Ross Video Limited

Installation Guide
Volume I

Software Issue: 18

ROSS
Live Production Technology™

Synergy Series • Installation Guide Volume I

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Trademarks

Important Regulatory and Safety Notices to Service Personnel

Before using this product and any associated equipment, refer to the "**Important Safety Instructions**" listed below to avoid personnel injury and to prevent product damage.

Product may require specific equipment, and/or installation procedures to be carried out to satisfy certain regulatory compliance requirements. Notices have been included in this publication to call attention to these specific requirements.

Symbol Meanings

 **Protective Earth**	This symbol identifies a Protective Earth (PE) terminal, which is provided for connection of the supply system's protective earth (green or green/yellow) conductor.
	This symbol on the equipment refers you to important operating and maintenance (servicing) instructions within the Product Manual Documentation. Failure to heed this information may present a major risk of damage or injury to persons or equipment.
 **Warning**	The symbol with the word **"Warning"** within the equipment manual indicates a potentially hazardous situation, which if not avoided, could result in death or serious injury
 **Caution**	The symbol with the word "**Caution**" within the equipment manual indicates a potentially hazardous situation, which if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.
 **Notice**	The symbol with the word "**Notice**" within the equipment manual indicates a situation, which if not avoided, may result in major or minor equipment damage or a situation, which could place the equipment in a non-compliant operating state.
 **Warning Hazardous Voltages**	This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product enclosure that may be of sufficient magnitude to constitute a risk of shock to persons.
 **ESD Susceptibility**	This symbol is used to alert the user that an electrical or electronic device or assembly is susceptible to damage from an ESD event.

Important Safety Instructions

 **Warning**

1) Read these instructions.
2) Keep these instructions.
3) Heed all warnings.
4) Follow all instructions.
5) Do not use this apparatus near water.
6) Clean only with a dry cloth.
7) Do not block any ventilation openings. Install in accordance with manufacturer's instructions.

8) Do not install near heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The third prong is provided for your safety. If the provided plug does not fit in to your outlet, consult an electrician for replacement of the obsolete outlet.

10) Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

11) Only use attachments/accessories specified by the manufacturer.

12) Unplug this apparatus during lightning storms or when unused for long periods of time.

13) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when the power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

14) Do not expose this apparatus to dripping or splashing, and ensure that no objects filled with liquids, such as vases, are placed on the apparatus.

15) To completely disconnect this apparatus from the AC Mains, disconnect the power supply cord plug from the AC receptacle.

16) The mains plug of the power supply cord shall remain readily operable.

17) The SD (Video Production Switcher) chassis is to be rack mounted only.

Warning

18) **Indoor Use**: **WARNING**: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

19) The safe operation of this product requires that a protective earth connection be provided. A grounding conductor in the equipment's supply cord provides this protective earth. To reduce the risk of electrical shock to the operator and service personnel, this ground conductor must be connected to an earthed ground.

20) **WARNING**: This apparatus, when equipped with multiple power supplies, can generate high leakage currents. To reduce the risk of electric shock, ensure that each individual supply cord is connected to its own separate branch circuit with an earth connection.

21) **CAUTION**: These service instructions are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. (Installation Guide only.)

Caution

22) This apparatus contains a Lithium battery, which if replaced incorrectly, or with an incorrect type, may cause an explosion. Replace only with the same type. Dispose of used batteries according to the manufacturer’s instruction.

23) Service barriers within this product are intended to protect the operator and service personnel from hazardous voltages. For continued safety, replace all barriers after servicing.

24) Certain parts of this equipment still present a safety hazard with the power switch in the OFF position. To avoid electrical shock, disconnect all A/C power cords from the chassis' rear appliance connectors before servicing.

25) This product contains safety critical parts, which, if incorrectly replaced, may present a risk of fire or electrical shock. Components contained within the product’s power supplies and power supply area are not intended to be customer-serviced and should be returned to the factory for repair.

26) To reduce the risk of fire, replacement fuses must be the same type and rating.

27) Use only power cords specified for this product and certified for the country of use. Refer to the Product Power Cord Requirement section that follows.

28) The safe operation of this equipment requires that the User heed and adhere to all installation and servicing instruction contained within the equipment's manuals.

Product Power Cord Requirements

Caution

North American Line Voltages 100 - 120 Volt

This product is supplied with certified 10A/125V SVT type supply cords. Conductors are color coded white (neutral), black (line) and green or green/yellow (ground).

Operation of this equipment at line voltages exceeding 130V requires that alternative supply cords with appropriate voltage and current ratings be used.

International Line Voltages 200 - 240 Volts

This product has been designed for use with certified IEC 320- C13 10A/250V - **H03 VV-F3G 1.00mm^2** type line cord.

International product orders are supplied with a certified 10A/250V line cords, utilizing a molded 3-pin IEC 320-C13 type connector at one end and stripped conductors on the other. One line cord is provided. Conductors are CEE color coded; blue (neutral), brown (line), and green/yellow (ground).

Installation by a qualified electrician, of an appropriately approved A/C wall plug certified for the country of use, is required.

Alternatively, other IEC 320 C-13 type power cords may be used, provided that they meet the necessary safety certification requirements for the country in which they are to be used. Refer to the correctly specified line cord above.

EMC Notices

United States of America

FCC Part 15

This equipment has been tested and found to comply with the limits for a class A Digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Notice

Changes or modifications to this equipment not expressly approved by Ross Video Limited could void the user's authority to operate this equipment.

CANADA

This Class "A" digital apparatus complies with Canadian ICES-003.

Cet appariel numerique de la classe "A" est conforme a la norme NMB-003 du Canada.

EUROPE

This equipment is in compliance with the essential requirements and other relevant provisions of **CE Directive 93/68/EEC**.

INTERNATIONAL

This equipment has been tested to **CISPR 22:1997** along with amendments **A1:2000** and **A2:2002**, and found to comply with the limits for a Class A Digital device.

Notice

This is a Class A product. In domestic environments, this product may cause radio interference, in which case the user may have to take adequate measures.

General Handling Guidelines

- Careful handling, using proper ESD precautions, must be observed.
- Power down the system before PCB removal.

A Word About Static Discharge

Throughout the many procedures in this guide, please observe all static discharge precautions.

Notice

Avoid handling the switcher circuit boards in high static environments such as carpeted areas, and when synthetic fiber clothing is worn. Touch the frame to dissipate static charge before removing boards from the frame, and exercise proper grounding precautions when working on circuit boards.

Warranty and Repair Policy

Ross Video Limited (Ross) warrants its switchers and related options, to be free from defects under normal use and service for a period of THREE YEARS from the date of shipment. Fader handle assemblies are warranted for the life of the product. If an item becomes defective within the warranty period Ross will repair or replace the defective item, as determined solely by Ross.

Warranty repairs will be conducted at Ross, with all shipping FOB Ross dock. If repairs are conducted at the customer site, reasonable out-of-pocket charges will apply. At the discretion of Ross, and on a temporary loan basis, plug in circuit boards or other replacement parts may be supplied free of charge while defective items undergo repair. Return packing, shipping, and special handling costs are the responsibility of the customer.

Software upgrades for switchers may occur from time to time, and are determined by Ross Video. The upgrades are posted on the Ross Video website, and are free of charge for the life of the switcher.

This warranty is void if products are subjected to misuse, neglect, accident, improper installation or application, or unauthorized modification.

In no event shall Ross Video Limited be liable for direct, indirect, special, incidental, or consequential damages (including loss of profit). Implied warranties, including that of merchantability and fitness for a particular purpose, are expressly limited to the duration of this warranty.

This warranty is TRANSFERABLE to subsequent owners, subject to Ross' notification of change of ownership.

Environmental Information

The equipment that you purchased required the extraction and use of natural resources for its production. It may contain hazardous substances that could impact health and the environment.

To avoid the potential release of those substances into the environment and to diminish the need for the extraction of natural resources, Ross Video encourages you to use the appropriate take-back systems. These systems will reuse or recycle most of the materials from your end-of-life equipment in an environmentally friendly and health conscious manner.

The crossed-out wheeled bin symbol invites you to use these systems.

If you need more information on the collection, reuse, and recycling systems, please contact your local or regional waste administration.

You can also contact Ross Video for more information on the environmental performances of our products.

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Contents

Volume I

BNC Configuration and Check 6

Basic Communications Setup 7

Custom Control Basics 8

Additional Installation Setups 9

Completing Setup 10

Still Stores 11

Editors/OverDrive 12

Volume II

Introduction

A Word of Thanks

Congratulations on choosing the Ross **Synergy SD Series** digital video production switchers. You have purchased the power and versatility of a digital Multi-Level Effects (MLE) switcher that is ready to take on all creative challenges in today's competitive broadcast environment. You will be pleased at how easily your Synergy switcher fits into your overall working environment.

About This Guide

This guide covers the installation of the following Synergy switchers:

- **Synergy 2 SD** (2 MLE)
- **Synergy 3 SD** (3 MLE)
- **Synergy 4 SD** (4 MLE)

The guide takes you through physical installation, system configuration, and the steps required to integrate your switcher with peripheral equipment.

Volume I

The following chapters are included:

- The **Front Matter** of this guide includes information on the warranty and repair policy, and all regulatory and safety notices and compliance issues.
- **Chapter 1 —** "**Introduction**" summarizes the guide and describes the components and features that comprise the Synergy system.
- **Chapter 2 —** "**Installation**" provides instructions for installing Synergy switcher hardware.
- **Chapter 3 —** "**Preliminary Cabling and Check**" outlines procedures for making basic control panel, frame, reference, and monitor connections. A preliminary functional check procedure is provided.
- **Chapter 4 —** "**Preliminary Video Installation**" provides instructions for connecting video and key signals to all areas of the switcher.
- **Chapter 5 —** "**Using the Menu System**" provides an introduction to the Synergy switcher's menu system.
- **Chapter 6 —** "**BNC Configuration and Check**" provides instructions for configuring and checking your BNC inputs.
- **Chapter 7 —** "**Basic Communications Setup**" provides instructions for setting up communications parameters with peripheral equipment such as the Remote Port Expander, and protocols such as the Peripheral Interface II Protocol.
- **Chapter 8 —** "**Custom Controls Basics**" provides instructions for setting up custom control banks, and programming and naming your custom control buttons.
- **Chapter 9 —** "**Additional Installation Setups**" provides instructions for additional setup procedures such as setting up Aux Buses, outputs, clean feed, GPIs, DSK, favorite CG, and Tallies.
- **Chapter 10 —** "**Completing Setup**" provides instructions for storing switcher configurations to a USB key, setting up Preview Overlay Parameters, and resetting factory defaults.
- **Chapter 11 —** "**Still Stores**" provides instructions for connecting, setting up, and operating a Still Store with your Synergy switcher.
- **Chapter 12 —** "**Editors/OverDrive**" provides instructions for connecting, setting up, and operating an Editor, or the OverDrive Production Control System, with your Synergy switcher.

- **Chapter 13** — "**External DVEs**" provides instructions for connecting and setting up a Digital Video Effects system (DVE) with a Synergy switcher.
- **Glossary —** The **Glossary** provides a reference list of important switching and video terms used throughout this guide.
- **Index** — An **Index** is also provided for your reference.

Volume II

The following chapters are included:

- **Chapter 14** — "**Routers**" provides instructions for connecting and setting up a Router with your Synergy switcher.
- **Chapter 15** — "**Character Generators**" provides instructions for connecting and setting up a Character Generator with your Synergy switcher.
- **Chapter 16** — "**VTRs (Betacam)**" provides instructions for connecting and setting up a VTR, DDR, or Video Server using the Sony Betacam protocol, with your Synergy switcher.
- **Chapter 17** — "**Audio Servers**" provides instructions for connecting and setting up an Audio Server protocol with your Synergy switcher.
- **Chapter 18** — "**Video Servers (VDCP)**" provides instructions for connecting and setting up a VTR, DDR, or Video Server using the VDCP protocol, with your Synergy switcher.
- **Chapter 19** — "**Robotic Cameras**" provides instructions for connecting and setting up a Robotic Camera with your Synergy switcher.
- **Chapter 20** — "**Monitor Walls**" provides instructions for connecting, setting up, and operating a Monitor Wall with your Synergy switcher.
- **Chapter 21** — "**Audio Mixers**" provides instructions for setting up and operating an Audio Mixer with your Synergy switcher..
- **Appendix A** — "**Specifications**" provides technical specifications and connector pinout diagrams.
- **Appendix B** — "**Diagnostics**" provides information on the switcher's full array of diagnostic functions.
- **Appendix C — "Hardware Options**" provides instruction for installing a variety of hardware options, such as the **Squeeze & Tease 3D**, the **Ultimatte Insider** and the **Dual Aspectizer**.
- **Appendix D** — "**Frame Modifications**" provides instructions on modifications to the frame processor board when the switcher is used with the DSK 3/4 (**CDK-111A-M**) option.
- **Appendix E** — "**Switcher Installation Worksheets**" gathers all the various blank worksheets for planning and recording switcher installation and wiring connections into one place for your convenience.
- **Appendix F** — "**Custom Device Serial Protocols**" provides information and procedures for setting up a custom device and programming a serial protocol to communicate with said device from a Synergy remote port.
- **Glossary** — The **Glossary** provides a reference list of important switching and video terms used throughout this guide.

- **Index** — An **Index** is also provided for your reference.

If, at any time, you have a question pertaining to the installation of your Ross Synergy switcher, please contact us at the numbers listed in the front of this guide. Our technical staff are always available for consultation, training, or service.

Documentation Conventions

The following conventions are used throughout this guide:

- Rear panel connectors are indicated in bold-faced upper case letters. For example:

  The **AUX 1** connector is ...

- Control Panel buttons are indicated in bold-faced upper case letters, using a sans-serif font. For example:

  Press **WIPE** to ...

- Menu names on the integral display panel are indicated in bold-faced text. For example:

  The **Aux Bus Setup Menu** allows you to ...

- Soft key labels on the integral display are indicated in bold-faced text, using a sans-serif font. They are *not* indicated by the function key below the display that you press. For example:

  Press **Accept New Name** to register ...

- Menu navigation procedures in this manual set state the buttons you are to press followed by the "⇨" symbol. For example, the following navigation procedure shows you how to navigate from the **Main Menus** to the **Installation Menus**. In this case, you press **Setup** on the **Main Menu 2-2**, then you press **Installation** on the **Setup Menu**.

  Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation**.

Documentation Terms

The following terms are used throughout this guide:

- A "**1+0 DVE**" has a video connection *only* going from Synergy to the DVE. Both key and fill signals are connected from the DVE to Synergy.
- A "**1+1 DVE**" has both a video (fill) and a key (alpha) connection going from Synergy to the DVE. Both key and fill signals are connected from the DVE to Synergy.
- **"Crosspoint"** is synonymous with **"Button"**. Both refer to the switcher crosspoints or buttons on the Synergy control panel.
- "**Frame**" and "**Electronics Frame**" both refer to the Synergy switcher's electronics chassis.
- **"Input #"** refers to the **"BNC input #"** on the rear of the Synergy frame.
- "**Operator**" and "**User**" refer to the person who uses the Synergy production switcher.
- "**Panel**" and "**Control Panel**" both refer to the Synergy switcher's large multi-button control panel.
- "**Primary DVE**" refers to the *one* DVE (either single or multi-channel) that is connected to a Synergy SD Switcher via RS-422 serial control. This type of connection allows you to run the DVE using *custom control* buttons, and by using the **DVE SEND** feature in the **Transition** group. You can also load DVE effects from the panel using the **Recall DVE** button in the **Global Memory System** group.
- "**SDI**" refers to Serial Digital Video, a digital video signal that is distributed via a single coaxial cable with BNC connectors.
- "**Secondary DVE**" refers to any number of DVEs that are connected to the switcher using video and key connections only — with *no* RS-422 control. A secondary DVE *must* be controlled from its own local control panel, or via GPI output pulses from the Synergy switcher.
- "**Storage device**" refers to a standard 1.44 MB high-density floppy disk or a USB key. Either type of storage device can be used to save and recall configurations, setups and certain files to the Synergy switcher.
- "**System**" refers to the entire Synergy system, consisting of its electronics frame and control panel.
- "**Video system**" refers to the mix of interconnected digital equipment (including the edit controller, VTRs, and DVEs) in which the Synergy SD switcher is included.

Abbreviations

The following abbreviations are used throughout the text:

Abbreviation	Definition
A-D	Analog-to-Digital
BKGD	Background Bus
AUX	Auxiliary
CG	Character Generator
D-A	Digital-to-Analog
DA	Distribution Amplifier
DDR	Digital Disk Recorder
DSK	Downstream Keyer
DVE	Digital Video Effects
DVR	Digital Video Recorder
ID	Identification
MLE	Multi-level Effects
PGM	Program Bus
PST	Preset Bus
PST PATT	Preset Pattern
PV	Preview
RU	Rack Unit
SMPTE	Society of Motion Picture and Television Engineers/Engineering
TD	Technical Director
VCR	Video Cassette Recorder
VDCP	Video Disk Communications Protocol
VTR	Video Tape Recorder

Product Overview

Ross Video developed the Synergy SD series for live news, live sports, and live production. Because the switcher is the center of the action, it must be powerful, versatile, yet easy to operate. This operational simplicity frees operators to concentrate on the programming — instead of the equipment.

The Synergy SD series (our fourth generation of switchers) was designed with the direct input of video professionals experienced in news, sports and mobile production. Key members of the Synergy design team are part of an ongoing program where they demonstrate the product, assist with installations, and provide operator training. As a result, the Synergy line continues to advance the traditions of Ross Video — power, ease-of use, and logical panel layouts.

Product Highlights

The following list summarizes the key features of the Synergy 2, 3 and 4 SD switchers:

- **Fully Digital System**. All switchers in the series are fully-digital, including the reference video connection. No analog input/output circuitry is provided. This unique concept simplifies the design, minimizes the power requirements, and reduces the overall cost.

  By requiring all A-D and D-A conversion to be performed *outside* the system, digital noise stays *out* of the converters. In addition, customers are guaranteed the latest converter technology, *without* burdening the cost of the switcher, and *with* the added option to use those converters for other purposes — as they gradually convert to the digital domain.

- **Large Input Matrix**. The Synergy SD frame can accept up to 64 video inputs, in groups of eight inputs each.

- **Compact Size**. The 11 RU (Rack Unit) frame can house 64 inputs, four fully optioned MLEs, 12 timed Aux Buses, an extender board, and full redundant power.

- **Low Power**. The only power requirements are a maximum 300 watts for the frame and 175 watts for the panel (based on a fully-loaded Synergy 4). Each power supply plugs into a standard power outlet.

- **Growth Path**. The same electronics frame is used for *all* multi-MLE Synergy SD switchers. You have the option of buying a smaller system now — and adding another MLE and a larger control panel as your needs grow.

- **Powerful Keyers**. Each *full function* Keyer has dedicated pushbuttons, flying borders for every key type, optional Squeeze & Tease capability, chroma keying, key over transition, quick key preview, transition generators, and bi-color on-air status.

- **Squeeze & Tease**. A 2D or 3D DVE key can be built into *every Keyer* — up to two per MLE. With the option installed, every type of Key can be repositioned, squeezed and zoomed.

  With **2D**, you can simultaneously crop, reposition, flip, squeeze or zoom, border, *and* add a glowing transparent color-washed drop shadow to a key inside a *single* Keyer.

  With **3D**, you can simultaneously crop, rotate and reposition keys in 3D space, freeze moving video, border, *and* build and move objects inside a *single* Keyer.

- **Chroma Keying**. A standard feature in every MLE Keyer, all chroma keyers feature chroma suppression, hue rejection, plus natural and simulated shadows.

- **VTR Control**. This option allows you to select a VTR on the PST bus, recall a VTR timecode "clip" from memory, display the VTR's current time code on the preview monitor, roll it with a Custom Control button, and take it to air. Fast forward, rewind, and cue-to-timecode are also available at the touch of a button on the control panel.
- **Custom Control Hot Buttons**. A number of macro buttons have been positioned close to the operator for powerful single-touch control. You can recall any combination of switcher memories, button pushes, and external device control.
- **Two Pattern Generators per MLE** (Standard). The Synergy SD series comes standard with a primary pattern generator for creating wipes and preset patterns (PST PATT 1), plus a secondary pattern generator for PST PATT 2. The primary generators are equipped with extensive traditional, rotary, and matrix wipes. In addition, a wide variety of creative "**User**" wipes are also available as standard.
- **Fully Featured** "**Program/Preset**." The bottom MLE, normally referred to as the Program/Preset bus, has *full effects capability* including wipes and dual DSKs with chroma keys and preset patterns.
- **Advanced Display**. Each Synergy series switcher includes a large crisp display that is used to configure the switcher and to provide advanced operational features.
- **Preview Overlay**. This powerful option presents VTR time code, a count up/down timer, source ID, safe title, and more. Displays are individually selectable on the preview monitor for quick reference.
- **External DVE Integration**. DVE effects from all popular DVEs are seamlessly integrated as switcher transitions. Push, slide, and warp keys, backgrounds, or both without tying up Keyers or worrying about Aux Buses, signal paths, or tallies.
- **Upgrades from the Web**. Software (and some hardware) can be upgraded by downloading files from the Ross Video web site onto a storage device such as a floppy disk or USB key.
- **Rugged Construction**. Ross products are tough — they're built to handle years of demanding, continuous use. In addition, the Synergy series is backed by a **three year** *transferable* warranty.

Standard Features

The following features are standard in *all* Synergy series switchers:

- **Complete Control Panel**

  Regardless of what options are ordered, your control panel is always equipped with every button, knob, display and light. This means that your Synergy switcher and your control room will look their very best - even if your budget is tight.

- **Serial Digital Inputs**

  The following sets of inputs are standard:

  ~ **Synergy 2**: 16 serial digital inputs

  ~ **Synergy 3**: 24 serial digital inputs

  ~ **Synergy 4**: 32 serial digital inputs

  On *each model*, you can expand to 64 inputs, in groups of 8 inputs each. In addition, all input boards are physically identical, for ease of installation and service.

With all switchers in the series, any input can be assigned to any control panel pushbutton, thus simplifying installation and your ability to customize the panel layout. Inputs can be used for video, alpha channel, chroma keying, or switcher reference.

Regarding reference, note that any serial digital input can be assigned as the reference. If an analog reference is desired, Ross Video will optionally provide external conversion from (or to) the analog domain.

Full MLE Effects Systems

All Synergy SD switchers include *full-featured* MLE systems — two on the Synergy 2, three on the Synergy 3, and four on the Synergy 4. Note the following important MLE functions:

- Two wipe generators are standard with every MLE.
- Every MLE includes two Keyers, both of which offer the following modes: matte fill, key invert, mask, self key, linear key, preset pattern key, and chroma key.
- Both MLE Keyers offer extensive optional bordering that works with every key type.
- The optional **2D** or **3D Squeeze & Tease** feature can be installed in *every* MLE in the switcher, allowing you to squeeze or zoom any key or full screen image.
- Each MLE features five comprehensive matte generators, two of which incorporate advanced *wash* capability.
- Full preview capability is provided.

Advanced Copy and Swap Functions

The following convenient copy and swap functions are available as standard:

- **Copy MLE** — allows you to copy the contents of an MLE to another MLE location on the switcher.
- **Copy/Swap Key** — allows you to copy or swap the contents of a Keyer with another key location (in the same MLE, or on a different MLE).
- **Copy Matte** — allows you to copy the contents of a matte generator to any other matte location.
- **Copy Wipe** — allows you to copy a wipe pattern (and all wipe pattern modifiers) from one MLE to another.

Pattern Generators

Each switcher includes (as standard) both primary and secondary pattern generators that are used for wipe transitions and preset patterns:

- **Synergy 2:** Four primary and two secondary
- **Synergy 3:** Six primary and three secondary
- **Synergy 4:** Eight primary and four secondary

The primary generators are equipped with extensive traditional, rotary, and matrix wipes. The secondary generators provide additional traditional patterns.

Chroma Keying

Chroma keying is available on *every Keyer* in each MLE — including the downstream keyers. Each high quality chroma keyer features internal 4:4:4 chroma channel interpolation from any of the 4:2:2 inputs.

- The Synergy 2 SD (with one MLE plus Program/Preset) is capable of putting up to four different chroma keys on air simultaneously.
- The Synergy 3 SD (with two MLEs plus Program/Preset) can display up to six different chroma keys simultaneously.
- The Synergy 4 SD (with three MLEs plus Program/Preset) can display up to eight different chroma keys simultaneously.

Using the control panel, you can *directly* adjust the Chroma Key's clip, gain, hue, hue reject and chroma suppress. Using the menu system, you can control additional chroma suppression, natural shadow insertion and shadow transparency. If your system has the Preview Overlay Option board installed, you also have access to the Auto Chroma Key feature, which allows you to quickly obtain the best automatic chroma key for a selected color.

To simplify fast-paced live operation, the advanced menu system controls can be disabled. This allows you to quickly set up high quality keys using a minimum number of dedicated knobs and buttons. A "chroma key memory" button is also available on the panel that instantly recalls a previously stored chroma key setup.

Chroma key shadows can either be extracted from the source image or simulated using the optional switcher border generators.

Untimed Aux Buses

Twelve untimed Aux Buses are standard, each of which can be used to route video to monitors, still stores, tape machines, technical areas, etc. If any destination requires signals with stable timing (regardless of the source), the **Timed Aux Bus** option can be utilized which converts an untimed Aux Bus output to a timed output. The total number of Aux Bus outputs remains fixed at 12.

The following signals are available on an Aux Bus:

- Black (requires **Timed Aux Bus** option)
- All primary inputs
- DVE SEND (requires **Timed Aux Bus** option, used to integrate external DVE effects into switcher transitions)
- Clean feed
- (**Synergy 2** only) MLE 1 and MLE 2 program outputs
- (**Synergy 3** only) MLE 1, MLE 2, and MLE 3 program outputs
- (**Synergy 4** only) MLE 1, MLE 2, MLE 3, and MLE 4 program outputs

Standard Digital Outputs

In addition to the standard 12 untimed Aux Bus outputs, a wide array of program and preview outputs are also provided as standard:

Synergy SD Series Digital Outputs

	Quantity		
Output Type	**Synergy 2**	**Synergy 3**	**Synergy 4**
Main PGM	1	1	1
Preview Matrix (no overlay)	1	1	1
MLE 1 PGM (BKGD)	1	1	1
MLE 1 PV (PST)	1	1	1
MLE 2 PGM (BKGD)	1	1	1
MLE 2 PV (PST)	1	1	1
MLE 3 PGM (BKGD)		1	1
MLE 3 PV (PST)		1	1
MLE 4 PGM (BKGD)			1
MLE 4 PV (PST)			1
Clean Feed	1	1	1
Aux Bus	12	12	12
Total Outputs	19	21	23

USB Removable Media Drive

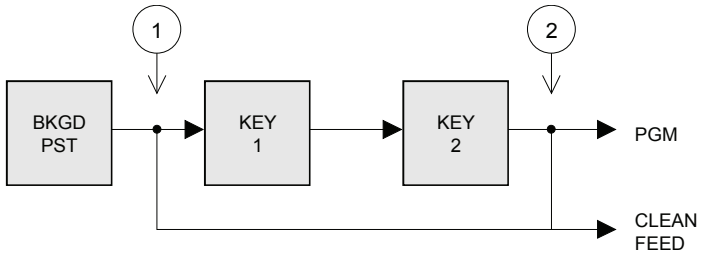
The **USB Removable Media Drive** supports industry standard USB keys. This feature makes it possible to store and recall complete switcher setups including memory functions, switcher personalities, installation parameters, and more, to a USB key. This allows operators and technical staff to back up their switcher setups and easily transfer these settings to other Synergy production switchers.

Clean Feed

The **Clean Feed** feature provides a second "program" output that is derived from a *different location* than the standard program output. Typical applications are:

- Bilingual and live-to-tape productions
- Recording shows for later airing without "call in" phone numbers inserted

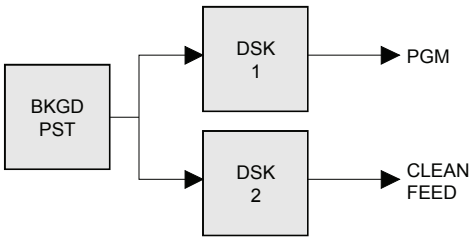
The **Clean Feed** output can be generated from any MLE Keyer — from *before* or *after* the keyers as illustrated below. The point from which the feed is derived is software-configurable.



Basic Clean Feed Modes

1. At point **1** above, the clean feed output is pulled after the MLE's program/preset bus, but *before* the two keys are added.
2. At point **2** above, the clean feed output is pulled downstream of the two MLE Keyers — effectively, an additional output.

For bilingual applications, a special "dual output mode" provides KEY 1 over the PGM/PST bus on the normal program output, and KEY 2 over the PGM/PST bus on the clean feed output. Transitions on one keyer are slaved to the other. This configuration allows simultaneous broadcasts (such as English/Spanish, English/French) from a *single switcher*, as illustrated below:



Clean Feed Dual Output Mode

In an advanced dual-output application (in conjunction with the **Aspectizer** option), you can use **Clean Feed** to output signals in two aspect ratios:

- Key 1 outputs a signal in 4x3 aspect ratio, standard definition.
- Key 2 uses the **Aspectizer** option to output a signal in 16x9 anamorphic aspect ratio, standard definition.

Custom Control Macros

Using the Synergy's macro sequence feature, a series of button presses can be easily recorded and attached to any of the dedicated macro buttons. You can step through complex show openings as easily as pressing one or two **Custom Control** buttons. This feature eliminates confusing timeline programming, and also allows you to control remote devices or other optional switcher features.

For example, you can:

- Trigger a GPI to advance to the next page of your still store.
- Attach live DVE remote control commands such as *go to start*, *run forward*, and *run reverse.*
- Play, stop, or shuttle, up to eight VTRs or disk recorders.
- Set, start, reset, or automate the integrated switcher time-clock.

Memory System

Each switcher is equipped with a standard 100-event memory for complete switcher snapshots. At the touch of a button, the entire switcher (or simply a portion of the switcher) can be recalled directly from an MLE keypad.

You can also associate “attributes” with memory recalls. These could be dynamic “effects dissolves,” auto transitions, or external device commands. All switcher memories can be stored on disk for operator (and program content) convenience. The alphanumeric display in each MLE tells you what you’ve recalled, or what you’re *about* to recall.

Matte Generators

Each MLE has three simple color generators and two complex ones that are capable of multi-color washes. Any one of the color generators can be assigned to COLOR BKGD 1 or 2, key fill 1 or 2, key border 1 or 2, or wipe pattern edges. Note that each MLE has its own dedicated COLOR BKGD video inputs to make memory recalls of individual MLEs simple and predictable.

Displays and Indicators

Every Synergy switcher always keeps you informed.

- Bright red lights at the end of every bus indicate what is on air.
- Yellow non-sync lights warn you that an input is untimed.
- Lights under the key transition buttons and in the keyers glow red when the key is on air, or green when they are active (but the MLE is not on air).
- Every auto transition rate is constantly visible — including the main transition rates, the dedicated keyer rates, and the fade-to-black rate.
- The last memory number recalled (per MLE) is displayed along with an associated eight character memory name.

General Purpose Interface

Each Synergy switcher is equipped with twelve dedicated GPI inputs and twelve dedicated GPI outputs.

- **GPI inputs** — these allow the switcher to interface with peripheral equipment such as editors and DVEs. Each GPI input can be assigned to perform simple editing and switching functions such as fade-to-black or an MLE auto-transition. For more complex editing capabilities, the **Editor Interface** option is available.
- **GPI outputs** — these are used to trigger remote events such as “Still Store Next Page”. They can also be tied to the **Custom Control** buttons on the switcher.
- The input GPIs can also be programmed to assist with Aux Bus tallies, with the ability to trigger “on air” status each time a different input source is used in an effect. For more complex DVE integration, the **DVE Send and Remote Control** option is available.

Tally Outputs

The standard system (on all Synergy SD switchers) includes 36 tally relays. These relays are located in the control panel — conveniently close to your monitors. Any tally can be assigned to any video input (or MLE program output). Even though 36 tallies are enough for *most systems* (even those fully loaded with 64 inputs), an optional 36 additional tallies are available as a hardware option.

Control Cable

The Synergy control panel and frame are connected by a single, standard 8-pin shielded Telco 33 foot (10 meter) cable that uses RS-422 communication. The maximum cable length between the control panel and frame is 1,000 feet (305 meters).

Digital Reference

All Synergy switchers use a digital reference. The default reference is input **1**, but the switcher can be programmed to lock to *any* installed input.

Internal switcher black is regenerated from the chosen reference input. Choose a stable digital source such as test signal generator black or color bars that is locked to your house reference.

Note

If you wish to use analog color black as your reference signal, external analog-to-digital (A-D) conversion is required. The Ross **ADC-8032A** is the recommended converter.

Synergy Slots

The Synergy series switchers incorporate a special mode in which pseudo-random information is statistically measured on a cumulative basis.

System Options

This section lists the options available for the Synergy SD series. Note that all options can be easily installed in the field.

Note

Refer to the section "**Installed Options Menus**" on page 2–37 for instructions on how to verify the status of your installed hardware and software options.

Conversion Frames

All switcher inputs and outputs are 10-bit SDI, including the system reference. Signal sources of other video formats must be converted to serial digital. Ross Video chose to do this conversion externally to ensure that the very latest conversion technology and most competitive pricing is available to our customers. An added bonus of external conversion is the ability to use those converters elsewhere in your facility as you eventually upgrade your switcher sources to serial digital. The table below lists the Ross products that qualify as converters.

Ross Converters

Converter	Description
ADC-8032B	Analog Composite to SDI Digital Decoder
ADC-8032B-S	Analog Composite to SDI Digital Decoder with Frame Sync
ADC-8033	Analog Component to SDI Converter
ADC-8035	Dual Analog Composite to SDI Converter
CMA-8011A	SDI Component Monitoring Amplifier
CMA-8011A-7	SDI Component Monitoring Amplifier with 7 reclocked SDI Outputs
DAC-8013	SDI to Analog Component Converter

Ross Converters

Converter	Description
DAC-8016A	SDI to Analog Composite Converter
DAC-8016A-S	SDI to Analog Composite Converter with Frame Sync
DAC-8016A-SX	SDI to Analog Composite Converter with Frame Sync and X-Color Filter
DAC-8016A-X	SDI to Analog Composite Converter with X-Color Filter
QMA-8044	Quad SDI to Analog Composite Monitoring Amplifier
UMA-8017	Universal SDI Monitoring Amplifier

Please visit our website at **http://www.rossvideo.com** or contact your Ross Video representative to obtain a current Ross Video Product Catalog for detailed information on our complete line of converters.

Serial Digital Inputs

Additional serial digital inputs are available in sets of eight — up to a maximum of 64 serial digital inputs. For all switchers, input quantities of 32, 40, 48, 56, and 64 inputs are possible. Please note:

- Inputs can be freely assigned to any panel pushbutton or *shifted* pushbutton.
- Inputs can be "hidden" and accessible only as alpha channels.
- Inputs can be "locked out" if they are not used.

Because of the system's flexibility with inputs, you can install and "map" inputs in any configuration desired — without restriction.

Input Carrier Boards

Each **Input Carrier Board** option is a full-length board that replaces the standard (half-length) **Input Crosspoint Board**. The option provides a standard matrix for eight digital inputs, but also provides slots for up to four hardware options (for example, the **Ultimatte Insider** or **Aspectizer**).

Note

Only **Input Carrier Boards** revisions 5 and greater are supported by the current release of software.

Preview Overlay

The **Preview Overlay** option makes it possible to present various types of useful information on one of the two main preview outputs. This information is color-coded, and can be positioned and displayed according to user preferences. Eight control panel buttons are dedicated to the **Preview Overlay** function.

A variety of overlay information is available:

- The "**Source Identification**" overlay displays the name of the current preview source, the current transition (and direction), followed by the name of the current program source. For example:

  VTR 1 -W-> CAM 2

  Note that the preview source is shown in green letters, while the program source is shown in red letters.

- The "**VTR Timecode**" overlay displays the timecode of a VTR, DDR, or other device when used as the background of main preview output (e.g. **12:59:59:23**). The device's

remote port must be connected to the switcher and the **VTR Remote Control Option** must be installed.

- The "**Safe Title and Safe Area**" overlay places a SMPTE standard safe title or safe area indication over the switcher's main preview output.
  - ~ Safe title is a box that outlines the area within which the vast majority of home TV sets will be able to read text.
  - ~ Safe area is a box that outlines the region within which viewers should be able to follow action.
  - ~ Two horizontal lines inside the box indicate the minimum text size to ensure that the text (font) is legible on nearly all sizes of television receivers.
- The "**Center Cross Hairs**" overlay places cross hairs on the main preview output to indicate the center of the picture. It is useful in the alignment of text and other information.
- The "**Time Clock**" overlay places a count-down or count-up timer on the main preview output to time commercial durations or other events. Custom Control buttons on the panel can be assigned to reset, start, stop, or set the clock. A special "auto clock" mode is included that resets and starts the clock every time a transition occurs on air.
- The "**Mask Preview**" overlay places a thin outline on the main preview output around any active box mask. The **AREA** buttons in the effects control area determine which box mask is currently being viewed.
- The **Preview Overlay** option is a circuit card that installs on the **Frame CPU** card. Note that the feature's buttons are installed, whether or not the option is installed.

Animated Logo Generator (ALG)

The Animated Logo Generator (**CDK-111A-M**) option allows the user to send animated logos or full-screen stills from the ALG to the switcher. There you can perform any switcher effect on the logo or still image.

External Downstream Keyer (DSK)

The External Downstream Keyer (**CDK-111A-M**) option allows the user to key stills or animated logos downstream of the switcher's own internal downstream keyers. The Synergy switcher can utilize up to two DSK 3/4s, each having independent PGM and PV outputs with true "look ahead" preview capability.

Dual Aspectizer

The **Dual Aspectizer** option, more commonly referred to as simply the **Aspectizer**, allows the user to perform live, dual aspect ratio, DTV production from a Synergy SD series control panel. The **Aspectizer** dynamically converts the aspect ratio of a video signal in real time, *within* the Synergy SD switcher itself. Aspectizer features include:

- 4:3 to 16:9, or 16:9 to 4:3 conversion on any input.
- Pan and scan, letterbox, and pillarbox formats
- Intermediate formats such as 14:9, 14:9 Wide, 14:9 Tall
- Bordering and color background generators
- Functional control via quick presets.

- Complete flexibility with the ability to assign the Aspectizer to selected inputs, an entire MLE, or selected outputs.
- Full access to both the original and the aspect ratio converted images.

The option installs on the **Input Carrier Board**.

Ultimatte Insider

Ultimatte Insider is a hardware option that adds true Ultimatte capability — directly *inside* the Synergy SD Switcher. The option is comprised of hardware boards designed by Ultimatte (the Oscar-winning industry leader in compositing technology), plus Ultimatte-specific menus for controlling the chroma key. The option installs on the **Input Carrier Board**.

Squeeze & Tease

One **Squeeze & Tease** option puts the power of a 2D (two dimensional) or 3D (three dimensional) WARP DVE into an MLE Keyer. The option is available for *all* MLEs including the DSK. Once installed, the option can also be *moved* to another MLE if desired.

- The **Synergy 2 SD** can be equipped with up to two Squeeze & Tease options — effectively, combining the power of up to four DVEs.
- The **Synergy 3 SD** can be equipped with up to three Squeeze & Tease options — effectively, combining the power of up to 6 DVEs
- The **Synergy 4 SD** can be equipped with up to four Squeeze & Tease options — effectively, combining the power of up to eight DVEs.

One **Squeeze & Tease 2D** option can perform the following digital video effects — using only one keyer:

- Squeeze, crop, and reposition an image with variable colored borders.
- Squeeze, crop, and reposition a self key or a chroma key.
- Push on and push off any type of key as a transition.
- Squeeze, crop, and reposition an auto select key. Note that this function “steals” the other MLE Keyer’s Squeeze & Tease option in order to process the alpha signal, but the remaining functionality of the other keyer is unaffected.
- Perform Squeeze & Tease wipes, such as push-offs, pull-ons, and other similar 2D DVE transitions.

One **Squeeze & Tease WARP** option can perform the following digital video effects.

- 10 bit processing using sub-pixel motion for great looking pictures.
- Warp effects include page turn, ripple, wave, mirror, swirl, melt, twist, slats, spheres, lens, gnarl, organics, pixie dust, sand, and more.
- Squeeze, crop, rotate, and reposition any kind of key.
- Create objects (such as slabs) from two images and manipulate them in 3D space.
- On board, dual channel StillStore stores 30 – 512 frames of video (dependent upon image size).
- Preprocessor effects include defocus, mosaic, posterization, colorization, and strobe effects.
- Advanced picture frame borders can be simple, single color type, or fancy picture frame including Roman column, tubular, beveled, computer style, tri-color, and more.
- All images can have natural lighting effects applied using a positionable light source with ambient light min/max controls.

In addition to its DVE functionality, either full screen video or key signals can be frozen at the touch of a button — thus putting the power of a frame store into every keyer. If full screen video is frozen, it can be used as a background to the other MLE Keyer. Alternatively, a character generator key can be frozen to free up your CG for further key generation.

Operationally, Squeeze & Tease is exceptionally easy to control. Most effects can be produced simply by pressing the **Fly Key** button and using the 3-axis joystick. Additional adjustment can be made through the menu system. Please note:

- All Squeeze & Tease effects can be bordered using the Keyer's optional dual border generator.
- The **Squeeze & Tease 2D** or **WARP** option is a circuit card that installs on the MLE Board (which plugs into the MLE Carrier Board).

Mnemonics Display

Mnemonics are available for each of your Synergy SD Series 2003 edition control panel MLEs and your Custom Control buttons. Each individual display is completely modifiable – change the display color, text size, and backlighting to customize your source names for different applications. Perfect for mobiles and other applications that require different crosspoint names from one production to another.

Dual Border Generator

The **Dual Border Generator** option provides visually dynamic border, shadow, and outline effects to both linear MLE Keyers, with either hard or "glowing" edges. The option also enhances self keys, chroma keys and preset pattern keys. You can move the border to any position on screen — even above the key. Borders are "flown" in real time with the joystick (just like wipe patterns and DVE effects). Please note:

- All border edge effects can be modified through the parameters of **X** and **Y** position, border size, border color (including color washes), density, and glow (giving a soft defocused look).
- The **Dual Border Generator** option is a circuit card that installs on the MLE Board (which plugs into the MLE Carrier Board).

Timed Aux Bus

The Synergy SD switcher offers two types of Aux Bus outputs — untimed (standard), and timed (optional). The total number of Aux Bus outputs remains fixed at 12.

- A standard **Untimed Aux Bus** output follows the timing of the input source (or re-entry), with a short additional processing delay. Re-entries have progressively larger delays depending upon where they are in the MLE cascade (i.e. MLE 4 has more delay than MLE 1).

  For destination devices that are not sensitive to timing (such as monitors), or for those which have their own input synchronization (such as some DVEs), the Untimed Aux Bus outputs are ideal.

- The **Timed Aux Bus** option allows you to convert untimed Aux Bus outputs to *timed* Aux Bus outputs. When installed, a timed output ensures that all "synchronous" sources have stable timing relative to the switcher's program output. This simplifies D-A conversion and system timing.

  A "synchronous" source is defined as one within +/- one quarter line of the switcher reference. Sources outside of this window remain horizontally locked, but may be shifted vertically.

For destination devices that *are* sensitive to timing (such as a D-A converter), the **Timed Aux Bus** outputs are ideal.

Note that the **Timed Aux Bus** option is easily installed in the field.

Dedicated and Assignable Remote Aux Panels

A **Remote Aux Panel** is a self-contained switching unit that has its own power supply. It mounts in a 19-inch rack and fills one RU (Rack Unit). There are two types of remote Aux panels available for *each* Synergy switcher:

- A **Dedicated Remote Aux Panel** controls one Aux Bus output. The Dedicated Panel for the Synergy 4 is shown below:

Synergy 4 SD Dedicated Remote Aux Panel

- An **Assignable Remote Aux Panel** controls all 12 Aux Bus outputs. The Assignable Panel for the Synergy 4 is shown below:

Synergy 4 SD Assignable Remote Aux Panel

Thus, there are a total of six Aux panels available in the product line. *All panels* include dedicated buttons for DVE Send, Program, and Clean Feed — plus a bright "on-air" LED. Assignable panels (only) include buttons to access the 12 Aux Bus outputs.

The primary difference between the panels is in the number of source and MLE buttons:

- **Synergy 2 SD** — each panel includes 17 source buttons plus **SHIFT**, and a button for **MLE 1**.
- **Synergy 3 SD** — each panel includes 30 source buttons plus **SHIFT**, and buttons for **MLE 1** and **MLE 2**.
- **Synergy 4 SD** — each panel includes 35 source buttons plus **SHIFT**, and buttons for **MLE 1**, **MLE 2**, and **MLE 3**.

The remote panel itself is connected to the rear of the switcher's control panel via a single six-conductor Telco control cable. Cable runs up to 1000 feet (305 meters) are possible. Typical applications include routing signals to one or more DVE channels, and switching a monitor between various signals (including MLE outputs) — outputs that are *not* the main program output.

An unlimited number of Aux panels can be connected to each of the control panel's two Aux connectors, but for a *practical limit* (and to minimize delay), a maximum limit of 16 Aux panels should be observed. This limit thus allows eight panels to be daisy-chained on each of the two connectors.

Please note:

- Both the **Dedicated** and **Assignable** Aux panel options include a 33-foot (10 meter) cable. Custom cable lengths are available.
- The maximum cable length between panels (as limited by RS-422 specifications) is 1000 feet (305 meters).

- The communications signal is re-buffered at each Aux panel.
- Aux panel assignments are performed using the control panel and menu system. Refer to the section "**Aux Bus Setup**" on page 11–3 for instructions.

Note

New versions of the **Dedicated** and **Assignable** Remote Aux Panels now provide 8 GPI input ports per panel. These GPIs are available *in addition* to those already provided on the frame. This feature allows the manual override of the Aux panel selection via a GPI trigger. For the purpose of camera matching, the Aux Bus can be manually switched to a camera directly from the Camera Control Unit. Refer to the section "**Remote Aux Panel GPI Setup**" on page 11–37 for details.

Editor Interface

The **Editor Interface Option** allows a Synergy SD switcher to interface with all popular editing systems. The option itself is comprised of software plus security codes.

Any MLE or combination of MLEs can be controlled using an RS-232 or RS-422 interface and industry standard editor protocol. The editor can be used to read and write switcher functions including video input selection, pushbutton enable and disable, control settings, and memory registers. If GPI control is not sufficient, and complete control of all switcher parameters from an editor is necessary, this option is required. Refer to the section "**General Purpose Interface**" on page 1–14 for additional details on GPI triggers.

VTR Remote Control

The **VTR Remote Control Option** controls VTRs, disk recorders, or other devices that use the (near-universal) Sony Betacam protocol or VDCP protocol — directly from the switcher panel. The option consists of software plus integrated circuits that install on the Control Panel's "**Panel CPU**" board.

With the option installed, the following functions are available:

- Every MLE's transition area includes a **ROLL VTR** button which, when set to **Play** mode and pressed, issues a *play* command to the device selected on the **PST** bus. The operator then manually transitions the source to air by moving the fader or by pressing the **CUT, AUTO TRANS**, or the device's crosspoint on the **PGM** bus.

  When the **ROLL VTR** button is set to the **Arm** or **Armed Always** modes, the switcher is armed to automatically transition the device to air *after* the preroll interval has elapsed. The transition to air is initiated manually when the operator presses the **CUT**, **AUTO TRANS**, or the device's bus crosspoint.

- The **Global Memory System Group** includes the **VTR CLIP** button which allows you to recall VTR clips (segments) from selected VTRs that are connected to the Synergy SD switcher. A clip consists of two pieces of information: a physical VTR and a timecode or media ID. Toggling the **VTR CLIP** button allows you to directly enter a **VTR Clip ID** to access a specific clip on a VTR device that supports this mode.

  Using the **VTR Clips Menu**, you can select a device (VTR) and store a timecode in one of 100 registers. You can then press **VTR CLIP**, enter a clip register and cue the VTR (that is associated with the clip). You can then use the **ROLL VTR** button or your **Custom Control** buttons to roll the VTR.

- VTR Remote Control can be tied into the **Custom Control** buttons. Any Custom Control button can be attached to functions such as play, stop, rewind, fast forward, frame advance, auto edit and standby off.

Still Store Interface

This option enables control over still store devices. It allows a user to randomly access any still or clip under control from the Synergy SD switcher. Custom Control macros can also be created for quick and direct access to clips and switcher scene recalls.

Character Generator Interface

This option enables the serial ports for control over a Character Generator. It allows a user to load and run effects, load and navigate through a playlist or a CG template, and edit CG text directly from the Synergy control panel.

Small Audio Mixer Interface (16 and fewer Inputs)

This option enables serial control for enhanced audio follow video from the Synergy SD Switcher over small audio mixers, making an integrated A/V production possible.

This protocol supports the associating of any audio input with any video input. It also supports easy audio voice-over control and audio level control from the Synergy control panel.

Large Audio Mixer Interface (more than 16 Inputs)

This option enables serial control for enhanced audio follow video from the Synergy SD Switcher over large audio mixers, making an integrated A/V production possible.

This protocol supports the associating of any audio input with any video input. It also supports easy audio voice-over control and audio level control from the Synergy control panel.

Robotic Camera System Interface

This option enables serial control over robotic camera systems including pan, tilt, zoom, focus, and scene recalls.

Router Control

The **Router Control Option** allows you to control an external routing switcher directly from the Synergy control panel. With the option installed, you can assign a BNC as the routing switcher and dial up the desired router crosspoint from the **Router Matrix Control Menu**. Setup parameters allow you to select the "type" of router, the router's output BNC and the router's level.

Serial Tally Interface

The **Contribution Serial Tally Protocol Option** allows you to set up communication parameters with tally system interface equipment using industry standard protocol. Note that the standard parallel tally interface will continue to operate normally when this option is enabled.

Video Server Control

The **Video Server Control Option** controls up to eight video servers directly from the switcher panel. Interfaced servers must use either the Harris (Louth) VDCP, or the Sony (Betacam) protocol. The option consists of software plus integrated circuits that install on the Control Panel's "**Panel CPU**" board.

With the option installed, the following functions are available:

- Using the **VTR Clips** menu, you can set up a list of server clips that you want to use on air, name them, preview them, trim each clip's head and tail and enable (or disable) each clip for use. The menu also includes a timeline that lets you visually review the clip's parameters.
- Once your clips are set up, you can choose a clip register from the **Global Memory System Group**, select the video server on Preset and perform preview and cue operation with full transport control capability. On the display, in addition to the clip timeline, you can select any of your preset clips for use — in any order desired.
- Every MLE's transition area includes a **ROLL VTR** button which, when set to **Play** mode and pressed, issues a *play* command to the device selected on the **PST** bus. The operator then manually transitions the source to air by moving the fader or by pressing the **CUT, AUTO TRANS**, or the device's crosspoint on the **PGM** bus.

  When the **ROLL VTR** button is set to the **Arm** or **Armed Always** modes, the switcher is armed to automatically transition the device to air *after* the preroll interval has elapsed. The transition to air is initiated manually when the operator presses the **CUT**, **AUTO TRANS**, or the device's crosspoint on the **PGM** bus.
- Just like VTR Remote Control, Video Server Control can be tied into the **Custom Control** buttons.

Audio Server Control

The **Audio Server Control Option** controls up to eight audio servers (such as the **Digicart** by 360 Systems) directly from the Synergy control panel. Interfaced audio servers must use Digicart protocol. The option consists of software plus integrated circuits that install on the Control Panel's "**Panel CPU**" board.

With the option installed, the following functions are available:

- Using the **VTR Clips** menu, you can set up a list of Digicart audio clips that you want to use on air, name them, preview them and enable (or disable) each clip for use.
- Once your clips are set up, you can choose a Digicart clip register from the **Global Memory System Group**.
- Just like VTR and Video Server remote control, Audio Server Control can be tied into the **Custom Control** buttons. This is the preferred way to utilize Audio Server clips, with the ability to associate sound effects with transitions (such as DVE moves), and store them on custom control buttons for single-button audio/video effects.

Monitor Wall Interface

This software option adds the ability to interface between Synergy and a multi-image display system, providing advanced monitoring capabilities.

Using the Custom Control macro buttons, you can perform functions such as loading a preset layout, changing the input channel on a particular monitor, or editing dynamic text.

DVE Send and Remote Control

The Synergy SD series is designed to integrate with most popular brands of DVEs *seamlessly* — as if they were part of the switcher during on air production. The **DVE Send and Remote Control Option** makes this possible.

The **DVE SEND** button in each MLE's **Transition Group** assigns the external DVE (the "primary" DVE) to that particular MLE — and also selects DVE Send as the transition type (as opposed to wipe or dissolve). You can then select the next transition (using the **BKGD**, **KEY 1** and **KEY 2** buttons) and press the **AUTO TRANS** button.

DVE Send transitions do not consume a keyer, and the switcher handles all Aux Bus and signal routing issues automatically. Please note:

- Depending upon the capability of the DVE itself, transitions can be run manually with the fader bar and positioned (or manipulated) with the switcher's 3-axis joystick.
- DVE effects can be recalled using the **RECALL DVE** button in the **Global Memory System** area, or by pressing **DVE** in the **Pattern Control** group and using the 40 pattern buttons as a DVE "shot box".
- DVE effects can be recalled along with a memory register by pressing the **INCL DVE** button in the **Global Memory System** area.
- Tallies will always be correct — regardless of the complexity of the video signal routing.

Note that the option is comprised of software plus one serializer and two deserializer modules that install on the **MLE Carrier Board**. Refer to Chapter 12 "**External DVEs**" for complete details on the **DVE Send** feature.

Extended Tallies

The *standard* system includes 36 *configurable* tally relays, each of which can be assigned to any video input (or MLE program output). The **Extended Tallies** option provides an additional 36 tallies (bringing the total number to 72). These additional tallies are equally configurable. They can be added for red/green preview tally systems that require twice as many tallies, or for cases where every single input requires a tally.

A preview tally system has a "red" output indicating that a source is on air and a "green" output indicating that a source has been selected on a preset bus. This gives the talent an additional warning as to the director's next move. "Green" tallies require the **Extended Tallies** option.

Note that the **Extended Tallies** option is comprised of hardware relays that install in the control panel tub.

Redundant Power

The **Redundant Power Supply** option provides protection against AC power failure — in both the frame and control panel. The option allows the entire switcher to receive power from two independent power sources. With the option installed, complete failure of one power source will not affect switcher operation.

If the main AC power fails, the switcher (and/or control panel) instantly draws power from the remaining source. The transition from one power source to the other is transparent and has no affect on the switcher's output — a critical feature should one power source fail during an on air broadcast.

There are two power fail indicator lights on the main panel. They indicate:

- loss of redundant power, or a fan failure in the frame.
- loss of redundant power in the control panel.

In the frame, there are lights visible from the front of the unit that indicate:

- all okay
- supply 1 failure

- supply 2 failure
- cooling fan failure

Note that the option includes two redundant power supplies — one for the frame and one for the control panel. Adding redundant power does *not* increase the amount of rack space required, as the main supply mounts inside the frame, and the control panel supply mounts inside the control panel tub.

Extender Board

The Extender Board is a printed circuit board having electrical contacts on the front and back ends, but no components. When installed into any board slot in the frame, it allows technicians easy and convenient access to any of the switcher's video processing boards — which can then be powered up and serviced while outside of the frame.

All of the video processing boards in the Synergy switcher are mounted horizontally, not vertically, making them convenient to work on. When not in use, the Extender Board itself installs in the frame's top slot.

Note

There are no adjustments on any of the switcher's video processing boards, as all of the circuitry is fully digital. The extender board is therefore only required for troubleshooting purposes, and as such, should only be used by qualified engineering personnel.

Spare Parts Kit

A **Spare Parts Kit** is available which provides switcher parts according to the following criteria:

- the part comes into frequent contact with the user
- the part can be easily damaged or may wear out with excessive use
- the part can be damaged by connecting excessive voltage to an external connector
- the part is used in system power management
- the part can be lost easily

Custom Main Panel Cable

The **Main Panel** cable connects the control panel to the electronics frame. It is a shielded 8-pin Telco cable and the ends are finished with the appropriate connectors. The control panel and frame can be separated by a maximum of 1,000 feet (305 meters).

A 33-foot (10 meter) control panel cable is supplied as standard with the switcher. If cable lengths other than 10 meters are needed, a custom cable can be ordered (by the meter).

A Word about Technical Support

At **Ross Video**, we take pride in the quality of our products, but if problems occur, help is as close as the nearest telephone.

Our 24 Hour Hot Line service ensures you have access to technical expertise around the clock. After-sales service and technical support is provided directly by Ross personnel. During business hours (eastern standard time), technical support personnel are available by telephone any time. After hours and on weekends, a direct emergency technical support phone line is available. If the technical support personnel who is on call does not answer this line immediately, a voice message can be left and the call will be returned shortly. These people are available to react to any problem and to do whatever is necessary to ensure customer satisfaction.

For **Technical Support**, call (+1) 613-652-4886 and, for **After Hours Emergency**, dial (+1) 613-349-0006.

Installation

In This Chapter

This chapter provides instructions for installing Synergy 2, 3 and 4 SD switcher hardware. The following topics are discussed:

- Static Discharge
- Getting Started
- Unpacking
- Synergy Control Panel Overview
- Synergy Frame Overview
- Installation at a Glance
- Hardware Installation
- Installing the Control Panel
- Installing Remote Aux Panels
- Installing the Electronics Frame
- Installing the Frame Power Supply
- Connecting Frame Power
- Jumpers and Switches
- System Reset Notes
- Software Upgrade
- Installed Options Menus

Operating Tip

Refer to Appendix E, "**Switcher Installation Worksheets**" for worksheets you can use to record switcher installation and wiring connections.

Static Discharge

Throughout this chapter, please heed the following cautionary note:

Caution

Static discharge can cause serious damage to sensitive semiconductor devices. Avoid handling the switcher circuit boards in high static environments such as carpeted areas and when synthetic fiber clothing is worn. Touch the frame to dissipate static charge before removing boards from the frame and exercise proper grounding precautions when working on circuit boards.

Getting Started

The following topics are covered in this section:

- Unpacking
- A Word about Serial Numbers
- Synergy Control Panel Overview
- Installation at a Glance

Unpacking

A complete Synergy 2, 3, or 4 SD Switcher system is typically shipped in three (or more) boxes, as outlined below. Your shipping configuration may vary.

- **Box 1** contains the electronics frame, with circuit boards installed inside the frame itself.
- **Box 2** contains the power supply for the electronics frame.
- **Box 3** contains the control panel, including its power supply.
- **Box 4** contains the remote Aux panels, coax cables, manuals, and all other options and accessories.

Warning

The control panel and frame are *extremely heavy* units that are top-loading. It will require two people to lift and unpack each unit.

Once the boxes are unpacked, check the contents against the packing list to ensure that all items are included. If any items are missing or damaged, contact your sales representative or Ross Video Limited immediately.

A Word about Serial Numbers

Serial numbers have now been implemented to allow Ross Video to properly track which options have been purchased by each customer. Switchers shipped in August 1999 and later have serial numbers installed (in flash memory) at the factory. Switchers shipped before August 1999 do not have serial numbers installed. Refer to the section "**Installed Options Menus**" on page 2–37 and the section "**Installing Serial Numbers**" on page 2–40 for detailed instructions.

Synergy Control Panel Overview

This section provides a hardware overview of the Synergy SD Series Control Panels. The following sections are included:

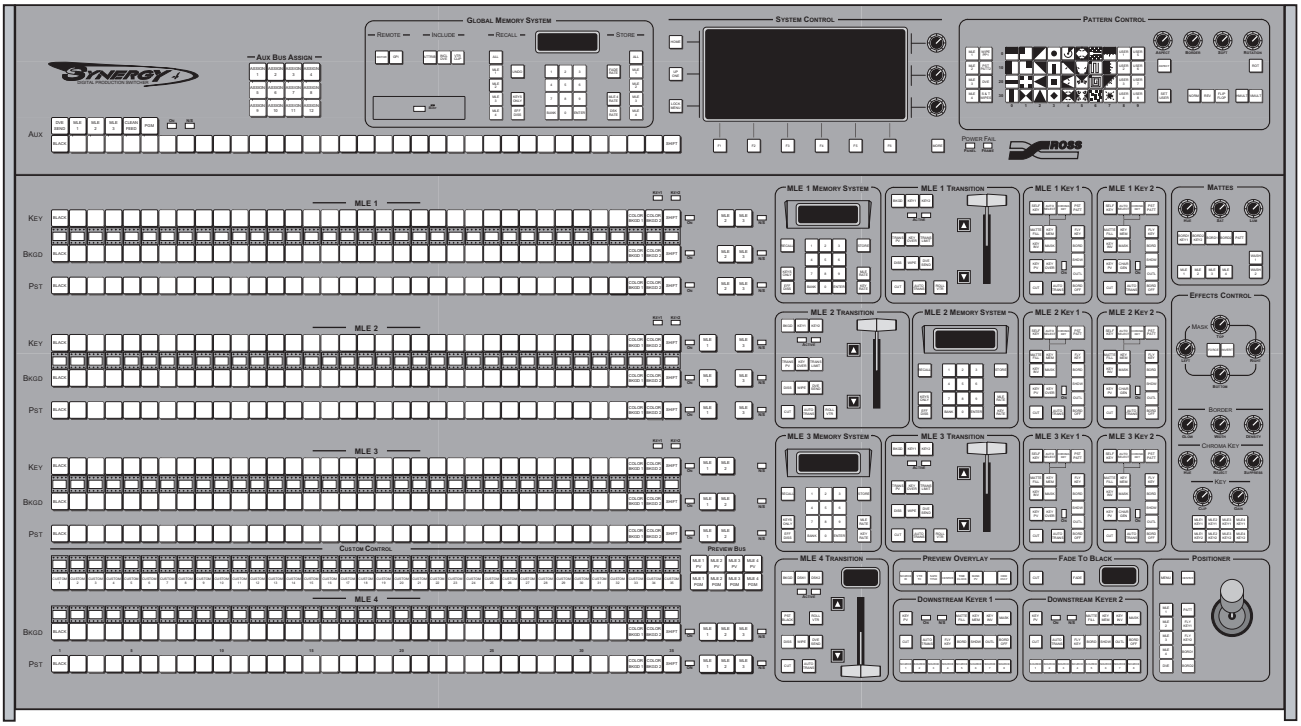
- Synergy Control Panel — Top View
- Synergy Control Panel — Rear Connector Panel
- Synergy Control Panel — Power Connectors

Synergy Control Panel — Top View

The following three figures show a top view of each Synergy control panel. Full details on each control panel are provided in the ***Synergy Series Operation Guide***.

Synergy 4 Control Panel

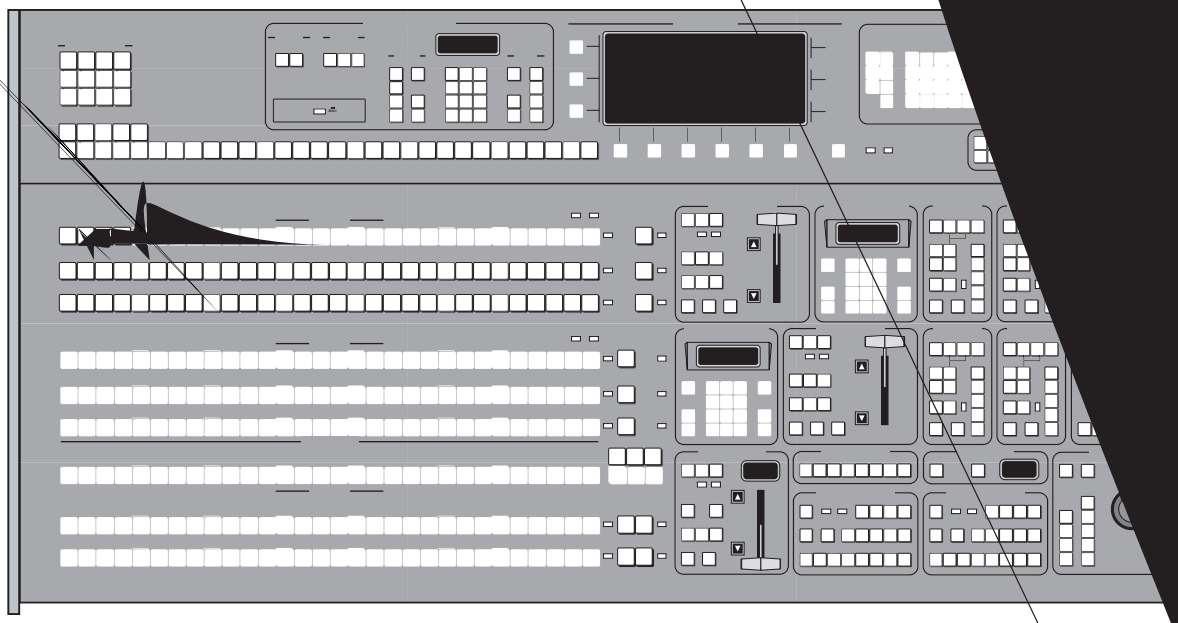
The Synergy 4 Control Panel comes standard with four MLEs, and 32 inputs.



Synergy 4 Control Panel with USB Removable Media Drive Option

Synergy 3 Control Panel

The Synergy 3 Control Panel comes standard with three MLEs, and 24 i



Synergy 3 Control Panel with USB Removable Media Drive Option

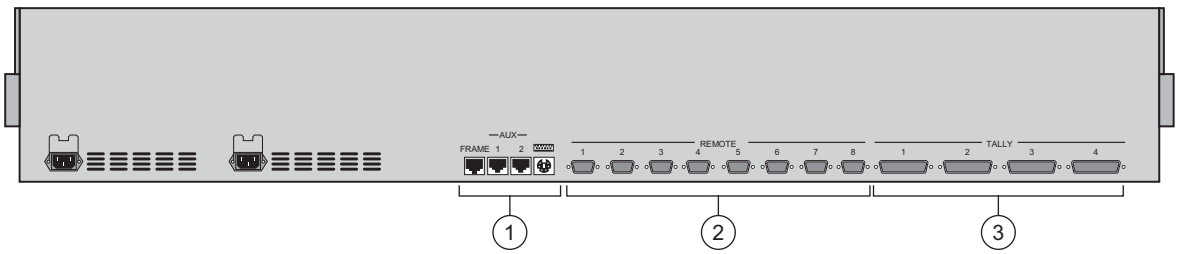
Synergy 2 Control Panel

The Synergy 2 control panel comes standard with two MLEs and 16 inputs.

Synergy 2 Control Panel with USB Removable Media Drive Option

Synergy Control Panel — Rear Connector Panel

The following figure illustrates the connector section of the rear panel.



Synergy Series Control Panel — Rear View, Connector Section

1) Panel Communications	2) Remote Control	3) Tally Connectors

All connectors are *always* present, whether or not you have options installed.

1. Panel Communications

Four connectors are provided for panel communications.

- **FRAME** — One 8-pin shielded Telco connector is provided for communications between the chassis (**PANEL** connector) and the control panel.

Important

The cable connecting the Synergy Control Panel to the Synergy Frame is not wired as a standard CAT5 ethernet cable. If you need a cable of a specific length, contact your Ross Video Representative for ordering information.

- **AUX 1**, **2** — Two 6-pin shielded Telco connectors are provided for communications between the control panel and remote Aux panels.
- **Keyboard Port** — One PS/2 port is provided for connecting a standard keyboard to the control panel.

Important

Do NOT place anything on your keyboard or place your keyboard in a position where any of the keys could be accidently pressed. This could result in the Switcher acting unpredictably.

2. Remote Control

Eight 9-pin D-Type connectors (RS-422) are provided for communicating with remote peripheral devices, such as VTRs, disk recorders, video servers, or other serial controlled devices. The ports can be configured as RS-422 or RS-232 through the menu system.

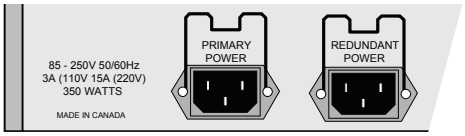
3. Tally Connectors

Four 25-pin D-Type connectors are provided for tallies.

- The functionality of connectors **1** and **2** is standard, providing 36 tally relays.
- The functionality of connectors **3** and **4** is optional, providing an additional 36 tally relays. The **Extended Tallies** option must be installed.

Synergy Control Panel — Power Connectors

The following figure illustrates the dual power connectors on the rear of each control panel. Although the layout and labeling is identical, the *placement* of these two connectors will differ, depending upon the size of your specific Synergy switcher.



Synergy Series Control Panel — Rear View, Power Section

Please note that each AC connector includes a power lock to retain the power cable connector.

Note

The connector marked **REDUNDANT POWER** is always installed, whether or not you have the **Redundant Power Supply** option mounted inside the control panel tub.

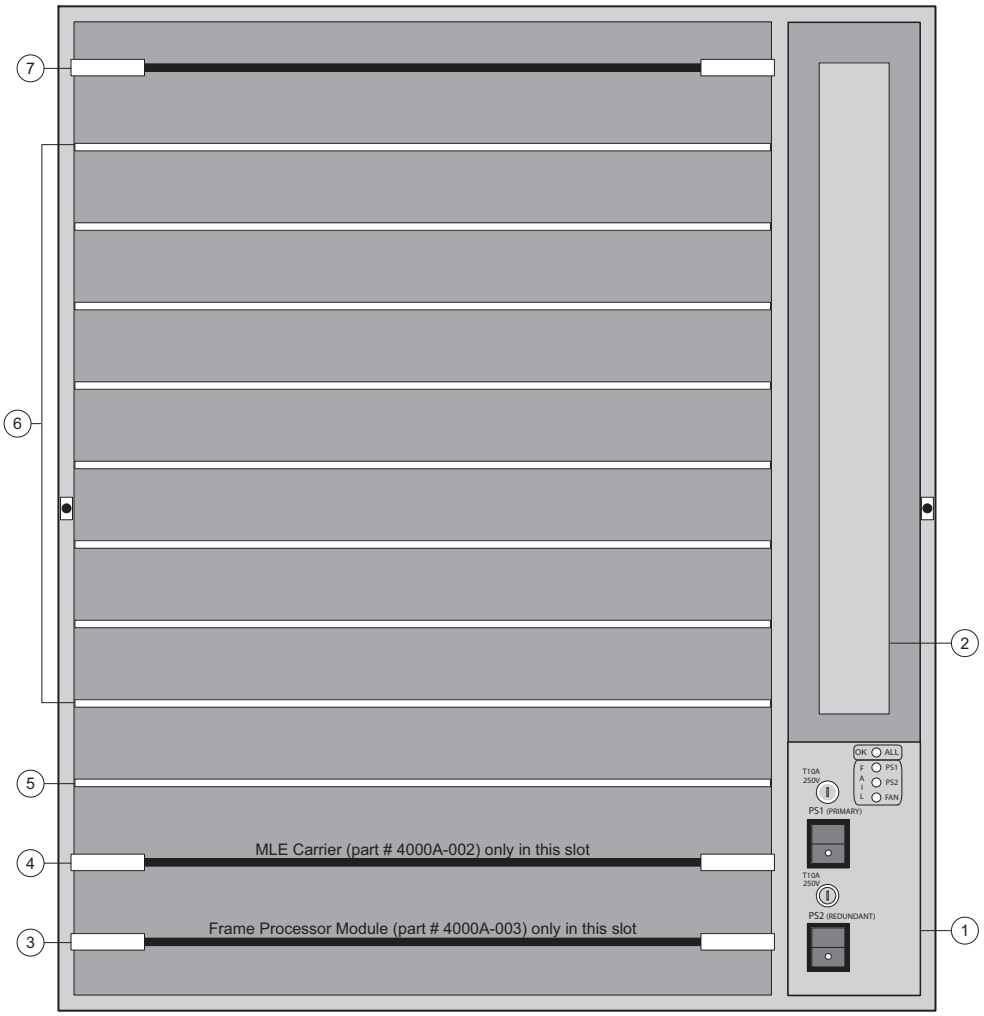
Synergy Frame Overview

This section provides a hardware overview of the Synergy SD Series Frame. The following sections are included:

- Synergy Frame — Front View
- Synergy Frame — Rear Connector Panel View

Synergy Frame — Front View

The following figure illustrates the front of the frame, with the door removed.



Synergy Series Frame — Front View

1) Power Controls and Indicators	4) MLE Carrier Board	7) Extender Board
2) Power Supply Tray Handle	5) Re-entry Board	
3) Frame CPU Board / Aux Bus Board	6) Input Crosspoint Board Slots	

Board layout is identical for all Synergy switchers.

1. Power Controls and Indicators

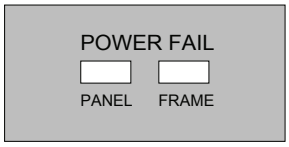
A panel is provided for power supply controls and LED indicators. Note that a cutout in the front door allows these controls to be accessed with the door closed.

- The **PRIMARY POWER** switch turns on the primary power supply.
- The **REDUNDANT POWER** switch turns on the redundant power supply, if installed. Note that this switch is always installed, whether or not you have the **Redundant Power Supply** option mounted inside the chassis. Electronically, the redundant power supply is identical to the primary.

If a failure occurs and the redundant supply takes over, the switch is *seamless* and *automatic*, with no glitches visible in the video.

- Four LEDs indicate the condition of the primary and redundant power supplies.
  - ~ **ALL OK**: during normal operation, this green LED should be lit. It indicates that there are no error conditions in the fans or power supplies. This LED is off if any of the three following LEDs are lit.
  - ~ **PRIMARY FAIL**: indicates that the primary power supply has failed or is not connected properly.
  - ~ **SECONDARY FAIL**: indicates that the secondary (redundant) power supply has failed or is not connected properly.
  - ~ **FAN FAIL**: indicates that one of the three fans is drawing too much current, or has stopped turning.

Note that two important **POWER FAIL** indicator LEDs on the Control Panel mirror the condition of the four chassis LEDs and the panel's power supply:



- ~ **PANEL**: when lit, indicates that there is a fault with the control panel's primary or secondary power supply.
- ~ **FRAME**: when lit, indicates that there is a fault with the chassis primary supply, secondary supply, or fans.

2. Power Supply Tray Handle

A large handle is provided to assist in removing and inserting the power supply tray. The tray houses the primary and redundant power supplies, power supply fans, chassis fans, and air filter. Please note:

- For chassis cooling, air flows in from the right side of the chassis, across the circuit boards, and out the left side of the chassis.
- For power supply cooling, a separate compartment is provided on the tray, so that power supply air does not flow across the circuit boards. A separate air intake is provided on the bottom of the tray, and air flows from the bottom to the top of the compartment.

- Note that an air filter is mounted on the back of the tray, behind the fans. This filter should be cleaned periodically.

Warning

When the power supply tray is inserted into the frame, it mates with male power pins that carry *live voltage* if the frame is plugged in. All power *must* be disconnected before servicing

Caution

Do *not* insert your fingers into the power supply slot when the unit is plugged in!

3. Frame CPU Board / Aux Bus Board

At the bottom of the chassis, the **Frame CPU Board** and **Aux Bus Board** connect together, and are housed in the bottom slot.

- If the **Timed Aux Bus** option is installed in the field, the option's **Serializer Module** and **De-serializer Module** install on the **Aux Bus Board**.

Warning

The **Frame CPU Board** (labeled **Frame Processor Module 4000A-003** on the card front edge) **must be installed only in slot 4** of the Frame, as illustrated in the *Synergy Series Frame, Front View* diagram above. Damage to Card and Frame will occur, otherwise.

4. MLE Carrier Board

This board houses up to four identical "daughter" boards — one for each MLE installed in your system.

Warning

The **MLE Carrier Board** (labeled **MLE Carrier 4000A-002** on the card front edge) **must be installed only in slot 5** of the frame, as illustrated in the *Synergy Series Frame Front View* diagram above. Damage to Card and Frame will occur, otherwise.

- Each **MLE Board** has positions for two additional option cards:
  - ~ A **2D** or **3D Squeeze & Tease** card can be installed on the right side of the **MLE Board**
  - ~ A **Dual Border Generator** card can be installed on the left side of the **MLE Board**

5. Re-entry Board

The Re-entry Board is a half-depth board that controls the switcher's re-entry pathways.

Note

In the event of the failure of a **Re-entry Board**, an **Input Crosspoint Board** can be used in place of the failed **Re-entry Board** in an emergency.

6. Input Crosspoint Board Slots

Eight slots are provided for 8-input digital video crosspoint boards — for a maximum of 64 digital inputs. Each crosspoint board is *identical*, and any crosspoint board can be installed in *any slot*. Configuration of each input is performed through the menu system.

Note

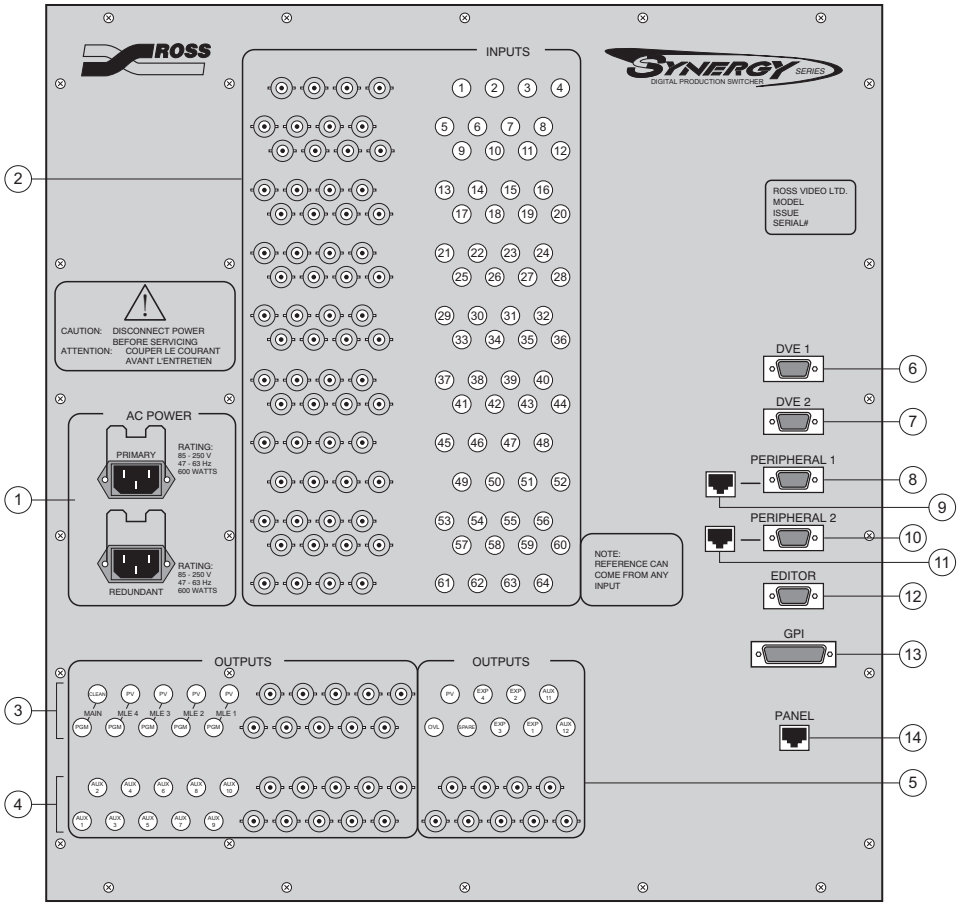
In certain configurations, an optional **Input Carrier Board** can be installed in place of an **Input Crosspoint Board**. Each **Input Carrier Board** is a full-length board that provides a standard matrix for eight digital inputs, but also provides slots for up to four hardware options (such as the **Dual Aspectizer** or the **Ultimatte Insider)**. Refer to Appendix C, "**Hardware Options**" for installation instructions and configurations.

7. Extender Board (Optional)

At the top of the chassis is a slot that houses the optional **Extender Board**. When not in use, always keep the **Extender Board** in this slot.

Synergy Frame — Rear Connector Panel View

The following figure illustrates the rear connector panel of the electronics chassis.



Synergy Series Frame — Rear View

1) Power Connectors	6) DVE 1 Connector	11) Peripheral 2 Connector B
2) Input Section	7) DVE 2 Connector	12) Editor Connector
3) Main Output Section	8) Peripheral 1 Connector A	13) GPI Input/Output Connector
4) Aux Output Section	9) Peripheral 1 Connector B	14) Control Panel Connector
5) Special Output Section	10) Peripheral 2 Connector A	

Connector layout is identical for all Synergy switchers.

1. Power Connectors

Two AC connectors are provided for chassis power.

- Connect primary power to the connector labeled **PRIMARY**.
- If installed, connect backup power to the connector labeled **REDUNDANT**. Note that this connector is always installed, whether or not you have the **Redundant Power Supply** option mounted inside the chassis.

2. Input Section

Sixty-four BNC connectors are provided for up to 64 digital video inputs. Each input is identified in the label array to the right of the connectors. The following sets of inputs are standard, but each switcher can be expanded to the maximum 64 inputs (in groups of 8 inputs each).

- **Synergy 2**: 16 serial digital inputs
- **Synergy 3**: 24 serial digital inputs
- **Synergy 4**: 32 serial digital inputs

Even though an input is *physically* connected to a numbered input connector, you can electronically place that input anywhere on the control panel's MLE bus row. All input configuration is performed through the menu system.

3. Main Output Section

Ten BNCs are provided for the switcher's main outputs including the **CLEAN** feed output. Please note:

- One program (**PGM**) and one preview (**PV**) output are provided for each MLE. The left-most program output provides a *second output* for the highest-numbered MLE in your system:
  - ~ **Synergy 2**: provides a second MLE 2 output
  - ~ **Synergy 3**: provides a second MLE 3 output
  - ~ **Synergy 4**: provides a second MLE 4 output
- Each output is identified in the label array to the *left* of the connectors.

The following table summarizes the active program and preview outputs on each Synergy switcher.

Active Program and Preview Outputs

	Output					
Switcher	**MLE 1 PGM / PV**	**MLE 2 PGM / PV**	**MLE 3 PGM / PV**	**MLE 4 PGM / PV**	**Main PGM**	**CLEAN**
Synergy 2	Active	Active			Active, MLE 2	Active
Synergy 3	Active	Active	Active		Active, MLE 3	Active
Synergy 4	Active	Active	Active	Active	Active, MLE 4	Active

If DAs are required to provide additional outputs for a particular signal, contact Ross Video or your Ross dealer for details.

4. Aux Output Section

Ten BNC connectors are provided for the switcher's first ten standard auxiliary bus outputs. Outputs 11 and 12 are located in the **Special Output Section**. Each auxiliary output is identified in the label array to the left of the connectors. Aux outputs can be *timed* or *untimed*, depending upon the number of **Timed Aux Bus** options installed.

Note

Any of the 12 Aux Bus outputs can be used for the primary DVE (the DVE that can be controlled via RS-422 serial control from the Synergy panel). Refer to the section "**Output Connection**" on page 4–15 for additional information.

5. Special Output Section

Nine BNC connectors are provided for the switcher's special outputs, including the two remaining Aux outputs. Each output is identified in the label array above the connectors.

- **PV**: provides the main output of the preview matrix. Using this output, in conjunction with the **PREVIEW BUS** group on the control panel, you can switch any one of the individual MLE **PGM** and **PV** outputs. The number of available outputs depends on the specific switcher model:
  - ~ **Synergy 2**: 4 outputs
  - ~ **Synergy 3**: 6 outputs
  - ~ **Synergy 4**: 8 outputs
- **OVL**: provides the identical output as the **PV** connector, but includes the selected overlay content (the **Preview Overlay** option must be installed). The overlay is switched from the control panel's **PREVIEW OVERLAY** group. When the **PV** output switches, the **OVL** output tracks in sync.

Operating Tip

The **OVL** output is the recommended one to feed the TD's main preview monitor. The **Preview Overlay** option must be installed.

Note

If the **Preview Overlay** option has not been purchased, there is *no signal* on the **OVL** output connector.

- **SPARE**: provides a spare output for future use. The output is currently not implemented.
- **EXP 1**, **2**, **3**, **4**: provides expansion outputs for future use. The outputs are currently not implemented.
- **AUX 11**: provides the output for Aux Bus 11.
- **AUX 12**: provides the output for Aux Bus 12.

6. DVE 1 Connector

One 9-pin, D-Type, RS-422 connector labeled **DVE 1** is provided for connection to the primary external DVE. The connection is designed for control purposes. Please note:

- The port can also be used to connect to the *first channel* of a DVE that requires one serial port per channel.
- The port can be configured for additional serial control purposes through the menu system.

7. DVE 2 Connector

One 9-pin, D-Type, RS-422 connector labeled **DVE 2** is provided for serial control purposes. Please note:

- The port is primarily designed to connect to the *second channel* of a DVE that requires one serial port per channel.
- The port can be configured for additional serial control purposes through the menu system.
- The port can be configured as RS-422 or RS-232 through the menu system.

8. Peripheral 1 Connector A

One 9-pin, D-Type, RS-422 connector labeled **PERIPHERAL 1** is provided for connection to a primary peripheral device. The connection is for control purposes. Please note:

- The port can be configured for additional serial control purposes through the menu system.

9. Peripheral 1 Connector B

One 8-pin shielded Telco connector is provided for future peripheral control requirements, such as control panel networking.

Note

The port shares the same internal circuitry as **Peripheral 1 Connector A**. Only *one* of the two ports can be used at a time.

10. Peripheral 2 Connector A

One 9-pin, D-Type, RS-422 connector labeled **PERIPHERAL 2** is provided for connection to a secondary peripheral device. The connection is for control purposes. Please note:

- The port can be configured for additional serial control purposes through the menu system.

11. Peripheral 2 Connector B

One 8-pin shielded Telco connector is provided for future peripheral control requirements, such as control panel networking.

Note

The port shares the same internal circuitry as **Peripheral 2 Connector A**. Only *one* of the two ports can be used at a time.

12. Editor Connector

One 9-pin, D-Type, RS-422 connector labeled **EDITOR** is provided for connection to an external edit controller. The connection allows the Synergy switcher to be controlled by the editor via RS-422 commands.

- The port can be configured as RS-422 or RS-232 through the menu system.

13. GPI Input/Output Connector

One 25-pin, D-Type connector labeled **GPI I/O** is provided for GPI input and output ports. Please note:

- As standard, the connector provides one common ground, 12 GPI outputs, and 12 GPI inputs.

14. Control Panel Connector

One 8-pin shielded Telco connector labeled **PANEL** is provided for communications between the chassis and the control panel.

Important

The cable connecting the Synergy Control Panel to the Synergy Frame is not wired as a standard CAT5 ethernet cable. If you need a cable of a specific length, contact your Ross Video Representative for ordering information.

Installation at a Glance

The following section presents a *brief* overview of the installation process. The exact steps taken in installing your switcher will depend on the specific options that you have purchased.

Caution

All cautionary rules regarding static discharge apply. Refer to the section "**Static Discharge**" on page 2–2 for details.

Experienced installers may wish to work from this outline as required.

- Install the control panel.
- Install any remote Aux panels.
- Install the electronics frame in an equipment rack.
- Install the frame power supply module.
- Perform the basic cabling:
  - ~ control panel to frame interconnection
  - ~ remote Aux panel cabling
  - ~ reference input(s)
  - ~ switcher interconnections
  - ~ connections to preview and program monitors
- Power up and do a quick video check on the switcher.
- Decide on inputs to the switcher's primary input sections and install push-button inserts accordingly.
- Connect primary inputs.
- Connect output monitors as required for your installation.
- Make connections to external equipment. The ways of connecting such sources will depend on personal preference as well as on the combination of options purchased with the switcher.
- Connect character generator key (alpha) and video input signals.
- Connect the tallies.
- Connect and set up the general purpose interface, configuring the editor GPIs and the Aux Bus GPI inputs and outputs.
- Configure the switcher personality according to your installation requirements and personal preferences. The many operational parameters include editor related functions, auto keying selections, Aux Bus and memory configuration, and various button assignments and operational shortcuts.

Note

The previous procedure covers switcher installation and configuration. Additional appendices at the end of this guide provide supplementary information for interfacing with DVEs and installing hardware options.

Hardware Installation

This section describes procedures for installing the following main components of the Synergy switcher system:

- Control panel
- Remote Aux panels
- Electronics frame
- Circuit boards
- Power supply

This equipment is to be installed and serviced by qualified personnel only. All cautionary rules regarding static discharge apply. Refer to the section "**Static Discharge**" on page 2–2 for details.

Caution

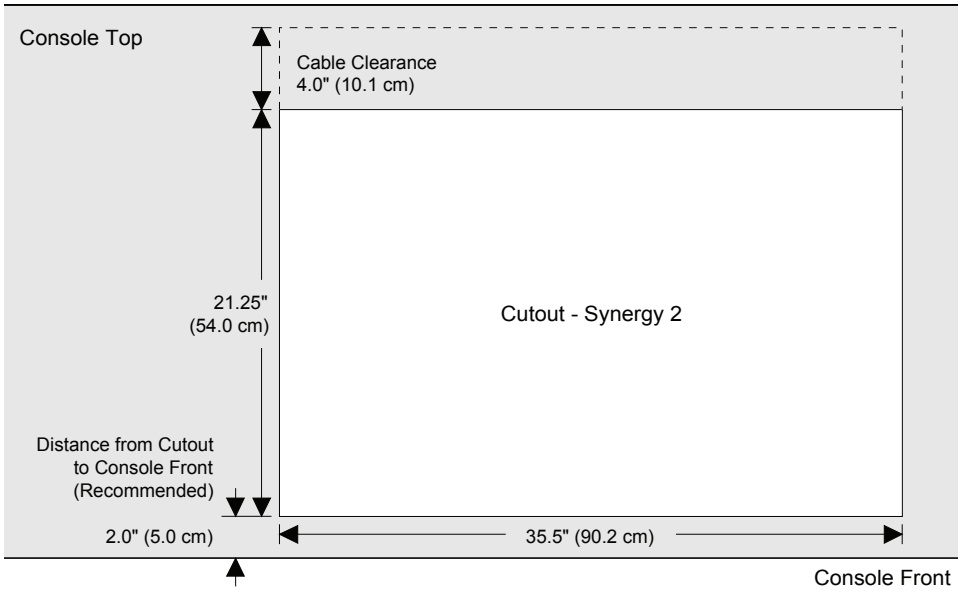
Switch power off before installing or removing printed circuit boards. Note that the frame and control panel have separate power supplies. The circuitry used throughout the switcher is largely CMOS, accounting for the system's low current drain.

Installing the Control Panel

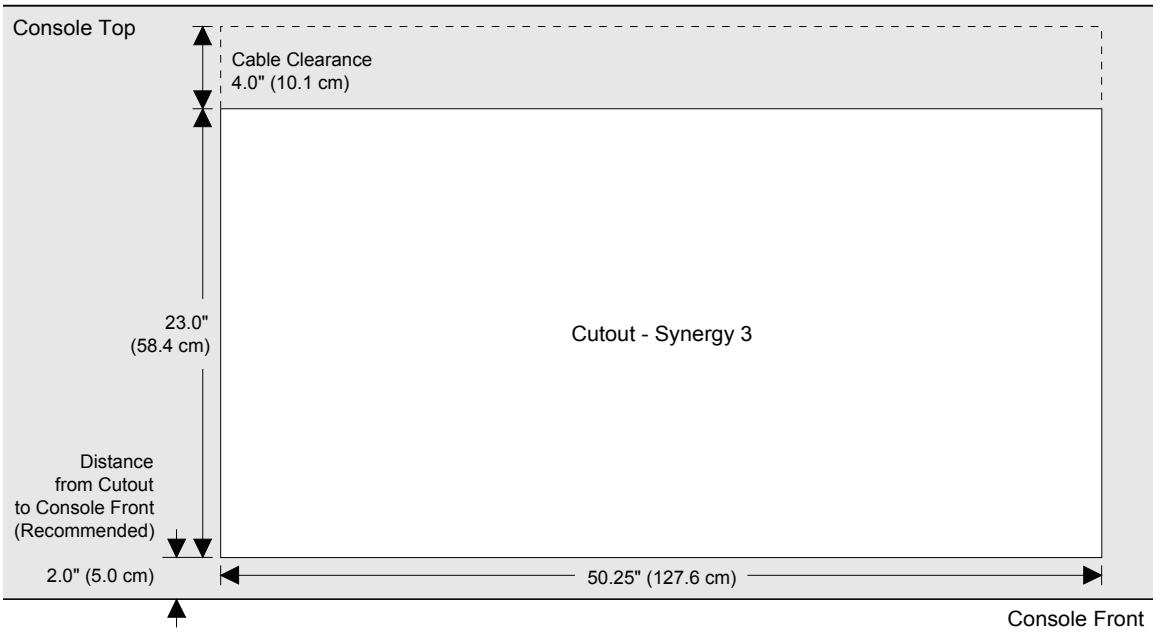
The control panel is shipped with all its circuit boards and power supply in place — you only have to install the control panel tub itself and some push-button inserts. Each tub is designed to be set into a desk or console cutout.

Use the following procedure to install the control panel:

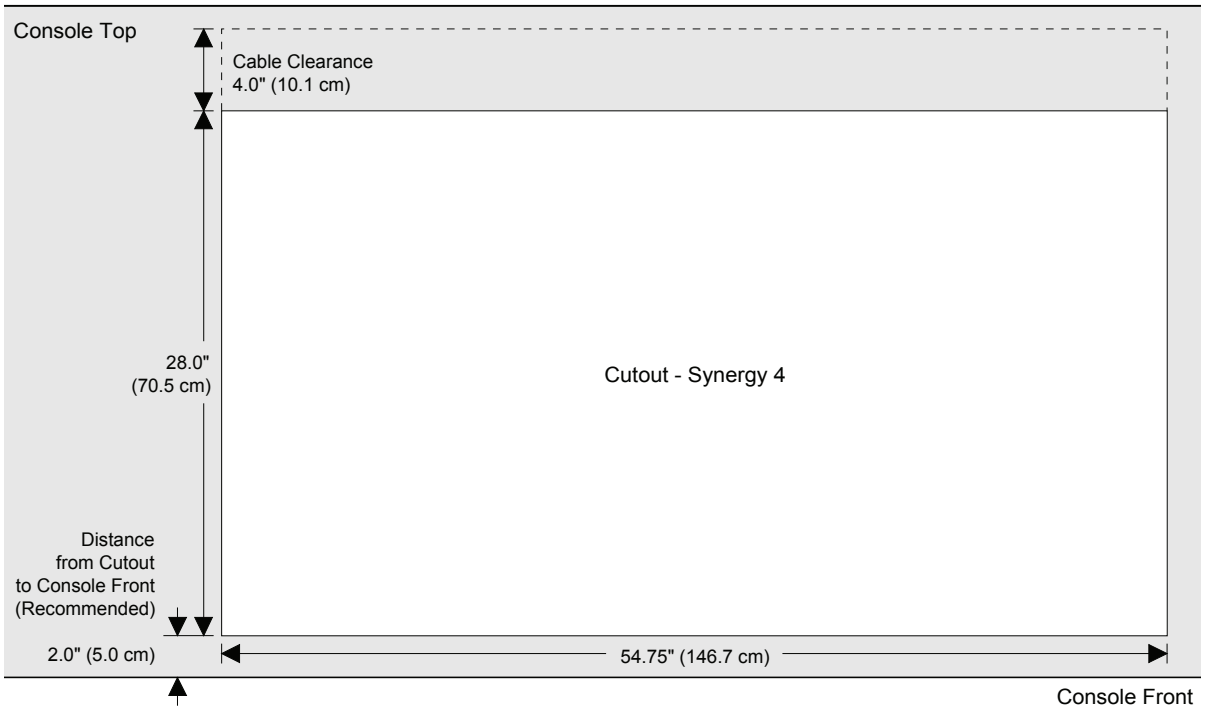
1. Measure your console according to the appropriate cutout measurements illustrated in the following diagrams. Centimeters are shown in parenthesis.



