

Pinouts

The following topics are discussed in this section:

- [Analog 15-pin D Connector](#)
- [DVI-I Connector](#)
- [Ethernet Connector](#)
- [Serial Connectors](#)
- [Tally Connector](#)
- [GPIO Connector](#)

Analog 15-pin D Connector

The figure below illustrates the analog 15-pin D connector:

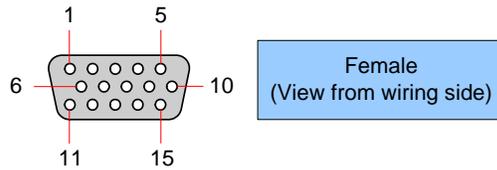


Figure A-1. Analog 15-pin D connector

The table below lists Analog 15-pin D connector pinouts.

Table A-12. Analog 15-pin D Connector Pinouts

Pin	Signal	Pin	Signal
1	Red	9	+5V Power
2	Green	10	GND
3	Blue	11	
4		12	DDC Data
5		13	H Sync or C Sync
6	Red return	14	V Sync
7	Green return	15	DDC Clock
8	Blue return		

DVI-I Connector

The figure below illustrates the DVI-I connector:

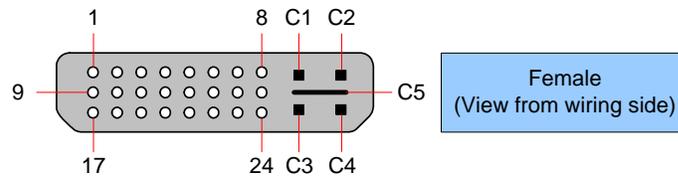


Figure A-2. DVI-I connector

The table below lists DVI-I connector pinouts. Please note:

- T.M.D.S = Transition Minimized Differential Signal
- DDC = Display Data Channel

Table A-13. DVI-I Connector Pinouts

Pin	Signal	Pin	Signal
1	T.M.D.S. Data 2-	13	T.M.D.S. Data 3+
2	T.M.D.S. Data 2+	14	+5V Power
3	T.M.D.S. Data 2/4 Shield	15	ground (for +5V)
4	T.M.D.S. Data 4-	16	Hot Plug Detect
5	T.M.D.S. Data 4+	17	T.M.D.S. Data 0-
6	DDC Clock	18	T.M.D.S. Data 0+
7	DDC Data	19	T.M.D.S. Data 0/5 Shield
8	Analog Vertical Sync	20	T.M.D.S. Data 5-
9	T.M.D.S. Data 1-	21	T.M.D.S. Data 5+
10	T.M.D.S. Data 1+	22	T.M.D.S. Clock Shield
11	T.M.D.S. Data 1/3 Shield	23	T.M.D.S. Clock +
12	T.M.D.S. Data 3-	24	T.M.D.S. Clock -
MicroCross Pins			
C1	Analog Red Video	C4	Analog Horizontal Sync
C2	Analog Green Video	C5	Analog Common Ground Return
C3	Analog Blue Video		

Note

Pins **C1**, **C2**, **C3**, **C4**, and **C5** are not used on the FSN-1400.

A. Specifications

Pinouts

Ethernet Connector

The figure below illustrates the Ethernet connector:

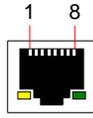


Figure A-3. Ethernet connector

The table below lists Ethernet connector pinouts.

Table A-14. Ethernet Connector Pinouts

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

Serial Connectors

The figure below illustrates the 9-pin D RS-232 serial connector:

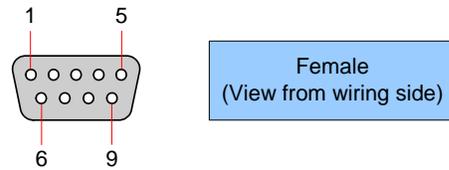


Figure A-4. Serial 9-pin D connector

The table below lists 9-pin D connector pinouts for the **System Card**'s front serial RS-232 diagnostic port:

Table A-15. System Card 9-pin D Front Diagnostic Port Pinouts

Pin	Signal	Pin	Signal
1	CD - Carrier Detect	6	DTR - Data Terminal Ready
2	TXD - Transmitted Data	7	CTS - Clear To Send
3	RXD - Received Data	8	RTS - Request To Send
4	DSR - Data Set Ready	9	Unused
5	GND - Signal Ground		

The table below lists 9-pin D connector pinouts for the **System Card**'s two rear serial ports:

Table A-16. System Card 9-pin D Rear Serial Port Pinouts

Pin	Signal	Pin	Signal
1	GND - Signal Ground	6	GND - Signal Ground
2	RX-	7	RX+
3	TX+	8	TX-
4	Ground	9	Ground
5	Unused		

A. Specifications

Pinouts

Tally Connector

The figure below illustrates the **Tally** connector.

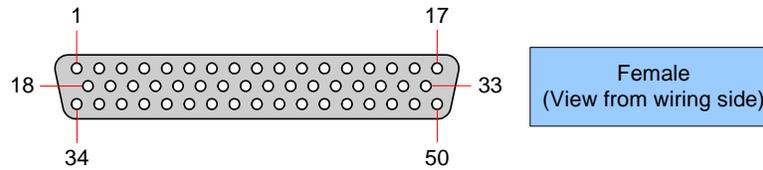


Figure A-5. Tally connector

The table below lists **Tally** connector pinouts.