Synergy 2 SD Control Panel Cutout Dimensions



Synergy 3 SD Control Panel Cutout Dimensions

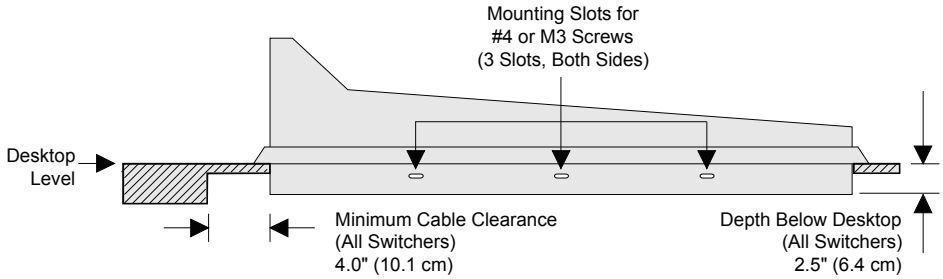


Synergy 4 SD Control Panel Cutout Dimensions

Operating Tip

When measuring for the cutout, it is recommended that you place the *front lip* of the panel within two inches (5.0 cm) of the console front (as shown in the diagrams above). This placement is designed for the convenience of the operator.

2. In addition to the cut-out measurement, ensure that there is sufficient clearance *under the desktop* for connectors and cables on the rear of the control panel. Approximately four inches (10.1 cm) of clearance should be sufficient for each switcher, as shown in the following diagram.



Detail — Control Panel Connector Clearance Requirements

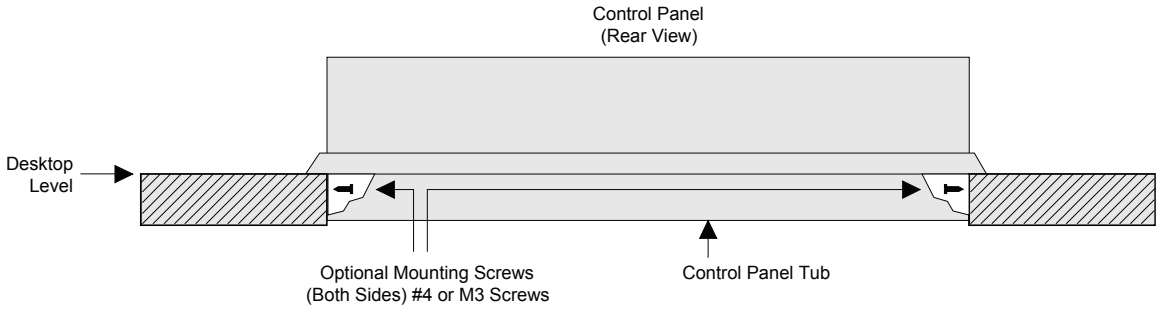
3. Install the control panel in your console. Each tub drops into the cut-out from above and rests on edge supports at the sides.

4. Remove the two tie-down bolts that are located on the underside of the tub. The control panel tub will not open until these bolts are removed. Once the bolts are removed, it is recommended that you re-install them *from the top* — making sure that they do not protrude through the bottom of the tub.

Note

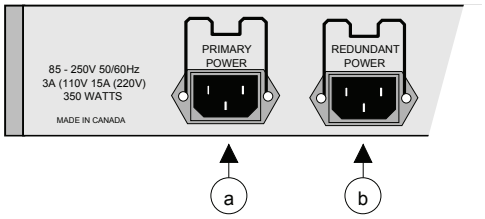
Once the panel is fully installed, you may also consider re-installing the bolts *from the bottom* — to prevent unauthorized access to the inside of the tub. If you elect to do this, ensure that the power switch (inside the tub) is in the **ON** position.

5. Normally, fasteners are not required to hold the control panel in place. However, if your installation requires it (particularly for remote trucks), you can attach the tub to the desk using the pre-drilled mounting slots on each side of the tub. Wood screws are not supplied.



Detail — Optional Mounting Screw Attachment

6. Install control panel power. Use the following figure for reference. Connections are identical for all switchers.



Power Connection

a) Connect the **PRIMARY POWER** connector to an AC outlet.

b) If the **Redundant Power Supply** option is installed, connect the **REDUNDANT POWER** connector to an AC outlet.

Caution

In some countries, it may be necessary to supply the correct mains supply cord. Use only an approved IEC 320 C-13 type A/C line cord rated for a minimum 10A at 250V and certified for the country of use.

The wiring designations by color are:

- **BLACK** — power (or "line" side)
- **WHITE** — neutral (or "return" side)
- **GREEN** — ground (or "earth").

Protective Earth

The safe operation of this product requires that a protective earth connection be provided. This protective earth is provided by the grounding conductor in the equipment's supply cord. To reduce the risk of electrical shock to operator and service personnel, this ground conductor must be connected to an earthed ground.

Note

For control panel redundancy, it is recommended that two independent AC sources be used to feed the control panel power supplies.

Warning

The control panel's power supply is not intended to be field serviced — it is serviced by *replacement only*. In case of power supply failures, please contact your dealer or Ross Video. The power supply cover should only be removed by qualified service personnel.

This completes the control panel installation.

Installing Remote Aux Panels

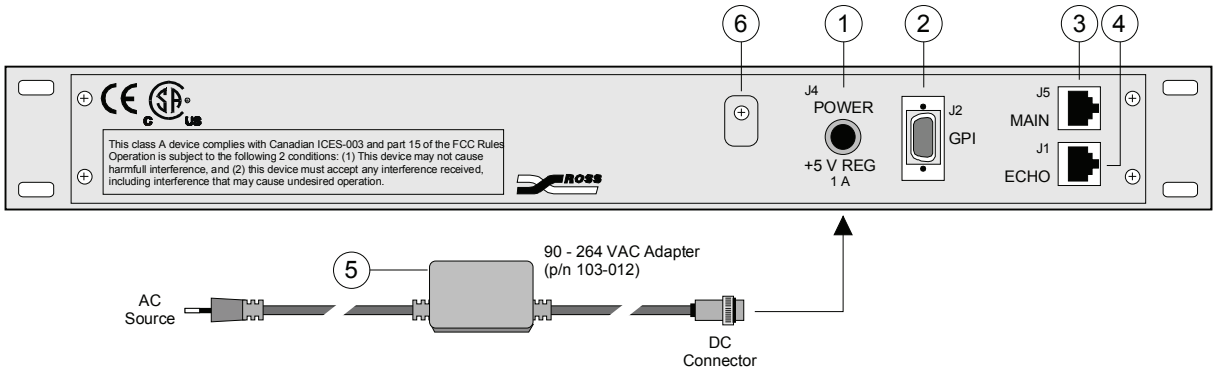
Remote Aux panels are self-contained units that have their own power supply. Each panel controls the switcher's Aux Buses via a single control cable.

Even though an unlimited number of Aux panels can be connected to each of the **AUX PANEL** connectors, a *practical limit* of 16 Aux panels should be observed. This limit minimizes delay, and allows 8 panels to be daisy-chained on each connector.

There are two types of remote Aux panels available:

- **Assignable** panels control all 12 Aux Bus outputs.
- **Non-assignable** (or "dedicated") panels control a single Aux Bus output.

Both panel types require one rack unit of space for installation, and both types require their own source of AC power as displayed in the following figure.



Aux Panel Rear Layout and Connection

1) Power Port	3) Switcher Port	5) AC Adapter
2) GPI Port	4) Echo Port	6) Cable Retainer

Connector layout is identical for all remote Aux panels.

1. Power Port

One DC connector is provided for +5 VDC panel power.

2. GPI Port

One 9-pin "D" GPI connector is provided for special GPI triggers that allow a camera operator to manually override the Aux panel selection. Refer to the section "**Remote Aux Panel Cabling**" on page 3–3 for connection details. Refer to the section "**Aux Bus Setup**" on page 9–3 for setup details.

3. Switcher Port

One 6-pin RJ-12 Telco connector is provided for connecting to the Aux connectors on the rear of the control panel. Refer to the section "**Remote Aux Panel Cabling**" on page 3–3 for connection details. For pinout information, refer to the section "**Pinouts**" in Appendix A**,** "**Specifications**".

4. Echo Port

One 6-pin RJ-12 Telco connector is provided for daisy-chaining the remote panel to the next remote Aux panel in line. Refer to the section "**Remote Aux Panel Cabling**" on page 3–3 for connection details. For pinout information, refer to the section "**Pinouts**" in Appendix A**, "Specifications"**.

5. AC Adapter

One AC Adapter (90 - 264 VAC) is provided with each remote Aux panel as a source of +5 VDC. Please note:

- 90 - 264 VAC adapter, p/n **103-012**

Refer to the section "**Remote Aux Panel Cabling**" on page 3–3 for connection details.

6. Cable Retainer

Loop the cable from the AC adaptor through the cable retainer on the back on the panel for better security.

Please note:

- There are no user-settable jumpers in the Aux panels.
- Assignable Aux panels are configured using the control panel's menu system. A special programming mode allows you to assign "rights" for each of the 12 available Aux outputs to an assignable Aux panel.
- Non-assignable (dedicated) Aux panels are also configured using the control panel's menu system. A special programming mode allows you to assign one specific Aux output to each dedicated panel.

Refer to the section "**Aux Bus Setup**" on page 11–3 for instructions for both assignable and dedicated Aux panels.

Installation Procedure

Use the following procedure to install remote Aux panels:

1. Install the appropriate panels in the desired locations for your facility.
2. Connect the supplied AC adapter to a suitable source of line voltage.
3. Plug the DC connector into the rear of the remote Aux panel.
4. Repeat steps 2 and 3 for each Aux panel.

This completes the remote Aux Bus panel installation procedure.

Installing the Electronics Frame

The electronics frame is designed to be rack mounted. Note the following installation requirements:

- **Rack Units**: 11 RU
- **Height**: 19.5 inches (49.5 cm)
- **Depth**: 19.25 inches (48.9 cm)
- **Rack**: standard 19 inch wide equipment rack

Install the frame for maximum stability during operation, and in such a way as to allow adequate ventilation. Ensure that *both sides* of the frame are clear, so that switcher airflow is not restricted in any way. If possible, but not required, leave a 1RU space above the frame to facilitate installation and removal of the frame door. The frame's location should be accessible, reasonably dry, and dust free.

Please note:

- The system is shipped with the door on.
- The system is shipped with all circuit boards (and the requested quantity of input crosspoint boards) already installed.
- As a precaution after installation, ensure that all boards are tightly pushed into their rear frame connectors. The circuit board extractors on the sides of the boards allow easy installation and removal.

Warning

The **Frame Processor Module 4000A-003** (labeled on the card front edge) **must be installed only in slot 4** of the frame, as illustrated in the section "**Synergy Frame — Front View**" on page 2–8. Damage to Card and Frame will occur, otherwise.

Warning

The **MLE Carrier 4000A-002** (labeled on the card front edge) **must be installed only in slot 5** of the frame, as illustrated in the section "**Synergy Frame — Front View**" on page 2–8. Damage to Card and Frame will occur, otherwise.

Installing the Frame Door

If you have the room in your rack, leave a 1RU space above the frame to prevent the equipment directly above from mildly encumbering the installation and removal of the frame door. The door can be installed and removed without the space.

Use the following procedure to install the frame door:

1. Grasp the door by the sliding latches on either side and retract the latches.
2. Place the door over the front of the frame so the sides of the door are lined up with the frame sides. Ensure that the light covers are in the bottom right corner.

Caution

If the door is not aligned with the frame sides, the frame power switch could be accidently toggled during step 4.

3. Hang the door on the top of the frame using the lip on the top of the door.
4. Press both sides of the door to the frame.
5. Release the sliding latches ensuring the two latches pop into place and are secure.

This completes the procedure to install the frame door.

Installing the Frame Power Supply

The frame's power supply tray plugs *vertically* into the right-hand section of the chassis. The supply is universal, and no power adjustments are required. The secondary (redundant) supply, if ordered, is already installed in the tray.

Use the following procedure to install the frame power supply:

Warning

The power supply should only be installed by qualified service personnel. In case of a power supply failure, contact your dealer or Ross Video.

1. Carefully unpack the power supply from its box, and retain all packing material for future use, if required.
2. Align the guide rails on the top and bottom of the tray with the slots in the chassis.
3. Push the power supply in firmly to ensure a tight connection at the rear of the frame.
4. On the top left of the power supply module, loosen the two mounting screws that secure the power supply's safety bracket in place.
5. Place the bracket behind the fold-over to the left of the power supply's frame cavity by moving the bracket towards the left.
6. Once in place, tighten the two mounting screws to secure the supply module in the Synergy chassis.

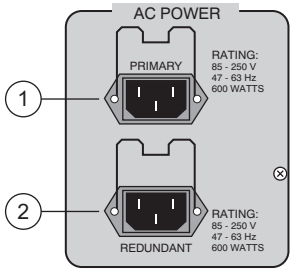
This completes the procedure to install the frame power supply.

Connecting Frame Power

Refer to the following diagram when installing frame power for your Synergy SD switcher.

Protective Earth

The safe operation of this product requires that a protective earth connection be provided. This protective earth is provided by the grounding conductor in the equipment's supply cord. To reduce the risk of electrical shock to operator and service personnel, this ground conductor must be connected to an earthed ground.



Primary and Redundant Connectors

Use the following procedure to install frame power:

Caution

In some countries, it may be necessary to supply the correct mains supply cord. Use only an approved IEC 320 C-13 type A/C line cord rated for a minimum 10A at 250V and certified for the country of use.

For frame redundancy, it is recommended that two independent AC sources be used to feed the power supplies.

1. Connect the **PRIMARY** connector to an AC outlet.
2. If the **Redundant Power Supply** option is installed, connect the **REDUNDANT** connector to an AC outlet.

This completes the procedure to install frame power. Please note that each AC connector includes a power lock, which is designed to retain the power cable connector.

Jumpers and Switches

This section provides important information about system jumpers and switches. Three sections are included:

- Jumper Positions
- Control Panel Jumpers and Switches
- Frame Jumpers and Switches

Caution

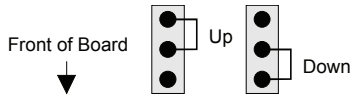
All product servicing should be carried out by qualified service personnel.

To gain access to the Control Panel's jumpers as outlined in the section "**Control Panel Jumpers and Switches**" on page 2–27, it will be necessary to remove the safety barrier from the inside of the Control Panel's tub. The equipment still presents a safety hazard with the power switches in the **OFF** position. To avoid electrical shock, disconnect all A/C power cords from the rear of the panel before removal of this barrier.

Service barriers within this product are intended to protect the operator and service personnel from hazardous voltages. For continued safety, replace all barriers after servicing.

Jumper Positions

The following legend indicates the jumper positions used in the following two sections.



Jumper Positions

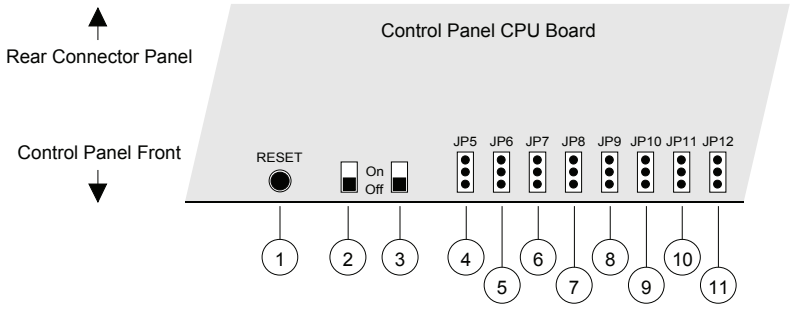
- **Up**: Jumper is away from the front of the board
- **Down**: Jumper is towards the front of the board

Caution

All product servicing should be carried out by qualified service personnel. To gain access to the Control Panel's jumpers, as outlined in the section "**Jumper Positions**" on page 2–26, it will be necessary to remove the safety barrier from the inside of the Control Panel's tub. The equipment still presents a safety hazard with the power switches in the **OFF** position. To avoid electrical shock, disconnect all A/C power cords from the rear of the panel before removal of this barrier. Service barriers within this product are intended to protect the operator and service personnel from hazardous voltages. For continued safety, replace all barriers after servicing.

Control Panel Jumpers and Switches

For all switchers, the following figure illustrates the location of jumpers and switches on the front edge of the **Control Panel CPU Board**:



Control Panel Jumpers and Switches

1) Reset Button	5) JP6, Panel Type	9) JP10, Reserved
2) Configuration Switch 1	6) JP7, Reserved	10) JP11, Reserved
3) Configuration Switch 2	7) JP8, Reserved	11) JP12, Panel Redundant Power
4) JP5, Panel Type	8) JP9, Reserved	

1. Reset Button

Press the control panel's red **RESET** button to initiate a *full system* reset. When the reset is initiated from the control panel, the frame's reset is initiated via a software message that is passed along the RS-422 control cable. In the unlikely event that the frame has crashed, it may be necessary to *manually* reset the frame. Refer to the section "**System Reset Notes**" on page 2–30 for additional important information about the system reset function.

2. Configuration Switch 1

This switch is reserved for future use. Please leave the switch in the default **Off** position, as labeled on the switch.

3. Configuration Switch 2

This switch is reserved for future use. Please leave the switch in the default **Off** position, as labeled on the switch.

4. JP5, Panel Type

Jumper **JP5** works in conjunction with **JP6** to set the type of control panel. Refer to the following table for details.

5. JP6, Panel Type

Jumper **JP6** works in conjunction with **JP5** to set the type of control panel. Refer to the following table for details.

Setting the Control Panel by Jumper Type

Jumper	Synergy 2	Synergy 3	Synergy 4
JP5	Up	Down	Up
JP6	Down	Up	Up

6. JP7, Reserved

Jumper **JP7** is reserved for future use. Please leave it in the default **Down** position.

7. JP8, Reserved

Jumper **JP8** is reserved for future use. Please leave it in the default **Down** position.

8. JP9, Reserved

Jumper **JP9** is reserved for future use. Please leave it in the default **Down** position.

9. JP10, Reserved

Jumper **JP10** is reserved for future use. Please leave it in the default **Down** position.

10. JP11, Reserved

Jumper **JP11** is reserved for future use. Please leave it in the default **Down** position.

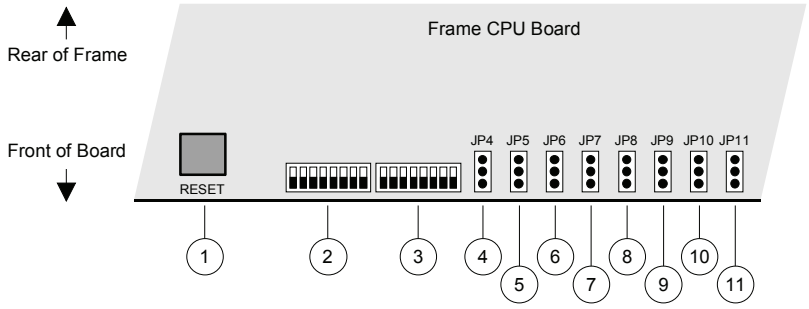
11. JP12, Panel Redundant Power

Jumper **JP12** indicates whether or not redundant power has been installed in the control panel.

- **Up**: Redundant power is installed. The red **POWER FAIL** indicator on the control panel will light in the event of a power supply failure in the panel.
- **Down**: Redundant power is not installed. The red **POWER FAIL** indicator will not light.

Frame Jumpers and Switches

For all switchers, the following figure illustrates the location of jumpers and switches on the front edge of the **Frame CPU Board**:



Frame Jumpers and Switches

1) Reset Button	5) JP5, Reserved	9) JP9, Reserved
2) DIP Switch 2, Power Supply	6) JP6, Reserved	10) JP10, Installation Enable
3) DIP Switch 1, S&T 3D Upgrade	7) JP7, Reserved	11) JP11, Software Upgrade
4) JP4, Reserved	8) JP8, Reserved	

1. Reset Button

Press the frame's red **RESET** button to initiate a *full system* reset. When the reset is initiated from the frame, the control panel's reset is initiated via a software message that is passed along the RS-422 control cable. In the unlikely event that the control panel has crashed, it may be necessary to *manually* reset the control panel. Refer to the section "**System Reset Notes**" on page 2–30 for additional important information about the system reset function.

2. DIP Switch 2, Power Supply

This 8-position DIP switch identifies the power supply(s) in the frame. If a single power supply is used, set SW1 (leftmost) to the **Up** position. If a redundant (second) power supply is used as well, set SW1 to the **Down** position.

3. DIP Switch 1, S&T 3D Upgrade

This 8-position DIP switch is adjusted only when upgrading Squeeze & Tease 3D software. When upgrading, set SW8 (rightmost) in the **Up** position to enable S&T 3D software upgrades from a storage device. Refer to Chapter 2, "**Installation and Setup**" in the ***Squeeze & Tease 3D/WARP Owner's Guide*** for detailed switch setup instructions.

If no S&T 3D software upgrades are being performed, please leave all switches in the default **Down** position, as labeled on the switch.

4. JP4, Reserved

Jumper **JP4** is reserved for future use. Please leave it in the default **Down** position.

5. JP5, Reserved

Jumper **JP5** is reserved for future use. Please leave it in the default **Down** position.

6. JP6, Reserved

Jumper **JP6** is reserved for future use. Please leave it in the default **Down** position.

7. JP7, Reserved

Jumper **JP7** is reserved for future use. Please leave it in the default **Down** position.

8. JP8, Reserved

Jumper **JP8** is reserved for future use. Please leave it in the default **Down** position.

9. JP9, Reserved

Jumper **JP9** is reserved for future use. Please leave it in the default **Down** position.

10. JP10, Installation Enable

Jumper **JP10** determines the installation status of the switcher:

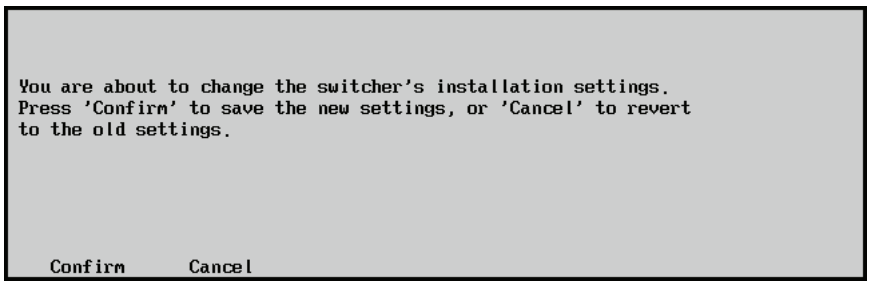
- **Up** — Access to installation features is restricted. When you enter the **Installation Menu**, a message alerts you that "**Installation Settings are Locked**." However, you *are* permitted to view the menus as usual. Upon exiting the installation menus, the "**Installation Settings are Locked**" menu once again alerts you that any changes will be *ignored* upon exiting the installation tree.

  The installation **Load/Save to Disk** menus do not appear in the menu tree.

Note

Place the jumper in the **Up** position when you want to restrict access to installation menus. For certain facilities, this setting is recommended once installation is complete.

- **Down** — All installation settings can be changed without restriction. However, upon exiting the menus, an "**Installation Warning**" on the Synergy control panel alerts you that settings are about to be changed:



Installation Change Confirmation Menu

11. JP11, Software Upgrade

Jumper **JP11** controls the ability to upgrade software from a storage device:

- **Up**: Software can be upgraded from a storage device. Refer to the section "**Software Upgrade**" on page 2–34 for instructions.
- **Down**: Software cannot be upgraded from a storage device. This is the default position.

System Reset Notes

Please note the following important points regarding the system reset function:

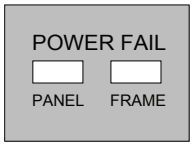
- Turning power on and off in either the control panel or the frame causes *that device* to reset — but *not* the other device. This feature ensures that the program video will not be adversely affected if the control panel loses power.
- If the frame *only* is turned off, the panel indicates a frame power failure on the **POWER FAIL** indicator LEDs. In addition, the control panel menu displays the Splash Screen.
  - ~ On a Synergy 4 switcher, when frame power is restored, the power failure status indicator clears, and the panel returns to the main menu with all control panel settings in the "reset" state — even though the panel was not physically reset.
  - ~ On Synergy 2 and Synergy 3 switchers, when frame power is restored, the power failure status indicator clears, and the panel returns to the main menu with all control panel settings in the state they were in before the frame power fail occurred — even though the panel was not physically reset.

Note

The rack frame stores all installation, personality, custom control macros, memories, and the current video state. The control panel keeps track of the current menu and the settings of all buttons. Resetting the frame changes the current video state. Turning the control panel on and off will *not* reset the video state, because a frame reset has not been initiated.

Power Fail Indicators

Note that two important **POWER FAIL** indicator LEDs on the Control Panel mirror the condition of the four chassis "Power" LEDs and the panel's power supply:



- **PANEL**: when lit, indicates that there is a fault with the control panel's primary or secondary power supply.
- **FRAME**: when lit, indicates that there is a fault with the chassis primary supply, secondary supply, or fans.

Power Failure Recovery

The Synergy switcher's power failure recovery feature protects the *entire panel setup* in situations in which power is lost. When power is restored after a failure, all MLE setups return *exactly* as they were, immediately before the power failure.

Please note:

- A loss of control panel power *only* has no effect on the frame, because the frame stores the current video state. When control panel power is restored, your setups will return to their previous state. Similarly, resetting the control panel *only* has no effect on the frame.

  Remember that resetting the frame *does* change the current video state, returning the frame and control panel to the default "reset" state on a Synergy 4 panel.

  On Synergy 2 and 3 panels, when frame power is restored, the power failure status indicator clears and the panel returns to the main menu with all control panel settings in the state they were in before the frame power fail occurred — even though the panel was not physically reset.

Software Upgrade

This section provides step-by-step instructions for upgrading the Synergy switcher software from a storage device. You can obtain a copy of the software, or of any previous version, by logging on to the Ross Video website:

(http://www.rossvideo.com)

Use the following steps to perform a software upgrade from a storage device:

- Hardware Confirmation
- System Backup
- Software Upgrade
- Restoring Disk Registers

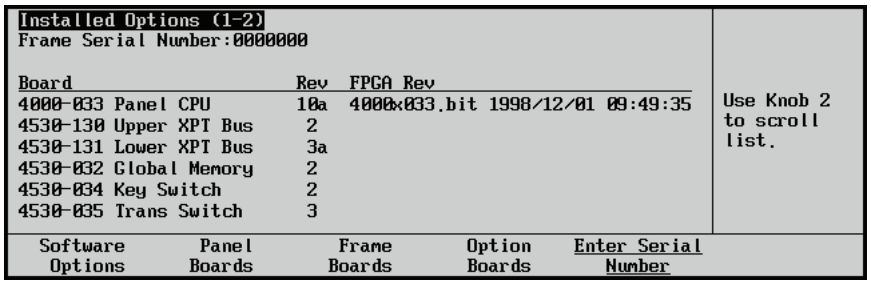
Hardware Confirmation

Important

If you are upgrading your Synergy switcher to a software version of **16**, or higher, you must ensure that your control panel CPU Board is of **Issue 10** or higher.

Use the following procedure to check the version of the CPU Board in your Synergy control panel:

1. Navigate to the **Installed Options Menu** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installed Options**.
2. Press **Panel Boards** to display the **Panel Boards Menu**.



Installed Options — Panel Boards Menu

3. Locate the **4000-033 Panel CPU** in the **Board** column.
4. Confirm that the **Rev** number is **10** or higher (in the example menu shown above the CPU Board is a Revision 10a).

Important

If the **Panel CPU** is of a Revision lower than **10** you will NOT be able to upgrade to version **16**, or higher, without upgrading your control panel.

If your hardware meets the requirements of the software upgrade, proceed to with the next step and backup your system.

System Backup

Important

Because the software upgrade process *automatically* returns the switcher to *default* values, it is important that you back up all switcher elements to a storage device, such as a floppy disk or USB key, at this point.

Use the following procedure to save your setup configurations to a storage device:

1. Navigate to the **Disk Menu** as follows:
   - Press **HOME ⇨ Disk**.
2. Insert a storage device as follows:
   - Insert a pre-formatted 1.44 MB high-density floppy disk into the floppy disk drive of the Synergy switcher.

Note

If the floppy disk is not formatted (or if you wish to completely erase all data from the disk), press **Format**. Follow the instructions on the display to format the floppy disk.

OR

- Insert a USB key into the USB port of the Synergy switcher. You must wait 5 seconds after inserting the USB key into the USB port before you can save setup configurations to it.

3. Press **Store** to display the **Disk Store Menu**.
4. Press **All** to store *all categories* of registers to your storage device.

Caution

Do NOT remove the floppy disk or USB key from the switcher before the LED on the floppy drive or USB port goes out. Doing so may destroy the data on your floppy disk or USB key, as well as the data on the next one you insert into the switcher..

5. Eject the storage device from the switcher.
6. Label the storage device and store it in a safe place.

   It is recommended that you place the following information on the label:
   - Synergy SD Switcher Model (2, 3, or 4)
   - Software Version [**vXX.xx**] Backup
   - Today's Date

This completes the procedure for saving your setups to a storage device. Please continue with the "**Software Upgrade**" procedure.

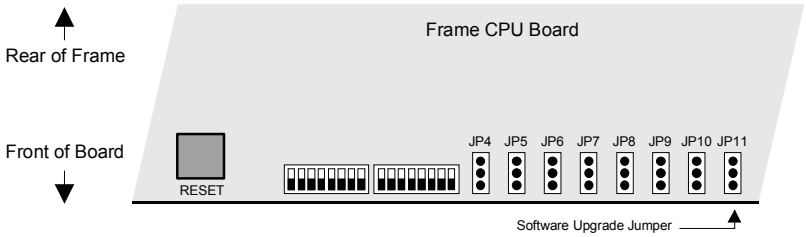
Software Upgrade

This section outlines how to initiate the software upgrade using either floppy disks or a USB key.

Using Floppy Disks

Use the following procedure to initiate the software upgrade from floppy disks:

1. Ensure that you backup your switcher by saving your setups to a floppy disk. Refer to the section "**System Backup**" on page 2–33 for more information.
2. Power off the frame.
3. Power off the control panel.
4. Move the **Software Upgrade** jumper (**JP11** on the **Frame CPU Board**) to the **Up** position. Use the following figure for reference:



Frame CPU Board – Software Upgrade Jumper

5. Power on the frame first.
6. Power on the control panel second.
7. Insert the **S234 Software Upgrade Disk #1** in the drive.

Note

If you receive an error message informing you that you must have CPU issue **8** or higher, you will have to abort the software upgrade. This will require you to power off the frame and set the jumper back to the **DOWN** position and power on the frame and control panel without the floppy disk in the disk drive.

When prompted, remove **Disk#1**, insert **Disk #2,** press **Continue**, and wait for the upgrade process to complete. The software is complete when the menu buttons flash in "marquee" fashion.

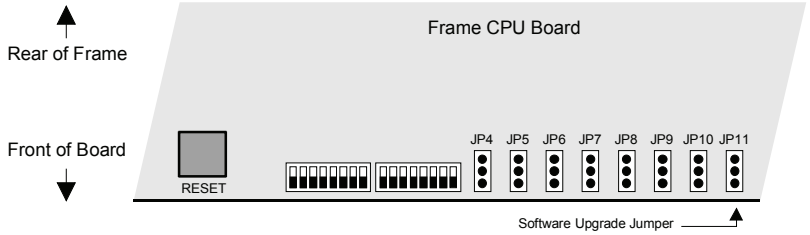
8. Power off the frame
9. Power off the control panel.
10. Move the jumper on **JP11** (on the **Frame CPU Board**) to the **Down** position.
11. Power on the frame and the control panel — in any order desired.

This completes the procedure for upgrading system software. Please continue with the "**Restoring Disk Registers**" procedure.

Using a USB Key

Use the following procedure to initiate the software upgrade from a USB key:

1. Ensure that you have saved your setups to a USB key. Refer to the section "**System Backup**" on page 2–33 for more information.
2. Power off the frame.
3. Power off the control panel.
4. Move the **Software Upgrade** jumper (**JP11** on the **Frame CPU Board**) to the **Up** position. Use the following figure for reference:



Frame CPU Board – Software Upgrade Jumper

5. Power on the frame first.
6. Power on the control panel second.
7. Insert the **USB key** with the upgrade system software into the USB port of the Synergy switcher.

Note

If you receive an error message informing you that you must have CPU issue **8** or higher, you will have to abort the software upgrade. This will require you to power off the frame and set the jumper back to the **DOWN** position and power on the frame and control panel without the USB key in the USB port.

The software is complete when the menu buttons flash in "marquee" fashion.

8. Power off the frame
9. Power off the control panel.
10. Move the jumper on **JP11** (on the **Frame CPU Board**) to the **Down** position.
11. Power on the frame and the control panel — in any order desired.

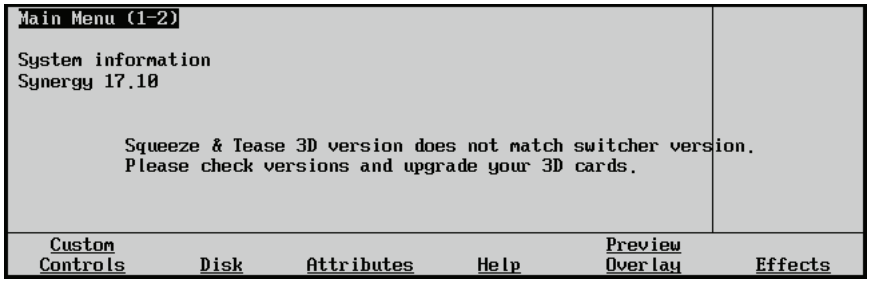
Important

After restoring power to the control panel, you may receive the error message, "**USB Upgrade Failed**". Contact Ross Video Technical Support for more information on correcting the error.

This completes the procedure for upgrading system software. Please continue with the "**Restoring Disk Registers**" procedure.

Software Versions

An error message occurs when the Squeeze & Tease 3D software is a different version than the Synergy switcher software. This error message is displayed on the **Main Menu 1-2**, as seen in the example below.



Main Menu — Software Version Message

If you receive this error message, you must verify the software versions of your Squeeze & Tease 3D cards and your Synergy control panel. Contact Ross Video Technical Support if you have questions on upgrading your Synergy switcher software version to match your Squeeze & Tease 3D cards.

Restoring Disk Registers

Use the following procedure to restore your disk registers to on-line memory:

1. Ensure that new Synergy software version is properly installed. If not, refer to the section "**Software Upgrade**" on page 2–34.
2. Locate the "backup" storage device that you made in the section "**System Backup**" on page 2–33.

Operating Tip

You must wait 5 seconds after inserting the USB key into the USB port before you can read its contents

3. Naivgate to the **Disk Menu** as follows:
   - Press **HOME** ⇨ **Disk**.
4. Read the entire contents of the storage device into switcher memory as follows:
   - Insert the backup storage device into its drive on the Synergy switcher.
   - Press **Recall** to display the **Disk Recall Menu**.
   - Press **All** to recall *all categories* of registers from the backup storage device.

Caution

Do NOT remove the floppy disk or USB key from the switcher before the LED on the floppy drive or USB port goes out. Doing so may destroy the data on your floppy disk or USB key, as well as the data on the next one you insert into the switcher.

5. Eject the storage device from the switcher.

This completes the procedure for restoring your disk registers.

Installed Options Menus

Several important menus are available that allow you to verify all of the installed options in your Synergy switcher — with serial numbers as well as software option codes. The menus also display the revision levels of all system boards, and allow you to install software options. In its initial state, the **Main Area** and **Scroll Area** of the **Installed Options Menu** are both blank. The **Label Area** provides an array of options which are discussed in the following sections:

- Menu Access
- Software Options Menu
- Panel Boards Menu
- Frame Boards Menu
- Option Boards Menu
- Installing Serial Numbers
- Installing Software Options
- Storing and Recalling Option Codes

Important

Serial numbers allow Ross Video to properly track which options have been purchased by each customer. Switchers shipped in August 1999 and later have serial numbers installed (in flash memory) at the factory. Switchers shipped before August 1999 do not have serial numbers installed. Refer to the section "**Installing Serial Numbers**" on page 2–40 for instructions.

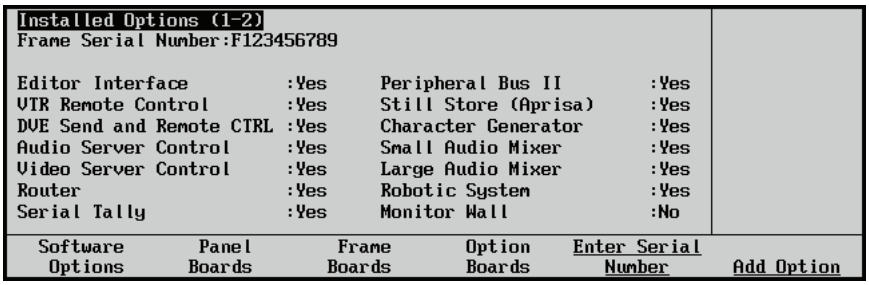
Software Options Menu

The main area of the **Software Options Menu** lists your Synergy frame's serial number at the top. This number is present at the top of *all* options menus. The main area also provides two columns of information:

- Column 1 lists the available software options.
- Column 2 indicates whether or not the option is installed.

Use the following procedure to view the software options you have installed on your Synergy switcher:

1. Navigate to the **Installed Options Menu 1-2** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installed Options**.
2. Press **Software Options** to display the **Software Options Menu**.



Installed Options — Software Options Menu

Notes on Using the Software Options Menu

Please note:

- The menu is provided for information only — no action can be taken.
- If a serial number appears at the top of the menu, please verify that the list reflects the exact options that you have purchased. If not, please contact **Ross Video Technical Support** for further information.
- If the label "**Unknown**" appears, the frame is turned off. Please turn on the frame so that the serial number can be recognized.
- If the label "**000000**" appears, a serial number is required. Your options will *temporarily* be activated but a valid serial number *must* be installed permanently — so that you do not lose switcher functionality. Refer to the section "**Installing Serial Numbers**" on page 2–40 for instructions.
- Serial numbers are unique, and pertain to *your switcher only*. The serial numbers cannot be exchanged, or entered on another switcher.

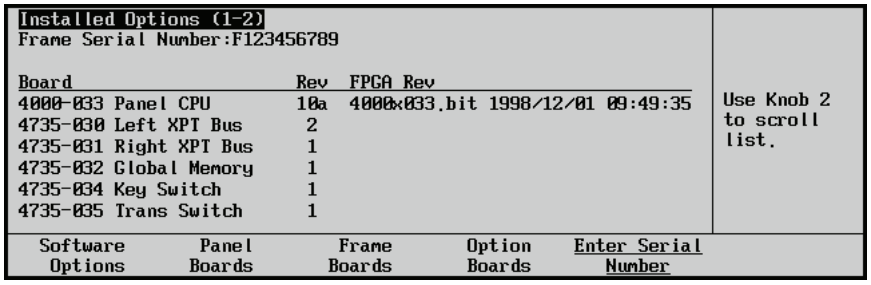
Panel Boards Menu

The **Main Area** of the **Panel Boards Menu** provides three columns of information that pertain to the boards installed in the panel:

- Column 1 (**Board**) lists each circuit board by part number and name.
- Column 2 (**Rev**) lists the board's hardware revision number.
- Column 3 (**FPGA Rev**) lists the board's software revision number.

Use the following procedure to view the control panel boards you have installed on your Synergy Series SD switcher:

1. Navigate to the **Installed Options Menu 1-2** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installed Options**.
2. Press **Panel Boards** to display the **Panel Boards Menu**.



Installed Options Menu — Panel Boards

3. Use the middle knob to scroll the list. Note that the menu is provided for information only — no action can be taken.

This completes the procedure to view the control panel boards you have installed on your Synergy Series SD Switcher.

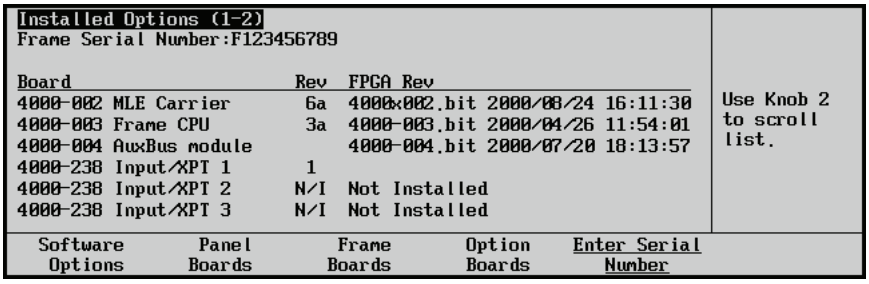
Frame Boards Menu

The Main Area of the **Frame Boards Menu** provides three columns of information that pertain to the boards installed in the frame:

- Column 1 (**Board**) lists each circuit board by part number and name.
- Column 2 (**Rev**) lists the board's hardware revision number.
- Column 3 (**FPGA Rev**) lists the board's software revision number.

Use the following procedure to view the frame boards you have installed on your Synergy Series SD Switcher:

1. Navigate to the **Installed Options Menu 1-2** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installed Options**.
2. Press **Frame Boards** to display the **Software Options Menu**.



Installed Options – Frame Boards Menu

3. Use the middle knob to scroll the list. Note that the menu is provided for information only — no action can be taken.

This completes the procedure to view the frame boards you have installed on your Synergy Series SD Switcher.

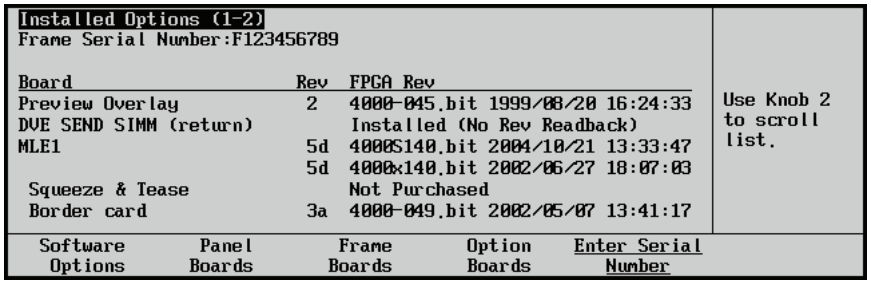
Option Boards Menu

The **Main Area** of the **Option Boards Menu** provides three columns of information that pertain to the optional boards that can be installed in the frame:

- Column 1 (**Board**) lists each optional circuit board by name.
- Column 2 (**Rev**) lists the hardware revision number of the associated board.
- Column 3 (**FPGA Rev**) lists the software revision number of the associated board.

Use the following procedure to view the optional boards you have installed on your Synergy SD Switcher:

1. Navigate to the **Installed Options Menu 1-2** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installed Options**.
2. Press **Option Boards** to display the **Option Boards Menu**.



Installed Options – Option Boards Menu

3. Use the center knob to scroll the list.

This completes the procedure to view the optional boards you have installed on your Synergy SD Switcher.

Notes on Using the Option Boards Menu

Please note:

- The menu is provided for information only — no action can be taken.
- The status for each MLE reflects whether or not the available MLE options are installed:
  - ~ **Squeeze & Tease**
  - ~ **Dual Border Generator**
- The status for each input slot reflects whether or not the optional **Input Carrier Board** is installed. Each **Input Carrier Board** has sockets provided for up to four hardware options.

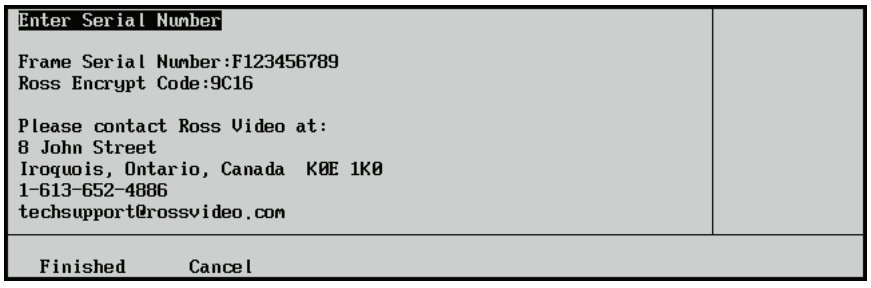
Installing Serial Numbers

Important

If the label "**000000**" appears at the top of the **Installed Options Menus**, a serial number is required.

Use the following procedure to install serial numbers on your Synergy Series SD Switcher:

1. Navigate to the **Installed Options Menu 1-2** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installed Options**.
2. Press **Enter Serial Number** to display the **Enter Serial Number Menu**.



Enter Serial Number Menu

Note

The **Encrypt Code** is a *random number* that is generated each time the switcher is powered up. Its purpose is to prevent unauthorized installation of software options. The code remains valid until the switcher is powered down or reset. The next time the switcher is powered up, a *new* Encrypt Code is generated.

3. Call **Ross Video Technical Support** at the number listed on the menu.
4. When you speak to our Technical Support representative, tell them your name, your facility name, and the **Encrypt Code** as listed on the menu.
5. You will be given a numeric code that must be entered on the keypad in the **Global Memory Area**.
6. Enter the code, and press **ENTER** on the keypad or press **Finished** on the **Serial Number Menu**.

This completes the procedure for entering the serial number.

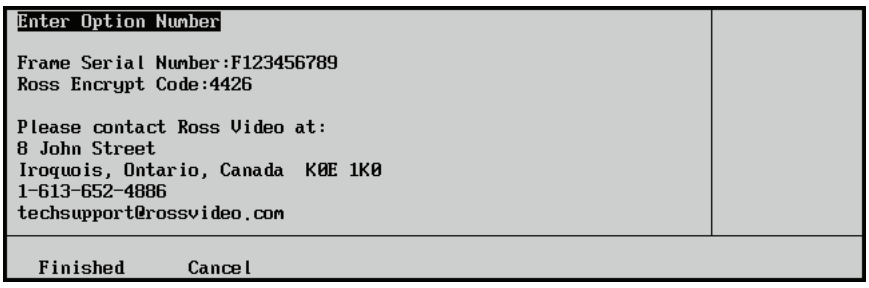
Installing Software Options

Use the following procedure to activate your software options (after entering a new serial number) or to install a new software option that you have just purchased.

Important

Ensure that your serial number is properly entered. Refer to the section "**Installing Serial Numbers**" on page 2–40 for more information.

1. Navigate to the **Installed Options Menu 1-2** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installed Options**.
2. Press **Software Options** to display the **Software Options Menu**.
3. Press **Add Option** to display the **Enter Serial Number Menu**.



Add Option Menu

4. Call **Ross Video Technical Support** at the number listed on the menu.
5. When you speak to our Technical Support representative, tell them:
   - Your name,
   - Your facility name,
   - The switcher's serial number,
   - The **Encrypt Code** as listed on the menu, and

- The option(s) that you wish to install. Technical Support keeps an up-to-date record of each switcher's configuration and option status.

6. You will be given a numeric code for each option. Enter the code on the keypad in the switcher's **Global Memory Area**.

Operating Tip

Make a written note of your serial number and each option code, and store them in a safe place for future reference.

7. Press **ENTER** on the keypad or press **Finished** on the **Serial Number Menu**. Once entered, the menu indicates "**Installed**," and the system displays the **Software Options Menu** to confirm.
8. Repeat steps 5 and 6 for each option.

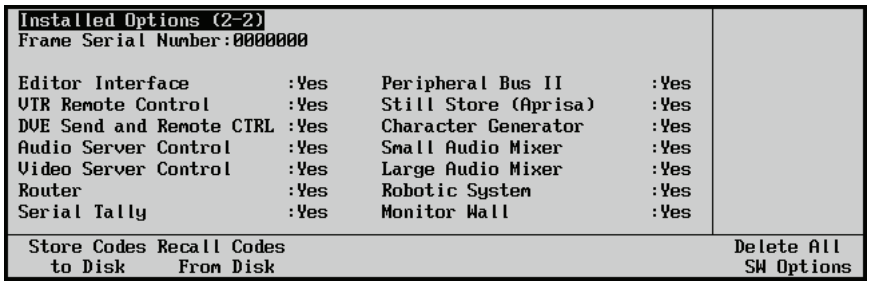
This completes the procedure to activate your software options.

Storing Option Codes

The **Installed Options Menu 2-2** allows you to store and recall your option codes to a storage device, such as a floppy disk or USB key, for purposes of safe storage.

Use the following procedure to store option codes:

1. Navigate to the **Installed Options Menu 2-2** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installed Options ⇨ Software Options⇨ .MORE**.



Installed Options Menu 2-2

2. Insert a storage device into the Synergy switcher as follows:
   - Insert a pre-formatted 1.4 MB high-density floppy disk into the floppy drive of the switcher.

   OR

   - If you have the **USB Removable Media Drive** option installed, insert a USB key into the USB port of the Synergy switcher. You must wait 5 seconds after inserting the USB key into the USB port before you can store option codes to it.
3. Press **Store Codes to Disk** to store all of your option codes.

Caution

Do NOT remove the floppy disk or USB key from the switcher before the LED on the floppy drive or USB port goes out. Doing so may destroy the data on your floppy disk or USB key, as well as the data on the next one you insert into the switcher.

4. Eject the storage device from the switcher.

5. Label the storage device and store it in a safe place.

   It is recommended that you place the following information on the label:

   - Synergy SD Switcher Model (2, 3, or 4)
   - Software Option Codes Backup
   - Today's Date
   - Synergy Software Version

This completes the procedure for saving your option codes to a storage device.

Recalling Option Codes

In case the option codes are accidentally erased or deleted, use the following procedure to recall option codes:

1. Navigate to the **Installed Options Menu 2-2** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installed Options ⇨ .MORE**.
2. Insert the storage device containing the **Software Option Codes** backup that you created in the section "**Storing Option Codes**" on page 2–42. You must wait 5 seconds after inserting the USB key into the USB port before you can begin to recall your option codes.
3. Press **Recall Codes from Disk** to recall all of your option codes.

Caution

Do NOT remove the floppy disk or USB key from the switcher before the LED on the floppy drive or USB port goes out. Doing so may destroy the data on your floppy disk or USB key, as well as the data on the next one you insert into the switcher.

4. Eject the storage device from the switcher.

Note

The **Delete All SW Options** function is reserved for factory use only. Do not use this function.

This completes the procedure to recall option codes.

Preliminary Cabling and Check

In This Chapter

This chapter outlines procedures for making basic control panel, frame, reference, and monitor connections. A preliminary functional check procedure is also provided. The following topics are discussed:

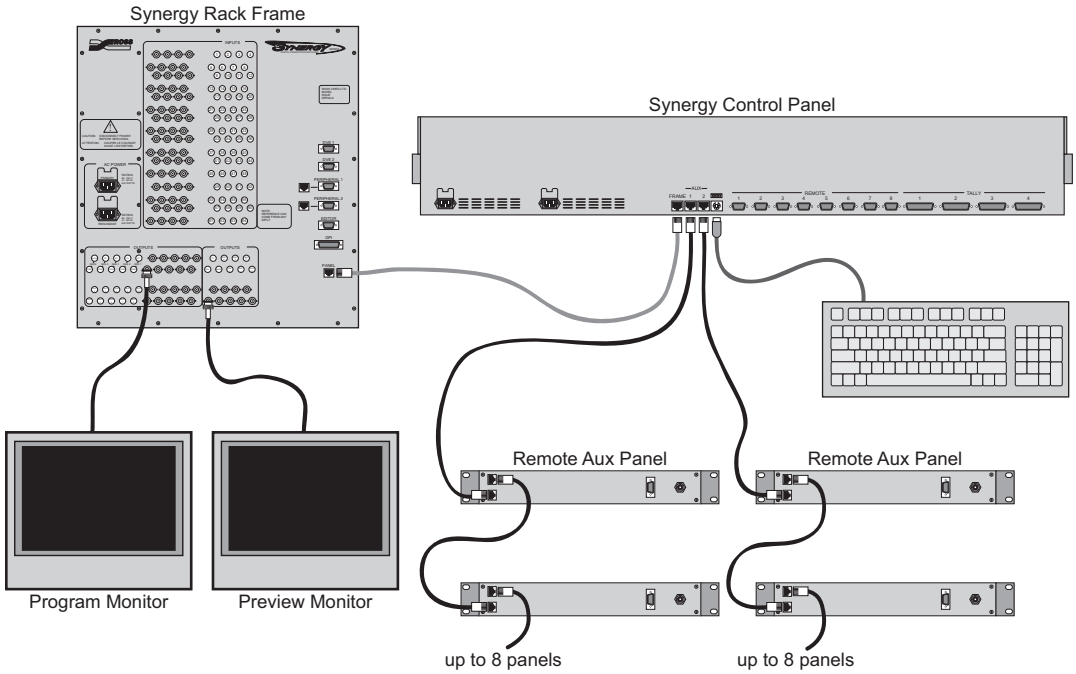
- Cabling
- Control Cable Installation
- Remote Aux Panel Cabling
- Reference Signal Connection
- Monitor Connection
- Animated Logo Generator (CDK-111A-M) Cabling
- DSK 3/4 (CDK-111A-M) Cabling
- Power Up
- Resetting the System
- Full Reset
- Software Reset
- Preliminary Functional Check
- Basic Troubleshooting
- Switcher Timeout

Cabling

In this section, the following connections are made:

- Control panel to main frame
- Control panel to optional remote Aux panels
- Reference input
- Connections to an output monitor

Once these basic connections have been completed, a preliminary functional check can be performed to ensure that the switcher is passing video. The following figure illustrates the connections that you will make in this chapter.



Preliminary Cable Connections

Note

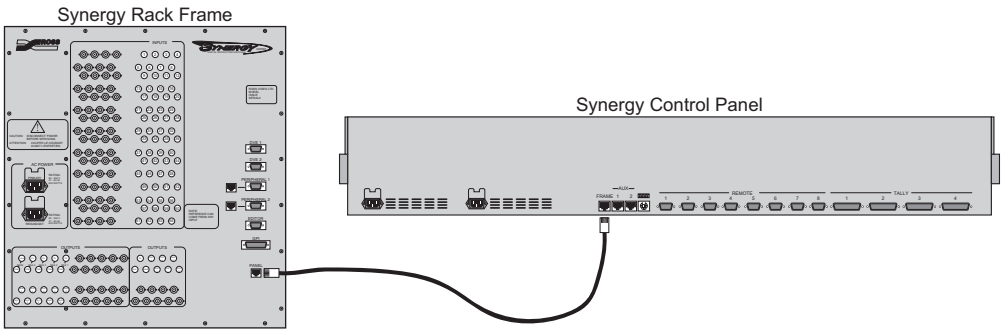
This diagram shows the Old Version of Remote Aux Panels, refer to the section "**Remote Aux Panel Cabling**" on page 3–3 for specific information on your Remote Aux Panel.

Control Cable Installation

Important

The cable connecting the Synergy Control Panel to the Synergy Frame is not wired as a standard CAT5 ethernet cable. If you need a cable of a specific length, contact your Ross Video Representative for ordering information.

Use the following procedure to install the control cable between the Frame and the Control Panel:



Frame to Control Panel Interconnection

1. Ensure that you have the correct **8-pin** shielded Telco cable, with **8-pin** connectors at each end. Because of their small size, all Telco connectors look quite similar.
2. Using an 8-pin shielded Telco cable, connect the communications port labeled **PANEL** (on the electronics frame) to the communications port labeled **FRAME** (on the rear of the control panel).

This completes the procedure to install the control cable between the Frame and the Control Panel.

Please note:

- The maximum cable length is 1000 feet (305 meters).
- The cable must be run in accordance with good engineering practice. Ensure that there is sufficient room for the cable and that enough slack is left in the cable run to permit long, gentle bends. Always install cables so that they will not be subjected to physical abuse.

Remote Aux Panel Cabling

This section provides instructions for cabling both *old* and *new version* **Remote Aux Panels**. The following topics are discussed:

- Remote Aux Panel Cabling — Old Version Panels
- Remote Aux Panel Cabling — New Version Panels
- Aux Panel Cabling Notes (applies to *all panel versions*)

Depending upon the type of Remote Aux Panel that you have installed, please refer to the appropriate “cabling” section below.

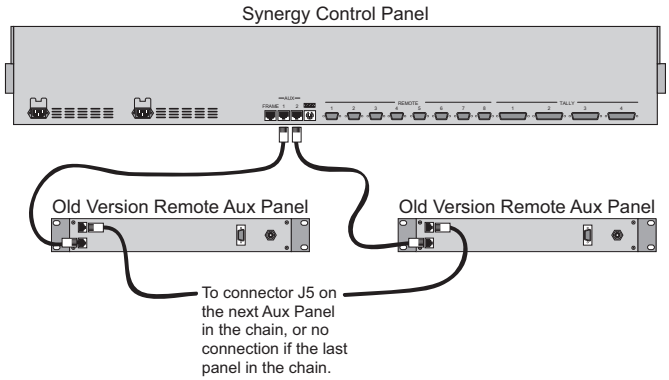
If your system includes remote Aux Bus panels, one serial cable is shipped with each panel. There are two types of cable available:

- Aux panel cables with standard 10 meter lengths.
- Non-standard cables with lengths specified by the customer.

For standard length cables, refer to the packing list provided with your switcher; the length will be given there. For custom length cables, the length is given on a label attached to the cable.

Remote Aux Panel Cabling — Old Version Panels

Once you have located the appropriate cables for each remote Aux panel (old version), make the connections according to the figure below:



Remote Aux Panel Interconnection

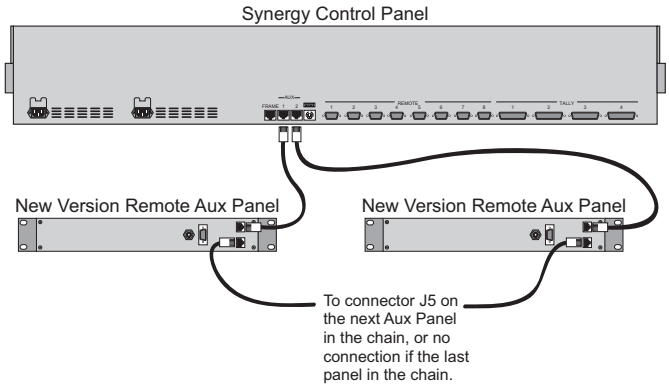
Use the following procedure to install the control cables between the control panel and each remote Aux panel:

1. Ensure that you have the correct **6-pin** shielded Telco cable, with **6-pin** connectors at each end. Because of their small size, all Telco connectors look quite similar.
2. Connect a 6-pin shielded Telco cable (of the supplied or custom length) between the control panel's **AUX 1** connector and the connector labeled **CONTROL** on the rear of the *first* Aux panel in line.
3. To daisy-chain additional Aux panels (up to 8), connect a 6-pin shielded Telco cable between the Aux panel connector labeled **EXTENSION PANEL** and the connector labeled **CONTROL** on the *next* Aux panel in line.
4. Repeat step 2 for all additional Aux panels in the **AUX 1** daisy-chain (up to the maximum of 8 panels per chain).
5. Repeat steps 1 through 3 for the **AUX 2** connector.

This completes the procedure to install the control cables between the control panel and each remote Aux panel.

Remote Aux Panel Cabling — New Version Panels

Once you have located the appropriate cables for each remote Aux panel (new version), make the connections according to the following figure:



Remote Aux Panel Interconnection

Use the following procedure to install the control cables between the control panel and each remote Aux panel:

1. Ensure that you have the correct **6-pin** shielded Telco cable, with **6-pin** connectors at each end. Because of their small size, all Telco connectors look quite similar.
2. Connect a 6-pin shielded Telco cable (of the supplied or custom length) between the control panel's **AUX 1** connector and the connector labeled **MAIN** on the rear of the *first* Aux panel in line.
3. To daisy-chain additional Aux panels (up to 8), connect a 6-pin shielded Telco cable between the Aux panel connector labeled **ECHO** and the connector labeled **MAIN** on the *next* Aux panel in line.
4. Repeat step 2 for all additional Aux panels in the **AUX 1** daisy-chain (up to the maximum of 8 panels per chain).
5. Repeat steps 1 through 3 for the switcher control panel's **AUX 2** and **AUX 3** connectors.

This completes the procedure to install the control cables between the control panel and each remote Aux panel.

Aux Panel Cabling Notes

Please note the following points regarding all remote Aux panels:

- All 12 Aux outputs on the frame are provided as standard. Unless the **Timed Aux Bus** option is installed on specific outputs, all Aux outputs are untimed.
- Aux panel connectors on the electronics frame are universal — they can control any of the remote Aux panels.
- Aux panel configuration (assignment to specific outputs and assignment of "rights") is performed using the menu system. Refer to the section "**Aux Bus Setup**" on page 11–3 for instructions.
- Aux panel crosspoint labels are provided with each panel. Refer to the section "**Pushbutton Inserts**" on page 4–9 for labeling instructions.

Reference Signal Connection

A digital reference signal must be connected to the switcher. Please note:

- Connect the digital reference signal to *any* of the 64 BNC input connectors on the rear of the frame.

Operating Tip

For convenience, use input **1**. This input is factory-configured as reference input. In addition, input **1** is the *required* reference connection for steps taken in the section "**Preliminary Functional Check**" on page 3–14.

- Configuration of the reference signal (for inputs other than **1**) is performed with the menu system. Refer to the section "**BNC Configuration**" on page 6–4 for complete BNC (input) configuration instructions.
- Always use a stable signal that is low in jitter, and that preferably originates from a reliable digital test signal generator.
- The switcher regenerates color black from the assigned reference input. Therefore, as a recommendation, if you select digital **COLOR BARS** as your reference, you can satisfy the reference requirement, automatically generate black and also provide the (typically) required color bar input — all in one signal.

Note

If you elect to use analog color black as your reference (based on your facility's requirements), you must use an external A-D converter. For information on Ross Video's full line of conversion equipment, contact your sales representative or Ross Video Limited.

Monitor Connection

Connect either the **PGM 1** or **PGM 2** BNC output on the rear of the frame to your serial digital program monitor.

Please note:

- If you are using a serial digital monitor, connection is direct.
- If you are using an analog monitor, one of three D-A converters is required:
  - ~ Serial Digital to NTSC
  - ~ Serial Digital to PAL
  - ~ Serial Digital to Analog Component

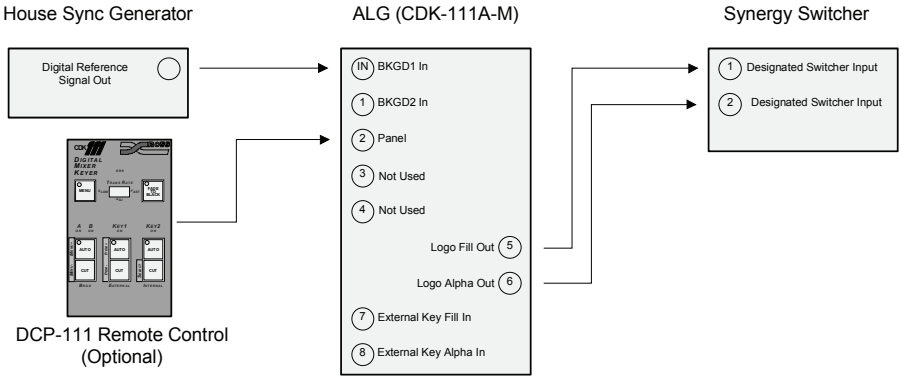
  For information on Ross Video's full line of conversion equipment, contact your sales representative or Ross Video Limited.

Animated Logo Generator (CDK-111A-M) Cabling

This section explains how to connect the Animated Logo Generator (ALG) to your Synergy 2, 3 or 4 SD Switcher.

Use the following procedure to connect the ALG to your Synergy SD Series switcher:

1. Using industry standard coaxial cable and BNC connectors, connect a digital reference signal from your facility's house sync generator to the **IN** BNC of the CDK-111A-M.
2. With the CDK-111A-M in ALG mode, BNC **5** and BNC **6** are the **Fill** and **Alpha** outputs, respectively, for the logo(s) stored on the card. Using industry standard coaxial cable and BNC connectors, connect these **Fill** and **Alpha** outputs to any Synergy switcher inputs as designated by the facility engineer.
3. For remote control of the CDK-111A-M in ALG mode, connect the DCP-111 panel to BNC 2.

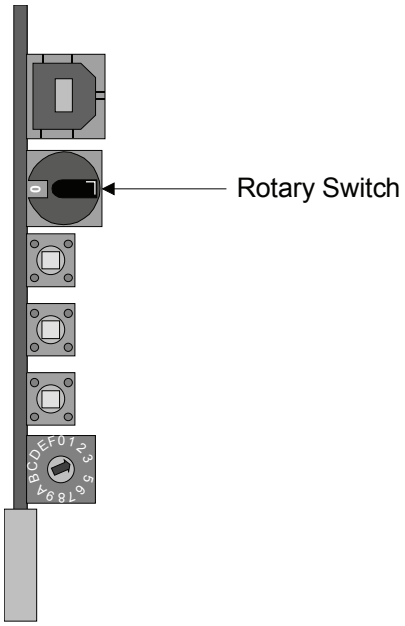


ALG (CDK-111A-M) Cabling Diagram

Important

Before turning on the power, please ensure that the rotary switch on the front edge of the CDK-111A-M card, as indicated on the following diagram on page 3–8 is turned to position 0. This is the normal operating position for your CDK-111A-M when in ALG mode.

Refer to Chapter 8, "**Animated Logo Generator Mode**", in the ***CDK-111A-M Owner's Guide*** for information on controlling the ALG using either the card edge buttons or the DCP-111 remote control buttons.



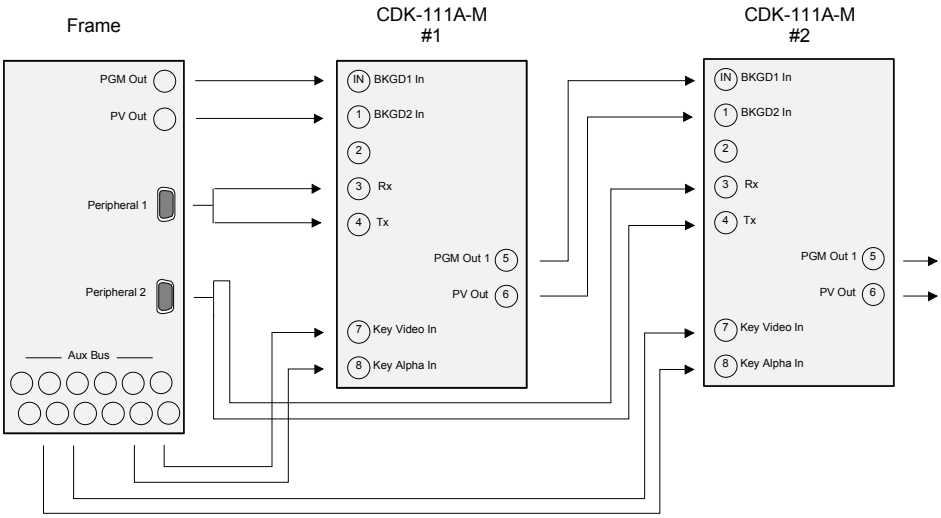
ALG (CDK-111A-M) Card Edge

Refer to the section, "**Animated Logo Generator Mode**", in the ***CDK-111A-M Owner's Guide,*** for complete instructions on installing, configuring, and operating your CDK-111A-M in ALG mode.

DSK 3/4 (CDK-111A-M) Cabling

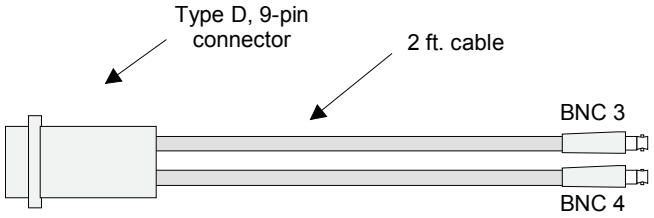
This section explains how to connect the DSK 3/4 (CDK-111A-M) to your Synergy 2, 3 or 4 SD Switcher. Refer to the section "**DSK 3/4 (CDK-111A-M) Communications Setup**" on page 7–19 for full installation and configuration procedures.

Use the following procedure to connect your DSK 3/4s:



DSK 3/4 (CDK-111A-M) Cabling Diagram

1. Using industry standard coaxial cable and BNC connectors, connect a PGM output of the Synergy frame to BNC **IN** for the DSK 3/4. This provides your reference signal as well as **BKGD1**.
2. Connect the associated PV Out from the Synergy frame to BNC **1**, which is **BKGD2** on the external DSK.
3. Using the Serial Interface Cable (supplied with CDK-111A-M), connect the **Peripheral 1** DB-9 port on the back of the Synergy frame to BNC **3** and BNC **4** on the external DSK. Depending on your site layout, add extension cables from either end if necessary.



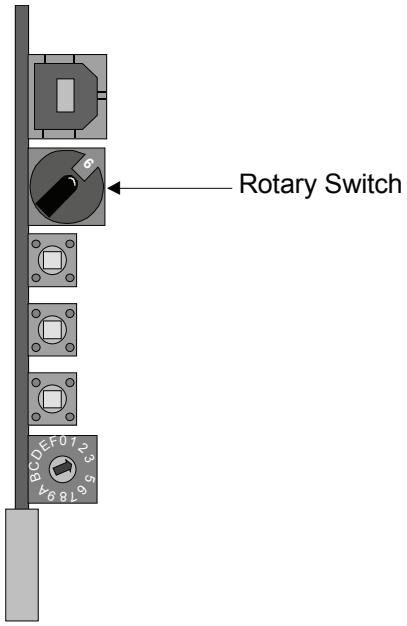
Serial Interface Cable

4. Connect the designated untimed Aux Buses for key video and alpha to the keyer's BNC **7** and **8** connectors, respectively.
5. If you are installing a single DSK, BNC **5** and BNC **6** are the **PGM** and **PV** outputs, respectively. If you are installing a second DSK, these connectors are used to feed the **BKGD1** and **BKGD2** (BNC **IN** and **1**) of the second board. As well, you will need to connect the Synergy frame's **Peripheral 2** DB-9 port to BNC **3** and **4** on the DSK in the same manner as you did for the first board. The second key video and key alpha (BNC **7** and **8**) will be fed with two additional Aux Buses.

6. On the second DSK, BNC **5** and **6** are the **PGM Out** and **PV Out**, respectively.

Important

Before turning on the power, please ensure that the rotary switch on the front edge of the CDK-111A-M card indicated on the diagram below is turned to position 6. This is the normal operating position for your DSK 3/4.



DSK 3/4 (CDK-111A-M) Card Edge

Refer to the section "**DSK 3/4 (CDK-111A-M) Communications Setup**" on page 7–19 for instructions on installing and seating cards.

Power Up

Powering up the switcher causes the system to restore the *previous condition* that existed before power down. In the absence of a valid condition, a "reset" condition is presented, with the **BLACK** crosspoint selected on all buses. The switcher's memory contents are retained.

Use the following procedure to power up the system:

1. Ensure the following power prerequisites are met:
   - All power cables are fastened and secure.
   - For control panel redundancy (if installed), ensure that two independent AC sources are used to feed the control panel power supplies.
   - For frame redundancy (if installed), ensure that two independent AC sources are used to feed the frame power supplies.

Note

The *order* in which you power up the frame and control panel is not important — either can be powered up first.

2. Control Panel power switches are located inside the control panel tub, on the right-hand side. Open the panel tub and turn on the **Primary** and (if installed) the **Redundant** power switches.
3. Close the control panel tub.
4. Frame power switches are located on the bottom right-hand side of the electronics frame. Turn on the **Primary** and (if installed) the **Redundant** power switches.
5. On the frame, ensure that the **ALL OK** LED is lit.
   - If it is *not* lit, turn the unit off and check all power connections.
   - Re-seat the power supply tray if necessary.
   - Turn the unit back on and recheck the **ALL OK** LED. If the LED is still not lit, contact Ross Video Technical Support.
6. On the control panel, ensure that the **PANEL** LED under the **POWER FAIL** heading is not lit.
   - If it *is* lit, turn the unit off and check all power connections.
   - Turn the unit back on and recheck the **PANEL** LED. If the LED is still lit, contact Ross Video Technical Support.

This completes the procedure to power up the system.

Resetting the System

If required, the Synergy SD Switcher can be reset manually from either the control panel or the frame. There are two types of resets:

- A **Full Reset** affects hardware and software simultaneously
- A **Software Reset** affects software only

Full Reset

This function performs both a hardware and a software reset simultaneously:

- To reset the frame and all system software, press the red button labeled **RESET** on the front edge of the **Frame CPU Board**. Switcher memory is not affected by a reset, but all other switcher parameters are reset. In this condition, **BLACK** will be selected on all buses.
- To reset the control panel and all system software, press the red button labeled **RESET** on the **Control Panel CPU Board**. This button is located underneath the control ribbon cable near the front edge of the board. Pressing this button causes a system reset as described above.

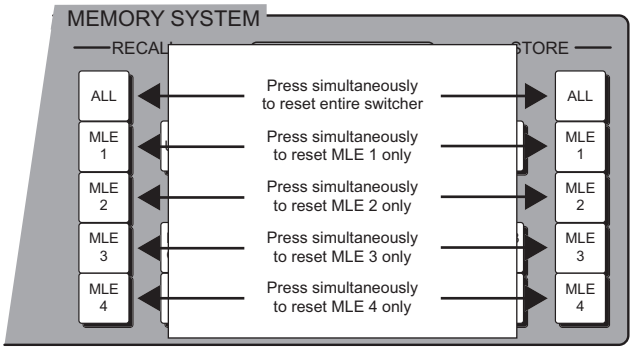
Refer to the section "**Jumpers and Switches**" on page 2–26 for additional information on the frame and control panel **RESET** switches.

Software Reset

The software reset function can be performed from either the **Global Memory System Group** or any individual **MLE** on the switcher. Both methods are described below.

Resetting the Switcher from the Global Memory System Group

Use the figure below for reference:



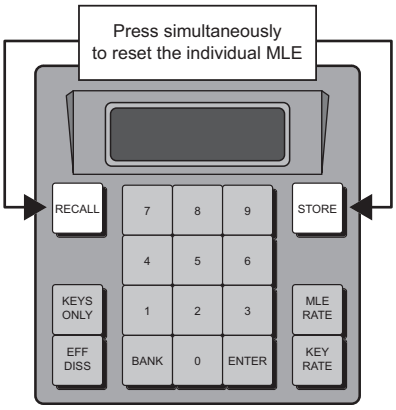
Global Memory System Group Reset Function

- To perform a full reset (on all switchers), simultaneously press **ALL** (in the **RECALL** column) and **ALL** (in the **STORE** column).
- To reset **MLE 1** (on all switchers), simultaneously press **MLE 1** (in the **RECALL** column) and **MLE 1** (in the **STORE** column).
- To reset **MLE 2** (on all switchers), simultaneously press **MLE 2** (in the **RECALL** column) and **MLE 2** (in the **STORE** column).

- To reset **MLE 3** (on Synergy 3 and Synergy 4 systems), simultaneously press **MLE 3** (in the **RECALL** column) and **MLE 3** (in the **STORE** column).
- To reset **MLE 4** (on Synergy 4 systems), simultaneously press **MLE 4** (in the **RECALL** column) and **MLE 4** (in the **STORE** column).

Resetting the Switcher from an Individual MLE

Use the figure below for reference:



Individual MLE Reset Function

Important

This feature is only available on **Synergy 3** and **Synergy 4** systems. The **Synergy 2** does not have an **MLE Memory** group due to the switcher's compact size.

- To reset **MLE 1**, in MLE 1's **Memory** group simultaneously press **STORE** and **RECALL**.
- To reset **MLE 2**, in MLE 2's **Memory** group, simultaneously press **STORE** and **RECALL**.
- To reset **MLE 3**, in MLE 3's **Memory** group, simultaneously press **STORE** and **RECALL**.

Note

On Synergy 4 systems, **MLE 4** can only be reset using the **Global Memory System** group.

Preliminary Functional Check

At this point, the basic connections have been completed. With the switcher powered up, a preliminary functional check can be performed to ensure that the switcher is passing video. A variety of tests can be performed, including:

- Dissolves between **BLACK** and **COLOR BKGD**
- Wipes between **BLACK** and **COLOR BKGD**
- Fade to black

All Ross Video products undergo thorough quality control and testing before shipment. The following preliminary check ensures that no damage has occurred during transit, and that all boards are correctly installed. Once the preliminary check is complete, the remaining installation procedures can be performed.

With your video monitor properly connected, perform the following procedure for a preliminary check:

1. Perform a full software reset, as outlined in the section "**Software Reset**" on page 3–12. This sets the panel to a *full* reset state.
2. Ensure that your reference video is connected to input **1**.
3. Check the status of the control panel. In a reset (or "default") condition, the following buttons and indicators will be lit:
   - The first crosspoint button (typically **BLACK**) is selected on all MLE buses.
   - The first crosspoint button (typically **BLACK**) is selected on the **Aux Bus**.
   - The red LED at the right edge of the **PGM** (Program) **Bus** is lit. This indicates that the **PGM Bus** is on air.
   - In the **Preview Bus** group, **PGM** is lit.
   - In the **Aux Bus Assign** group, **ASSIGN 1** is lit.
   - In each MLE's **Transition** group, the **BKGD** and **DISS** buttons are lit. A background dissolve is the switcher's default transition.
   - In the **Program/Preset Transition** group, the **BKGD** and **DISS** buttons are lit.
   - In each MLE's **Memory System** group, the **RECALL** button is lit and the display shows the following information (for the specific MLE):
     - **REG:00** — Memory register 00 is preset
     - **Memory0** — Memory register 00 was last recalled
     - **MLE:015** — MLE transition rate is 15 frames
     - **Key:008** — Key transition rate is 8 frames
   - In the **Global Memory System Group**, under the "**Recall**" heading, the following buttons are lit:
     - **Synergy 2**: **MLE 2**
     - **Synergy 3**: **MLE 3**
     - **Synergy 4**: **MLE 4**

The default display in the **Global Memory System Group** indicates the following information (for the DSK and the Program/Preset MLE):

  - ~ **REG:00** — Memory register 00 is preset
  - ~ **Memory0** — Memory register 00 was last recalled
  - ~ **M:015** — MLE (4, 3, or 2) transition rate is 15 frames
  - ~ **D:008** — DSK transition rate is 8 frames
  - ~ **F:20** — DSK fade-to-black transition rate is 20 frames

- In each MLE's **Key 1** and **Key 2** group, the **AUTO SELECT** button is lit.
- In each switcher's **Downstream Keyer** group, source 1 is selected.
- At the far right edge of each MLE's **Key Bus**, the green **KEY 1** LED is lit. This indicates that the **Key 1 Bus** is active.
- In the **Positioner** group, the **MLE 1** and **PATT** buttons are lit.
- In each switcher's **Mattes** group, there is no default selection. Therefore the last buttons selected will be lit.
- In the **Pattern Control** group, the **MLE 1**, **PP1**, **NORM** and **Vertical Wipe** (upper left wipe) buttons are lit.
- In the **DVE Send** group, the **MLE 1** button is lit.

4. Select sources for the transition:
   - Ensure that **BLACK** is selected on the **PGM Bus**.
   - Select **COLOR BKGD 1** on the **PST** (Preset) **Bus**.
     - ~ **Color Background 1** is factory preset to red.
     - ~ **Color Background 2** is factory preset to blue.
5. Ensure that **DISS** is selected in the PGM/PST MLE's **Transition** group.
6. While watching the monitor, move the fader from one limit to the other, and verify that the video dissolves from black to color.

Note

When lit, the Up/Down arrows adjacent to the fader indicate which direction to move the fader to complete the transition.

7. In the MLE's **Transition** group, press **WIPE**.
8. While watching the monitor, move the fader from one limit to the other, and verify that the video *wipes* between color and black.
9. On the active bus, switch between two or three crosspoints (such as **COLOR BKGD 1** and **COLOR BKGD 2**) to ensure that "cuts" are taking place.
10. On the **PGM Bus**, press a re-entry crosspoint (**MLE 1**, **MLE 2**, or **MLE 3**, depending on the switcher model).
11. On the selected re-entry bus, repeat steps 4 through 9. Instead of the **PGM** and **PST** bus, use each MLE's **BKGD** and **PST** buses.
12. Repeat steps 10 and 11 for *each MLE* in your system.

This completes the preliminary check. Once you are satisfied that video is switching and mixing, continue with the remaining connection procedures.

Basic Troubleshooting

Note the following basic troubleshooting points:

- If you experience any problems with knobs, faders, or the joystick during the preliminary functional check, there may be a problem with switcher calibration or MLE communications. Refer to the section "**Switcher Calibration**" on page 11–46 for instructions.
- If the system is not switching and is not outputting video, there may be a problem with the reference connection. Check that a valid digital reference is connected to input **1**. The system will not output video if the reference signal is invalid or not present.
- If you have the USB Removable Media Drive option installed, you may receive the error message, "**USB Upgrade Failed**" after restoring power to the control panel. Contact Ross Video Technical Support for more information on correcting this error.

For other switcher problems, please contact **Ross Video Technical Support**.

Switcher Timeout

If no control panel buttons are touched and no fader arms are moved for a period of 30 minutes, the switcher goes into a "sleep" mode and all lights are automatically turned off. If this timeout occurs, press any button or move any fader (or joystick) to "wake" the switcher and turn on all lights.

Please note:

- The switcher does *not* act on a button push when it is coming out of "sleep" mode.
- The factory default timeout interval is 30 minutes.

Preliminary Video Installation

In This Chapter

This chapter describes the connections required to provide video and key signals to all areas of the switcher. You will complete input and output worksheets, connect inputs and alpha signals, install all pushbutton inserts, and connect your switcher outputs. The following topics are discussed:

- Input Worksheet
- Connecting and Verifying Inputs
- Input Connection
- Input Verification
- Pushbutton Inserts
- Control Panel Pushbutton Inserts
- Aux Bus Panel Pushbutton Inserts
- Output Connection
- Connecting and Verifying Outputs
- Output Verification

Input Worksheet

Complete the following worksheet for all of your video inputs, including primary sources, Keys, and fills. To avoid marking up this guide, you can also use the worksheet provided in Appendix E, "**Switcher Installation Worksheets**" to make extra copies.

The following are basic input recommendations:

- Connect your reference video source to input **1** (as outlined in Chapter 3). This input is factory-configured as the reference input, and it automatically provides you with **BLACK** (Crosspoint button **1**), and your two **COLOR BKGD** (color background) sources.

  If you select digital **COLOR BARS** as your reference (recommended), remember that you can satisfy the reference requirement, automatically generate black and color, and *also* provide the color bar input — all in one signal. You will re-map the color bar signal itself to a control panel pushbutton later in the installation procedure.

Important

If you do *not* want to connect reference to input **1**, connect it to the desired input BNC, and make a written note of its location on the following chart. You will designate or "re-map" the alternate input as the reference during the input configuration process later in this guide. Until you re-map the reference input, the switcher's video output will *no longer function*.

Note

If you elect to use analog color black as your reference (based on your facility's requirements), you must use an external A-D converter. For information on Ross Video's full line of conversion equipment, contact your sales representative or Ross Video Limited.

- Connect your primary video sources to inputs **2**, **3**, **4** (etc.), and then continue forward in sequence.

  On the control panel, by default, input **2** is mapped to crosspoint button **2**, input **3** is mapped to crosspoint button **3**, etc. This association will minimize subsequent re-mapping of your inputs, and make it *very easy* for you to locate inputs on the panel during the initial cabling procedure.

- Connect your Key signals (alphas) to your *highest* available input number, and then continue backwards in sequence. For example:

  ~ **Synergy 2**: (assuming 16 standard inputs), start alphas at input **16**, then **15**, **14**, etc.

  ~ **Synergy 3**: (assuming 24 standard inputs), start alphas at input **24**, then **23**, **22**, etc.

  ~ **Synergy 4**: (assuming 32 standard inputs), start alphas at input **32**, then **31**, **30**, etc.

  In each case, if you have expansion inputs installed, use the your *highest* available input number. This association will allow you to view each alpha during preliminary cabling, and will also assist in the subsequent alpha-to-video re-mapping procedure.

Using the above recommendations, complete the input worksheet on page 4-4. The majority of this data will be used in the section "**BNC Configuration**" on page 6–4 to complete the configuration of each input.

For each input (moving from left to right in the worksheet columns):

- Fill in the actual source name. For example: **VTR 1**.
- Fill in the Remote port on the Synergy switcher for that input. For example: **Remote 1**.
- Fill in the Device Address of the input.
- Fill in the input name (up to 8 characters), as you would like to see it displayed throughout the menu system (and on the **Preview Overlay**). For example: **VTR Blue**.
- Fill in the *type* of input. Choose between:
  - ~ **OFF**
  - ~ **DVE**
  - ~ **VTR**
  - ~ **Reference**
  - ~ **Alpha**
  - ~ **Router**
  - ~ **Still Store**
  - ~ **Robotic Cam**
  - ~ **Video**
- Fill in the input's tally number.
- If the input is an alpha, choose between:
  - ~ Shaped (**S**) or Unshaped (**U**) Keying mode.
  - ~ Luminance Filter **On** or **Off**.
- If the input is a Key fill, choose the alpha with which you want the Key fill to be associated. List the primary source's BNC number.
- Fill in the audio channel if required.
- Fill in the desired physical button on which you want to place the input signal.

Note

The optional **Ultimatte Insider Board** is installed on an **Input Carrier Board**. Only BNCs attached to that **Input Carrier Board** can be fed to the Ultimatte. Verify that any inputs that you wish to Chroma key (like cameras) are fed to the appropriate **Input Carrier Board** BNCs.

BNC Input Worksheet

BNC #	Actual Source	Remote Port	Device Address	Input Name	Input Type	Tally Number	Alpha Type	Auto Key	Audio Channel	Button
Sample 1	VTR 1	Remote 1		VTR Blue	VTR	12	—	—	—	5
Sample 2	CG Alpha	Remote 2		CG Alpha	Alpha	—	S, Off	25	—	50
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
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30										
31										

BNC Input Worksheet

BNC #	Actual Source	Remote Port	Device Address	Input Name	Input Type	Tally Number	Alpha Type	Auto Key	Audio Channel	Button
32										
33										
34										
35										
36										
37										
38										
39										
40										
41										
42										
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Connecting and Verifying Inputs

This section covers the following topics:

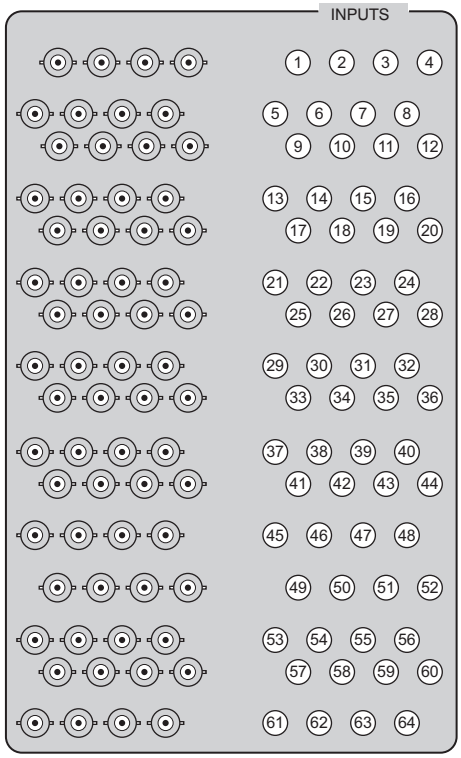
- Input Connection
- Input Verification

Input Connection

Operating Tip

Use cabling techniques in accordance with good engineering practice.

Using the data from the worksheet section "**BNC Input Worksheet**" on page 4–4, connect your reference input, primary inputs, and all alpha inputs to the appropriate connectors on the rear of the frame. Remember that there are no specific "Key" inputs — any input can be used for any purpose. All connectors are located in the "**Inputs**" section on the rear of the frame as shown below. Each input is identified in the label array to the right of the connectors.



Input BNC Connections

Note

The Synergy SD Switcher passes all embedded audio and ancillary data signals, including "closed captioning" that are present on the background video. The individual MLE program outputs each have the ancillary data associated with that MLE's background video.

Input Verification

For verification of your inputs, ensure that a monitor is connected to the **PGM – MAIN** BNC output. Remember also (at this point in the installation) that default mapping is still in effect. Re-mapping (per your input worksheet) will be performed in the section "**BNC Configuration**" on page 6–4. During this procedure, you can map *any input* to any button on a bus row.

On the unshifted row, default mapping is as follows:

- **BLACK** is mapped to Button 1.
- **SHIFT** is mapped to the last button in a bus row.
- **COLOR BKGD 2** is mapped to the second-to-last button.
- **COLOR BKGD 1** is mapped to the third-to-last button.

On the shifted row, default mapping is as follows:

- **SHIFT** is mapped to the last button in a bus row.

If reference has been connected to input **1** as recommended, you can verify input video inputs as they are connected. The following check assumes a *default* switcher condition.

- **Synergy 2:**
  - ~ To view inputs **2** through **14**, press buttons **2** through **14**, respectively. (Buttons **1**, **15**, **16**, and **17** are already mapped as indicated above).
  - ~ To view inputs **15** through **30**, press **SHIFT +** buttons **1** through **16**, respectively. (Button **17** is mapped to **SHIFT** on the shifted row).

Operating Tip

You can also double press the **SHIFT** button to have the MLE remain in the shifted mode. Double pressing the **SHIFT** button again releases the MLE from the shifted mode.

  - ~ Inputs **31** through **64** cannot be verified unless re-mapped.
- **Synergy 3:**
  - ~ To view inputs **2** through **27**, press buttons **2** through **27**, respectively. (Buttons **1**, **28**, **29**, and **30** are already mapped as indicated above).
  - ~ To view inputs **28** through **56**, press **SHIFT +** buttons **1** through **29**, respectively. (Button **30** is mapped to **SHIFT** on the shifted row).

Operating Tip

You can also double press the **SHIFT** button to have the MLE remain in the shifted mode. Double pressing the **SHIFT** button again releases the MLE from the shifted mode.

  - ~ Inputs **57** through **64** cannot be verified unless re-mapped.
- **Synergy 4:**
  - ~ To view inputs **2** through **32**, press buttons **2** through **32**, respectively. (Buttons **1**, **33**, **34**, and **35** are already mapped as indicated above).

~ To view inputs **33** through **64**, press **SHIFT +** buttons **1** through **32**, respectively. (Button **35** is mapped to **SHIFT** on the shifted row).

Operating Tip

You can also double press the **SHIFT** button to have the MLE remain in the shifted mode. Double pressing the **SHIFT** button again releases the MLE from the shifted mode.

Pushbutton Inserts

Once your inputs and alpha signal are connected, install the pushbutton designation inserts to identify the sources for your inputs. All pushbutton inserts are printed on full-sized sheets of transparent plastic and are easily installed under the lens caps for both the control panel and Aux panel pushbuttons.

Standard films with common input designations are provided with your switcher. If a designation that you require has *not* been included on a certain film and it is a type likely to be needed by other switcher users, Ross Video would be pleased to consider adding it to the standard film.

There are four typical ways of labeling a pushbutton:

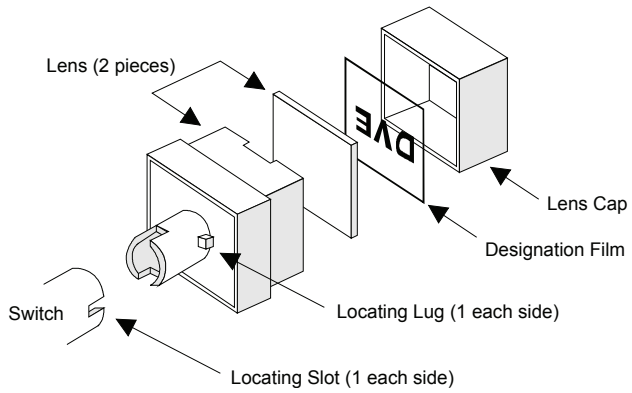
- Use our standard inserts.
- Ask us to make custom inserts.
- Make your own inserts using transparency material.
- Use a **Brother®** label maker to create your own labels.

Note

Ross Video will make *custom inserts* for your facility at a very reasonable price. Please call us for details.

Control Panel Pushbutton Inserts

Refer to the following diagram during this procedure.



Control Panel Pushbutton Inserts

Use the following procedure to install a control panel pushbutton insert:

1. Cut out the designation film inserts for the pushbuttons.

Operating Tip

For best results when cutting out the button inserts, use a sharp **X-ACTO®** knife and a steel-edged ruler.

2. Remove the pushbutton from the switch by pulling straight upward on the lens cap.
3. Remove the lens cap from the lens and place the desired input designation under the lens cap.

Operating Tip

If you have trouble removing a control panel button, use a pair of wide-tipped pliers (1/2 inch) with masking tape wrapped around the ends. For best results, wiggle the button back and forth as you extract it.

4. Place the designation film in the lens cap.
5. Reassemble the lens assembly with the new designation film. The designation film must read correctly with the lens locating lugs at the sides, *not* at the top and bottom.
6. Line up the locating lugs on the pushbutton with the locating slots on the switch and install the pushbutton.

Operating Tip

If the location lugs are not properly aligned, the pushbutton may pop off when the button is pressed and released.

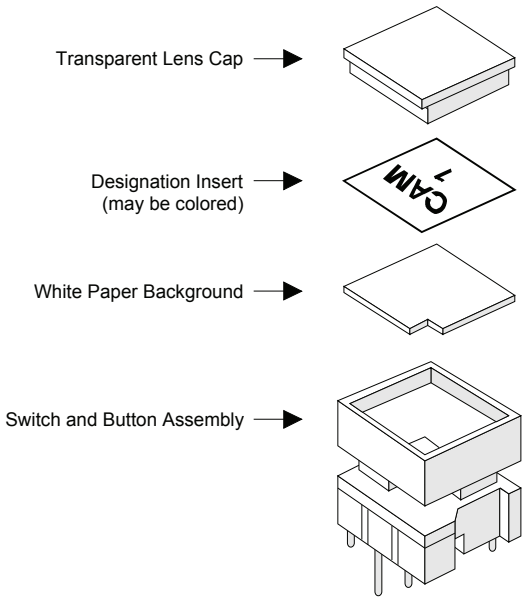
This completes the procedure for installing a control panel pushbutton insert.

Important

Perform this procedure for all buttons on each **PGM**, **PST**, **BKGD**, and **KEY** bus on your switcher. In addition, install pushbutton inserts for each of the eight **Key Bus** crosspoints in each **Downstream Keyer** (DSK). For information on the DSK **Key Bus**, and instructions on programming each **Key Bus** crosspoint, refer to the section "**DSK 3/4 (CDK-111A-M) Communications Setup**" on page 7–19.

Aux Bus Panel Pushbutton Inserts

Refer to the following diagram during this procedure.



Aux Panel Pushbutton Inserts

Use the following procedure to install an Aux Bus pushbutton insert:

1. Cut out the designation film inserts for the Aux Bus pushbuttons. These can be the same inserts used for the control panel pushbuttons.

Operating Tip

For best results when cutting out the button inserts, use a sharp **X-ACTO®** knife and a steel-edged ruler.

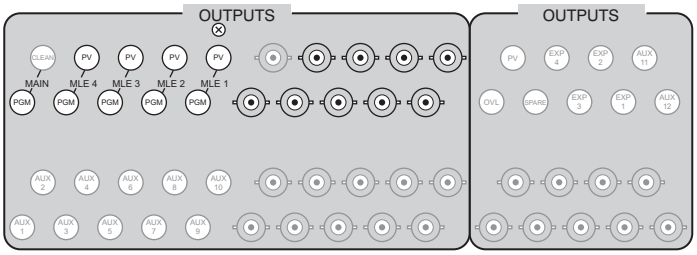
2. Remove the pushbutton from the switch by pulling straight upward on the button assembly.
3. Remove the lens cap by gently prying the lens cap out of the button assembly.
4. Place the designation insert in the lens cap.
5. Replace the paper background behind the designation film.
6. Replace the lens cap on the button assembly and press firmly together.
7. Install the pushbutton into the panel by pressing down firmly to re-seat it on the switch.

This completes the procedure for installing an Aux Bus pushbutton insert.

Output Connection

Complete the following primary output worksheet. Or, to avoid marking up the ***Installation Guide***, use the worksheet provided in Appendix E, "**Switcher Installation Worksheets**" to make extra copies.

Use the figure below for reference (note that only primary outputs are shown).



Primary Output BNC Connections

- Fill in the desired destination for each primary output signal.
- A gray cell indicates an inactive output for the selected switcher.
- The signal in parentheses indicates the actual signal provided by the **MAIN PGM** output for the selected switcher.

Primary Output Worksheet

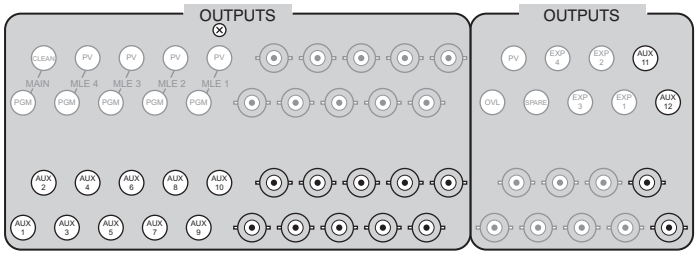
Output Connector	Synergy 2 Destination	Synergy 3 Destination	Synergy 4 Destination
MAIN PGM	(MLE 2 PGM)	(MLE 3 PGM)	(MLE 4 PGM)
MLE 1 PGM			
MLE 1 PV			
MLE 2 PGM			
MLE 2 PV			
MLE 3 PGM			
MLE 3 PV			
MLE 4 PGM			
MLE 4 PV			

Note

If you require more primary outputs than are provided on the rear of the frame, consideration should be given to using a digital distribution amplifier. Contact Ross Video or your Ross Video dealer for details.

Complete the auxiliary output worksheet on page 4-12. Or, to avoid marking up this guide, use the worksheet provided in Appendix E, "**Switcher Installation Worksheets**" to make extra copies.

Use the following figure for reference (note that only auxiliary outputs are shown).



Auxiliary Output BNC Connections

- Fill in the desired destination for each auxiliary output signal. Outputs serve the same function on all three switchers.
- *Any* Aux Bus outputs can be used for connecting the primary DVE's video and key channels. The "primary" DVE is defined as the *one DVE* that can be controlled via RS-422 serial control from the Synergy control panel.

Auxiliary Output Worksheet

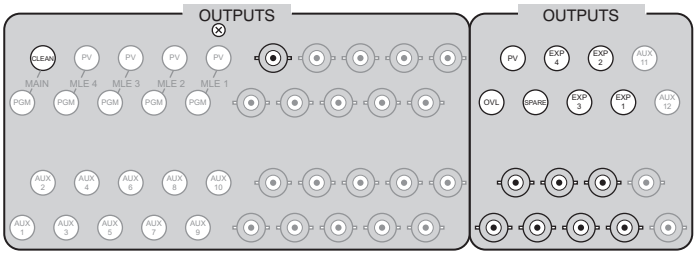
Output Connector	Destination
AUX 1	
AUX 2	
AUX 3	
AUX 4	
AUX 5	
AUX 6	
AUX 7	
AUX 8	
AUX 9	
AUX 10	
AUX 11	
AUX 12	

Note

If you require more auxiliary outputs than are provided on the rear of the frame, consideration should be given to using a digital distribution amplifier. Contact Ross Video or your Ross Video dealer for details.

Complete the special output worksheet on page 4-14 . Or, to avoid marking up this guide, use the worksheet provided in Appendix E, "**Switcher Installation Worksheets**" to make extra copies.

Use the following figure for reference (note that only special outputs are shown).



Special Output BNC Connections

- Fill in the desired destination for each special output signal. Outputs serve the same function on all three switchers.

Special Output Worksheet

Output Connector	Note	Destination
CLEAN	**Standard**. Provides clean feed output (software configurable).	
PV	**Standard**. Provides main output of the preview matrix.	
OVL	**Option**. Preview overlay must be installed for a signal to be present.	
SPARE	The output is currently not implemented.	
EXP 1	The output is currently not implemented.	
EXP 2	The output is currently not implemented.	
EXP 3	The output is currently not implemented.	
EXP 4	The output is currently not implemented.	

Note

If you require more special outputs than are provided on the rear of the frame, consideration should be given to using a digital distribution amplifier. Contact Ross Video or your Ross Video dealer for details.

Connecting and Verifying Outputs

This section covers the following topics:

- Output Connection
- Output Verification

Output Connection

Using the data from the three previous charts, connect the following outputs to the desired destinations. Use cabling and connecting techniques in accordance with good engineering practice.

Primary Outputs

Per your **Primary Output Worksheet**, connect the following primary outputs to the desired external destinations, such as program monitors, preview monitors, transmission, routing switchers, etc. Remember that the **MAIN PGM** output provides a *second output* for the highest-numbered MLE in your system:

- **MAIN PGM**
- **MLE 1 PGM**
- **MLE 1 PV**
- **MLE 2 PGM**
- **MLE 2 PV**
- **MLE 3 PGM**
- **MLE 3 PV**
- **MLE 4 PGM**
- **MLE 4 PV**

Auxiliary Outputs

Per your **Auxiliary Output Worksheet**, connect the following auxiliary outputs to the desired external destinations, such as monitors, VTRs, DVE channels, and routing switchers.

- **AUX 1**
- **AUX 2**
- **AUX 3**
- **AUX 4**
- **AUX 5**
- **AUX 6**
- **AUX 7**
- **AUX 8**
- **AUX 9**
- **AUX 10**
- **AUX 11**
- **AUX 12**

Special Outputs

Per your **Special Output Worksheet**, connect the following special outputs to the desired external destinations, such as monitors, preview monitors, VTRs, and routing switchers.

- **CLEAN** (standard, provides the clean feed output which is software configurable)
- **PV** (standard, provides main output of the preview matrix)
- **OVL** (the **Preview Overlay Option** must be installed for a signal to be present on the connector).

Output Verification

For verification of your outputs, ensure that *some form of monitoring* is available at the destination of each specific output. The destination device *itself* may be a monitor, however, if the destination is a VTR or a routing switcher, ensure that you can monitor the input signal to the specific device.

Primary Output Verification

Output to Verify	Verification Method
MAIN PGM	(**Synergy 2**) Switch between inputs on **MLE 2 PGM** bus. (**Synergy 3**) Switch between inputs on **MLE 3 PGM** bus. (**Synergy 4**) Switch between inputs on **MLE 4 PGM** bus.
MLE 1 PGM	(All Switchers) Switch between inputs on **MLE 1 BKGD** bus.
MLE 1 PV	(All Switchers) Switch between inputs on **MLE 1 PST** bus.
MLE 2 PGM	(All Switchers) Switch between inputs on **MLE 2 BKGD** bus.
MLE 2 PV	(All Switchers) Switch between inputs on **MLE 2 PST** bus.
MLE 3 PGM	(**Synergy 3** and **4**) Switch between inputs on **MLE 3 BKGD** bus.
MLE 3 PV	(**Synergy 3** and **4**) Switch between inputs on **MLE 3 PST** bus.
MLE 4 PGM	(**Synergy 4**) Switch between inputs on **MLE 4 BKGD** bus.
MLE 4 PV	(**Synergy 4**) Switch between inputs on **MLE 4 PST** bus.

Auxiliary Output Verification

Output to Verify	Verification Method
AUX 1	In the **AUX BUS ASSIGN** group, press **ASSIGN 1**, then switch between inputs on **AUX** Bus.
AUX 2	In the **AUX BUS ASSIGN** group, press **ASSIGN 2**, then switch between inputs on **AUX** Bus.
AUX 3	In the **AUX BUS ASSIGN** group, press **ASSIGN 3**, then switch between inputs on **AUX** Bus.
AUX 4	In the **AUX BUS ASSIGN** group, press **ASSIGN 4**, then switch between inputs on **AUX** Bus.
AUX 5	In the **AUX BUS ASSIGN** group, press **ASSIGN 5**, then switch between inputs on **AUX** Bus.
AUX 6	In the **AUX BUS ASSIGN** group, press **ASSIGN 6**, then switch between inputs on **AUX** Bus.
AUX 7	In the **AUX BUS ASSIGN** group, press **ASSIGN 7**, then switch between inputs on **AUX** Bus.
AUX 8	In the **AUX BUS ASSIGN** group, press **ASSIGN 8**, then switch between inputs on **AUX** Bus.
AUX 9	In the **AUX BUS ASSIGN** group, press **ASSIGN 9**, then switch between inputs on **AUX** Bus.
AUX 10	In the **AUX BUS ASSIGN** group, press **ASSIGN 10**, then switch between inputs on **AUX** Bus.
AUX 11	In the **AUX BUS ASSIGN** group, press **ASSIGN 11**, then switch between inputs on **AUX** Bus.
AUX 12	In the **AUX BUS ASSIGN** group, press **ASSIGN 12**, then switch between inputs on **AUX** Bus.

Special Output Verification

Output to Verify	Verification Method
CLEAN	(All Switchers) Output depends on clean feed point of origin. Refer to the section "**Clean Feed Setup**" on page 11–20 for instructions.
PV	(All Switchers) Place different sources on each individual MLE bus. In the **PREVIEW BUS** group, switch between each MLE's PGM and PV button.
OVL	(All Switchers, **Preview Overlay Option** must be installed.) In the **PREVIEW OVERLAY** group, switch between the various overlay options. In the **PREVIEW BUS** group, switch between each MLE's PGM and PV button and verify that the overlay output tracks.

Using the Menu System

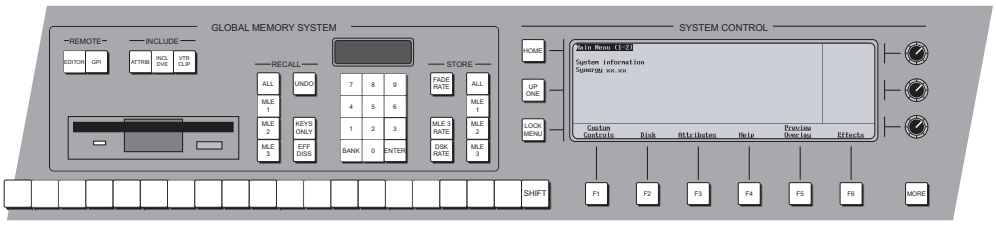
In This Chapter

This chapter introduces the menu system of the Synergy SD Switcher. The following topics are discussed:

- About the System Control Display
- Menu System Basics
- Positioner Icons
- Adjusting the Display
- Help Features
- Screen Capture

About the System Control Display

Each Synergy SD Switcher includes a **System Control Group** in its top panel.



Synergy 3 Control Panel — System Control Group

This group is similar in appearance and functionality on all Synergy switchers. At the center of the group is the **System Control Display**, a bright LCD screen that provides a variety of clear menus for various system setup and operational functions.

Note

If you have the **USB Removable Media Drive** option installed, the Global Memory System includes a USB port instead of a floppy drive.

The display is in fact a menu *tree*, with various branches that arrange switcher functions into concise categories.

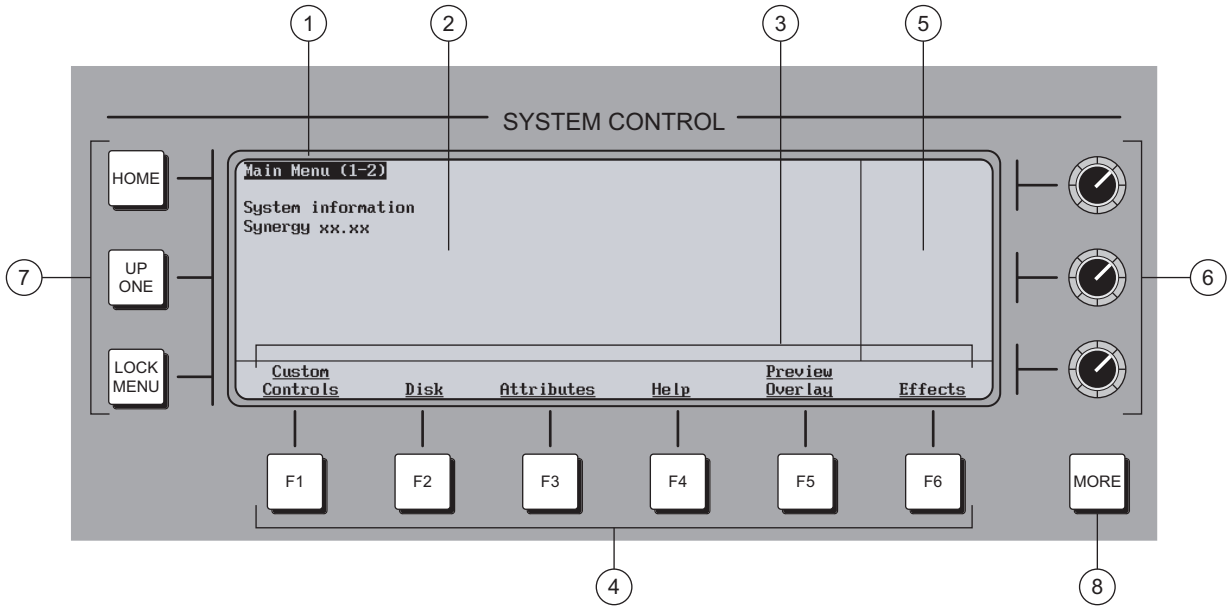
There are two ways that the display can change:

- The display changes *automatically*, depending on certain functions that you select on the control panel. In this way, additional adjustment parameters are instantly available to you, as soon as you press a control panel button.
- You can also navigate the menu tree *manually* to reach the desired menu or function — simply by following the desired path through the menu tree.

The following section provides details on all buttons and functions in the **System Control Group**.

Menu System Basics

The following figure illustrates the **System Control Group**, which is *identical* on all Synergy switchers — in both appearance and function. At the center of the group is the **System Control Display**, a bright LCD screen that provides a variety of clear menus for various system setup and operational functions.



System Control Group

1) Menu Name	4) Soft Keys	7) Menu Control Buttons
2) Main Area	5) Scroll Area	8) MORE Button
3) Label Area	6) Scroll Knobs	

1. Menu Name

Each menu is named in the upper left corner. If numbers in parentheses appear after the name, for example **Main Menu (1-2)**, it indicates that the current menu is number *one of two* — and that there are more functions available than can be displayed at one time.

On the **Main Menu** (accessible by pressing **HOME**), note that the software version is displayed below the menu name.

When parentheses are shown, the **MORE** button lights. Press **MORE** to display the second menu in the series. If the numbers **(2-2)** appears, it indicates that the current menu is number *two of two*. Press **MORE** to return to the first menu in the series.

Note

In this guide, multiple menus will simply be referred to using **1-2** and **2-2** — for example, **Main Menu 1-2** and **Main Menu 2-2**.

2. Main Area

The large center area of the display is your main working area for each specific menu. It is typically reserved for status, text, mini "help" messages, descriptions of parameters, entry fields, etc.

3. Label Area

Labels on the two bottom rows represent *functions* that you can activate, or buttons that route you to further sub-menus. These labels change depending upon the selected mode and menu. A menu function is activated by pressing its corresponding **Soft Key**.

Note

In this guide, display functions are referred to by their *actual label names*, and not by the soft key that is pressed (below the display). For example, the phrase "... press **Disk** ..." is used, rather than "... press **Soft key #2** ... "

- A label that is underlined indicates that a sub-menu is available for that function. Pressing the button takes you one level down.
- Non-underlined labels are simply functions that you can activate by pressing the associated soft key, or other screens that you can access within the same menu.

4. Soft Keys

The six **Soft Key** buttons below the display correspond to labels that appear in the **Label Area** of the display. Pressing a **Soft Key** activates the selected function, or switches to the selected menu.

5. Scroll Area

The right-hand section of the display (adjacent to the three **Scroll Knobs**) is reserved for functions that you can adjust with the scroll knobs. Up to three different adjustable parameters can appear in this section, each of which will be labeled accordingly.

When the three "**Positioner Icons**" appear in this area, you can adjust the selected function or parameter either with the **Scroll Knobs** or with the **Positioner**. Refer to the section "**Positioner Icons**" on page 5–5 for details.

6. Scroll Knobs

The three scroll knobs are assignable. Depending upon the selected mode (and menu), the functions of the knobs *change* just like the display labels. When a function requires a knob to adjust a parameter, up to three labels (and their associated functions) will appear in the right-hand section of the display — arranged vertically. Turn the appropriate knob to adjust the associated parameter.

Note

In this guide, knobs are referred to by their *name* or *location*. For example, the phrase "Use the top knob to..." would be used to describe the top-most knob.

Operating Tip

When using the three scroll knobs, you should adjust the top knob first, followed by the middle and then the bottom. When you change the top knob, the bottom knobs change in sync, showing the parameters for each selection chosen by the top knob. When you change one of the bottom two knobs, only *that* parameter changes.

7. Menu Control Buttons

To the left of the display, three buttons are provided to assist with navigating the menu system.

- **HOME** — Press **HOME** to return the display to the top of the menu tree. **Main Menu 1-2** will be displayed.
- **UP ONE** — Press **UP ONE** to take the display up one level in the menu tree. For example, if you press **Disk** to go one level down to the **Disk Menu**, press **UP ONE** to return up one level to the **Main Menu 1-2**.
- **LOCK MENU** — Press to lock the display on the current menu. Regardless of which control panel button is pressed, the display remains in its current location — it will *not* "auto-follow" a control panel selection.

8. MORE Button

When parentheses are shown in a menu name, the **MORE** button lights to indicate that additional menus (and functions) are available on the current level. (While the **Soft Keys** move you *vertically* through the menu system, **MORE** moves you horizontally.)

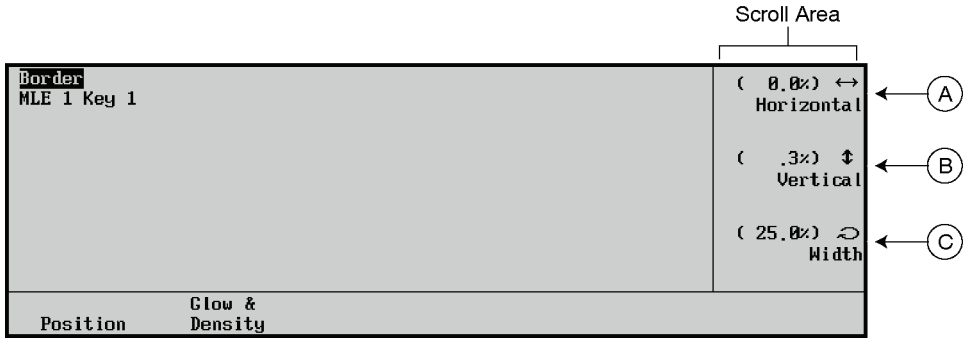
Press **MORE** to display the second menu in the series or to return from the second menu to the first. For example, on the **Main Menu 1-2**, if you press the **MORE** button you will go to the **Main Menu 2-2**. If you press **MORE** again you will return to the **Main Menu 1-2**.

Positioner Icons

When you select specific installation and operational menus, the "**Positioner Icons**" appear in the right-hand **Scroll Area**. (Typically, two or three icons are shown, depending upon the selected menu and function).

When these icons appear, you can adjust the selected function or parameter either with the **Scroll Knobs** or with the **Positioner**. In addition, when the **Positioner Icons** appear, the **MENU** button automatically lights in the **Positioner Group** — indicating that **Positioner** control is temporarily assigned to the display, rather than to a selected MLE and *positionable* function.

The following figures is a sample menu that includes the three icons.



Border Menu — with Positioner Icons

A) When the left-right **Positioner Icon** appears, you can use the top knob to adjust the selected function or you can move the **Positioner** *left* and *right*.

B) When the up-down **Positioner Icon** appears, you can use the middle knob to adjust the selected function or you can move the **Positioner** *up* and *down*.

C) When the circular **Positioner Icon** appears, you can use the bottom knob to adjust the function, or you can twist the **Positioner**'s knob *clockwise* and *counter-clockwise*.

When you turn the **MENU** button off, the **Positioner** once again is assigned to the current panel function and location.

Refer to Chapter 7 of the ***Synergy Series Operation Guide*** for additional information on the **Positioner** itself, and the three **Positioner Icons**.

Adjusting the Display

Use the following procedure to adjust the brightness or contrast of the large display or the mnemonic displays:

1. Navigate to the **Display Menu** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Display**.

Display Menu — Large Display

2. Press **Large Display** to adjust the brightness and contrast of the Menu display.
   - Use the **Contrast** knob to adjust the contrast.

Note

You must have the Mnemonics option installed in order to be able to adjust the Mnemonics display levels.

3. Press **Mnemonics Displays** to adjust the brightness and contrast of the mnemonic displays.
   - Use the **Brightness** knob to adjust display brightness.
   - Use the **Contrast** knob to adjust display contrast.

This completes the procedure for adjusting the brightness or contrast of the large display or the mnemonic displays.

Help Features

Two help features provide convenient on-line assistance as you operate your Synergy switcher:

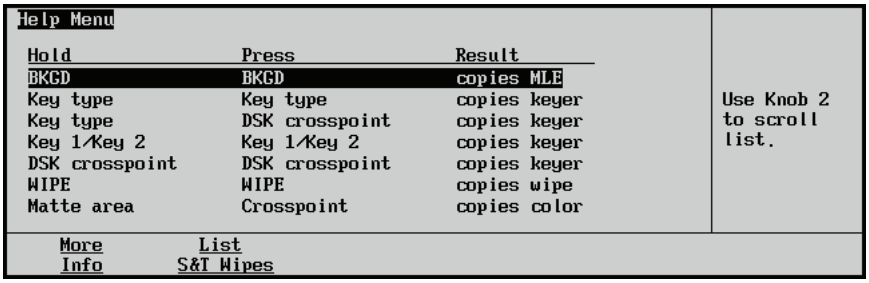
- Help Menu
- Pop-up Help

Help Menu

The **Help Menu** provides a list of important "hidden" switcher functions that require two-button combinations to access, such as Keyer and MLE copy functions. The **More Info Menu** provides more extensive information about the requested function.

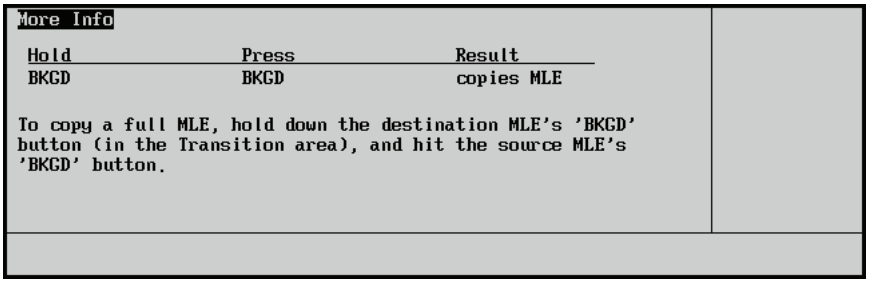
Use the following procedure to access the **Help Menu**:

1. Navigate to the **Help Menu** as follows:
   - Press **HOME ⇨ Help**.



Help Menu

2. Use the middle knob to highlight the switcher function that you want more information on.
3. Press **More Info** to display the **More Info Menu**.



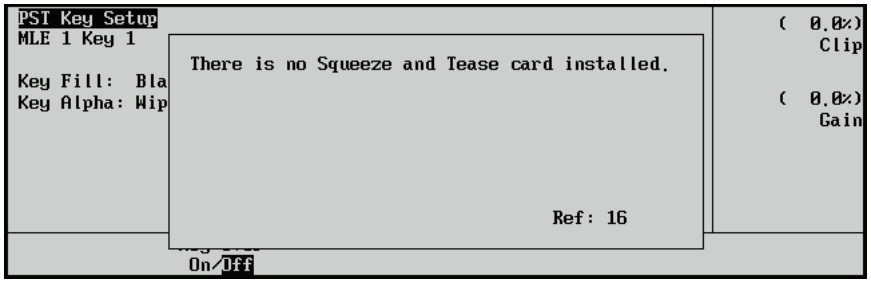
More Info Menu

4. Exit the menu by pressing **HOME** or **UP ONE**.

For information on the **List S&T Wipes** function, refer to Chapter 6 of the ***Synergy Series Operation Guide***. If you have the **Squeeze & Tease 3D** option installed and engaged, pressing this softkey will display the **Squeeze & Tease 3D Menu**. Refer to the ***Squeeze & Tease 3D/WARP Owner's Guide*** for further details.

Pop-up Help

The **Pop-up Help** feature is designed to alert the operator when an illegal function is attempted. When the illegal button is pressed, the **Pop-up Help Menu** appears — providing a brief explanation of why the operation cannot be performed. A sample menu is shown below.



Pop-up Help Menu

The **Pop-up Help Menu** disappears when the illegal button is released.

Screen Capture

Switcher users can take screen captures of the Synergy SD control panel menus. The switcher saves the screen capture as a 16K bitmap file, which you can then import into other applications on your PC.

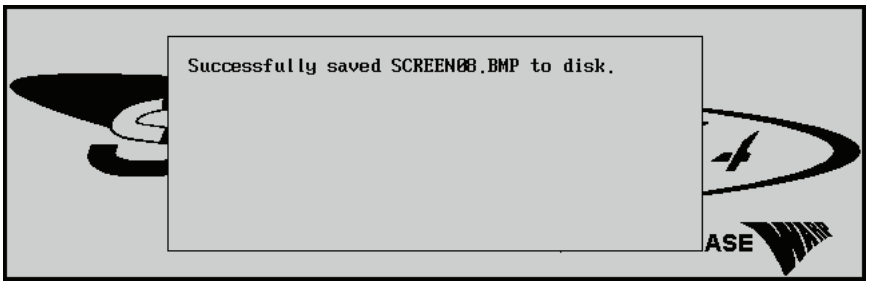
Use the following procedure to capture a bitmap of the current display screen:

1. Insert a storage device into the Synergy control panel as follows:
   - Insert a pre-formatted 1.4 MB high-density floppy disk into the disk drive of the switcher.

   OR

   - If you have the **USB Removable Media Drive** option installed, insert a USB key into the USB port of your switcher.
2. Navigate to the menu you wish to capture.
3. Simultaneously press the **FADE RATE** and **ALL** buttons in the **STORE Area** of the **Global Memory System Group**.

   The light on the drive will come on, the current menu freezes, and a popup message is displayed indicating that you have saved a SCREENXX.BMP file to the storage device. You can save from 00-99 files in sequence on a floppy disk.



Screen Capture Confirmation Pop-up Message

Caution

Do NOT remove the floppy disk or USB key from the switcher before the LED on the disk drive or USB port goes out. Doing so may destroy the data on your floppy disk or USB key, as well as the data on the next one you insert into the switcher.

4. On your computer, insert the storage device and open the files in any graphics application that supports bitmap files to view, rename, and reformat the screen captures.

This completes the procedure for capturing a bitmap of the current display screen.

BNC Configuration and Check

In This Chapter

This chapter provides instructions for configuring and checking your BNC inputs. As you follow each procedure, you are in effect building a *database* that is used by the switcher to provide the desired names, sources, Key and fill associations, and overall switcher functionality. The following topics are discussed:

- Installation Enable Jumper Setting
- BNC Configuration Menu Tree
- Naming BNC Inputs
- Setting Up Mnemonics Displays for BNC Names
- Setting Up BNC Types
- Setting Up Tallies
- Setting Up Alphas
- Setting Up Auto Keys
- Setting Up Panel Buttons
- Shifted Crosspoint Buttons
- Setting Up N/S Disable
- Checking Inputs
- Checking Keys

Installation Enable Jumper Setting

Before you begin the configuration process, please ensure that the **Installation Enable Jumper** (**JP10**) on the front edge of the **Frame CPU Board** is in the **Down** position. This position allows all installation settings to be changed without restriction. Refer to the section "**Frame Jumpers and Switches**" on page 2–28 for details.

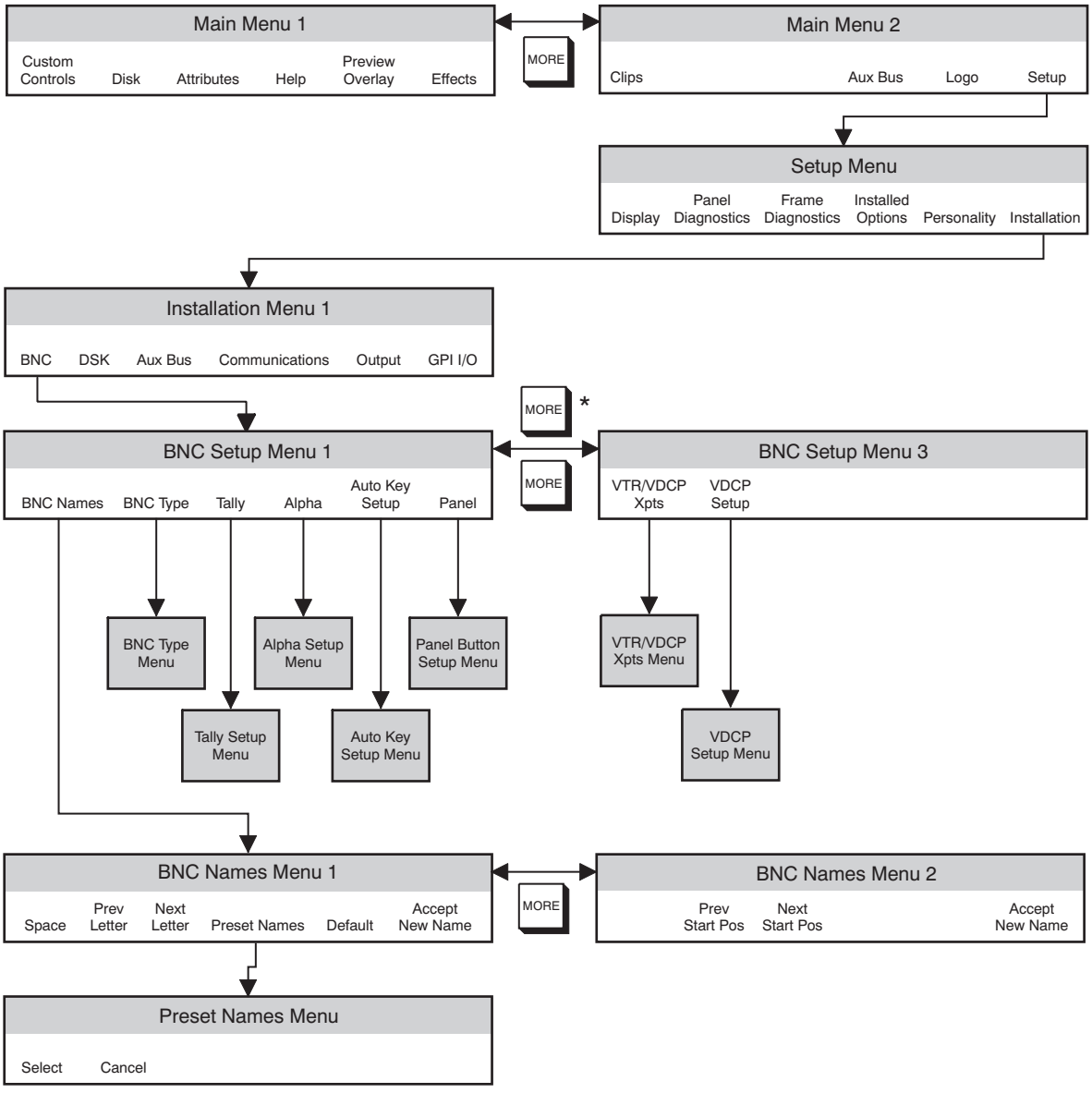
Note

Before you begin, ensure that you have completed your **Input Worksheet**. Refer to the section "**Input Worksheet**" on page 4–2 for instructions.

BNC Configuration Menu Tree

The following figure illustrates the *portion* of the menu tree that is used to configure your BNC connectors — specifically, the path used to reach the **BNC Setup Menu** and other associated setup menus.

Use this figure for reference during the following procedures.



BNC Configuration Menu Tree

BNC Configuration

The following procedures will be discussed in this section:

- Naming BNC Inputs
- Restoring Default BNC Names
- Setting Up Mnemonics Displays for BNC Names
- Setting Up BNC Types
- Setting Up Tallies
- Setting Up Alphas
- Setting Up Auto Keys
- Setting Up Panel Buttons
- Setting Up N/S Disable
- Exiting the Setup Menus

For information on setting up Still Store BNCs, refer to the section "**Setting up Still Store BNCs**" on page 11–8. Refer to the section "**Setting up Character Generator BNCs**" for instructions on setting up BNCs for a character generator.

You can also set up Router BNCs and Router Levels. Refer to the section "**Setting up Router BNCs**" for more information. For information on setting up BNCs for an external device, refer to the appropriate chapter in this guide.

Naming BNC Inputs

In Chapter 4, you connected your physical switcher inputs, including reference, primary inputs and alpha inputs. In this section, you will *name* each physical BNC input using the **BNC Names Menu**. This allows you to use *actual input names* throughout the menus. Additionally, the names that you choose will appear on the **Preview Overlay** output (provided that the **Preview Overlay Option** is installed).

Note

If the mnemonic option is purchased and installed, the **Mnemonic** field displays the BNC name as it will appear in the associated mnemonic display. Further mnemonic display configurations are discussed in the section "**Setting Up Mnemonics Displays for BNC Names**" on page 6–7.

The **BNC Names Menu** includes the following areas:

- The **Main Area** of the **BNC Names Menu** provides an array of letters and numbers. The reverse video *highlight* indicates the "selected" character — the position of which is controlled by the two upper scroll knobs. The **Current Name**, **Mnemonic**, and **New Name** fields are located below the array. In the **New Name** field, the reverse video *highlight* indicates the "active" character — the one that you are changing.
- The **Label Area** provides an array of tools for naming and editing your physical names.
- The **Scroll Area** provides three functions that are controlled by their respective knobs:
  - ~ The top **Horizontal** knob moves the highlight horizontally.
  - ~ The middle **Vertical** knob moves the highlight vertically.

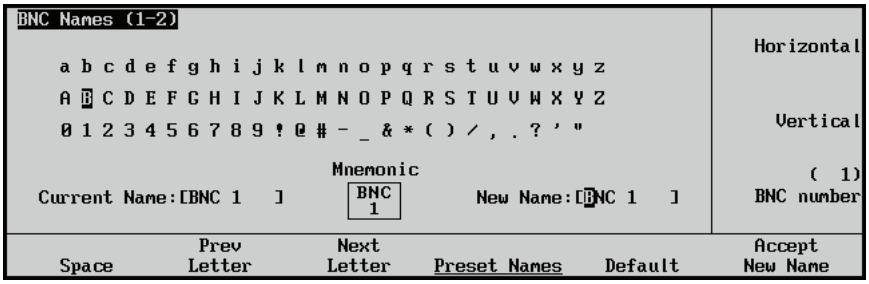
~ The bottom **BNC number** knob selects the input that you want to name. As you scroll through your inputs, the **Current Name** field tracks each name.

Use the following procedure to name your inputs:

Note

During the procedure, refer to the **Input Name** column in your **Input Worksheet**. These names will be entered on the **BNC Names Menu**.

1. Navigate to the **BNC Menu 1-3** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installation ⇨ BNC**.
2. Press **BNC Names** to display **BNC Names Menu 1-2**. This menu is specifically designed for naming inputs.



BNC Names Menu 1-2 with Optional Mnemonic Field

Operating Tip

You can use the **MLE 1** crosspoint buttons to select the characters you want to enter. The buttons on the **Key** bus will correspond to the first row of characters, the buttons on the **BKGD** bus will correspond to the second, and the buttons on the **PST** bus will correspond to the third.

3. Use the **BNC number** knob until the desired BNC number is shown — the one that you want to name. As you rotate the knob, the **Current Name Field** changes to show the current name of the BNC (as stored in switcher memory).
   - BNC numbers on the display correspond to *physical* BNC connectors on the rear of the chassis, from **1** - **64**.
   - A Standard PS/2 keyboard can be used to perform the same actions as pressing or rotating the **System Control** buttons and knobs. Refer to the section, "**Using The Keyboard**" in the ***Synergy Series Operation Guide*** for details.

Important

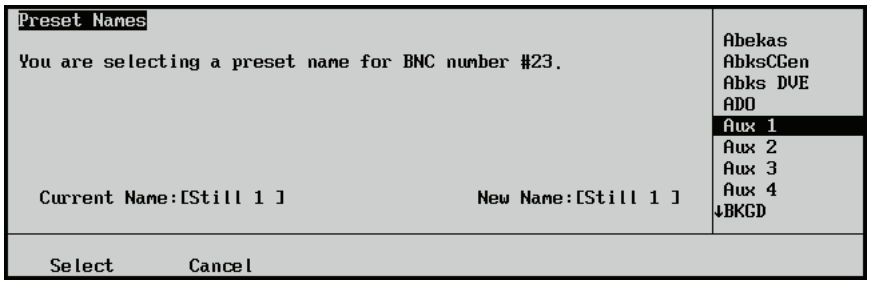
Do NOT place anything on your keyboard or place your keyboard in a position where any of the keys could be accidently pressed. This could result in the Switcher acting unpredictably.

4. There are two ways to begin editing the BNC name.
   - You can begin by choosing a *preset* name (a prefix) from a list of typical BNC names. To start in this manner, continue with step 5.
   - You can begin *editing* the name immediately, by changing the default characters to your custom characters. To start in this manner, proceed to step 6.

Note

If you start editing the name immediately, and then decide at some point to choose a *preset* name instead, *all characters* in the custom name will be replaced by the preset name.

5. To choose a *preset* name:
   - Press **Preset Names** to display the **Preset Names Menu**.



BNC — Preset Names Menu

   - Use the middle knob to scroll the list of preset names.
   - Press **Select** to accept the preset name, or press **Cancel** to return.
   - If you select a preset name, you automatically return to the **BNC Names Menu**, where it appears in the **New Name Field**, with the cursor positioned *after* the name.
6. To name your input (or to add additional characters after a preset name), use the **Horizontal** and **Vertical** knobs to select the desired character. The highlighted position in the **New Name Field** changes as you select each character. Please note:
   - The maximum number of characters allowed is eight.
   - Press **Space** to add a space at the current position. If a letter is in the active position, it will be deleted.
   - Press **Prev Letter** to move the highlight one space to the left.
   - Press **Next Letter** to move the highlight one space to the right.
7. When the name entered is correct, press **Accept New Name**.
8. Repeat for each additional input that you want to name. It is recommended at this point that you name *each input* to the switcher.

Note

If you exit the installation menus without first pressing **Accept New Name**, the a confirmation screen is displayed.

   - Press **Continue** to proceed without saving the changes you made to the name.
   - Press **Cancel** to return to the previous menu and accept the new name.

This completes the procedure to name your inputs.

Restoring Default BNC Names

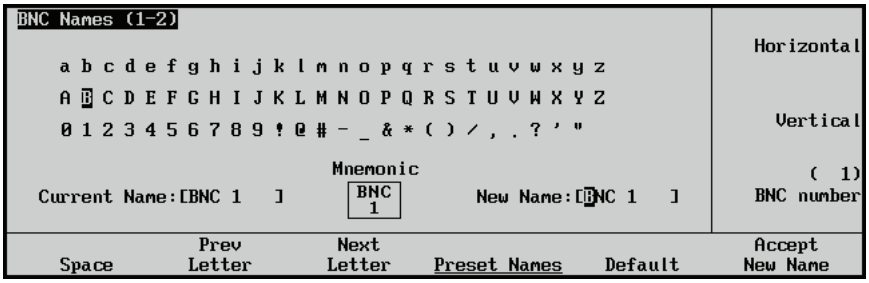
The factory default format for *all BNC names* is: [**BNC**] [**space**] [**BNC number**]

Note

When setting the BNC name to its default format, the change applies *only* to the selected BNC number. If you have more than one BNC name to change, you must repeat the procedure.

Use the following procedure to restore the default BNC name of a BNC connector:

1. Navigate to the **BNC Names Menu 1-2** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **BNC** ⇨ **BNC Names**.



BNC Names Menu 1-2

2. Use the **BNC Number** knob until the desired BNC number is shown. As you rotate the knob, you will notice the **Current Name Field** changes to show the current name (as stored in switcher memory) of the BNC connector.
   - A Standard PS/2 keyboard can be used to perform the same actions as pressing or rotating the **System Control** buttons and knobs. Refer to the section, "**Using The Keyboard**" in Chapter 2 "**Control Panel Introduction**" of the ***Synergy Series Operation Guide*** for details.
3. Press **Default** softkey to change the BNC name to the default format.
4. Press **Accept New Name**.

This completes the procedure to restore the default BNC name of a BNC connector.

Setting Up Mnemonics Displays for BNC Names

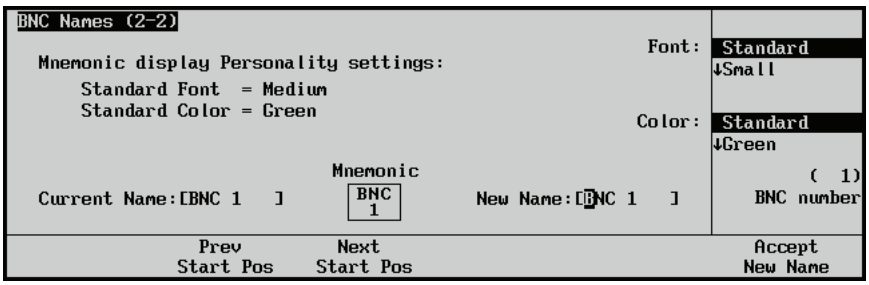
Note

For more information on Personality settings for Mnemonic Displays, refer to the section "**Standard Mnemonics**" in the ***Synergy Series Operation Guide***.

In the **Main Area** of the **BNC Names Menu**, the **Personality Menu** global settings for the mnemonic display font and color are indicated. In this naming menu they are referred to as the **Standard** settings.

If the Mnemonic Display option is purchased and installed, use the following procedure to customize the appearance of the display:

1. Navigate to the **BNC Names Menu 2-2** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **BNC** ⇨ **BNC Names** ⇨ **MORE**.



BNC Names Menu 2-2

2. Use the **BNC Names Menu 2-2** to adjust how BNC names will appear in their associated mnemonic displays.

   - A Standard PS/2 keyboard can be used to perform the same actions as using the **System Control** buttons and knobs. Refer to the section, "**Using The Keyboard**" in Chapter 2 "**Control Panel Introduction**" of the ***Synergy Series Operation Guide*** for details.

3. To adjust the size of the font that will appear in an individual mnemonic display, use the **Font** knob to select from the following:

   - **Standard** — Select this option to use the default mnemonic format as set from the **Personality Menu**.

   - **Small** — Select this option to use a small font that permits up to 6 characters per line.

   - **Small Invert** — Select this option to use a small font that permits up to 6 characters per line, and draws light text on a dark background.

   - **Medium** — Select this option to use a medium font that permits up to 4 characters per line.

   - **Medium Invert** — Select this option to use a medium font that permits up to 4 characters per line, and draws light text on a dark background.

   - **Large** — Select this option to use a large font that permits only 2 characters per line.

   - **Large Invert** — Select this option to use a large font that permits only 2 characters per line, and draws light text on a dark background.

   - **NONE** — Select this option to use no font in the mnemonic display. The display will only show the selected background color, with no text.

   The selected mnemonic display changes on the switcher when you exit the **Installation Menus**.

4. You can select which character of the BNC name will be the first one to appear in the mnemonic display.

   Use the **Prev Start Pos** and **Next Start Pos** softkeys to move the cursor through the BNC name. The selected character will be the first one in the name to appear in the display. This function is especially useful if you are using one of the large font options.

5. To adjust the color that will appear in the mnemonic display, use the **Color** knob to select from the following choices:

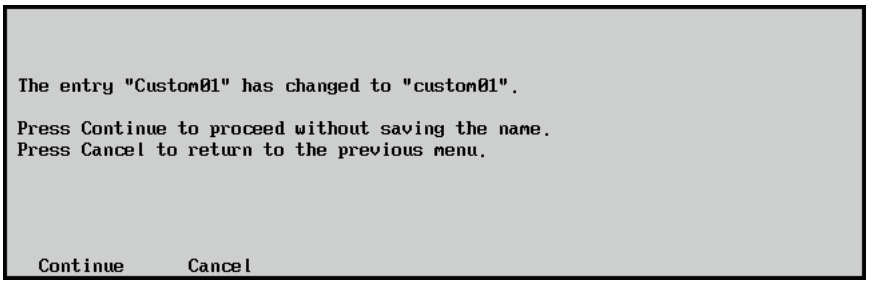
   - **Standard** — Select this option to use the default mnemonic format as set from the **Personality Menu**.
   - **Green** — Select this option to use green as the display color.
   - **Yellow** — Select this option to use yellow as the display color.
   - **Orange** — Select this option to use orange as the display color.
   - **None** — Select this option to use no background color for the display.

The selected mnemonic display changes on the switcher when you exit the **Installation Menus**.

6. To adjust the mnemonic display style of another BNC name, use the **BNC number** knob. The selected BNC name/number appears in the mnemonic display area of the menu as you select BNCs from the list.
7. When you have completed your mnemonic adjustments, press **Accept New Name** to register the new name and display style in memory.
8. Repeat steps 3 through 7 for each additional mnemonic display that you want to adjust.

Note

If you exit the installation menus without first pressing **Accept New Name**, the following screen is displayed.



Change Name Without Saving Message

- Press **Continue** to proceed without saving the changes you made to the name.
- Press **Cancel** to return to the previous menu and accept the new name.

This completes the procedure to customize the appearance of the display.

Setting Up BNC Types

The **BNC Type Menu** allows you to associate physical BNC connectors with input *types*. These associations play important roles throughout the system, particularly with regard to *filtering* subsequent BNC setup menus based on specific input types.

Note

During the procedure, refer to the **Input Type** column in your **Input Worksheet**. These "types" will be entered on the **BNC Type Menu** for each input connected to the frame.

The **Main Area** of the **BNC Type Menu** provides a mini "help" message, plus a **Status Box** that lists the following information for the selected BNC:

- **BNC** — Current name and physical BNC connector (in parentheses). All lines below refer to this BNC.
- **Maps to** — Physical control panel button to which the BNC is mapped.
- **Type —** Input "type" for the selected BNC.
- **Tally —** Tally assignment for the selected BNC.
- **Auto Key —** Auto-key association for the selected BNC. Every BNC input has an associated auto-key, which can be an input (such as an alpha signal), or black (for inputs such as VTRs or cameras).
- **Asp Ratio —** Native aspect ratio for the selected BNC.

Use the following procedure to set your input types:

1. Navigate to the **BNC Menu 1-3** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **BNC**.
2. Press **BNC Type** to display the **BNC Type Menu**.

BNC — BNC Type Menu

3. Use the **BNC** knob to select the BNC input that you want to assign an input type to.
4. Use the **Type** knob to select the desired input type. You can select from the following:

Important

All BNC input types must be assigned to **Video**, **Alpha**, or **Reference**, unless the device connected to that BNC input is controlled by the Synergy switcher.

Note

When you assign a remote device to a BNC crosspoint, pressing that crosspoint button will display the corresponding device control menus. If it is on a Key bus, pressing the button will cycle through the device control menus and the **Key Type Menu**.

- **Off** — Select this option when there is *no input* physically connected to the selected BNC. Selecting **Off** filters the input out of subsequent menus.
- **DVE** — Select this option when a DVE "fill" signal is connected to the selected BNC. You must have the **DVE Send and Remote Control Software Option** in order to control a DVE from the Synergy switcher.
- **VTR** — Select this option when a VTR, Video Server, or Audio Server is connected to the selected BNC. You must have the **VTR Remote Control Software Option** in order to connect a VTR to the Synergy switcher. You will need the **Video Server Control** or **Audio Server Control Software Options**, depending on the device you are connecting.

Note

When you assign a VTR device to a BNC crosspoint, pressing that crosspoint button will put the **Global Memory System** in either **VTR Clip ID** mode or **VTR Clip Number** mode based on the device. Refer to the section "**VTR Operation**" for more information.

- **Reference** — Select this option when a reference video signal is connected to the selected BNC. The *name* assigned to the reference input may be **Color Bars** (the recommended reference signal). Refer to the section "**Setting Up Panel Buttons**" on page 6–15 for more information on naming panel buttons

Important

You can select only *one* BNC as the reference input.

- **Alpha** — Select this option when an alpha signal (also known as a "key" signal) is connected to the selected BNC. Devices such as DVEs, Character Generators, Graphics (Paint) Systems, and Still Stores typically provide unique alpha signals. Selecting **Alpha** generates a filtered list on the **Alpha Setup Menu**.
- **Router** — Select this option when a routing switcher is connected to the selected BNC. You must have the **Routing Switcher Interface Software Option** in order to control a Router from the Synergy switcher.
- **Still Store** — Select this option when a Still Store output is connected to the Synergy switcher. (Note: for use in conjunction with the Still Store (Aprisa) Software Option). You must have the **Still Store Interface Software Option** in order to control a Still Store from the Synergy switcher.
- **Robotic Cam** — Select this option when a robotic camera is connected to the selected BNC. You must have the **Robotic Camera System Interface Software Option** in order to control a Robotic Camera from the Synergy switcher.
- **CharGen** — Select this option when a character generator is connected to the selected BNC. You must have the **Character Generator Software Option** in order to control a Character Generator from the Synergy switcher.
- **Video** — This is the default option. Use this option unless the input is an alpha, reference, or a device listed above is connected to that BNC *and* controlled by the Synergy switcher. Refer to the chapter "**Basic Communications Setup**" on page 7–1 for more information on controlling equipment from the switcher.

5. Use the **Asp Ratio** knob to select the native aspect ratio of the video signal for the selected BNC.

Note

The Aspect Ratio parameter is only available when the **Aspectizer Option** is installed.

This completes the procedure for setting up a BNC input type. Repeat the procedure for each BNC you want to assign a different type to. Refer to the appropriate chapter in this guide, for more information on setting up BNCs for your device.

Setting Up Tallies

Each Synergy switcher includes (as standard) 36 *configurable* tally relays, each of which can be assigned to any video input. The **Extended Tallies** option, when installed, provides an additional 36 tallies (bringing the total number to 72).

The **Tally Setup Menu** allows you to select the tally relays that will be activated when control panel buttons are pressed. Your associations on this menu affect the tally connectors (and associated relay electronics) on the control panel.

Operating Tip

During the procedure, refer to the **Tally Number** column in your **Input Worksheet**. These numbers will be entered on the **Tally Setup Menu** for each input connected to the frame.

Use the following procedure to assign tallies:

1. Navigate to the **BNC Menu 1-3** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installation ⇨ BNC**.

2. Press **Tally** to display the **Tally Setup Menu**.

BNC — Tally Setup Menu

3. Use the **Tally** knob to select the tally you want to assign.
4. Use the **BNC/MLE** knob to select the MLE or BNC that you want to assign the selected tally to.

Operating Tip

For wiring convenience, it is recommended that you make your tally associations on a 1:1 basis, with tally numbers matching input BNC numbers. For example input **12** would be assigned to tally **12**.

5. Use the **Type** knob to select the type of tally to assign to the selected MLE or BNC. You can select from the following:

Note

An MLE is considered On Air if its tally is set to **Always** from the **Output Menu**. This setting will tally the selected MLE regardless of what is selected on the **Program**/**Preset Bus** of the switcher. The red **ON** LED of that MLE will always be lit, and all sources selected on the MLE will tally accordingly. Refer to the section "**MLE Tally Setup**" on page 11–18 for instructions on how to select the desired tally function for an MLE.

- **On Air** — Select this option to tally the selected BNC or MLE when it is taken on-air.
- **Preview** — Select this option to tally the selected BNC or MLE when it is selected on the preview monitor and will be taken on-air during the next transition.
- **Aux bus** — Select this option to tally the selected BNC or MLE when it is selected on a particular Aux Bus (1-12).
- **MLE BKGD** — Select this option to tally the selected BNC or MLE when it is selected on the BKGD bus of a particular upper MLE. The number of MLE BKGD tally types you have will depend on the number of upper MLEs you have on your switcher.
- **MLE PST** — Select this option to tally the selected BNC or MLE when it is selected on the PST bus of a particular upper MLE. The number of MLE PST tally types you have will depend on the number of upper MLEs you have on your switcher.

This completes the procedure for assigning tallies. Repeat the procedure for each tally you want to set up. Refer to the section "**Tally Connections**" on page 11–63 for tally wiring instructions.

Setting Up Alphas

The **Alpha Setup Menu** allows you to select the specific keying mode for the selected alpha (Key) signal. These mode selections determine how the key is processed electronically, and how it appears *visually.*

Operating Tip

During the procedure, refer to the **Alpha Type** column in your **Input Worksheet**. These modes will be entered on the **Alpha Setup Menu** for each alpha input connected to the frame.

Use the following procedure to set up an alpha input:

1. Navigate to the **BNC Menu 1-3** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **BNC**.
2. Press **BNC Type** to display the **BNC Type Menu**.

BNC — BNC Type Menu

3. Assign a BNC as an alpha as follows:
   - Use the **BNC** knob to select the BNC input you want to assign as an Key alpha.
   - Use the **Type** knob to select **Alpha**.
   - Use the **Asp Ratio** knob to select the native aspect ratio of the input Key alpha video signal.
4. Press **Alpha** to display the **Alpha Setup Menu**.

BNC — Alpha Setup Menu

5. Define the alpha as shaped or unshaped as follows:
   - Use the **Alpha** knob to select the BNC Key alpha input you want to configure.
   - Use the **Mode** knob to select the desired Key Alpha mode. You can choose from the following:
     ~ **Unshaped** — Select **Unshaped** to have the switcher perform a *multiplicative Key.* With an unshaped Key, the Key alpha cuts a hole based on the gradient values of the alpha. Shades of grey are translated into transparency

levels, giving the key a soft edge. Unshaped Key alphas can also be consider true linear alphas. Key alphas are set as unshaped by default.

~ **Shaped** — Select **Shaped** to have the switcher perform an *additive Key*. With a shaped Key, the Key alpha cuts a hole based on the monochrome value of the alpha. Shades of grey are translated into either white or black, giving the Key a hard edge. Shaped alphas are sometimes used with Character Generators to cut very precise holes for the fill.

This completes the procedure for setting up an alpha input. Refer to the section "**Checking Keys**" on page 6–21 for instructions on verifying that each mode assignment is correct.

Setting Up Auto Keys

The **BNC Auto Key Setup Menu** allows you to associate alpha (Key) signals with their primary (fill) video inputs, for example, associating **CG Fill** with **CG Alpha**, or **DVE 1 Fill** with **DVE 1 Alpha**. This association completely simplifies the Keying process on the switcher. When you punch up a key source on the Key bus, its alpha and fill are automatically selected.

Operating Tip

During the procedure, refer to the **Auto Key** column in your **Input Worksheet**. The alpha input numbers will be entered on the **BNC Auto Key Setup Menu** for each associated fill video signal connected to the frame.

Use the following procedure to set up an Auto Key:

1. Navigate to the **BNC Menu 1-3** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **BNC**.
2. Press **Auto Key Setup** to display the **BNC Auto Key Setup Menu**.

BNC — Auto Key Setup Menu

3. Use the **BNC** knob to select the BNC with the input video signal that you want to use as the Fill for the Auto Key.
4. Use the **Alpha** knob to select the BNC with the input video signal that you want to use as the Key Alpha for the Auto Key. For example:

Note

Select **BLACK** for inputs with no associated alpha. This is the default setting.

- Match **CG Fill (12)** with **CG Alpha (42)**.
- Match **DVE 1 Fill (13)** with **DVE 1 Alpha (43)**.
- Match **VTR 1 (5)** with **BLACK**.

This completes the procedure for setting up an Auto Key.

Ultimatte Insider

If you have purchased the **Ultimatte Insider** option, refer to Appendix C, "**Hardware Options**" for detailed instructions on installing the board, setting it up using the menu system, and setting up special Ultimatte Auto Select keys.

Setting Up Panel Buttons

As the last step in the BNC configuration process, the **Panel Button Setup Menu** allows you to map BNC connectors to physical buttons on the control panel.

Operating Tip

During the procedure, refer to the **Physical Button** column in your **Input Worksheet**. These button numbers will be entered on the **Panel Button Setup Menu** for each input connected to the frame.

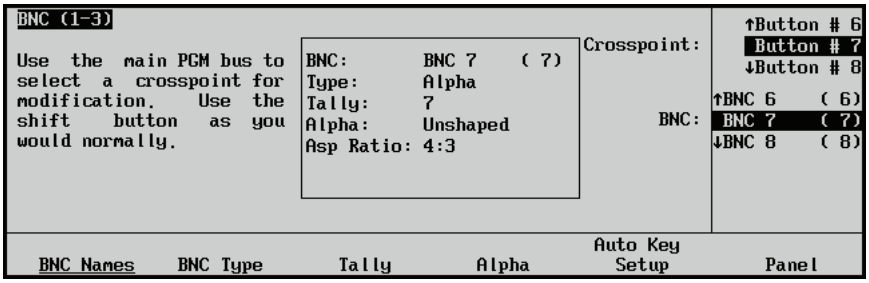
Use the following procedure to set up your control panel buttons:

1. Navigate to the **BNC Menu 1-3** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **BNC**.

Operating Tip

You can press the desired crosspoint button on the **PGM** bus directly to select that button. This applies to both shifted and unshifted crosspoints.

2. Press **Panel** to display the **Panel Button Setup Menu**.



BNC — Panel Button Setup Menu

3. Use the **Crosspoint** knob to select the crosspoint button on the control panel that you want to assign a BNC input to. By default, BNC inputs are mapped to crosspoint buttons on a one to one assignment. For example, BNC 1 will be assigned to crosspoint button 1, BNC 2 will be assigned to button 2, and so on.
4. Use the **BNC** knob to select the BNC video input that you want to assign to the selected crosspoint button. You can select from the following:
   - **NONE** — Select this option to assign no BNC input to the selected crosspoint button.
   - **BKGD** — Select this option to assign color background one, **BKGD 1**, or color background two, **BKGD 2**, to the selected crosspoint button.
   - **BLACK** — Select this option to assign **Black** to the selected crosspoint button.

- **PGM/Key SHIFT** — Select this option to have the **SHIFT** button access the unshifted crosspoints on the Key bus of each MLE. Refer to the section "**Shifted Crosspoint Buttons**" on page 6–16 for more information on using this function.

Important

The **SHIFT** and **PGM/Key Shift** functions are mutually exclusive. You must assign **PGM/Key Shift** to the same button as the **Shift** function.

- **SHIFT** — Select this option to assign the **Shift** function to the selected crosspoint button. When active, the Shift function allows you to map BNC inputs to a second layer of crosspoint buttons, increasing the total number of crosspoints. Refer to the section "**Shifted Crosspoint Buttons**" on page 6–16 for more information on using the **SHIFT** button.
  - ~ **Synergy 2** — Any crosspoint button on a **Synergy 2** control panel can be assigned the Shift function. This will increase the maximum number of crosspoints accessible inputs from **17** to **33**.
  - ~ **Synergy 3** — Any crosspoint button on a **Synergy 3** control panel can be assigned the Shift function. This will increase the maximum number of crosspoints accessible inputs from **30** to **59**.
  - ~ **Synergy 4** — Any crosspoint button on a **Synergy 4** control panel can be assigned the Shift function. This will increase the maximum number of crosspoint accessible inputs from **35** to **69**.
- **BUS HOLD** — Select this option to assign the **Bus Hold** function to the selected crosspoint button. When active, the Bus Hold function allows you to retain the current crosspoint on a bus during a memory recall. Refer to the section "**Bus Hold Function**" on page 6–18 for more information on using this function.
- **BNC** — Select this option to assign a BNC input to the selected crosspoint button.

This completes the procedure for setting up your control panel buttons. Refer to the section "**Setting Up Local Aux Panels**" on page 11–6 for information on assigning BNCs to crosspoints on the local Aux Panel.

Shifted Crosspoint Buttons

There are two types of shifted crosspoint buses, Standard Shift crosspoint buses and PGM/Key Shift crosspoint buses. Both of these types are discussed in this section.

Standard Shift Crosspoint Buses

The **Shift** function is assigned to any crosspoint button on each bus row and allows you to access a second layer of crosspoint buttons. For example, you can assign the **Shift** function to button **17** on a Synergy 2 control panel. When the **Shift** function is applied to this button, pressing and holding it will allow you to access crosspoint buttons **18** through **33**.

Operating Tip

You can double press the **SHIFT** button to have the MLE remain in the shifted mode. When you need to access an *unshifted* crosspoint, you can press **SHIFT** and the crosspoint. Double pressing the **SHIFT** button again releases the MLE from the shifted mode.

Use the following procedure to access a shifted crosspoint:

1. Press and hold the **SHIFT** button on the crosspoint bus you want to access the shifted crosspoint on.
2. Press the **Crosspoint** button you want to select.
3. Release both buttons.

   Both the **Crosspoint** button and **SHIFT** buttons will remain lit.

Note

If you press another **Crosspoint** button, you will select an unshifted crosspoint and the **SHIFT** button will not be lit.

This completes the procedure to access a shifted crosspoint.

PGM/Key Shift Crosspoint Buses

The **PGM/Key Shift** function creates the shifted crosspoint bus, just as the Standard Shift function does, but for the Key buses, it makes the **SHIFT** button act as if it is always being pressed. For example, on MLE 1 of a **Synergy 2** switcher, if you press **Button 1** on the **BKGD** bus, you will be selecting **Crosspoint Button 1** (typically Black). If you press the corresponding button on the **Key** bus, you will be selecting **Crosspoint Button 18**, and the **SHIFT** button on the **Key** bus will be lit.

Note

When using the PGM/Key Shift function, the crosspoints on the Key bus will be Shifted, and the ones on the BKGD and PST buses will not.

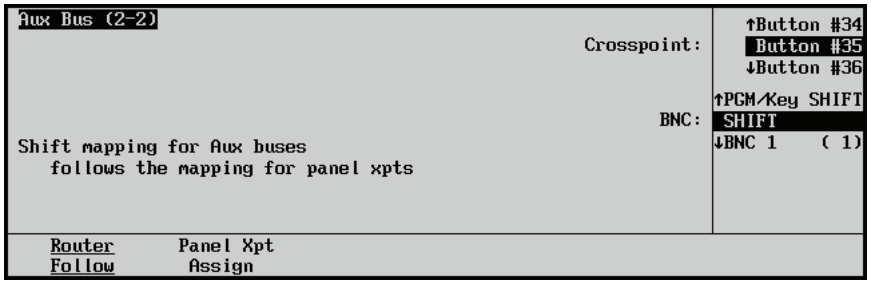
Tips for Using the Shifted Crosspoint Buttons

Note the following when mapping sources to a shifted crosspoint:

- To save a crosspoint, you may wish to assign Color Background 2 as the shifted function of Color Background 1.
- For convenience, you can place alphas as the shifted button of the associated fill. However, if you are short on inputs, it is not even necessary to place alphas on the panel — because the auto-key association calls them up *automatically* when you punch up a key fill.

The following are tips to remember when assigning **Shift** or **PGM/Key Shift** to MLE crosspoints and definable Aux Buses:

- When you set the crosspoint on the MLE buses to the Shift or PGM/Key Shift in the **BNC Menu**, the corresponding crosspoint on the Aux Bus is also set.
- When you re-assign a crosspoint on the MLE buses from Shift or PGM/Key Shift to another function, the corresponding crosspoint on all definable Aux Buses is set to **BLACK**.
- If the MLE crosspoint is assigned to Shift or PGM/Key, and you attempt to assign the corresponding Aux Bus crosspoint, the **BNC** knob is locked to **SHIFT** in the **Aux Bus Setup Menu 2-2** and the following message is displayed:



Aux Bus Setup Menu — Shift Mapping Message

Bus Hold Function

The **Bus Hold** function allows you to retain the currently selected video crosspoint on a bus during a memory recall. If the **BUS HOLD** button is assigned to a crosspoint, each bus BKGD (or PGM), PST, Key 1, and Key 2, on all MLEs, can be held independently. Refer to the ***Synergy Series Operation Guide*** for information on using the Bus Hold function.

If the **Bus Hold Clear** function has been enabled in the **Personality Menu**, you can turn off all the Bus Holds by performing a soft reset (pressing **ALL**+**ALL**).

Setting Up N/S Disable

The **N/S Disable Menu** gives you the option to disable the non-sync LEDs for *all* or *individual* BNCs. When a BNC has the **N/S Disable** set to **ON**, the non-sync indicator on the panel will not light for this BNC, even if this source is un-synchronized.

Use the following procedure to disable the non-sync LEDs:

1. Navigate to the **BNC Menu 2-3** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **BNC** ⇨ **MORE**.
2. Press **N/S Disable** to display the **N/S Disable Menu**.

BNC — N/S Disable Menu

3. Use the **BNC** knob to select the BNC input that you want to turn the **N/S Disable** feature on for.
4. Use the **N/S Disable** knob to turn the N/S Disable on or off as follows:
   - **ON** — Select this option if you want to enable the N/S Disable feature.
   - **OFF** — Select this option if you want to disable the N/S Disable feature. This is the default setting.

5. Use the **N/S Control** knob to select between the following:
    - **Individual** — Select this option to disable the N/S LED for the selected BNC input only.
    - **All OFF** — Select this option to turn all the **N/S Disable** setting **Off**. This will override all the individual **N/S Disable** settings, and return the BNCs to a **N/S Disable OFF** mode.
    - **All ON** — Select this option to turn all the **N/S Disable** setting **On**. This will *remove* the override that would have been set by selecting the **All OFF** option on any other BNC.

Note

When you return the settings to **Individual** after an **All OFF** or **All ON** setting, the original settings will preserved.

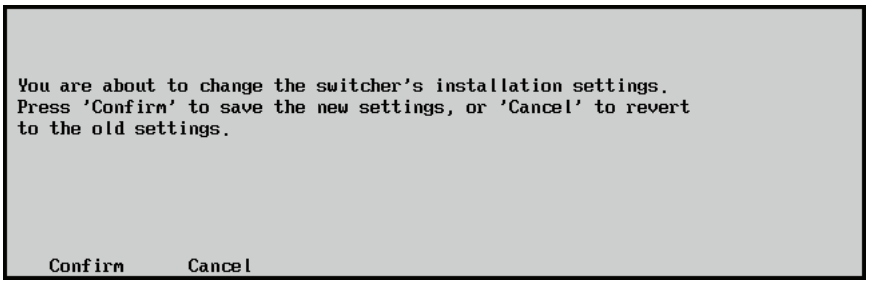
This completes the procedure for disabling the N/S LEDs.

Exiting the Setup Menus

When you exit the **Setup Menus** (typically by pressing **HOME**), the system provides visual warning and asks you to confirm the changes. This warning occurs only when the following conditions are met:

- The **Installation Enable Jumper** (**JP10**) on the front edge of the Frame CPU Board is in the **Down** position.
- A change has been made on an **Installation Menu**.

When you press **HOME** to exit the **Installation Menu**, the following **Installation Change Confirmation Menu** is displayed:



Installation Change Confirmation Menu

This menu alerts you that settings are about to be changed:

- Press **Confirm** to accept the changes.
- Press **Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

Important

If all installation changes are now complete, return the **Installation Enable Jumper** (**JP10**) on the front edge of the **Frame CPU Board** to the **Up** position in order to lock installation.

Checking Inputs

At this point in the installation process, ensure that you have performed the following tasks for *each BNC input* to your Synergy switcher:

- Named the input
- Set up its BNC type
- Set up its tally
- Set up its alpha parameters (if the input is an alpha signal)
- Set up its auto key association (if the input is an alpha signal)
- Set up its control panel button mapping

Use the following procedure to check your inputs:

1. Press **HOME** to exit the installation menus, and return to the **Main Menu 1-2**.
2. When the "**Installation Warning**" menu appears, press **Confirm** to accept all changes.
3. Ensure that the program monitor is connected to the **MAIN PGM** output connector (on the rear of the chassis).
4. Ensure that each source device connected to the switcher is putting out a signal.
5. Using your "**Input Worksheet**" as a guide, press each control panel button on the **PGM** bus, starting with crosspoint 1. Verify that each signal is present on the crosspoint (as mapped), and that it matches each connected signal as written on your worksheet.
6. For each *shifted* crosspoint, *press and hold* the **SHIFT** button, then press the desired button on the **PGM** bus.

Operating Tip

You can also double press the **SHIFT** button to have the MLE remain in the shifted mode. Double pressing the **SHIFT** button again releases the MLE from the shifted mode.

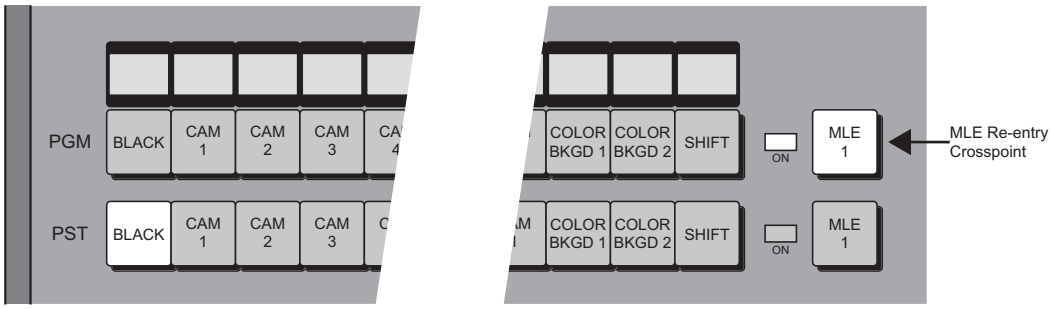
If any signal does not match, check your "**Input Worksheet**" against the settings that you made on the **Panel Button Setup Menu**.

Checking Keys

Once your inputs have been checked, you can now check each auto-key association that you have made. This procedure allows you to verify that each alpha-fill combination is working properly, and generating a proper linear key.

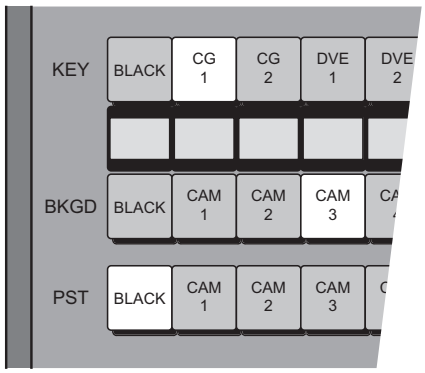
Use the following procedure to check your keys:

1. On the **PGM Bus**, select the re-entry crosspoint for **MLE 1**. Note that sample crosspoint names are used below.



Sample PGM/PST Bus

2. On **MLE 1**, select a background source on the **PGM Bus** (such as a camera or VTR), and select your first key source on the **KEY Bus**. A sample selection is shown below.

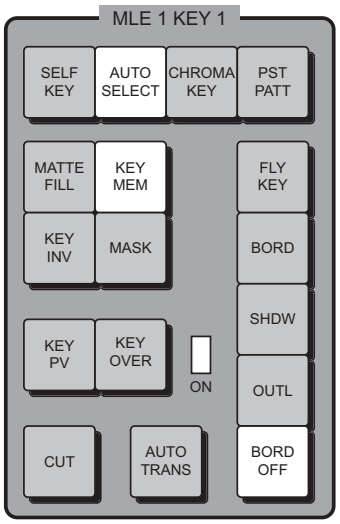


Sample MLE Selections

Note

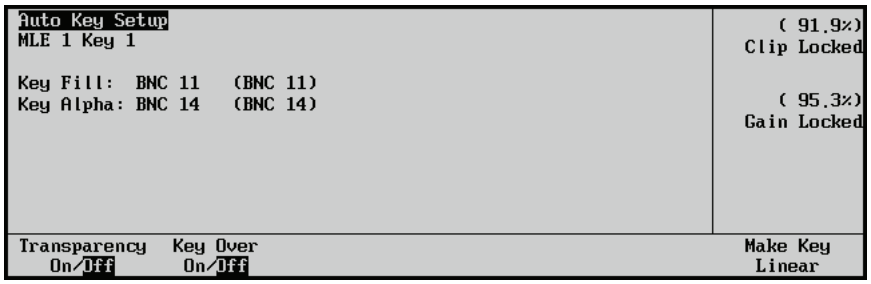
In the sample illustration above, the **Key Bus** sources do not match the **BKGD** and **PST** bus sources. This is because this particular user has elected to use the **PGM/Key SHIFT** function, thus making the **Key Bus** shifted *all the time*. Refer to the section "**Setting Up Panel Buttons**" on page 6–15 for instructions.

3. In the MLE's **Key 1 Group**:
   - Press **AUTO SELECT** to select a linear key type. The **KEY MEM** button will automatically light.
   - Press **CUT** to take the key to air. The **CUT** button lights momentarily, and the red **ON** LED lights to indicate that the selected key is on air.



Sample MLE Keyer State

4. Visually check the appearance of the Key on the monitor:
   - The assigned alpha signal should be properly cutting the hole in the background.
   - The selected fill signal should be properly filling the hole.
   - The edges of the Key should be clean.
5. If the key does not appear visually correct, check the display. The **Auto Key Setup Menu** appears *automatically* each time you take a Key to air.



Auto Key Setup Menu

   In the **Main Area** of the menu, verify the following:
   - The correct MLE and keyer are shown.
   - The correct key fill source name and BNC number are shown.
   - The correct key alpha source name and BNC number are shown.
   - The correct key attributes are shown (e.g., shaped).
6. If the key alpha and fill sources are *incorrectly paired* or *improperly assigned*, verify the associations for the alpha and fill signals on the following setup menus:
   - **BNC Names Menu** — refer to the section "**Naming BNC Inputs**" on page 6–4.
   - **BNC Type Menu** — refer to the section "**Setting Up BNC Types**" on page 6–9.
   - **Alpha Setup Menu** — refer to the section "**Setting Up Alphas**" on page 6–13.
   - **Auto Key Setup Menu** — refer to section "**Setting Up Auto Keys**" on page 6–14.
   - **Panel Button Setup Menu** — refer to the section "**Setting Up Panel Buttons**" on page 6–15.

7. If the Key alpha and fill sources are correct, but the Key does not appear correct *visually*, check the following "mode" assignments that you made on the **Alpha Setup Menu**:

BNC — Alpha Setup Menu

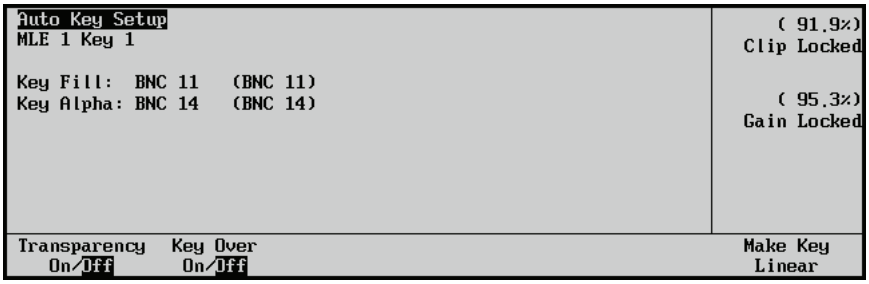
- If you selected **Unshaped** and the alpha signal is actually **Shaped**, you will see black edges around the keyed image.
- If you selected **Shaped** and the alpha signal is actually **Unshaped**, you will see illegal video and other spikes on the waveform monitor.
- Reassign the mode if required, and recheck the key's visual appearance.

8. If the Key alpha and fill sources are correct, but the edges or shadows of the Key do not appear correct *visually* (as compared to the direct CG output), you may need to adjust the factory default clip and gain settings as shown in the **Scroll Area** of the **Auto Key Setup Menu**.

   By default, the labels in the **Scroll Area** both indicate **Locked** for the selected Key. This shows that the *factory default settings* for the selected alpha-fill pair are being used, and that the **Clip** knob and **Gain** knob are both disabled.

   To change the factory default settings for the selected Key:

   - Press **KEY MEM**. The **Locked** labels disappear.



Auto Key Setup Menu — Clip and Gain Enabled

   - Use the **Clip Locked** knob to adjust the linear clip threshold of the linear Key, until the desired visual appearance is achieved.
   - Use the **Gain Locked** knob to adjust the gain of the linear Key, until the desired visual appearance is achieved.
   - To restore the new settings in memory, *press and hold* **AUTO SELECT**, press **KEY MEM**, and release both buttons. Then press **KEY MEM**.

   The **Locked** labels reappear, the clip and gain controls are locked at the new settings, and each setting is stored in switcher Key memory. These settings will now be used each time the selected auto Key is used on air.

Basic Communications Setup

In This Chapter

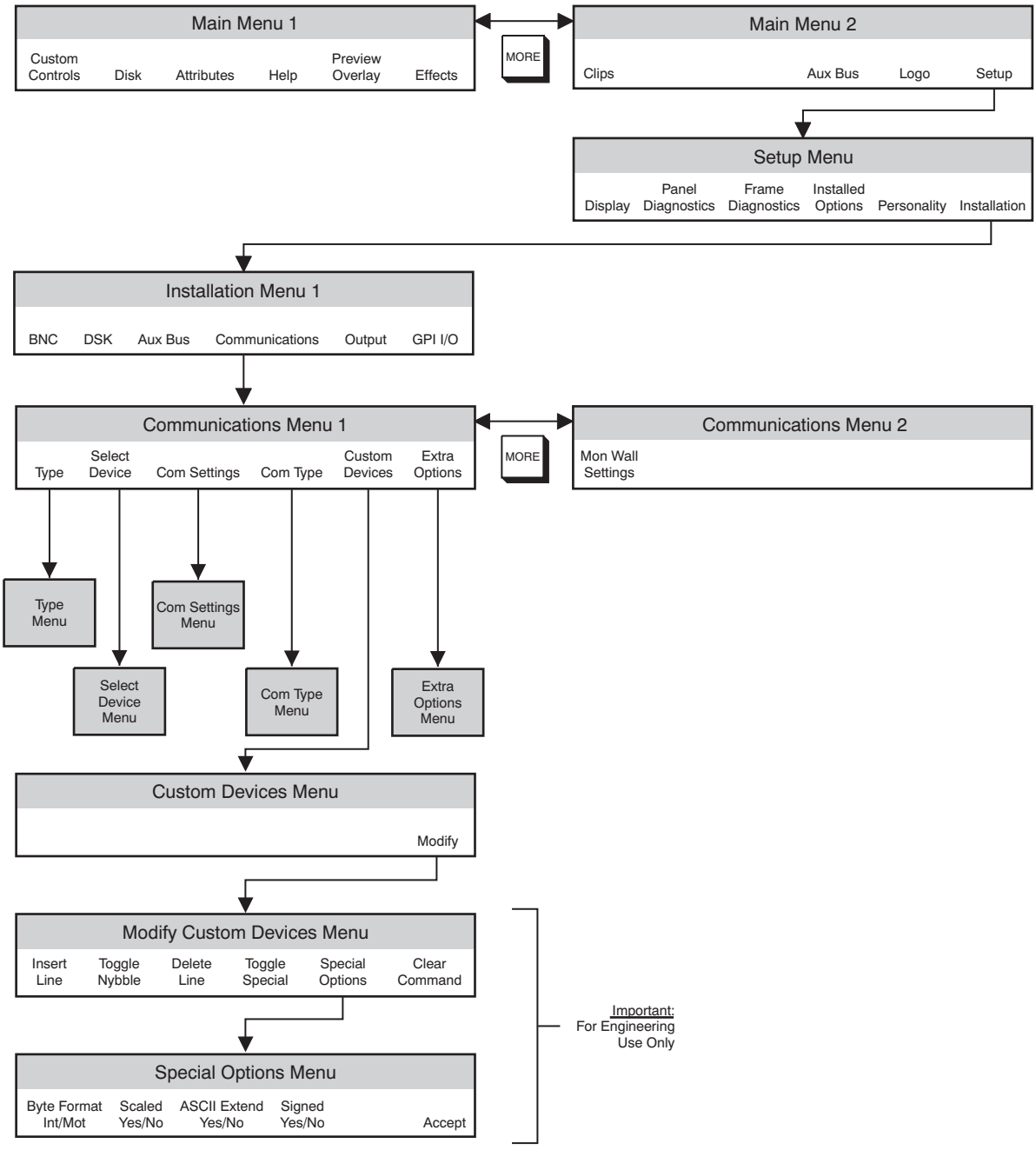
This chapter provides instructions for setting up communications parameters with peripheral equipment.

The following topics are discussed:

- Communications Menu Tree
- Remote Port Expander (BSS4) Setup
- Custom Device Setup
- Peripheral Interface II Protocol Setup
- Serial Tally Protocol Setup
- DSK 3/4 (CDK-111A-M) Communications Setup

Communications Menu Tree

The figure below illustrates the *portion* of the Synergy menu tree that is used for communications set up procedures. Use this figure for reference throughout this chapter.



Communications Menu Tree

Remote Port Expander (BSS4) Setup

The RS-422 Four Port Buffered Smart Switch (Model RS422BSS4) connects to one of the Remote Ports on the back of the Synergy control panel to allow you to control up to four serial devices from that one port. This can increase the total number of remote ports on the Synergy control panel from 8 to 32, depending on the number of BSS4 switches you have.

Important

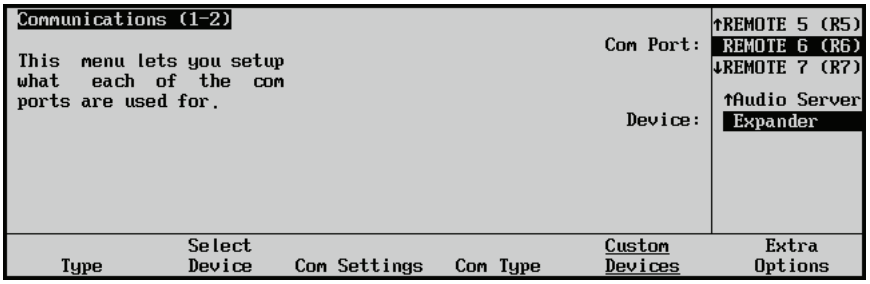
The maximum number of BSS4 remote ports you can use at any one time may vary depending on the type of equipment you are connecting.

Refer to Appendix C, "**Hardware Options**" for information on cabling and connecting the BSS4 to the Synergy switcher.

Remote Port Expander Communications Setup (BSS4)

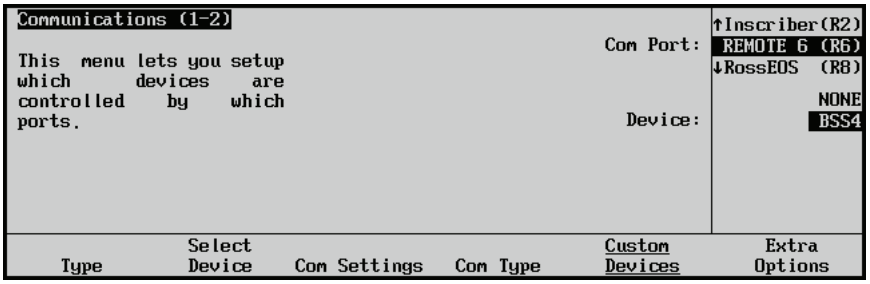
Use the following procedure to configure the BSS4 Remote Port Expander:

1. Navigate to the **Communications Menu 1-2** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installation ⇨ Communications**.
2. Press **Type** to display the **Type Menu**.



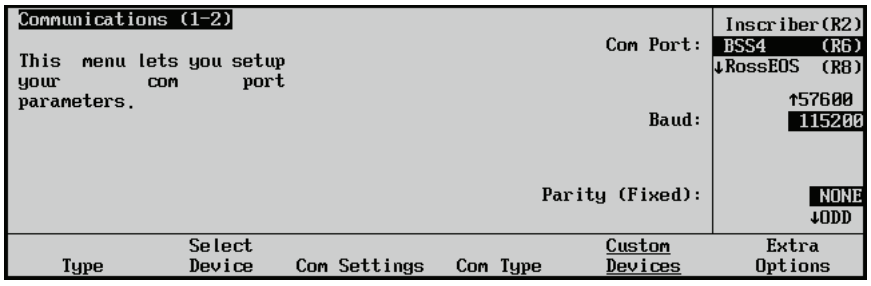
Communications — Type Menu

3. Assign a com port to the BSS4 as follows:
   - Use the **Com Port** knob to select the remote port on the Synergy switcher that is connected to the BSS4.
   - Use the **Device** knob to select **Expander**.
4. Press **Select Device** to display the **Select Device Menu**.



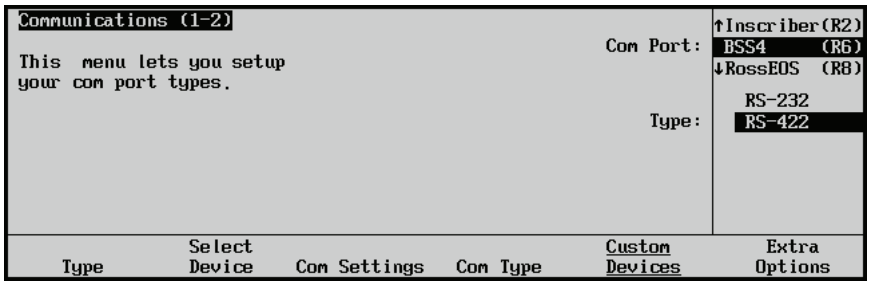
Communications — Select Device Menu

5. Assign the BSS4 to the Expander communications port as follows:
   - Use the **Com Port** knob to select the communications port you want to assign the specific BSS4 to.
   - Use the **Device** knob to select **BSS4**.
6. Press **Com Settings** to display the **Communications Settings Menu**.



Communications — Communications Settings Menu

7. Assign the communications settings for the BSS4 as follows:
   - Use the **Com Port** knob to select the BSS4 you want to set the communications settings for.
   - Use the **Baud** knob to select **115200** as the baud rate for the BSS4.
   - The **Parity** knob is fixed at **NONE**.
8. Press **Com Type** to display the **Communications Type Menu**.



Communications — Communications Type Menu

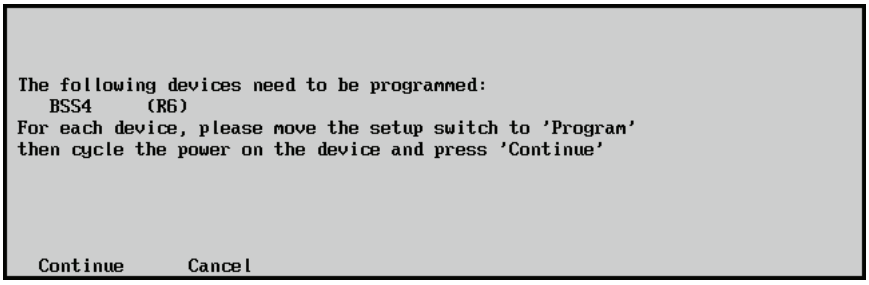
9. Select the type of serial communications that will be used to communicate with the BSS4 as follows:
   - Use the **Com Port** knob to select the BSS4 you want to set the communications type for.
   - Use the **Type** knob to select **RS-422** as the type of serial communication for the selected port.

Note

The BSS4 will only support RS-422 communication, RS-232 devices will require a RS-422 to RS-232 converter.

10. Press **HOME** to display the **Confirm Changes Screen**.
11. Press **Confirm** to accept the changes you have made to communications set up of the switcher.

When you press **Confirm**, a second screen will be displayed prompting you to program the BSS4 Remote Port Expander.



BSS4 — Program BSS4 Screen

Note

If you press **Cancel**, a warning message will be displayed and you will have to perform the setup of the BSS4 again.

12. Move the **SET UP SWITCH** on the BSS4 to **PROG**.

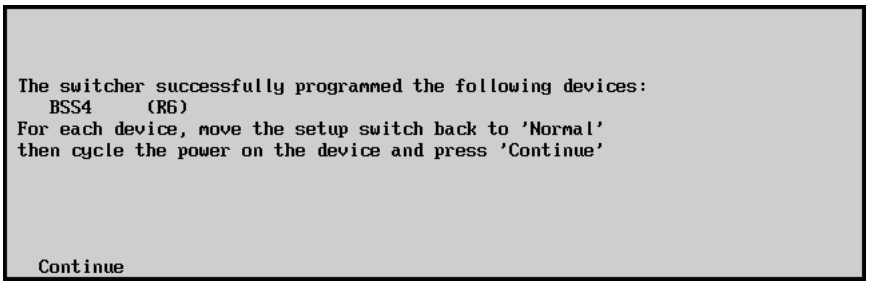
BSS4 Remote Port Expander — Set Up Switch

13. Disconnect the **BSS4 Power Supply** from the BSS4 to cycle the power **Off**.
14. Reconnect the **BSS4 Power Supply** to the BSS4 to cycle the power **On**.
15. Press **Continue** on the Synergy control panel.

Note

If you get an error message stating that the BSS4 could not be programmed, you should confirm your settings and try to program the BSS4 again.

When you press **Continue**, a screen will be displayed informing you that the BSS4 Remote Port Expander has been successfully programmed.

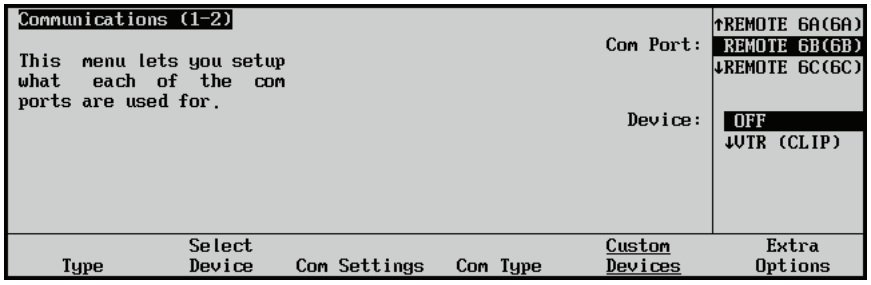


BSS4 — Successful Program BSS4 Screen

16. Move the **SET UP SWITCH** on the BSS4 to **NORM**.
17. Disconnect the **BSS4 Power Supply** from the BSS4 to cycle the power **Off**.
18. Reconnect the **BSS4 Power Supply** to the BSS4 to cycle the power **On**.
19. Press **Continue** on the Synergy control panel.

This completes the procedure for installing a BSS4 Remote Port Expander on the Synergy switcher.

You will now notice that there are four new remote ports on the **Communications Menu 1-2**. These ports will be labelled **A**, **B**, **C** and **D**, corresponding to the **Slave Ports** on the BSS4, and will start with the number of the remote port that the BSS4 is connected to.



Communications — Expander Remote Ports

For example, if the BSS4 is connected to **Remote Port 6** on the control panel, then the four **Extended Remote Ports** will be **Remote 6A**, **Remote 6B**, **Remote 6C**, and **Remote 6D**.

Connecting Equipment to the Remote Port Expander (BSS4)

When installed, the BSS4 Remote Port Expander gives you four expanded remote ports that you can connect most of the same serial equipment to as you would any of the standard remote ports.

Note

If you attempt to remove the setup for the BSS4 in the **Communications Menu 1-2**, a warning message will be displayed indicating the devices, if any, that are still set up on the BSS4.

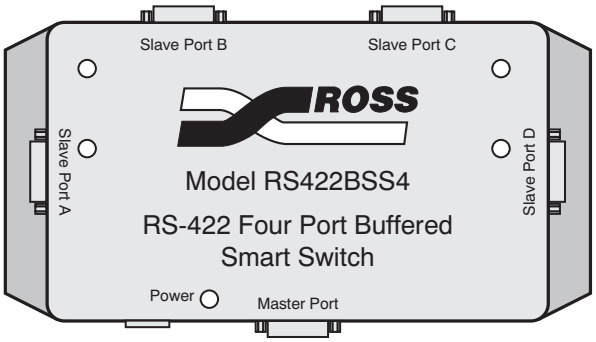
When connecting serial devices to the BSS4 Remote Port Expander, the following rules apply:

Important

You cannot control a **360 Systems DigiCart Audio Server** nor a **360 Systems DigiCart/E Audio Server** from a remote port on a BSS4. If you want to connect a DigiCart to the Synergy switcher, you will have to use a standard Remote Port.

- Devices connected to the BSS4 must use the RS-422 protocol. Devices using RS-232 protocol will require a RS-422 to RS-232 converter.
- Devices that use a **Baud** rate other than the current rate that the port on the BSS4 is set for will require programming of the BSS4. Refer to the section "**Programming the BSS4 for Peripheral Devices**" on page 7–7 for more information on programming the BSS4.
- Devices that use a **Parity** other than the current rate that the port on the BSS4 is set for will require programming of the BSS4. Refer to the section "**Programming the BSS4 for Peripheral Devices**" on page 7–7 for more information on programming the BSS4.
- If you cancel the upgrade procedure of the BSS4 you will have to remove the device from the **Communications Menu 1-2**, confirm the removal, and then set up the device again in order to program the BSS4.
- A device is connected and set up on an expanded BSS4 port in the same manner as it is on any other remote port on the Synergy switcher. You connect the device to the port on the BSS4, select that port on the **Communications Type Menu** and follow the procedures for connecting that device. If the device used a Baud or Parity that is different than what the port was set to before, you will have to program the BSS4. Refer

to the section "**Programming the BSS4 for Peripheral Devices**" on page 7–7 for more information.