Table A-17. Tally connector pinouts

Pin	Signal	Pin	Signal
38	Tally 1 NO	5	Tally 1 C
22	Tally 2 NO	39	Tally 2 C
6	Tally 3 NO	23	Tally 3 C
40	Tally 4 NO	7	Tally 4 C
24	Tally 5 NO	41	Tally 5 C
8	Tally 6 NO	25	Tally 6 C
42	Tally 7 NO	9	Tally 7 C
26	Tally 8 NO	43	Tally 8 C
10	Tally 9 NO	27	Tally 9 C
34	Tally 10 NO	1	Tally 10 C
35	Tally 11 NO	18	Tally 11 C
19	Tally 12 NO	2	Tally 12 C
36	Tally 13 NO	3	Tally 13 C
37	Tally 14 NO	20	Tally 14 C
21	Tally 15 NO	4	Tally 15 C
44	Tally 16 NO	11	Tally 16 C
45	Tally 17 NO	28	Tally 17 C
29	Tally 18 NO	12	Tally 18 C
46	Tally 19 NO	13	Tally 19 C
47	Tally 20 NO	30	Tally 20 C
31	Tally 21 NO	14	Tally 21 C
48	Tally 22 NO	15	Tally 22 C
32	Tally 23 NO	49	Tally 23 C
16	Tally 24 NO	33	Tally 24 C
50	Ground	17	Ground

GPIO Connector

The figure below illustrates the **GPIO** connector.

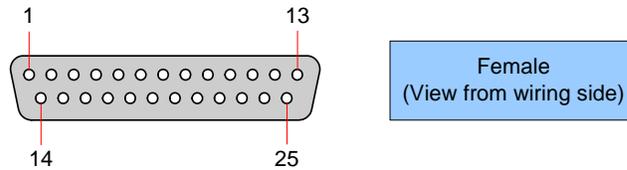


Figure A-6. GPIO connector

The table below lists **GPIO** connector pinouts.

Table A-18. GPIO Connector Pinouts

Pin	Signal	Pin	Signal
1	Output 1 (Collector)	14	Output 1 (Emitter)
2	Output 2 (Collector)	15	Output 2 (Emitter)
3	Output 3 (Collector)	16	Output 3 (Emitter)
4	Output 4 (Collector)	17	Output 4 (Emitter)
5	Output 5 (Collector)	18	Output 5 (Emitter)
6	Output 6 (Collector)	19	Output 6 (Emitter)
7	Output 7 (Collector)	20	Output 7 (Emitter)
8	Output 8 (Collector)	21	Output 8 (Emitter)
9	Input 1	22	Input 2
10	Input 3	23	Input 4
11	Unused	24	Unused
12	Unused	25	Unused
13	Ground		

The figure below illustrates a generic GPO connection, which could be used for any GPO circuit listed above:

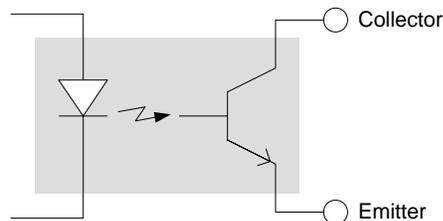


Figure A-7. Generic GPO connection

A. Specifications

Input and Output Format Tables

Input and Output Format Tables

The following tables are provided in this section:

- [UIC Input Formats](#)
- [NIC Input Formats, UIC Input Formats \(BNC\)](#)
- [Output Formats](#)

UIC Input Formats

The table below lists the available input formats supported on the HD-15 and DVI-I connectors for the UIC.

Table A-19. UIC Input formats

Format	Color Space
NTSC (480i)	SMPTE, RGB
720x480p	SMPTE, RGB
PAL (576i)	SMPTE, RGB
720x575p	SMPTE, RGB
640x480 @59.94	RGB
640x480 @60	RGB
640x480 @72	RGB
640x480 @75	RGB
640x480 @85	RGB
800x600 @50	RGB
800x600 @56	RGB
800x600 @59.94	RGB
800x600 @60	RGB
800x600 @72	RGB
800x600 @75	RGB
800x600 @85	RGB
1024x768 @47.95	RGB
1024x768 @48	RGB
1024x768 @50	RGB
1024x768 @59.94	RGB
1024x768 @60	RGB
1024x768 @70	RGB

Table A-19. UIC Input formats (Continued)

Format	Color Space
1024x768 @71.93	RGB
1024x768 @72	RGB
1024x768 @75	RGB
1024x768 @85	RGB
1152x864 @75	RGB
1280x768 @47.95	RGB
1280x768 @48	RGB
1280x768 @50	RGB
1280x768 @59.94	RGB
1280x768 @75	RGB
1280x960 @50	RGB
1280x960 @59.94	RGB
1280x960 @60	RGB
1280x960 @85	RGB
1280x1024 @47.95	RGB
1280x1024 @48	RGB
1280x1024 @50	RGB
1280x1024 @59.94	RGB
1280x1024 @60	RGB
1280x1024 @71.93	RGB
1280x1024 @72	RGB
1280x1024 @75	RGB
1280x1024 @85	RGB
1364x768 @47.95	RGB
1364x768 @48	RGB
1364x768 @50	RGB
1364x768 @59.94	RGB
1364x768 @75	RGB
1364x1024 @47.95	RGB
1364x1024 @48	RGB
1364x1024 @50	RGB
1364x1024 @59.94	RGB
1364x1024 @75	RGB