BSS4 Remote Port Expander

The **Slave Ports A**, **B**, **C** and **D** on the BSS4 correspond to the **Remote #A**, **Remote #B**, **Remote #C**, and **Remote #D** ports on the **Communications Setup Menu** of the Synergy switcher. The **#** will be the number of the Remote Port that the BSS4 is installed on. For example, if the BSS4 is connected to **Remote Port 3**, the corresponding expanded BSS4 ports would appear as **Remote 3A**, **Remote 3B**, **Remote 3C** and **Remote 3D**. You connect peripheral devices to these ports in the same manner as you would to any of the other Remote Ports on the Switcher.

Programming the BSS4 for Peripheral Devices

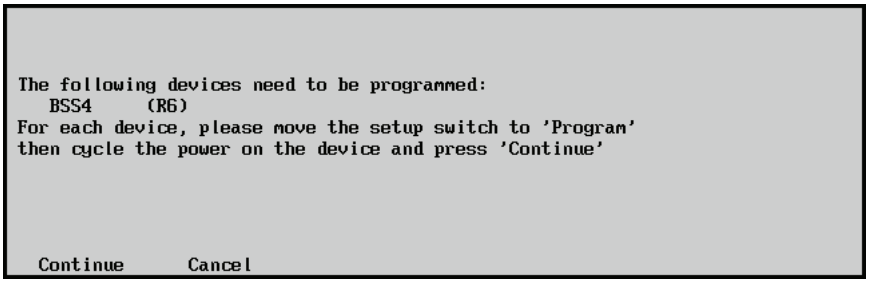
If you set up a device that uses a baud rate or parity that is different than what the remote port on the BSS4 is set to, you will have to program the BSS4.

Use the following procedure to program the BSS4:

1. Install and set up communications for your device as you would for a device connected to a standard remote port.

Note The BSS4 will only support RS-422 communication, and RS-232 devices will require a RS-422 to RS-232 converter.

2. After you confirm the setup of the device from the **Communications Menu 1-2**, the **Program BSS4 Screen** will be displayed.



BSS4 — Program BSS4 Screen

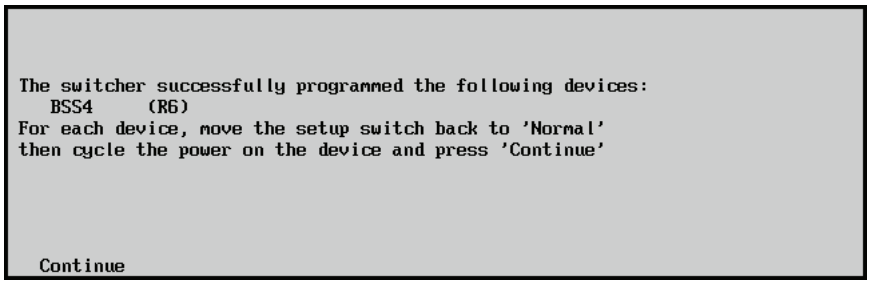
3. Move the **SET UP SWITCH** on the BSS4 to **PROG**.

BSS4 Remote Port Expander — Set Up Switch

4. Disconnect the **BSS4 Power Supply** from the BSS4 to cycle the power **Off**.
5. Reconnect the **BSS4 Power Supply** to the BSS4 to cycle the power **On**.
6. Press **Continue** on the Synergy control panel.

Note

If you press **Cancel**, a warning message will be displayed and you will have to perform the setup of the BSS4 again.



BSS4 — Successful Program BSS4 Screen

7. Move the **SET UP SWITCH** on the BSS4 to **NORM**.
8. Disconnect the **BSS4 Power Supply** from the BSS4 to cycle the power **Off**.
9. Reconnect the **BSS4 Power Supply** to the BSS4 to cycle the power **On**.
10. Press **Continue** on the Synergy control panel.

This completes the procedure for programming the BSS4 Remote Port Expander.

Custom Device Setup

The **Custom Device Setup** procedure allows you to set up communications parameters with custom external devices.

Note

The **Custom Device Setup** is an advanced feature requiring technical knowledge of serial protocols. Refer to Appendix F, "**Custom Device Serial Protocols**", for detailed information and set up procedures.

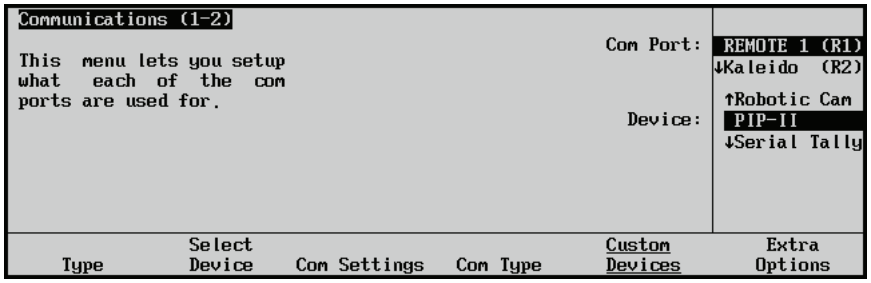
Peripheral Interface II Protocol Setup

Use the **Peripheral Interface II Protocol Setup** procedure to set up communications parameters with a PIP-II device that can control up to 24 peripheral devices from a single remote port on the Synergy switcher.

Ensure that the **Peripheral Interface II Protocol** option is installed. If not, please contact **Ross Video** for details. Refer to the section "**Installed Options Menus**" on page 2–37 for instructions on verifying the status of installed options.

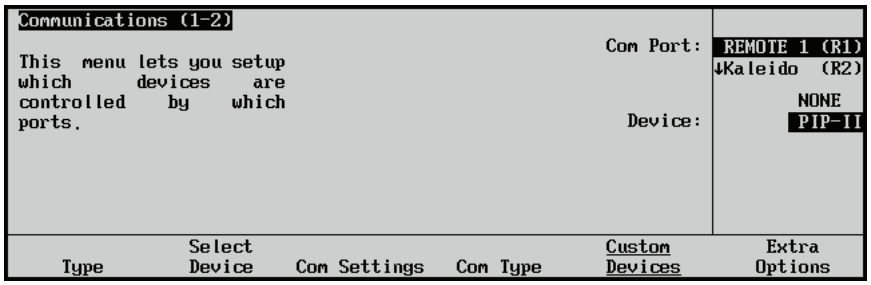
Use the following procedure to configure a Synergy switcher communication port for a Peripheral Interface II Protocol device:

1. Navigate to the **Communications Menu 1-2** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **Communications**.
2. Press **Type** to display the **Type Menu**.



Communications — Type Menu

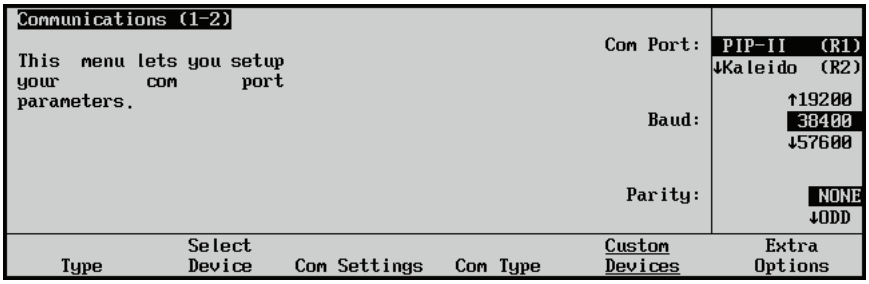
3. Assign a com port to the PIP-II as follows:
   - Use the **Com Port** knob to select the remote port on the Synergy switcher that is connected to the PIP-II device.
   - Use the **Device** knob to select **PIP–II**.
4. Press **Select Device** to display the **Select Device Menu**.



Communications — Select Device Menu

5. Select the PIP-II protocol for the PIP-II communications port as follows:
   - Use the **Com Port** knob to select the communications port you want to assign a PIP-II device to.
   - Use the **Device** knob to select **PIP–II**.

6. Press **Com Settings** to display the **Com Settings Menu**.



Communications — Com Settings Menu

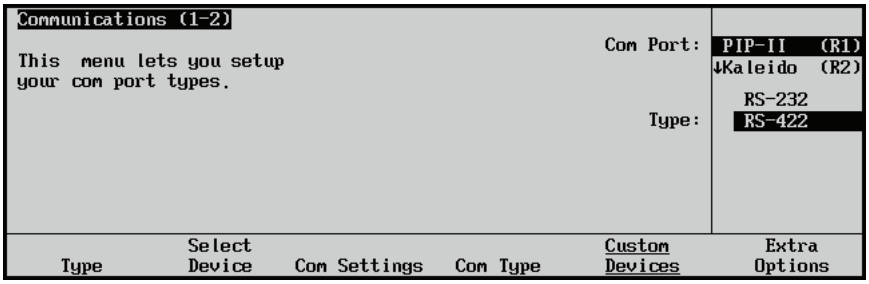
7. Set the communications protocols for the PIP-II device as follows:

Note

Refer to your PIP-II device documentation for the specific Baud and Parity settings of your PIP-II device.

- Use the **Com Port** knob to select the PIP-II port you are setting the communications settings for.
- Use the **Baud** knob to select the baud rate for the PIP-II device.
- Use the **Parity** knob to select the parity for the PIP-II device.

8. Press **Com Type** to display the **Com Type Menu**.



Communications — Com Type Menu

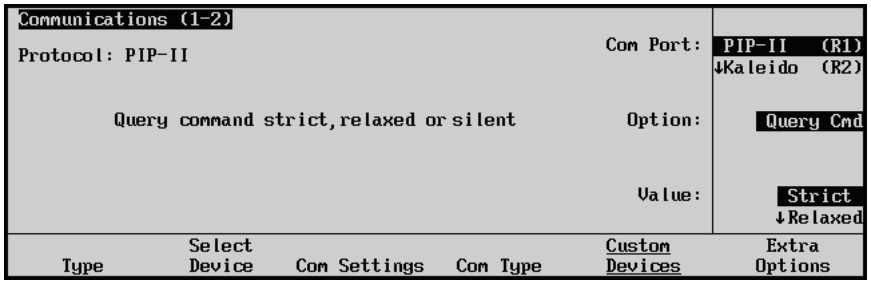
9. Select the type of serial communications that will be used to communicate with the PIP-II device as follows:

Note

Refer to your PIP-II device documentation for the specific communications type of your PIP-II device.

- Use the **Com Port** knob to select the PIP-II device you want to set the communications type for.
- Use the **Type** knob to select the type of serial communications for the selected port.

10. Press **Extra Options** to display the **Extra Options Menu**.



Communications — Extra Options Menu

11. Select the type of querying command for the PIP-II device as follows:
    - Use the **Com Port** knob to select the PIP-II device you want to set the querying command type for.
    - Use the **Option** knob to select **Query Cmd**.
    - Use the **Value** knob to select the type of Query Command you want.
        ~ **Strict** — Select this option to be able to control *only* devices connected to your PIP-II device that respond to the Query Command.
        ~ **Relaxed** — Select this option to be able to control all devices connected to your PIP-II device whether they respond to the Query Command or not.
        ~ **Silent** — Select this option to not send the Query Command. The switcher will be able to control all devices connected to your PIP-II device.
12. Press **HOME** to display the **Installation Change Confirmation Screen**.
13. Accept or reject the changes you have made as follows:
    - Press **Confirm** to accept the changes.
    - Press **Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedures for setup of the **Peripheral Interface II Protocol** option. For operating settings, refer to the section "**Switcher Personality**" on page 11–66. Refer to the section "**Peripheral Interface II Custom Controls**" on page 8–37 for procedures on creating custom controls using the Peripheral Interface II Protocol option.

Serial Tally Protocol Setup

Before proceeding to the sections below, ensure that the **Serial Tally** software option is installed. If not, please contact **Ross Video** for details. Refer to the section "**Installed Options Menus**" on page 2–37 for instructions on verifying the status of installed options.

The following topics are discussed:

- Contribution Serial Tally Protocol Setup
- Look Ahead Serial Tallies Protocol Setup

Contribution Serial Tally Protocol Setup

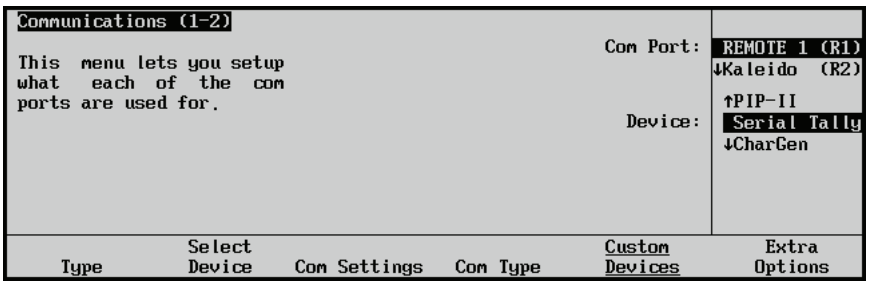
Use the **Contribution Serial Tally Protocol Setup** procedure to set up communication parameters with tally system interface equipment using industry standard protocol.

Note

Note that the standard parallel tally interface will continue to operate normally when this option is enabled.

Use the following procedure to configure the Contribution Serial Tally Protocol:

1. Navigate to the **Communications Menu 1-2** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **Communications**.
2. Press **Type** to display the **Type Menu**.

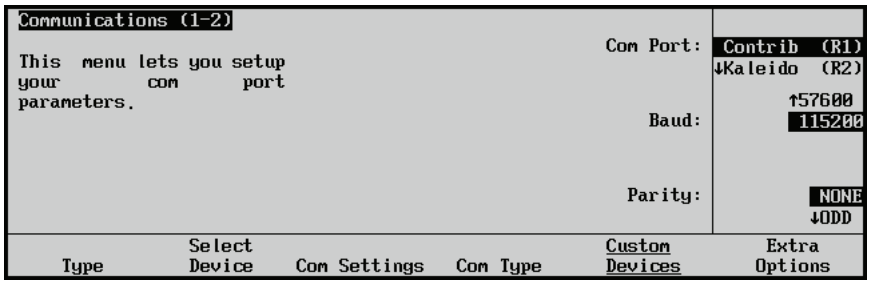


Communications — Type Menu

3. Assign a com port to the tally system as follows:
   - Use the **Com Port** knob to select the remote port on the Synergy switcher that is connected to the tally system.
   - Use the **Device** knob to select **Serial Tally**.
4. Press **Select Device** to display the **Select Device Menu**.

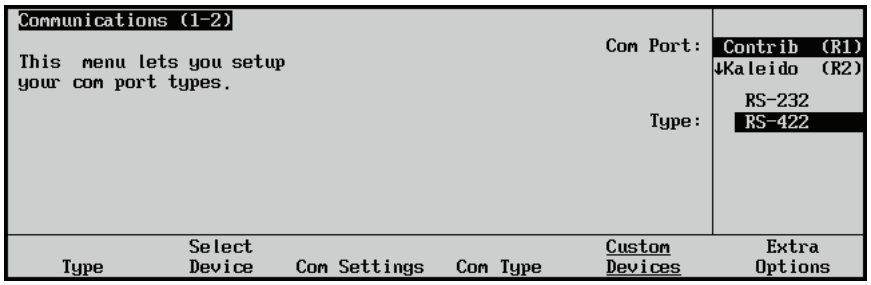
Communications — Select Device Menu

5. Select the tally system you want to assign to the tally system communications port as follows:
   - Use the **Com Port** knob to select the communications port you want to assign a specific tally interface to.
   - Use the **Device** knob to select the type of tally interface that is connected to the port. You can select between the following:
     ~ **NONE** — Use this option to not assign a tally interface to the selected com port.
     ~ **Contrib** — Use this option to assign a **Contribution Serial Tally Interface** device to the selected com port.
     ~ **L.A.S.T.** — Use this option to assign the **Look Ahead Serial Tally** protocol to the selected com port. Refer to the section "**Look Ahead Serial Tallies Protocol Setup**" on page 7–16 for more details.
6. Press **Com Settings** to display the **Com Settings Menu**.



Communications — Com Settings Menu

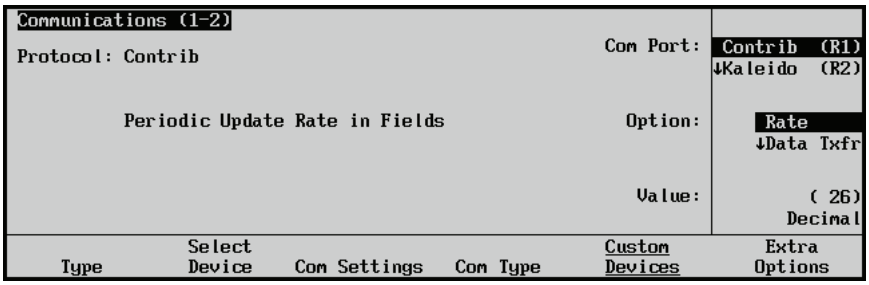
7. Set the communications protocols for the tally interface as follows:
   - Use the **Com Port** knob to select the tally interface you are setting the communications settings for.
   - Use the **Baud** knob to select the baud rate for the tally interface.
   - Use the **Parity** knob to select the parity for the tally interface.
8. Press **Com Type** to display the **Com Type Menu**.



Communications — Com Type Menu

9. Select the type of serial communication that will be used to communicate with the tally interface as follows:
   - Use the **Com Port** knob to select the tally interface you want to set the communications type for.
   - Use the **Type** knob to select the type of serial communications for the selected port.

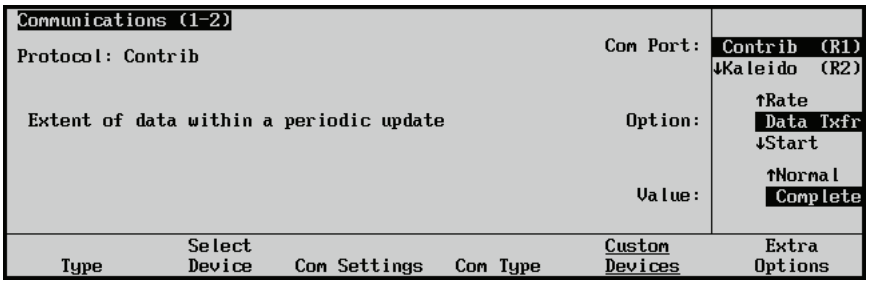
10. Press **Extra Options** to display the **Extra Options Menu**.
11. Assign an update rate to the tally interface as follows:



Communications — Extra Options (Rate) Menu

- Use the **Com Port** knob to select the tally interface you are setting the rate for.
- Use the **Option** knob to select **Rate**.
- Use the **Value** knob to select the rate, in fields, between update messages sent by the switcher to the tally interface equipment.

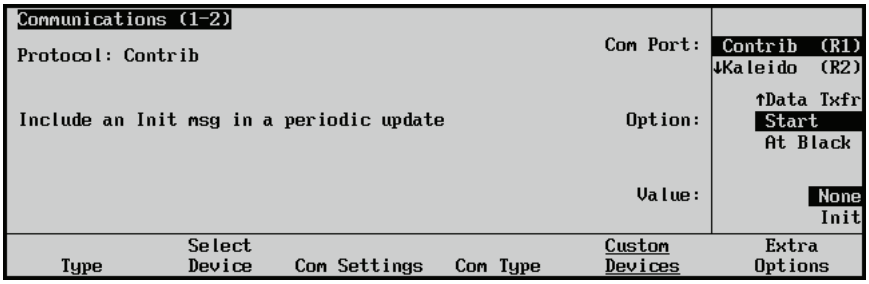
12. Assign a data transfer size to the tally interface as follows:



Communications — Extra Options (Data Transfer) Menu

- Use the **Com Port** knob to select the tally interface you are setting the message size for.
- Use the **Option** knob to select **Data Txfr**.
- Use the **Value** knob to select either **Minimal**, **Normal** or **Complete** as the message size protocol for the tally interface.

13. Assign a start message to the communications with the tally interface as follows:

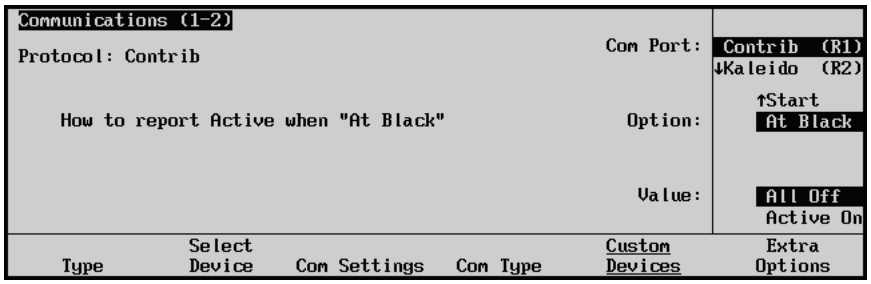


Communications — Extra Options (Start) Menu

- Use the **Com Port** knob to select the tally interface you are setting the start message for.
- Use the **Option** knob to select **Start**.

- Use the **Value** knob to select either **None** or **Init** as the start message for the tally interface.

14. Assign an At Black action to the tally interface as follows:



Communications — Extra Options (At Black) Menu

- Use the **Com Port** knob to select the tally interface you are setting the At Black action for.
- Use the **Option** knob to select **At Black**.
- Use the **Value** knob to select the At Black action for the tally interface as follows:
  - ~ **All Off** — Select this option to have the switcher report that nothing is on-air when the switcher as at black.
  - ~ **Active On** — Select this option to have the switcher not report anything different when the switcher is at black.

15. Press **HOME** to display the **Installation Change Confirmation Screen**.
16. Accept or reject the changes you have made as follows:
    - Press **Confirm** to accept the changes.
    - Press **Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedures for setup of the **Contribution Serial Tally Protocol** option. If you require further information on the various options and their associated values, contact Ross Video Technical Support at the number listed in the front of this guide.

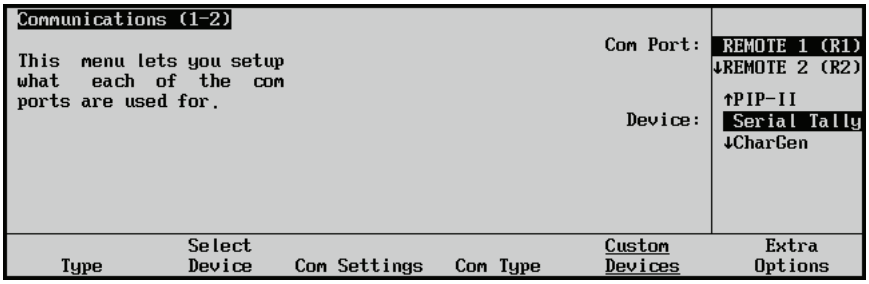
Look Ahead Serial Tallies Protocol Setup

The Look Ahead Serial Tallies (L.A.S.T.) protocol enables you to inform external devices of a key crosspoint change before the crosspoint change is performed on any bus of the Synergy switcher. When a key source changes, the L.A.S.T. protocol informs the device while delaying the key crosspoint change for the duration you set in the **Communications Menus**. Once set up, the L.A.S.T. protocol will continually transmit the information about every Synergy switcher bus on all available MLEs. Refer to Appendix B, "**Diagnostics**" for information on monitoring TX/RX functions.

Use the following procedure to configure the L.A.S.T. protocol:

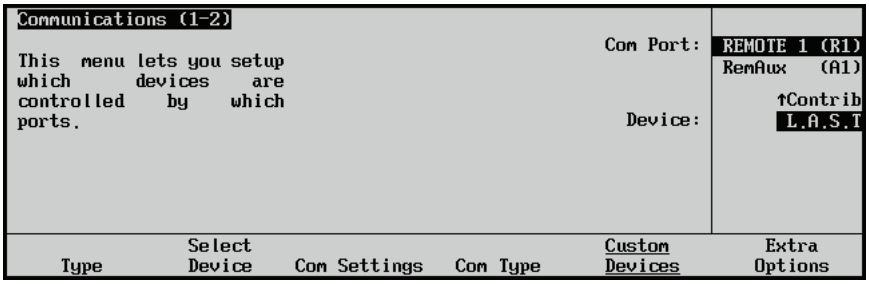
1. Navigate to the **Communications Menu 1-2** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **Communications**.

2. Press **Type** to display the **Type Menu**.



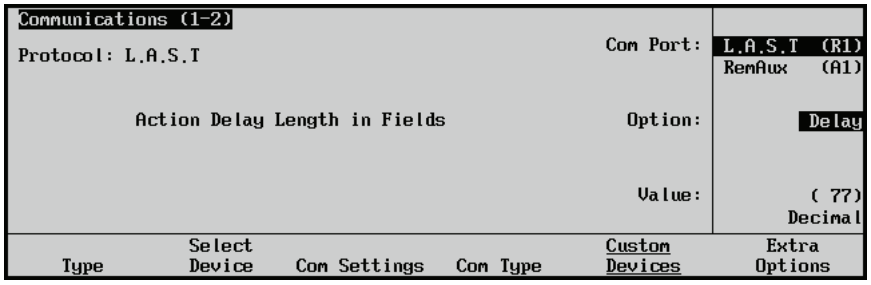
Communications — Type Menu

3. Assign a com port to the tally system as follows:
   - Use the **Com Port** knob to select the remote port on the Synergy switcher that is connected to the tally system.
   - Use the **Device** knob to select **Serial Tally**.
4. Press **Select Device** to display the **Select Device Menu**.



Communications — Select Device Menu

5. Select the tally system you want to assign to the tally system communications port as follows:
   - Use the **Com Port** knob to select the communications port you want to assign a specific tally interface to.
   - Use the **Device** knob to select the type of tally interface that is connected to the port. You can select between the following:
     ~ **NONE** — Use this option to not assign a tally interface to the selected com port.
     ~ **Contrib** — Use this option to assign a **Contribution Serial Tally Interface** device to the selected com port. Refer to the section "**Contribution Serial Tally Protocol Setup**" on page 7–13 for more details.
     ~ **L.A.S.T.** — Select this option to assign the **Look Ahead Serial Tally** protocol to the com port.
6. Press **Extra Options** to display the **Extra Options Menu**.



Extra Options Menu

7. Set the delay duration (in fields) for the L.A.S.T. protocol as follows:
   - Use the **Com Port** knob to select the tally interface you are setting the delay for.
   - Use the **Option** knob to select **Delay**. This is the default setting.
   - Use the **Value** knob to set the number of fields for the delay.
     ~ You can select between **0** and **120** fields for the delay duration.
8. Press **HOME** to display the **Installation Change Confirmation Screen**.
9. Accept or reject the changes you have made as follows:
   - Press **Confirm** to accept the changes.
   - Press **Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

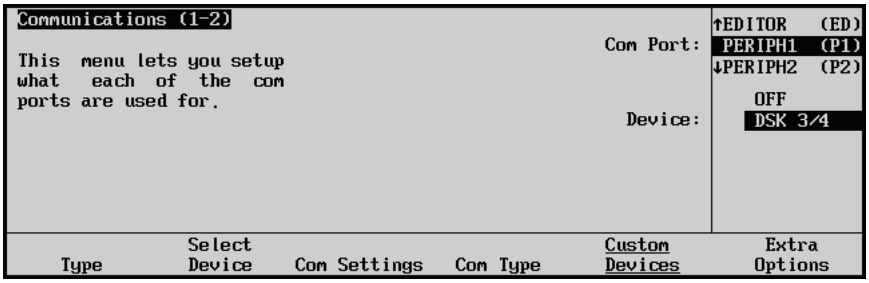
This concludes the procedure to configure the **L.A.S.T. protocol** option. If you require further information on the various options and their associated values, contact **Ross Video Technical Support** at the number listed in the front of this guide.

DSK 3/4 (CDK-111A-M) Communications Setup

The **DSK 3/4 Communication Setup** procedure allows you to set up communications with the CDK-111A-M Downstream Keyers. Once the procedure is completed, you will have full functionality of an additional one or two DSK 3/4s on your Synergy switcher.

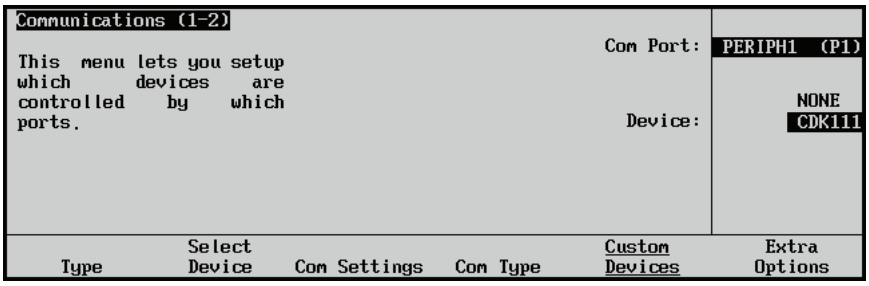
Use the following procedure to set up communications with a CDK-111A-M in Downstream Keyer mode:

1. Ensure that the CDK-111A-M boards are installed. If not, please refer to the section section "**DSK 3/4 (CDK-111A-M) Cabling**" on page 3–9 and the section "**DSK 3/4 (CDK-111A-M) Cabling**" on page 3–9.
2. Navigate to the **Communications Menu 1-2** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **Communications**.
3. Press **Type** to display the **Type Menu**.



Communications — Type Menu

4. Assign a Peripheral port to the DSK as follows:
   - Use the **Com Port** knob to select the peripheral port (**PERIPH1** or **PERIPH2**) on the Synergy frame that is connected to the CDK-111A-M.
   - Use the **Device** knob to select the **DSK** (External Downstream Keyer) device.
5. Press **Select Device** to display the **Select Device Menu**.



Communications — Select Device Menu

6. Select the DSK you want to assign to the peripheral port as follows:
   - Use the **Com Port** knob to select the peripheral port you want to assign a specific DSK to.

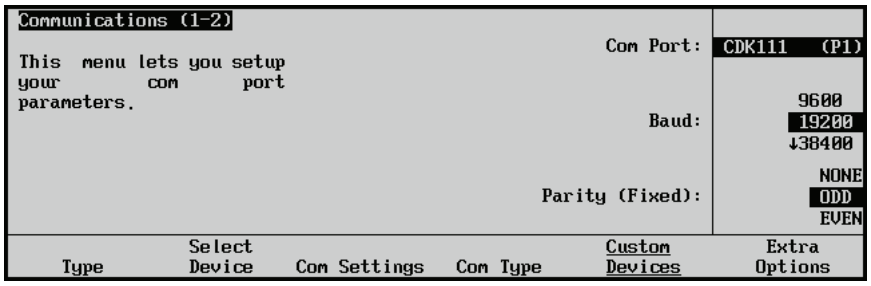
- Use the **Device** knob to select the type of DSK that is connected to the peripheral port. You can chose between the following:
  - ~ **NONE** — Select this option to not assign a DSK to the selected port.

Note

If the CDK-111A-M card is not being used and is removed from the frame, you must set the middle **Device** knob to **NONE**.

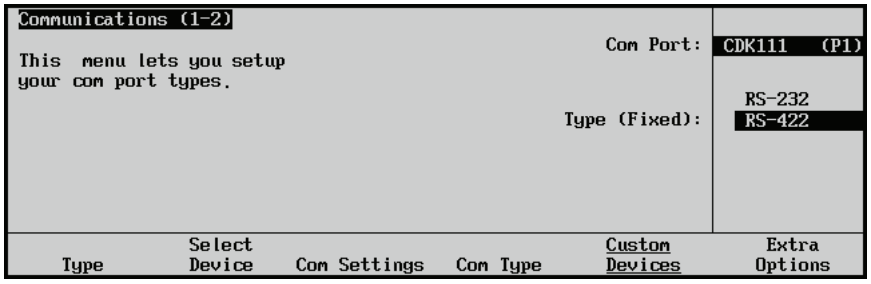
  - ~ **CDK111** — Select this option to assign a **CDK-111A-M** to the selected port.

7. Press **Com Settings** to display the **Com Settings Menu**.



Communications — Com Settings Menu

8. Set the communications protocols for the DSK as follows:
   - Use the **Com Port** knob to select the DSK you are setting the communications settings for.
   - Use the **Baud** knob to select **19200** as the baud rate for the CDK-111.
   - Use the **Parity** knob to select **ODD**.
9. Press **Com Type** to display the **Com Type Menu**.



Communications — Com Type Menu

10. Select the type of serial communication that will be used to communicate with the DSK as follows:
    - Use the **Com Port** knob to select the DSK you want to set the communications type for.
    - The middle **Type** knob is fixed at **RS-422**.

This completes the set up of the peripheral ports for the CDK-111A-M Downstream Keyer.

Custom Control Basics

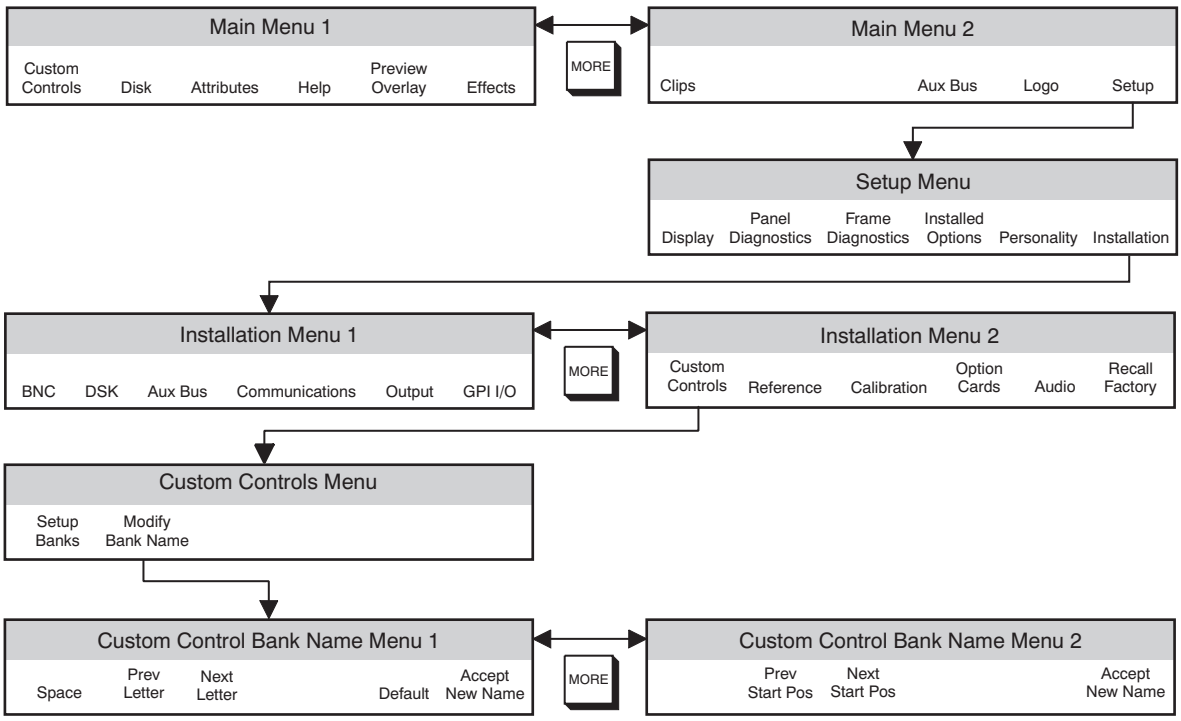
In This Chapter

This chapter provides basic instructions for setting up and naming custom control banks, and programming, naming, and editing your custom control buttons. The following topics are discussed:

- Custom Control Banks Menu Tree
- Custom Controls Menu Tree
- Custom Controls
- Custom Control Banks
- Programming Control Panel Functions
- Relative Custom Controls
- Programming Special Functions
- Time Clock Functions
- Special Functions
- Peripheral Interface II Custom Controls
- Copy MLE Custom Controls
- Naming Custom Controls
- Editing Custom Control Macros
- Modifying Events
- Inserting Events
- Deleting Custom Controls
- Saving and Recalling Custom Controls

Custom Control Banks Menu Tree

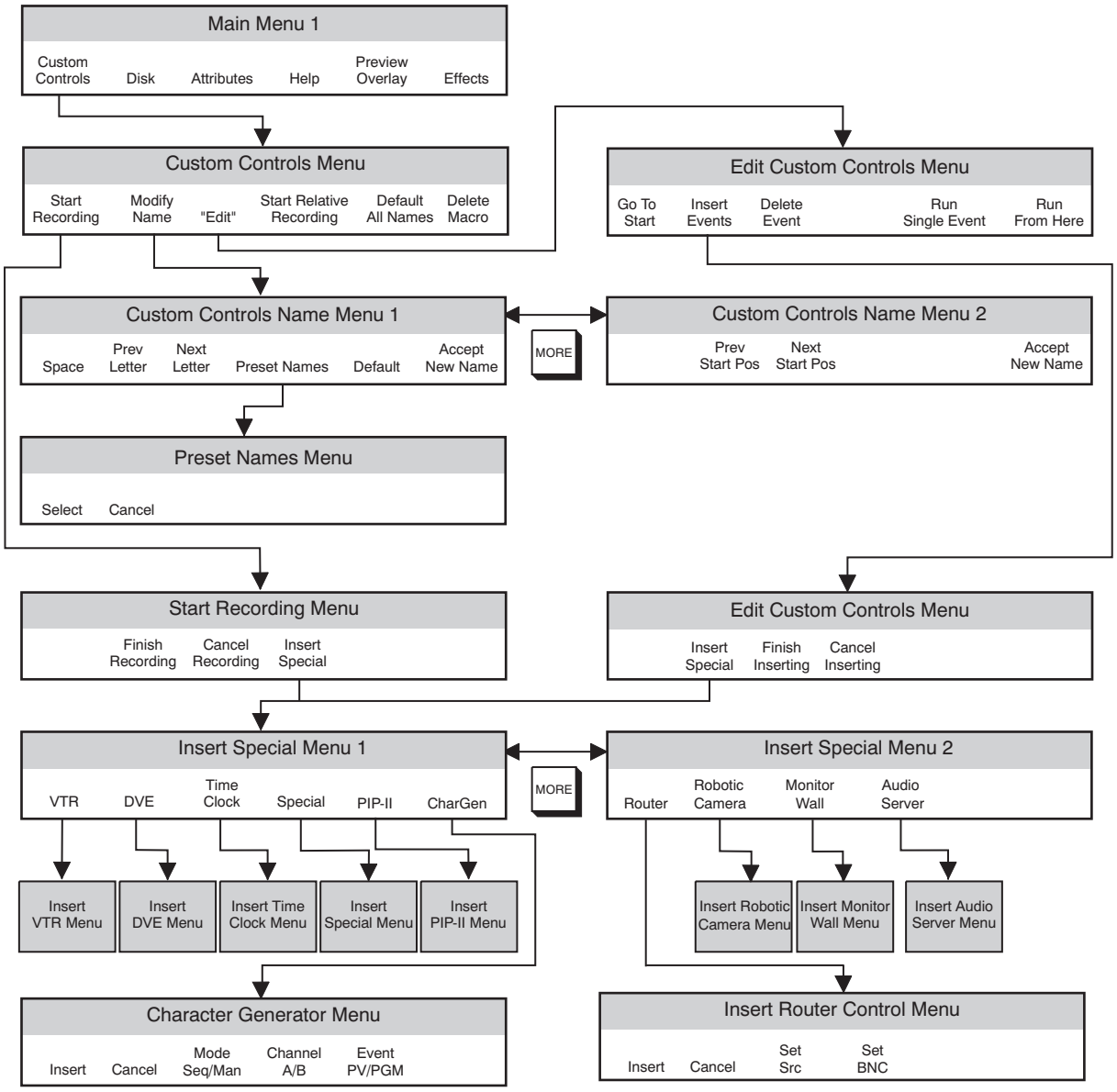
The following figure illustrates the *portion* of the Synergy menu tree that is used for setting up Custom Control banks. Use this figure for reference throughout the following chapter.



Custom Controls Banks Menu Tree

Custom Controls Menu Tree

The following figure illustrates the *portion* of the Synergy menu tree that is used for programming custom control buttons. Use this figure for reference throughout this chapter.



"Edit" only shows up as a soft key if the custom control button currently selected in the System Control Group has already been programmed with a macro.

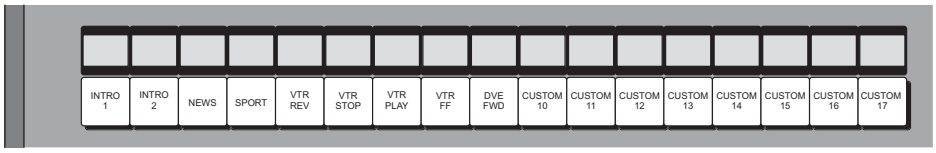
Custom Controls Menu Tree

Custom Controls

The **Custom Control** function allows you to program sequences of keystrokes (called “macros”) and other special switcher functions — and store them in dedicated buttons and banks in the **Custom Control** group. Once programmed, a macro can be played back simply by pressing *one button* in the **Custom Control** group. A custom control macro can be as simple as triggering an output GPI pulse, or as complex as recalling a specific memory register, performing a switcher transition, and flying a group of keys — all with one-button simplicity.

The figures below illustrate each switcher’s **Custom Control Group**. Note that *sample* labels are provided.

- **Synergy 2** — The following figure illustrates the **Custom Control Group** for the Synergy 2, 2003 edition panel. A total of 17 registers are provided, up to eight of which can be assigned as *banks* to increase the total number of available registers.



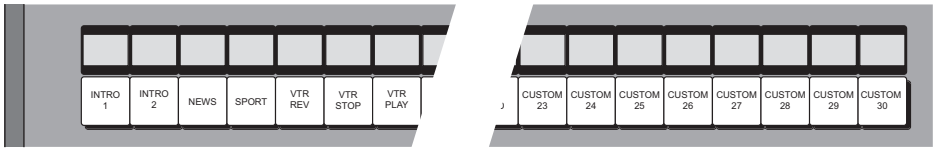
Custom Control Group — Synergy 2 Panel, 2003 Edition

Buttons are numbered to simplify the programming procedure. The numbering is **1** to **17** in ascending order, from left to right.

Note

If you have a Synergy 2 panel *prior* to the 2003 edition panels, a total of 24 registers are available, eight of which can be assigned as banks.

- **Synergy 3** — The following figure illustrates the **Custom Control Group** for the Synergy 3, 2003 edition panel. A total of 30 registers are provided, up to eight of which can be assigned as *banks* to increase the total number of available registers.



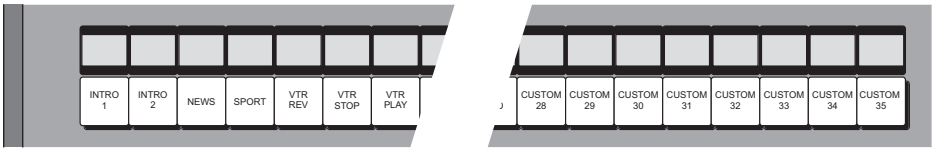
Custom Control Group — Synergy 3 Panel, 2003 Edition

Buttons are numbered to simplify the programming procedure. The numbering is **1** to **30** in ascending order, from left to right.

Note

If you have a Synergy 3 panel *prior* to the 2003 edition panels, a total of 32 registers are available, eight of which can be assigned as banks.

- **Synergy 4** — The following figure illustrates the **Custom Control Group** for the Synergy 4, 2003 edition panel. A total of 35 registers are provided, up to eight of which can be assigned as *banks* to increase the total number of available registers.



Custom Control Group — Synergy 4 Panel, 2003 Edition

Buttons are numbered to simplify the programming procedure. The numbering is **1** to **35** in ascending order, from left to right.

Note

If you have a Synergy 4 panel manufactured *prior* to the 2003 edition panels, a total of 32 registers are available, eight of which can be assigned as banks.

Custom control functionality falls into several different categories. These categories have been identified as follows:

- **Custom Control Banks** — Up to eight banks can be enabled, and you can select *any* of the available custom control buttons on which to place the bank buttons themselves. Each bank stores a separate set of custom controls.
- **Naming Custom Controls** — A custom control function can be named for quick reference in the menus and, if installed, on the mnemonic displays.
- **Control Panel Functions** — A custom control button can be programmed to play back a series of control panel button presses — such as recalling memory registers, initiating auto transitions, taking a selected source, bringing up a CG, and calling other custom control macros.

Important

Although the following sections deal with each *individual* custom control function, please note that when you are programming a custom control button, you are free to mix *all types* of functions together in one button programming session.

Note

While recording a custom control macro, pressing the custom control button of an existing macro will record only the call to the custom control recorded on that button, and will stop the recording in progress. Upon playback of the new macro, the called macro will be performed as the last function.

- **VTR Functions** — A custom control button can be programmed to perform a specific transport command such as play, cue and rewind. Commands apply to serial controlled devices such as VTRs, Video Servers and Audio Servers. The **VTR Remote Control**, **Video Sever Control** or **Audio Sever Control** option must be installed, respectively. Any combination of options can be installed. Refer to the following sections for more information on setting up and using these custom controls. Refer to the section "**VTR Custom Controls**" for more information on VTR Custom Controls.
- **Video Servers** — Refer to the section "**Video Server Custom Controls**" for more information on Video Server Custom Controls.

- **DVE Functions** — Using the primary DVE, a custom control button can be programmed to perform a specific DVE command such as play effect, frame advance, and stop. The **DVE Send and Remote Control Option** must be installed.
- **Time Clock Functions** — A custom control button can be programmed to start, stop, or reset the preview overlay clock. The **Preview Overlay Option** must be installed.
- **Special Functions** — A custom control button can be programmed to perform a variety of special functions controlling GPIs and external audio devices, menu retrieval, transitions, and inserting pauses and holds to the custom control.
- **PIP II Functions** — A custom control button can be programmed to send messages to devices using this optional software feature.
- **Robotic Camera Functions** — A custom control button can be programmed to recall cameras and specific shots. The **Robotic Camera Interface Option** must be installed. Refer to the section "**Robotic Camera Custom Controls**" for more information on Robotic Camera Custom Controls.
- **Monitor Wall Functions** — A custom control button can be programmed to change input channels, modify dynamic text and load a specific layout. Refer to the section "**Monitor Wall Custom Controls**" for more information on Monitor Wall Custom Controls.
- **Audio Servers** — Refer to the section "**Programming Audio Server Custom Controls**" for more information on Audio Server Custom Controls.
- **Saving and Recalling Custom Controls** — A custom control function can be stored to and recalled from a storage device such as a floppy disk or USB key.

Note

You must have the **USB Removable Media Drive** option installed in order to use a USB key for saving and recalling Custom Controls.

- **Deleting Custom Controls** — A custom control function can be deleted from a button.
- **Editing Custom Controls** - A custom control macro can be viewed and modified by inserting or deleting events, as desired.

Note

When recording a memory recall in a custom control macro, it may be necessary to add a pause of between 1-10 frames after the memory recall in the macro. Refer to the section "**Custom Control Pauses**" on page 8–35 for details on inserting pauses in a custom control macro.

Custom Control Banks

Before programming the actual **Custom Control** buttons themselves, you must determine whether or not you want to enable custom control "**Banks**." This feature effectively multiplies the total number of custom control buttons that you have available.

Two types of banks are available: **Normal** and **Audio**. Normal banks are for storing normal custom controls dealing with typical switcher video functions. Audio banks are used when custom controls are created for use when the switcher is in Audio Custom Control mode, and remotely operates an audio mixing board through the PGM and PST bus crosspoints. Refer to Chapter 11 "**Audio Mixers**" for more information.

Up to eight banks can be enabled, and you can select *any* of the available custom control buttons on which to place the bank buttons themselves. Each bank stores a separate set of custom controls.

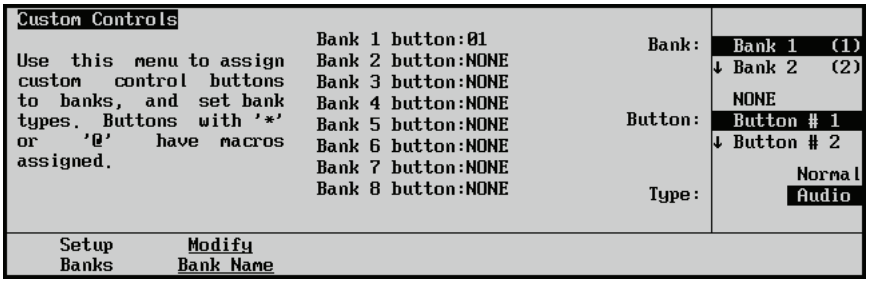
Note

It is possible to record a custom control macro to a button that is assigned as a bank button. However, this is only useful for audio functions, as there is no means by which you could access a regular custom control macro assigned to a bank button.

Custom Control Bank Setup

Use the following procedure to set up Custom Control Banks:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installation ⇨ MORE ⇨ Custom Controls**.
2. Press **Setup Banks** to display the **Bank Setup Menu**.



Custom Controls — Bank Setup Menu

3. Assign a Bank to a Custom Control Button as follows:
   - Use the **Bank** knob to select the desired bank that you wish to enable (from **1** to **8**).
   - Use the **Button** knob to select the desired custom control button that you want to assign as the bank. If you need to *disable* a bank, select **NONE**.

Note

As you rotate the **Bank** and **Button** knobs, the **Custom Control Buttons** will light, indicating the selected button on the control panel.

- Use the **Type** button to select the Custom Control Bank type you are creating.
  - ~ **Audio** — Use this option for macros that communicate with remote audio mixers.

Operating Tip

When an **Audio Bank** button is pressed and *held*, the **PGM/PST** buses operate in **Audio Custom Control Mode**. In this mode, each crosspoint represents the audio channel or group assigned to the corresponding custom control button. This mode also shows the current audio channels, or groups, assigned to the **PGM/PST** buses.

For example, crosspoint 1 will represent the audio channel assigned to custom control 1.

  - ~ **Normal** — Use this option for macros that perform any function *except* communicating with outboard audio mixers.

4. Press **HOME** to display the **Installation Change Confirmation Screen**.
5. Accept or reject the changes you have made as follows:
   - Press **Confirm** to accept the changes.
   - Press **Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

Operating Tip

If you enable banks and do not have the Mnemonic Display option installed, be sure to re-label the keycaps on the Synergy control panel accordingly.

This completes the procedure to set up Custom Control Banks. Next you will name your custom control banks.

Naming Custom Control Banks

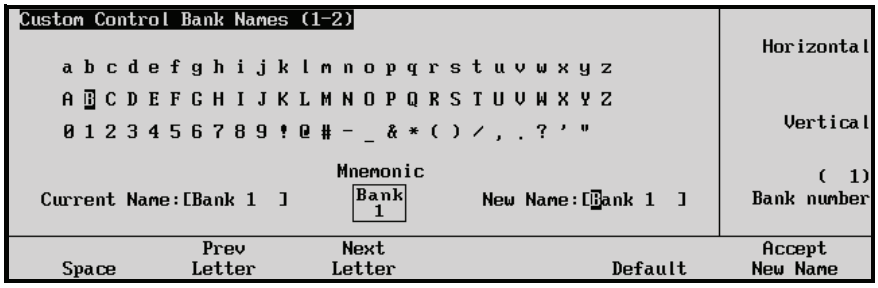
The **Custom Control Bank Names Menu** enables you to edit the names of your custom control banks using a Standard PS/2 keyboard or by pressing or rotating the System Control buttons and knobs. Refer to the section, "**Using The Keyboard**" in the ***Synergy Series Operation Guide*** for details on using a standard PS/2 keyboard. The **Custom Control Bank Names Menu** includes the following information:

- The **Main Area** of the **Custom Control Bank Names Menu** provides an array of letters and numbers. The reverse video *highlight* indicates the "selected" character — the position of which is controlled by the two upper scroll knobs. In the **New Name** field, the reverse video *highlight* indicates the "active" character — the one that you are changing.
- The **Label Area** provides an array of tools for naming and editing your physical names.
- The **Scroll Area** provides three functions for controlling the highlight and for selecting the bank you want to name. You will notice that as you scroll through your banks, the **Current Name** field tracks each name.

Use the following procedure to name custom control banks:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installation ⇨ MORE ⇨ Custom Controls**.

2. Press **Modify Bank Names** to display the **Custom Control Bank Names Menu**.



Custom Control Bank Names Menu 1-2

Note

If the Mnemonic Display option is purchased and installed, the **Mnemonic** field displays the bank name as it will appear in the associated mnemonic display. Additional mnemonic display configurations are discussed in the section "**Customizing Mnemonic Displays — Banks**" on page 8–10.

3. Use the **Bank number** knob to select the bank that you wish to name.
   - As you rotate the knob, the **Current Name Field** changes to show the bank's current name (as stored in switcher memory).
   - The factory default format for *all bank names* is: [**Bank**] [**space**] [**number**]. For example, **Bank 1** or **Bank 8**. This format makes it easy to associate names with actual banks.
4. Name a bank as follows:
   - Use the **Horizontal** and **Vertical** knobs to select the desired character. The highlighted position in the **New Name Field** changes as you select each character.

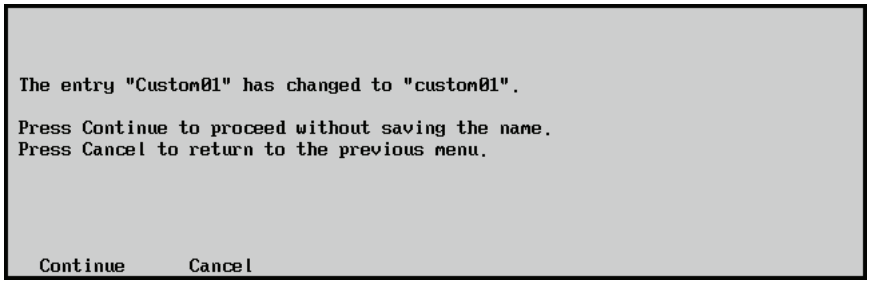
Note

As you rotate the **Horizontal** and **Vertical** knobs, note that on the control panel's **MLE 1** bus, the pushbuttons light that correspond to each character (in sequence). If desired, you can press the MLE pushbutton to select a character.

   - Press **Space** to add a space at the highlight's current position. If a letter is in the active position, it will be deleted.
   - Press **Prev Letter** to move the highlight one space to the left.
   - Press **Next Letter** to move the highlight one space to the right.
   - To return the currently modified custom control bank name to its default title, press **Default**.
5. When the name entered is correct, press **Accept New Name**.

Note

If you exit the **Custom Control Bank Names Menu** without first pressing **Accept New Name**, the **Change Name Confirmation Screen** is displayed.



Change Name Confirmation Screen

- Press **Continue** to proceed without saving the changes you made to the name.
- Press **Cancel** to return to the previous menu and accept the new name.

6. Repeat for each bank that you want to name.

Operating Tip

It is recommended at this point that you name *each bank*.

7. When all banks are named as desired, accept or reject the changes as follows:
   - Press **HOME** to display the **Change Name Confirmation Screen**.
     - ~ Press **Confirm** to save the changes you made to the names; or
     - ~ Press **Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored names.

This completes the procedure to name custom control banks. If you have the Mnemonics Display option installed, proceed to the next section to customize your mnemonics to display Custom Control Bank Names.

Customizing Mnemonic Displays — Banks

Note

Ensure that the **Mnemonic Display** option is installed before customizing the mnemonic displays for your Custom Control Banks.

The **Custom Control Bank Names Menu** allows you to adjust how bank names will appear in their associated mnemonic displays. In the main area of the menu, the **Personality** settings for the mnemonic display font and color are indicated. In this naming menu, they are referred to as the **Standard** settings.

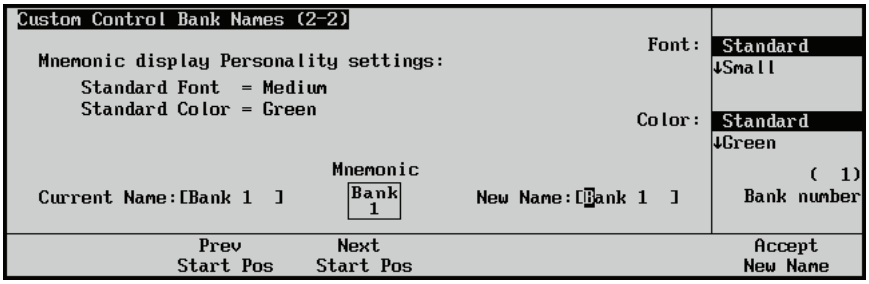
Note

Refer to the section "**Customizing Mnemonic Displays — Banks**" on page 8–10 for more information on **Personality Menu** settings for Mnemonic Displays.

Use the following procedure to customize the Mnemonics Display for Custom Control Banks:

1. Navigate to the **Custom Control Bank Names Menu 1-2** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installation ⇨ MORE ⇨ Custom Controls ⇨ Modify Bank Name**.

2. Press **MORE** to display the **Custom Control Bank Names Menu 2-2**.



Custom Control Bank Names Menu 2-2

Operating Tip

A Standard PS/2 keyboard can be used to perform the same actions as pressing or rotating the **System Control** buttons and knobs. Refer to the section, "**Using The Keyboard**" in the ***Synergy Series Operation Guide*** for details.

Important

Do NOT place anything on your keyboard or place your keyboard in a position where any of the keys could be accidently pressed. This could result in the Switcher acting unpredictably.

3. Use the **Bank number** knob to select the desired Bank Number. The selected bank name/number is displayed in the mnemonic display area of the menu as you select banks from the list.
4. Adjust the size of the font that will appear in the mnemonic display as follows:
   - Use the **Bank number** knob to select the desired Bank Number.
   - Use the **Font** knob to select a size. You can choose from the following:
     - ~ **Standard** — Select this option to change the font size as defined in the **Personality Menu**.

     - ~ **Small** — Select this option to permit up to 6 characters per line.

     - ~ **Small Invert** — Select this option to permit up to 6 characters per line, and draw light text on a dark background.

     - ~ **Medium** — Select this option to permit up to 4 characters per line.

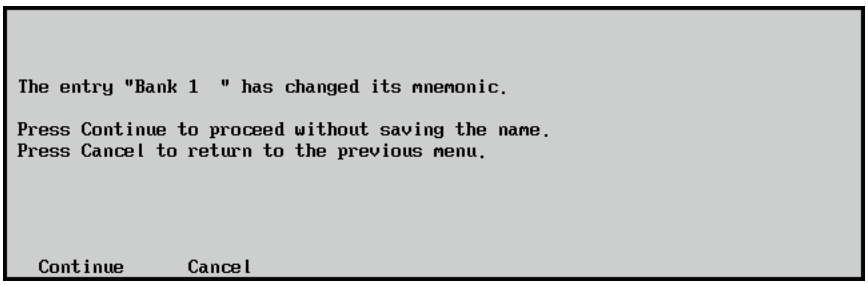
     - ~ **Medium Invert** — Select this option to permit up to 4 characters per line, and draw light text on a dark background.

     - ~ **Large** — Select this option to permit only 2 characters.

     - ~ **Large Invert** — Select this option to permit only 2 characters, and draw light text on a dark background.

~ **None** — Select this option to turn the display off.

5. Select which character of the bank name will be the first one to appear in the mnemonic display as follows:
   - Use the **Bank number** knob to select the desired Bank Number.
   - Use the **Prev Start Pos** to return to the previous character.
   - Use the **Next Start Pos** to move the cursor through the bank name.
   - This function is especially useful if you are using one of the large font options.
6. Adjust the color that will appear in the mnemonic display as follows:
   - Use the **Bank number** knob to select the desired Bank Number.
   - Use the **Color** knob to select the color of the mnemonic display for the selected Bank. You can choose from the following:
     ~ **Standard** — Select this option to apply the color as defined in the **Personality Menu**.
     ~ **Green** — Select this option to apply a green background to the display.
     ~ **Yellow** — Select this option to apply a yellow background to the display.
     ~ **Orange** — Select this option to apply an orange background to the display.
     ~ **None** — Select this option to turn the display off.
7. Save your mnemonic adjustments as follows:
   - Press **Accept New Name** to register the new name and display style of the bank in memory.
   - If you exit the installation menus without first pressing **Accept New Name**, a confirmation screen is displayed.



Change Mnemonic Displays Without Saving Message

~ Press **Continue** to proceed without saving the changes you made to the name.
~ Press **Cancel** to return to the previous menu without saving the changes.

This completes the procedure to customize the Mnemonics Display for Custom Control Banks.

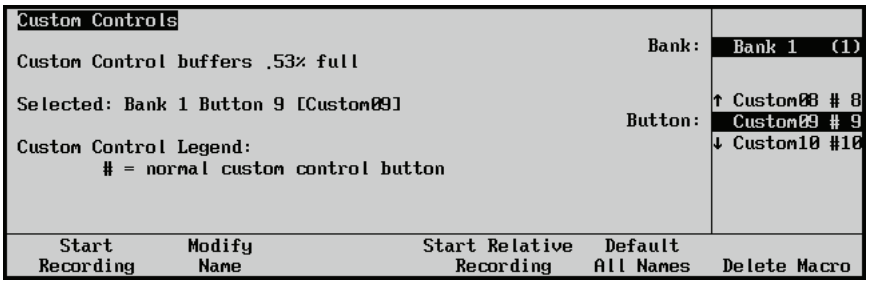
Programming Control Panel Functions

Use the following procedure to program a normal custom control button with basic functions:

Operating Tip

If you are programming long or looping custom controls, you should keep at least one unprogrammed custom control. Pressing an unprogrammed custom control button, one with no macros recorded on it, will stop a running custom control macro.

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME ⇨ Custom Controls**.



Custom Controls Menu

2. Select the Custom Control bank and button that you want to record to as follows:
   - Use the **Bank** knob to select the custom control bank that you want to record the custom control on.
   - Use the **Button** knob to select the custom control button that you wish to program. You can also press the button *directly* on the panel.

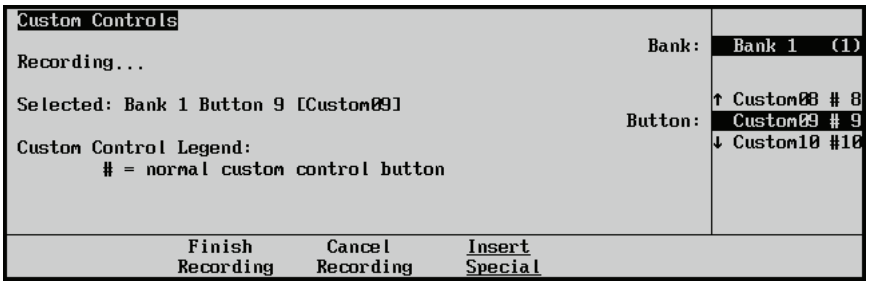
Note

Buttons with an asterisk (*****) next to them in the list are *already* programmed, however, they can be edited. Refer to the section "**Editing Custom Control Macros**" on page 8–47 for details.

3. Press **Start Recording** to display the **Recording Menu**.

Note

You can record **Relative Custom Controls** instead of a normal Custom Control. Refer to the section "**Relative Custom Controls**" on page 8–16 for more information.



Custom Controls — Recording Menu

Note

Press **Cancel Recording** to terminate the programming procedure. The macro will *not* be recorded.

4. With the recording in progress, press the buttons on the control panel that you would like to have played back — in order. All subsequent keystrokes will be remembered, *in the exact order that you press them*. The following is a list of examples of custom controls that can be recorded:

   - To program the macro to recall memory register 5 in MLE 1, and then perform an auto transition, in MLE 1 press **RECALL**, **5**, **AUTO TRANS**. You may want to insert a pause in this sequence in order to be able to view the memory recall before the auto transition is performed.

Important

You cannot have a Select Custom Control Bank and Run Custom Control event in the same custom control macro.

   - To have a custom control run another custom control as part of the macro, press the desired Custom Control button while recording your macro. This will finish the recording of the custom control.

Note

Run Custom Control macros can only be added or inserted at the end of a custom control. When you add a Run Custom Control macro, the custom control will stop recording and you will not be permitted to insert another event after it. You will also not be able to add this event in any position other than the last position in the macro.

   - To have a custom control select another Custom Control Bank as part of the macro, double press the desired Custom Control Bank button while recording your macro. This will finish the recording of the custom control. Remember that when this custom control is run, it will end on a different bank than where you ran it.

Note

Custom Control Bank select macros can only be added or inserted at the end of a custom control. When you add a Bank select macro, the custom control will stop recording and you will not be permitted to insert another event after it. You will also not be able to add this event in any position other than the last position in the macro.

5. Insert any special functions you want. You can insert any of the following:

   - **VTR Functions** — Refer to the section "**VTR Custom Controls**" for more information.
   - **DVE Functions** — Refer to the section "**External DVE Custom Controls**" on page 13–37 for more information.
   - **Time Clock Functions** — Refer to the section "**Time Clock Functions**" on page 8–19 for more information.
   - **Special Functions** — Refer to the section "**Special Functions**" on page 8–21 for more information.
   - **Peripheral Interface II Custom Controls** — Refer to the section "**Peripheral Interface II Custom Controls**" on page 8–37 for more information.
   - **Character Generator Custom Controls** — Refer to the section "**Character Generator Custom Controls**" for more information.

- **Router Custom Controls** — Refer to the section "**Router Custom Controls**" for more information.
- **Robotic Camera Controls** — Refer to the section "**Robotic Camera Custom Controls**" for more information.
- **Monitor Wall Controls** — Refer to the section "**Monitor Wall Custom Controls**" for more information.
- **Audio Server Controls** — Refer to the section "**Audio Server Custom Controls**" for more information.

6. Press **Finish Recording** when you have finished recording the macro.

Operating Tip

You can also stop the recording by pressing the blinking custom control button.

You will notice an asterisk next to the custom control you just recorded, indicating that this custom control contains information.

This completes the procedure for recording a normal custom control. To play back your macro, exit the **Custom Controls Menu** and press the custom control button on the control panel that you recorded the custom control macro to.

Notes on Programming Custom Controls

Please note the following important points:

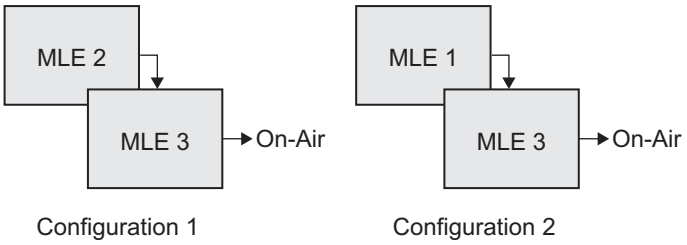
- If you program a custom control button that *already* contains a macro (as indicated by the asterisk), the previous macro is immediately overwritten by your new set of commands. It is recommended that you keep a written chart of your custom control macro assignments. Remember, however, that you can *edit* your custom control macros. Refer to the section "**Editing Custom Control Macros**" on page 8–47 for details.
- The custom control feature does not recognize analog knob adjustments or **Fader** movement. Macros are restricted to button presses and functions on the **Insert Special Menus** only.
- You can stop a custom control sequence (macro) from playing by inserting a **Hold** in the sequence during programming. The sequence is resumed when the custom control is triggered by a GPI from an external device such as an editor, or by pressing the custom control button again.
- You can pause a custom control sequence (macro) for a designated period of time by inserting a **Pause** in the sequence during programming. The sequence waits the designated time and then automatically resumes the playing of the sequence. Pressing the custom control button again during the wait time will immediately resume the sequence.
- The system does not recognize the *state* of buttons that you press, but rather repeats your exact sequence upon playback. For example, if you toggle a function **on** such as a key modifier, the system will toggle the button between the **on** and **off** states each time the Custom Control macro is played.
- Since key, wipe and color background copies are performed with button presses, you can store these functions to a custom control macro as you would any other keystroke.
- It is possible to record a custom control macro to a button that is assigned as a bank button. However, this is only useful for audio functions, as there is no means by which you could access a regular custom control macro assigned to a bank button.

Relative Custom Controls

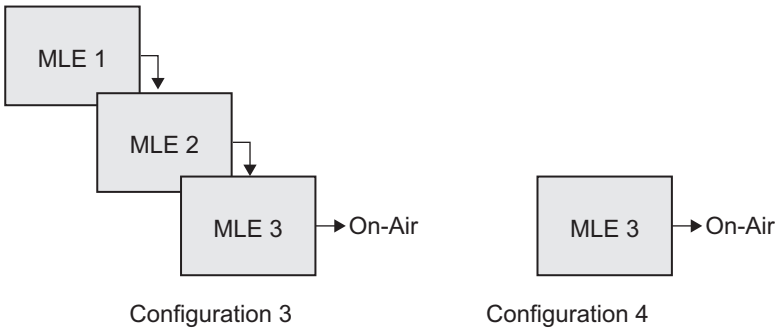
Important

Relative Custom Controls can only be *properly* recorded and recalled on upper MLEs that are re-entered onto the PGM/PST MLE. If the MLE is not re-entered, you will not be able to *properly* record or recall a relative custom control. Instead, the relative custom control will act like a normal custom control when recalled.

Relative Custom Controls store the MLE re-entry position so that they can be taken on-air from any MLE that is re-entered on the **PGM/PST MLE**. For example, if you have **MLE 2** re-entered into **MLE 3** (**Configuration 1**), of a Synergy 3, and Record a Custom Control on **MLE 2**, you can only recall that custom control on **MLE 2**, in the same configuration. If, however, you have **MLE 1** re-entered into **MLE 3** (**Configuration 2**), the Relative Custom Control will be recalled on **MLE 1**.



Relative Custom Controls are not MLE specific, as normal custom controls, but instead are re-entry specific. This means that the re-entry order, or levels that the Relative Custom Control was recorded on, do not need to be the same in order to recall that custom control. For example, if we again record a Relative Custom Control on **MLE 2**, of a Synergy 3, which is re-entered into **MLE 3** (**Configuration 1**), we can recall that Relative Custom Control with more or fewer MLEs. If we have **MLE 1** re-entered into **MLE 2** and **MLE 2** re-entered into **MLE 3** (**Configuration 3**), the Relative Custom Control will be recalled on **MLE 1**. If we have no MLEs re-entered, (**Configuration 4**) the Relative Custom Control will be recalled on **MLE 3**.



Important

If you record a relative custom control across multiple re-entered MLEs, at least the same number of MLEs must be re-entered in order to recall the entire custom control. For example, if a two MLE relative custom control is recalled on one MLE, the actions to be recalled on the second MLE will be ignored.

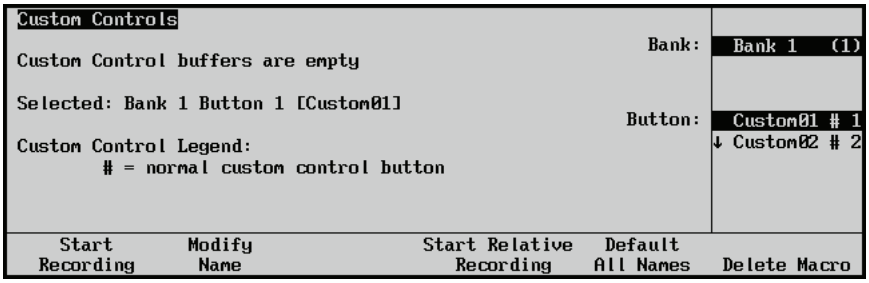
Programming a Relative Custom Control

Use the following procedure to program a relative custom control button with basic functions:

1. Set up your MLE re-entry configuration to record the relative custom control at the Re-entry level you want.

Note — You must record a relative custom control on an MLE that is re-entered onto the PGM/PST MLE for it to run properly.

2. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME ⇨ Custom Controls**.

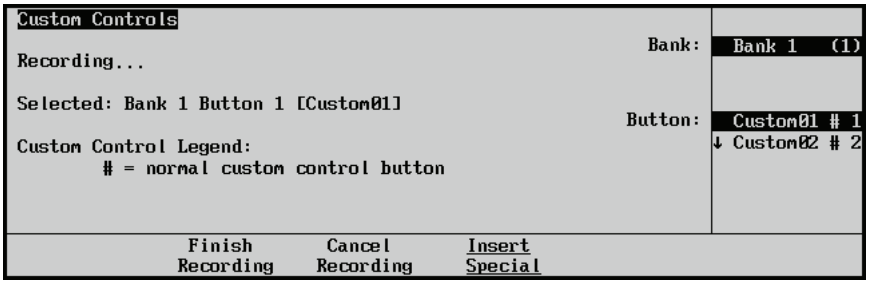


Custom Controls Menu

3. Select the Custom Control bank and button that you want to record to as follows:
   - Use the **Bank** knob to select the custom control bank that you want to record the custom control on.
   - Use the **Button** knob to select the custom control button that you wish to program. You can also press the button *directly* on the panel.

Note — Buttons with an at (@) next to them in the list are *already* programmed with a relative custom control, however, they can be overwritten or edited. Refer to the section "**Editing Custom Control Macros**" on page 8–47 for more information.

4. Press **Start Relative Recording** to display the **Recording Menu**.



Custom Controls — Recording Menu

Note — Press **Cancel Recording** to terminate the programming procedure. The macro will *not* be recorded.

5. With the recording in progress, press the buttons on the control panel that you would like to have played back, in order. All subsequent keystrokes will be remembered, *in the exact order that you press them*.

6. Insert any special functions you want as follows:
   - Press **Insert Special** to display the **Insert Special Menu 1-2**.
   - Refer to the section "**Programming Special Functions**" on page 8–19 for information on inserting special functions.
7. Press **Finish Recording** when you have finished recording the macro.

Operating Tip

You can also stop the recording by pressing the flashing custom control button that was selected on the panel.

Custom Controls Menu

You will notice an at symbol next to the custom control you just recorded, indicating that this relative custom control contains information.

This completes the procedure for recording a relative custom control. To play back your macro, exit the **Custom Controls Menu** and press the custom control button on the control panel that you recorded the custom control macro to. (This is the button you selected in step 3 above).

Programming Special Functions

The following sections describe how to program your custom controls with various other special functions. Refer to the section "**Editing Custom Control Macros**" on page 8–47 for more information on inserting events into existing custom control macros.

The following functions are covered in this section:

- Time Clock Functions
- Special Functions
- Copy MLE Custom Controls
- Peripheral Interface II Custom Controls

Note

Refer to the appropriate chapter to learn more about programming custom controls for specific devices.

Time Clock Functions

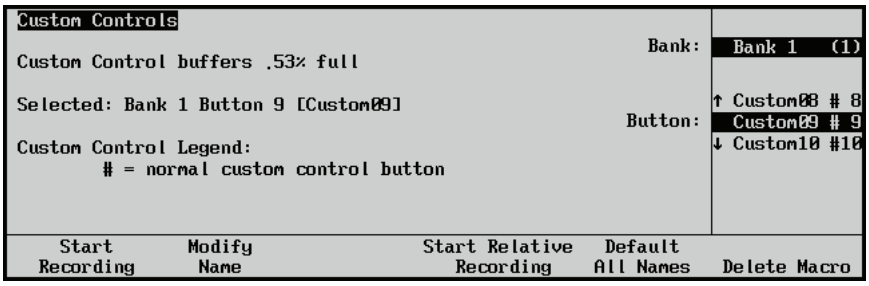
The Synergy Series Switcher allows you to program custom control buttons with Time Clock functions.

Use the following procedure to program one or more custom control buttons with special **Time Clock** functions.

Note

You must have the Preview Overlay option installed in order to be able to use the Time Clock feature.

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME** ⇨ **Custom Controls**.



Custom Controls Menu

2. Select the custom control button you want to record to as follows:
   - Use the **Bank** knob to select the custom control bank you want to record the custom control to.
   - Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*) or an (@) in the list have already been programmed.

Operating Tip

As a recommendation, keep Time Clock functions grouped together on your *physical* custom control buttons.

3. Navigate to the **Insert Time Clock Menu** as follows:

   - Press **Start Recording** ⇨ **Insert Special** ⇨ **Time Clock**.

   This menu allows you to choose specific Time Clock control functions to assign to the button.

Insert Time Clock Menu

4. Select a Time Clock function to insert as follows:

   - Use the top knob to select the function that you want to assign to the custom control. Use the table "**Time Clock — Custom Control Functions**" on page 8–20 to determine which function you want to insert.

Note

The middle **Reset Time** knob only applies to the insert **Reset** command. No value will be displayed for other commands.

Time Clock — Custom Control Functions

Time Clock Functions	Description
Count Up	Starts the **Preview Overlay** clock counting up from zero.
Count Down	Starts the **Preview Overlay** clock counting down from the preset time to zero.
Count Down/Up	Starts the **Preview Overlay** clock counting down from the preset time to zero, when it will then start counting up from zero until you press **Reset** or **Stop**.
Stop	Stops the **Preview Overlay** clock.
Reset	Resets the **Preview Overlay** clock to the preset time.

Operating Tip

Time Clock functions can be strung together (during the programming mode), allowing one custom control button to perform *multiple functions* when it is pressed. For example, you can have the **Reset** function following by the **Count Down** function, allowing a single custom control macro to reset the Time Clock and start it counting down.

5. Press **Insert** to insert the selected command into the custom control and display the **Insert Special Menu 1-2**.
6. Insert additional commands if needed. When you have finished inserting commands, proceed to the next step to complete the procedure.
7. Press **UP ONE** to display the **Recording Menu**.
8. Press **Finish Recording**, or the flashing custom control button, to finish recording to the selected custom control. The custom control button will stop flashing.

Once your custom control buttons have been programmed, be sure to properly name them. Refer to the section "**Naming Custom Controls**" on page 8–42 for more information on naming custom control buttons.

To play back your macro, exit the **Custom Controls Menu** and press the custom control button on the control panel that you recorded the custom control macro to. Any recorded custom control can be edited. Refer to the section "**Editing Custom Control Macros**" on page 8–47 for details.

Special Functions

Custom control buttons can be programmed to perform a variety of special functions for operational convenience and efficiency. These functions include:

- Reset GPI
- Trigger GPI
- Automation
- Go To Menu
- Transition Keys
- Safe Title
- Roll VTR Mode
- Custom Control Holds
- Custom Control Pauses

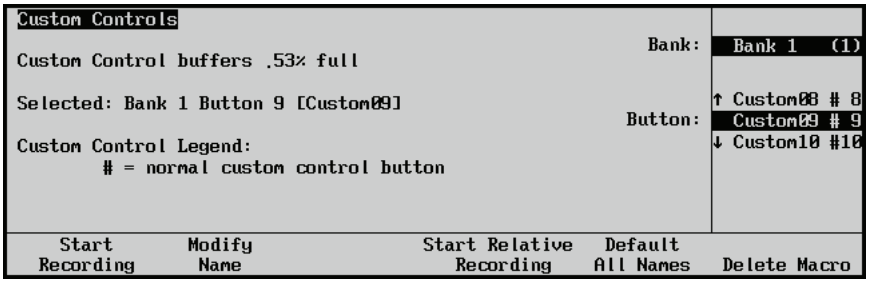
Note

You can also create custom controls for audio channels and groups using the **Custom Controls Menu**. Refer to the section "**Audio Custom Controls**" on page 11–24 for instructions.

Reset GPI

Use the following procedure to program a GPI reset:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME ⇨ Custom Controls**.



Custom Controls Menu

2. Select the custom control button you want to record to as follows:
   - Use the **Bank** knob to select the custom control bank you want to record the custom control to.
   - Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the

control panel. Remember that buttons marked with an asterisk (*) in the list have already been programmed.

Operating Tip

As a recommendation, keep special functions grouped together on your *physical* custom control buttons.

3. Navigate to the **Special Menu** as follows:
   - Press **Start Recording** ⇨ **Insert Special** ⇨ **Special**.

Insert Special — Special Menu

4. Assign the reset GPI to a GPI output as follows:
   - Use the **Selection** knob to select **Reset GPI**.
   - Use the **GPI Output** knob to select the GPI output port you want to reset.

Note

The names that appear in the **GPI Output** list are programmed on the **GPI Output Setup Menu**. Refer to the section "**Standard GPI Setup**" on page 11–26 for details.

5. Press **Insert** to insert the selected command into the custom control and display the **Insert Special Menu 1-2**.
6. Insert additional commands if needed. When you have finished inserting commands, proceed to the next step to complete the procedure.
7. Press **UP ONE** to display the **Recording Menu**.
8. Press **Finish Recording**, or the flashing custom control button, to finish recording to the selected custom control. The custom control button will stop flashing.

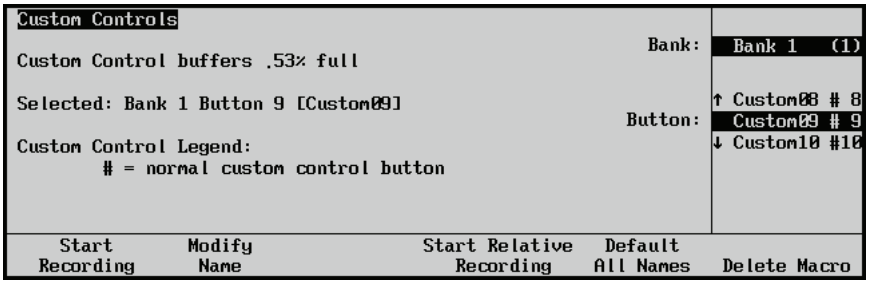
Once your custom control buttons have been programmed, be sure to properly name them. Refer to the section "**Naming Custom Controls**" on page 8–42 for more information on naming custom control buttons.

To play back your macro, exit the **Custom Controls Menu** and press the custom control button on the control panel that you recorded the custom control macro to. Any recorded custom control can be edited. Refer to the section "**Editing Custom Control Macros**" on page 8–47 for details.

Trigger GPI

Use the following procedure to program a GPI output trigger.

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME** ⇨ **Custom Controls**.



Custom Controls Menu

2. Select the custom control button you want to record to as follows:
   - Use the **Bank** knob to select the custom control bank you want to record the custom control to.
   - Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*) in the list have already been programmed.

Operating Tip

As a recommendation, keep special functions grouped together on your *physical* custom control buttons.

3. Navigate to the **Special Menu** as follows:
   - Press **Start Recording** ⇨ **Insert Special** ⇨ **Special**.

Insert Special — Special Menu

4. Assign the trigger GPI to a GPI output as follows:
   - Use the top knob to select **Trigger GPI**.
   - Use the **GPI Output** knob to select the GPI output port you want to trigger.

Note

The names that appear in the **GPI Output** list are programmed on the **GPI Output Setup Menu**. Refer to the section "**Standard GPI Setup**" on page 11–26 for details.

5. Press **Insert** to insert the selected command into the custom control and display the **Insert Special Menu 1-2**.
6. Insert additional commands if needed. When you have finished inserting commands, proceed to the next step to complete the procedure.
7. Press **UP ONE** to display the **Recording Menu**.

8. Press **Finish Recording**, or the flashing custom control button, to finish recording to the selected custom control. The custom control button will stop flashing.

Once your custom control buttons have been programmed, be sure to properly name them. Refer to the section "**Naming Custom Controls**" on page 8–42 for more information on naming custom control buttons.

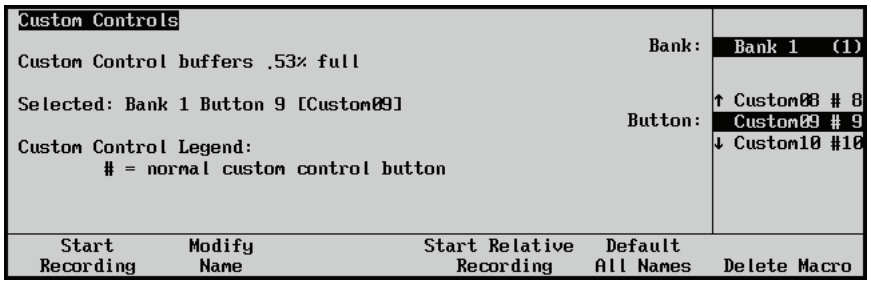
To play back your macro, exit the **Custom Controls Menu** and press the custom control button on the control panel that you recorded the custom control macro to. Any recorded custom control can be edited. Refer to the section "**Editing Custom Control Macros**" on page 8–47 for details.

Automation

Use the **Automation** function to create custom controls that accept commands from an external automation system.

Use the following procedure to create an Automation custom control macro:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME ⇨ Custom Controls**.



Custom Controls Menu

2. Select the custom control button you want to record to as follows:
   - Use the **Bank** knob to select the custom control bank you want to record the custom control to.
   - Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*) in the list have already been programmed.

Operating Tip

As a recommendation, keep special functions grouped together on your *physical* custom control buttons.

3. Navigate to the **Special Menu** as follows:
   - Press **Start Recording ⇨ Insert Special ⇨ Special**.

Insert Special — Special Menu

4. Assign an automation function to the selected custom control macro as follows:
   - Use the **Selection** knob to select **Automation**.
   - Use the **Command** knob to select the command you want the macro to perform. You can select between the following:
     ~ **Keys Off Air** — Select this option when you want all on-air **Keys**, on all **MLEs**, to be dissolved off-air when the custom control is run.
     ~ **Act MLE Trans** — Select this option when you want all **MLEs** that are contributing the **PGM** output, except for the **PGM/PST MLE**, to be transitioned according to the settings in the **MLE Transition Group**. For example, if **MLE 1,** of a **Synergy 3 Switcher**, is re-entered onto **MLE 2** and **MLE 2** is re-entered onto **MLE 3**, the **Active MLE Trans** custom control will perform a transition on *both* **MLE 1** and **MLE 2**.

Important

If you have more than one re-entry set up for a shot, the **Active MLE Trans** custom control will transition all on-air **MLEs**. If you have an **MLE** re-entered onto the **BKGD** bus of another **MLE**, the **Active MLE Trans** custom control will transition the **MLE** re-entry with whatever you have selected on the **PST** bus of that **MLE**.

5. Press **Insert** to insert the selected command into the custom control and display the **Insert Special Menu 1-2**.
6. Insert additional commands if needed. When you have finished inserting commands, proceed to the next step to complete the procedure.
7. Press **UP ONE** to display the **Recording Menu**.
8. Press **Finish Recording**, or the flashing custom control button, to finish recording to the selected custom control. The custom control button will stop flashing.

Once your custom control buttons have been programmed, be sure to properly name them. Refer to the section "**Naming Custom Controls**" on page 8–42 for more information on naming custom control buttons.

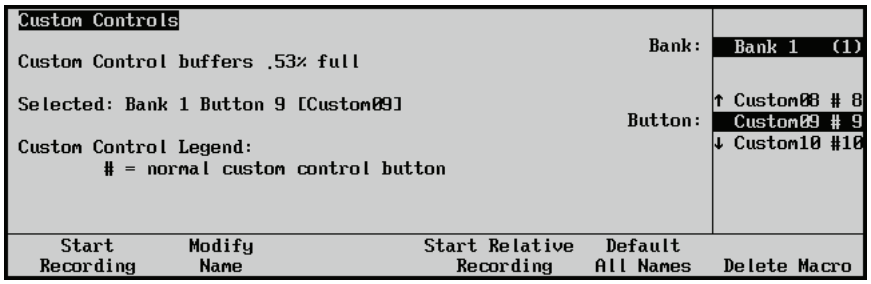
To play back your macro, exit the **Custom Controls Menu** and press the custom control button on the control panel that you recorded the custom control macro to. Any recorded custom control can be edited. Refer to the section "**Editing Custom Control Macros**" on page 8–47 for details.

Go To Menu

The **Go To Menu** feature allows you to create custom controls that automatically display Squeeze & Tease 3D Menus.

Use the following procedure to create a Squeeze & Tease 3D **Go To Menu** custom control macro:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME ⇨ Custom Controls**.



Custom Controls Menu

2. Select the custom control button you want to record to as follows:
   - Use the **Bank** knob to select the custom control bank you want to record the custom control to.
   - Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*) in the list have already been programmed.

Operating Tip

As a recommendation, keep special functions grouped together on your *physical* custom control buttons.

3. Navigate to the **Special Menu** as follows:
   - Press **Start Recording ⇨ Insert Special ⇨ Special**.

Insert Special — Special Menu

4. Assign a menu to display to the selected custom control macro as follows:
   - Use the top knob to select **Go To Menu**.
   - Use the middle knob to select **3D**.
   - Use the bottom knob to select the menu you want to display when the custom control is run. You can select between the follow:

Note

When you run a **Go To Menu** custom control, the menu that is displayed will be determined by the current active **MLE** and **Keyer**. If **Key 2** is active on **MLE 2**, the menu will be displayed for **Key 2** on **MLE 2**.

   ~ **Position/Crop** — Select this option to display the **S&T Position/Crop Menu 1-2** for the active **Fly Key** when the custom control is run.

- ~ **Border** — Select this option to display the **S&T Border Menu** for the active **Fly Key** when the custom control is run.
- ~ **Sequence** — Select this option to display the **S&T Sequence Menu 1-2** for the active **Fly Key** when the custom control is run.
- ~ **Pre Processor** — Select this option to display the **S&T Preprocessor Menu** for the active **Fly Key** when the custom control is run.
- ~ **Lighting** — Select this option to display the **S&T Lighting Menu** for the active **Fly Key** when the custom control is run.
- ~ **Obj Builder** — Select this option to display the **S&T Object Builder Menu** for the active **Fly Key** when the custom control is run.
- ~ **Still Store** — Select this option to display the **S&T StillStore Menu 1-2** for the active **Fly Key** when the custom control is run.
- ~ **WARP** — Select this option to display the **S&T WARP Menu** for the active **Fly Key** when the custom control is run.

5. Press **Insert** to insert the selected command into the custom control and display the **Insert Special Menu 1-2**.
6. Insert additional commands if needed. When you have finished inserting commands, proceed to the next step to complete the procedure.
7. Press **UP ONE** to display the **Recording Menu**.
8. Press **Finish Recording**, or the flashing custom control button, to finish recording to the selected custom control. The custom control button will stop flashing.

Once your custom control buttons have been programmed, be sure to properly name them. Refer to the section "**Naming Custom Controls**" on page 8–42 for more information on naming custom control buttons.

To play back your macro, exit the **Custom Controls Menu** and press the custom control button on the control panel that you recorded the custom control macro to. Any recorded custom control can be edited. Refer to the section "**Editing Custom Control Macros**" on page 8–47 for details.

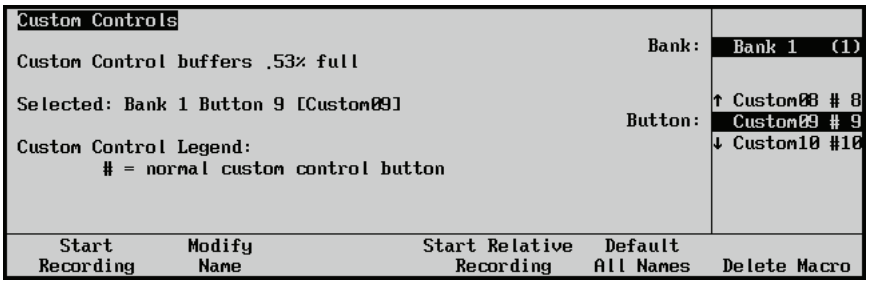
Transition Keys

Note

The **Trans Keys** function cannot initiate a transition if a transition is already in progress on the associated **MLE** or external **DSK**.

Use the **Trans Keys** feature to perform key transitions with a custom control.

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME ⇨ Custom Controls**.



Custom Controls Menu

2. Select the custom control button you want to record to as follows:
   - Use the **Bank** knob to select the custom control bank you want to record the custom control to.
   - Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*) in the list have already been programmed.

Operating Tip

As a recommendation, keep special functions grouped together on your *physical* custom control buttons.

3. Navigate to the **Special Menu** as follows:
   - Press **Start Recording** ⇨ **Insert Special** ⇨ **Special**.

Insert Special — Special Menu

4. Assign a menu to display to the selected custom control macro as follows:
   - Use the top knob to select **Trans Keys**.
   - Use the **For** knob to select the MLE or external DSK that you want to transition the Keys for. You can select between the following:

Note

The number of MLEs you have available will depend on your switcher. For this menu, the **DSK**s associated with the **PGM/PST MLE** are referred to as **Keys**.

     ~ **MLE 1** — Select this option to transition the Keys on **MLE 1**.
     ~ **MLE 2** — Select this option to transition the Keys on **MLE 2**.
     ~ **MLE 3** — Select this option to transition the Keys on **MLE 3**.
     ~ **MLE 4** — Select this option to transition the Keys on **MLE 4**.
     ~ **DSK 3/4** — Select this option to transition the **External Downstream Keyers**.
   - Use the **To** knob to select the Keys you want to transition. You can select between the following:

Note

If you select **DSK 3/4**, the **Key1** and **Key2** values will be replaced with **DSK3** and **DSK4**, respectively.

     ~ **Key1 Off** — Select this option to have **Key 1** dissolve **off-air** when the custom control is run.
     ~ **Key2 Off** — Select this option to have **Key 2** dissolve **off-air** when the custom control is run.

- ~ **Key1+2 Off** — Select this option to have both **Key 1** and **Key 2** dissolve **off-air** when the custom control is run.
- ~ **Key1 On** — Select this option to have **Key 1** dissolve **on-air** when the custom control is run.
- ~ **Key2 On** — Select this option to have **Key 2** dissolve **on-air** when the custom control is run.
- ~ **Key1+2 On** — Select this option to have both **Key 1** and **Key 2** dissolve **on-air** when the custom control is run.
- ~ **Key1 Only** — Select this option to have the switcher dissolve **Key 1** and **Key 2** so that only **Key 1** is **on-air** when the custom control is run. For example, if **Key 1** is **off-air** and **Key 2** is **on-air**, this custom control would dissolve **Key 1 on-air**, and at the same time dissolve **Key 2 off-air**.
- ~ **Key2 Only** — Select this option to have the switcher dissolve **Key 1** and **Key 2** so that only **Key 2** is **on-air** when the custom control is run.

5. Press **Insert** to insert the selected command into the custom control and display the **Insert Special Menu 1-2**.
6. Insert additional commands if needed. When you have finished inserting commands, proceed to the next step to complete the procedure.
7. Press **UP ONE** to display the **Recording Menu**.
8. Press **Finish Recording**, or the flashing custom control button, to finish recording to the selected custom control. The custom control button will stop flashing.

Once your custom control buttons have been programmed, be sure to properly name them. Refer to the section "**Naming Custom Controls**" on page 8–42 for more information on naming custom control buttons.

To play back your macro, exit the **Custom Controls Menu** and press the custom control button on the control panel that you recorded the custom control macro to. Any recorded custom control can be edited. Refer to the section "**Editing Custom Control Macros**" on page 8–47 for details.

Safe Title

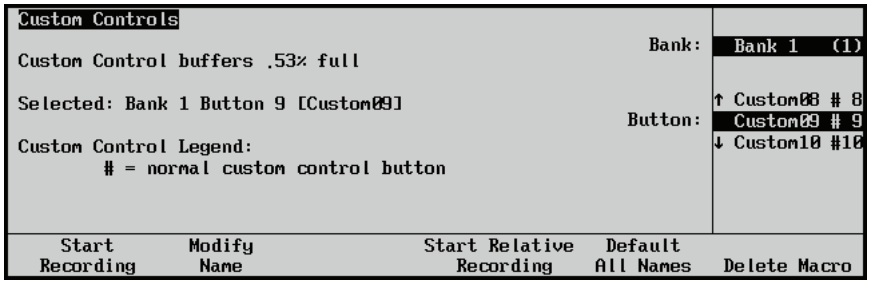
Use the **Safe Title** feature to program a custom control button to recall a specific user-configured safe title setting. Refer to the section "**Setting Up Safe Title and Center Preview Overlay**" on page 12–13 for more information on setting up the safe title.

Note

The safe title function will only recall a stored Safe Title setting and will not turn the safe title on or off.

Use the following procedure to recall a safe title setting with a custom control button:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME ⇨ Custom Controls**.



Custom Controls Menu

2. Select the custom control button you want to record to as follows:
   - Use the **Bank** knob to select the custom control bank you want to record the custom control to.
   - Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*) in the list have already been programmed.

Operating Tip

As a recommendation, keep special functions grouped together on your *physical* custom control buttons.

3. Navigate to the **Special Menu** as follows:
   - Press **Start Recording** ⇨ **Insert Special** ⇨ **Special**.

Insert Special — Special Menu

4. Assign a safe title to be recalled as follows:
   - Use the top knob to select **Safe Title**.
   - Use the **Safe ID** knob to select the stored Safe Title set up that you want to recall when you run the custom control.
5. Press **Insert** to enter the safe title into your custom control macro.
6. Press **UP ONE** to return to the **Custom Controls Recording Menu**.
7. Press **Finish Recording**, or the flashing custom control button, to finish recording to the selected custom control. The custom control button will stop flashing.

This concludes the procedure to recall a safe title setting with a custom control button.

Once your custom control buttons have been programmed, be sure to properly name them. Refer to the section "**Naming Custom Controls**" on page 8–42 for more information on naming custom control buttons.

To play back your macro, exit the **Custom Controls Menu** and press the custom control button on the control panel that you recorded the custom control macro to. Any recorded custom control can be edited. Refer to the section "**Editing Custom Control Macros**" on page 8–47 for details.

Roll VTR Mode

The **Roll VTR Mode** determines how the **ROLL VTR** button behaves when a VTR is selected. When you set the **Roll VTR Mode**, the setting affects all **ROLL VTR** buttons in all MLEs.

Important

A custom control macro that changes the **Roll VTR Mode** state will disable the Roll VTR Mode selection in the **Personality Menu**.

Play Mode

When the **ROLL VTR** button is in the **Play Mode**:

- Pressing the button immediately rolls the serial device selected on the **PST** bus (one device per bus, including one device from a re-entered MLE).
- The transition that brings the device to air must be initiated by the operator with the fader, **CUT**, or **AUTO TRANS** buttons.
- The button is *momentary*. It is lit only when pressed.

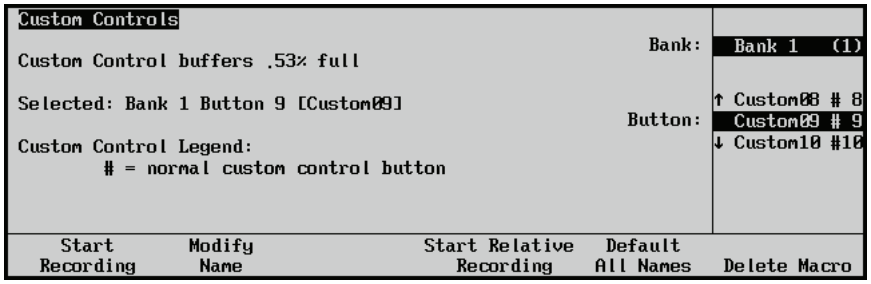
Arm or Armed Always Modes

When the **ROLL VTR** button is in the **Arm Mode** or **Armed Always Mode**:

- Pressing the button arms the switcher to roll the selected serial device (one device per bus, including one device from a re-entered MLE) on the **PST** bus in the next transition.
- When the transition is performed by pressing the crosspoint on the **PGM** bus, **CUT**, or **AUTO TRANS**, the device rolls, and goes to air after the preroll interval has elapsed.
- During preroll, moving the fader, pressing **CUT**, or double-pressing the crosspoint on the **PGM** bus will override the preroll time and take the VTR to air immediately.
- On a re-entered MLE, **ROLL VTR** activates only the first VTR it finds that is about to be brought on-air. The search order is: reentered MLE BKGD (including its own re-entry, if necessary), then re-entered MLE PST, then Key 1, then Key 2 – each, if necessary, with its own re-entry checked.
- If the mode is set to **Arm**, the button is *latching*. It remains lit until it is pressed again.
- If the mode is set to **Armed Always**, the button is always lit. Pressing the **Roll VTR** button does not disable it. You must re-configure the Roll VTR mode in the **Personality Menu** or in a custom control macro.
- When an OverDrive production controller is connected to the switcher, activating the **Editor** button turns on all the **Roll VTR** buttons and sets the Roll VTR Mode to ***Arm***, disabling the Roll VTR Mode selection in the **Personality Menu**. Attempting to disable the Roll VTR function by pressing a lit **Roll VTR** button will display a warning.

Use the following procedure to change the **Roll VTR Mode** with a custom control macro:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME ⇨ Custom Controls**.



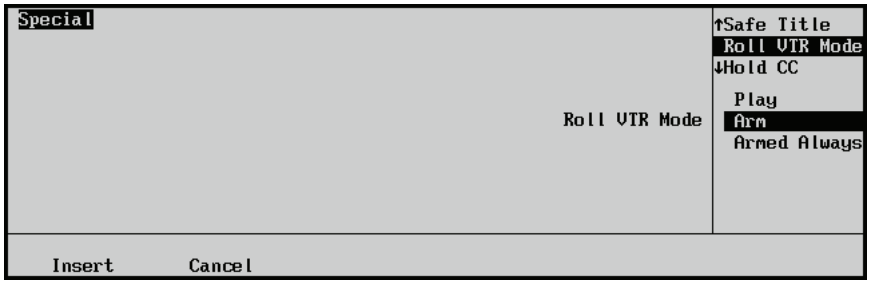
Custom Controls Menu

2. Select the custom control button you want to record to as follows:
   - Use the **Bank** knob to select the custom control bank you want to record the custom control to.
   - Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*) in the list have already been programmed.

Operating Tip

As a recommendation, keep special functions grouped together on your *physical* custom control buttons.

3. Navigate to the **Special Menu** as follows:
   - Press **Start Recording** ⇨ **Insert Special** ⇨ **Special**.



Insert Special — Special Menu

4. Change the Roll VTR Mode as follows:
   - Use the top knob to select **Roll VTR Mode**.
   - Use the **Roll VTR Mode** to select a **Roll VTR Mode**. You can select between the following:

Note

If an Auto Transition is performed with the **ROLL VTR** active, and in **Arm** or **Armed Always Mode**, the switcher will apply the **Pre-Roll** time for the device before it takes the device on-air.

   ~ **Play** — Select this option to issue a Play command to the serial device when the **Roll VTR** button is selected in the **PST** Bus. This is the default setting.

   ~ **Arm** — Select this option to enable the Synergy switcher to automatically transition the device to air after the preroll interval has lapsed.

~ **Armed Always** — Select this option to have the **ROLL VTR** always active, the button is always lit. The clip will play when it is taken on-air when you press the assigned crosspoint button.

5. Press **Insert** to enter the change in Roll VTR Mode into your custom control macro.
6. Press **UP ONE** to return to the **Custom Controls Recording Menu**.
7. Press **Finish Recording**, or the flashing custom control button, to finish recording to the selected custom control. The custom control button will stop flashing.

This completes the procedure to change the **Roll VTR Mode** with a custom control.

Once your custom control buttons have been programmed, be sure to properly name them. Refer to the section "**Naming Custom Controls**" on page 8–42 for more information on naming custom control buttons.

To play back your macro, exit the **Custom Controls Menu** and press the custom control button on the control panel that you recorded the custom control macro to. Any recorded custom control can be edited. Refer to the section "**Editing Custom Control Macros**" on page 8–47 for details.

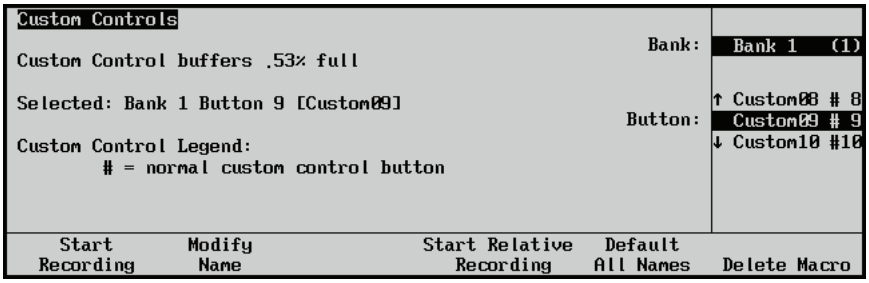
Custom Control Holds

Use the **Custom Control Hold** feature to place "holds" within a custom control sequence. When entered, these holds specify a point to stop and wait for a user button-press (of the same custom control) or an external trigger (Editor or GPI). The macro then executes from that point until it reaches its end or another embedded hold.

A **Custom Control Hold** (**Hold CC**) allows you to manually determine in real time, how long a macro is stopped. For example, a macro is initiated by the operator and when it reaches the **Hold CC**, it stops playing. The operator then waits until the interview (or whatever) is finished, presses the macro button again, and the macro resumes playing.

Use the following procedure to place a **Hold CC** within a custom control sequence:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME ⇨ Custom Controls**.



Custom Controls Menu

2. Select the custom control button you want to record to as follows:
   - Use the **Bank** knob to select the custom control bank you want to record the custom control to.
   - Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*) in the list have already been programmed.

Operating Tip

As a recommendation, keep special functions grouped together on your *physical* custom control buttons.

3. Navigate to the **Special Menu** as follows:
   - Press **Start Recording** ⇨ **Insert Special** ⇨ **Special**.

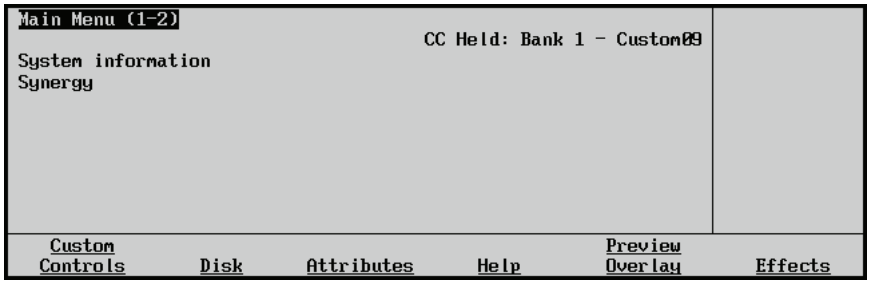
Insert Special — Special Menu

4. Assign a Custom Control Hold as follows:
   - Use the top knob to select **Hold CC**.
   - Use the middle knob to select the type of popup notification you want to appear when the hold is performed. You can select between the following:

Note

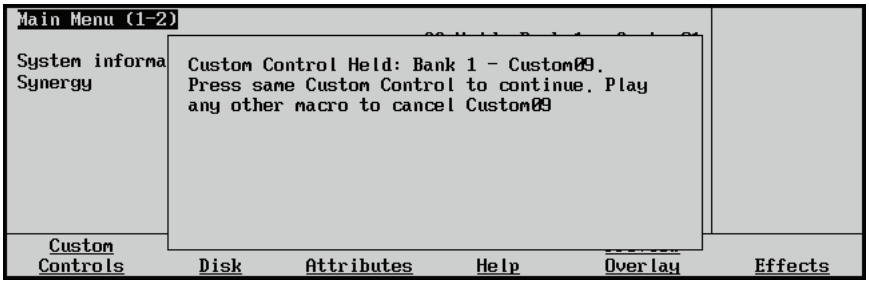
When a macro is held, the name of the macro appears in the **Main Menu** and **Custom Controls Menu**. The **Hold CC** also extends the time that the associated custom control button will remain lit until the macro is continued or cancelled.

   ~ **No Popup** — Select this option to have only a message displayed on the **Main Menu** or the **Custom Control Menu** when a custom control hold is being performed.



Main Menu — Custom Control Held

   ~ **1-Time Popup** — Select this option to have a pop-up appear on any menu when a custom control is being held, as shown in the example below. This pop-up will only appear once.



Custom Controls Menu — Custom Control Held Pop-up

5. Press **Insert** to enter the Custom Control Hold into your custom control macro.
6. Press **UP ONE** to return to the **Custom Controls Recording Menu**.
7. Press **Finish Recording**, or the flashing custom control button, to finish recording to the selected custom control. The custom control button will stop flashing.

This concludes the procedure to place a **Hold CC** within a custom control sequence.

Once your custom control buttons have been programmed, be sure to properly name them. Refer to the section "**Naming Custom Controls**" on page 8–42 for more information on naming custom control buttons.

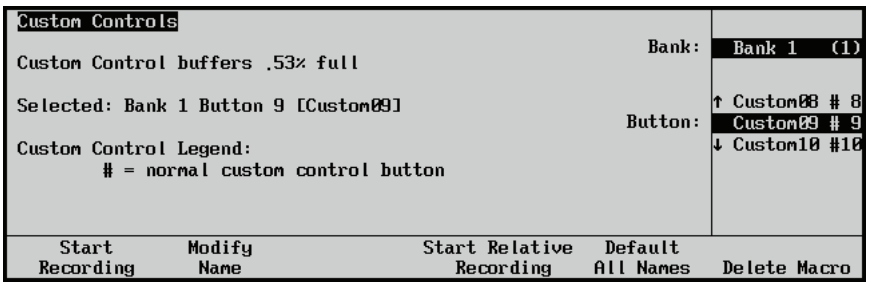
To play back your macro, exit the **Custom Controls Menu** and press the custom control button on the control panel that you recorded the custom control macro to. Any recorded custom control can be edited. Refer to the section "**Editing Custom Control Macros**" on page 8–47 for details.

Custom Control Pauses

Use the **Custom Control Pauses** feature to place "pauses" within a custom control sequence. With a pause inserted, a sequence can have a duration rather than being executed instantaneously. With multiple pauses placed in between macro events, controlled switching between sources becomes possible. Pressing the custom control button again during the wait time will immediately resume the macro.

Use the following procedure to place a pause within a custom control macro:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME ⇨ Custom Controls**.



Custom Controls Menu

2. Select the custom control button you want to record to as follows:
   - Use the **Bank** knob to select the custom control bank you want to record the custom control to.
   - Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the

control panel. Remember that buttons marked with an asterisk (*) in the list have already been programmed.

Operating Tip

As a recommendation, keep special functions grouped together on your *physical* custom control buttons.

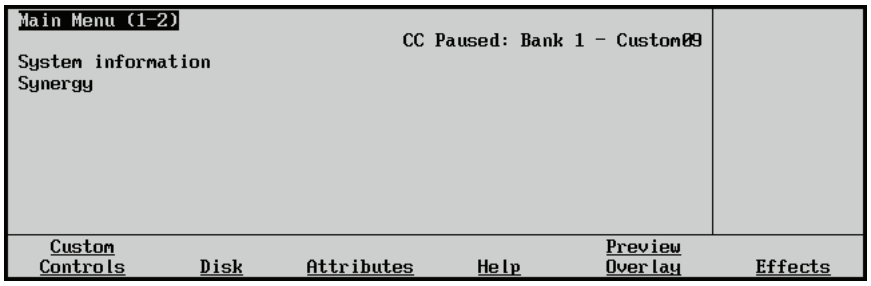
3. Navigate to the **Special Menu** as follows:
   - Press **Start Recording** ⇨ **Insert Special** ⇨ **Special**.

Insert Special — Special Menu

4. Assign a pause to the custom control as follows:
   - Use the top knob to select **Pause CC**.
   - Use the **Seconds** knob to set the duration of the pause in seconds.
   - Use the **Frames** knob to set the duration of the pause in frames.

Note

Similar to a Custom Control Hold, a Pause will display a message on the Main Menu or the Custom Control Menu indicating that the custom control is paused.



Main Menu — Custom Control Held

5. Press **Insert** to enter the Custom Control Hold into your custom control macro.
6. Press **UP ONE** to return to the **Custom Controls Recording Menu**.
7. Press **Finish Recording**, or the flashing custom control button, to finish recording to the selected custom control. The custom control button will stop flashing.

Once your custom control buttons have been programmed, be sure to properly name them. Refer to the section "**Naming Custom Controls**" on page 8–42 for more information on naming custom control buttons.

To play back your macro, exit the **Custom Controls Menu** and press the custom control button on the control panel that you recorded the custom control macro to. Any recorded custom control can be edited. Refer to the section "**Editing Custom Control Macros**" on page 8–47 for details.

Peripheral Interface II Custom Controls

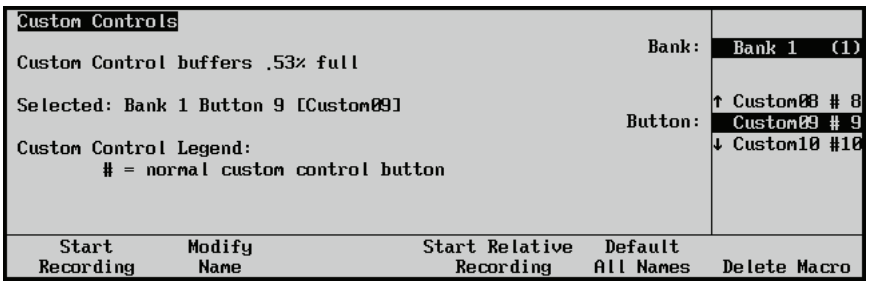
A custom control button can be programmed to send messages to devices using the **Peripheral Interface II Protocol.**

Note

Ensure that the **Peripheral Interface II Protocol** (PIP-II) option is installed and that the PIP-II device you want to control is properly connected and configured with the Synergy switcher. Refer to the section "**Peripheral Interface II Protocol Setup**" on page 7–10 for more information on setting up a PIP-II device.

Use the following procedure to create a custom control that will send commands to devices using the PIP-II protocol:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME ⇨ Custom Controls**.



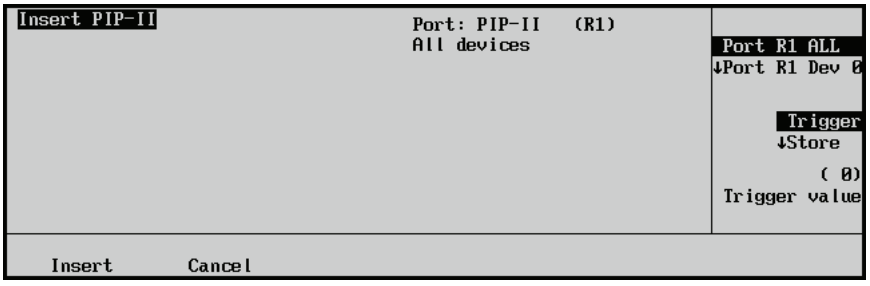
Custom Controls Menu

2. Select the custom control button you want to record to as follows:
   - Use the **Bank** knob to select the custom control bank you want to record the custom control to.
   - Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*) in the list have already been programmed.

Operating Tip

As a recommendation, keep special functions grouped together on your *physical* custom control buttons.

3. Navigate to the **Insert PIP-II Menu** as follows:
   - Press **Start Recording ⇨ Insert Special ⇨ PIP-II**.



Insert PIP-II Menu

4. Assign a command to a PIP-II device for the custom control as follows:

   - Use the top knob to select the PIP-II device you want to assign a command to. You can select between the following:

Note

The Ports are identified by the remote port on the Synergy control panel that the PIP-II device is connected to. For example, if a PIP-II device is connected to **Remote Port 1** on the control panel, the ports for the PIP-II device will be labelled as **Port R1 DevXX**.

     ~ **ALL** — Select this option to have the PIP-II command sent to all PIP-II devices connected on the selected remote port.

     ~ **DevXX** — Select this option to have the PIP-II command sent to a specific PIP-II device (**Dev 0** to **Dev23**) attached to the selected remote port.

   - Use the middle knob to select the command you want to send to the selected PIP-II device. You can select between the following:

     ~ **Trigger** — Select this option to have a specific trigger value (**0** to **15**) sent to the PIP-II device when the custom control is run.

     ~ **Store** — Select this option to have the PIP-II device store a specific memory value (**0** to **4095**) when the custom control is run.

     ~ **Recall** — Select this option to have the PIP-II device recall a specific memory value (**0** to **4095**) when the custom control is run.

   - Use the bottom **Trigger Value** knob to select the **Trigger**, **Store** or **Recall** Value that you want.

Note

Although the PIP-II protocol allows for memories up to 4095, your specific device may not support this many. Refer to the documentation that came with your device to determine the number of memories you have available.

5. Press **Insert** to enter the PIP-II command into your custom control macro.
6. Press **UP ONE** to return to the **Custom Controls Recording Menu**.
7. Press **Finish Recording**, or the flashing custom control button, to finish recording to the selected custom control. The custom control button will stop flashing.

This concludes the procedure to create a custom control that will send commands to devices using the PIP-II protocol.

Once your custom control buttons have been programmed, be sure to properly name them. Refer to the section "**Naming Custom Controls**" on page 8–42 for more information on naming custom control buttons.

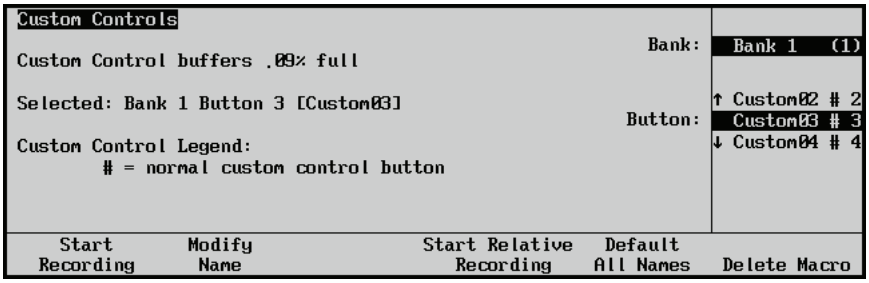
To play back your macro, exit the **Custom Controls Menu** and press the custom control button on the control panel that you recorded the custom control macro to. Any recorded custom control can be edited. Refer to the section "**Editing Custom Control Macros**" on page 8–47 for details.

Copy MLE Custom Controls

The Copy MLE function allows you to copy the contents, including crosspoints, matte generator values, fader positions, on-air status, key active status, and key over priorities, of an MLE to another MLE location on the switcher. You can record a Copy MLE function to a custom control button using the Custom Controls Menu.

Use the following procedure to create a custom control macro that copies the contents of one MLE to another MLE location:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME ⇨ Custom Controls**.



Custom Controls Menu

2. Select the Custom Control bank and button that you want to record to as follows:
   - Use the **Bank** knob to select the custom control bank that you want to record the custom control on.
   - Use the **Button** knob to select the custom control button that you wish to program. You can also press the button *directly* on the panel.

Note

Buttons with an asterisk (***** or **@**) next to them in the list are *already* programmed, however, they can be edited.

3. Press **Start Recording** to display the **Recording Menu**.

Note

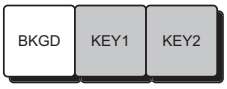
Press **Cancel Recording** to terminate the programming procedure. The macro will *not* be recorded.

4. Insert a Copy MLE function as follows:

Operation Tip

All copy functions use the "**Destination - Source**" method, in which the desired *destination* button is pressed first, followed by the source button (the location from which you want to copy). Because the switcher senses the "held" button (**Destination**), the source button can be pressed without affecting the on-air status of the switcher. Refer to Chapter 4, "**Switcher Basics**" in the ***Synergy Series Operation Guide*** for more information on Copy and Swap functions.

- Press and *hold* the **BKGD** button in the **Program/Preset Transition Group** of the destination MLE.



- Press the **BKGD** button in the **Program/Preset Transition Group** of the source MLE.
- Release both buttons.

5. Press **Finish Recording**, or the flashing custom control button, when you have finished recording the macro.
   - You will notice an asterisk next to the custom control you just recorded, indicating that this custom control contains information.

This completes the procedure for create a custom control to copy the contents of one MLE to another MLE location.

Once your custom control buttons have been programmed, be sure to properly name them. Refer to the section "**Naming Custom Controls**" on page 8–42 for more information on naming custom control buttons.

To play back your macro, exit the **Custom Controls Menu** and press the custom control button on the control panel that you recorded the custom control macro to.

Notes on Using the Copy MLE Function

The following rules apply to the "**Copy MLE**" function:

- The entire MLE is copied, including crosspoints, matte generator values, fader positions, on-air status, key active status, and key over priorities.
- If a re-entry selection is invalid on the destination MLE, **BLACK** is automatically selected when the copy is performed. If a transition type is invalid on the destination MLE, **DISS** is automatically selected.
- If a specific option is not installed on the destination MLE, the system automatically turns the function off.
- When copying from the Program/Preset bus to an MLE, the current **DSK 1** and **DSK 2** selections (that is, the active DSK crosspoints) are turned into **Key 1** and **Key 2** selections, respectively.
- If a specific keyer was active in the source MLE, it becomes active in the destination MLE.
- You can copy an MLE that has its **KEY OVER** button enabled in its MLE Keyer 1 to the DSK. This specific copy function *overwrites* the Key Over priority settings in the **Key Setup Menu**.
- When copying from an MLE to the Program/Preset bus, **Key 1** and **Key 2** selections are turned into **DSK 1** and **DSK 2** selections, respectively.

Caution

This specific copy function *overwrites* the currently selected DSK crosspoint, by copying down new key sources and new key types for **DSK1** and **DSK2**.

- Using the **Copy MLE** function, a function can be copied to an MLE that does not support the function with a physical button. For example:

~ If you copy an MLE that has its **TRANS LIMIT** button enabled to the Program/Preset MLE, the Program/Preset MLE does *not* have a **TRANS LIMIT** button.

~ If you copy the Program/Preset MLE with its **PST BLACK** button enabled to an MLE, the MLEs do *not* have a **PST BLACK** button.

~ In each of these situations, the Synergy switcher *will perform the copy*, and electronically set up the desired effect — even though it is not physically supported by a button. Use care in these situations, so that you are aware of the *exact functions* that are preset in the destination location. If you need to clear an MLE in which this has occurred, you can (1) reset the MLE, (2) copy another valid MLE, or (3) recall a memory register.

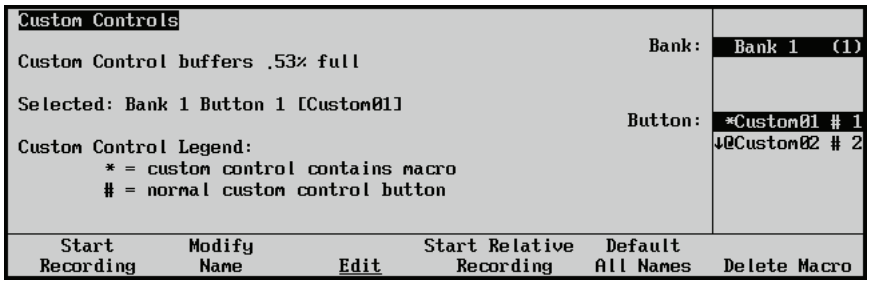
Naming Custom Controls

A custom control button can be named for ready identification in the menus, and in the mnemonic displays if that option is installed.

Once your custom control buttons have been programmed, be sure to properly name and label them. Refer to the section "**Pushbutton Inserts**" on page 4–9 for instructions on labeling the actual buttons.

Use the following procedure to name your custom control buttons:

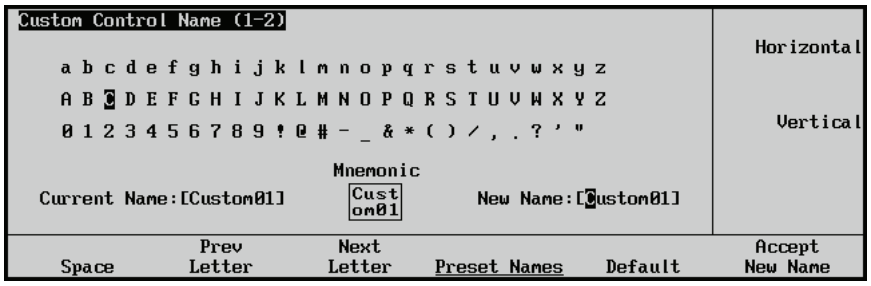
1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME ⇨ Custom Controls**.



Custom Controls Menu

Note Press **Default All Names** to return any modified custom control names to the default titles.

2. Select the custom control button you want to set the name for:
   - Use the **Bank** knob to select the custom control bank with the custom control you want to set the name for.
   - Use the **Button** knob to select the custom control button that you want to set the name for. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*) in the list have already been programmed.
3. Press **Modify Name** to display **Custom Control Name Menu 1-2**.



Custom Control Name Menu 1-2 with Optional Mnemonic Field

Note

If the mnemonic option is purchased and installed, the **Mnemonic** field displays the custom control name as it will appear in the associated mnemonic display. Further mnemonic display configurations are discussed in section "**Customizing Mnemonic Displays — Banks**" on page 8–10.

4. Assign a **New Name** to the custom control as follows, or continue to the next step to enter a **Preset Name**:

   - Use the top **Horizontal** knob to move the cursor horizontally up or down a row to select a letter.
   - Use the middle **Vertical** knob to move the cursor vertically up or down a column to select a letter.

Note

As you rotate the **Horizontal** and **Vertical** knobs, note that on the control panel's buses, the pushbuttons that correspond to each character (in sequence) light. If desired, you can press the MLE pushbutton to select a character.

   - Press **Next Letter** to accept the currently selected letter and begin selection of the next letter. If you make a mistake, you can use the **Prev Letter** button to go back and adjust a letter.
   - Press **Space** if you want to enter a space in the name.
   - You can use a Standard PS/2 keyboard to perform the same actions as pressing or rotating the **System Control** buttons and knobs. Refer to Chapter 2 "**Control Panel Introduction**" of the ***Synergy Series Operation Guide*** for details.

Important

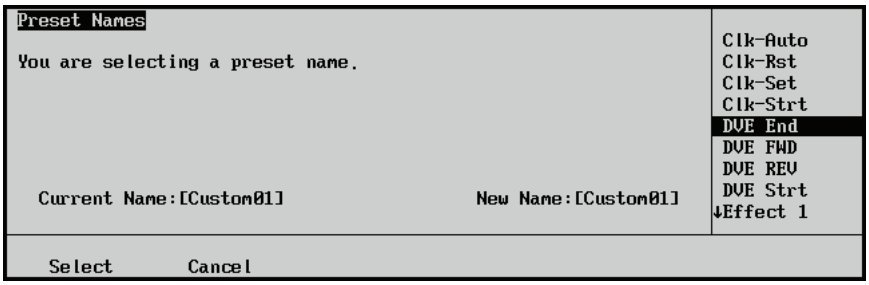
Do NOT place anything on your keyboard or place your keyboard in a position where any of the keys could be accidently pressed. This could result in the Switcher acting unpredictably.

5. Assign a **Preset Name** to the custom control as follows:

Note

If you start editing the name immediately, and then decide at some point to choose a *preset* name instead, *all characters* in the custom name will be replaced by the preset name.

   - Press **Preset Names** to display the **Preset Names Menu**.



Preset Names Menu

- Use the middle knob to select a preset name (a prefix) from the list of typical custom control names.
- Press **Select** to accept the preset name, or **Cancel** to return to the previous menu.

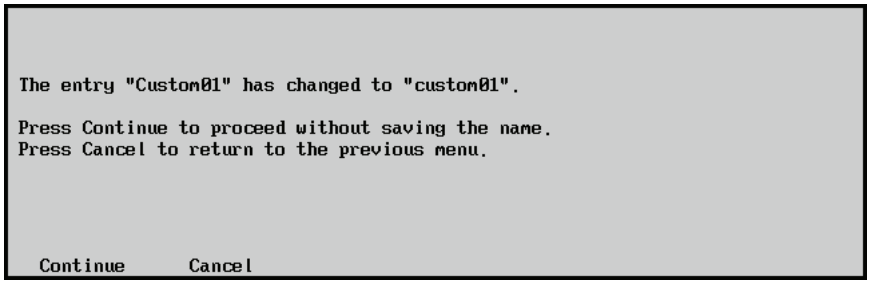
Operating Tip

You can edit a preset name on the **Custom Name Menu** just as you would a **New Name** you entered. Refer to step 4 above.

6. Press **Accept New Name** to save the new name.

Note

If you exit the installation menus without first pressing **Accept New Name**, the following screen is displayed.



Change Name Without Saving Message

- Press **Continue** to proceed without saving the changes you made to the name.
- Press **Cancel** to return to the previous menu and accept the new name.

This completes the procedure for naming your custom controls.

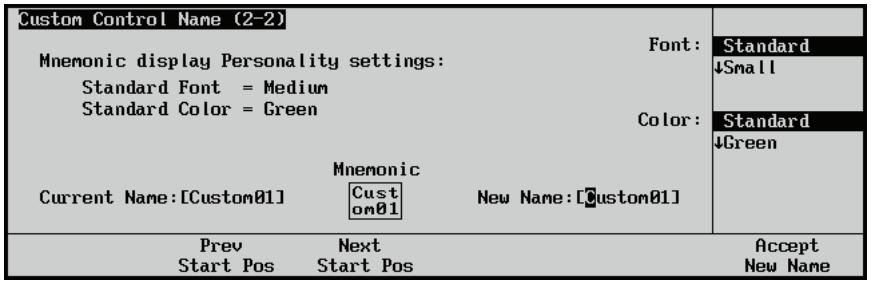
Customizing Mnemonic Displays — Buttons

Note

For more information on Personality settings for Mnemonic Displays, refer to the section "**Standard Mnemonics**" of the ***Synergy Series Operation Guide***.

If the **Mnemonic Display option** is purchased and installed, use the following procedure to customize the display appearance:

1. Navigate to the **Custom Control Name Menu 2-2** as follows:
   - Press **HOME ⇨ Custom Controls ⇨ Modify Name ⇨ MORE**.



Custom Control Name Menu 2-2

2. Adjust the appearance of the Mnemonic Display name for the custom control as follows:

- Use the **Font** knob to select the size of the font. You can select from the following:
  - ~ **Standard** — Select this option to use the default mnemonic format as set from the **Personality Menu**.

  - ~ **Small** — Select this option to use a small font that permits up to 6 characters per line.

  - ~ **Small Invert** — Select this option to use a small font that permits up to 6 characters per line, and draws light text on a dark background.

  - ~ **Medium** — Select this option to use a medium font that permits up to 4 characters per line.

  - ~ **Medium Invert** — Select this option to use a medium font that permits up to 4 characters per line, and draws light text on a dark background.

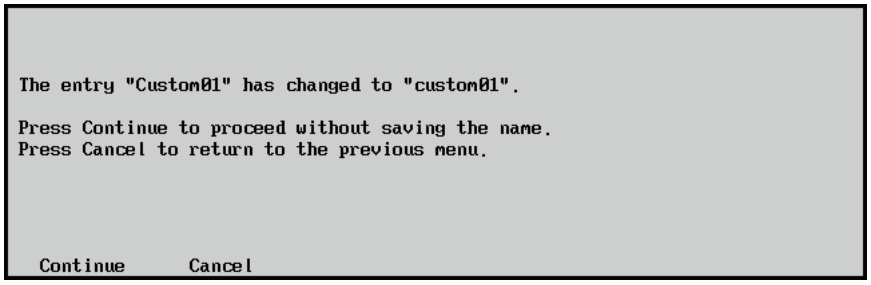
  - ~ **Large** — Select this option to use a large font that permits only 2 characters per line.

  - ~ **Large Invert** — Select this option to use a large font that permits only 2 characters per line, and draws light text on a dark background.
  - ~ **NONE** — Select this option to use no font in the mnemonic display. The display will only show the selected background color, with no text.
- Use the **Color** knob to select the color of the display. You can select from the following:
  - ~ **Standard** — Select this option to use the default mnemonic format as set from the **Personality Menu**.
  - ~ **Green** — Select this option to set the mnemonic background to green.
  - ~ **Yellow** — Select this option to set the mnemonic background to yellow.
  - ~ **Orange** — Select this option to set the mnemonic background to orange.
  - ~ **None** — Select this option to turn the mnemonic background off and not have it illuminated.

3. Select how the name will appear in the mnemonic display as follows:
   - Press **Next Start Pos** to adjust the point in the name where the text on the mnemonic display starts. For example, if you have the name **Custom01**, you can press the **Next Start Pos** button until the cursor is over the **0** to have only **01** appear on the mnemonic display.
   - Press **Prev Start Pos** to move the cursor in the opposite direction as the **Next Start Pos**.
4. Press **Accept New Name** to save the display style in memory.

Note

If you exit the installation menus without first pressing **Accept New Name**, the following screen is displayed.



Change Name Without Saving Message

- Press **Continue** to proceed without saving the changes you made to the name.
- Press **Cancel** to return to the previous menu and accept the new name.

This completes the procedure for naming and customizing the look of your custom controls.

Editing Custom Control Macros

After your custom control buttons have been programmed, you may wish to review and edit the contents. Events can easily be inserted or deleted through the **Custom Controls Menu**.

The **Custom Controls Menu** displays the following information:

- The **Main Area** displays the location of the custom control that you are editing, such as **Bank 1 Button 1 [Custom01]**, and the contents of the custom control, including the number of events, the duration of the macro, and details of the event highlighted in the scroll area.

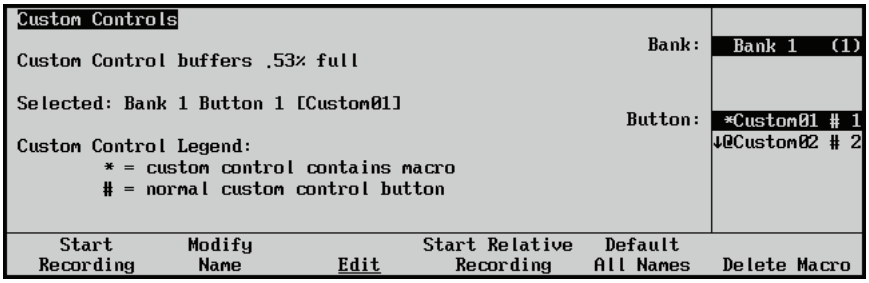
Note

If the custom control has been programmed to recall a memory, as in the example below, the memory name is displayed in the **Main Area**. If memories from more than one MLE are being recalled, the name from the highest MLE is displayed.

- The **Scroll Area** provides a list of the events currently programmed into the custom control button.
- The **Label Area** provides softkeys for inserting, deleting, and running the events, as required.

Use the following procedure to edit a custom control button:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME ⇨ Custom Controls**.



Custom Controls Menu

2. Select the Custom Control bank and button that you want to edit as follows:
   - Use the **Bank** knob to select the custom control bank that you want to edit the custom control on.
   - Use the **Button** knob to select the custom control that you wish to edit.

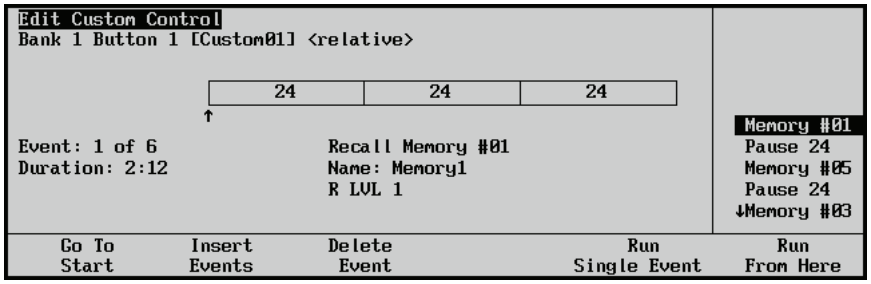
Note

Buttons with an asterisk (*) or an "at" (**@**) next to them in the list are *already* programmed and can be edited.

3. Press **Edit** to display the **Edit Custom Control Menu**.

Note

If you are editing a relative custom control, **<relative>** will appear next to the Bank and Button identification and the relative MLE level (**R LVL**) will be displayed instead of the MLE number.



Edit Custom Control Menu

Note If your macro includes pauses or holds, a timeline will be displayed showing these events.

4. You can select between the following editing functions:
   - **Go To Start** — Select this function to go to the start of the macro.
   - **Insert Events** — Select this function to insert an event before the currently highlighted event. Refer to the section "**Inserting Events**" on page 8–50 for more information on inserting events.
   - **Delete Event** — Select this function to delete the currently highlighted event. This cannot be undone.
   - **Modify Event** — Select this function to modify the currently highlighted event. The Modify Event function will take you to the **Special Menu** that was used to create the event.

Note Only certain functions found on the **Special Menu**, such as **Pause CC**, can be modified.

   - **Run Single Event** — Select this function to run the currently highlighted event. Only the selected custom control event will be played.
   - **Run From Here** — Select this function to run the custom control, starting from the currently highlighted position.

This completes the procedure for editing a custom control. Refer to the section "**Inserting Events**" on page 8–50 for more information on inserting an event into a custom control.

Modifying Events

The Modify Event function allows you to modify certain events in an already existing custom control. Only events such as Pause CC can be modified.

Use the following procedure to modify an event in a custom control:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME ⇨ Custom Controls**.

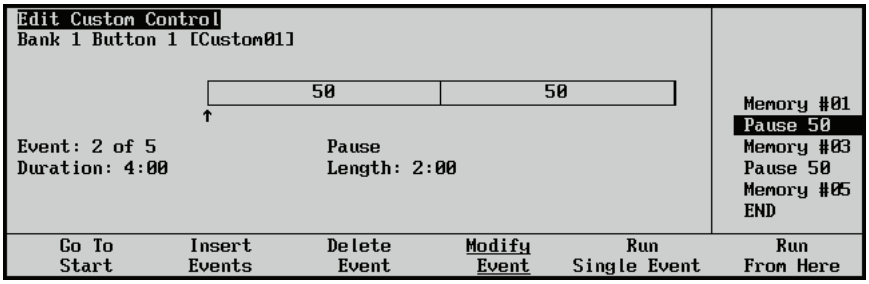
Custom Controls Menu

2. Select the Custom Control bank and button that you want to edit to as follows:
   - Use the **Bank** knob to select the custom control bank that you want to edit the custom control on.
   - Use the **Button** knob to select the custom control that you wish to edit.

Note

Only buttons with an asterisk (*) or an "at" (@) next to them in the list are *already* programmed and can be edited.

3. Press **Edit** to display the **Edit Custom Control Menu**.



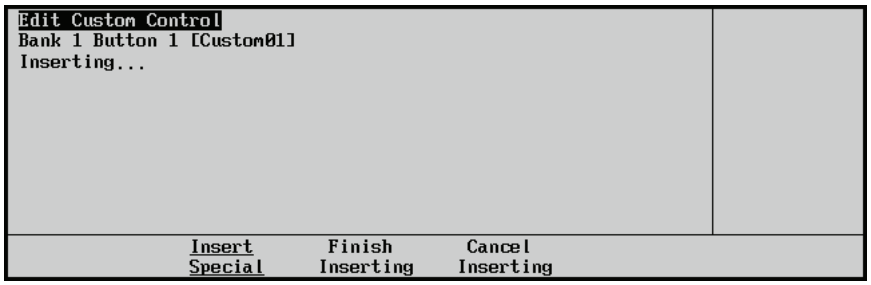
Edit Custom Control Menu

4. Use the middle knob to select the event you want to modify.
5. Press **Modify Event** to display the **Modify Event Menu**.

Edit Custom Control — Modify Event Menu (Pause CC)

6. Modify the event in the same manner that you inserted it originally. Refer to the section "**Programming Special Functions**" on page 8–19 for more information on inserting special functions.

7. Press **Insert** to save your changes.
8. Press **UP ONE** to display the **Inserting Menu**.



Custom Controls — Recording Menu

9. Press **Finish Inserting** to finish inserting to the selected custom control.

Operating Tip

Press **Cancel Inserting** to return to the previous menu without recording any of the insertions you made.

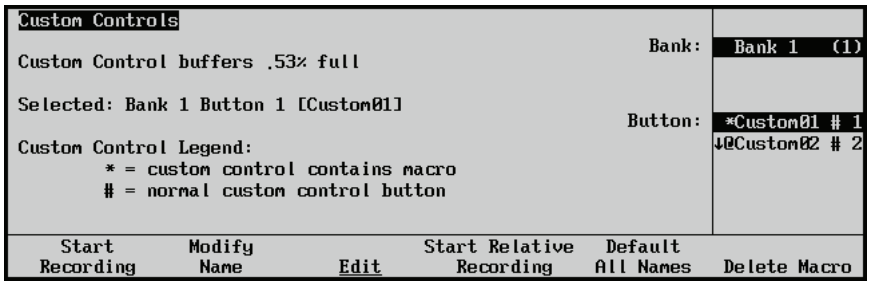
This completes the procedure for modifying a custom control event.

Inserting Events

The Insert Events function allows you to insert a number of events into an already existing custom control. Events are inserted immediately before the event that is currently highlighted.

Use the following procedure to insert an event into a custom control:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME ⇨ Custom Controls**.



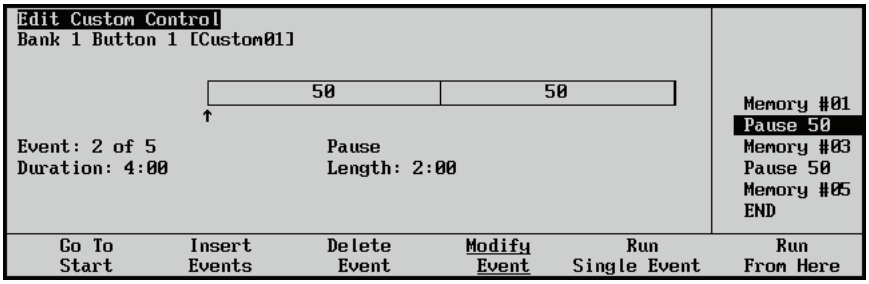
Custom Controls Menu

2. Select the Custom Control bank and button that you want to edit to as follows:
   - Use the **Bank** knob to select the custom control bank that you want to edit the custom control on.
   - Use the **Button** knob to select the custom control that you wish to edit.

Note

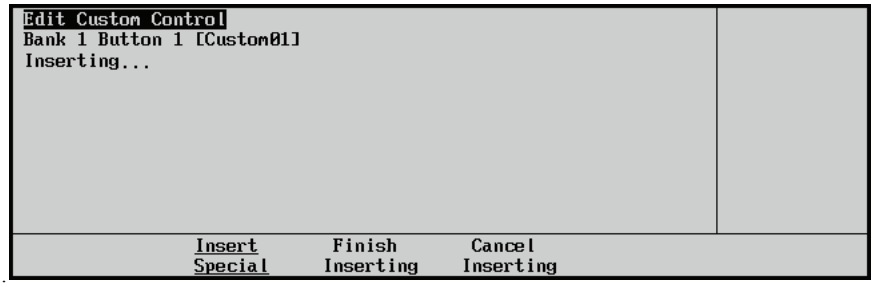
Only buttons with an asterisk (*) or an "at" (@) next to them in the list are *already* programmed and can be edited.

3. Press **Edit** to display the **Edit Custom Control Menu**.



Edit Custom Control Menu

4. Go into the **Inserting Mode** as follows:
   - Use the middle knob to highlight the event that you want to insert an event before.
   - Press **Insert Events** to display the **Inserting Menu**.



Edit Custom Control — Inserting Menu

5. Insert a **Control Panel Button Press** as follows:
   - Press the buttons on the control panel that you want to record. All subsequent keystrokes will be remembered, *in the exact order that you press them*. For example, to program the macro to recall memory register 5 in MLE 1, and then perform an auto transition, in MLE 1 press **RECALL**, **5**, **AUTO TRANS**. You may want to insert a pause in this sequence in order to be able to view the memory recall before the auto transition is performed.

Important

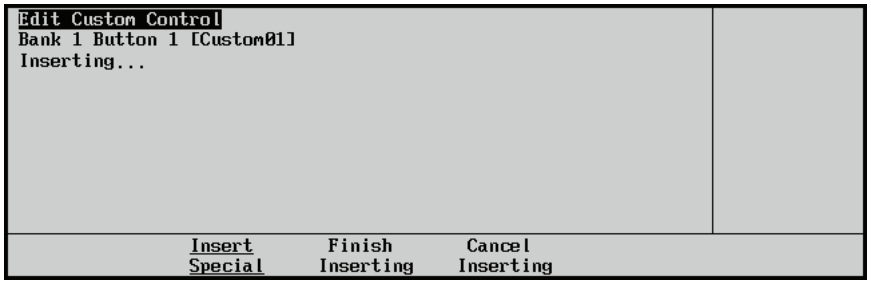
You cannot have a Select Bank and Run Custom Control event in the same custom control macro.

   - Press **Finish Inserting** to finish inserting to the selected custom control.

Operating Tip

Press **Cancel Inserting** to return to the previous menu without recording any of the insertions you made.

6. Insert a **Special Event** as follows:
   - Press **Insert Special** to display the **Insert Special Menu 1-2**.
   - Insert an event, or events, as described in the section "**Programming Special Functions**" on page 8–19. This is the identical menu you used when you initially programmed your custom control buttons.
   - Press **UP ONE** to display the **Inserting Menu**.



Custom Controls — Recording Menu

- Press **Finish Inserting** to finish inserting to the selected custom control.

Operating Tip

Press **Cancel Inserting** to return to the previous menu without recording any of the insertions you made.

This completes the procedure for inserting events into your custom control.

Deleting Custom Controls

Use the following procedure to delete a custom control function from a button:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME ⇨ Custom Controls**.

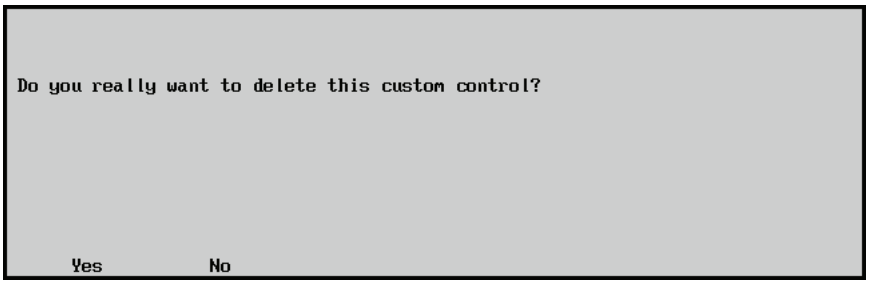
Custom Controls Menu

2. Select the Custom Control bank and button that you want to delete to as follows:
   - Use the top **Bank** knob to select the custom control bank that you want to edit the custom control on.
   - Use the middle **Button** knob to select the custom control that you wish to edit.

Note

Only buttons with an asterisk (*) or an "at" (@) next to them in the list are *already* programmed and can be edited.

3. Press **Delete Macro**.



Confirmation — Delete Custom Control

   - Press **Yes** to delete the custom control macro.
   - Press **No** to cancel the procedure without deleting the macro.

This completes the procedure to delete a custom control function from a button.

Saving and Recalling Custom Controls

For archive purposes and to keep safe backup copies of your valuable macros, it is recommended that you store your custom control functions to a storage device such as a floppy disk or USB key. This *also* allows you to keep a library of custom functions that can be recalled as required for your current production configuration.

- Refer to the "**Saving Registers**" section in Chapter 8 of the ***Synergy Series Operation Guide*** for instructions on saving custom control (and other types of) registers to a storage device.
- Refer to the "**Recalling Registers**" section in Chapter 8 of the ***Synergy Series Operation Guide*** for instructions on recalling custom control (and other types of) registers from a storage device.

Note

You *cannot* store to or recall from a storage device while a custom control function is playing.

Additional Installation Setups

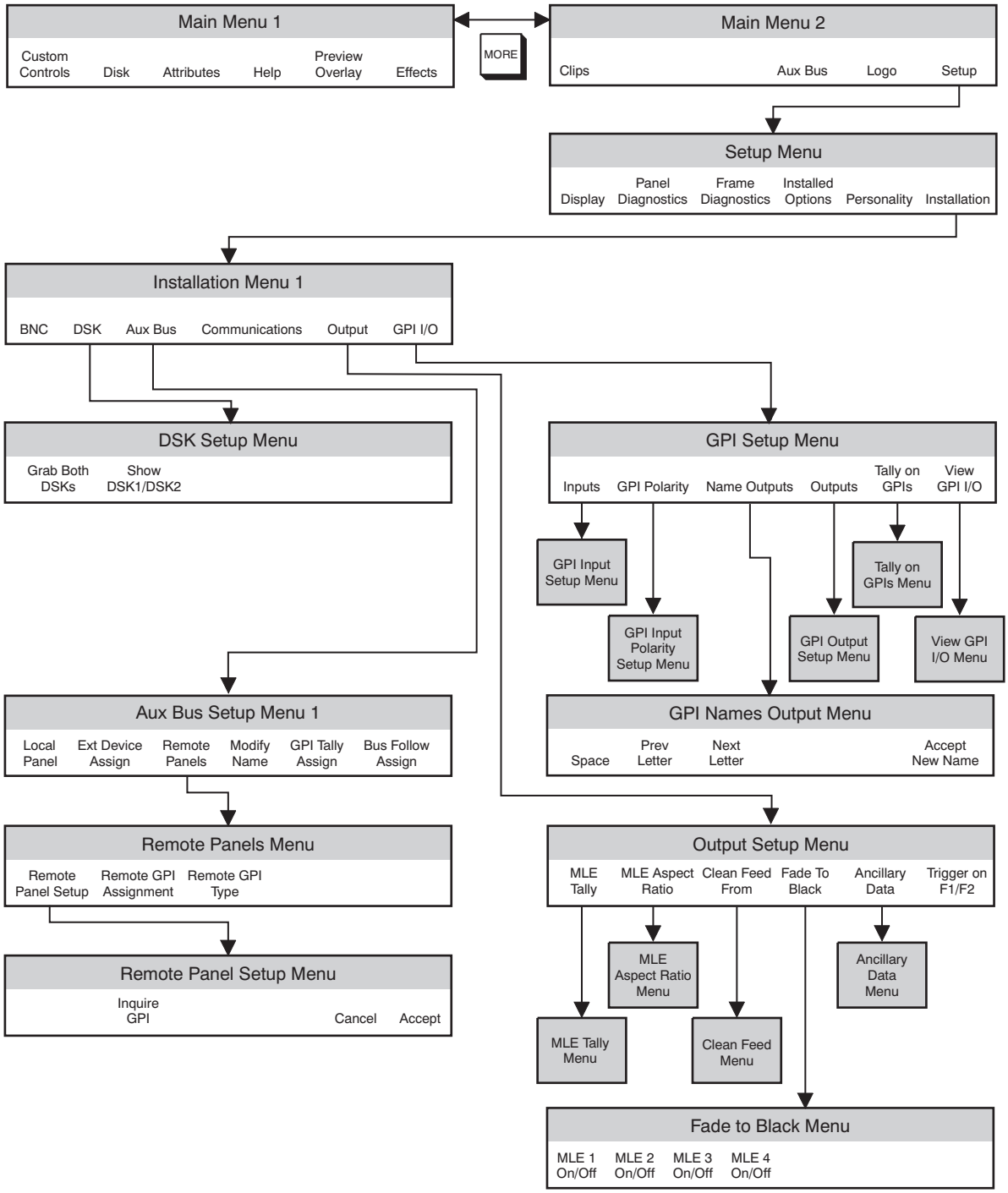
In This Chapter

This chapter provides instructions for additional installation setup procedures. The following topics are discussed:

- Installation Setup Menu Tree
- Aux Bus Setup
- Modifying Aux Bus Names
- Output Setup
- Standard GPI Setup
- Remote Aux Panel GPI Setup
- Switcher Calibration
- DSK Setup
- Chroma Key Setup
- Favorite CG Setup
- System Timing
- Peripheral Control Setup
- Tally Connections
- Aspect Ratio

Installation Setup Menu Tree

The following figure illustrates the *portion* of the menu tree that is used for additional installation setup procedures. Use this figure for reference throughout this chapter.

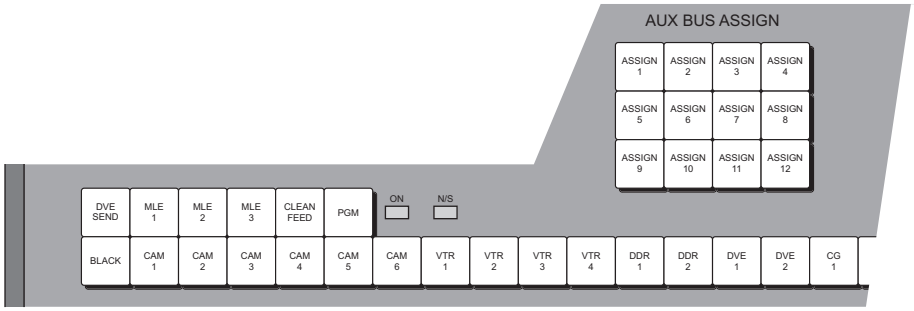


Installation Setup Menu Tree

Aux Bus Setup

The **Aux Bus Menu 1-2** allows you to set up Aux (Auxiliary) panels, and assign certain "rights" to those panels. The setups procedures cover both *local* and *remote* Aux panels.

- The "**Local**" Aux panel consists of the **Aux Bus** (on the Switcher control panel), plus the **Aux Bus Assign Group** of the switcher, as displayed in the following figure (on the Synergy 4):

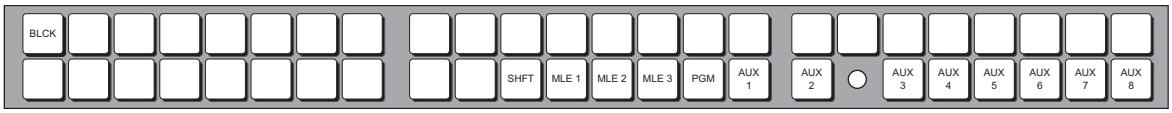


Synergy 4 Aux Bus and Aux Bus Assign Group

- The "**Remote**" Aux panels consist of two different types of panels. A **Dedicated Remote Aux Panel** controls *one* Aux Bus output, as shown below (for the Synergy 4):

Synergy 4 Dedicated Remote Aux Panel

An **Assignable Remote Aux Panel** controls *all 12* Aux Bus outputs, as shown below (for the Synergy 4):



Synergy 4 Assignable Remote Aux Panel

Note

The following setup procedures include information for the *new versions* of the **Dedicated** and **Assignable** Remote Aux Panels. These panels include a feature that allows the manual override of the Aux panel selection via a GPI trigger.

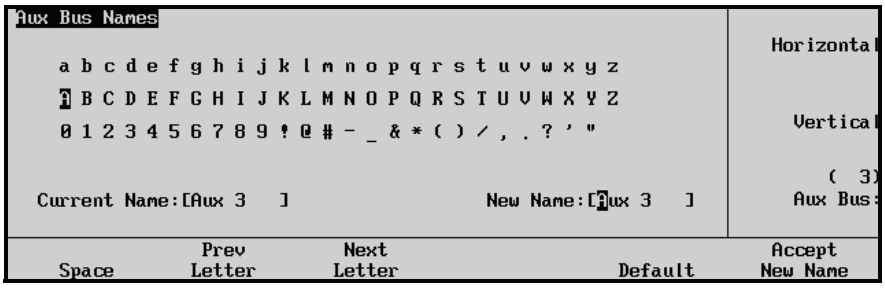
Modifying Aux Bus Names

Each Aux Bus can be named to represent the function that it will actually control. You can modify the Aux Bus names using the **Aux Bus Names Menu**:

- The **Main Area** of the **Aux Bus Names Menu** provides an array of letters and numbers. The reverse video *highlight* indicates the "selected" character — the position of which is controlled by the two upper scroll knobs. The **Current Name** and **New Name** fields are located below the array. In the **New Name** field, the reverse video *highlight* indicates the "active" character — the one that you are changing.
- The **Label Area** provides an array of tools for naming and editing your Aux Bus names.
- The **Scroll Area** provides three functions that are controlled by their respective knobs:

Use the following procedure to modify the name of the Aux Bus:

1. Navigate to the **Aux Bus Menu 1-2** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installation ⇨ Aux Bus**.
2. Press **Modify Name** to display the **Aux Bus Names Menu**.



Aux Bus Names Menu

3. Use the **Aux Bus** knob until the desired Aux Bus is displayed — the one that you want to name. As you rotate the knob, both the **Current Name** and **New Name** fields change to display the Aux Bus names (as stored in switcher memory).
4. Use the **Horizontal** and **Vertical** knobs to select the desired character. The highlighted position in the **New Name Field** changes as you select each character. Please note:
   - The maximum number of characters allowed is eight.
   - Press **Space** to add a space at the highlight's current position. When a letter is in the active position, it will be deleted.
   - Press **Prev Letter** to move the highlight one space to the left.
   - Press **Next Letter** to move the highlight one space to the right.
   - A Standard PS/2 keyboard can also be used to perform the same actions as pressing or rotating the **System Control** buttons and knobs. Refer to the section, "**Using The Keyboard**" in the ***Synergy Series Operation Guide*** for details.

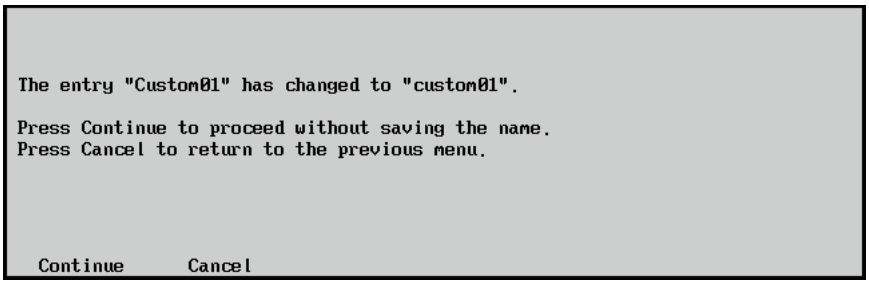
Important

Do NOT place anything on your keyboard or place your keyboard in a position where any of the keys could be accidently pressed. This could result in the Switcher acting unpredictably.

5. Press **Accept New Name** to register the Aux Busses new name in memory. The new name is transferred to the **Current Name Field**.
6. Repeat for each additional Aux Bus that you want to name.

Note

If you exit the installation menus without first pressing **Accept New Name**, the following screen is displayed.



Change Name Without Saving Message

- Press **Continue** to proceed without saving the changes you made to the name.
- Press **Cancel** to return to the previous menu and accept the new name.

7. Once you have named all of the desired Aux Buses, press **UP ONE** to return to the **Aux Bus Menu 1-2**.

This completes the procedure to modify the name of the Aux Bus.

Setting Up Local Aux Panels

This section helps you to set up your local Aux Panel using one of two methods:

- **Using MLE Crosspoints** — This method enables you to map your Aux Panel using MLE crosspoints. By default, Aux Panel crosspoints are mapped to MLE crosspoint buttons on a one to one assignment. For example, crosspoint 1 on the MLE will be the same as crosspoint 1 on the Aux Panel.
- **Defining Aux Panel Crosspoints —** This method enables you to map BNC connectors to physical buttons on the Aux Panel differently from that of the MLE crosspoints. This enables you to customize your local Aux Panel by assigning any BNC to a selected Aux Bus crosspoint without changing your MLE crosspoints. For example, BNC 1 can now be assigned to Aux Bus crosspoint 4, BNC 2 can be assigned to Aux Bus crosspoint 6, and so on. All Aux Buses set to **Definable** will have the same crosspoint assignments.

Note

Remote Aux panel crosspoints will be automatically adjusted to reflect the changes in crosspoint mapping on the local Aux Panel. For example, if you map the crosspoints on the local Aux Panel differently than the MLE crosspoints, the Remote Aux Panel will reflect the local Aux Panel assignments. Refer to the section "**Setting Up Remote Aux Panels**" on page 9–12 for more information.

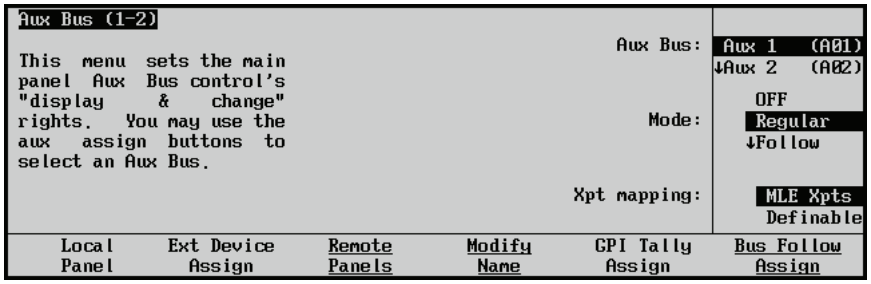
Assigning MLE Crosspoints to the Local Aux Panel

The **Aux Bus Setup Menu** allows you to set specific switching parameters (or "rights") for each of the 12 Aux Buses that are accessible from the control panel in the **Aux Bus Assign Group**. Each bus can be set up individually.

- The **Main Area** of the **Aux Bus Setup Menu** provides a mini "help" message.
- The **Label Area** provides access to the additional setup menus.
- The **Scroll Area** provides three functions that are controlled by their respective knobs.

Use the following procedure to map MLE crosspoints to the local Aux Panel:

1. As required, refer to your **Auxiliary Output Worksheet**. Refer to the section "**Connecting and Verifying Outputs**" on page 4–15 to verify the destinations and functions of all Aux Bus outputs.
2. Navigate to the **Aux Bus Setup Menu 1-2** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **Aux Bus**.
3. Press **Local Panel** to display the **Aux Bus Local Panel Setup Menu**.



Aux Bus – Local Panel Setup Menu

4. Use the **Aux Bus** knob to select the Aux Bus that you want to configure. As you scroll, each selected button lights in the **Aux Bus Assign Group**.

Operating Tip

You can also press a button in the **Aux Bus Assign Group** to select the Aux Bus that you want to configure.

5. Use the **Mode** knob to select the mode for the selected local bus. You can choose between the following:
   - **OFF —** Use this option to turn the specific Aux Bus *off* — effectively disabling access to the bus *from the control panel*. When the button in the **Aux Bus Assign Group** is pressed, it lights *momentarily* — but it will not "take." The bus can, however, be controlled by a *remote* Aux panel.
   - **Regular —** Use this option to place the specific Aux Bus in normal operating mode. The bus can be selected and sources can be changed from the control panel. Note that this mode also allows both *local* and *remote* panels to control the Aux Bus. This option is required when setting the Aux Bus as **Definable**.
   - **Follow —** Use this option to place the specific Aux Bus in *follow* (or "view only") mode. You can select the bus in the **Aux Bus Assign Group** and follow what crosspoints are being selected (remotely), but *you* cannot change crosspoints. In this configuration, the bus is controlled from another location.
   - **Bus Follow —** Use this option to place the specific Aux Bus in *bus follow* mode. This mode directs the **Aux Bus** to follow the user's selections on a specified MLE and bus, and is only used in conjunction with the **Dual Aspectizer** hardware option.

In Appendix D, refer to the "**Bus Mode Setup**" section for detailed instructions on **Bus Follow** mode and the associated **Bus Assign** softkey on the **Bus Follow Menu**.

Note

In **Bus Follow** mode, the user is "locked out" of the designated **Aux Bus** and can *not* make selections on the **Aux Bus** panel itself.

6. Use the **Xpt** knob to select the method for assigning the selected Aux Bus. You can select between the following:
   - **MLE Xpts** — Use this option to assign your Aux Bus crosspoints using MLE crosspoints.
   - **Definable** — Use this option to assign your BNC inputs individually to the Aux Bus crosspoints. Ensure that you have assigned the Aux Bus to **Regular Mode** in step 5.

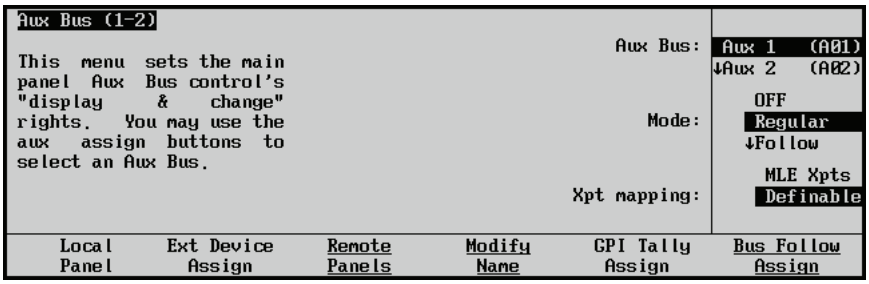
This concludes the procedure to assign MLE crosspoints to the local Aux Panel crosspoints. Refer to the section "**Assigning BNCs to Aux Panel Crosspoints**" on page 9–7 for information.

Assigning BNCs to Aux Panel Crosspoints

All Definable Aux Buses, as assigned in the **Aux Bus Setup Menu**, have the same crosspoint mapping. As a result, when you change a crosspoint assignment on one definable Aux Bus, the new assignment applies to *all* definable Aux Buses. The **Aux Bus Local Panel Setup Menu** allows you to set specific switching parameters (or "rights") for each of the 12 Aux Buses that are accessible from the control panel (in the **Aux Bus Assign Group**). Each bus can be set up individually.

Use the following procedure to assign a crosspoint on the local Aux Panel to a BNC:

1. As required, refer to your **Auxiliary Output Worksheet**. Refer to the section "**Connecting and Verifying Outputs**" on page 4–15 to verify the destinations and functions of all Aux Bus outputs.
2. Navigate to the **Aux Bus Setup Menu 1-2** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **Aux Bus**.
3. Press **Local Panel** to display the **Aux Bus Local Panel Setup Menu**.



Aux Bus – Local Panel Setup Menu

4. Configure an Aux Bus to **Definable** as follows:
   - Use the **Aux Bus** knob to select the Aux Bus that you want to set as Definable. As you scroll, each selected button lights in the **Aux Bus Assign Group**.

Operating Tip

You can also press a button in the **Aux Bus Assign Group** to select the Aux Bus that you want to configure.

- Use the **Mode** knob to select **Regular**. An Aux Bus must be set to Regular Mode in order to assign a crosspoint on the local Aux Panel to a BNC.
- Use the **Xpt mapping** knob to select **Definable**.

5. Press **MORE** to display the **Aux Bus Menu 2-2**.
6. Press **Panel Xpt Assign** to display the **Panel Xpt Assign Menu**.

Aux Bus Menu — Panel Xpt Assign

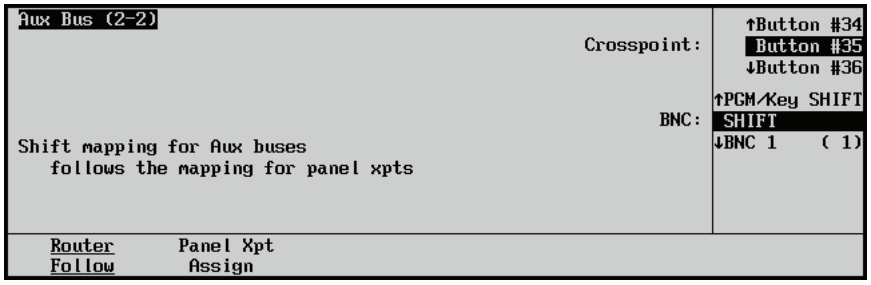
7. Assign an Aux Bus crosspoint to a BNC as follows:
   - Use the **Crosspoint** knob to select the Aux Bus crosspoint you wish to assign to a BNC.
   - Use the **BNC** knob to select the BNC you wish to assign to the selected Aux Bus crosspoint.

This completes the procedure to assign a crosspoint on the local Aux Panel to a BNC. Refer to the section "**Notes on Assigning an Aux Panel Crosspoint**" on page 9–8, for details on assigning the Shift or PGM/Key Shift function to Aux Bus crosspoints.

Notes on Assigning an Aux Panel Crosspoint

Remember the following when assigning **Shift** or **PGM/Key Shift** with definable Aux Buses:

- When you set the crosspoint on the MLE buses to the Shift or PGM/Key Shift in the **BNC Menu**, the corresponding crosspoint on the Aux Bus is also set.
- When you re-assign a crosspoint on the MLE buses from Shift or PGM/Key Shift to another function, the corresponding crosspoint on all definable Aux Buses is set to **BLACK**.
- If the MLE crosspoint is assigned to Shift or PGM/Key, and you attempt to assign the corresponding Aux Bus crosspoint, the middle **BNC** knob is locked to **SHIFT** in the **Aux Bus Setup Menu 2-2** and the following message is displayed:



Aux Bus Setup Menu — Shift Mapping Message

Assigning Router Follow

The **Router Follow** feature allows the Synergy switcher to have a router provide a source, such as audio, to correspond to the video you are feeding out of the Aux Bus. For instance, you can set the Router Follow so that when Aux Bus Crosspoint 1 is pressed, the router will respond by sending Audio Channel 1 out. When the crosspoint is changed, the Router will follow.

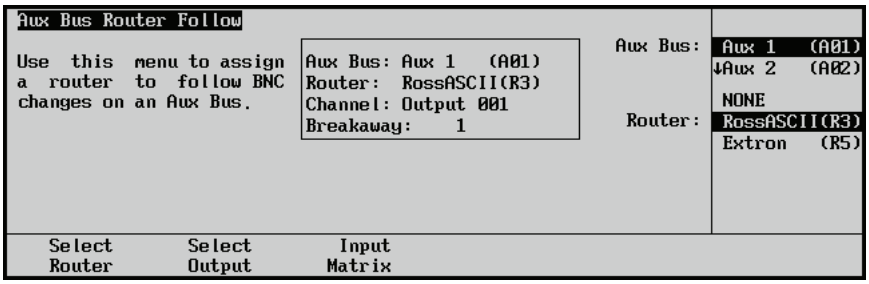
Note

In order to assign audio router to follow aux bus video, the router must first be set up. Refer to the section, "**Communications Setup**" in Chapter 13 for more information.

During this procedure you will assign a particular router output channel and level, or breakaway, to an Aux Bus. You will then associate particular inputs on the router with particular BNCs on the router. As a result, when you select a BNC on the Aux Bus, the router will respond by sending the associated input out on the channel and level you set.

Use the following procedure to set up the Router Follow feature:

1. Navigate to the **Aux Bus Menu 2-2** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **Aux Bus** ⇨ **MORE**.
2. Press **Router Follow** to display the **Aux Bus Router Follow Menu**.
3. Press **Select Router** to display the **Select Router Menu**.

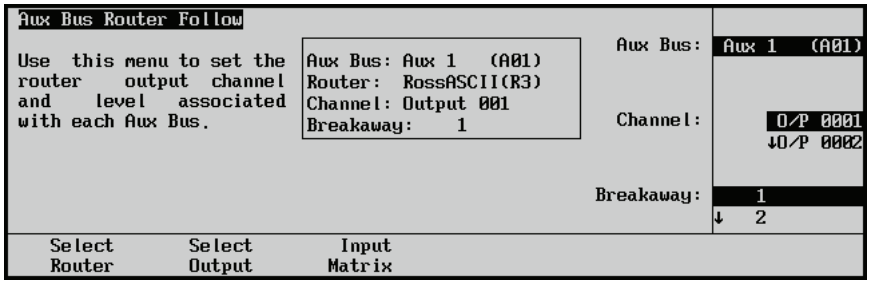


Aux Bus Router Follow — Select Router Menu

4. Assign a router to an Aux Bus as follows:
   - Use the **Aux Bus** knob to select the Aux Bus you want to assign the router to.
   - Use the **Router** knob to select the router you want to assign to the Aux Bus.
5. Press **Select Output** to display the **Select Output Menu**.

Note

On **Ross Routing Systems**, the matrix is controlled by breakaways that have the different levels assigned to them. Refer to your router documentation for information on assigning different levels to a breakaway.



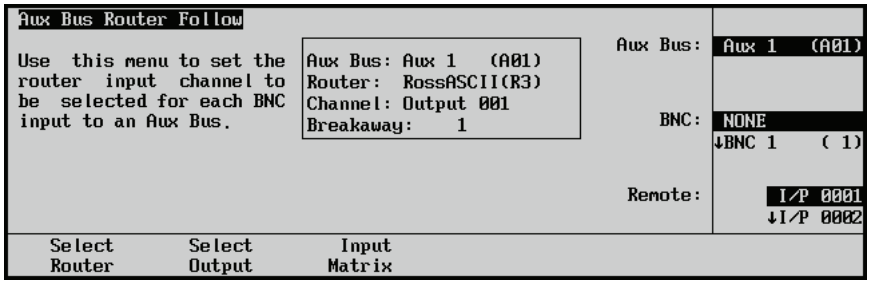
Aux Bus Router Follow — Select Output Menu

6. Assign the output channel and level, or breakaway, for the Router as follows:
   - Use the **Aux Bus** knob to select the Router (assigned to the selected Aux Bus) that you want to set the outputs for.
   - Use the **Channel** knob to select the associated router output channel.
   - Use the **Level** knob to select the router output level. Zero on the list will correspond to the first level on the router.

Note

On the **Ross Routing Systems**, this is the **Breakaway** knob and you can only select from **1** through **8**.

7. Press **Input Matrix** to display the **Input Matrix Menu**.



Aux Bus Router Follow — Input Matrix Menu

8. Assign an input on the Router to a crosspoint BNC on the Aux Bus as follows:
   - Use the **Aux Bus** knob to select the Router (assigned to the selected Aux Bus) that you want to set the Router input to the Aux Bus crosspoints for.
   - Use the **BNC** knob to select the Aux Bus crosspoint you want to assign the Router channel for.

Operating Tip

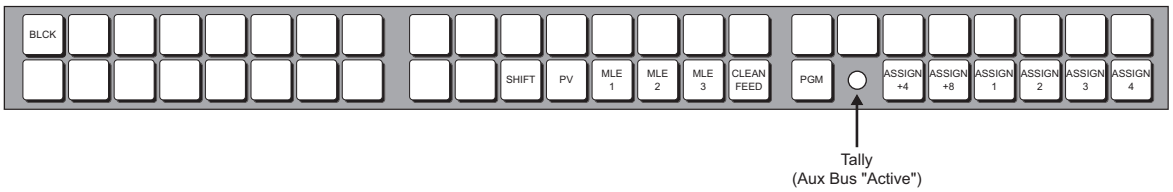
A crosspoint (BNC) can also be selected by pressing the corresponding crosspoint on the **PGM** Bus.

   - Use the **Remote** knob to select the input on the Router that you want the router to send when the indicated BNC is selected on the Aux Bus.

This completes the procedure for setting up a Router Follow for an Aux Bus.

Assigning Aux Bus Tallies

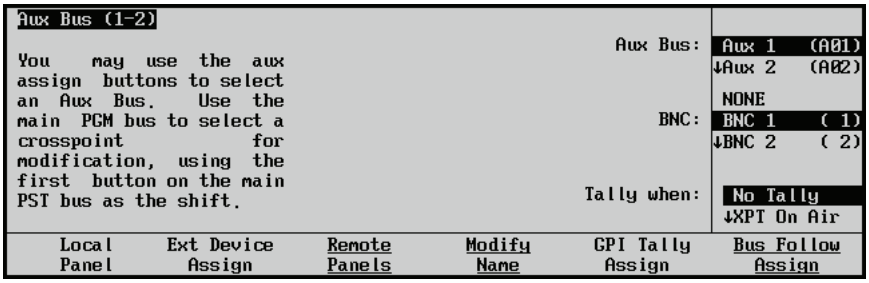
When an Aux Bus is used to route video to an external device (such as a DVE or a VTR), this procedure sets up the method for *tallying* that bus. By selecting certain parameters, you can tally the bus (lighting the Aux panel's red "**ON**" LED) whenever the device is used *on air* — or as part of the composite on air image.



For example, by telling the switcher that Aux Bus #1 feeds DVE #1, the switcher will tally Aux Bus #1 whenever DVE 1 is taken on air.

Use the following procedure to select the Aux Bus tally method:

1. As required, refer to your **Auxiliary Output Worksheet** to verify the destinations and functions of all Aux Bus outputs.
2. Navigate to the **Aux Bus Menu 1-2** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installation ⇨ Aux Bus**.
3. Press **Ext Device Assign** to display the **External Device Assignment Menu**.



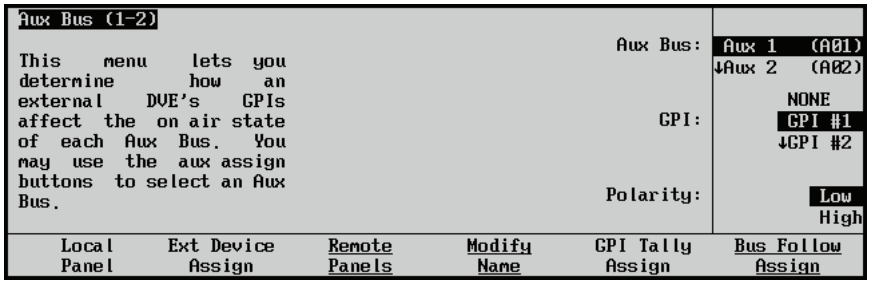
Aux Bus – External Device Assignment Menu

4. Use the **Aux Bus** knob to select the Aux Bus whose output is physically connected to the input of the external device.
5. Use the **BNC** knob to select the switcher's BNC *input* that is connected to the output of the external device.
6. Use the **Tally when** knob to select the method by which the Aux Bus is tallied. You can choose between the following:
   - **No Tally** — Select this option to prevent the Aux Bus from being tallied, regardless of what is selected on air.
   - **XPT On Air** — Select this option to tally the Aux Bus whenever the selected BNC (from step 3 above) is used on air.
   - **GPI & XPT On** — Select this option to tally the Aux Bus whenever the selected BNC is used on air, and whenever an assigned "input" GPI is enabled. *Both criteria* must be active in order for the Aux Bus to tally properly. If you selected **GPI & XPT On** in step 5, an input GPI port must be associated with the Aux Bus that you chose in step 3.

Note

The **GPI & XPT On** function is specifically designed for external DVEs that can generate a GPI trigger each time a different input source is used in an effect (e.g., in a rotating effect in which different sources are used on the front and back sides of the image). For additional information, refer to Appendix B, "**DVE Specifics**."

7. Press **GPI Tally Assign** to display the **GPI Tally Assign Menu**.



Aux Bus – External Device, GPI Tally Assign Menu

8. Associate an input GPI trigger to the selected Aux Bus as follows:
   - Use the **Aux Bus** knob to select the Aux Bus that you wish to associate with a GPI input trigger.
   - Use the **GPI** knob to select the desired input GPI port.
   - Use the **Polarity** knob to select if the GPI triggers on a low or high-level pulse.

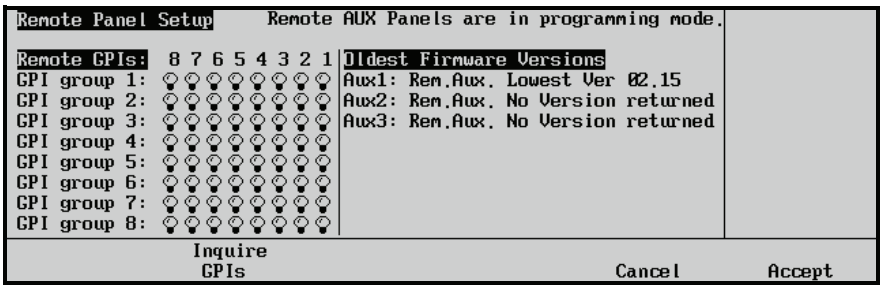
This completes the procedure to select the Aux Bus tally method. Repeat this procedure for each additional Aux Bus that is connected to an external device (and for which you want to set up tallies).

Setting Up Remote Aux Panels

For all assignable and dedicated remote Aux panels, this procedure allows you to program the access "rights" for each Aux Bus output. Note that the **Main Area** of the **Aux Bus Remote Panel Setup Menu** deals mainly with the Aux Panel CCU Joystick Override and GPI function. Refer to section "**Remote Aux Panel GPI Setup**" on page 9–34 for details.

Use the following procedure to set up your remote Aux panels:

1. As required, refer to your **Auxiliary Output Worksheet** to verify the destinations and functions of all Aux Bus outputs.
2. Navigate to the **Aux Bus Remote Panels Menu** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installation ⇨ Aux Bus ⇨ Remote Panels**.



Aux Bus – Remote Panels

When **Remote Panel Setup** is pressed, the following actions occur:

- All remote panels (both assignable and dedicated) are placed in "programming" mode (as indicated on the menu itself).
- The on-air LED *on all panels* flashes to alert you that programming mode is now in effect.
- The 12 buttons in the control panel's **Aux Bus Assign Group** become inactive.

With the programming mode in effect, selected crosspoints on each panel now represent the 12 Aux Bus outputs.

- On Synergy 2 panels, the 12 **Aux Assign** buttons represent the 12 Aux Bus outputs, respectively.
- On **Synergy 3** and **Synergy 4** panels, the first 12 crosspoints on *each Aux panel* represent the 12 Aux Bus outputs, respectively.
- On **assignable** panels, each button programs the rights for its associated Aux Bus — as controlled from the *current* assignable panel. On **dedicated** panels, each button represents its associated Aux Bus output, but only *one* of the 12 buttons can be selected.

3. Assign the rights for an **assignable** panel for *each assignable panel* connected to the frame as follows:

   - Go to the assignable panel itself.
   - Ensure that the panel is in "programming" mode (with the on-air LED flashing).
   - *For reference only*, note the state of the **SHIFT** button — but *do not* change its state. If the button is lit, shifted crosspoints are allowed on the panel. If the button is off, shifted crosspoints cannot be selected. On *newer* models of assignable panels, this mode is set *automatically* to match that of the main Control Panel. For details on *older* model panels, contact Ross Video Technical Support.

Note

Special modes such as the **PGM/Key SHIFT** mode are not available on remote panels.

   - Press the crosspoint (**1** - **12**) that corresponds to the Aux Bus that you want to program, and select the desired option. *Each button* can be toggled between **Regular Mode** and **Follow Mode**, and each press cycles to the next option:
     ~ **Regular Mode** — the remote Aux panel has full access. The bus can be selected and sources can be changed from both the remote Aux panel and the *local* control panel. The button is lit steadily.
     ~ **Follow Mode** — the associated Aux Bus is in "view only" mode. You can select the bus and follow what crosspoints are being selected (remotely, by

another user), but *you* cannot change crosspoints from the current panel. The button's light is flashing.

- Repeat the last step for each of the 12 Aux Buses.

4. Assign the rights for a **dedicated** panel for *each dedicated panel* connected to the frame as follows:

   - Go to the dedicated panel itself.
   - Ensure that the panel is in "programming" mode (with the on-air LED flashing).
   - *For reference only*, note the state of the **SHIFT** button — but *do not* change its state. If the button is lit, shifted crosspoints are allowed on the panel. If the button is off, shifted crosspoints cannot be selected. On *newer* models of dedicated panels, this mode is set *automatically* to match that of the main control panel. For details on *older* model panels, contact Technical Support.

Note

Special modes such as the **PRG/Key SHIFT** mode are not available on remote panels.

   - Press the crosspoint (**1** - **12**) that corresponds to the *one* Aux Bus that you want to control at the current panel. By selecting a button, you are telling the switcher that the current dedicated panel now controls the associated Aux Bus output.
   - Select the desired option. The selected button can be toggled between **Regular Mode** and **Follow Mode**, and each press cycles to the next option:
     - ~ **Regular Mode** — the remote Aux panel has full access. The bus can be selected and sources can be changed from both the remote Aux panel and the *local* control panel. The button is lit steadily.
     - ~ **Follow Mode** — the associated Aux Bus is in "view only" mode. You can select the bus and follow what crosspoints are being selected (remotely, by another user), but *you* cannot change crosspoints from the current panel. The button's light is flashing.

5. On the **Aux Bus Remote Panel Setup Menu**, press **Accept** to store all new settings, and exit the programming mode. All remote Aux panels return to their normal operating mode. In addition, each panel's new "rights" are stored in the remote panel's non-volatile memory.

Note

If an Aux Bus is set to Bus Follow (i.e., feeding a CDK-111, an Aspectizer, or an Ultimatte) or if it is assigned to an external DVE, you will not be able to change the crosspoints on the current remote Aux panel, regardless of the "rights" assigned to this panel.

This completes the procedure to set up your Remote Aux panels. Refer to Appendix A "**Specifications**" for a comprehensive table that lists all normal, GPI, and special diagnostic Aux panel programming modes.

Output Setup

The **Output Setup Menu** allows you to set up six specific output parameters:

- MLE Tally Setup
- MLE Aspect Ratio Setup
- Clean Feed Setup
- Fade to Black Setup
- Ancillary Data
- Trigger Field Setup

Each topic is discussed in the following sections.

MLE Tally Setup

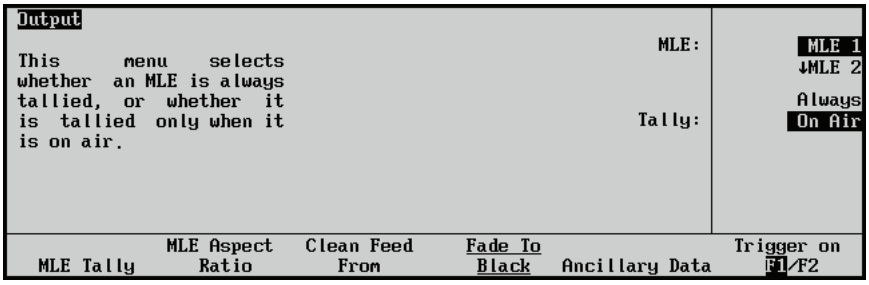
The **MLE Tally** feature allows you to force a selected MLE to always function as if it is on air — regardless of whether or not it is selected on the **Program/Preset Bus**.

Note

Once selected, the MLE tally settings remain in effect until changed.

Use the following procedure to set up a tally function for an MLE:

1. Navigate to the **Output Menu** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installation ⇨ Output**.
2. Press **MLE Tally** to display the **MLE Tally Menu**.



MLE Tally Menu

3. Assign a tall function to a selected MLE as follows:
   - Use the **MLE** knob to select the MLE for which you want to assign a tally function.
   - Use the **Tally** knob to select the desired tally function. You can select between the following:
     - ~ **Always** — Select this option to tally the selected MLE regardless of what is selected on the switcher's **Program/Preset Bus**. The MLE's red **ON** LED will always be lit, and all sources selected on the MLE will tally accordingly. Use this option for dual aspect ratio configurations as discussed previously.
     - ~ **On Air** — Select this option when you want an MLE to be tallied only when it is selected on the switcher's **Program/Preset Bus**.

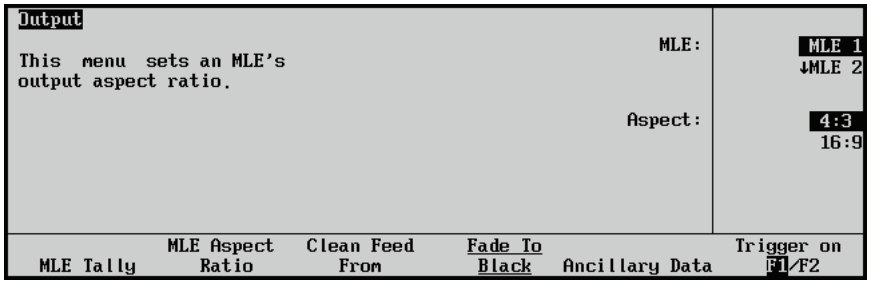
This completes the procedure to set up a tally function for an MLE.

MLE Aspect Ratio Setup

The **MLE Aspect Ratio Menu** allows you to assign an output aspect ratio to a selected MLE. This parameter is valid only when the **Aspectizer** option is installed. This feature is primarily designed for the Synergy 2, 3, and 4 switchers, in which one MLE can be assigned as 4:3 and another MLE assigned as 16:9 — for true dual aspect ratio production.

Use the following procedure to select the MLE aspect ratio:

1. Ensure that the **Aspectizer** option is properly installed. Refer to the section "**Dual Aspectizer Option and Overview**" for information.
2. Navigate to the **Output Menu** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installation ⇨ Output**.
3. Press **MLE Aspect Ratio** to display the **MLE Aspect Ratio Menu**.



MLE Aspect Ratio Menu

4. Select the MLE aspect ratio as follows:
   - Use the **MLE** knob to select the MLE that you wish to assign an aspect ratio.
   - Use the **Aspect** knob to select the desired aspect ratio.

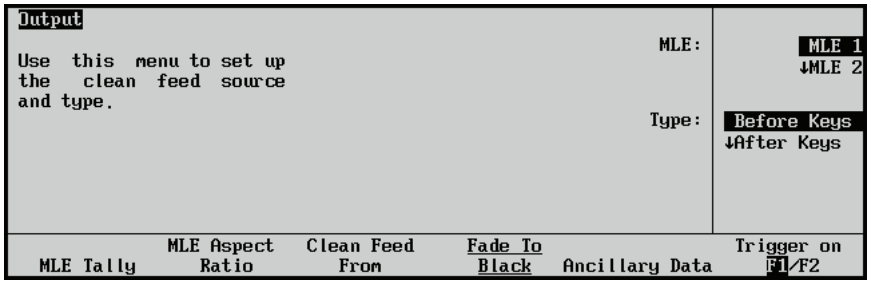
This completes the procedure to select the MLE aspect ratio.

Clean Feed Setup

The **Clean Feed From Menu** allows you to set the point from which the clean feed signal is derived. The selected signal is then routed to the **CLEAN** output connector on the rear of the frame.

Use the following procedure to set up the **Clean Feed** output:

1. Navigate to the **Output Menu** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installation ⇨ Output**.
2. Press **Clean Feed From** to display the **Clean Feed From Menu**.



Output — Clean Feed From Menu

3. Use the **MLE** knob to select the *single MLE* from which the feed originates. Only *one MLE* can be selected.
4. Use the **Type** knob to select the point from which the output is taken in the MLE's video path. You can select between the following:
   - **Before Keys** — The clean feed output is pulled after the MLE's program/preset bus, but *before* the two keys are added.
   - **After Keys** — The clean feed output is pulled downstream of the two MLE keyers — effectively, an additional output.
   - **Split** — This option splits your two DSKs, sending program out of **DSK 1** and **Clean Feed** out of **DSK 2**. Both DSKs are independently switched.
   - **Split Follow** — This option also splits your two DSKs, sending program out of **DSK 1** and **Clean Feed** out of **DSK 2**. However, both DSKs are slaved together, in sync with each other. If you *cut* on **DSK 1**, **DSK 2** automatically cuts in sync.
   - **Between Keys** — The clean feed output is pulled downstream of **DSK 1**, but before **DSK 2**.
   - **AlphaNomadCK** — The clean feed output will follow the last selected Chroma key. In the **Clean Feed From Menu,** the MLE will be locked to the bottom MLE. When a Chroma Key is selected on any Keyer in any of the MLEs, the clean feed signal will change to the alpha signal for the selected Keyer.
   - **Alpha Key 1** — The clean feed output will be the alpha signal for Key 1 of the selected MLE.
   - **Alpha Key 2** — The clean feed output will be the alpha signal for Key 2 of the selected MLE.
   - **DVE Alpha** — This option eliminates **DVE Send** limitations with regard to routing keys to a DVE. Specifically, you cannot route a **Squeeze & Tease Key**, a **Chroma Key**, or a modified **Auto Select** key to an external DVE without a background signal behind it — *unless* you enable the **Clean Feed Alpha** feature.
     ~ With the feature enabled, the clean feed alpha signal is routed to the DVE, thus removing the **DVE Send** limitations with **Squeeze & Tease**, **Chroma** and **Auto Select** keys as described above.

Important

With **DVE Alpha** selected and the clean feed alpha signal routed to the external DVE, the switcher's **Clean Feed** output signal (on the **CLEAN** output connector) is lost.