A. Specifications

Input and Output Format Tables

Table A-19. UIC Input formats (Continued)

Format	Color Space
1366x768 @50	RGB
1366x768 @59.94	RGB
1400x1050 @48	RGB
1400x1050 @50	RGB
1400x1050 @59.94	RGB
1400x1050 @60	RGB
1400x1050 @75	RGB
1536x768 @50	RGB
1536x768 @59.94	RGB
1680x1050 @60	RGB
1600x1200 @47.95	RGB
1600x1200 @48	RGB
1600x1200 @50	RGB
1600x1200 @59.94	RGB
1600x1200 @60	RGB
1280x720p @48	SMPTE, RGB
1280x720p @50	SMPTE, RGB
1280x720p @59.94	SMPTE, RGB
1280x720p @60	SMPTE, RGB
1920x1080p @23.98	SMPTE, RGB
1920x1080p @24	SMPTE, RGB
1920x1080p @25	SMPTE, RGB
1920x1080p @29.97	SMPTE, RGB
1920x1080p @30	SMPTE, RGB
1920x1080p @48	SMPTE, RGB
1920x1080p @50	SMPTE, RGB
1920x1080p II @50	SMPTE, RGB
1920x1080p @59.94	SMPTE, RGB
1920x1080p @60	SMPTE, RGB
1920x1080sF@23.98	SMPTE, RGB
1920x1080sF@24	SMPTE, RGB
1920x1080i @50	SMPTE, RGB
1920x1080i @59.94	SMPTE, RGB

Table A-19. UIC Input formats (Continued)

Format	Color Space
1920x1080i @60	SMPTE, RGB
2048x1080p @48	RGB
2048x1080p @50	RGB
2048x1080p II @50	RGB

A. Specifications

Input and Output Format Tables

NIC Input Formats, UIC Input Formats (BNC)

The table below lists the available input formats supported on the NIC, and the available input formats supported on the UIC BNC connector.

Table A-20. NIC Input Formats

Standard	Format
SMPTE 259M-C	720 x 487i @ 59.94
	720 x 576i @ 50
SMPTE 292M	1920 x 1080i @ 59.94
	1920 x 1080i @ 50
	1920 x 1080PsF @ 29.97
	1920 x 1080PsF @ 25
	1280 x 720p @ 59.94
	1280 x 720p @ 50

Output Formats

The table below lists the available output formats supported on the M/E card.

Table A-21. M/E Card Output Formats

Standard	Format
SMPTE 259M-C	720 x 487i @ 59.94
	720 x 576i @ 50
SMPTE 292M	1920 x 1080i @ 59.94
	1920 x 1080i @ 50
	1280 x 720p @ 59.94
	1280 x 720p @ 50

B. Contact Information

In This Appendix

The following topics are discussed in this Appendix:

- [Warranty](#)
 - [Return Material Authorization \(RMA\)](#)
 - [Contact Information](#)
-

Warranty

All video products are designed and tested to the highest quality standards and are backed by a full 3-year parts and labor warranty. Warranties are effective upon delivery date to customer and are non-transferable. Barco warranties are only valid to the original purchaser/owner. Warranty related repairs include parts and labor, but do not include faults resulting from user negligence, special modifications, lightning strikes, abuse (drop/crush), and/or other unusual damages.

The customer shall pay shipping charges when unit is returned for repair. Barco will cover shipping charges for return shipments to customers.

Return Material Authorization (RMA)

In the unlikely event that a product is required to return for repair, please call the following number and ask for a Sales Engineer to receive a Return Merchandise Authorization number (RMA).

- (888) 414-7226

RMA Conditions are listed below:

- Prior to returning any item, you must receive a Return Merchandise Authorization (RMA) number.
- All RMA numbers must appear on their return-shipping label.
- RMA numbers are valid for ten (10) days from issue date.
- All shipping and insurance charges on all RMAs must be prepaid by the customer

B. Contact Information

Contact Information

Contact Information

Barco, Inc.

11101 Trade Center Drive
Rancho Cordova, California 95670
USA

- Phone: (916) 859-2500
- Fax: (916) 859-2515
- Website: www.barco.com

Sales Contact Information

- Direct: (916) 859-2505
- Toll Free: (888) 414-7226
- E-mail: folsomsales@barco.com

Barco N.V.

Noordlaan 5
8520 Kuurne
BELGIUM

- Phone: +32 56.36.82.11
- Fax: +32 56.35.16.51
- Website: www.barco.com

Technical Support Information

- Tech Line: (866) 374-7878 — 24 hours per day, 7 days per week
- E-mail: folsomsupport@barco.com

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