This concludes the procedure to set up your Clean Feed output.

Fade to Black Setup

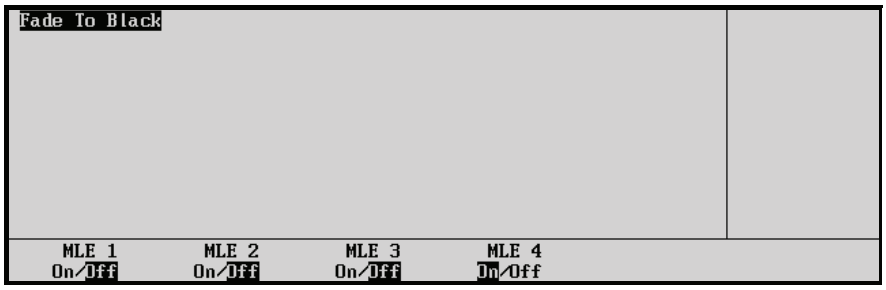
The **Fade to Black Menu** allows you to select the combination of MLEs that you want to fade to black — when a **Fade to Black** transition is initiated. You can select any number of MLEs, each of which will fade simultaneously.

This function is useful for dual aspect ratio productions, in which one MLE is routed to the NTSC transmitter (in 4x3 format) and another MLE is routed to the DTV transmitter (in 16x9 format). Both MLEs must fade simultaneously.

Use the following procedure to select the MLEs that you want to fade to black:

1. Navigate to the **Fade to Black Menu** as follows:

- Press **HOME ⇨ MORE ⇨ Setup ⇨ Installation ⇨ Output ⇨ Fade to Black**.



Fade to Black Menu

2. Toggle the desired MLEs **On** or **Off**, as required.

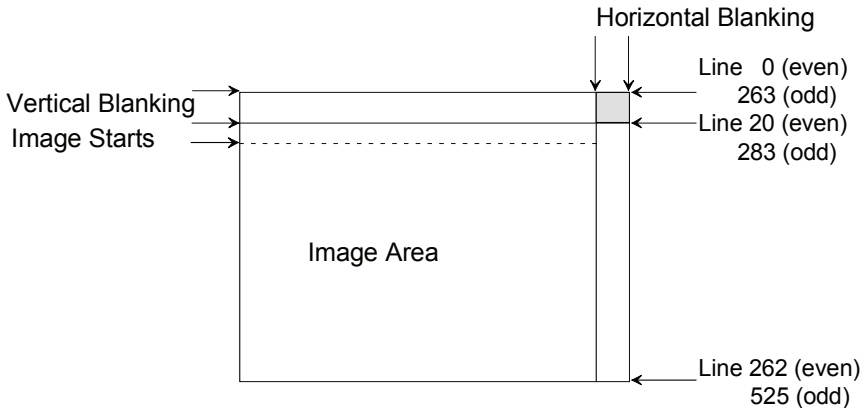
This completes the procedure to select the MLEs that you want to fade to black.

Ancillary Data

The **Ancillary Data Menu** allows you to select lines in the vertical/horizontal blanking area of the video stream, which can then be stripped or passed. This menu is useful in situations, such as when you want to pass embedded audio or closed captioning.

You can also define the line where the image starts, to prevent any switcher effects (such as keys and wipes) from modifying lines before the selected line. This is useful for protecting information such as closed-captioning, which may reside beyond the normal blanking area.

Refer to the following figure for a visual description of vertical/horizontal blanking.



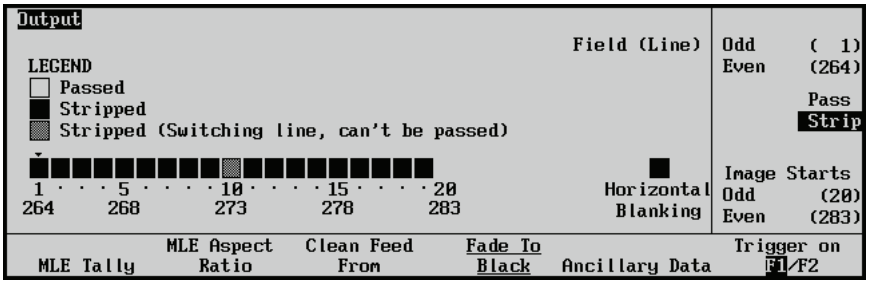
Vertical/Horizontal Blanking Area

Note

To enable the video stream to be passed through the horizontal area located within the vertical blanking (the shaded area), both the horizontal blanking and the vertical line must be set to **Pass**.

Use the following procedure to select ancillary data parameters.

1. Navigate to the **Ancillary Data Menu** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installation ⇨ Output ⇨ Ancillary Data**.



Output — Ancillary Data Menu

Ancillary Data menu components:

- Legend with colors indicating whether a line is:
  - ~ **Passed** — When a line is passed, the original line data is preserved.
  - ~ **Stripped** — When a line is stripped, the switcher substitutes black for that line.
  - ~ **Stripped (Switching Line)** — The switching line (line 10 in NTSC, line 6 in PAL) is always stripped and cannot be changed.
- Horizontal bar graph starts on the left with a box representing the first line of video in the vertical blanking. The last box of the graph is the floating box on the right. This floating box represents the Horizontal Blanking area of all the video lines. Above the graph is a small inverted triangle selector (used as a pointer) and below the graph are 2 lines of numbers and graduation marks. The pointer indicates which box (representing a line of video) is being modified in the menu. The latter 2 lines of numbers and graduations identify the line numbers that the boxes represent. The first line identifies the line number for the **Odd** field and the lower second line for the **Even** field.
- In the Knobs area:
  - ~ Top **Field (Line)** knob
  - ~ Middle **Pass/Strip** knob
  - ~ Bottom **Image Starts** knob

2. Use the **Field (Line)** knob to select the desired field (line). Note that the pointer on the menu moves to indicate the selected line in the graphical display. To use the menu, first rotate the top knob to select the line or box to be edited.
3. To select the **Horizontal Blanking** box (on the far right of the bar graph) rotate the top **Field (Line)** knob to its maximum value clockwise. The text to the left of the top knob indicates the selection. For video lines, the knob normally selects a pair of lines, one in the **Odd** field and a corresponding line in the **Even** field. The text beside the top knob shows the line number in parenthesis to the right of the Field type.

Note

The definition for the last line in normal 625 vertical blanking does not have a corresponding line in the other field's vertical blanking. For that special case the knob will select only the one line that the 625 standard dictates as part of the vertical blanking.

4. Use the **Pass/Strip** knob to select either **Pass** or **Strip** for the line selected by the top Knob. On the bar graph, the box representing the selected line will change color to show Passed or Stripped, as per the legend.

In the **Horizontal Blanking** case, stripping removes any embedded audio data in the blanking area of all the video.

Note

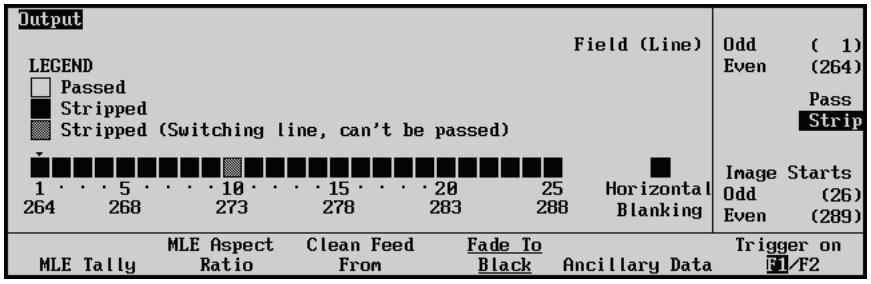
All non-image (vertical blanking) lines and the horizontal blanking should be set to pass if embedded audio is to be passed.

The Switching line (line 10 in 525 systems and line 6 in 625 systems) is always stripped and cannot be changed.

5. Use the **Image Starts** knob to select the image start point. As the line number increases, the bar graph displays additional boxes with line numbers to reflect this change. You can then pass or strip these lines as required. Refer to the following diagram.

   The bottom knob controls the line number that the switcher considers as the first line of active video (i.e. the line on which the image starts). By default this is the first line after the vertical blanking. In some cases it may be desirable to protect the first few lines of normal video from being modified by the switcher. For example: In 525 systems closed captioning may be present a couple of lines past the vertical blanking.

   - To prevent keying etc. from destroying the closed captioning of a background selection, use the **Image Starts** knob to adjust the first line number after the closed caption line. The bar graph will now display additional boxes for the lines that the switcher will protect (refer to the following example).



Ancillary Data Menu with Additional Lines Stripped

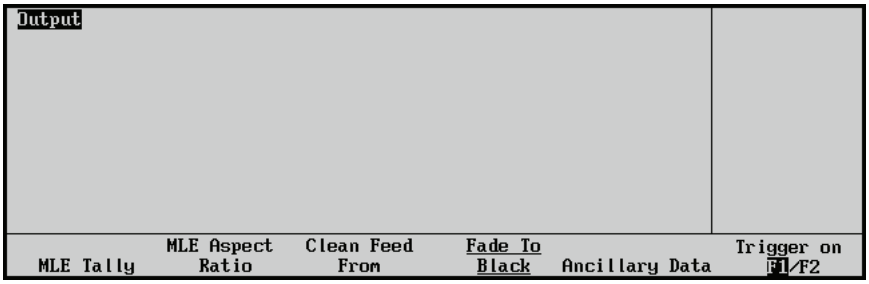
Contact Ross Video Technical Support for any additional assistance with **Ancillary Data** setup.

Trigger Field Setup

The **Trigger on** feature allows you to select when the Synergy switcher will trigger a transition from one video source to the next. Each Video Frame is composed of an **Odd Field** and an **Even Field**.

Use the following procedure to set up the **Trigger on** feature:

1. Navigate to the **Output Menu** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **Output**.



Output Menu

2. Toggle the **Trigger on** softkey to select **F1** or **F2**.
   - **F1** — Select **F1** (**Odd Field**/**Field 1**) to trigger the transition to the next video source after the Odd Field of the first source. This is the default setting.
   - **F2** — Select **F2** (**Even Field**/**Field 2**) to trigger the transition to the next video source after the Even Field of the first source.

This completes the procedure to set up the **Trigger on** feature.

Standard GPI Setup

The **GPI Setup Menu** allows you to set up your 12 “standard” GPI Input ports and 12 GPI Output ports. All 24 ports are provided on the **GPI I/O** connector. Refer to the section “**Standard GPI Connections**” on page 9–33 for wiring instructions. Before setting up your GPIs, please complete the following worksheets.

Standard GPI Input Worksheet

Complete the following “standard” GPI Input worksheet, and copy the chart as required to avoid marking up this guide. A worksheet is also provided in section “**Standard GPI Input Worksheet**” to make extra copies.

For each standard GPI input port (1 to 12):

- In the **Event Type** column, fill in the type of event that you want to trigger. Choose between:
  - ~ Off
  - ~ Auto
  - ~ Cut
  - ~ Cust Ctrl
  - ~ Mem Recall
- In the **Event Area** column, fill in the area of the switcher where you would like the event to occur. Choose between:
  - ~ MLE 1
  - ~ MLE 2
  - ~ MLE 3
  - ~ MLE 4
  - ~ Fade to black (DSK)
  - ~ Custom Control name or number
  - ~ Memory name or number
- In the **Polarity** column, fill in the polarity of the input trigger. Choose between:
  - ~ Low
  - ~ High

Standard GPI Input Worksheet

Standard GPI Input #	Event Type	Event Area	Polarity
Sample GPI Input #1	Auto	MLE 1	Low
Sample GPI Input #2	Cut	Fade to black	High
Sample GPI Input #3	Cust Ctrl	Custom08 1 #08	High
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

Standard GPI Output Worksheet

Complete the following "standard" GPI Output worksheet. To avoid marking up this guide, use the worksheet provided in the section "**Standard GPI Output Worksheet**" to make extra copies.

For each GPI output port (1 to 12):

- In the **Output Name** column, fill in the desired GPI Output name (up to eight characters).
- In the **Trigger Type** column, fill in the output trigger type. Choose between:
  - ~ Edge
  - ~ Level
- In the **Trigger Level** column, fill in the polarity of the output trigger. Choose between:
  - ~ Low
  - ~ High

Standard GPI Output Worksheet

Standard GPI Output #	Output Name	Trigger Type	Trigger Level
Sample GPI Output #1	PrevStill	Edge	Low
Sample GPI Output #2	Roll VTR	Level	High
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

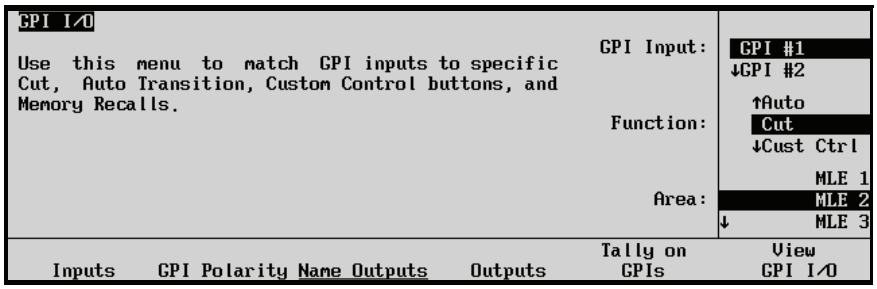
Programming Standard GPI Inputs

The **GPI Input Setup Menu** allows you to associate each GPI Input with an *area* and *button* on the switcher that you would like to trigger, when that specific GPI input pulse is received from an external device. The **GPI Input Setup Menu** also allows you to trigger a custom control or a memory recall.

GPI Input Control — Area and Button

Use the following procedure to assign an area and a button to your standard GPI ports:

1. Navigate to the **GPI Setup Menu** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installation ⇨ GPI I/O**.
2. Press **Inputs** to display the **GPI Input Setup Menu**.



GPI Input Setup Menu

3. Assign a function to the GPI Input port as follows:

   - Use the **GPI Input** knob to select the GPI Input port (**1** to **12**) to which you want to assign a switcher event type and location (area).
   - Use the **Function** knob to select a specific function. You can select between the following:

Operating Tip

The label of the bottom knob changes depending on the selection made with the middle **Function** knob.

   ~ **Off** — Use this option to perform *no transition* when an incoming pulse is received from an external device.

   ~ **Auto** — Use this option to set the function to perform an **Auto** transition when an incoming pulse is received from an external device:

   – When an "**MLE**" area is chosen, the **AUTO TRANS** button in the selected MLE's **Transition Group** is triggered when a specific GPI input pulse is received from the external device. Refer to the illustration "**GPI Trigger Types and Locations — MLE 1 Transition Group**" on page 9–25.

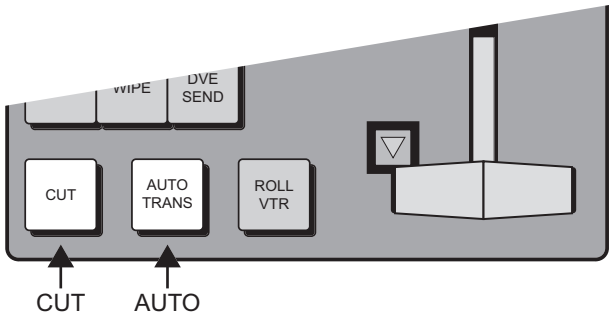
   – When the "**Fade to Black**" area is selected, the **FADE** button in the **Fade to Black** group is triggered when a specific GPI input pulse is received from the external device. Refer to the illustration "**GPI Transition Type and Trigger Locations — Fade to Black Group**" on page 9–26.

   ~ **Cut** — Use this option to set the function to perform a **Cut** transition when an incoming pulse is received from an external device:

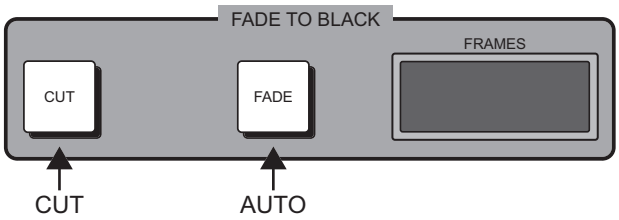
   – When an "**MLE**" area is chosen, the **CUT** button in the selected MLE's **Transition Group** is triggered when a specific GPI input pulse is received from the external device. Refer to the illustration "**GPI Trigger Types and Locations — MLE 1 Transition Group**" on page 9–25.

   – When the "**Fade to Black**" area is selected, the **CUT** button in the **Fade to Black** group is triggered when a specific GPI input pulse is received from the external device. Refer to the illustration "**GPI Transition Type and Trigger Locations — Fade to Black Group**" on page 9–26.

   - Use the **Area** knob to select the MLE area.

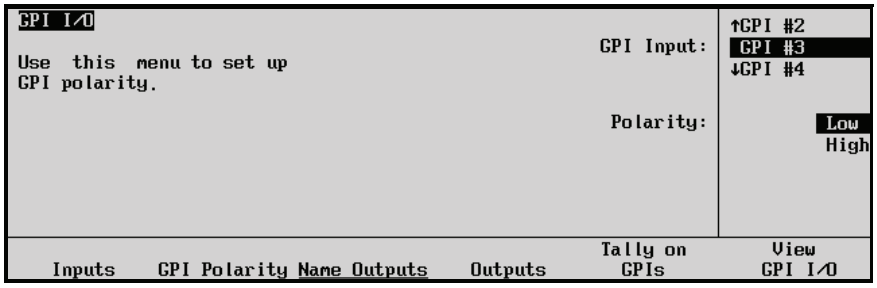


GPI Trigger Types and Locations — MLE 1 Transition Group



GPI Transition Type and Trigger Locations — Fade to Black Group

4. Assign the polarity for the GPI input port as follows:
   - Press **GPI Polarity** to display the **GPI Input Polarity Menu**.



GPI Input Polarity Menu

   - Use the **GPI Input** knob to select the GPI Input port (**1** to **12**) for which you want to set the polarity.
   - Use the **Polarity** knob to select the polarity of the port. Refer to the **Polarity** column of your **Standard GPI Input Worksheet**. Refer to your source device's documentation for details on the specific type of GPI pulse that the device provides. You can select between the following:
     ~ **Low** — Use this option to trigger the selected port when the line goes low (to ground). Select this option when the incoming GPI line is normally high.
     ~ **High** — Use this option to trigger the selected port when the line goes high (released from ground). Select this option when the incoming GPI line is normally low.
5. Press **HOME** to display the **Installation Change Confirmation Screen**.
6. Accept or reject the changes you have made as follows:
   - Press **Confirm** to accept the changes.
   - Press **Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

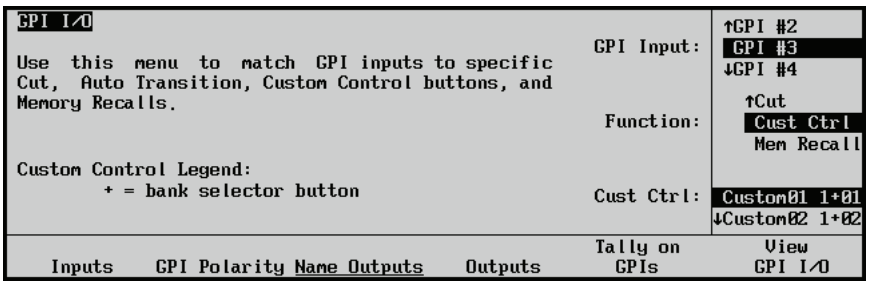
This completes the procedure to assign an area and a button to your standard GPI ports.

GPI Input — Custom Controls

The **GPI Input Setup Menu** allows you to set up a GPI input to trigger a complex series of operations that have been assigned to a custom control button. Refer to the section "**Custom Controls**" on page 8–4 for information on programming custom controls.

Use the following procedure to allow a GPI input to trigger a custom control:

1. Navigate to the **GPI Setup Menu** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **GPI I/O**.
2. Press **Inputs** to display the **GPI Input Setup Menu**.



GPI Input Setup — Custom Controls Menu

3. Use the **GPI Input** knob to select the GPI Input port (**1** to **12**) to trigger the custom control.

Note

If the label **USED** appears to the right of the GPI input port number, it indicates that the selected port is already in use by the Aux Bus, as assigned on the **Aux Bus External Device Assign Menu**. Refer to the section "**Assigning Aux Bus Tallies**" on page 9–11 for details.

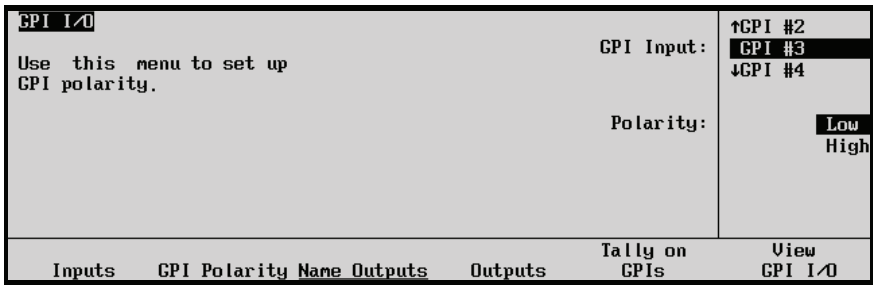
4. Use the **Function** knob to select **Cust Ctrl** to display a list of the custom control buttons. The list includes the custom control name, bank, status as defined in the legend area, and button number.
5. Use the **Cust Ctrl** knob to select a custom control to trigger. A custom control button that has a macro assigned to it is prefixed in the list with an asterisk.

Operating Tip

You can also specify the custom control setting by pressing the actual custom control button on the Synergy control panel.

- The custom control button on the switcher panel that corresponds to the active line for the bottom **Cust Ctrl** knob lights up during the selection process. The lit button changes as the knob is turned.
- If the current custom control setting is for a control button in a bank, and that bank has a button assigned to activate it, then both the bank button and the control button will light.

6. Assign the polarity for the GPI input port as follows:
   - Press **GPI Polarity** to display the **GPI Input Polarity Menu**.



GPI Input Polarity Menu

- Use the **GPI Input** knob to select the GPI Input port (**1** to **12**) for which you want to set the polarity.
- Use the **Polarity** knob to select the polarity of the port; refer to the **Polarity** column of your **Standard GPI Input Worksheet**. Refer to your source device's documentation for details on the specific type of GPI pulse that the device provides. You can select between the following:
  - ~ **Low** — Use this option to trigger the selected port when the line goes low (to ground). Select this option when the incoming GPI line is normally high.
  - ~ **High** — Use this option to trigger the selected port when the line goes high (released from ground). Select this option when the incoming GPI line is normally low.

7. Press **HOME** to display the **Installation Change Confirmation Screen**.
8. Accept or reject the changes you have made as follows:
   - Press **Confirm** to accept the changes.
   - Press **Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

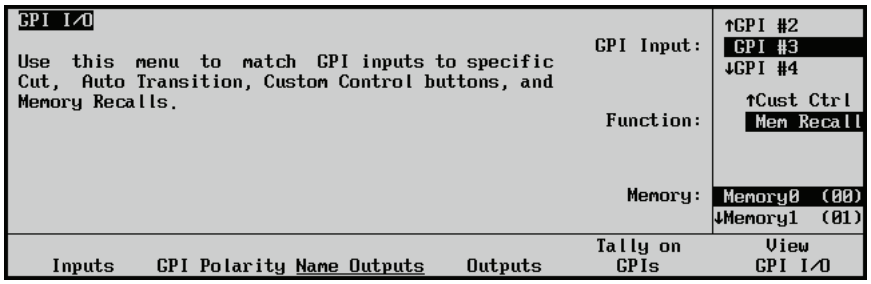
This completes the procedure to allow a GPI input to trigger a custom control.

GPI Input Control — Memory Recalls

During this procedure, refer to the **Polarity** column of your **Standard GPI Input Worksheet**. You may also want to refer to your source device's documentation for details on the specific type of GPI pulse that the device provides.

Use the following procedure to allow a GPI input to trigger a Memory Recall:

1. Navigate to the **GPI I/O Setup Menu** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **GPI I/O**.
2. Press **Inputs** to display the **GPI Input Setup Menu**.



GPI Input Setup — Memory Recall Menu

3. Set up a memory recall to trigger as follows:
   - Use the **GPI Input** knob to select the GPI Input port (**1** to **12**) to trigger the memory recall.

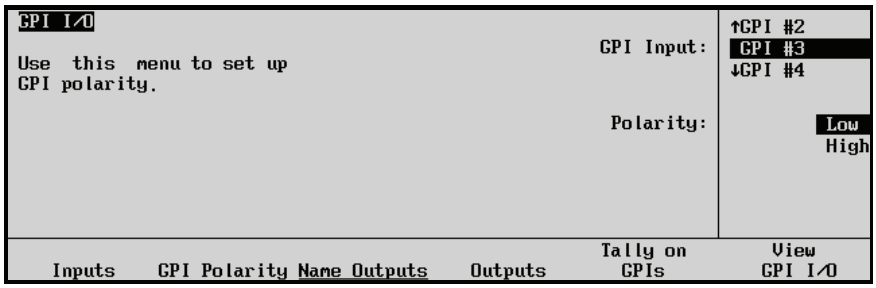
Note

If the label **USED** appears to the right of the GPI input port number, it indicates that the selected port is already in use by the Aux Bus, as assigned on the **Aux Bus External Device Assign Menu**. Refer to the section "**Assigning Aux Bus Tallies**" on page 9–11 for details.

   - Use the **Function** knob to select **Mem Recall**. The label for the bottom knob changes to **Memory**.

- Use the **Memory** knob to select a memory that can be recalled by triggering a GPI input.

4. Assign the polarity for a GPI input port as follows:
   - Press **GPI Polarity** to display the **GPI Input Polarity Menu**.



GPI Input Polarity Menu

   - Use the **GPI Input** knob to select the GPI Input port (**1** to **12**) for which you want to set the polarity.
   - Use the **Polarity** knob to select the polarity of the port. You can select between the following:
     ~ **Low** — Use this option to trigger the selected port when the line goes low (to ground). Select this option when the incoming GPI line is normally high.
     ~ **High** — Use this option to trigger the selected port when the line goes high (released from ground). Select this option when the incoming GPI line is normally low.

5. Press **HOME** to display the **Installation Change Confirmation Screen**.
6. Accept or reject the changes you have made as follows:
   - Press **Confirm** to accept the changes.
   - Press **Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure to enable a GPI input to trigger a Memory Recall.

Enabling GPI Control

Once you have finished programming your GPI inputs, you can enable the switcher to receive and act upon a GPI input pulse by toggling the **GPI** button in the **Remote Section** of the **Global Memory System Group**:

- When **GPI** is lit, the remote GPI control is enabled, but local operation can still be performed.
- When **GPI** is not lit, and external GPI control is disabled.

Programming Standard GPI Outputs

Each standard GPI output port can be named, to represent the function that it will actually control — such as **PrevStil** (select previous still) or **Roll VTR**). The **GPI Name Outputs Menu** includes the following information:

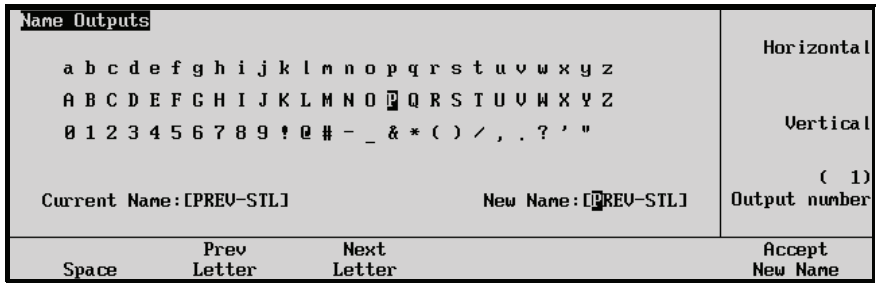
- The **Main Area** provides an array of letters and numbers. The reverse video *highlight* indicates the "selected" character — the position of which is controlled by the two upper

scroll knobs. The **Current Name** and **New Name** fields are located below the array. In the **New Name** field, the reverse video *highlight* indicates the "active" character — the one that you are changing.

- The **Label Area** provides an array of tools for naming and editing your physical GPI Output names.
- The **Scroll Area** provides three functions that are controlled by the following knobs:
  - ~ The top **Horizontal** knob moves the highlight horizontally.
  - ~ The middle **Vertical** knob moves the highlight vertically.
  - ~ The bottom **Output number** knob selects the GPI Output port that you want to name. As you scroll through the ports, the **Current Name** field tracks each name.

Use the following procedure to set up your standard GPI output ports:

1. Navigate to the **GPI Setup Menu** with **Outputs** selected as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **GPI I/O**.
2. Press **Name Outputs** to display the **GPI Name Outputs Menu**.



GPI Name Outputs Menu

3. Use the **Output number** knob to select the desired GPI output port. Refer to the data from the **Output Name** column in your **Standard GPI Output Worksheet**. Please note:
   - As you rotate the knob, both the **Current Name** and **New Name** fields change to show the port names (as stored in switcher memory).
   - The factory default name for *all outputs* is [**UNKNOWN**].
4. Use the **Horizontal** and **Vertical** knobs to select the desired character. The highlighted position in the **New Name Field** changes as you select each character. Please note:
   - The maximum number of characters allowed is eight.
   - A Standard PS/2 keyboard can be used to perform the same actions as pressing or rotating the **System Control** buttons and knobs. Refer to the section, "**Using The Keyboard**" in the ***Synergy Series Operation Guide*** for details.

Important

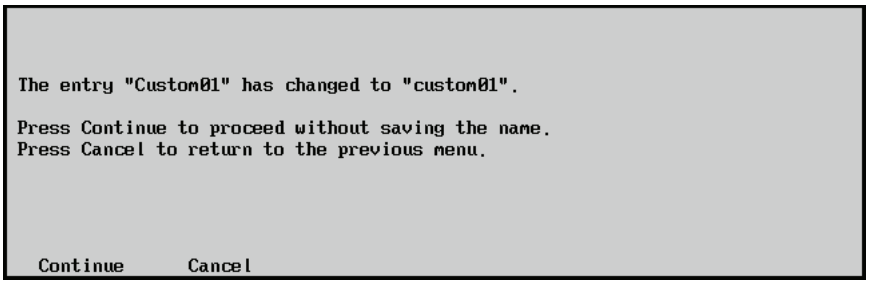
Do NOT place anything on your keyboard or place your keyboard in a position where any of the keys could be accidently pressed. This could result in the Switcher acting unpredictably.

- Press **Space** to add a space at the highlight's current position. If a letter is in the active position, it will be deleted.
- Press **Prev Letter** to move the highlight one space to the left.
- Press **Next Letter** to move the highlight one space to the right.

5. Press **Accept New Name** to register the output port's new name in memory. The new name is transferred to the **Current Name Field**.
6. Repeat for each additional GPI output port that you want to name.

Note

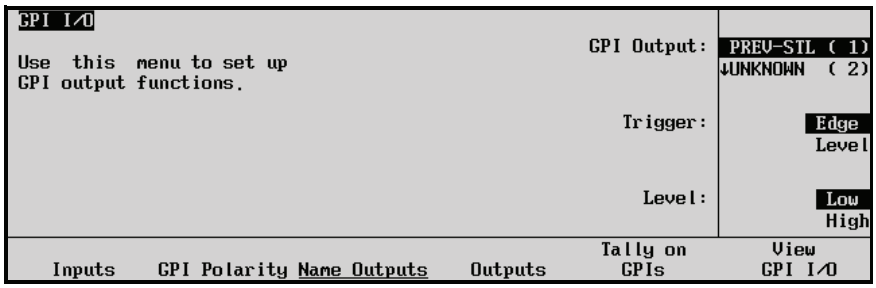
If you exit the installation menus without first pressing **Accept New Name**, the following screen is displayed.



Change Name Without Saving Message

- Press **Continue** to proceed without saving the changes you made to the name.
- Press **Cancel** to return to the previous menu and accept the new name.

7. Once you have named all of the desired GPI output ports, press **UP ONE** to return to the **GPI Setup Menu**.
8. To set the parameters for each GPI output port, press **Outputs** to display the **GPI Output Setup Menu**.



GPI Output Setup Menu

When a selected GPI output port is activated, it obeys the trigger and level parameters that you have entered. The **Main Area** provides a mini "help" message and the **Label Area** provides access to additional GPI setup menus. The **Scroll Area** provides three functions that are controlled by their respective **Scroll Knobs**:

- The top **GPI Output** knob selects the output port (**1** to **12**) that you want to set up. Note that your custom names are listed (as entered on the **GPI Name Outputs Menu**).
- The middle **Trigger** knob selects the output port's trigger type — **Edge** or **Level**.
- The bottom **Level** knob selects the output port's level — **Low** or **High**.

9. Using the information from the **Trigger Type** and **Trigger Level** columns in your **Standard GPI Output Worksheet**, set up the desired parameters for each GPI output (that you named in steps 2 through 6 above). These parameters affect the pulses sent *from* the Synergy switcher to each destination device:

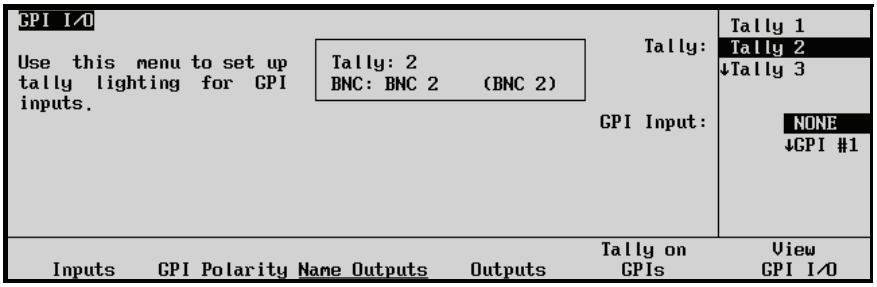
- When **Level** is assigned, the GPI output port's line is held at the selected state (low or high) until triggered, whereupon the line switches to the opposite state — and *holds* there.
- When **Edge** is assigned, the GPI output port's line is held at the selected state (low or high) until triggered, whereupon the line switches to the opposite state momentarily — and returns immediately to the original state.
- When **Low** is assigned, the GPI output port's line is normally high. When the port is triggered, the line goes low (to ground).
- When **High** is assigned, the GPI output port's line is normally low. When the port is triggered, the line goes high (released from ground).

Refer to your destination device's documentation for details on the specific type of GPI pulse that the device needs to receive.

This completes the procedure to set up your standard GPI output ports.

Tally on GPIs

Use the **Tally on GPIs** function to specify for each tally if it should be forced on by one of the GPI inputs.

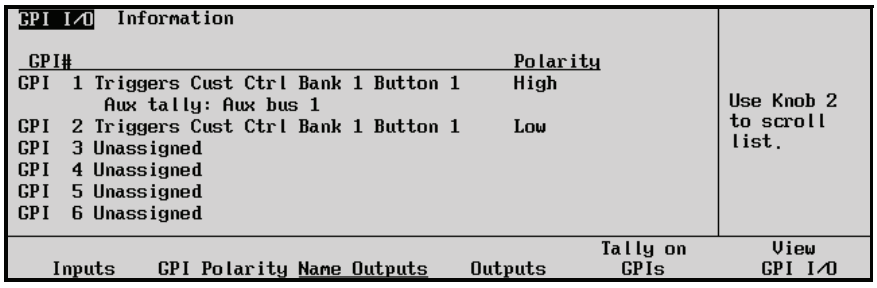


Tally on GPI Setup Menu

The top knob selects a tally number, while the middle knob specifies which GPI input (or **NONE**) should force the tally on. Multiple tallies can be forced on by one GPI input. This forcing is independent of the tallies being used to indicate, for example, which crosspoints are active. It is not possible to tell from the tally side if it is on because of a crosspoint being used or because of the GPI forcing.

GPI Information

Use the **View GPI I/O Menu** to display all the information about the GPI inputs and outputs in a concise format.



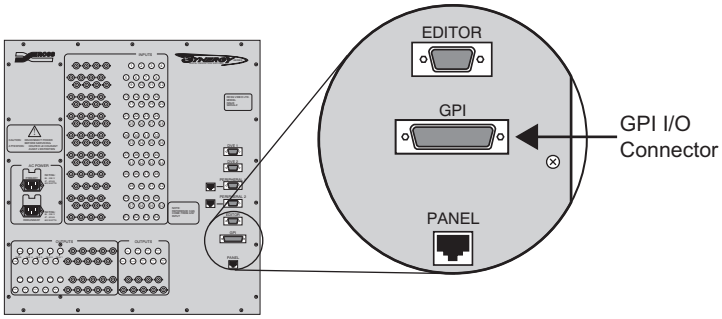
View GPI I/O Menu

For each GPI input, the display shows its transition type, area or custom control button and its polarity, if it has been assigned to trigger one of these operations. The display will show the associated Aux Bus, if one has been assigned to a GPI as outlined in the section "**Assigning Aux Bus Tallies**" on page 9–11, and will show a list of tallies that it forces if the GPI has been set up accordingly. If the text cannot all show in the display, it can be scrolled up and down with the middle knob.

Standard GPI Connections

In this section, using the "**Standard GPI Input Worksheet**" and "**Standard GPI Output Worksheet**" as guides, you will wire each GPI port that you have assigned to source and destination devices, respectively. Refer to Appendix A "**Specifications**" for standard GPI connector specifications.

The GPI connector is located on the rear of the frame as shown below:



Synergy Series Frame, Rear View – GPI I/O Connector

- Using the "**Standard GPI Pinout Table**" provided in Appendix A and the data from your "**Standard GPI Input Worksheet**" wire GPI input ports 1-12 (or simply the number of ports that you assigned) to each source device. Refer to your source device's manual for pinout information on the device's individual GPI output ports.
- Using the "**Standard GPI Pinout Table**" provided in Appendix A together with the data from your "**Standard GPI Output Worksheet**" wire GPI output ports 1-12 (or simply the number of ports that you named) to each destination device. Refer to your destination device's manual for pinout information on the device's individual GPI input ports.

Please note:

- Standard GPI Connector type: 25-pin "D" SUB Female
- GPI Out 1-12: 0 ~ +5V swing (TTL-compatible) outputs
- GPI In 1-12: TTL-compatible inputs
- Run all GPI cables in accordance with good engineering practice, and ensure that the cable will not be subjected to physical abuse.

Remote Aux Panel GPI Setup

New versions of the **Dedicated** and **Assignable** Remote Aux Panels include a feature that allows the manual override of the Aux panel selection via GPI triggers. For purposes of camera matching or monitoring, the feature overrides the selected Aux Bus crosspoint and manually switch to a camera's BNC — simply by pushing a button on the joystick of the Camera Control Unit.

Please note:

- Each *new-generation* Aux Panel provides eight GPI input ports. These GPIs are *completely separate* from, and are available *in addition* to those already provided on the frame. The GPI capability is not available on first-generation remote panels.
- A maximum of 64 GPIs can be distributed over eight different "new" remote panels, and the practical maximum limit of 16 Aux panels should still be observed. Thus, a system can effectively have 8 non-GPI panels working together with 8 new GPI-capable panels. The GPI-capable panels can be programmed to ignore all 8 GPIs, if desired. Note that this is applicable with Remote Aux panel firmware version 2.10 or later.
- Each new panel has provisions for *offsetting* its GPI port numbers, such that panel #1 uses ports 1 - 8, panel #2 uses ports 9 - 16, etc. The selection of panel # (offset + 1) is performed during programming mode of each remote Aux panel that will be used for remote GPIs.
- Each remote GPI port is dedicated *exclusively* to the control of Aux Bus signal selection, such as via a contact closure from a CCU. No other functions can be assigned to these remote GPIs.

Four steps are required to properly set up remote Aux panel GPIs:

- Remote Aux Panel GPI Input Worksheet
- Remote Aux Panel GPI connection
- Remote Aux Panel GPI programming
- Setting up Remote GPIs for CCU Joystick Aux control

Each step is explained in detail in the following sections.

Remote Aux Panel GPI Input Worksheet

Complete the following **Remote Aux Panel GPI Input** worksheet, or, to avoid marking up the ***Installation Guide***, use the worksheet provided in Appendix F, ***Switcher Installation Worksheets***, to make extra copies.

In the table, note that remote GPI numbers, group numbers, offset numbers and physical panel GPI numbers have already been filled in. For each remote Aux Panel GPI port:

- In the **Assigned Aux Bus** column, select the Aux Bus (**1** - **12**) that you want to assign to the GPI group (**1** - **8**).
- In the **Assigned BNC** column, select the switcher's BNC crosspoint that you want to select when the specific CCU's joystick button is pressed.
- In the **Physical Connection** column, note the Camera CCU that must be connected to the physical GPI line.

Remote Aux Panel GPI Input Worksheet

Remote GPI	Group / Offset / Physical GPI	Assigned Aux Bus	Assigned BNC	Type/Edge	Physical Connection
Sample Aux GPI 5	Group 1, Offset 0, GPI 5	Aux Bus 1	5 (Cam 4)		Cam 4 Joystick
1	Group 1, Offset 0, GPI 1				
2	Group 1, Offset 0, GPI 2				
3	Group 1, Offset 0, GPI 3				
4	Group 1, Offset 0, GPI 4				
5	Group 1, Offset 0, GPI 5				
6	Group 1, Offset 0, GPI 6				
7	Group 1, Offset 0, GPI 7				
8	Group 1, Offset 0, GPI 8				
9	Group 2, Offset 1, GPI 1				
10	Group 2, Offset 1, GPI 2				
11	Group 2, Offset 1, GPI 3				
12	Group 2, Offset 1, GPI 4				
13	Group 2, Offset 1, GPI 5				
14	Group 2, Offset 1, GPI 6				
15	Group 2, Offset 1, GPI 7				
16	Group 2, Offset 1, GPI 8				
17	Group 3, Offset 2, GPI 1				
18	Group 3, Offset 2, GPI 2				
19	Group 3, Offset 2, GPI 3				
20	Group 3, Offset 2, GPI 4				
21	Group 3, Offset 2, GPI 5				
22	Group 3, Offset 2, GPI 6				
23	Group 3, Offset 2, GPI 7				
24	Group 3, Offset 2, GPI 8				
25	Group 4, Offset 3, GPI 1				
26	Group 4, Offset 3, GPI 2				
27	Group 4, Offset 3, GPI 3				
28	Group 4, Offset 3, GPI 4				
29	Group 4, Offset 3, GPI 5				
30	Group 4, Offset 3, GPI 6				
31	Group 4, Offset 3, GPI 7				
32	Group 4, Offset 4, GPI 8				

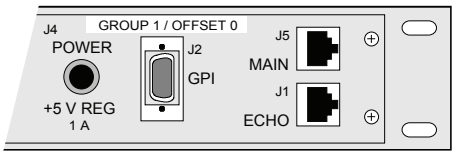
Remote Aux Panel GPI Input Worksheet

Remote GPI	Group / Offset / Physical GPI	Assigned Aux Bus	Assigned BNC	Type/Edge	Physical Connection
33	Group 5, Offset 4, GPI 1				
34	Group 5, Offset 4, GPI 2				
35	Group 5, Offset 4, GPI 3				
36	Group 5, Offset 4, GPI 4				
37	Group 5, Offset 4, GPI 5				
38	Group 5, Offset 4, GPI 6				
39	Group 5, Offset 4, GPI 7				
40	Group 5, Offset 4, GPI 8				
41	Group 6, Offset 5, GPI 1				
42	Group 6, Offset 5, GPI 2				
43	Group 6, Offset 5, GPI 3				
44	Group 6, Offset 5, GPI 4				
45	Group 6, Offset 5, GPI 5				
46	Group 6, Offset 5, GPI 6				
47	Group 6, Offset 5, GPI 7				
48	Group 6, Offset 5, GPI 8				
49	Group 7, Offset 6, GPI 1				
50	Group 7, Offset 6, GPI 2				
51	Group 7, Offset 6, GPI 3				
52	Group 7, Offset 6, GPI 4				
53	Group 7, Offset 6, GPI 5				
54	Group 7, Offset 6, GPI 6				
55	Group 7, Offset 6, GPI 7				
56	Group 7, Offset 6, GPI 8				
57	Group 8, Offset 7, GPI 1				
58	Group 8, Offset 7, GPI 2				
59	Group 8, Offset 7, GPI 3				
60	Group 8, Offset 7, GPI 4				
61	Group 8, Offset 7, GPI 5				
62	Group 8, Offset 7, GPI 6				
63	Group 8, Offset 7, GPI 7				
64	Group 8, Offset 7, GPI 8				

Remote Aux Panel GPI Connection

In this section, you will wire each Remote Aux Panel GPI port to the designated joystick switch on selected camera CCUs. If you wish to connect GPIs on *more than one* panel to different CCU joysticks, each connector must be wired at this time. The GPI connector is located on the rear of each "new generation" remote Aux panel.

- Using the "**Remote Aux Panel GPI Input Worksheet**" as a guide, label the rear of each panel with its assigned *group* and *offset*. A sample label is shown below.



Rear of the Panel Sample Label

- Using the "**Remote Aux Panel GPI Pinout Table**" provided in Appendix A, together with the data from your "**Remote Aux Panel GPI Input Worksheet**" wire the appropriate GPI ports to each designated Camera CCU. Refer to your camera's ***Installation Manual*** for pinout information on the device's Joystick contact closure. Momentary action, normally-open switches are recommended.

Refer to Appendix A "**Specifications**" for Aux Panel GPI connector specifications.

Please note:

- Remote Aux Panel GPI Connector type: 9-pin "D" SUB Female
- GPI In 1-8: Active low, short-to-ground to activate
- Run all GPI cables in accordance with good engineering practice, and ensure that the cable will not be subjected to physical abuse.

Caution

GPI inputs are only intended for connection to "dry contact", open collector type transistor outputs, or 5 VDC signals. Application of any negative voltages, or voltages in excess of 5 VDC may permanently damage the GPI inputs.

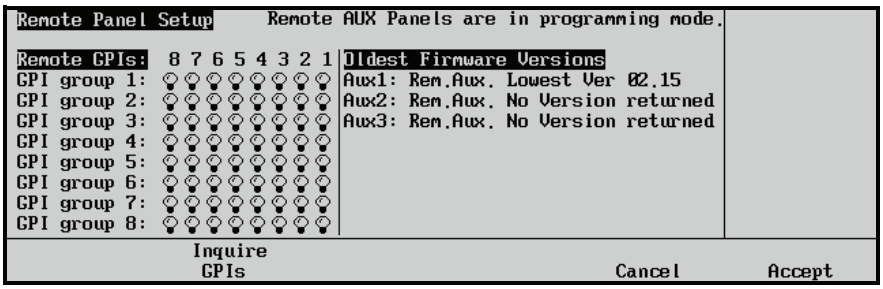
Remote Aux Panel GPI Programming

In this section, you will program your remote Aux panels for the desired *group* and *offset*. You can also test the GPI connections locally. Refer to your **Remote Aux Panel GPI Input Worksheet** to verify the groups and offsets for all buses.

1. Navigate to the **Aux Bus Remote Panel Setup Menu** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installation ⇨ Aux Bus ⇨ Remote Panels ⇨ Remote Panel Setup**.

   This step automatically places all remote panels (both assignable and dedicated) in programming mode, as displayed in the following sample menu.

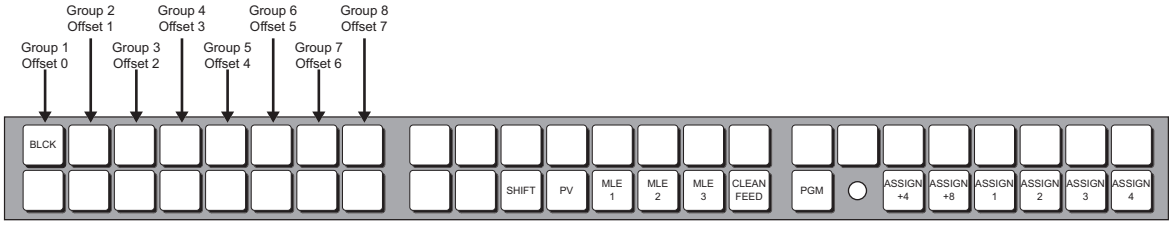
   Note that the on-air LED (on all panels) flashes to alert you that programming mode is now in effect, and the 12 buttons in the Control Panel's **Aux Bus Assign Group** become inactive.



Aux Bus Remote Panels Setup Menu

2. Go to the first **assignable** or **dedicated** Aux panel that you want to program.
3. Ensure that the panel is in "programming" mode (with the on-air LED flashing).
4. Press **CLEAN FEED** to switch the panel from "assignment" programming mode to "GPI" programming mode. The **CLEAN FEED** button flashes to indicate that GPI programming mode is active.

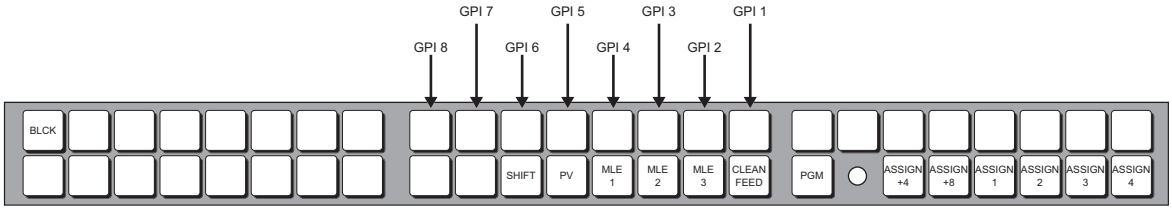
   With the GPI programming mode in effect, the first eight crosspoints on each panel allow you to set the selected panel's group and offset, as indicated below.



Remote Aux Panel GPI Group and Offset Programming Buttons

5. Press the crosspoint for the group and offset that you want to assign to this Aux Panel. The button lights to indicate your selection. Only one switch can be lit at a time.
6. To test your GPIs *locally* for valid contact closures, press each joystick button on the CCUs that are connected to this panel.

   As you press the CCU joystick buttons, the LEDs in the *second group* of eight crosspoints on the panel will indicate when each GPI has been shorted to ground, as shown below.



Remote Aux Panel Button GPI Contact Closure Status Buttons

Important

GPI status buttons are numbered from left to right, starting at **GPI 8** and counting down to **GPI 1**. These correspond to the 8 available ports on each panel, and also correspond to the arrangement of GPI icons on the **Remote Panels Menu**.

Note also that when each GPI is shorted to ground, the corresponding **GPI Icon** on the **Remote Panels Menu** will light. Refer to section "**Monitoring CCU Joystick Selections**" on page 9–41 for details on GPI icons.

7. When programming for this panel is complete, on the **Remote Panels Menu** press **Accept** to store all new settings and exit the programming mode. All remote Aux panels return to their normal operating mode, and each panel's new "group and offset" is stored in the remote panel's non-volatile memory.

8. Repeat steps 2 through 7 for each remaining panel for which you want to program remote Aux GPI groups and offsets.

Refer to Appendix A "**Specifications**" for a comprehensive table that lists all normal, GPI, and special diagnostic Aux panel programming modes.

Setting Up CCU Joystick Aux Control

Once the remote GPIs have been wired, and the remote panels have been programmed with the proper offsets, you can now assign each remote GPI to an Aux Bus and a switcher BNC input, and select the desired trigger type for it.

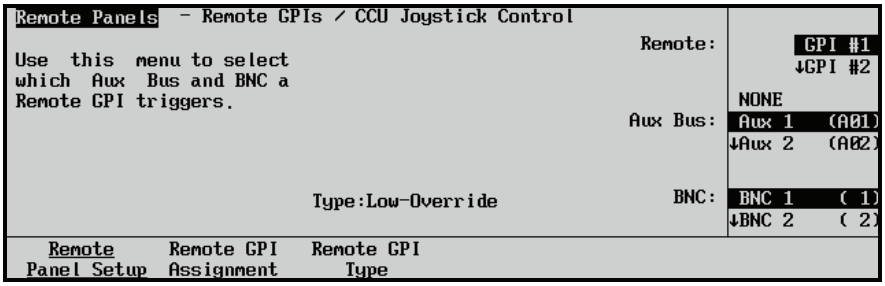
The **Remote GPIs/CCU Joystick Control Menu** allows you to select a remote GPI (**1** - **64**), assign it to a specific Aux Bus (**1** - **12** or **NONE**), and associate that GPI with a specific BNC (**1** - **64**).

Operating Tip

Use the data from your **Remote Aux Panel GPI Input Worksheet** to set up each desired remote GPI trigger.

Use the following procedure to configure your CCU Joystick Aux Control:

1. Navigate to the **Remote Panels Menu** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **Aux Bus** ⇨ **Remote Panels**.
2. Press **Remote GPI Assignment** to display the **Remote GPIs/CCU Joystick Control Menu**.



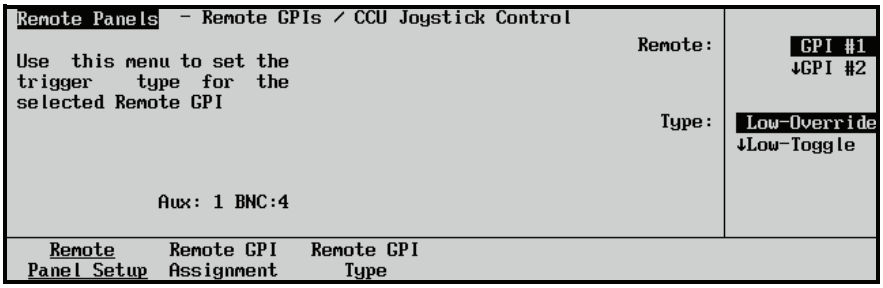
Remote GPIs/CCU Joystick Control Menu

3. Set up each desired remote GPI as follows:
   - Use the **Remote** knob to select the remote GPI that you want to use to trigger the BNC.
   - Use the **Aux Bus** knob to select the Aux Bus on which that GPI resides.
   - Use the **BNC** knob to select the switcher BNC input that you want to be selected when the remote GPI is triggered.

Note

The text above the **Remote GPI Type** label indicates the type of trigger selected for the highlighted remote GPI. This information tracks each GPI as you rotate the top **Remote** knob.

4. Press **Remote GPI Type** to display the **Remote GPI Type Menu**.



Remote GPI Type Menu

5. Set up the desired remote GPI trigger type as follows:
   - Use the **Remote** knob to select the remote GPI that you want to set the GPI type for.
   - Use the **Type** knob to select the type of control that you want to assign. You can select between the following:
     ~ **Low-Override** — Select this option for an input trigger to cause a temporary override on contact closure (high to low signal). When the contact opens again (low to high signal), any override on this Aux Bus is ended, and the Aux Bus output returns to its selected crosspoint. A **Low-Override** trigger acts as an override of the actual crosspoint selected, but can also be cancelled (overridden) simply by pressing another crosspoint. This is the default setting.

     ~ **Low-Toggle** — Select this option for an input trigger to cause an override on initial contact closure (high to low signal) if no override exists currently on this Aux Bus. The override remains in effect until the contact is closed a second time (assuming no other action has ended the override). A **Low-Toggle** trigger acts as an override of the actual crosspoint selected, but can also be cancelled (overridden) simply by pressing another crosspoint.

     ~ **High-Toggle** — Select this option for an input trigger similar to the **Low-Toggle**, except that an override is triggered when a contact is opened (low to high signals).

     ~ **Latch** — Select this option for an input trigger that will override the Aux Bus output with the selected crosspoint until overriden by another CCU joystick, a remote aux panel crosspoint button selection, or a switcher Aux Bus crosspoint button selection.

     ~ **Off** — Select this option to disable the highlighted remote GPI.

Note

The text above the **Remote GPI Assignment** label indicates the Aux Bus and BNC assigned to the highlighted remote GPI. This information tracks each GPI as you rotate the top **Remote** knob.

This concludes the procedure to configure your CCU Joystick Aux control.

Verifying BNC Selection

Use the following procedure to verify that the proper BNCs have been selected:

1. Go to each of the **assignable** or **dedicated** Aux panels (on which you have assigned override crosspoints).
2. Select **BLACK** on the Aux Bus panel.
3. Press each CCU joystick button in succession, and verify that the desired BNC is selected — overriding **BLACK**. Verify that when you release the joystick button, or press it a second time, **BLACK** is once again selected.

This completes the procedure to verify your BNCs.

CCU Joystick Aux Control Notes

Please note the following important points regarding the use of Override-type remote GPIs connected to CCU Joystick buttons:

- The selected override remains latched so long as the Joystick button is held down. The panel returns to its previous "normal" assignment when the button is released.
- If a *second* Joystick button is pressed while the first is being held, the second button's BNC will override the panel's current selection. In this situation, if *either* Joystick button is released, the panel returns to its previous "normal" assignment.

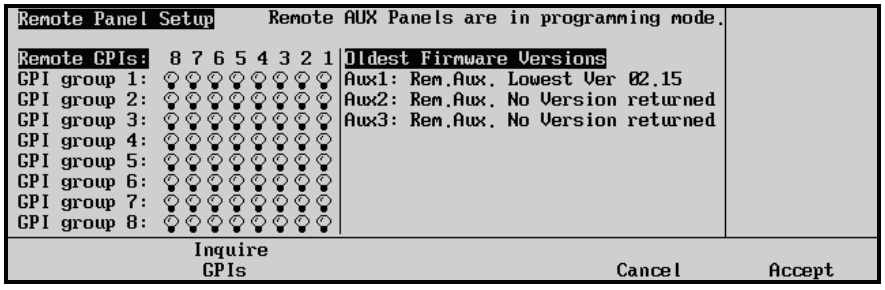
All GPI trigger types act as an override of the actual crosspoint selected, but can also be cancelled (overridden) simply by pressing another crosspoint.

Monitoring CCU Joystick Selections

The status of the Remote Aux Panel GPIs can be viewed on the **Remote Panel Setup Menu**.

Use the following procedure to monitor the current status of the Remote Aux Panel GPIs:

1. Navigate to the **Remote Panel Setup Menu** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installation ⇨ Aux Bus ⇨ Remote Panels ⇨ Remote Panel Setup**.



Remote Panels Menu

The **Main Area** is divided into three columns:

- The left-hand column lists the eight available GPI groups. These groups are assigned during programming mode.

- The middle column indicates the status of each GPI port, using two types of GPI icons.

Important

GPI icons are numbered from left to right, starting at **GPI 8** and counting down to **GPI 1**. These correspond to the 8 available ports on each Aux panel.

~ If a GPI icon is lit, the associated GPI port is **On** (shorted to ground) — and the associated CCU Joystick button is being held down (for normally open contacts).

~ If a GPI icon is dark, the associated port is **Off** (open).

- The right-hand column indicates the software version for each panel.

2. Press **Inquire GPIs** to poll the remote panels for the status of all connected GPIs.

This completes the procedure to monitor the current status of the Remote Aux Panel GPIs.

Switcher Calibration

The **Calibration Menu** allows you calibrate all analog controls on the switcher panel, including the faders, the XYZ positioner, and all knobs (excluding those to the right of the display). The **Calibration Menu** includes the following information:

Caution

Use this mode with caution. Perform the calibration only when you suspect that there has been "drift" in the knobs or the joystick, or that there is a "limit" problem with a fader.

- The **Main Area** provides a visual display of all analog controls, including the faders, positioner, and all the knobs.
- The **Label Area** provides only one function, **Accept**.

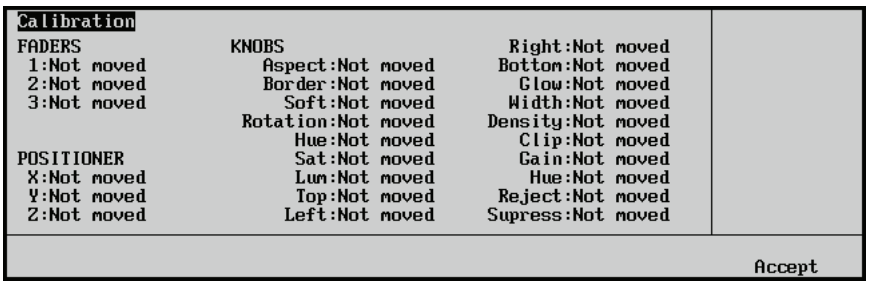
Important

You must calibrate *all analog controls* on your switcher. Failure to do so will map a false limit into switcher memory [for the control(s) that you did not calibrate], thus preventing proper switcher operation.

Calibrating the Analog Controls of the Synergy Switcher

Use the following procedure to calibrate the switcher's analog controls:

1. Navigate to the **Calibration Menu** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **MORE** ⇨ **Calibration**.



Calibration Menu

Note

The screen shot shown above is for a Synergy 4. The number of **Faders** (as shown in the **FADERS** column) differs on the **Calibration Menu** for the Synergy 2 and 3 switchers.

2. To calibrate the faders:
   - Move *each fader* to its full upper and lower limit.
   - Repeat this procedure two or three times for *each fader*.

   As you move the faders, you will see a series of numbers appear in the **Main Area**, under the **FADERS** heading. The numbers for each fader *may not match* — this is normal.
3. To calibrate the positioner, move *each axis* as follows:
   - Calibrate the X-Axis by moving the joystick fully left and right. Repeat this procedure two or three times.

- Calibrate the Y-Axis by moving the joystick fully up and down. Repeat this procedure two or three times.
- Calibrate the Z-Axis by twisting the joystick knob fully clockwise, then counterclockwise. Repeat this procedure two or three times.

As you move the joystick, you will see a series of numbers appear in the **Main Area**, under the **POSITIONER** heading. The numbers for each axis *may not match* — this is normal.

4. To calibrate the knobs:
   - Move *each knob* fully left and right.
   - Repeat this procedure two or three times for *each knob*.

   As you move the knobs, you will see a series of numbers appear in the **Main Area**, under the **KNOBS** heading. The numbers for each knob *may not match* — this is normal.
5. Ensure that the label **Not Moved** does *not appear* in the **Main Area**. This guarantees that you moved each control.
6. At this point, you can complete the calibration or exit the menu safely:
   - To exit the menu safely, without accepting the newly calibrated controls, press **HOME**.
   - To complete the calibration, press **Accept**.

Caution

When you press **Accept**, *do not* hold the positioner off center. This will program a false "center" for the joystick, and you will have to re-calibrate the switcher again to clear it.

This completes the procedure to calibrate the switcher's analog controls.

DSK Setup

The following DSK procedures are discussed in this section:

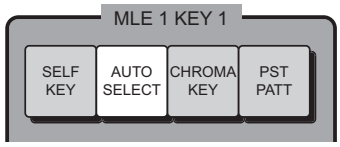
- Programming DSK Crosspoints
- Storing DSK Crosspoint Assignments
- DSK 3/4 (CDK-111A-M) Setup

Each procedure is explained in detail in the following sections.

Programming DSK Crosspoints

This setup procedure allows you to select the key type (and the key source) for each **Key Bus** button on **Downstream Keyer** (DSK) **1** and **DSK 2**.

Unlike each MLE's **Key 1** and **Key 2 Group**, each **Downstream Key Group** does *not* include the four buttons that allow you select the key type (**SELF KEY**, **AUTO SELECT**, **CHROMA KEY**, and **PST PATT**). These MLE key type buttons are shown in the illustration below:



MLE Keyer Key Type Buttons

Nevertheless, even though the key type buttons are not present in a DSK, each DSK *can* in fact perform all four key types. Each of the eight crosspoints in the Downstream Key Group's **Key Bus** can be *programmed* to store two elements:

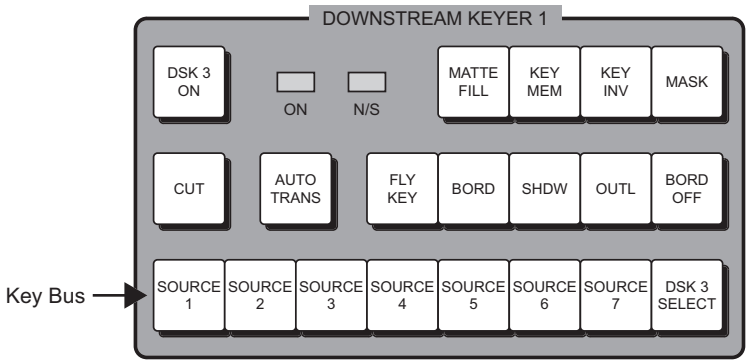
- Key type
- Key source

During a live program, when a **Key Bus** crosspoint is pressed, the key type and the key source are instantly called up for operator simplicity, convenience and instant access in on-air situations.

Note

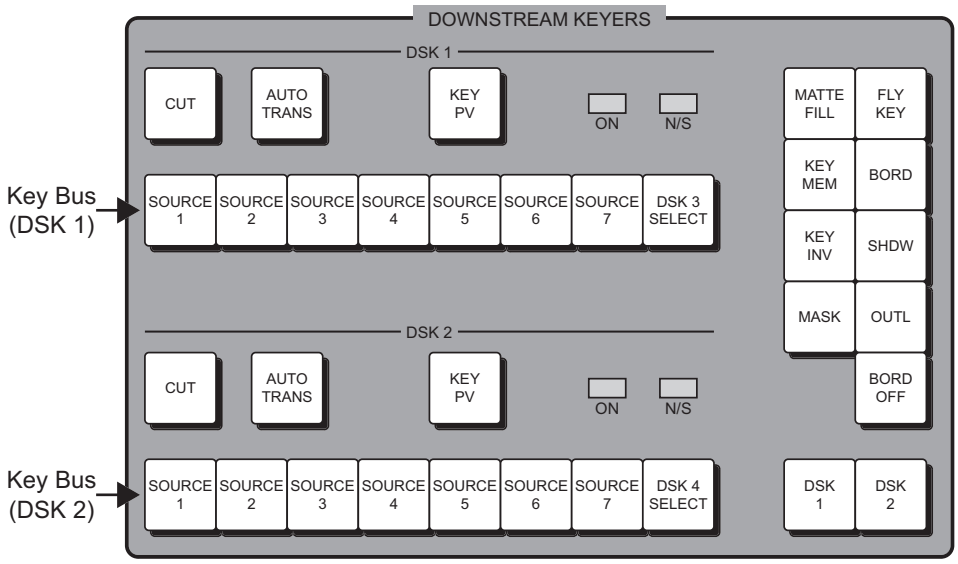
If you have enabled the L.A.S.T. protocol option, a delay will occur when you select crosspoints directly on any Key bus, including when you change DSK sources. Refer to

The figure below illustrates the **Downstream Key Bus** location on the Synergy 3 and 4 switchers. The bus is *identical* on both **DSK 1** and **2** (only **DSK 1** is shown below). Note that sample crosspoint names are used.



DSK 1 (and DSK 2) Key Bus on Synergy 3 and 4 Switchers

The figure below illustrates the two **Downstream Key Bus** locations on the Synergy 2 switcher. Note that sample crosspoint names are used.



DSK 1 and 2 Key Bus on Synergy 2 Switcher

Use the following procedure to program each crosspoint on the DSK's **Key Bus**:

Note

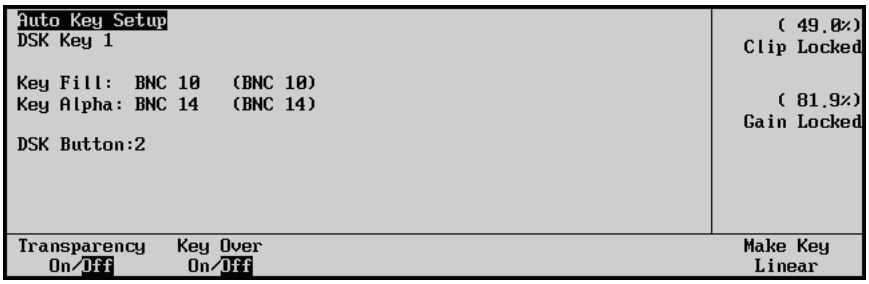
This procedure applies to *all* Synergy switchers.

1. To program the key type, press and *hold* the **Key Bus** button that you want to program.
2. Press any one of the four key type buttons (**SELF KEY**, **AUTO SELECT**, **CHROMA KEY**, and **PST PATT**) in *any* MLE keyer.
3. Release both buttons to complete the key type programming. The key type is now stored in memory for the selected button.
4. To program the key source, press and *hold* the same **Key Bus** button that you pressed in step 1.
5. Select the desired source on the **Preset Bus** in the Program/Preset MLE.
6. Release both buttons to complete the key source programming. The key source is now stored in memory for the selected button.

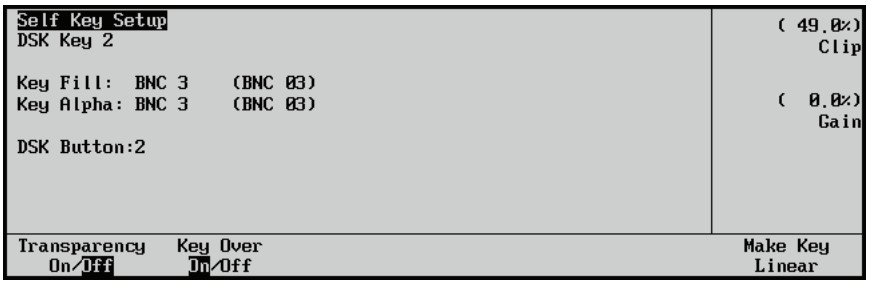
7. Press the DSK **Key Bus** button that you just programmed, and look at the display. Verify that the following choices are correct:

   - DSK Key number (**1** or **2**)
   - DSK **Key Bus** crosspoint (labeled as **DSK Button**)
   - Key type (labeled in the upper left corner)
   - Key Fill, with its associated name and BNC input number
   - Key Alpha, with its associated name and BNC input number

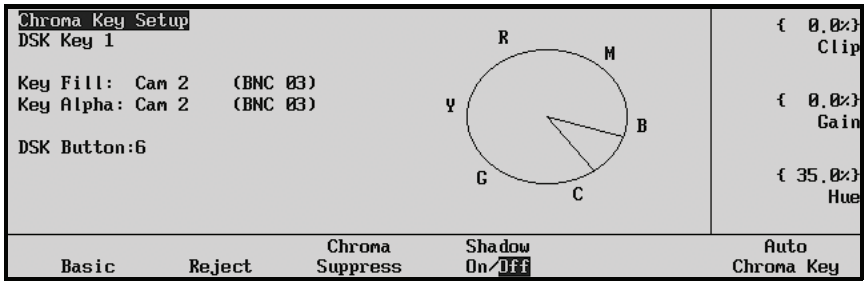
   The following four figures illustrate *sample* display screens, representing four types of keys that can be programmed in a DSK.



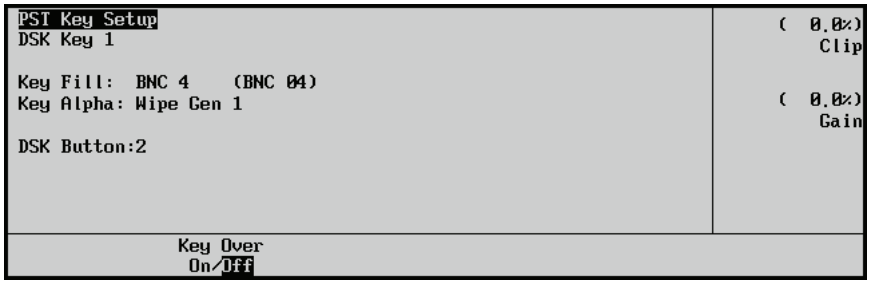
Sample DSK 1 Auto Key Setup Menu



Sample DSK 1 Self Key Setup Menu



Sample DSK 1 Chroma Key Setup Menu



Sample DSK 1 PST Key Setup Menu

8. Repeat steps 1 through 7 for each DSK **Key Bus** button — in *both* of your switcher's DSKs.

This completes the procedure to program each crosspoint on the DSK's **Key Bus**.

Notes on Programming DSK Key Bus Buttons

Please note:

- The actual source for any DSK **Key Bus** can be revealed on the **Preset Bus** — simply by *holding down* any one of the eight downstream **Key Bus** buttons, and then releasing the button once you have noted the source. This feature provides a quick and accurate way to verify your downstream key sources prior to taking them on air.
- You do *not* have to choose identical key type and sources on each DSK's **Key Bus**. For example, crosspoint 1 on DSK 1 can have CG 1, while crosspoint 1 on DSK 2 can have CG 2. Effectively, you can program 16 different key sources.
- During operation, remember that pressing a DSK **Key Bus** crosspoint calls up *both* the key source and the key type, for single-button simplicity.
- Remember that when you copy MLEs, you also copy the keyer priorities. You can change the keyer priorities in the **Key Setup Menus**. Refer to Chapter 7 "**Keying**" in the ***Synergy Series Operation Guide*** for more information.
- Remember that this programming procedure can be performed on-the-fly, during switcher operation — if you need to quickly program a key source for use in the current production. You may want to label one of the DSK Key Bus crosspoints "**TEMP**" (as shown in the illustrations above) for just this purpose.
- If you have not already done so, be sure to install pushbutton inserts (labels) in each **Key Bus** crosspoint button in both Downstream Keyers. For instructions, refer to Chapter 4, "**Preliminary Video Installation**" in the ***Synergy Series Installation Guide Volume I***.

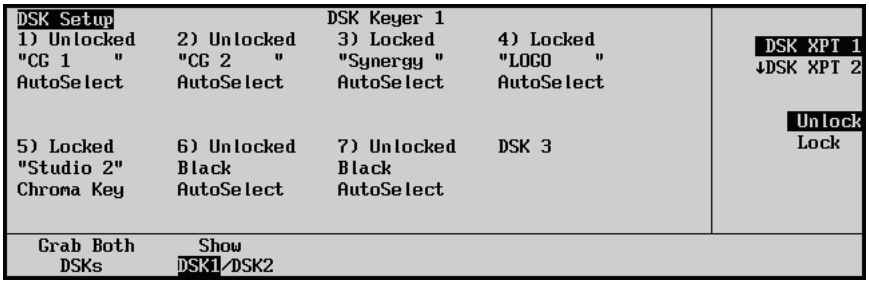
Storing DSK Crosspoint Assignments

The **DSK Setup Menu** allows you to store the default states for each DSK. The menu captures all eight crosspoints for the selected DSK, and stores the crosspoints, key types and clip/gain settings in the switcher's installation file. The menu also allows you to lock DSK crosspoints, so that they cannot be changed during normal switcher operation.

Functionally, whenever you reset the DSK (for example, by pressing the **STORE** and **RECALL** buttons in the **Global Memory Group**), the default DSK states will be restored.

Navigate to the **DSK Setup Menu** as follows:

- Press **HOME ⇨ MORE ⇨ Setup ⇨ Installation ⇨ DSK**.



DSK Setup Menu

The menu lists each DSK crosspoint, its lock/unlock status, the crosspoint's name, and the selected key type.

Capturing and Storing a DSK Setup

Use the following procedure to capture and store the DSK setup:

1. Ensure that your DSK crosspoints are programmed as desired. If not, refer to section "**Programming DSK Crosspoints**" on page 9–45.
2. Toggle the **Show DSK1/DSK2** button to choose the DSK that you wish to store.
3. Press **Grab Both DSKs** to update the menu with the current state of the selected DSK. This action stores the settings in memory.

This completes the procedure to capture and store the DSK setup.

Changing a DSK Crosspoint Lock Status

Use the following procedure to change a DSK crosspoint's lock/unlock status:

1. Toggle the **Show DSK1/DSK2** button to choose the desired DSK.
2. Use the top **Knob** to select the desired crosspoint (1 through 8).
3. Use the middle **Knob** to select either **Unlock** or **Lock**. This action changes the crosspoint's label in the main menu area.
4. Repeat steps 1 through 3 for all crosspoints that you wish to change.
5. If desired, press **Grab Both DSKs** to update the stored settings.

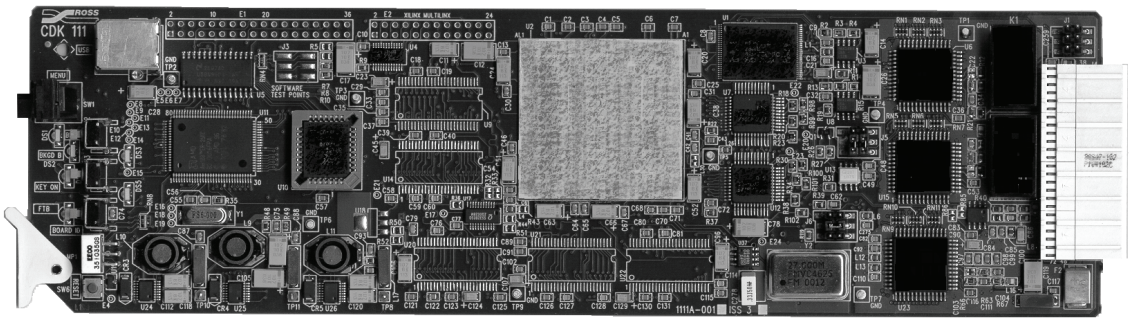
This completes the procedure to change a DSK crosspoint's lock/unlock status.

DSK 3/4 (CDK-111A-M) Setup

The Synergy switcher can utilize up to two optional DSK 3/4s (CDK-111A-Ms) that are installed in Ross Video's DFR-8110A-C and DFR-8104A-C DA frames. Each DSK 3/4 has **Self** and **Auto Select** key capabilities only. Borders, DVE Send transitions and Squeeze and Tease capability are *not* provided with external DSKs.

Note

This equipment is to be installed and serviced by qualified personnel only. All cautionary rules regarding static discharge apply. Refer to the section "**Static Discharge**" on page 2–2 for details.



CDK-111A-M Downstream Keyer

Each DSK 3/4 (CDK-111A-M) has independent PGM and PV serial digital video outputs and four serial digital video inputs – **BKGD1**, **BKGD2**, **KeyVideo** and **KeyAlpha**. The **BKGD1** input is also used as the reference and, therefore, must always be present for the card to provide a video output.

The following DSK 3/4 procedures are discussed in this section:

- Installing the DSK 3/4 (CDK-111A-M) Card
- Setting up Communications
- Setting up Aux Buses

Each procedure is explained in detail in the following sections.

Installing the DSK 3/4 (CDK-111A-M) Card

Use the following procedure to install the CDK-111A-M card:

Caution

Observe all static discharge precautions throughout the procedure.

1. It is not necessary to power down either the Synergy switcher chassis or the DA frame when installing or removing the CDK-111A-M card.
2. Identify the slot in which you want to install the card. Connect cabling as described in the section "**DSK 3/4 (CDK-111A-M) Cabling**" on page 3–9.
3. If you are replacing a *standard* DA card with a CDK-111A-M external downstream keyer, carefully remove the selected card from the chassis slot that you identified in Step 3. You can store the card for future use, or you can install it in another appropriate open slot in the frame.
4. Carefully install the CDK-111A-M card in the chassis and secure it with the ejector latch on the card edge.
5. Repeat steps 3 to 5 if you wish to install a second CDK-111A-M card.

Important

Before turning on the power, please ensure that the rotary switch on the front edge of the CDK-111A-M card is turned to position 6. This is the normal operating position for your DSK 3/4.

This completes the procedure to install the CDK-111A-M card.

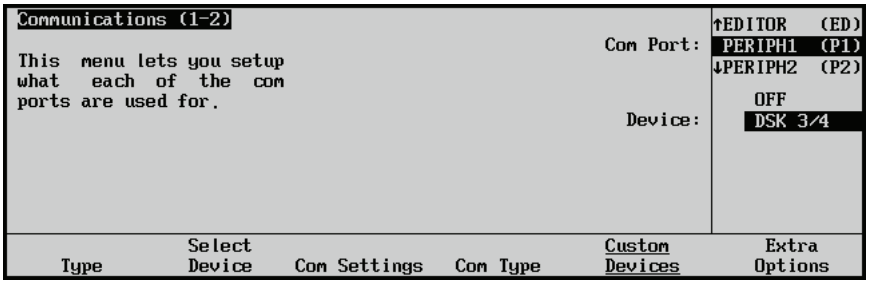
Setting up Communications

Use the following procedure to set up communications with a CDK-111A-M external downstream keyer:

Note

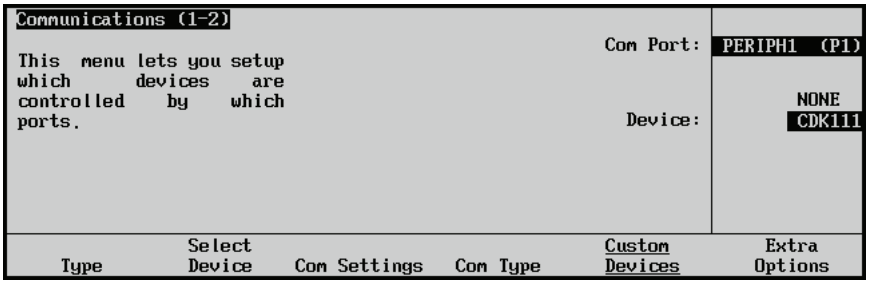
After setting up communications between a Synergy switcher and an DSK 3/4, the button that was designated as **SOURCE 8** in the **Downstream Keyer 1** panel area is now **DSK3 SELECT** (and **DSK4 SELECT** for **Downstream Keyer 2**). If you want to retain a source that was on that button, it should be reassigned to another button on your switcher before setting up communications with the CDK-111A-Ms.

1. Ensure that the CDK-111A-M cards are installed. If not, please refer to the section above titled "**Installing the DSK 3/4 (CDK-111A-M) Card**" and the "**DSK 3/4 (CDK-111A-M) Cabling**" section in **Chapter 3**.
2. Navigate to the **Communications Menu 1-2** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installation ⇨ Communications**.
3. Press **Type** to display the **Communication – Type Menu**.



Communications –Type Menu

4. Use the **Com Port** knob to select the **Periph1 (P1)** communications port.
5. Use the **Device** knob to select the **DSK 3/4** (external downstream keyer) device.
6. If you have two CDK-111A-M cards installed, you will need to set up the second one in a similar manner. Use the top **Com Port** knob to select the **Periph2 (P2)** communications port and the middle **Device** knob to select the **DSK 3/4** (external downstream keyer) device.
7. Press **Select Device** to display the **Select Device Menu**:



Select Device Menu – CDK-111A-M

8. Use the **Com Port** knob to select the **Periph1 (P1)** communications port.
9. Use the **Device** knob to select the **CDK111**.

10. If you have two CDK-111A-M keyers installed, repeat steps 8 and 9, rotating the top **Com Port** knob to select **Periph2 (P2)** and the middle **Device** knob to select the second **CDK111**.

Note

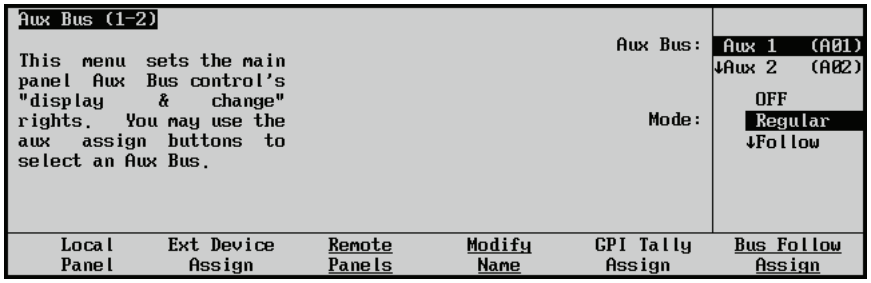
If, for any reason, the CDK-111A-M card is not being used and is removed from the frame, you must access the **Select Device Menu** and reset the middle **Device** knob to **NONE.**

This completes the procedure to set up communications with a CDK-111A-M external downstream keyer.

Setting up Aux Buses

Use the following procedure to set up the Aux Buses to feed key video and alpha to the CDK-111A-M downstream keyer(s):

1. Navigate to the **Aux Bus Menu 1-2** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **Aux Bus**.
2. Press **Local Panel** to display the **Aux Bus Local Panel Setup Menu**.



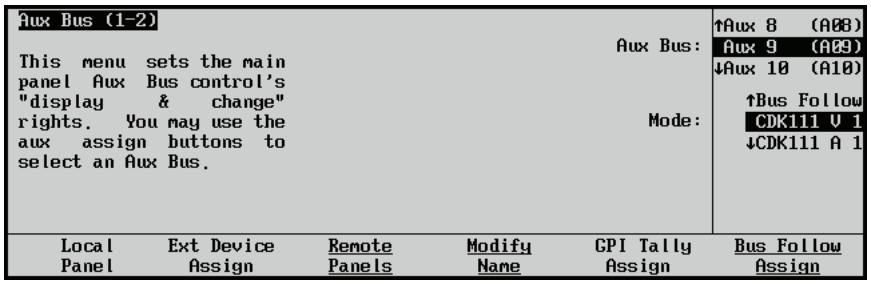
Aux Bus – Local Panel Setup Menu

3. Use the **Aux Bus** knob to select the Aux Bus that you want to use to feed the CDK-111A-M.

Note

Aux Buses used for CDK-111A-Ms may be timed or untimed.

4. Use the **Mode** knob to select the video or alpha you wish to feed to the CDK-111A-M. The following figure illustrates a sample menu:



Aux Bus – Local Panel, CDK-111A-M Setup Menu

When you scroll through the options, you will notice the following "modes":

- **CDK111 V 1**
- **CDK111 A 1**

- **CDK111 V 2**
- **CDK111 A 2**.

The capital “V” stands for “video” and the “A” for alpha. The numbers indicate the CDK-111A-M card that you are feeding, with 1 being the card connected directly to the **PGM** and **PV** outputs, and 2 being the card that is cascaded from the first.

5. If required, repeat steps 3 and 4 to assign the required Aux Buses for the other CDK-111A-M video and key outputs.

Note

The **Mode** area of the Aux Bus Local Panel setup menu will always show two CDK-111A-Ms even if only one (or none) is installed in the system.

This completes the procedure for setting up the DSK 3/4.

Chroma Key Setup

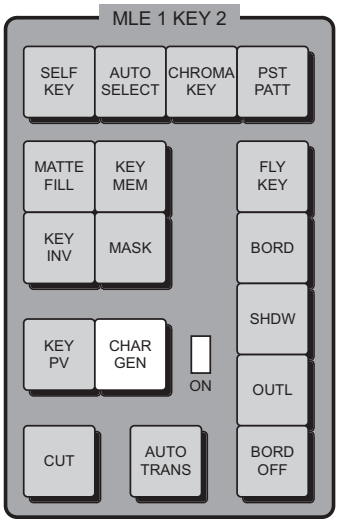
Chroma keying is a standard feature in every Synergy switcher's keyer, including both downstream keyers. Each chroma keyer features internal 4:4:4 chroma channel interpolation — from *any* input. This means that *no special input setup procedures* are required in order to perform a chroma key — you can chroma key off of *any serial digital input* as required.

Note

If you have purchased the **Ultimatte Insider** option, please refer to Appendix D, "**Hardware Options**." Instructions are provided for installing the board, setting it up via the menu system, and setting up special Ultimatte Auto Select keys.

Favorite CG Setup

This setup procedure allows you to select a "favorite" CG that you want to place on the **CHAR GEN** button in each MLE's **Key 2 Group**. The location of the button is shown below:



CHAR GEN (Favorite CG) Button Location

The button allows you to instantly recall and select your most frequently-used character generator, without having to hunt for it on the MLE's **Key Bus** — thus saving two steps during production: (1) selecting the key type, and (2) selecting the key source.

Programming a Favorite CG Button

Use the following procedure to program the "favorite" CG button:

1. Press and *hold* the **CHAR GEN** button in *any* MLE's keyer.
2. On the selected MLE's **Key Bus**, press the button for your most frequently used CG.
3. Release both buttons. The selected CG is now stored in memory, and will be recalled each time **CHAR GEN** is pressed — in any MLE.

This completes the procedure to program the "favorite" CG button.

Notes on Programming a Favorite CG Button

Please note:

- If you have a key type already set up when you press **CHAR GEN**, the entire keyer is cleared. In addition to the favorite CG, the system will automatically select **AUTO SELECT** and (if an Auto Key has been properly set up during installation), **KEY MEM**.
- The "favorite" CG programming function is global. Regardless of where you program the function, all **CHAR GEN** buttons (in all MLE's) will now recall the selected CG.

System Timing

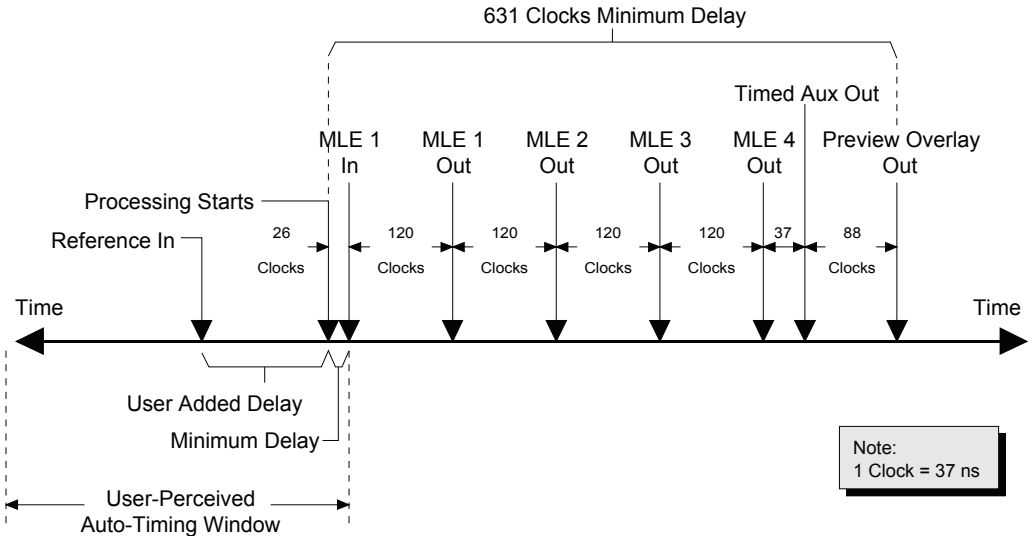
This section provides information regarding Synergy system timing. The following topics are discussed:

- Auto-timing Technical Overview
- Non-Sync LEDs
- Key Timing
- Reference Delay Adjustment

Auto-timing Technical Overview

Within the Synergy switcher, auto-timing does not occur on the input card. Instead, it occurs on the input buses that feed each individual MLE. The auto-timing function is accomplished by the **Deserializer Modules** (4000A-061).

Use the following diagram for reference throughout this section.



Synergy Auto-timing Diagram

Using MLE 1 as an example, assume that MLE 1 is at "zero time" and all inputs are expected to line up with the supplied reference that feeds the MLE. Synergy's Deserializer Modules can delay a bus (that is fed with an untimed input) to make it line up with the reference input. This delay capability is zero to one line.

Auto-timing would be simple if all inputs were lined up with the reference, or if they were no more than one line early. With regard to late signals, and because there is not a "negative delay" generator, the reference itself can be delayed instead — and therefore, the whole MLE.

For example, if the reference is user-delayed by ½ line, then a late signal can now be auto timed ± ½ line. In this case, the input signal is really being delayed between zero delay and one line delay, but on the output it looks like a negative delay. The cost of this (in terms of timing) is that the processing delay of the MLE (and therefore the switcher) would be increased by ½ line.

Each MLE takes "time" to process its video (about $^{1}/_{16}$ line). In addition, MLEs are cascaded up to four deep on a Synergy 4, and the timed Aux Bus must be able to auto-time any untimed input to the MLE 4 program output. That means that the reference feeding a timed Aux Bus Deserializer Module

must be delayed by 4/16 (or ¼) of a line. If the Deserializer Module can only delay a video signal from zero to one line, adding this ¼ line delay to the reference reduces the auto-timing window by ¼ line. This occurs because MLE 1 does not see this delay, and a signal has to auto-time to both MLE 1 (at the start of the switcher) and a timed Aux Bus (at the end of the switcher) — simultaneously.

At this point, please note that Synergy's quoted auto-timing specification of ± ¼ line is a *very* simplified quantity. When the user adjusts the reference delay, they are *also* increasing the delay through the switcher. Therefore, the auto-timing capability ranges from zero to ¾ line — relative to whatever delay the user adds. In the middle, you get ± 3/8 line, but Synergy quotes ± ¼ line — in order to be conservative.

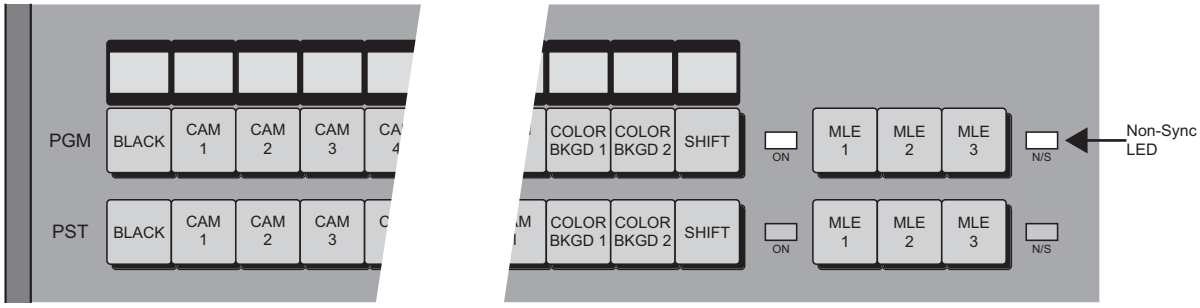
When you adjust the reference delay, you will find that it can actually be adjusted to about 1.5 lines. This is the extreme limit of the hardware's capability and in theory, this capability could time an input that is much later than the supplied reference.

To conclude the discussion, note that the goal of Synergy's auto-timing algorithm is to lock an input's horizontal edge with the edge of reference. The algorithm will always succeed in this task, assuming that valid video is supplied. This is true — even if the incoming video is not locked to the reference and has a significant field-to-field drift! Note also that a vertical phase detector circuit will detect a vertical edge mismatch between the reference and the auto-timed video, and cause the non-sync LED to light on the control panel when this "non-sync" source is selected.

Non-Sync LEDs

Each Synergy switcher auto-times any source that is within ± ¼ line of the reference input. Typically, no special procedures are required in order to time your inputs. If you wish to adjust the switcher's reference delay, in order to match the *entire* switcher to incoming sources, refer to section "**Reference Delay Adjustment**" on page 9–58. If an input is outside of the range (± ¼ line), the following rules apply:

- The input will continue to be horizontally phased, but it will H-phase on a subsequent line.
- Visually, the input will be horizontally locked, but it will appear "shifted" down the screen.
- The **N/S** (Non-Sync) LED will light, indicating that source on that specific bus is non-synchronous, as shown in the figure below.



Non-Sync Indication

The **N/S** LED serves as a *warning* only, indicating that the input's timing should be fixed *at the source*. In Chapter 4 of the ***Synergy Series Operation Guide***, refer to the "**Non-sync Indicators**" section for additional information.

In this condition, with a non-sync LED lit, the source is still usable. You *can* perform cuts, dissolves, and other effects — however, remember that the non-synchronous source will be shifted vertically.

Key Timing

The Synergy switcher provides *no adjustments* for key timing. All key timing adjustments must be made *at the source*.

Reference Delay Adjustment

The **Reference Menu** lists the:

- **MLE Delay** for each MLE,
- the **Timed Aux Delay**,
- the **Preview Overlay Delay;** and
- the **Additional Delay** that you can add (up to 64 microseconds). This parameter allows you to properly match the *entire* switcher to incoming sources.

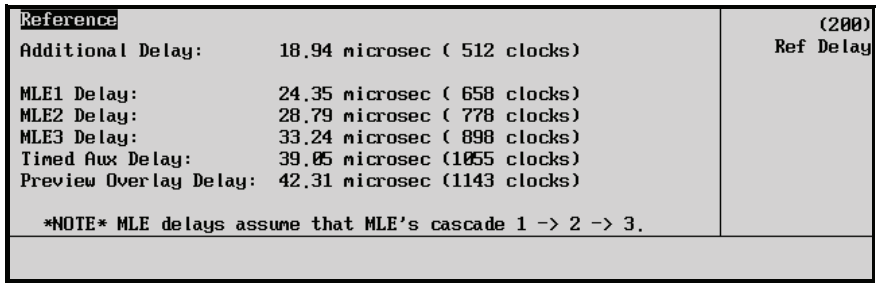
Use the following procedure to adjust the switcher's internal reference delay:

Note

When you adjust the **Selected Delay**, you are adjusting the reference coming in to the switcher — rather than the outputs.

Both the Aspectizer and the Squeeze & Tease cards add an additional delay of one frame to the Synergy switcher.

1. Navigate to the **Reference Menu** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installation ⇨ MORE ⇨ Reference**.



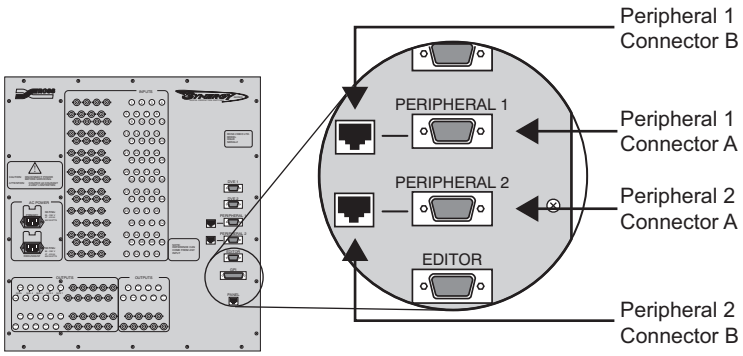
Reference Menu

2. Use the **Ref Delay** knob to adjust the delay.

This completes the procedure to adjust the switcher's internal reference delay.

Peripheral Control Setup

Four connectors are provided for *future* peripheral control capability, as illustrated in the figure below:



Synergy Series Frame, Rear View – Peripheral Connectors

- **Peripheral 1 Connector A** is a 9-pin "D" RS-422 connector that is provided for connection to a primary peripheral device.
- **Peripheral 1 Connector B** is an 8-pin shielded Telco connector that is provided for future control requirements, such as control panel networking. The port shares the same internal circuitry as **Peripheral 1 Connector A**. Only *one* of the two ports can be used at a time.
- **Peripheral 2 Connector A** is a 9-pin "D" RS-422 connector that is provided for connection to a secondary peripheral device.
- **Peripheral 2 Connector B** is an 8-pin shielded Telco connector that is provided for future control requirements. The port shares the same internal circuitry as **Peripheral 2 Connector A**. Only *one* of the two ports can be used at a time.

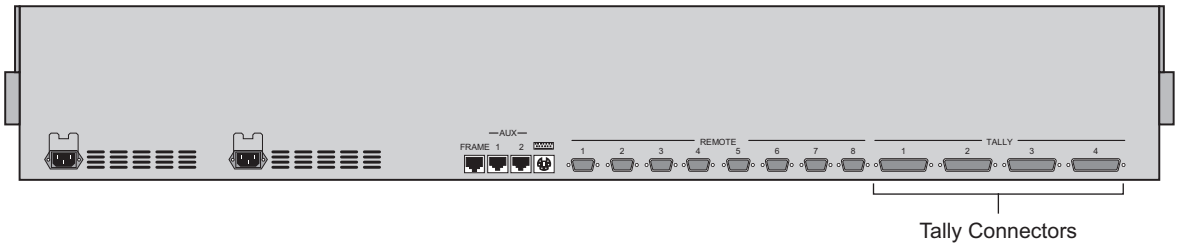
Note

All peripheral control connector functionality is not currently implemented.

Tally Connections

In Chapter 6, you used the **Tally Setup Menu** to select the tally relays that are activated when control panel buttons are pressed. In this section, using the **Tally Column** on your "**Input Worksheet**" as a guide, you will wire each tally that you have assigned.

All four tally connectors are located on the rear of the control panel as shown below:



Synergy Series Control Panel, Rear View – Tally Connectors

- Connectors 1 and 2 (and the associated tally relay electronics) are *standard*, each providing 18 tally relay contacts — for a total of 36 tallies.
- Connectors 3 and 4 are provided as standard, but the associated tally electronics are *optional*. If the **Extended Tallies** option has been purchased, and additional 18 tally relay contacts (per connector) are provided — for a total of 72 tallies. Refer to the section "**Installed Options Menus**" on page 2–37 for instructions on verifying the status of installed options.
- Each connector is a 25-pin "D" SUB female
- Each relay provides a contact closure to TALLY COMMON.

Using the tally pinout tables provided in Appendix A and the **Tally Column** data from your **Input Worksheet**, wire each 25-pin tally connector. Connect the other end of the tally cable to your external equipment as follows:

- Refer to the section "**Tally 1 Connector Pinouts**" for specifications for tallies 1 - 18.
- Refer to the section "**Tally 2 Connector Pinouts**" for specifications for tallies 19 - 36.
- Refer to the section "**Tally 3 Connector Pinouts**" for specifications for tallies 37 - 54.
- Refer to the section "**Tally 4 Connector Pinouts**" for specifications for tallies 55 - 72.

Please note:

- All relay contacts are normally open.
- Tally relay contacts are rated for a maximum of 10 VA (100 Vmax, 0.5 Amax) into a non-inductive load.
- Make all connection straight on, and allow at least four inches of cable clearance at the rear of the control panel.
- Be sure to fasten the clips to hold each connector in place.
- Run all tally cables in accordance with good engineering practice, and ensure that the cable will not be subjected to physical abuse.

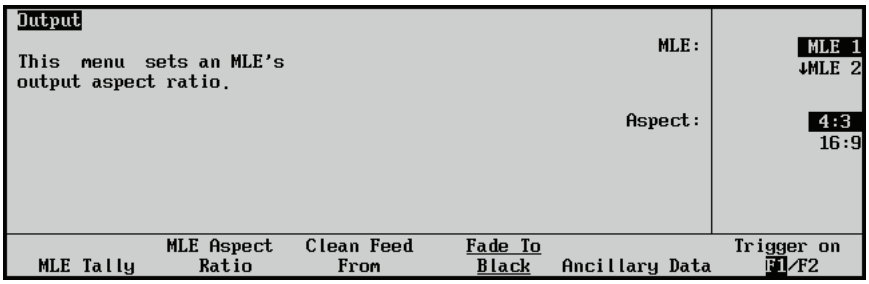
Aspect Ratio

In the **Output Menu**, the **MLE Aspect Ratio** function allows you to change the aspect ratio of each MLE. Affected switcher modes include:

- A circle wipe in 4:3 remains a circle in 16:9.
- 3D flown keys may change shape from squares to rectangles.

Use the following procedure to set the MLE output:

1. Navigate to the **MLE Aspect Ratio Menu** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installation ⇨ Output ⇨ MLE Aspect Ratio**.



MLE Aspect Ratio Menu

2. Use the **MLE** knob to select the MLE.
3. Use the **Aspect** knob to select either **16:9** or **4:3** mode.

This completes the procedure to set the MLE output.

Completing Setup

In This Chapter

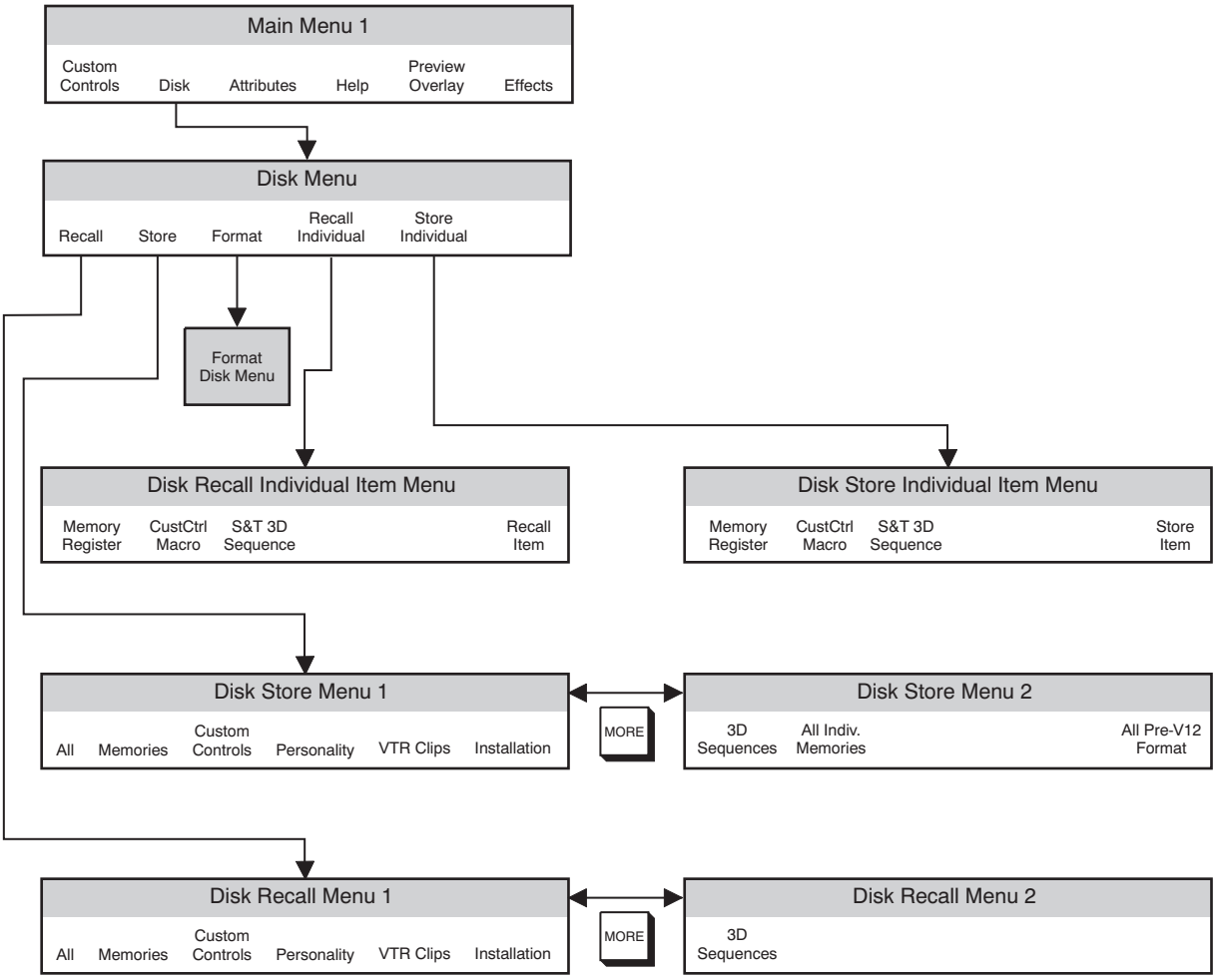
This chapter provides instructions for storing switcher configurations on a storage device, such as a floppy disk or USB key, and resetting the switcher to factory default values if required. The following topics are discussed:

- Disk Menu Tree
- About the Synergy File Storage System
- Saving Configurations
- Recalling Configurations
- Setting Up Safe Title and Center Preview Overlay
- Restoring Factory Default Settings
- Recall Factory Menu Tree
- Recall Factory Procedure
- When Configuration is Complete

Disk Menu Tree

The figure below illustrates the *portion* of the menu tree that is used for saving and recalling switcher setups.

Use this figure for reference during the following procedures.



Disk Menu Tree

About the Synergy File Storage System

The Synergy file storage system arranges those portions of the switcher that are software-configurable (and user-configurable) into the following categories of registers. These registers can then be saved to a storage device such as a floppy disk or USB key.

- **Memory Registers**

  This category stores and recalls MLE settings or "snapshots" of the various switcher MLEs. A memory register can be programmed from several locations on the panel: in the **Global Memory Group** or in an individual MLE **Memory Group**. When saved to a storage device, all 100 memory registers are stored in the file **MEMORYS.SYN**. If the **Squeeze & Tease WARP** option is installed, all 100 S&T3D memories are stored in the file **ST3DMEM.SYN.**

- **Custom Control Registers**

  This category stores and recalls the functions that you have programmed into the switcher's **Custom Control Group**. These functions can include VTR remote control commands, DVE control commands and other panel-specific macros (programmable keys). When saved to a storage device, the filename **CUSTCTRL.SYN** is used.

- **Personality Registers**

  This category stores and recalls settings that are user-configurable, and which apply to a TD's particular *style of operation* rather than to basic installation parameters. When saved to a storage device, the filename **PERS.SYN** is used. The following data is contained in the file:

  - Favorite CG Setup
  - Time Clock Direction
  - Transitions (on which the Time Clock resets)
  - Time Clock Reset Time
  - Time Clock Position
  - VTR Time Code Position
  - Source ID Position
  - Mnemonics
  - PIP II Memory
  - DVE Send Internal/External
  - Audio Transitions
  - White Flash
  - Preset Black
  - Fade to Black
  - Second Transition Preview
  - All Preview Overlay
  - User Wipes
  - CG Mode, Channel and file/folder settings
  - Ultimatte Quick Recall
  - Double Press Rate
  - Memory Bank Cycle Max
  - Memory Attributes
  - Matte Limit
  - Auto-Recall
  - DSK Cut
  - Aspectizer input/mode select
  - 3D Button Pattern Assignment
  - Panel Sleep Time
  - Next Available Memory
  - Recall Deleted Memories

- **VTR Clip Registers**

  This category stores and recalls VTR clip registers (in timecode format). When saved to a storage device, the filename **VTR.SYN** is used.

- **Installation Registers**

  This category stores and recalls all setup and configuration settings. When saved to a storage device, the filename **INSTALL.SYN** is used. The following data is contained in the file:

  - BNC Input Names
  - BNC Input Types
  - Tally Configuration
  - Alpha Setup
  - Auto Key Configuration
  - Panel Button Assignments
  - Option Card Setups
  - Calibration
  - Reference Delay
  - Aux Bus Setup
  - Output Setup
  - Clean Feed Setup
  - GPI Input / Output Setup
  - Device Setup
  - Editor Communications Setup
  - Custom Banks
  - Custom Device Setup

- **3D Sequence Registers**

  This category stores and recalls all 3D Sequence registers. When saved to a storage device, the filename **ST3DSEQ.SYN** is used.

- **All Individual Memories Registers**

  This category stores switcher memories individually to their own separate files. When saved to a storage device, the filenames used are **STMEM##.SYN**, which identifies a Squeeze & Tease 3D memory, and **MEM##.SYN**, which identifies a regular switcher snapshot. Note that **##** represents the number of the memory register.

Using the Disk Menu

The file storage and recall system is accessible via the **Disk Menu**. This menu provides complete flexibility with regard to registers. You can independently store or recall individual categories as desired (without affecting other files), or you can store *all categories* at once.

Note

You *cannot* store to or recall from a storage device while a custom control function is playing.

One 1.4 MB high-density floppy disk stores one complete set of registers (all categories), as outlined above.

Although one disk is capable of storing all categories of Synergy registers, there is a physical limitation of 224 files in the root directory. Please keep this in mind if you are storing individual memories, custom controls and S&T 3D sequences to a floppy disk.

Even though all the data listed above is stored in the switcher's non-volatile "flash" memory, it is always wise to keep an archive or "engineering" disk or USB key on hand that contains your important setups and configurations. Not only does this provide security in case you need to re-program the switcher, but it also allows you to have a variety of switcher *files* available (on

multiple storage devices), should you need to load *different* configurations — for different clients or different production situations.

Notes on Using a USB Key

This option replaces the floppy disk drive on the control panel, and supports industry standard USB keys. Once the option is installed, you can store and recall complete switcher setups including memory functions, switcher personalities, installation parameters, and more, to a USB key.

Important

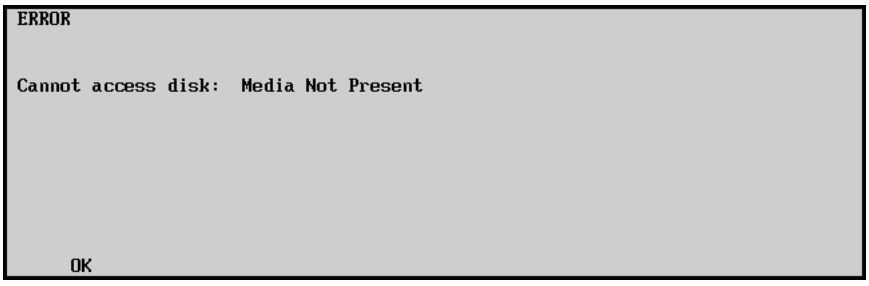
A decrease in performance will result from storing more than one set of Synergy files on your USB key. One set of Synergy files should not comprise more than half of the available memory on your USB key.

Consider the following notes when using a USB key:

- Write protect should be disabled on any USB key.
- All Synergy files must be stored in the Root directory of the USB key.
- Only DOS or Windows™ partitions in the USB key directory are supported.
- You can use a PC to transfer files between floppy disks and a USB key. Ensure that the switcher files are set in the root directory of the USB key before attempting to save and recall switcher setups.
- You must wait 5 seconds after inserting the USB key into the USB port before you can save or recall registers to it.
- A delay can be expected when saving files to a USB key with limited memory space.
- You may receive a "**USB Upgrade Failed**" error message when the Synergy control panel is powered on. Should you receive this error message, contact Ross Video Technical Support for instructions on how to correct the error.

Storage Errors

When you access a storage device, or store a configuration to a storage device, the Synergy switcher performs a validation to ensure that the contents have not been corrupted. If there are no problems with the storage device you will proceed to the next menu. If there are problems, an error screen will be displayed indicating the problem that has occurred.



Disk Error Screen — Media Not Present

The following is a list of error messages and possible solutions:

Important If possible, backup any Synergy files from the storage device before attempting to correct the following errors.

- **File allocation error found on this disk** — The switcher has detected an error with the file allocation table (FAT) or root directory of the storage device. Run **Check Disk** or **Scan Disk** from a computer in order to repair the storage device.
- **Read Write Error** — The switcher was unable to read or write to the floppy disk. Run **Check Disk** or **Scan Disk** from a computer in order to repair the floppy disk.
- **Controller Error** — The switcher was unable to communicate properly with the storage device controller. Run **Check Disk** or **Scan Disk** from a computer to ensure there are no problems with the storage device.
- **Media Not Present** — The switcher was unable to detect a storage device present. Ensure that the storage device is properly inserted into the switcher.
- **Invalid Media** — The switcher was unable to access the storage device.
  - ~ If you are using a floppy disk, ensure that the floppy disk has been IBM-formatted and run **Check Disk** or **Scan Disk** from a computer to ensure there are no other problems with the disk.
  - ~ If you are using a USB key, ensure that the Write Protect on the USB key is disabled. Only one set of Synergy files should be saved on the USB key and that they comprise less than half the memory space. Ensure that you have waited 5 seconds after inserting the USB key into the USB port before attempting to save or recall registers to it.
- **File System Timeout** — The switcher did not receive a proper response from the floppy drive or USB port for a prolonged period of time. Ensure that the storage device is properly inserted into the switcher and run **Check Disk** or **Scan Disk** from a computer to ensure there are no other problems with the storage device.

Note If any of these problems persist, contact Ross Video Technical Support.

Saving Configurations

Once all of your switcher assignments and configurations have been completed, it is *strongly recommended* that you save these important setups to a storage device, such as a floppy disk or USB key. Because the Synergy installation procedure covers such a wide variety of information, the pertinent data spans three categories of registers — **Custom Control**, **Personality**, and **Installation**. As a result, all three categories should be saved to a storage device.

Note

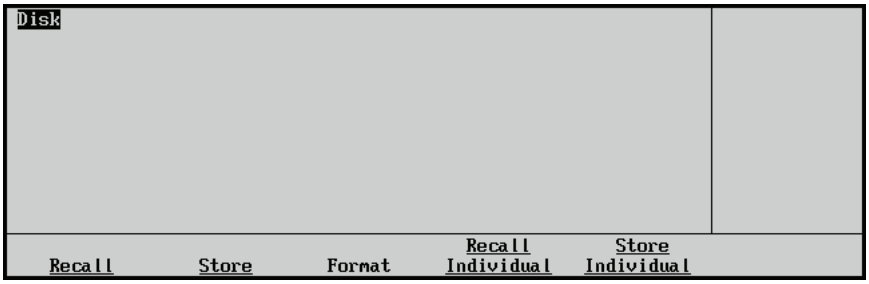
You must have the **USB Removable Media Drive** option installed in order to save setups to a USB key.

Typically, you will use this procedure in the following situations:

- To save a completely new switcher setup once complete
- To save incremental setups during a long installation process
- To save completely different switcher setups

Use the following procedure to save your setup configurations to a storage device:

1. Navigate to the **Disk Menu** as follows:
   - Press **HOME ⇨ Disk**.



Disk Menu

2. Insert a storage device as follows:
   - Insert a pre-formatted 1.4 MB high-density floppy disk into the floppy disk drive of the Synergy switcher.

Note

If the floppy disk is not formatted (or if you wish to completely erase all data from the disk), press **Format**. Follow the instructions on the display to format the disk.

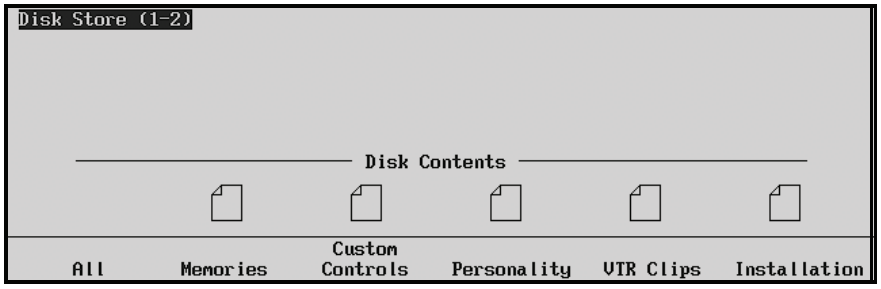
OR

- Insert a USB key into the USB port of the Synergy switcher. You must wait 5 seconds after inserting the USB key into the USB port before you can save or recall registers to it.

3. Press **Store** to display the **Disk Store Menu 1-2**.

Note

If you encounter an error message, refer to the section "**Storage Errors**" on page 10–5 for information on this error.



Disk Store Menu 1-2

If a **File Icon** appears above a softkey label (such as **Custom Controls**), the storage device contains a file of that type.

4. Press **MORE** to display the **Disk Store Menu 2-2**.
5. If you wish to save *all categories* of registers to a storage device, press **All**. This action writes the following seven files to your storage device in succession:
   - **Memory Registers** are stored in the file **MEMORYS.SYN**.
   - **S&T3D Memories** (if the **Squeeze & Tease WARP** option is installed) are stored in the file **ST3DMEM.SYN**.
   - **Custom Control Registers** are stored in the file **CUSTCTRL.SYN**.
   - **Personality Registers** are stored in the file **PERS.SYN**.
   - **VTR Clip Registers** are stored in the file **VTR.SYN**.
   - **Installation Registers** are stored in the file **INSTALL.SYN**.
   - **3D Sequence Registers** are stored in the file **ST3DSEQ.SYN**.

Important

Pressing **All Pre-V12 Format** stores all of the above registers to your storage device in a format that is compatible with switcher software versions earlier than version 12. Therefore, if you are downgrading your switcher software from version 12 to an earlier version, use this method to store all your switcher configurations to a floppy disk. If you are using a USB key, you can transfer the files to a floppy disk using your PC.

Note that a floppy disk created in this manner can still be loaded into version 12 or newer software, but it will load significantly slower than a disk that was saved using the **All** softkey.

Note

If you wish to have all registers stored to a storage device, but would like to store the memories individually, you must store *each category individually.* Pressing **All** will not store memories in individual files.

6. If you wish to save *only* the three files that pertain to your installation setups, proceed as follows:
   - Press **Custom Controls** to save **Custom Control Registers** to a storage device. The file **CUSTCTRL.SYN** is written to the storage device.
   - Press **Personality** to save **Personality Registers** to a storage device. The file **PERS.SYN** is written to the storage device.

- Press **Installation** to save **Installation Registers** to a storage device. The file **INSTALL.SYN** is written to the storage device.

Caution

Do NOT remove the floppy disk or USB key from the switcher before the LED on the floppy drive or USB port goes out. Doing so may destroy the data on your floppy disk or USB key, as well as the data on the next one you insert into the switcher.

Note

If you select a category that already contains a file (as indicated by the **File Icon**), the category will be overwritten.

7. Eject the storage device from the Synergy switcher.
8. Label the storage device and store it in a safe place.

   It is recommended that you place the following information on the label:

   - Synergy Switcher Model (2, 3, or 4)
   - Master Engineering Installation
   - Today's Date
   - Synergy Software Version

This completes the procedure for saving your engineering setups to a storage device.

Note

Remember that you can use *multiple storage devices* for different switcher setup configurations. Refer to the section "**Recalling Configurations**" on page 10–10 for details on recalling files from storage devices.

Recalling Configurations

As required, you can recall *all categories* of configuration registers from a storage device, such as a floppy disk or USB key, or you can simply recall the desired *individual* category. Typically, you will use this procedure in the following situations:

- To recall a previous switcher setup if a problem occurs
- To recall a different setup for a new production requirement
- To restore a previous (or default) setup after making custom or temporary setup changes

Note

You must have the **USB Removal Media Drive** option installed in order to save and recall configurations from a USB key.

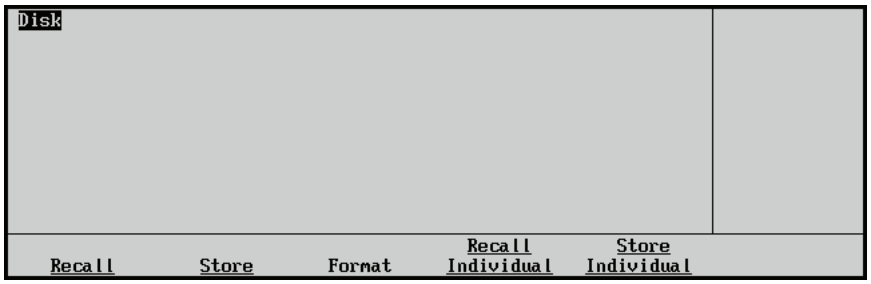
Use the following procedure to recall your setup configurations from a storage device:

1. Ensure that any custom setups are stored to a storage device. If you have made *any changes* to the setup (in any of the five file areas) and you have *not* stored them to a storage device, they will be overwritten when you recall files.

Note

Remember that the five file areas are independent. For example, if you *only* recall **Custom Control Registers**, all **Custom Control Registers** will be overwritten by the incoming data from the storage device, but the *other* categories of registers will not be overwritten.

2. Navigate to the **Disk Menu** as follows:
   - Press **HOME ⇨ Disk**.



Disk Menu

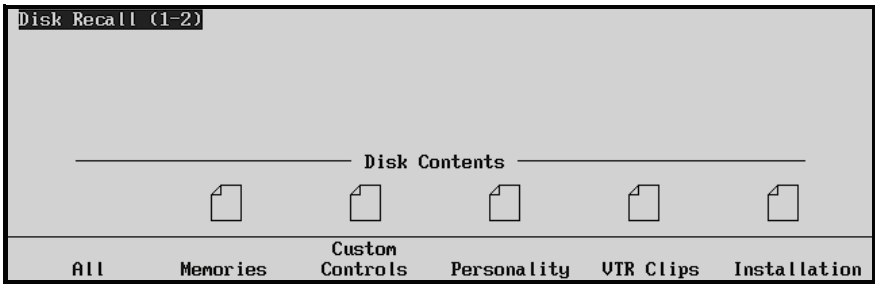
3. Insert a storage device as follows:
   - Insert the floppy disk with the desired setups into the floppy disk drive of the Synergy switcher.

   OR

   - Insert the USB key with the desired setups into the USB port of the Synergy switcher. You must wait 5 seconds after inserting the USB key into the USB port before you can save or recall registers to it.
4. Press **Recall** to display the **Disk Recall Menu 1-2**.

Note

If you encounter an error, refer to the section "**Storage Errors**" on page 10–5 for more information.



Disk Recall Menu 1-2

If a **File Icon** appears above a softkey label (such as **Memories**), the storage device contains a file of that type.

5. Press **MORE** to display the **Disk Recall Menu 2-2**.
6. If you wish to recall *all categories* of registers from a storage device, press **All**. This action reads in files from the storage device in succession:
   - **Memory Registers** are recalled in the file **MEMORY.SYN**.
   - **Custom Control Registers** are recalled in the file **CUSTCTRL.SYN**.
   - **Personality Registers** are recalled in the file **PERS.SYN**.
   - **VTR Clip Registers** are recalled in the file **VTR.SYN**.
   - **Installation Registers** are recalled in the file **INSTALL.SYN**.
   - **3D Sequence Registers** are recalled in the file **ST3DSEQ.SYN**.
7. If you wish to recall *only* the three files that pertain to your installation setups, proceed as follows:
   - Press **Custom Controls** to recall **Custom Control Registers**. Registers are loaded from the file **CUSTCTRL.SYN**.
   - Press **Personality** to recall **Personality Registers**. Registers are loaded from the file **PERS.SYN**.
   - Press **Installation** to recall **Installation Registers**. Registers are loaded from the file **INSTALL.SYN**.

Caution

Do NOT remove the floppy disk or USB key from the switcher before the LED on the floppy drive or USB port goes out. Doing so may destroy the data on your floppy disk or USB key, as well as the data on the next one you insert into the switcher.

8. Eject the storage device from the Synergy switcher.

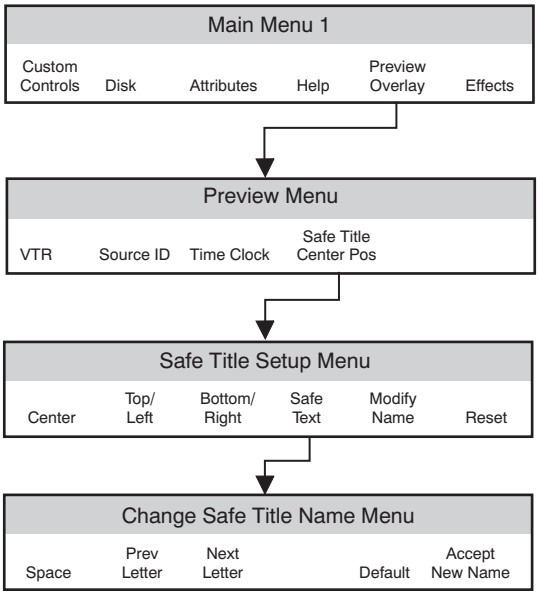
This completes the procedure for recalling your engineering setups from a storage device.

Setting Up Safe Title and Center Preview Overlay

The Safe Title/ Center Preview Overlay places a SMPTE standard Safe Title and Safe Action grid, Minimum Text lines, and Center Cross-hairs on the preview screen. The default positions of the Safe Title and Safe Action Grid, Minimum Text, and the Cross-hairs are modifiable. These modified positions can be renamed and saved for recall as macros. Refer to the section "**Safe Title**" on page 8–29 for configuration details.

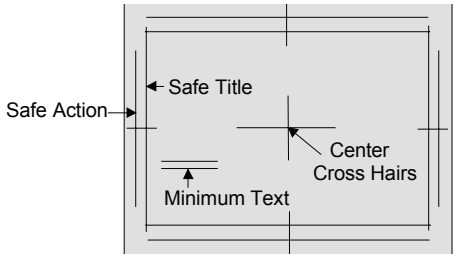
Preview Overlay Menu Tree

The following figure illustrates the *portion* of the menu tree that is used for accessing the Safe Title.



Preview Overlay Menu Tree

The following figure illustrates the default position of the components of the Safe Title and Center Preview Overlay:



Safe Title Overlay

- The **Safe Title** box (inner box) outlines the area that the vast majority of home TV sets will be able to read text inside of.
- The **Safe Action** box (outer box) outlines the region that viewers should be able to follow action. The borders of the Safe Action box track with the borders of the Safe Title box.

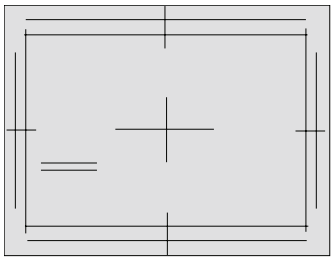
- The two small **Minimum Text** horizontal lines indicate the minimum font size that you can choose to ensure that text is legible on nearly all sizes of television receivers.
- The **Center** Cross-hairs indicate the vertical and horizontal center of the screen.

Center and Safe Title Setup

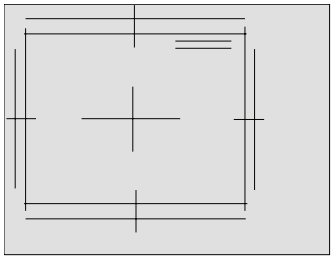
The position and size of the following elements of the overlay can be configured and saved for recall from the Safe Title Setup Menu:

- **Center** — Use this option to reposition the Center Crosshairs.
- **Top/Left** — Use this option to reposition the top or left edge of the Safe Text border.
- **Bottom/Right** — Use this option to reposition the bottom or right Safe Text border.
- **Safe Text** — Use this option to reposition the placement of the minimum text lines.
- **Modify Name** — Use this option to change the name of the Safe ID.
- **Reset** — Use this option to reset the parameters to their default values.

The following figures represent the default and modified positions of the overlay:



Default Overlay Position



Modified Overlay Position

Both the **Center** and **Safe Title** setup menus are accessed from the **Safe Title Setup Menu**.

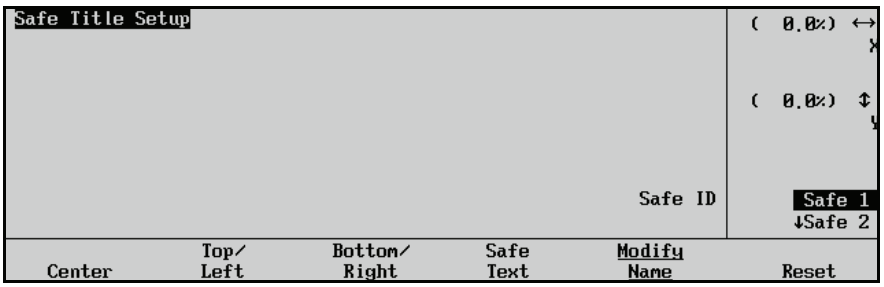
Modifying the Center Crosshairs Overlay

Use the following procedure modify the location of the **Center Crosshairs** overlay:

1. Navigate to the **Safe Title Setup — Center Menu** as follows:
   - Press **HOME ⇨ Preview Overlay ⇨ Safe Title/Center Pos ⇨ Center**.

Operation Tip

You can also press the **CENTER** key in the Preview Overlay Group to display the **Preview Menu**.



Safe Title Setup — Center Menu

2. Reposition the Center Crosshairs as follows:
   - Use the **X** knob to reposition the Center Crosshairs along the horizontal x-axis. You can also move the **Positioner** left and right.
   - Use the **Y** knob to reposition the Center Crosshairs along the vertical y-axis. You can also move the **Positioner** up and down.
   - Use the **Safe ID** knob to select the safe identification memory you wish to modify. You can also rotate the **Positioner** clockwise and counter-clockwise.

Note

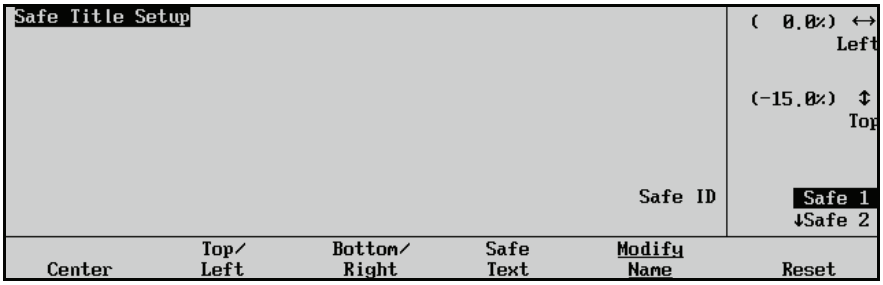
The values set for each Safe ID will remain stored in "personality" memory until you press **Reset** to restore the value to its default setting.

This completes the procedure to modify the location of the **Center Crosshairs** overlay.

Modifying the Top or Left Borders

Use the following procedure to modify the location of the **Top** and **Left borders** of the safe title area:

1. Navigate to the **Safe Title Setup Menu** as follows:
   - Press **HOME ⇨ Preview Overlay ⇨ Safe Title/Center Pos**.
2. Press **Top/Left** to display the **Safe Title Setup — Top/Left Menu**.



Safe Title Setup — Top/Left Menu

3. Reposition the top and left borders of the Safe Title box as follows:
   - Use the **Left** knob to reposition the left border of the Safe Title box along the horizontal x-axis. You can also move the **Positioner** left and right.
   - Use the **Top** knob to reposition the top border of the Safe Title box along the vertical y-axis. You can also move the **Positioner** up and down.
   - Use the **Safe ID** knob to select the safe identification memory you wish to modify. You can also rotate the **Positioner** clockwise and counter-clockwise.

Note

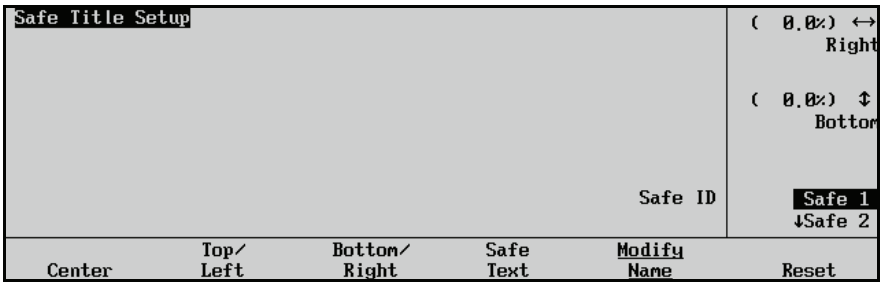
The values set for each Safe ID will remain stored in "personality" memory until you press **Reset** to restore the value to its default setting.

This completes the procedure to modify the location of the **Top** and **Left borders** of the **Safe Title** area.

Modifying the Bottom or Right Borders

Use the following procedure to modify the location of the **Bottom** and **Right borders** of the **Safe Title** area:

1. Navigate to the **Safe Title Setup Menu** as follows:
   - Press **HOME** ⇨ **Preview Overlay** ⇨ **Safe Title/Center Pos**.
2. Press **Bottom/Right** to display the **Safe Title Setup – Bottom/Right Menu**.



Safe Title Setup — Bottom/Right Menu

3. Reposition the right or bottom borders of the **Safe Title** box as follows:
   - Use the **Right** knob to reposition the right border of the Safe Title box along the horizontal x-axis. You can also move the **Positioner** left and right.
   - Use the **Bottom** knob to reposition the bottom border of the Safe Title box along the vertical y-axis. You can also move the **Positioner** up and down.
   - Use the **Safe ID** knob to select the safe identification memory you wish to modify. You can also rotate the **Positioner** clockwise and counter-clockwise.

Note

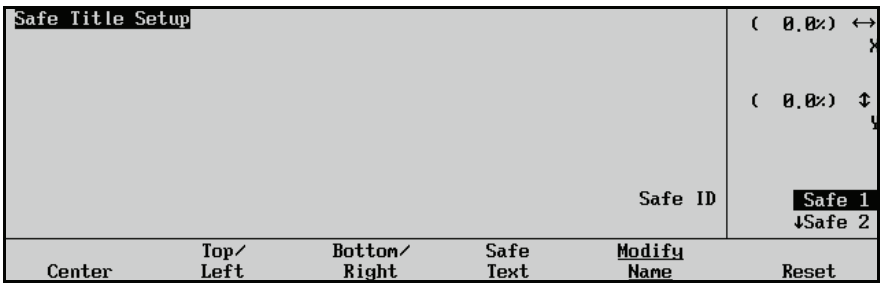
The values set for each Safe ID will remain stored in "personality" memory until you press **Reset** to restore the value to its default setting.

This completes the procedure to modify the location of the **Bottom** and **Right borders** of the **Safe Title** area.

Modifying the Safe Text Location

Use the following procedure to modify the location of the two small **Minimum Text** horizontal lines (**Safe Text**) within the safe title area:

1. Navigate to the **Safe Title Setup Menu** as follows:
   - Press **HOME** ⇨ **Preview Overlay** ⇨ **Safe Title/Center Pos**.
2. Press **Safe Text** to display the **Safe Title Setup – Safe Text Menu**.



Safe Title Setup – Safe Text Menu

3. Reposition the **Safe Text** within the safe title area as follows:
   - Use the **X** knob to reposition the Safe Text borders along the horizontal x-axis. You can also move the **Positioner** left and right.
   - Use the **Y** knob to reposition the Safe Text borders along the vertical y-axis. You can also move the **Positioner** up and down.
   - Use the **Safe ID** knob to select the safe identification memory you wish to modify. You can also rotate the **Positioner** clockwise and counter-clockwise.

Note

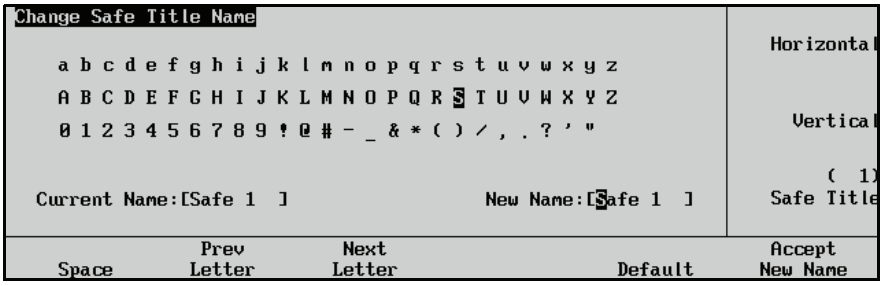
The values set for each Safe ID will remain stored in "personality" memory until you press **Reset** to restore the value to its default setting.

This completes the procedure to modify the location of the **Safe Text** within the safe title area.

Modifying the Safe ID Name

Use the following procedure to modify the name of the **Safe ID** assigned to the bottom knob in the **Safe Title Setup Menu**:

1. Navigate to the **Safe Title Setup Menu** as follows:
   - Press **HOME ⇨ Preview Overlay ⇨ Safe Title/Center Pos**.
2. Press **Modify Name** to display the **Safe Title Setup – Change Safe Title Name Menu**.



Safe Title Setup — Change Safe Title Name Menu

3. Edit the desired **Safe Title Name** as follows:
   - Use the top **Horizontal** knob to move the highlight horizontally.
   - Use the middle **Vertical** knob to move the highlight vertically.
   - Use the bottom **Safe Title** knob to select the desired safe title number (**1**– **4**). As you scroll through the registers, the **Current Name** field tracks each name.

- Use the **Space**, **Prev Letter**, **Next Letter** and **Default** softkeys to edit the name as required.
- A standard PS/2 keyboard can be used to perform the same actions as pressing or rotating the **System Control** buttons and knobs. Refer to the section, "**Using The Keyboard**" in the ***Synergy Series Operation Guide*** for details.

Important

Do NOT place anything on your keyboard or place your keyboard in a position where any of the keys could be accidently pressed. This could result in the Switcher acting unpredictably.

4. Press **Accept New Name** to save the name as modified.

Note

The new name will remain stored in "personality" memory until you press **Default** to reset the name to its default name.

This completes the procedure to modify the name of the **Safe ID**.

Restoring Factory Default Settings

This section provides instructions for resetting the switcher to factory default values. These values are *preset* at the factory, and cannot be overwritten by the user. Typically, once all of your switcher setups and configurations have been completed and successfully saved to a storage device, such as a floppy disk or USB key, you will *not need* to perform this procedure.

Note

You must have the **USB Removable Media Drive** option installed in order to save and recall setups to a USB key.

However, you *may* need to recall one (or more) set of default values in the following situations:

- If you sense a problem within one of the register categories.
- If you feel the need to restart a series of setups or configurations from a base default setting.
- If you wish to *clear out* a set of registers (e.g., resetting all memory registers to zero).
- If you wish to reset all control panel values.

The default values fall into eight categories of registers.

- **Personality Registers**

  This set of registers stores default values for the switcher's user-configurable areas. When reset, the following areas will return to factory default values:

  - Favorite CG Setup
  - Time Clock Direction
  - Transitions (on which the Time Clock resets)
  - Time Clock Reset Time
  - Time Clock Position
  - VTR Time Code Position
  - Source ID Position
  - Mnemonics
  - PIP II Memory
  - DVE Send Internal/External
  - Audio Transitions
  - White Flash
  - Preset Black
  - Fade to Black
  - Second Transition Preview
  - All Preview Overlay
  - User Wipes
  - CG Mode, Channel and file/folder settings
  - Ultimatte Quick Recall
  - Double Press Rate
  - Memory Bank Cycle Max
  - Memory Attributes
  - Matte Limit
  - Auto-Recall
  - DSK Cut
  - Aspectizer input/mode select
  - 3D Button Pattern Assignment
  - Panel Sleep Time
  - Next Available Memory
  - Recall Deleted Memories

- **Memory Registers**

  This set of registers stores default values for the **Global Memory System** and individual MLE **Memory** groups. When reset, all memory registers are essentially cleared out (or erased).

- **Switcher Registers**

  This set of registers stores default settings for the control panel, similar to those discussed in the section "**Resetting the System**" on page 3–12. When reset, the control panel (and all associated crosspoints, keyers, and MLE settings) is essentially cleared to zero.

- **Installation Registers**

  This set of registers stores default settings for all switcher setup and software-based configurations. When reset, the following areas will return to factory default values:

  - BNC Input Names
  - BNC Input Types
  - Tally Configuration
  - Alpha Setup
  - Auto Key Configuration
  - Panel Button Assignments
  - Option Card Setups
  - Calibration
  - Reference Delay
  - Aux Bus Setup
  - Output Setup
  - Clean Feed Setup
  - GPI Input / Output Setup
  - Device Setup
  - Editor Communications Setup
  - Custom Banks
  - Custom Device Setup

- **Custom Control Registers**

  This set of registers stores the functions that you have programmed into the switcher's **Custom Control Group**. These functions can include VTR remote control commands, DVE control commands and other panel-specific macros (programmable keys). When reset, all registers are cleared (empty).

- **Default NV-RAM**

  When reset, the switcher's non-volatile RAM is cleared.

- **Default S&T3D**

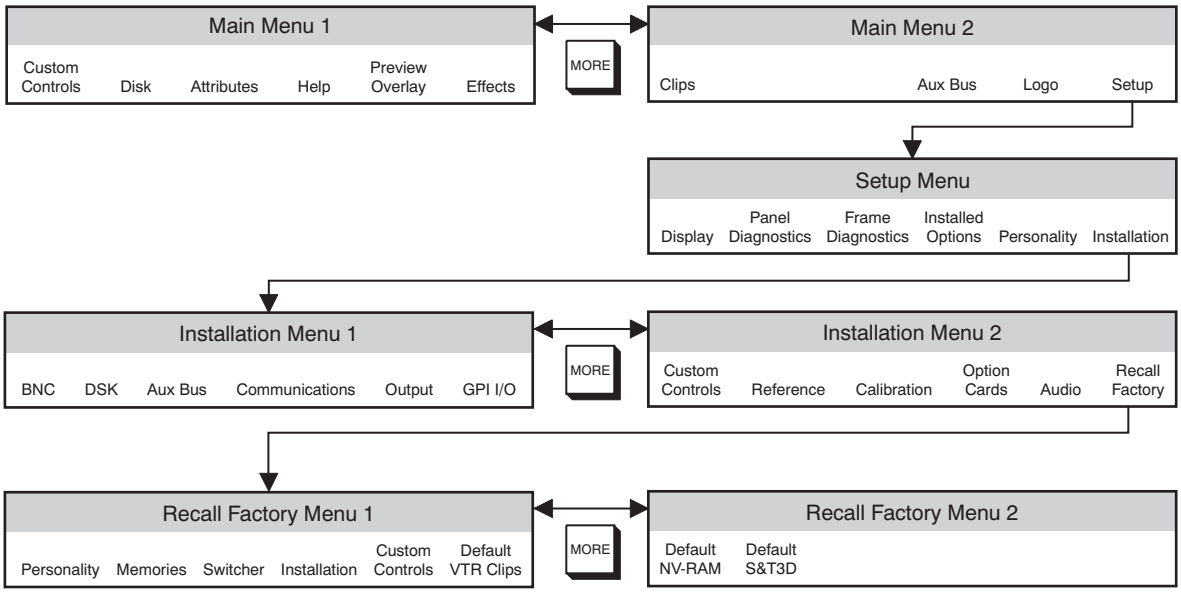
  When reset, all of the 3D cards present in the switcher are defaulted to factory settings.

- **VTR Clip Registers**

  When reset, all VTR Clip registers are essentially cleared out (or erased).

Recall Factory Menu Tree

The figure below illustrates the *portion* of the menu tree that is used for recalling factory default settings. Use this figure for reference during the following procedure.



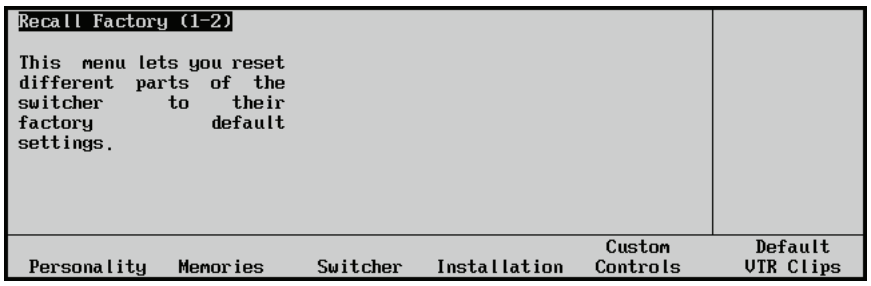
Recall Factory Menu Tree

Recall Factory Procedure

The **Recall Factory Menu** provides a mini "help" message, and lists the six categories of default registers that you can restore. Any combination of registers can be restored.

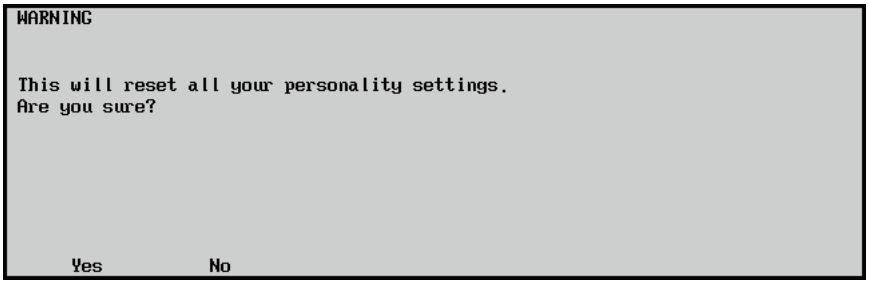
Use the following procedure to restore factory default values.

1. As a precaution, ensure that any setups, memory registers or special configurations are saved to a storage device. Once you recall default registers, *there is no undo* function! Refer to the section "**Saving Configurations**" on page 10–7 for complete instructions.
2. Navigate to the **Installation Menu 2-2** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installation ⇨ MORE**.
3. Press **Recall Factory** to display the **Recall Factory Menu 1-2**.



Recall Factory Menu 1-2

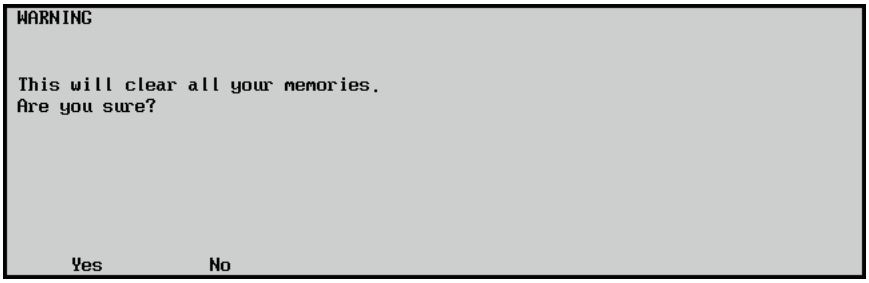
4. Use the following method to **Reset** your **Personality Settings**:
   - Press **Personality** to display the **Reset Personality Settings Warning Screen**.



Warning — Reset Personality Settings

- Press **Yes** to reset all **Personality Settings** to their default values.
- Press **No** to retain the current set of **Personality Settings** and exit the menu safely.

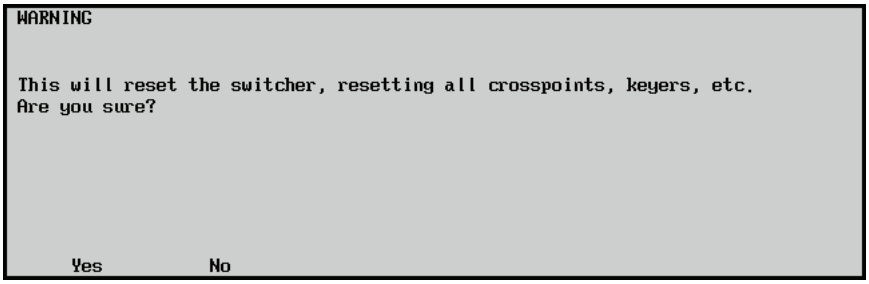
5. Use the following method to **Reset** your **Memory Registers**:
   - Press **Memories** to display the **Reset Memory Registers Warning Screen**.



Warning — Reset Memory Registers

   - Press **Yes** to clear all **Memory Registers** to their default values.
   - Press **No** to retain the current set of **Memory Registers** and exit the menu safely.

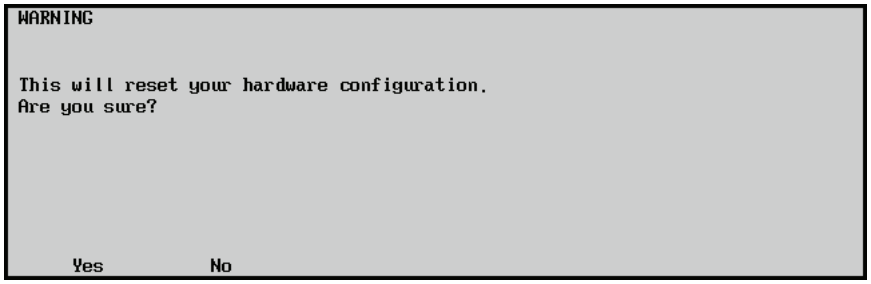
6. Use the following method to **Reset** your **Switcher Registers**:
   - Press **Switcher** to display the **Reset Switcher Registers Screen**.



Warning — Reset Switcher Registers

   - Press **Yes** to reset all **Switcher Registers** (control panel settings) to their default values. The control panel will be reset and all crosspoints and keyers will be cleared.
   - Press **No** to retain the current set of **Switcher Registers** and exit the menu safely. The control panel will not be reset.

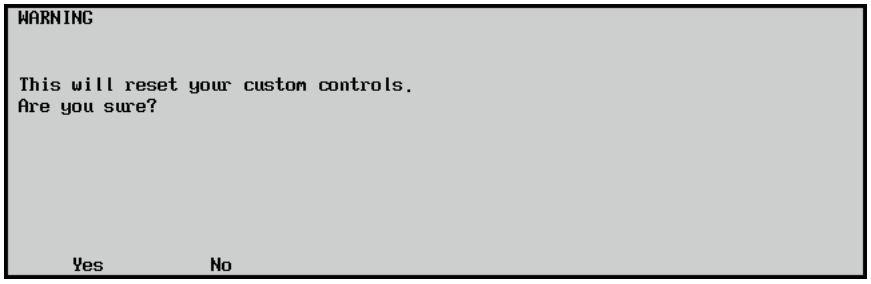
7. Use the following method to **Reset** your **Installation Registers**:
   - Press **Installation** to display the **Reset Installation Registers Screen**.



Warning — Reset Installation Registers

- Press **Yes** to reset all **Installation Registers** to their default values.
- Press **No** to retain the current set of **Installation Registers** and exit the menu safely.

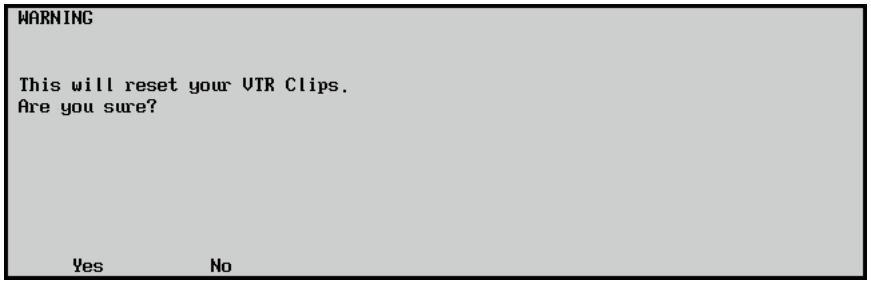
8. Use the following method to **Reset** your **Custom Control Registers**:
   - Press **Custom Controls** to display the **Reset Custom Controls Warning Screen**.



Warning — Reset Custom Control Registers

   - Press **Yes** to reset all **Custom Control Registers** to their default values.
   - Press **No** to retain the current set of **Custom Control Registers** and exit the menu safely.

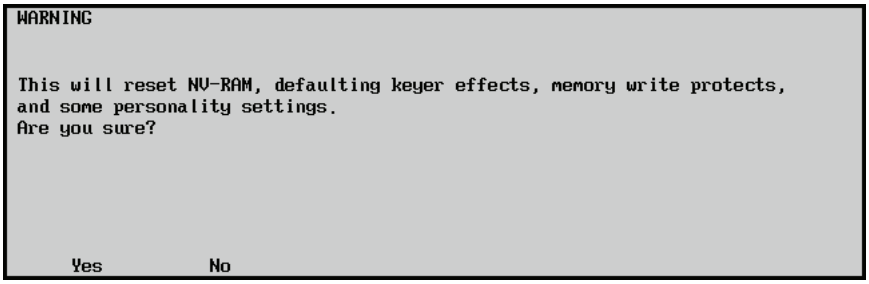
9. Use the following method to **Reset** your **VTR Clip Registers**:
   - Press **Default VTR Clips** to display the **Reset VTR Clip Registers Warning Screen**.



Warning — Reset VTR Clip Registers

   - Press **Yes** to reset the contents of the **VTR Clip Registers**.
   - Press **No** to retain the current set of **VTR Clip Registers**, and exit the menu safely.

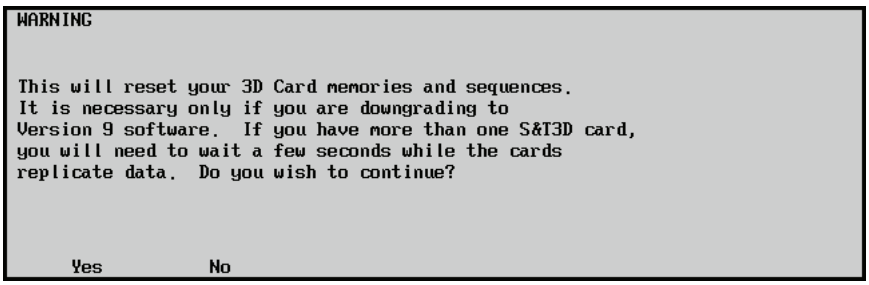
10. Press **MORE** to display **Recall Factory Menu 2-2**.
11. Use the following method to **Reset** the contents of the **Non-Volatile RAM (NV-RAM)**:
    - Press **Default NV-RAM** to display the **Reset NV-RAM Warning Screen**.



Warning — Reset NV-RAM

- Press **Yes** to reset the contents of the **NV-RAM**.
- Press **No** to retain the current **NV-RAM** and exit the menu safely.

12. Use the following method to **Reset** all the **S&T 3D Card** memories and sequences:
    - Press **Default S&T3D** to display the **Reset S&T3D Warning Screen**.



Warning — Reset S&T3D

    - Press **Yes** to reset all memories and sequences on the **S&T3D** cards.
    - Press **No** to retain the current **S&T3D** card settings and exit the menu safely.
13. Press **HOME** to exit the **Recall Factory Menu 2-2**.

Note

If you have defaulted the **Installation Registers**, you will be prompted to confirm your changes.

- Press **Confirm** to accept the recall and continue to the **Main Menu 1-2**.
- Press **Cancel** to reject the recall and return to the **Recall Factory Menu**.

This completes the procedure for restoring default values.

When Configuration is Complete

Once the entire switcher configuration process is complete, please heed the following important note:

Important

Place the **Installation Enable Jumper** (**JP10**) on the front edge of the **Frame CPU Board** in the **Up** position.

This position restricts access to installation settings as follows:

- The **Installation Menu** appears in the switcher's menu tree, which you can then view and navigate as usual. However, upon exiting the installation menus, an "**Installation Settings are Locked**" menu alerts you that any changes will be *ignored* upon exiting the installation tree.
- The "**Installation**" label *does not* appear in the **Disk Store** and **Disk Recall** menus.

Refer to the section "**Jumpers and Switches**" on page 2–26 for additional details.

Still Stores

In This Chapter

This chapter provides instructions for connecting, and setting up a Still Store with your Synergy switcher. Before you begin, ensure that the **Still Store (Aprisa) Interface** option is installed. If not, contact **Ross Video** for details. Refer to the section "**Installed Options Menus**" on page 2–37 for instructions on verifying the status of installed options.

The following topics are discussed:

- Supported Still Stores
- Communications Connections
- Communications Setup
- Setting up Still Store BNCs

Supported Still Stores

The Synergy switcher has been tested with a number of Still Stores to ensure the highest standard for compatibility and reliability. The following Still Stores are currently supported by your Synergy switcher:

- **Chyron Aprisa 100 Stillstore**

Communications Connections

You can connect a number of Still Stores to your Synergy switcher. The procedure for connecting the Still Store will depend on the type of Still Store you have. This section will provide general instructions for connecting the Still Store to one of the Remote Ports on the back of the Synergy Control Panel.

Note

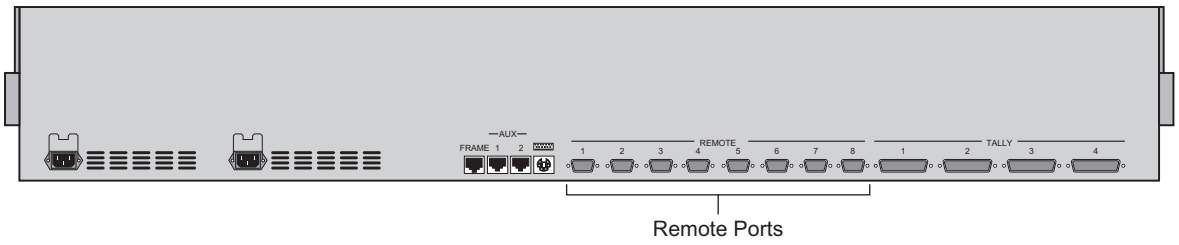
These instruction are provided as a guide, for specific information on the Still Store you are connecting to the Synergy switcher, refer to the documentation provided with your Still Store.

In order to properly complete this procedure you will need the following software options, cables, and equipment:

- **Still Store (Aprisa) Interface** — This is the software option from Ross Video that allows your Synergy switcher to control a Still Store.
- **Interface Cable** — This is a 9-Pin cable with a 9-Pin, D-Type (DB9) male connector on one end, to connect to the remote port on the control panel, and a connector on the other end to connect to your Still Store. Refer to the section "**Still Store Interface Cable Pinouts**" on page 11–4 for information on the pin-outs and connector required for your Still Store. Ross Video does not supply this cable.

Use the following procedure to connect a Still Store to your Synergy switcher:

1. Connect and secure the **9-Pin**, **Male**, end of the **Interface Cable** to one of the **Remote Ports** on the back of the Synergy control panel.



Synergy Series Control Panel — Rear View, Remote Control Ports

2. Connect and secure the other end of the cable to the appropriate port on the Still Store. The suggested port for each supported Still Store is listed below:
   - **Chyron Aprisa 100 Stillstore** — Connect the Interface cable to the RS-422 port or the RS-232 port on the rear of the Aprisa 100 Still Store. Refer to the section "**Chyron Aprisa 100 Still Store Cabling**" on page 11–4 for more information on the cabling for this Still Store.

This completes the procedure for connecting a Still Store to the Synergy switcher. Refer to the section "**Communications Setup**" on page 11–5 for instructions on how to set up communications protocols on the Switcher, as well as on the Still Store.

Still Store Interface Cable Pinouts

Use the information in this section to connect the Interface Cable from the Synergy switcher to the Still Store.

Chyron Aprisa 100 Still Store Cabling

The Synergy control panel connects to an Aprisa 100 Still Store via the remote ports on the Synergy control panel, and the RS-422 port or the RS-232 port on the rear of the Aprisa 100 Still Store.

Cable connections in the following table refer only to those between the Synergy control panel and the Aprisa 100 Still Store. Other cable connections present on the Aprisa 100 chassis can be found in the Chyron Aprisa 100 documentation.

Synergy-to-Chyron Aprisa 100 RS-422 Wiring Chart

Synergy Control Panel			Chyron Aprisa 100	
Remote Port	**Signal**		**RS-422 Port**	**Signal**
1	Chassis			
2	RxA (Rx-)	→	9	TxA (Tx-)
3	TxB (Tx+)	→	6	RxB (Rx+)
4	n/c			
5	Ground			
6	Ground			
7	RxB (Rx+)	→	8	TxB (Tx+)
8	TxA (Tx-)	→	7	RxA (Rx-)
9	Chassis			

Important

For **RS-232** cables, only pins **2**, **3**, and **5** should be connected. All other pins must be disconnected.

Synergy-to-Chyron Aprisa 100 RS-232 Wiring Chart

Synergy Control Panel			Chyron Aprisa 100	
Remote Port	**Signal**		**RS-232 Port**	**Signal**
1	Chassis			
2	Tx	→	2	Rx
3	Rx	→	3	Tx
4	n/c			
5	Ground	→	5	Ground
6	n/c			
7	n/c			
8	n/c			
9	Chassis			

Communications Setup

This section will provide instructions for setting up the Still Store to communicate with the Synergy switcher.

The following topics are discussed in this section:

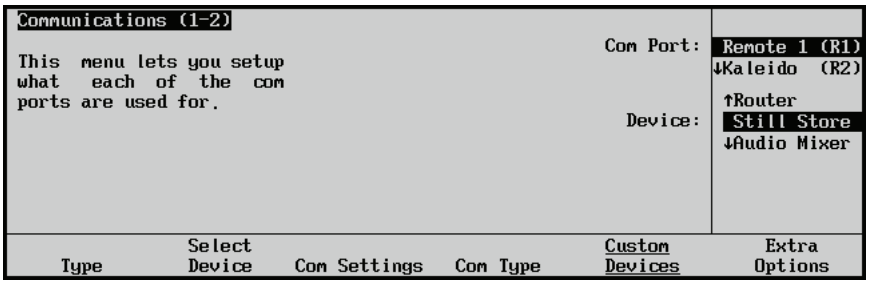
- Setting up the Switcher
- Setting up the Still Store

Setting up the Switcher

In order to have the Synergy switcher communicate with a Still Store, the remote port on the control panel that the Still Store is connected to must be set up to communicate with the particular Still Store you have connected.

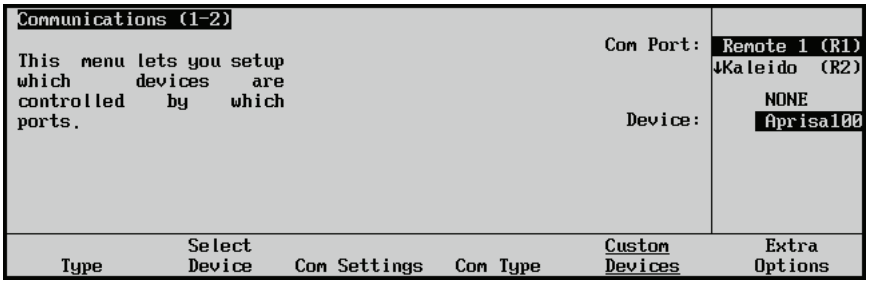
Use the following procedure to configure a Remote port on the control panel to connect with a Still Store:

1. Navigate to the **Communications Menu 1-2** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installation ⇨ Communications**.
2. Press **Type** to display the **Type Menu**.



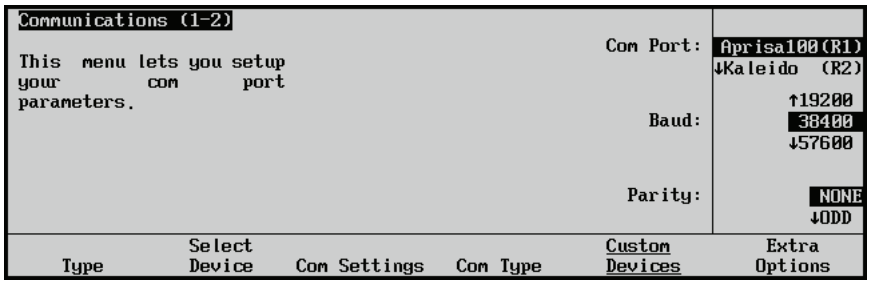
Communications — Type Menu

3. Assign a remote port to the Still Store as follows:
   - Use the **Com Port** knob to select the remote port on the Synergy switcher that is connected to the Still Store.
   - Use the **Device** knob to select **Still Store**.
4. Press **Select Device** to display the **Select Device Menu**.



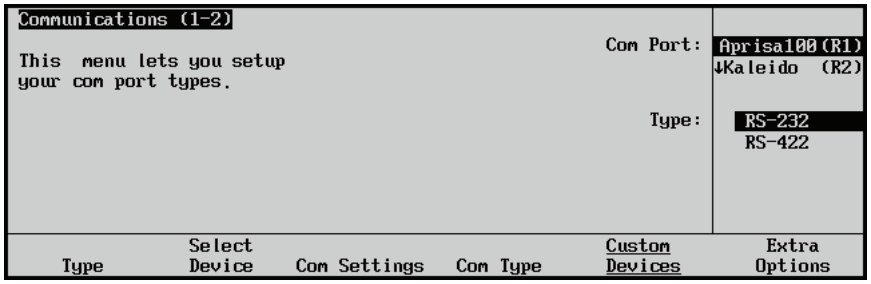
Communications — Select Device Menu

5. Assign a specific Still Store to the remote port as follows:
   - Use the **Com Port** knob to select the remote port that the desired Still Store is connected to.
   - Use the **Device** knob to select the type of Still Store that is connected to the port. You can select between the following:
     ~ **NONE** — Use this option to not assign a Still Store to the selected com port.
     ~ **Aprisa100** — Use this option to assign a **Chyron Aprisa 100 Stillstore** to the selected com port. Refer to the section "**Chyron Aprisa 100**" on page 11–7 for details.
6. Press **Com Settings** to display the **Com Settings Menu**.



Communications — Com Settings Menu

7. Select the type of serial communication that will be used to communicate with the Still Store as follows:
   - Use the **Com Port** knob to select the Still Store you are setting the communications settings for.
   - Use the **Baud** knob to select the baud rate for the Still Store. Refer to the section "**Setting up the Still Store**" on page 11–7 for the specific settings for your Still Store.
   - Use the **Parity** knob to select the parity, **NONE**, **ODD**, or **EVEN** for the specific Still Store. Refer to the section "**Setting up the Still Store**" on page 11–7 for the specific settings for your Still Store.
8. Press **Com Type** to display the **Com Type Menu**.



Communications — Com Type Menu

9. Select the type of serial communication that will be used to communicate with the Still Store as follows:
    - Use the **Com Port** knob to select the Still Store you want to set the communication type for.
    - Use the **Type** knob to select the type of serial communications (RS-232, RS-422) for the selected port. Refer to the section "**Setting up the Still Store**" on page 11–7 for details.
10. Press **HOME** to display the **Installation Change Confirmation Screen**.
11. Accept or reject the changes you have made as follows:
    - Press **Confirm** to accept the changes.
    - Press **Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure for setting up the communications with the Still Store. Next you will have finish setting up the Still Store to communicate with the Synergy switcher, and then set up the BNC inputs that you have connected to the Still Store.

Setting up the Still Store

In order to have the Synergy switcher communicate with a Still Store, the Still Store you are connecting to the switcher must be set up to communicate and accept commands from the switcher.

Chyron Aprisa 100

Use the following information to configure and connect your Chyron Aprisa 100 Still Store to your Synergy switcher:

- Use the following communications settings when connecting a Chyron Aprisa 100 Still Store to the Synergy switcher:

Synergy-to-Aprisa 100 Communication Settings

Setting	Value
Transmission Standard	**RS-422**
Baud Rate	**38400**
Parity	**NONE**
Data Bits	**8**
Stop Bits	**1**

Setting up Still Store BNCs

The **Still Setup Menu** allows you to associate a Still Store BNC input with a particular Still Store communication port. In addition, you can select which channel on the Still Store is feeding the input BNC on the Synergy SD frame.

Important

You must have a Still Store set up on the Synergy switcher before you can assign a BNC to that device. Refer to the section "**Setting up the Switcher**" on page 11–5 for more information on setting up Still Store communications.

Use the following procedure to assign the Still Store to a specific BNC input:

1. Navigate to the **BNC Menu 1-3** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **BNC**.
2. Press **BNC Type** to display the **BNC Type Menu**.

BNC — BNC Type Menu

3. Assign a BNC to a Still Store as follows:
   - Use the **BNC** knob to select the BNC that is connected to the Still Store.
   - Use the **Type** knob to select **Still**.
   - Use the **Asp Ratio** knob to select the video aspect ratio of the Still Store output.
4. Press **MORE** to display the **BNC Menu 2-3**.
5. Press **Still/CG Setup** to display the **Still Setup Menu**.

BNC — Still Setup Menu

6. Assign a specific Still Store to the Still BNC as follows:

- Use the **BNC** knob to select the BNC you want to assign the specific Still Store to.

Operating Tip

Pressing the associated BNC crosspoint button lights the **VTR CLIP** button in the **Global Memory System**, and allows you to recall a specific still using the numeric keypad.

- Use the **Still** knob to select the Still Store port for the specific Still Store you want to assign to the BNC.
- Use the **Channel** knob to select the Channel (**A**-**H**) on the Still Store that is feeding the BNC on the Synergy switcher.

7. Press **HOME** to display the **Installation Change Confirmation Screen**.
8. Accept or reject the changes you have made as follows:
   - Press **Confirm** to accept the changes.
   - Press **Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure for assigning a Still Store to a BNC on the Synergy switcher. Refer to the section “” on page 11–9 for details on accessing specific stills.

Editors/OverDrive

In This Chapter

This chapter provides instructions for connecting, and setting up an Editor, or the OverDrive Production Control System with your Synergy switcher. Before you begin, ensure that the **Editor Interface** option is installed. If not, contact **Ross Video** for details. Refer to the section "**Installed Options Menus**" on page 2–37 for instructions on verifying the status of installed options.

The following topics are discussed:

- Supported Editors
- Editor Communications Connections
- OverDrive Communications Connections
- Editor Communications Setup
- OverDrive Communications Setup
- OverDrive Custom Controls
- Editor and OverDrive Operation

Supported Editors

The Synergy Series Switcher has been tested with a number of Editor Protocols to ensure the highest standard for compatibility and reliability. The following Editor Protocols are currently supported by your Synergy switcher:

- **Thomson Grass Valley GVG4000 Protocol**
- **Thomson Grass Valley GVG100 Protocol**
- **Thomson Grass Valley GVG200 Protocol**

Editor Communications Connections

You can connect a number of Editors to your Synergy switcher. The procedure for connecting the Editor will depend on the type of Editor you have. This section will provide general instructions for connecting the Editor to the Editor Port on the back of the Synergy Frame.

Note

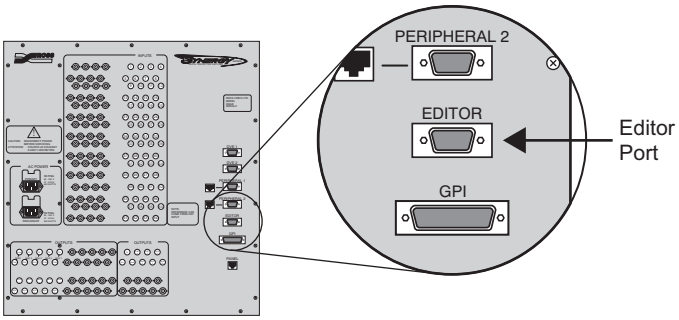
These instructions are provided as a guide, for specific information on the Editor you are connecting to the Synergy switcher, refer to the documentation provided with the Editor.

In order to properly complete this procedure you will need the following software options, cables, and equipment:

- **Editor Interface** — This is the software option from Ross Video that allows your Synergy switcher to control a Editor.
- **Interface Cable** — This is a 9-Pin cable with a 9-Pin, D-Type (DB9) male connector on one end, to connect to the editor port on the frame, and a connector on the other end to connect to your Editor. Refer to the documentation that came with your Editor for information on using it with the Synergy switcher. Ross Video does not supply this cable.

Use the following procedure to connect an Editor to your Synergy switcher:

1. Connect and secure the **9-Pin**, **Male**, end of the **Interface Cable** to the **Editor Port** on the back of the Synergy frame.



Synergy Series Frame, Rear View — Editor Port

2. Connect and secure the other end of the cable to the appropriate port on the Editor. Refer to the documentation that came with your Editor for information on the proper port and cable pinouts for connecting to the Synergy switcher.

The **Editor Port** on the Synergy switcher Frame has the following pinouts:

Synergy 422 Wiring Chart

Synergy Control Panel	
Editor Port	**Signal**
1	n/c
2	TxA (Tx–)
3	RxB (Rx+)
4	Ground
5	Ground
6	n/c
7	TxB (Tx+)
8	RxA (Rx–)
9	n/c

This completes the procedure for connecting an Editor to the Synergy switcher. Refer to the section "**Editor Communications Setup**" on page 12–7 for instructions on how to set up communications protocols on the Switcher, as well as on the Editor.

OverDrive Communications Connections

To connect an OverDrive to the Synergy switcher, you will have to make one connection from the Synergy control panel to the OverDrive and another connection from the Editor Port on the back of the Synergy frame to the OverDrive System.

Note

Refer to the ***OverDrive Installation and Configuration Guide*** for specific cabling information, wiring pinouts, and details on connecting the Synergy switcher with your OverDrive Production Control System.

In order to properly complete this procedure you need the following software options, cables, and equipment:

- **Editor Interface** — This is the software option from Ross Video that allows your Synergy switcher to control an Editor.
- **Control Panel Interface Cable** — A 33ft RS-422 cable (Ross Part Numbers 4000C-301 or 4000CR-312) with a 9-Pin, D-Type connector on one end and a Telco RJ-12 connector on the other.
- **Frame Interface Cable** — A 33ft RS-422 cable (Ross Part Numbers 4000C-300 or 4000CR-311) with a 9-Pin, D-Type connector on both ends.

Connecting

This section provides a general overview of how to connect an OverDrive Production Control System to your Synergy switcher. Refer to your OverDrive documentation for information on connecting the Synergy switcher to a RapidSwitch™.

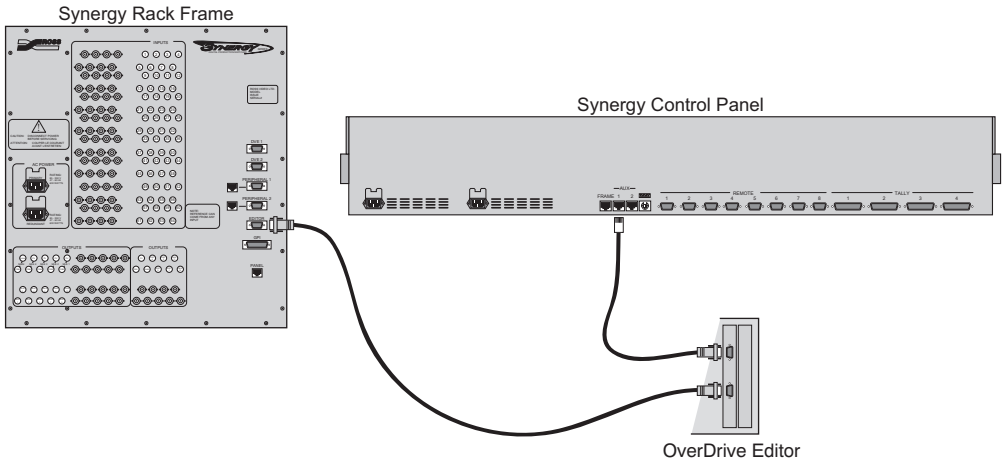
Use the following procedure to directly connect an OverDrive Production Control System to your Synergy switcher:

1. Connect and secure the **RJ-12** end of the **Control Panel Interface Cable** to the **AUX 1** port on the back of the Synergy control panel.

Important

You must connect the OverDrive Production Control System to the **AUX 1** Port. If you already have an Aux Panel connected to this port, it will have to be moved to the remaining Aux port.

2. Connect and secure the **DB9** end of the **Control Panel Interface Cable** to one of the two com ports on the OverDrive computer. Refer to your OverDrive documentation for more information.



Connecting the OverDrive Production Control System to the Synergy Switcher

3. Connect and secure one of the **DB9** ends of the **Frame Interface Cable** to the **EDITOR** port on the back of the Synergy frame.
4. Connect and secure the other **DB9** end of the **Frame Interface Cable** to the other available com port on the RS-422 card of the OverDrive Computer. Refer to your OverDrive documentation for more information.

This completes the procedure for connecting an OverDrive Production Control System to the Synergy switcher. Refer to the section "**OverDrive Communications Setup**" on page 12–11 for instructions on how to set up communications protocols on the Synergy switcher.

Editor Communications Setup

This section will provide instructions for setting up the Editor to communicate with the Synergy switcher. Refer to the section "**OverDrive Communications Connections**" on page 12–5 for information on setting up communications between an OverDrive Standard System and a Synergy switcher.

The following topic is discussed in this section:

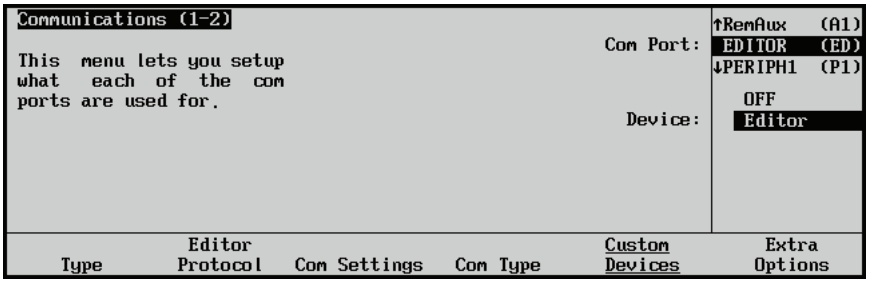
- Setting up the Switcher

Setting up the Switcher

In order to have the Synergy switcher communicate with an Editor, the editor port on the frame that the Editor is connected to must be set up to communicate with the particular Editor you have connected.

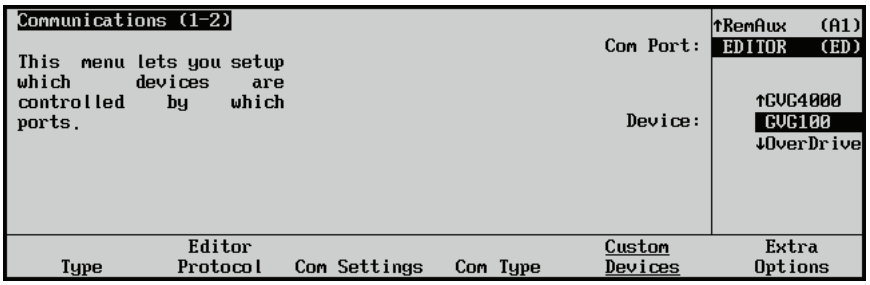
Use the following procedure to configure the Editor port on the control panel to connect with a Editor:

1. Navigate to the **Communications Menu 1-2** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installation ⇨ Communications**.
2. Press **Type** to display the **Communications Type Menu.**



Communications — Type Menu

3. Activate the Editor Port as follows:
   - Use the **Com Port** knob to select the Editor port, **EDITOR (ED)**.
   - Use the **Device** knob to select **Editor**.
4. Press **Editor Protocol** to display the **Editor Protocol Menu**.

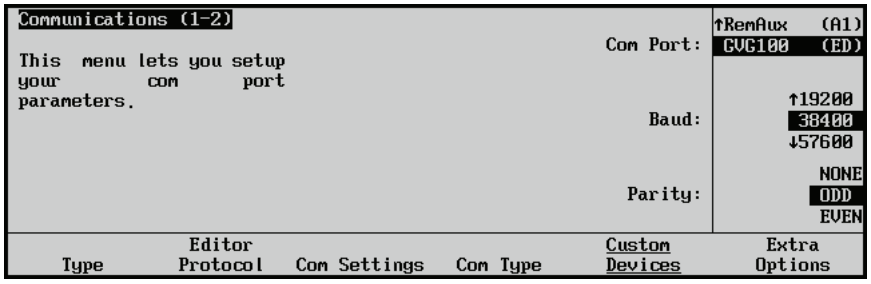


Communications — Editor Protocol Menu

5. Select the Editor Protocol as follows:
   - Use the **Com Port** knob to select the Editor.

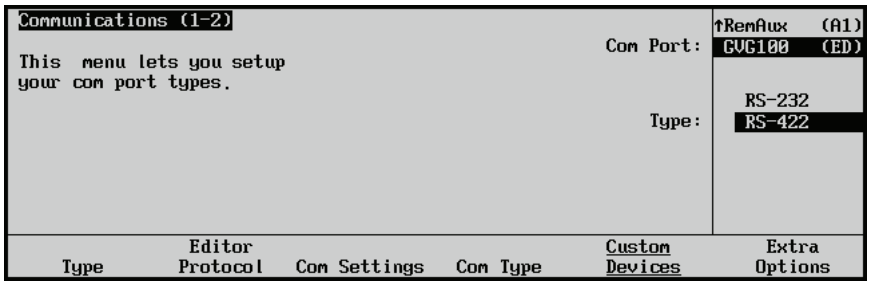
- Use the **Device** knob to select the Editor Protocol used by the selected device. You can select from the following:
  - ~ **NONE** — Select this option when you are not connecting an Editor to the selected port.
  - ~ **GVG4000** — Select this option when you are connecting an Editor using the Thomson Grass Valley GVG4000 Editor protocol.
  - ~ **GVG100** — Select this option when you are connecting an Editor using the Thomson Grass Valley GVG100 Editor protocol.
  - ~ **GVG200** — Select this option when you are connecting an Editor using the Thomson Grass Valley GVG200 Editor protocol.

6. Press **Com Settings** to display the **Com Settings Menu**.



Communications — Com Settings Menu

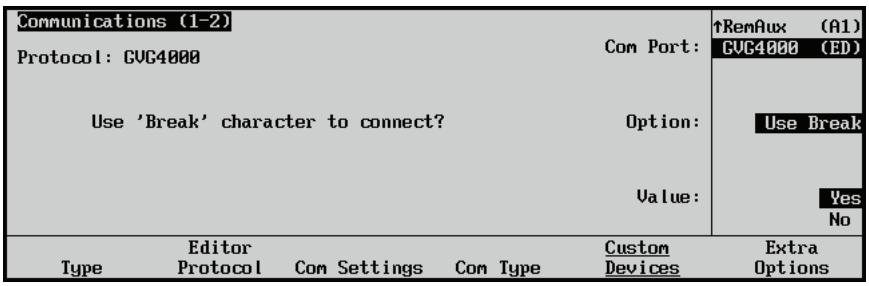
7. Select the communications protocols for the Editor as follows:
   - Use the **Com Port** knob to select the Editor you are setting the communications settings for.
   - Use the **Baud** knob to select the baud rate for the Editor. Refer to your Editor documentation for information on the communications settings required.
   - Use the **Parity** knob to select the parity for the Editor. Refer to your Editor documentation for information on the communications settings required.
8. Press **Com Type** to display the **Com Type Menu**.



Communications — Com Type Menu

9. Select the type of serial communication that will be used to communicate with the Editor as follows:
   - Use the **Com Port** knob to select the Editor you want to set the communication type for.
   - Use the **Type** knob to select the type of serial communications for the selected port. Refer to your Editor documentation for information on the communications settings required.

10. Press **Extra Options** to display the **Extra Options Menu**.
    - The **GVG100** Editor Protocol has additional Extra Options that may need to be set, depending on the configuration you have. Refer to the section "**GVG100 Editor Protocol Extra Options**" on page 12–9 for more information.
11. Configure the **Use Break** feature as follows:
    - Use the **Com Port** knob to select the Editor you want to set the communication type for.
    - Use the **Option** knob to select **Use Break**.



Communications — Extra Options Menu

    - Use the **Value** knob to toggle between **Yes** and **No** as follows:
        ~ **Yes** — Use this option to enable the Synergy switcher to go into Active mode once a Break and an address has been received. This is the default setting.
        ~ **No** — Use this option to enable the Synergy switcher to go into Active mode and the Editor does not have to send Breaks to the switcher. The Editor will send commands and messages without Breaks to the Synergy switcher.
12. Press **HOME** to display the **Installation Change Confirmation Screen**.
13. Accept or reject the changes you have made as follows:
    - Press **Confirm** to accept the changes.
    - Press **Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure for setting up the communications with the Editor, next you will have finish setting up the Editor to communicate with the Synergy switcher.

Extra Options Setup

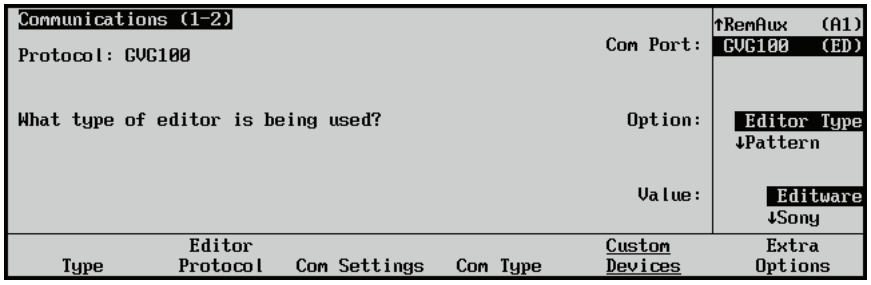
The **Extra Options Menu** for an Editor allows you to complete the communications setup for some of the Editors on the Synergy switcher.

GVG100 Editor Protocol Extra Options

The **Extra Options Menu** for the GVG100 Editor Protocol allows you to specify the type of Editor that is connected to the Synergy switcher, and the way you want to access the wipe patterns from the Editor.

Use the following procedure to set up the Extra Options for the GVG100 Editor Protocol:

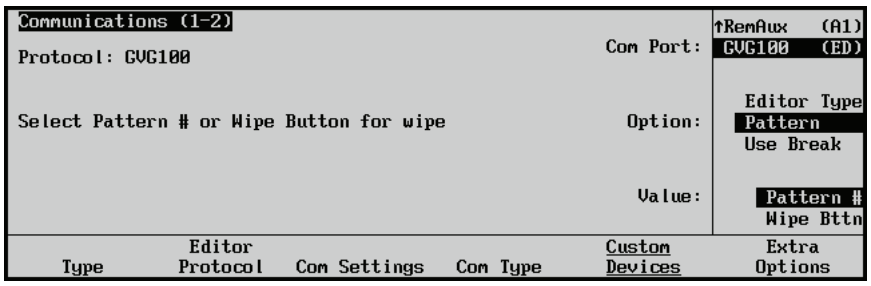
1. Assign a specific type of the Editor to the Editor Port as follows:



Communications — GVG 100 (Editor Type) Extra Options Menu

- Use the **Com Port** knob to select the Editor port that the Editor using the GVG100 Editor Protocol is connected to.
- Use the **Option** knob to select **Editor Type**.
- Use the **Value** knob to select the type of Editor you have connected to the Editor port. You can select from the following:
  - ~ **Editware** — Select this option if you are connecting an Editware Editor to the selected port.
  - ~ **Sony** — Select this option if you are connecting a Sony Editor to the selected port.
  - ~ **Generic** — Select this option if you are connecting any other Editor to the selected port.

2. Select the way you access the wipe patterns as follows:



Communications — GVG 100 (Pattern) Extra Options Menu

- Use the **Com Port** knob to select the Editor port that the Editor using the GVG100 Editor Protocol is connected to.
- Use the **Option** knob to select **Pattern**.
- Use the **Value** knob to select the way you access the wipe patterns. You can select from the following:
  - ~ **Pattern #** — Select this option to use the wipe pattern numbers to enter the wipe into the editor.
  - ~ **Wipe Bttn** — Select this option to use the wipe button numbers to enter the wipe into the editor.

This completes the procedure to set up the Extra Options for the GVG100 Editor.

OverDrive Communications Setup

The OverDrive Production Control System is a highly flexible production control system that enables touch screen control over your Synergy switcher. For detailed instructions on connecting the OverDrive Production Control System to your Synergy switcher, refer to the OverDrive documentation.

Important

The **OverDrive Editor** requires a **Synergy 2 Switcher** to operate in an unusual manner. Be sure to consult your **OverDrive User Guide** for more information on the operation of **OverDrive** with a **Synergy 2 Switcher**. Refer to Chapter 8, "**Memory Functions and More**" of the ***Synergy Series Operation Guide*** for more information on **Synergy 2** limitation when in OverDrive Editor mode.

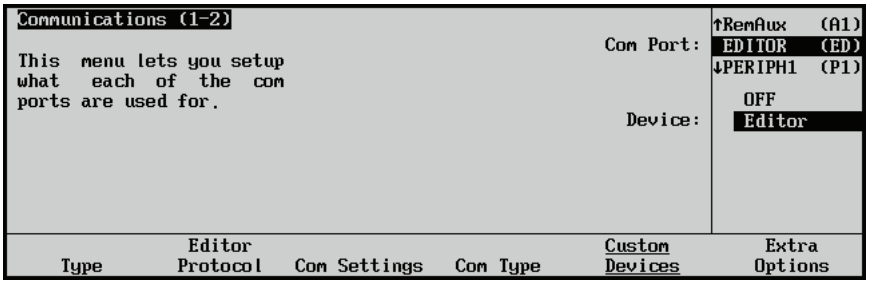
Setting up the Editor Port for OverDrive

Use the following procedure to configure the Synergy frame to communicate with the OverDrive Editor:

Note

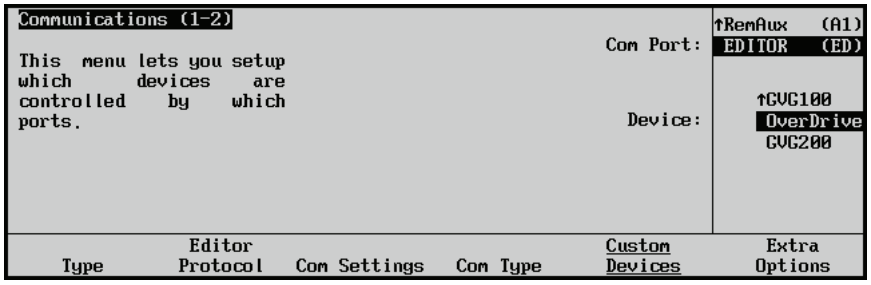
Refer to your OverDrive documentation for information on how to set up the communications protocols on the OverDrive Production Control System.

1. Navigate to the **Communications Menu 1-2** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **Communications**.
2. Press **Type** to display the **Type Menu**.



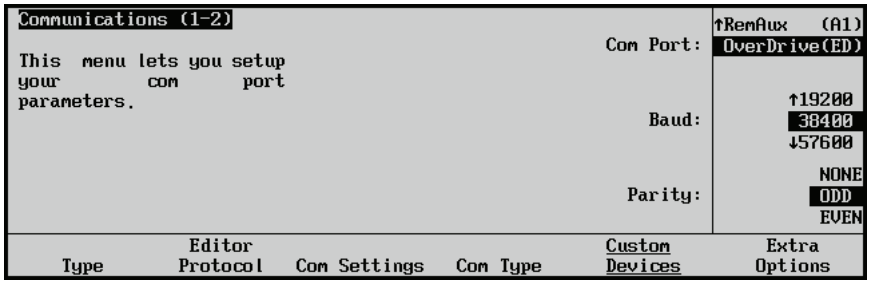
Communications — Type Menu

3. Activate the Editor port as follows:
   - Use the **Com Port** knob to select **EDITOR (ED)**. This is the EDITOR Port on the Synergy Frame.
   - Use the **Device** knob to select **EDITOR**.
4. Press **Editor Protocol** to display the **Editor Protocol Menu**.



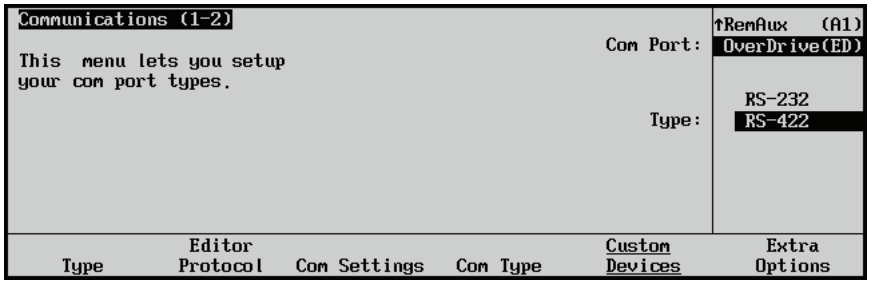
Communications — Editor Protocol Menu

5. Assign the OverDrive Editor to the Editor Port as follows:
   - Use the **Com Port** knob to select **EDITOR (ED)**.
   - Use the **Device** knob to select **OverDrive**.
6. Press **Com Settings** to display the **Com Settings Menu**.



Communications — Com Settings Menu

7. Set the communications parameters for the Editor Port as follows:
   - Use the **Com Port** knob to select **OverDrive(ED)**.
   - Use the **Baud** knob to select **38400**.
   - Use the **Parity** knob to select **ODD**.
8. Press **Com Type** to display the **Com Type Menu**.



Communications — Com Type Menu

9. Select the serial communications protocol for the OverDrive Editor as follows:
   - Use the **Com Port** knob to select **OverDrive(ED)**.
   - Use the **Type** knob to select **RS-422**.

Now that your Editor port is configured for OverDrive, you must configure your Aux 1 port.

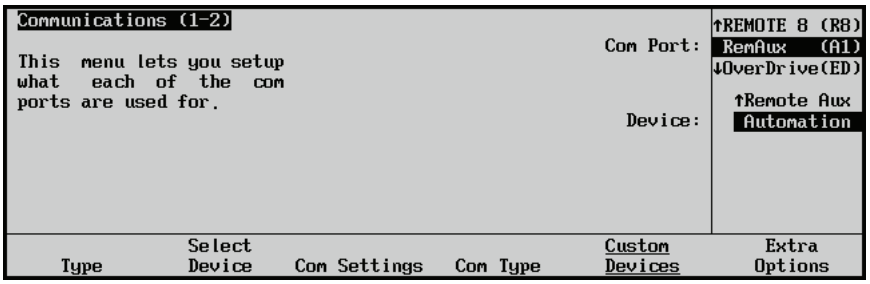
Setting up the Aux 1 Port for OverDrive

Use the following procedure to configure the Synergy Control Panel to communicate with an OverDrive Production Control System:

Note

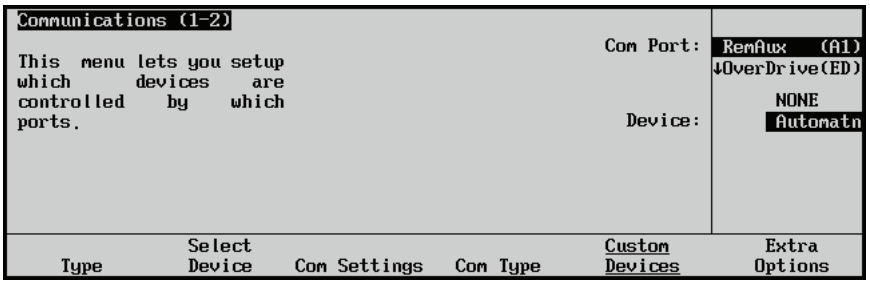
Refer to your OverDrive documentation for information on how to set up the communications protocols on the OverDrive Production Control System.

1. Navigate to the **Communications Menu 1-2** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **Communications**.
2. Press **Type** to display the **Type Menu**.



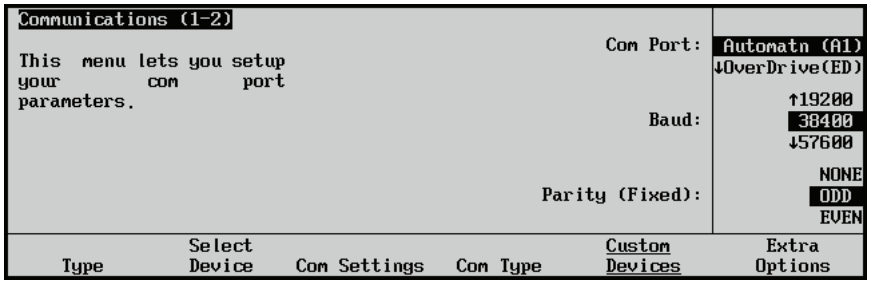
Communications — Type Menu

3. Assign the Remote Aux 1 port to the OverDrive Editor as follows:
   - Use the **Com Port** knob to select **RemAux (A1)**.
   - Use the **Device** knob to select **Automation**.
4. Press **Select Device** to display the **Select Device Menu**.



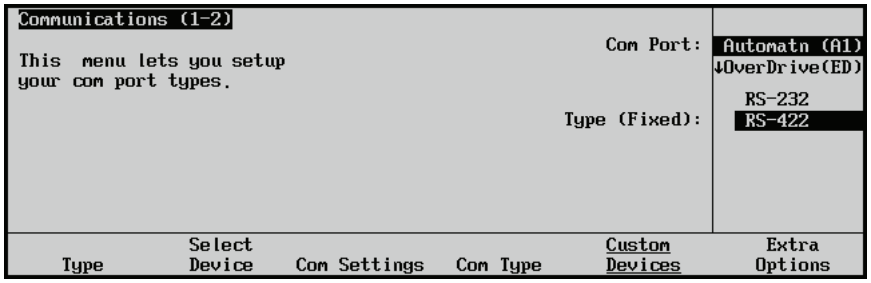
Communications — Select Device Menu

5. Assign OverDrive Automation to the Remote Aux 1 port as follows:
   - Use the **Com Port** knob to select **RemAux (A1)**.
   - Use the **Device** knob to select **Automatn**.
6. Press **Com Settings** to display the **Com Settings Menu**.



Communications — Com Settings Menu

7. Set the communications parameters for the Remote Aux 1 port as follows:
   - Use the **Com Port** knob to select **Automatn (A1)**.
   - Use the **Baud** knob to select **38400**.
   - Use the **Parity** knob to select **ODD**.
8. Press **Com Type** to display the **Com Type Menu**.



Communications — Com Type Menu

9. Select the serial communications protocol for the Remote Aux 1 port as follows:
   - Use the **Com Port** knob to select **Automatn (A1)**.
   - Use the **Type** knob to select **RS-422**.

Important

You must toggle the **EDITOR** button in the **Remote** area of the **Global Memory System Group** to **On** to allow the OverDrive Production Control System to control the Synergy switcher.

Note

When active, **EDITOR** mode turns on all the Roll VTR buttons and sets the Roll VTR Mode to ***Arm***, disabling the Roll VTR Mode selection in the **Personality Menu**.

This completes the procedure for setting up the Synergy switcher to be controlled by the OverDrive Production Control System.

OverDrive Custom Controls

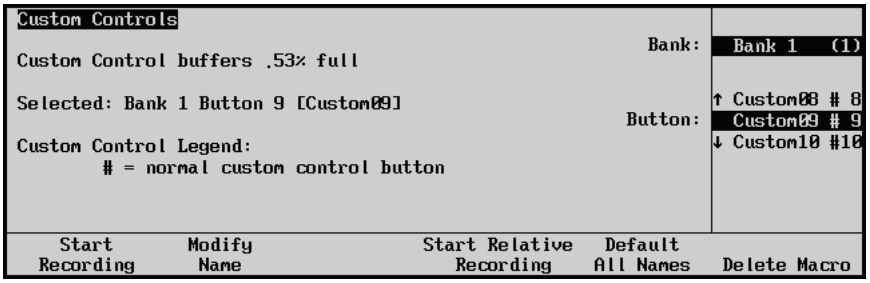
The OverDrive Production Control System can use certain custom controls, or types of custom controls, to perform operations on the Synergy switcher. Using these custom controls, the OverDrive Production Control System can have the Synergy switcher perform a transition of all on-air MLEs, or transition all Keys off-air. These custom controls, or any other, can also be recorded as a relative custom control, allowing OverDrive to be more flexible in using the custom control.

Automation Custom Controls

Use the **Automation** function to create custom controls that accept commands from an external automation system.

Use the following procedure to create an Automation custom control macro:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME ⇨ Custom Controls**.



Custom Controls Menu

2. Select the custom control button you want to record to as follows:
   - Use the **Bank** knob to select the custom control bank you want to record the custom control to.
   - Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*) or the "at sign" (@) in the list have already been programmed.

Operating Tip

As a recommendation, keep special functions for similar devices grouped together on your *physical* custom control buttons.

3. Navigate to the **Special Menu** as follows:
   - Press **Start Recording ⇨ Insert Special ⇨ Special**.

Insert Special — Special Menu

4. Assign an automation function to the selected custom control macro as follows:
   - Use the top knob to select **Automation**.
   - Use the **Command** knob to select the command you want the macro to perform. You can select between the follow:
     ~ **Keys Off Air** — Select this option when you want all on-air **Keys**, on all **MLEs**, to be dissolved off-air when the custom control is run.
     ~ **Act MLE Trans** — Select this option when you want all **MLEs** that are contributing the **PGM** output, except for the **PGM/PST MLE**, to be transitioned according to the settings in the **MLE Transition Group**. For example, if **MLE 1,** of a **Synergy 3 Switcher**, is re-entered onto **MLE 2** and **MLE 2** is re-entered onto **MLE 3**, the **Active MLE Trans** custom control will perform a transition on *both* **MLE 1** and **MLE 2**.

Important

If you have more than one re-entry set up for a shot, the **Active MLE Trans** custom control will transition all on-air **MLEs**. If you have an **MLE** re-entered onto the **BKGD** bus of another **MLE**, the **Active MLE Trans** custom control will transition the **MLE** re-entry with whatever you have selected on the **PST** bus of that **MLE**.

5. Press **Insert** to insert the selected command into the custom control and display the **Insert Special Menu 1-2**.
6. Insert additional commands if needed. When you have finished inserting commands, proceed to the next step to complete the procedure.
7. Press **UP ONE** to display the **Recording Menu**.
8. Press **Finish Recording**, or the flashing custom control button, to finish recording to the selected custom control. The custom control button will stop flashing.

Once your custom control buttons have been programmed, be sure to properly name them. Refer to the section "**Naming Custom Controls**" on page 8–42 for more information on naming custom control buttons.

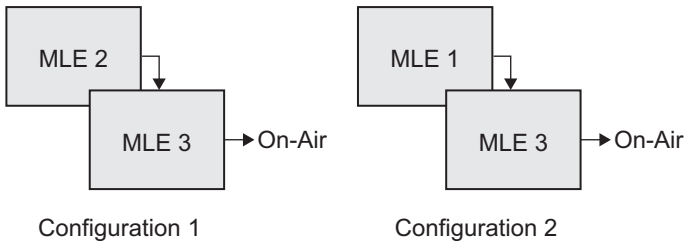
To play back your macro, exit the **Custom Controls Menu** and press the custom control button on the control panel that you recorded the custom control macro to.

Relative Custom Controls

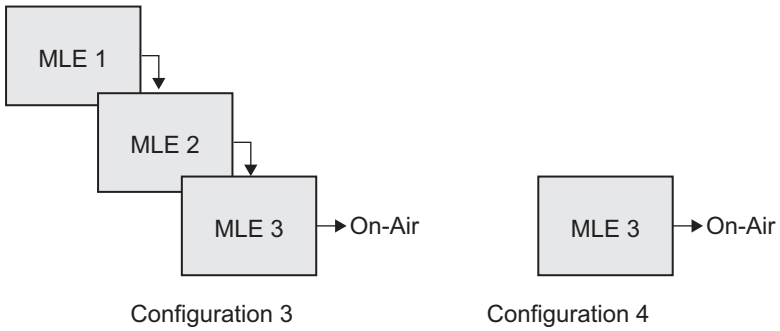
Important

Relative Custom Controls can only be *properly* recorded and recalled on upper MLEs that are re-entered onto the PGM/PST MLE. If the MLE is not re-entered, you will not be able to *properly* record or recall a relative custom control. Instead, the relative custom control will act like a normal custom control when recalled.

Relative Custom Controls store the MLE re-entry position so that they can be taken on-air from any MLE that is re-entered on the **PGM/PST MLE**. For example, if you have **MLE 2** re-entered into **MLE 3** (**Configuration 1**), of a Synergy 3, and Record a Custom Control on **MLE 2**, you can only recall that custom control on **MLE 2**, in the same configuration. If, however, you have **MLE 1** re-entered into **MLE 3** (**Configuration 2**), the Relative Custom Control will be recalled on **MLE 1**.



Relative Custom Controls are not MLE specific, as normal custom controls, but instead are re-entry specific. This means that the re-entry order, or levels that the Relative Custom Control was recorded on, do not need to be the same in order to recall that custom control. For example, if we again record a Relative Custom Control on **MLE 2**, of a Synergy 3, which is re-entered into **MLE 3** (**Configuration 1**), we can recall that Relative Custom Control with more or fewer MLEs. If we have **MLE 1** re-entered into **MLE 2** and **MLE 2** re-entered into **MLE 3** (**Configuration 3**), the Relative Custom Control will be recalled on **MLE 1**. If we have no MLEs re-entered, (**Configuration 4**) the Relative Custom Control will be recalled on **MLE 3**.



Important

If you record a relative custom control across multiple re-entered MLEs, at least the same number of MLEs must be re-entered in order to recall the entire custom control. For example, if a two MLE relative custom control is recalled on one MLE, the actions to be recalled on the second MLE will be ignored.

For more information on programming a Relative Custom Control, refer to the section "**Relative Custom Controls**" on page 8–16.

Editor and OverDrive Operation

The **Editor Interface** button in the **Global Memory System Group** allows the Synergy switcher to be controlled by a remote editing system, using a GVG Editor Protocol, or the OverDrive Production Control System.

Toggle the **EDITOR** button **ON**, lit, to enable control of the Synergy switcher from the editor or OverDrive system. In Editor mode, you can still perform most switcher functions.

OverDrive Operation Notes

When the OverDrive Production Control System is connected to the switcher, activating the **EDITOR** button will cause the following to occur:

- The **ROLL VTR** buttons turn on, and **Roll VTR Mode** is set to **Arm**, disabling the **Roll VTR Mode** selection in the **Personality Menu**.
- MLE copying to the bottom (PGM) MLE is disabled. If you try to copy an MLE to the PGM MLE, a message is displayed indicating you must turn the **EDITOR** button **OFF** before copying.
- The Synergy switcher cannot control a Robotic Camera that has been disabled in the OverDrive menus. You must toggle the **EDITOR** button **OFF** to enable control of the camera from the Synergy switcher. Refer to the OverDrive documentation for details.

Using OverDrive with a Synergy 2 Switcher

The OverDrive Production Control System requires at least two Effects MLEs in order to operate. With a **Synergy 2** Switcher, there is only one Effects MLE and the PGM MLE. OverDrive will compensate for this lack of a second Effects MLE by using the PGM MLE as an Effects MLE. This requires OverDrive to configure the switcher in a manner that will alter the way the PGM MLE operates. This configuration involves how OverDrive recalls a shot and performs a transition and how you will be able to use the control panel when it is in Editor mode.

Important

These operational limitations will only apply if the **EDITOR** button in the **Global Memory System Group** is **On** and an **OverDrive Production Control System** has been set up in the **Communications Menus**.

These limitations apply to both the **Synergy 2** switcher and the **OverDrive Production Control System**. If full functionality of your **Synergy 2** switcher is required, you can toggle the **EDITOR** button **Off**, to return to normal switcher operation. Because OverDrive must use **MLE 2** of the switcher as both a **BKGD/PST MLE** and a **PGM/PST MLE**, there are a number of special limitations that result. These limitations are as follows:

- The two internal **DSKs** are turned into Keyers for **MLE 2**; therefore, they cannot be used as Downstream Keyers. If you attempt to transition a DSK on-air when MLE 2 is off-air, a warning message will pop up. If **DSKs** are required, the Additional Downstream Keyer option will be required.
- If a Key is included in the shot set up on **MLE 2**, a transition of both the Background and any Keys will be required. In this case you cannot perform an S&T Wipe transition because the Key is included. This limitation only applies if there are Keys on-air in the memory recall.

- If a Key is flown in the memory recall on **MLE 2**, an S&T Wipe cannot be used to transition the memory on-air. This limitation applies whether the Key is on-air or not.
- You will not be able to preview a transition on **MLE 2** as you can on **MLE 1**.
- Because OverDrive has to recall memories on **MLE 2**, you will have to duplicate your memories on **MLE 1** and **MLE 2**.

Operating Tip

It will be easier to create your memories in **MLE 1** and copy them down onto **MLE 2**, than trying to recreate them on **MLE 2**.

External DVEs

In This Chapter

This chapter provides instructions for interfacing a generic Digital Video Effects system (DVE) with a Synergy switcher, and covers a variety of aspects such as technical requirements, connections, and programming.

The following topics are discussed:

- Supported External DVEs
- Primary and Secondary DVEs
- Communication Connections
- Communications Setup
- DVE Interface Specifications
- External DVE Custom Controls

Supported External DVEs

The Synergy Series Switcher has been tested with a number of external DVEs to ensure the highest standard for compatibility and reliability. The following external DVEs are currently supported by your Synergy switcher:

Note

The Synergy switcher will support any external DVE that uses the **Generic Sony Betacam Protocol**.

- **Abekas A51 DVE**
- **Questech Charisma VTL DVE**
- **Pinnacle DVEXtreme DVE**
- **Pinnacle DVEXtreme Version 2 DVE**
- **Accom Dveous DVE**
- **Snell & Wilcox Magic DaVE DVE**
- **Grass Valley DPM-100** (using the GVG DPM-100 Protocol)
- **Grass Valley DPM-700** (using the GVG DPM-100 Protocol)

Primary and Secondary DVEs

There are two types of external DVEs that can be connected to a Synergy switcher:

- **Primary External DVE**

  Only *one* primary external DVE (either single or multi-channel) can be connected to a Synergy switcher at a time. The connection includes:

  ~ Video and Key signal routed from the Aux Bus outputs of the Synergy switcher to the external DVE.

  ~ Video and key routed from the external DVE back to the Synergy switcher.

  ~ Serial communication can be RS-422 or RS-232, RS-422 serial control from the Synergy switcher to the external DVE.

  Serial control allows you to run the external DVE using the **DVE Send** feature, as well as using the Custom Control buttons.

- **Secondary External DVE**

  You can connect as many secondary external DVEs (either single or multi-channel) as desired to a Synergy switcher. The only limit is the number of available Aux Buses from which to route signals. The connection includes:

  ~ Video and Key signals routed from the Aux Bus outputs to the external DVE.

  ~ Video and Key signals routed from the external DVE back to the Synergy switcher.

  Note that a secondary external DVE cannot be controlled using commands. Therefore, in this configuration, the power of each secondary external DVE is available (just like the primary external DVE), with the restriction that the secondary DVE *must* be controlled from its own local control panel or via GPI output pulses from the Synergy switcher. Refer to the section "**GPI Output Connections**" on page 13-10 for details.

Setup Steps

The table below illustrates the steps required when interfacing a primary and secondary external DVE to the Synergy switcher:

DVE Setup Steps

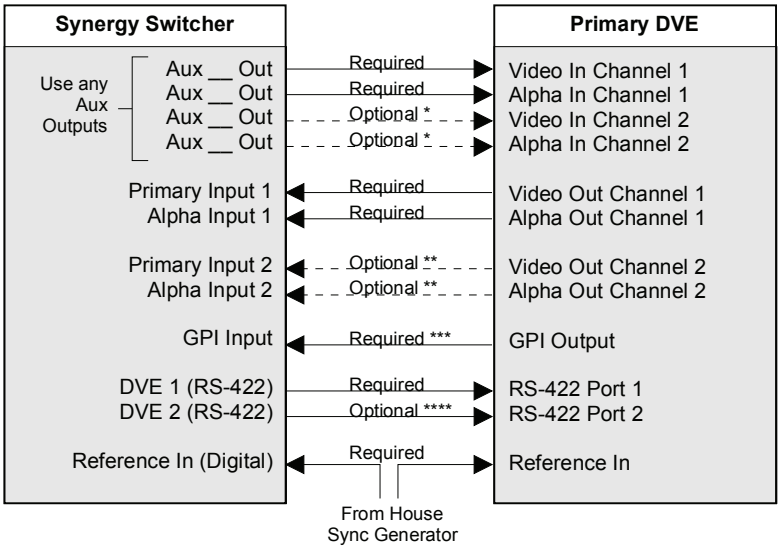
Setup Step	Primary External DVE	Secondary External DVE
Reference Connection	X	X
DVE Input Connections	X	X
DVE Output Connections	X	X
Aux Bus Programming	X	X
GPI Input Connections	X	X
GPI Output Connections		X
Remote Control Connections	X	
Programming Custom Control Buttons	X	
Saving the Switcher Personality	X	X
Testing the Interface	X	X

Connection Diagrams

The diagrams in this section illustrate the typical connections used to interface the Synergy switcher with a *primary* and *secondary* external DVE. Use these figures for reference (for the appropriate DVE) during the interface procedures in this chapter. Refer to the documentation for your DVE or to the section "**DVE Interface Specifications**" on page 13-21 for the specific settings for your external DVE.

Primary External DVE Connections

The diagram below illustrates typical primary external DVE interface connections:



Primary External DVE Interface Connections

Notes:

* Connect these signals if the primary external DVE includes a second video and alpha channel.

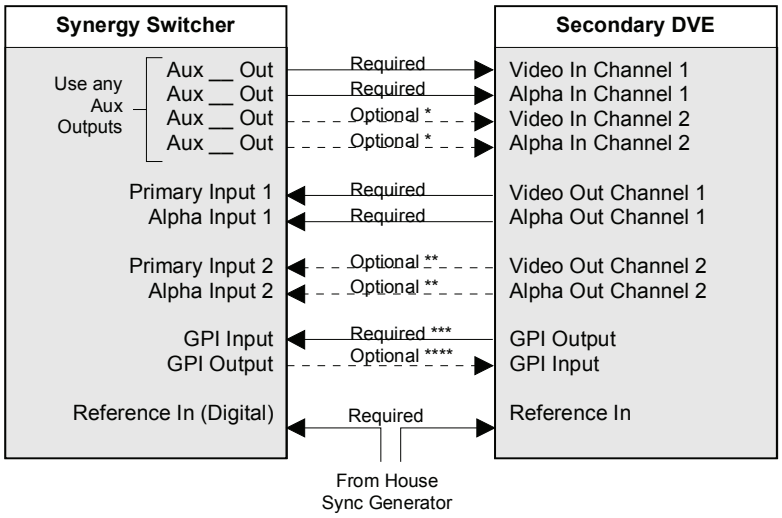
** Connect these signals *only* if the primary external DVE does not include a combiner output for multi-channels.

*** If the external DVE provides a GPI output pulse for purposes of triggering Aux Bus tallies, connect the GPI output port on the DVE to the GPI input port on the Synergy switcher.

**** Connect the **DVE 2** port on the Synergy switcher to the primary DVE *only* if the DVE's *second channel* requires a unique serial connection.

Secondary External DVE Connections

The diagram "**Secondary External DVE Interface Connections**" on page 13–5 illustrates typical secondary external DVE interface connections:



Secondary External DVE Interface Connections

Notes:

* Connect these signals if the secondary DVE includes a second video and alpha channel.

** Connect these signals *only* if the secondary DVE does not include a combiner output for multi-channels.

*** If the DVE provides a GPI output pulse for purposes of triggering Aux Bus tallies, connect the DVE's GPI output port to the GPI input port on the Synergy panel.

**** Connect the GPI output port on the Synergy panel to the GPI input port on the DVE if you wish to trigger selected DVE functions, for example, run forward, run reverse, and stop, from the Synergy panel.

Each of the connections shown in the diagram above is detailed in the following sections.

Communication Connections

You can connect only *one* primary external DVE to a Synergy switcher but as many secondary external DVEs as desired; the only limit is the number of Aux Buses available to route signals. The procedure for connecting external DVEs will depend on the type of DVE you have (single or multi-channel) and how many external DVEs you wish to connect to the Synergy switcher.

This section will help you make the communication connections between the external DVEs and the Synergy switcher.

The following topics are discussed in this section:

- Reference Connection Setup
- DVE Input Connections
- DVE Output Connections
- Aux Bus Panel Programming
- GPI Input Connections
- GPI Output Connections
- Remote Control Connections

Reference Connection Setup

Note This procedure applies to both primary and secondary DVEs.

Use the following procedure to ensure a proper reference connection:

1. Ensure that a *digital* reference signal is connected to the switcher. Refer to section "**Reference Signal Connection**" on page 3-6 for instructions.
2. Connect a suitable reference signal to the **Reference Input** connector of the external DVE. Ensure that the signal is the *same one* that is used for the switcher's reference input. Refer to your DVE's documentation for more information.
3. Most DVEs require an *analog* reference **Black** input, and typically, a pair of looping reference connectors are also provided:
   - If the DVE is in the *middle* of your reference loop, connect the open reference connector to the reference input connector of the next device. Ensure that the last device in the loop is terminated with a 75 Ohm terminator.
   - If the DVE is the *last device* in your reference loop, terminate the open reference connector with a 75 Ohm terminator (customer supplied).

This completes the procedure to ensure a proper reference connection.

DVE Input Connections

The Aux Bus outputs of the Synergy switcher are used to route video and alpha signals to the video and Key inputs of your DVE, respectively. Use the appropriate procedure below to connect the inputs of your external DVE.

Primary External DVE Input Connection

Any Aux Bus outputs can be used for connecting the video and key channels of your primary external DVE. If you have not already done so, complete the **Auxiliary Output Worksheet**, which can be found in Chapter 4, "**Preliminary Video Installation**" in the ***Synergy Series Installation Guide Volume I***. Use the worksheet for reference during this procedure.

Single-channel Primary External DVE

Use the following procedure to connect a single-channel primary external DVE:

1. Connect an available Aux output to the Channel 1 video input of your primary external DVE.
2. Connect a second available Aux output to the Channel 1 alpha (key) input on the primary external DVE.

This configuration routes one fill source and one key (alpha) source to the primary external DVE. Effects can be recalled and triggered from the Synergy switcher.

Dual-channel Primary External DVE

Use the following procedure to connect a dual-channel primary external DVE:

1. Connect an available Aux output to the Channel 1 video input on the primary external DVE.
2. Connect a second available Aux output to the Channel 1 alpha (Key) input on the primary external DVE.
3. Connect a third available Aux output to the Channel 2 video input on the primary external DVE.
4. Connect a fourth available Aux output to the Channel 2 alpha (Key) input on the primary external DVE.

This configuration routes two fill sources and two alpha (Key) sources to the primary external DVE. Effects can be recalled and triggered from the Synergy switcher.

Secondary External DVE Input Connection

Any Aux Bus outputs can be used for connecting the video and Key channels of a secondary external DVE. If you have not already done so, complete the **Auxiliary Output Worksheet**, which can be found in the section "**Output Connection**" on page 4-12. Use the worksheet for reference during this procedure. Refer to your DVE's documentation for connection details.

Single-channel Secondary External DVE

This configuration routes one fill source and one alpha (Key) source to the secondary external DVE. Image manipulation must be performed at the local control panel of the external DVE. Effects can be triggered at the local control panel of the external DVE, or from a GPI pulse (from the Synergy switcher).

Use the following procedure to connect a single-channel secondary external DVE:

1. Connect an available Aux Bus output to the Channel 1 video input on the secondary external DVE.
2. Connect a second available switcher Aux Bus output to the Channel 1 alpha (Key) input on the secondary external DVE.

This completes the procedure to connect a single-channel secondary external DVE.

Dual-channel Secondary External DVE

This configuration routes two fill sources and two alpha (Key) sources to the primary external DVE. Image manipulation must be performed at the local control panel of the DVE. Effects can be triggered at the local control panel of the DVE, or from a GPI pulse (from the Synergy switcher).

Use the following procedure to connect a dual-channel secondary external DVE:

1. Connect an available switcher Aux Bus output to the Channel 1 video input on the secondary external DVE.
2. Connect a second available switcher Aux Bus output to the Channel 1 alpha (Key) input on the secondary external DVE.
3. Connect a third available switcher Aux Bus output to the Channel 2 video input on the secondary external DVE.
4. Connect a fourth available switcher Aux Bus output to the Channel 2 alpha (Key) input on the secondary external DVE.

This completes the procedure to connect a dual-channel secondary external DVE.

DVE Output Connections

Note This procedure applies to both primary and secondary external DVEs.

The video and Key outputs on the external DVE must be connected to the switcher, and properly assigned as primary and alpha video inputs using the BNC setup menus of the Synergy switcher.

Use your **Input Worksheet** for assistance. The worksheet can be found in the section "**BNC Input Worksheet**" on page 4-4. If your **Input Worksheet** does not include DVE assignments, use an open BNC input connector as required, and ensure that the selected input has a serial digital input board installed that supports the input.

Use the following procedure to connect external DVE outputs:

1. Connect the Channel 1 video output on the external DVE to the desired video input on the Synergy switcher.
2. Connect the Channel 1 alpha output on the external DVE to the desired video input on the Synergy switcher.
3. For a dual-channel external DVE that requires an *individual* Channel 2 "fill" output connection, connect the Channel 2 video output on the external DVE to the desired video input on the Synergy switcher.

Note Connect this signal *only* if the external DVE does not provide a combined "fill" output.

4. For a dual-channel external DVE that requires an *individual* Channel 2 "Key" output connection, connect the Channel 2 alpha output on the external DVE to the desired video input on the Synergy switcher.

Note Connect this signal *only* if the external DVE does not provide a combined "Key" output.

5. Follow all procedures outlined in the section "**Communications Setup**" on page 13-11. For each external DVE video and alpha input, these procedures allow you to perform the following tasks:
   - Name the BNC input
   - Set up the BNC type (DVE video or alpha)
   - Set up tallies
   - Set up alphas (shaped or unshaped)
   - Set up auto keys (associated alphas with primary video signals)
   - Set up panel buttons

This completes the procedure to connect external DVE outputs.

Aux Bus Panel Programming

Note This procedure applies to both primary and secondary external DVEs.

Each Aux panel (both local and remote) must be properly programmed to control the desired Aux Bus outputs, and with the desired "rights" assigned.

Use the following procedure to program your Aux panels:

1. Ensure that each remote Aux panel is properly installed. Refer to the section "**Installing Remote Aux Panels**" on page 2-21 for instructions.
2. Ensure that each remote Aux panel is properly cabled. Refer to the section "**Remote Aux Panel Cabling**" on page 3-3 for instructions.
3. Ensure that your **Auxiliary Output Worksheet** is completed, as outlined in the section "**Auxiliary Outputs**" on page 4-15.
4. Using the information from your **Auxiliary Output Worksheet**, follow all instructions presented in the section "**Communications Setup**" on page 13-11. In this section, you will program each local and remote panel, and assign specific switching parameters (or "rights") for each of the 12 Aux Buses that are accessible locally and remotely. Each Aux Bus can be set up individually.

This completes the procedure to program your Aux panels.

GPI Input Connections

Note This section applies to both primary and secondary external DVEs.

The Synergy switcher is able to use GPI input pulses from the DVE for Tallies. When an Aux Bus is used to route video to a DVE, the **Tally Assignment** procedure sets up the method for *tallying* that bus. By selecting certain parameters, you can tally the bus (lighting the red "**ON**" LED on the Aux panel) whenever the device is used *on air* — or as part of the composite on air image. Refer to the section "**Setting Up Aux Bus Tallies**" on page 13-13 for complete instructions.

GPI Output Connections

For *secondary* external DVEs, the Synergy switcher is able to use GPI output pulses to trigger selected functions on the DVE (for example, run forward, run reverse, and stop).

Use the following procedure to connect and program GPI output connections:

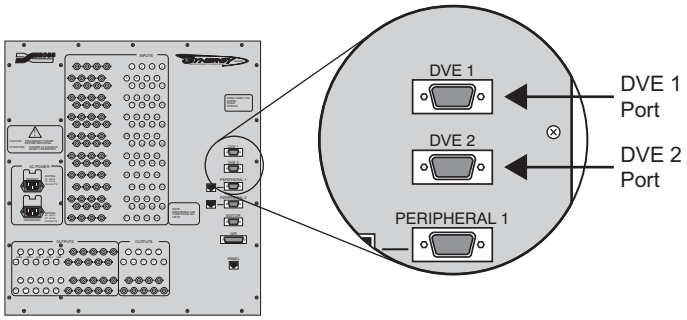
1. Ensure that your **Standard GPI Output Worksheet** is fully completed, as outlined in the section "**Standard GPI Setup**" on page 9-22.
2. Ensure that your GPI outputs are properly wired from the Synergy switcher to the GPI input port on your secondary external DVE. Refer to the section "**Standard GPI Setup**" on page 9-22 for more information.
3. Using the information from your **Standard GPI Output Worksheet**, follow all instructions in the section "**Programming Standard GPI Outputs**" on page 9-29. In this section, you will name each GPI output, and set up specific output parameters such as trigger type and level.
4. Refer to the documentation for your DVE for instructions on assigning the external DVE's GPI input ports to specific operational functions.

This completes the procedure to connect and program GPI outputs.

Remote Control Connections

The Synergy switcher provides powerful remote control capability for the primary external DVE, allowing you to use the "**DVE Send**" mode to perform fast and simple DVE transitions from the switcher panel. In this mode, when you set up a **DVE Send** transition, you are electronically routing a specific set of signals from the selected MLE to the DVE for processing — and then *back* into the MLE for Keying. The mode also allows you to recall DVE effects from the switcher panel.

Use the figure below for reference in the following procedures:



Synergy Series Frame, Rear View — DVE Ports 1 and 2

Use the following procedure to connect remote control to the primary external DVE:

1. Connect a serial cable between the **DVE 1** port on the switcher and the appropriate port on your external DVE. Refer to the documentation for your DVE for instructions on connecting communications.
2. If your primary external DVE includes a second channel that requires its own unique connection, connect a serial cable between the **DVE 2** port on the switcher and the appropriate port on your external DVE. Refer to the documentation for your DVE for instructions on connecting communications.

Refer to the section "**DVE Functions**" on page 13-37 for details on establishing communications with the primary external DVE.

Communications Setup

The **DVE Communications Setup** procedures allow you to set up communications parameters with your primary external DVE. Once the procedures are completed, the "**DVE Send**" feature is operational, and custom control buttons can also be programmed to perform specific tasks such as **Play**, **Stop**, **Go To Start**, and **Go To End**. Refer to the section "**External DVE Custom Controls**" on page 13-37 for details. In the ***Synergy Series Operation Guide***, refer to Chapter 11, "**DVE Send**" for complete instructions on the **DVE Send** feature.

Note

You must have the **DVE Send and Remote Control Software Option** installed to control an external DVE from the Synergy switcher. Refer to the section "**Installed Options Menus**" on page 2-37 for more information.

The following topics are discussed in this section:

- Setting up BNCs for External DVEs
- Setting Up Auto Keys
- Setting Up Aux Bus Tallies
- Setting Up Clean Feed Output
- Setting Up Communications Type
- Setting Up DVE Send

Setting up BNCs for External DVEs

The following procedure allows you to associate physical BNC connectors with a DVE "fill" signal and an alpha signal for the primary external DVE. During the procedure, refer to the **Input Type** column in your **Input Worksheet**. These "types" will be entered on the **BNC Type Menu** for each external DVE input connected to the frame.

Important

All BNC inputs types must be assigned to **Video**, **Alpha**, or **Reference**, unless the device connected to that BNC input is controlled by the Synergy switcher.

The **Main Area** of the **BNC Menus** provide a mini "help" message, plus a **Status Box** that lists the following information for the selected BNC:

- **BNC** — Current name and physical BNC connector (in parentheses). All lines below refer to this BNC.
- **Maps to** — Physical control panel button to which the BNC is mapped.
- **Type —** Input "type" for the selected BNC.
- **Tally —** Tally assignment for the selected BNC.
- **Auto Key —** Auto-key association for the selected BNC. Every BNC input has an associated auto-key, which can be an input (such as an alpha signal), or black (for inputs such as VTRs or cameras).
- **Asp Ratio —** Native aspect ratio for the selected BNC.

Use the following procedure to set your input types for your primary external DVE:

1. Navigate to the **BNC Menu 1-3** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **BNC**.
2. Press **BNC Type** to display the **BNC Type Menu**.

BNC — BNC Type Menu

3. Assign a BNC input to an external DVE as follows:
   - Use the **BNC** knob to select the BNC input that is connected to the fill signal from the DVE.
   - Use the **Type** knob to select **DVE**

Note

When you assign a remote device to a BNC crosspoint, pressing that crosspoint button will display the corresponding device control menus. If it is on a Key bus, pressing the button will cycle through the device control menus and the **Key Type Menu**.

   - Use the **Asp Ratio** knob to select the native aspect ratio of the video signal for the selected BNC.
4. Assign the alpha signal from the DVE to the fill BNC as follows:
   - Use the **BNC** knob to select the BNC input that is connected to the alpha signal from the DVE.
   - Use the middle **Type** knob to select **Alpha**. Use this option when an alpha signal (also known as a "key" signal) is connected to the selected BNC. External DVEs typically provide unique alpha signals. Selecting **Alpha** generates a filtered list on the **Alpha Setup Menu**.
   - Use the **Asp Ratio** knob to select the native aspect ratio of the video signal for the selected BNC.

This completes the procedure for setting up BNC input types for your primary external DVE.

Setting Up Auto Keys

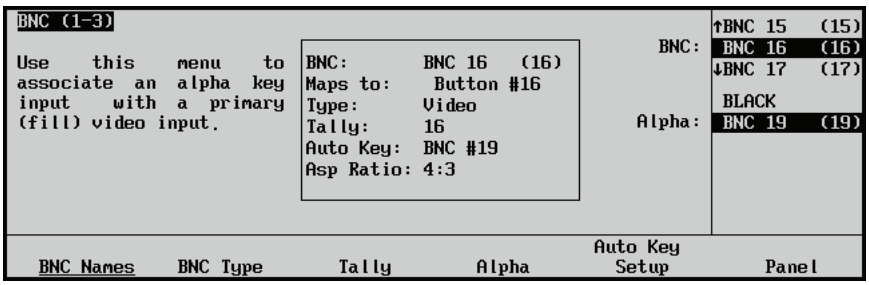
The following procedure allows you to associate alpha (Key) signals with their primary (fill) video inputs, associating **DVE 1 Fill** with **DVE 1 Alpha**. When you select a key source on the Key bus, its alpha and fill are automatically selected.

Operating Tip

During the procedure, refer to the **Auto Key** column in your **Input Worksheet**. The alpha input numbers will be entered on the **BNC Auto Key Setup Menu** for each associated fill video signal connected to the frame.

Use the following procedure to set up an Auto Key:

1. Navigate to the **BNC Menu 1-3** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **BNC**.
2. Press **Auto Key Setup** to display the **Auto Key Setup Menu**.



BNC — Auto Key Setup Menu

3. Assign an alpha BNC to a BNC input as follows:
   - Use the **BNC** knob to select the BNC with the input video signal that you want to assign as the fill.
   - Use the **Alpha** knob to select the BNC with the input video signal that you want to assign as the alpha.

Note

Select **BLACK** for inputs with no associated alpha. This is the default setting.

This completes the procedure for setting up an Auto Key for your primary external DVE.

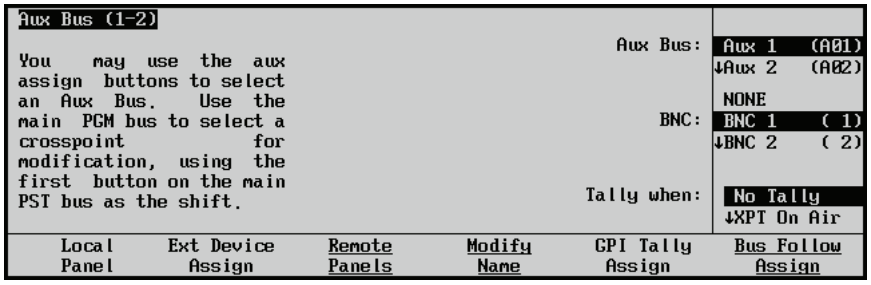
Setting Up Aux Bus Tallies

When an Aux Bus is used to route video to an external DVE, this procedure sets up the method for tallying that bus. By selecting certain parameters, you can tally the bus (lighting the red "**ON**" LED on the Aux panel) whenever the external DVE is used on air — or as part of the composite on air image.

For example, by telling the Synergy switcher that Aux Bus 1 feeds DVE 1, the switcher will tally Aux Bus 1 whenever DVE 1 is taken on air.

Use the following procedure to set up the Aux Bus tally:

1. As required, refer to your **Auxiliary Output Worksheet** (refer to the section "**Auxiliary Output Worksheet**" on page 4-13) to verify the destinations and functions of all Aux Bus outputs.
2. Navigate to the **External Device Assignment Menu** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **Aux Bus** ⇨ **Ext Device Assign**.



Aux Bus – External Device Assignment Menu

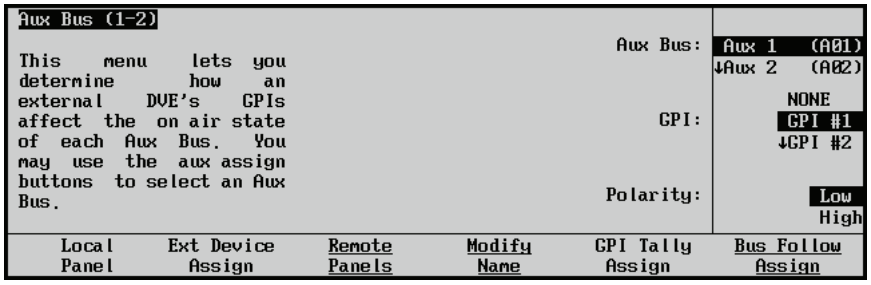
3. Assign the method by which the Aux Bus is tallied as follows:

   - Use the **Aux Bus** knob to select the Aux Bus whose output is physically connected to the input of the external DVE.
   - Use the **BNC** knob to select the BNC *input* on the switcher that is connected to the output of the external DVE.
   - Use the **Tally when** knob to select the method by which the Aux Bus is tallied. You can select from the following options:
     - ~ **No Tally** — Use this option to prevent the Aux Bus from being tallied, regardless of what is selected on air.
     - ~ **XPT On Air** — Use this option to tally the Aux Bus whenever the selected BNC is used on air.
     - ~ **GPI & XPT On** — Use this option to tally the Aux Bus whenever the selected BNC is used on air, and whenever an assigned "input" GPI is enabled. *Both criteria* must be active in order for the Aux Bus to tally properly. An input GPI port must be associated with the Aux Bus that you chose.

Note

The **GPI & XPT On** function is specifically designed for external DVEs that can generate a GPI trigger each time a different input source is used in an effect (for example, in a rotating effect in which different sources are used on the front and back sides of the image). For additional information, refer to the section "**DVE Interface Specifications**" on page 13-21

4. Press **GPI Tally Assign** to display the **GPI Tally Assign Menu**.



Aux Bus — External Device, GPI Tally Assign Menu

5. Assign an input GPI port with the selected Aux Bus as follows:

   - Use the **Aux Bus** knob to select the Aux Bus that you wish to associate with a GPI input trigger.
   - Use the **GPI** knob to select the desired input GPI port.

- Use the **Polarity** knob to select if the GPI triggers on a low or high-level pulse.

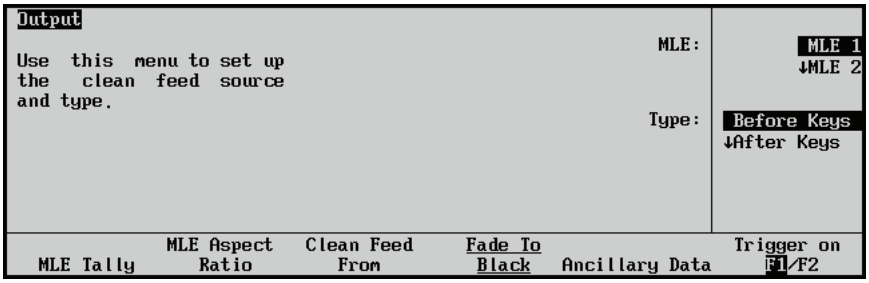
This completes the procedure for setting up Aux Bus tallies for your external DVE.

Setting Up Clean Feed Output

The **Clean Feed From Menu** allows you to set the point from which the clean feed signal is derived. The selected signal is then routed to the **CLEAN** output connector on the rear of the Synergy frame.

Use the following procedure to set up the **Clean Feed** output for your primary external DVE:

1. Navigate to the **Clean Feed From Menu** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installation ⇨ Output ⇨ Clean Feed From**.



Clean Feed From Menu

2. Set the Clean Feed for an MLE as follows:
   - Use the **MLE** knob to select the *bottom MLE*.
   - Use the **Type** knob to select **DVE Alpha**.
     ~ This choice eliminates **DVE Send** limitations with regard to routing Keys to a DVE. Specifically, you cannot route a **Squeeze & Tease Key**, a **Chroma Key**, or a modified **Auto Select Key** to an external DVE without a background signal behind it — *unless* you enable the **Clean Feed Alpha** feature.

     ~ With this feature enabled, the clean feed alpha signal is routed to the DVE, thus removing the **DVE Send** limitations with **Squeeze & Tease**, **Chroma** and **Auto Select** keys as described in the section "**Clean Feed Setup**" on page 9-16.

Important

With **DVE Alpha** selected and the clean feed alpha signal routed to the external DVE, the **Clean Feed** output signal (on the **CLEAN** output connector) of the switcher is lost.

This completes the procedure to set up the **Clean Feed** output when using a primary external DVE.

Setting Up Communications Type

Use the following procedure to set up communications with your primary external DVE:

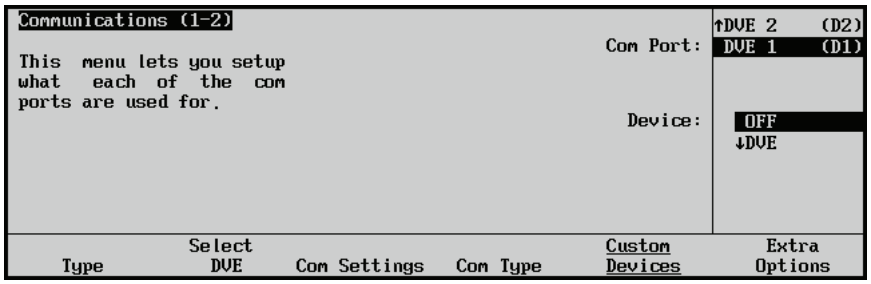
1. Ensure that the **DVE Send and Remote Control Option** is installed. If not, please contact **Ross Video** for details. Refer to the section "**Installed Options Menus**" on page 2-37 for instructions on verifying the status of installed options.

2. Ensure that serial cable(s) are connected between the proper Synergy switcher port(s) and the primary external DVE. Refer to the section "**Remote Control Connections**" on page 13-10 for details.
3. Navigate to the **Communications Menu 1-2** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **Communications**.

Note

The **F2** softkey (labeled **Select Device** above) *changes* depending on the communications *type* selected with the **F1** softkey (**Type**).

4. Press **Type** to display the **Com Type Menu**.



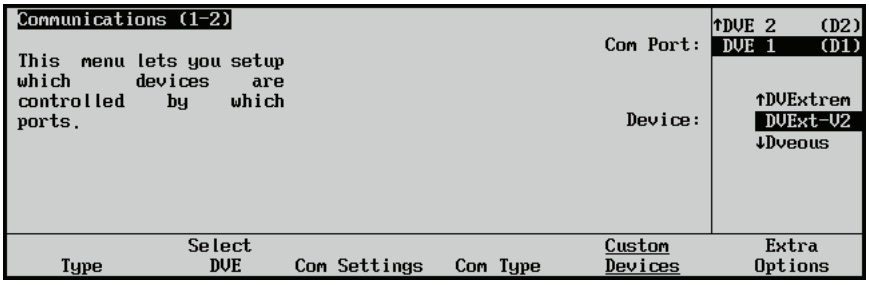
Com Type Menu

5. Assign the primary external DVE to the *physical* BNC input connector on the switcher as follows:
   - Use the **Com Port** knob to select the port that the primary external DVE is connected to.
   - Use the **Device** knob to select the device. You can select between the following:
     ~ **OFF** — Use this option to turn the serial port off.
     ~ **DVE** — Use this option to display the **BNC** scrolling list.
     ~ **Primary DVE** — Use this option to enable the selected port for the primary external DVE control.
   - Use the **BNC** knob to select the *physical* BNC input connector on the switcher to which "fill" video output on the primary external DVE is connected. All external DVE devices are listed in numeric order, followed by their input numbers in parentheses.

Note

This *filtered* list is comprised of BNCs set to DVE that were designated as a **DVE** on the **BNC Type Menu**. Refer to the section "**Setting up BNCs for External DVEs**" on page 13-11 for details on selecting BNC types.

6. Press **Select DVE** to display the **Select DVE Protocol Menu**.

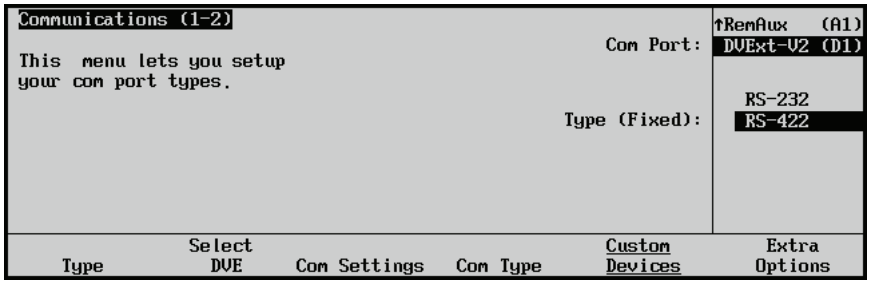


Select DVE Protocol Menu

7. Assign a specific DVE protocol to the DVE communications port as follows:
   - Use the **Com Port** knob to select the port that the primary external DVE is connected to.
   - Use the **Device** knob to select the specific external DVE that is connected to the port. The following external DVEs are currently supported:
     - ~ **NONE** — Use this option to not assign a DVE to the DVE port.
     - ~ **A51 ESBus** — Use this option to assign an **Abekas A51 DVE** to the DVE port.
     - ~ **Betacam** — Use this option to assign a DVE using **Betacam** protocol to the DVE port. Refer to the section "**DVE Betacam Protocol Specifics**" on page 13-35 for information on setting up the Decode NAKs option.
     - ~ **Charisma** — Use this option to assign a **Questech Charisma VTL DVE** to the DVE port.
     - ~ **DVExtreme** — Use this option to assign a **Pinnacle DVEXtreme DVE** to the DVE port.
     - ~ **DVExt-V2** — Use this option to assign a **Pinnacle DVEXtreme Version 2 DVE** to the DVE port.
     - ~ **Dveous** — Use this option to assign an **Accom Dveous DVE** to the DVE port.
     - ~ **MagcDaVE** — Use this option to assign a **Snell & Wilcox Magic DaVE DVE** to the DVE port.
     - ~ **DPM100** — Use this option to assign a **Grass Valley** Digital Picture Manipulator using the GVG DPM-100 protocol to the DVE port.
     - ~ **CUSTOM00** — Use this option, in conjunction with the **Custom Devices** button, to manually configure the communications protocol for your particular device.
     - ~ **CUSTOM1** — Use this option, in conjunction with the **Custom Devices** button, to manually configure the communications protocol for your particular device.
8. Press **Com Settings** to display the **DVE Com Settings Menu**.

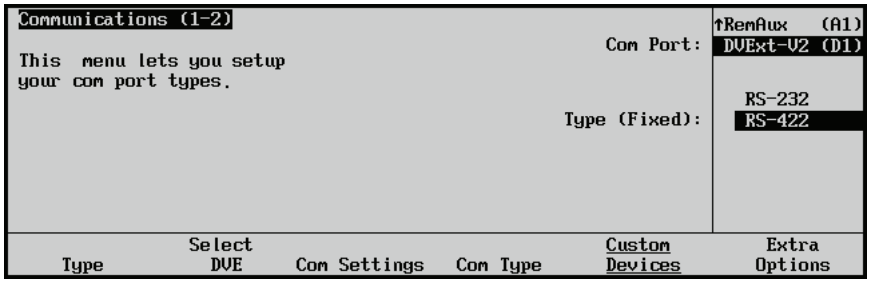
Note

The baud rate and parity may be fixed depending upon the selected device. Refer to the documentation for your DVE to confirm the required settings for your external DVE.



DVE Com Settings Menu

9. Set the baud rate and parity as follows:
   - Use the **Com Port** knob to select the port that the primary external DVE is connected to.
   - Use the **Baud** knob to select the baud rate for the primary external DVE.
   - Use the **Parity** knob to select the parity for the specific DVE. Refer to the section "**DVE Interface Specifications**" on page 13-21 and your device's documentation for the specific settings for your external DVE.
10. Press **Com Type** to display the **DVE Com Type Menu**.



DVE Com Type Menu

11. Set the serial communications type as follows:
    - Use the **Com Port** knob to select the port that the primary external DVE is connected to.
    - Use the **Type** knob to select the type of serial communications for the selected DVE port.
12. Press **Extra Options** to display the **Extra Options Menu** if you are connecting a device using the **Grass Valley DPM-100 Protocol**. Refer to the section below for information on the Extra Options settings for your device.
13. Press **HOME** to display the **Installation Change Confirmation Screen**.
14. Accept or reject the changes you have made as follows:
    - Press **Confirm** to accept the changes.
    - Press **Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure for setting up DVE communications.

Extra Options Setup

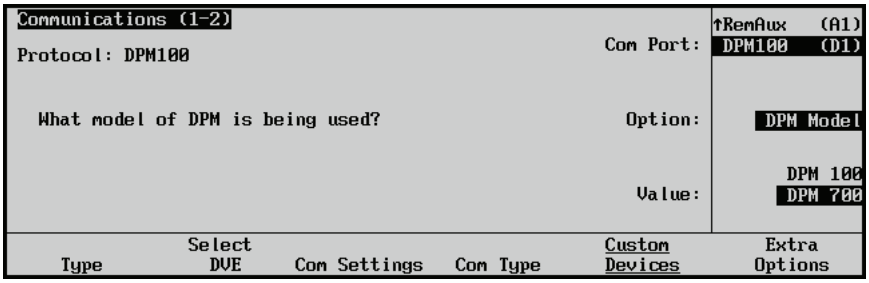
The **Extra Options Menu** for an external DVE allows you to complete the communications setup for some of the external DVEs on the Synergy switcher.

Grass Valley DPM-100 Protocol

The Extra Options Menu for external DVEs using the Grass Valley DPM-100 Protocol allows you to specify the GVG Model that you are setting up.

Use the following procedure to set up the Extra Options for a Grass Valley external DVE using the DPM-100 Protocol:

1. Assign a Grass Valley DVE Model as follows:



Communications Extra Options — Grass Valley DMP-100 Menu

- Use the **Com Port** knob to select the remote port that the external DVE is connected to.
- Use the **Option** knob to select **DPM Model**.
- Use the **Value** knob to select the model of external DVE that you are using. You can select between the following:
  - ~ **DPM 100** — Use this option to assign a Grass Valley DPM-100 external DVE to the selected com port.
  - ~ **DPM 700** — Use this option to assign a Grass Valley DPM-700 external DVE to the selected com port.

This completes the procedure to set up the Extra Options for a Grass Valley external DVE using the DPM-100 Protocol.

Setting Up DVE Send

Important

In previous versions of Synergy software, the **DVE Send** button was used to control external DVEs. The default setting in version 14 or higher system software is **Internal**. Holding down the **WIPE** + **DVE SEND** buttons will also activate **Internal** Squeeze & Tease functionality when **External** is toggled on.

Use the following procedure to set the functionality of the **DVE Send** button:

1. Navigate to the **Personality Menu 3-4** as follows:
   - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Personality** ⇨ **MORE** ⇨ **MORE**.

Personality Menu 3-4

2. Toggle the **DVESend Bttn** feature as follows:
   - **Int** — Select this option to use the **DVE Send** button for internal Squeeze & Tease wipes.
   - **Ext** — Select this option to use the **DVE Send** button for external DVE functions.

This completes the procedure for setting to set the functionality of the **DVE Send** button to **External**.

DVE Interface Specifications

This section provides interface and technical information for *specific* DVEs with which the Synergy switcher interfaces.

Pinnacle DVEXtreme

This section provides information that pertains to interfacing the **Pinnacle DVEXtreme** to the Synergy switcher — as the *primary* DVE. Once the interface is set up, you can perform a variety of DVEXtreme-specific functions directly from the Synergy control panel — via RS-422 serial control.

Available DVEXtreme Functions

The following set of basic DVEXtreme functions can be mapped to the custom control buttons on the Synergy switcher:

Available DVEXtreme Remote Control Functions

DVE Function	Description
Go To Start	Cues the DVEXtreme to the start of its effect.
Go To End	Cues the DVEXtreme to the end of its effect.
Play	Plays (runs) the DVEXtreme effect forward.
Play Reverse	Plays (runs) the DVEXtreme effect in reverse.
Recall	Recalls a selected DVEXtreme effect (from **1** to **30**).
Stop	Stops the DVEXtreme effect.
Pause	Pauses (stops) the DVEXtreme effect.

Refer to the section "**External DVE Custom Controls**" on page 13-37 for custom control instructions.

In addition, once communication is properly set up with the DVEXtreme, the "**DVE Send**" feature is operational. This feature allows you to perform fast and simple DVE transitions from the switcher panel — as easy as selecting a Dissolve or a Wipe. When you set up a **DVE Send** transition, you are electronically routing a specific set of signals from the selected MLE to the DVEXtreme for processing — and then *back* into the MLE for keying.

Note

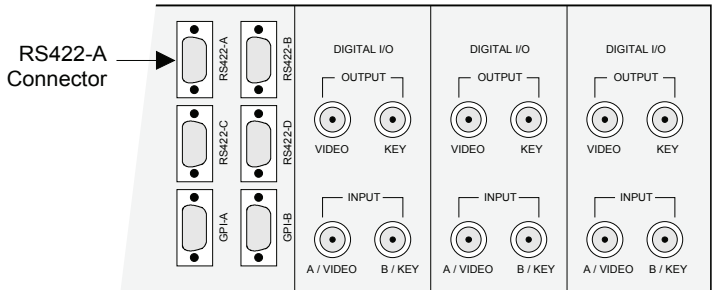
DVEXtreme V2 protocol is now implemented for enhanced external DVEXtreme control. This protocol gives the Synergy switcher full fader and transition rate control of the DVE.

In the ***Synergy Series Operation Guide***, refer to Chapter 11, "**DVE Send**" for complete instructions on the **DVE Send** feature.

DVEXtreme Serial Connection

This section describes the requirements for interfacing the Synergy switcher to the Pinnacle DVEXtreme.

1. On the rear panel of the DVEXtreme, locate the connector marked **RS422-A**, as shown in the diagram "**DVEXtreme DVE — Rear Panel**" on page 13–22:



DVEXtreme DVE — Rear Panel

2. Locate the connector marked **DVE 1**on the Synergy frame.
3. Construct a custom cable using the following table as a guide. The cable must use standard male 9-pin "D" subminiature connectors at both ends.

Synergy to DVEXtreme Wiring Chart

Synergy Control Panel			Pinnacle DVEXtreme	
Synergy DVE 1 Pin #	**Signal**		**DVEXtreme RS422-A Pin #**	**Signal**
1	n/c		n/c	Chassis Ground
2	TxA (Tx-)	→	8	Receive A (-)
3	RxB (Rx+)	→	7	Transmit B (+)
4	n/c			Signal Ground
5	Ground		n/c	n/c
6	Ground		n/c	Signal Ground
7	TxB (Tx+)	→	3	Receive B (+)
8	RxA (Rx-)	→	2	Transmit A (-)
9	n/c		n/c	Signal Ground

4. Using the custom cable, connect the **RS422-A** connector on the DVEXtreme to the **DVE 1** connector on the Synergy frame.

Operating Tip

When programming standard effects from a Synergy switcher, we recommend the following connections to a DVEXtreme:

Synergy	DVEXtreme
Aux 1	CH1 Video
Aux 2	CH1 Key
Aux 3	CH2 Video
Aux 4	CH2 Key

DVEXtreme Setup Specifics

This section provides information regarding specific DVEXtreme setups. The following topics are discussed:

- DVEXtreme Remote Control Setup
- GPI Output Connection (for Synergy Tally Mode)

DVEXtreme Remote Control Setup

On the DVEXtreme, the **Remote Control Menu** controls the way the DVEXtreme operates when connected to an external device. Press **Shift + Remote** to display the **Remote Control Menu**. Default values are shown below:

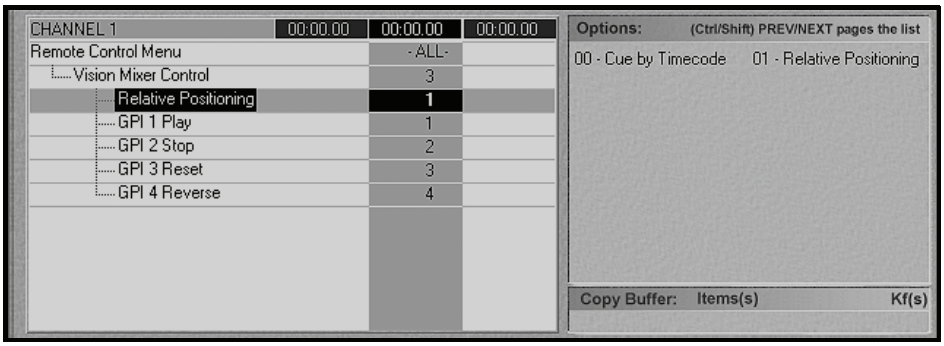
DVEXtreme — Remote Control Menu

The following remote control settings must be utilized for proper operation with the Synergy switcher:

- The first item in the **Remote Control Menu** chooses the remote control protocol. This item must be set to "Vision Mixer Control" in order for all remote control actions to function properly. The resulting display is shown below.

DVEXtreme Remote Control Menu — Vision Mixer Control

- The second item in the **Remote Control Menu** selects how the effects respond to Fader Bar and Auto Transition control. This option should be set to "Relative Positioning" in order for effects to run smoothly at any transition rate regardless of the effect's programmed duration.



DVEXtreme Remote Control Menu — Relative Positioning

In Chapter 5 of the ***DVEXtreme User's Guide***, refer to the "**Remote Control**" section for additional information on the "**Vision Mixer Control**" and "**Relative Positioning**" flags.

GPI Output Connection (for Synergy Tally Mode)

The Synergy **Aux Bus Assignment** function allows you to set up certain methods for *tallying* an Aux Bus, and lighting the red "**ON**" LED on the Aux panel whenever a specific external device is used *on air* — or as part of the composite on air image.

As one of the **Aux Bus Assignment** options, the **GPI & XPT On** function is *specifically* designed for external DVEs that can generate a GPI trigger each time a different input source is used in an effect (e.g., in a rotating effect in which different sources are used on the front and back sides of the image).

DVEXtreme allows you to connect its GPI output ports for purposes of tallying Synergy Aux Buses.

Note

Two GPI output ports are available per DVEXtreme channel. Thus, on a single channel system, GPI output port numbers **1** and **2** are valid. Similarly, on a dual channel system, ports **1**, **2**, **3** and **4** are valid.

The following table lists GPI input and output pinouts on the DVEXtreme GPI-A connector.

DVEXtreme GPI-A Connector Pinouts (mini 15-pin "D" Male)

Pin	Signal	Pin	Signal	Pin	Signal
1	In 0	6	Ground	11	In 1
2	Ground	7	Out 0 +	12	Ground
3	In 2	8	Out 0 -	13	In 3
4	Ground	9	Out 1 +	14	Ground
5	No connection	10	Out 1 -	15	No connection

GPI Output Connection

The **GPI-A** connector on the rear of the DVEXtreme chassis includes pins for *two* GPI output lines (from "**Channel 1**" only). If a second or third channel is installed, the two output ports on each channel's DVE card are *not* routed to the rear connector panel.

Note

If you wish to connect the GPI output ports from Channel 2 and Channel 3, a special GPI cable is required. Contact Pinnacle Systems Customer Service for full details.

DVEXtreme version 2.0 provides two modes for GPI outputs. Using the **Setup Menu**, the **GPI Out Tally Mode** feature can be enabled or disabled as follows:

- When **ON**, GPI outputs trigger when an input is selected. For example, when input 1 is selected on any layer (on any DVEXtreme channel), GPI output port 1 triggers. This feature can be used as an "active" source ID.
- When **OFF**, GPI output ports can be programmed into the DVEXtreme timeline to trigger at a certain point.

Use the following procedure to connect GPI output lines:

1. Using the pinout data from the table on the previous page, construct a cable that connects the desired GPI input ports (on the Synergy switcher) to the desired GPI output lines on DVEXtreme.

Note

For the Synergy side of the connection, refer to the section "**Standard GPI I/O Connector Pinouts**". If required, refer to the section "**Standard GPI Setup**" on page 9-22.

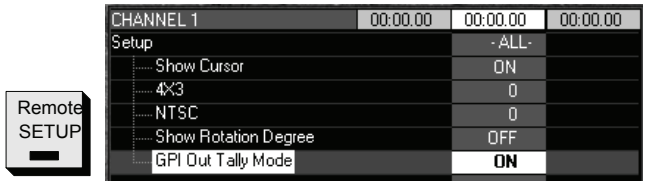
   If you have *already* wired your GPI inputs on DVEXtreme, simply add wiring for your GPI outputs to the same connector.

2. With the cable construction complete, connect one end of the cable to the GPI input connector (on the Synergy switcher) and the other cable end to the **GPI-A** connector on the DVEXtreme.

This concludes the procedure to connect GPI output lines.

Use the following procedure to set up automatic GPI output triggers:

1. On the DVEXtreme control panel, press **Setup** to display the **Setup Menu**.



DVEXtreme Control Panel — Setup Menu

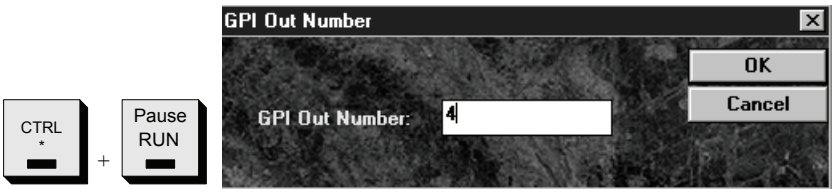
2. Highlight the **GPI Out Tally Mode** line.
3. Press **ENTER** to toggle the function **ON**. In this mode, the GPI output ports on the DVEXtreme will trigger when an input is selected. For example, when input 3 is selected on any layer (on any DVE channel), GPI output port 3 will trigger.

Note

This mode is *recommended* for use with the Synergy switcher as an "active" source indication.

Use the following procedure to set up manual GPI output triggers:

1. On the DVEXtreme control panel, press **Setup** to display the **Setup Menu**.
2. Highlight the **GPI Out Tally Mode** line.
3. Press **ENTER** to toggle the function **OFF**. In this mode, the GPI output ports on the DVEXtreme can be programmed into the timeline to trigger at certain points.
4. In the DVEXtreme Timeline, navigate to the location where you would like to insert a GPI output trigger.
5. Press **CTRL + RUN** to display the **GPI Out Number Dialog**.



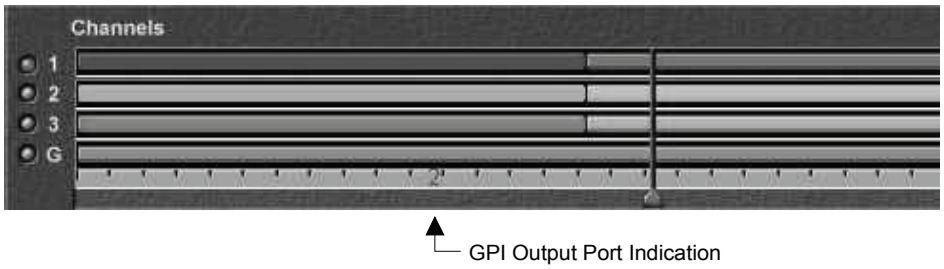
DVEXtreme Control Panel — GPI Out Number Dialog

6. Enter the number of the GPI output port that you wish to use, and press **ENTER**.

Note

Remember that two GPI output ports are available per DVEXtreme channel. Thus, on a single channel system, GPI output port numbers **1** and **2** are valid. Similarly, on a dual channel system, ports **1**, **2**, **3** and **4** are valid.

When a valid number has been entered, the selected number appears on the DVEXtreme Timeline. This port will trigger when the Timeline reaches that point in the effect.



DVEXtreme Timeline — GPI Output

Accom (Abekas) Dveous

This section provides information that pertains to interfacing the **Accom Dveous** to the Synergy switcher — as the *primary* external DVE. Once the interface is set up, you can perform a variety of Dveous-specific functions directly from the Synergy control panel — via RS-422 serial control.

Available Dveous Functions

The following set of basic Dveous functions can be mapped to the custom control buttons on the Synergy switcher:

Available Dveous Remote Control Functions

DVE Function	Description
Go To Start	Cues the Dveous to the start of its effect.
Go To End	Cues the Dveous to the end of its effect.
Play	Plays (runs) the Dveous effect forward.
Play Reverse	Plays (runs) the Dveous effect in reverse.
Recall	Recalls a selected Dveous effect from memory (from **0** to **99**, or from **0** to **39** from the DVE shot box on the Synergy panel itself).
Stop	Stops the Dveous effect.
Pause	Pauses (Stops) the Dveous effect.

Refer to the section "**External DVE Custom Controls**" on page 13-37 for custom control instructions.

In addition, once communication is properly set up with the Dveous, the "**DVE Send**" feature is operational. This feature allows you to perform fast and simple DVE transitions from the switcher panel — as easy as selecting a Dissolve or a Wipe. When you set up a **DVE Send** transition, you are electronically routing a specific set of signals from the selected MLE to the Dveous for processing — and then *back* into the MLE for keying.

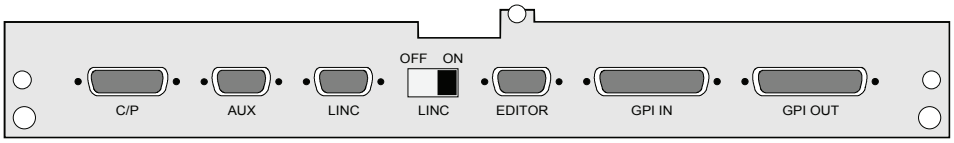
In the ***Synergy Series Operation Guide***, refer to Chapter 11 "**DVE Send**" for complete instructions on the **DVE Send** feature.

Dveous Serial Connection

This section describes the requirements for interfacing the Synergy switcher to the Accom Dveous.

Use the following procedure to connect the Synergy switcher to the Accom Dveous DVE:

1. On the rear of the Dveous frame, locate the connector marked **Editor**, on the Dveous frame communications board as shown below:



Dveous Frame — Editor Connector

2. On the Synergy frame, locate the connector marked **DVE 2**.

Note Connector **DVE1** may also be used if the Synergy switcher is set to use that connector as the primary DVE.

3. Construct a custom cable using the table "**Synergy Frame to Dveous Wiring Chart**" as a guide. The cable must use standard male 9-pin "D" subminiature connectors at both ends.

Synergy Frame to Dveous Wiring Chart

Synergy Control Panel			Accom Dveous	
Synergy DVE 2	**Signal**		**Dveous Editor A53D mode**	**Signal**
1	Frame GND	→	1	Chassis GND
2	Transmit A (-)	→	8	Receive A
3	Receive B (+)	→	3	Transmit B
4	Receive Common	→	6	Signal Ground
5	n/c		n/c	n/c
6	Transmit Common	→	4	Signal Ground
7	Transmit B (+)	→	2	Receive B
8	Receive A (-)	→	7	Transmit A
9	Frame GND		n/c	Signal Ground pin 9

4. Using the custom cable, connect the **Editor** connector on the Dveous DVE to the **DVE 2** connector on the Synergy frame.

This completes the procedure to connect the Synergy switcher to the Accom Dveous DVE.

Dveous Setup Specifics

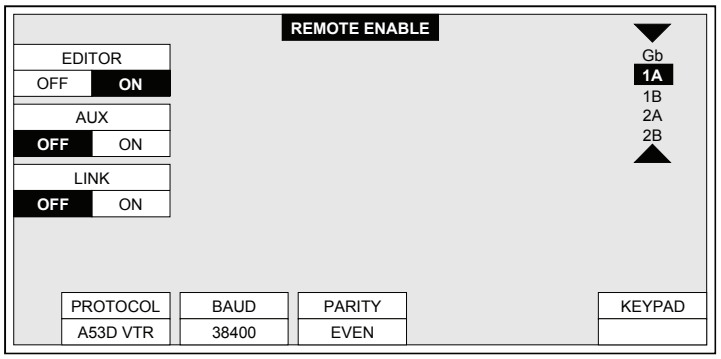
This section provides information regarding specific Dveous setups. The following topics are discussed:

- Dveous Remote Control Setup
- GPI Output Connection

Dveous Remote Control Setup

On the Dveous, the **Remote Enable Menu** controls the way Dveous operates when connected to an external device.

1. Press the **Remote Enable** button (in the system buttons to the left of the Dveous joystick) to display the **Remote Enable Menu**.



Dveous Remote Control settings (Editor On, A53D VTR, 38400, Even)

2. Using the Dveous panel soft buttons and soft pots, the **Editor, Protocol, Baud** and **Parity** values should be set to display the values as shown above.

Note

The settings for **Baud** and **Parity** on the Dveous should match those in the Synergy **Communications Menu 1-2**. A baud of **38400** and parity of **Even** are the *default* values in the Synergy **Communication Menu 1-2** for the Dveous Interface. Your specific DVE may require an **Odd** Parity value. Refer to the documentation for your DVE to ensure the Parity is set correctly in the Synergy **Communication Menu**.

Dveous GPI Output Connection

The Dveous GPI outputs #5, 7, 9 and 11 can be used to indicate front-back status on Dveous channels 1A, 1B, 2A, 2B respectively. Where only 2 Aux Buses on the Synergy are available, these GPIs can be used to switch front-back video to Dveous for effects where only one input is visible on screen at a time per channel pair (such as a slab turn).

To use the Dveous GPIs in this manner, set the Dveous **Remote Setup** menu for **Mode 1**. The Dveous tallies these GPI outputs high for the front side and low for the back side. Also in mode 1, the GPI outputs 6, 8, 10, 12 provide tallies as to whether channels 1A, 1B, 2A, and 2B (respectively) are included in the on-air program output. Connecting these GPIs to the Synergy frame allows proper tallying in the Synergy Aux Bus system. Note that all effects must be built with the same input-to-channel mapping.

If front-back signals are not needed, setting the Dveous to Tally mode will set the GPI outputs to tally (low active) for the 12 possible inputs on the Dveous frame (for example, GPI output 1 tallies low when input 1 to the Dveous is included in the output video). This “active” source tallying is the recommended mode for connection to Synergy where possible. For more information, refer to your Dveous Technical guide for GPI output pinouts and the **Remote Control Setup Menu** section.

Dveous Operational Notes

Please note the following points for proper operation with the Synergy switcher:

- **Stop on Limits**

  In order for the Dveous to stop on the limits of the keyframes when the Synergy sends play commands, the **Stop Next** button must be on (lit) on the Dveous panel. The Dveous remote interface cannot set or change this value — thus it must be set on the Dveous if required.

Note

DVE Send’s auto-trans and fader bar use commands which are unaffected by the **Stop Next** option, so they will run through all the keyframes during a full transition.

- **Fader Bar Control**

  With **DVE Send** operation, when using the Synergy’s fader-bar to manually run the effect, there may be a small difference between the start field and the end field points — as compared to those when using the auto-trans button. Re-calibrating the faders should minimize this difference.

  If the difference is still visible in the effect, modify the effect accordingly so that nothing happens on screen during these few fields at either end of the effect.

- **Communication Loss**

  The Dveous may stop responding to the Synergy if an error occurs during communication, such as if the cable is disconnected in the middle of a message, or if an incorrect communication setup is sending incorrect messages. In some cases, the Dveous will re-establish communications once the error is corrected. In other cases, the Dveous will have to be reset or have its frame powered off and then back on, the Synergy switcher should not need to be reset. It is a good idea to have **DVE Send** off on the Synergy panel until the Dveous has completed its reset or power-up sequence.

- **Using Dveous as a 1 + 1 DVE**

  While the single standard Dveous Video and Key output is highly capable (including keying internally), Accom informs us that an additional card (Channel Output) is required to provide complete 1 + 1 DVE usage, such as full featured flying keys within Synergy using the Dveous.

- **Dveous Software Version**

  The Synergy interface was tested on version 6 Dveous software, installed in all the Dveous modules.

This concludes the discussion for interfacing the **Accom Dveous** to the Synergy switcher as the primary external DVE.

Questech Charisma VTL

This section provides information that pertains to interfacing the **Questech Charisma VTL** to the Synergy switcher — as the *primary* external DVE. Once the interface is set up, you can perform a variety of Charisma-specific functions directly from the Synergy control panel — via RS-422 serial control.

Available Charisma Functions

The following set of basic Charisma functions can be mapped to the custom control buttons on the Synergy switcher:

Available Charisma Remote Control Functions

DVE Function	Description
Go To Start	Cues the Charisma to the start of its effect.
Go To End	Cues the Charisma to the end of its effect.
Play	Plays (runs) the Charisma effect forward.
Play Reverse	Plays (runs) the Charisma effect in reverse.
Recall	Recalls a selected Charisma effect (from **1** to **30**).
Stop	Stops the Charisma effect.
Pause	Pauses (stops) the Charisma effect.

Refer to the section "**External DVE Custom Controls**" on page 13–37 for custom control instructions.

In addition, once communication is properly set up with the Charisma, the "**DVE Send**" feature is operational. This feature allows you to perform fast and simple DVE transitions from the switcher panel — as easy as selecting a Dissolve or a Wipe. When you set up a **DVE Send** transition, you are electronically routing a specific set of signals from the selected MLE to the Charisma for processing — and then *back* into the MLE for keying.

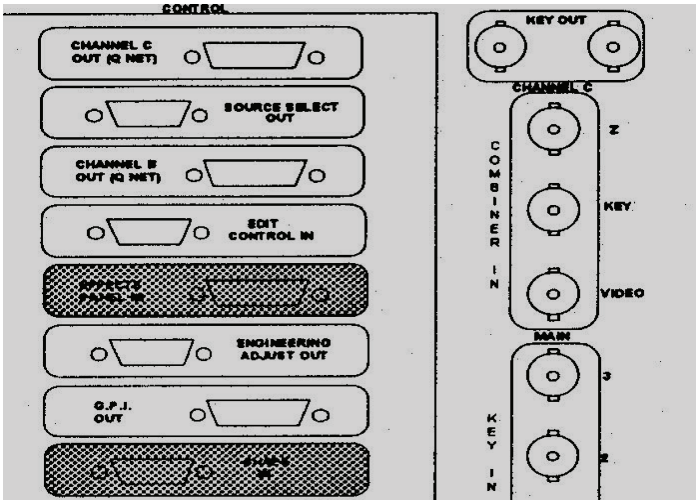
In the ***Synergy Series Operation Guide***, refer to Chapter 11, "**DVE Send**" for complete instructions on the **DVE Send** feature.

Charisma Serial Connection

This section describes the requirements for interfacing the Synergy switcher to the Questech Charisma VTL.

Use the following procedure to connect the Synergy switcher to the Questech Charisma VTL DVE:

1. On the rear panel of the Charisma, locate the connector marked **EDIT CONTROL IN**, as shown below:



Charisma VTL DVE — Rear Panel

2. Locate the connector marked **DVE 1** on the Synergy frame.
3. Construct an RS-422 Null Modem cable using the following table as a guide. The cable must use standard male 9-pin "D" subminiature connectors at both ends.

Synergy Frame to Questech Charisma VTL Wiring

Synergy Control Panel			Questech Charisma VTL	
Synergy DVE 1 Pin #	**Signal**		**Charisma EDIT CONTROL IN Pin #**	**Signal**
1	n/c		1	Chassis Ground
2	TxA (Tx-)	→	8	Receive A (-)
3	RxB (Rx+)	→	7	Transmit B (+)
4	Ground	→	6	Signal Ground
5	Ground	→	5	n/c
6	n/c		4	Signal Ground
7	TxB (Tx+)	→	3	Receive B (+)
8	RxA (Rx-)	→	2	Transmit A (-)
9	n/c		9	Signal Ground

4. Using the Null Modem cable, connect the **Edit Control In** connector on the Charisma VTL DVE to the **DVE 1** connector on the Synergy frame.

This concludes the procedure to connect the Synergy switcher to the Questech Charisma VTL DVE.

Charisma Setup Specifics

This section provides instructions for setting up the Charisma. The Editor protocol on the Charisma must be set to **SSVR**.

Use the following procedure to set the Editor protocol to SSVR on the Charisma DVE:

1. Press the **SYSTEM** button located above the main keyboard.
2. Press the **GLOBAL** button located above the numeric keypad.

3. Press the **Editor Setup** soft key.
4. Using the first "modify" soft key below the screen, select **SSVR protocol**.
5. Using the third "modify" soft key, select the **Mainframe** device.
6. Press the **SYSTEM** button to return to the timeline display.

This completes the procedure to set the Editor protocol to SSVR on the Charisma DVE. Next, the effect must be set up to enable key transitions to do a proper key transition with the Charisma. This must be done for each effect.

Use the following procedure to set up the effect to enable key transitions with the Charisma:

1. Press the appropriate channel button, which is located above the numeric keypad. This will have been determined by the previously selected "Mainframe" device.
2. Using the **Page Up** and **Page Down** softkeys below the display, go to page 3 of 4.
3. Press the **Input Sources** softkey.
4. Press the **Freezes/Key Enable** softkey.
5. Ensure Key Channel Enable is **On** for the entire sequence.
6. Using the **Page Up** or **Page Down** softkeys, return to the timeline screen. This will show you the effects Size/Rotation/Position parameters.

For additional information on setting up your effects to enable key transitions, please refer to the ***Questech Charisma VTL Operating Guide***.

To allow the selection of different effects, the Charisma must have the Shot Box on the screen. However, you must first load all effects. In the ***Questech Charisma VTL Operating Guide***, refer to the section titled "**Disk operation"** for instructions on recalling effects.

This completes the procedures for interfacing the Questech Charisma VTL to the Synergy switcher.

Grass Valley DPM-700

This section provides information that pertains to interfacing the **Grass Valley DPM-700** to the Synergy switcher — as the *primary* external DVE. Once the interface is set up, you will be able to perform a variety of GVG DPM-700-specific functions directly from the Synergy control panel — via RS-422 serial control.

Available GVG DPM-700 Functions

The following set of basic GVG DPM-700 functions can be mapped to the custom control buttons on the Synergy switcher:

Available GVG DPM-700 Remote Control Functions

DVE Function	Description
Go To Start	Cues the DPM-700 to the start of its effect.
Play	Plays (runs) the DPM-700 effect forward.
Play Reverse	Plays (runs) the DPM-700 effect in reverse.
Recall	Recalls a selected DPM-700 effect.
Stop	Stops the DPM-700 effect.
Pause	Pauses (stops) the DPM-700 effect.

In addition, once communication is properly set up with the GVG DPM-700, the "**DVE Send**" feature is operational. This feature allows you to perform fast and simple DVE transitions from the switcher panel — as easy as selecting a Dissolve or a Wipe. When you set up a **DVE Send** transition, you are electronically routing a specific set of signals from the selected MLE to the GVG DPM-700 for processing — and then *back* into the MLE for keying.

In the ***Synergy Series Operation Guide***, refer to Chapter 11, "**DVE Send**" for complete instructions on the **DVE Send** feature.

Note

The GVG DPM-700 does not support fader bar control nor full transition rate control of the DVE.

DPM-700 Serial Connection

This section describes the requirements for interfacing the Synergy switcher to the GVG DPM-700.

Use the following procedure to connect the GVG DPM-700 to the Synergy switcher:

1. On the rear panel of the GVG DPM-700, locate the connector marked **J6 ACCESSORY**.
2. Locate the connector marked **DVE 1**on the Synergy frame.
3. Construct an RS-422 Null Modem cable using the following table as a guide. The cable must use standard male 9-pin "D" subminiature connectors at both ends.

Synergy Frame to GVG DPM-700 Wiring Chart

Synergy Control Panel			GVG DPM-700	
Synergy DVE 1 Pin #	**Signal**		**Accessory Pin #**	**Signal**
1	n/c			
2	TxA (Tx-)	→	8	RxA (Rx-)
3	RxB (Rx+)	→	7	TxB (Tx +)
4	n/c			
5	Ground	→	5	Ground
6	Ground			
7	TxB (Tx+)	→	3	RxB (Rx+)
8	RxA (Rx-)	→	2	TxA (Tx-)
9	n/c			

4. Using the Null Modem cable, connect the **ACCESSORY** connector on the DPM-700 to the **DVE 1** connector on the Synergy frame.

This concludes the procedure to connect the GVG DPM-700 to the Synergy switcher.

DPM-700 Setup Specifics

The factory default protocol for the **ACCESSORY** port on the DPM 700 is Standard 100/200/300. If this has been changed, the **DPM 700 Diagnostic Software Disk** (GVG Assembly Number 074751) will be required to reset the port.

Use the following procedure to reset the port on your GVG DPM-700:

1. Insert the **Diagnostic Software Disk** into the DPM-700 drive.
2. Power down the DPM-700.
3. Power up the DPM-700

   The DPM 700 STREAMLINE™ display will read DPM-700 System Diagnostics.
4. Reset the port as outlined in your GVG DPM-700 documentation.

This concludes the procedure to reset the port on your GVG DPM-700. Next, you will need to set up the communication parameters for the GVG DMP-700.

Communication Setup

Note

The settings for **Baud** and **Parity** on the GVG DPM-700 should match those in the Synergy **Communications Menu 1-2**. Refer to the documentation for your DVE for specific instructions on communication setup.

Use the following procedure to set up the communication parameters for the DPM-700:

1. Using the softkeys on the DPM-700 control panel, navigate to the **Accessory Port Setup Menu** as follows:
   - Select **Comm**.
   - Select **Setup**.
   - Select **USetup**.
   - Select **Acc**.
2. Ensure the following communication parameters are set in the **Accessory Port Setup Menu**:
   - The **Type** field is set to **mod100**.
   - The **Addrs** field is set to **30**.
   - The **Baud** field is set to **38400**.

   If any changes are made, a **SAVE** softkey is displayed on the menu.
3. Press the **Uart** softkey.
4. Ensure the following communication parameters are set:
   - The **Msgbit** field is set to **8**.
   - The **Stpbit** field is set to **1**.
   - The **Parity** field is set to **odd**.

   If any changes are made, a **SAVE** softkey is displayed on the menu.
5. Press the **SAVE** softkey to save all changes.

This concludes the procedure to set up the communication parameters for the GVG DPM-700.

DVE Betacam Protocol Specifics

This section provides set up information for the Decode NAKs (Not Acknowledgement) for DVEs using the Betacam protocol.

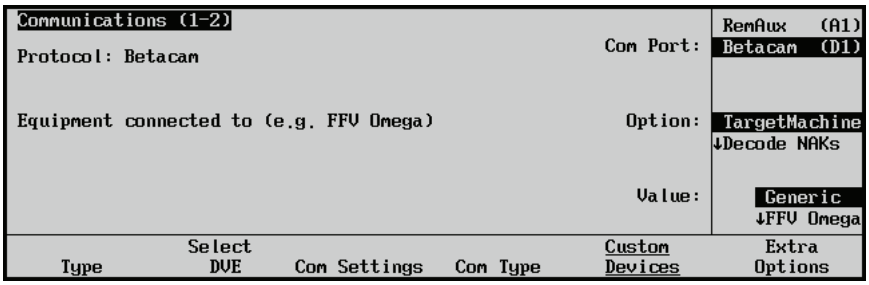
A NAK message is sent from the DVE device to the Synergy switcher to indicate that a Play command was received but not carried out. When you enable the **Decode NAKs** option, the Synergy switcher will act upon the NAK message and re-send the Play command to the DVE device. You can assign the number of fields for the switcher to wait for a message before re-sending the Play command.

Important

The **Decode NAKs** option is enabled by default. The settings should only be modified if you encounter problems using the Play commands with your DVE device or as advised by Ross Video Technical Support.

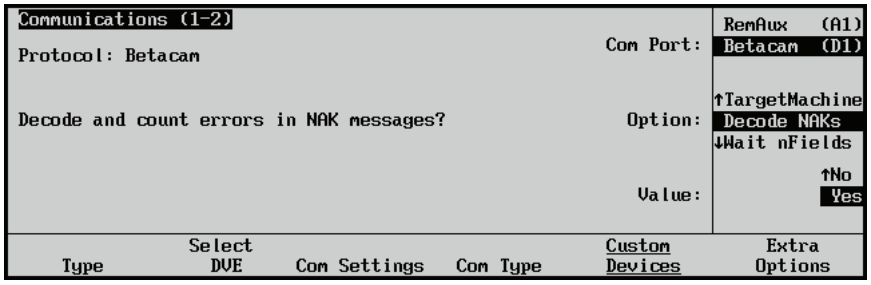
Use the following procedure to set up the Decode NAKs option:

1. Navigate to the **Communications Menu 1-2** as follows:
   - Press **HOME ⇨ MORE ⇨ Setup ⇨ Installation ⇨ Communications**.
2. Press **Extra Options** to display the **Extra Options Menu**.



Communications — Extra Options Menu

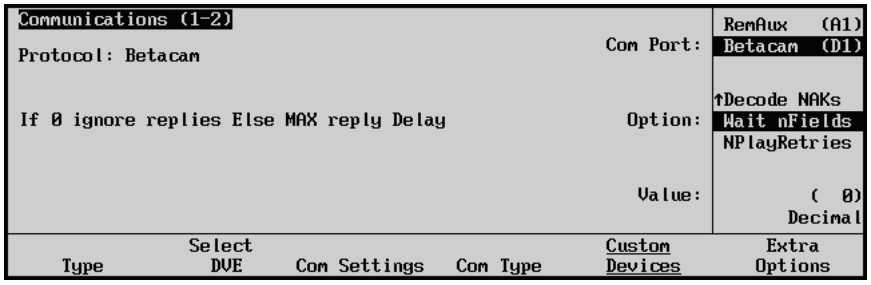
3. Assign a target machine to the selected device as follows:
   - Use the **Com Port** knob to select the device you want to assign a target machine for.
   - Use the **Option** knob to select **TargetMachine**.
   - Use the **Value** knob to select the target machine that you are using. You can choose from the following:
     - ~ **Generic** — Select this option to set up a device not specified in the list.
     - ~ **FFV Omega** — Select this option to set up a **Fast Forward Video Omega Digital Disk Recorder**.
     - ~ **DVM 2** — Select this option to set up an **Alcorn McBride DVM2**.
     - ~ **Accom APR** — Select this option to set up an **Accom APR Clipstore**.
4. Enable the Decode NAKs option as follows:
   - Use the **Option** knob to select **Decode NAKs**.



Communications — Extra Options (Decode NAKs) Menu

- Use the **Value** knob to select Yes or No as follows:
  - ~ **Yes** — Select this option to enable the Decode NAKs option. This is the default setting.
  - ~ **No** — Select this option to disable the Decode NAKs option.

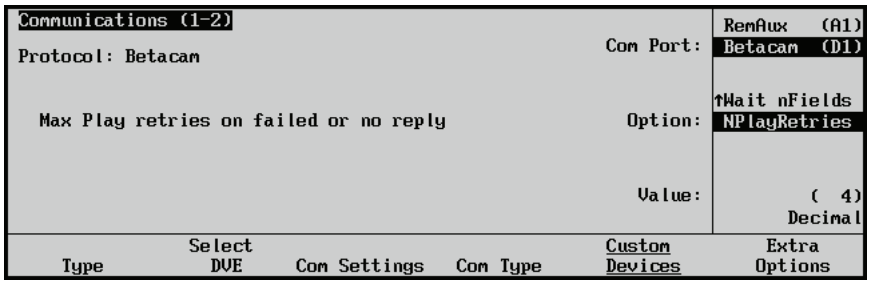
5. Set the number of fields the switcher will wait before assuming the last Play command failed or was not received as follows:
   - Use the **Option** knob to select **Wait nFields**.



Communications — Extra Options (Wait nFields) Menu

   - Use the **Value** knob to select the number of fields you want the switcher to wait before assuming a NAK by default. The **Wait nFields** value is set to **0** by default.

6. Set the number of Play command retries the switcher will attempt to send to the device as follows:
   - Use the **Option** knob to select **NPlayRetries**.



Communications — Extra Options (NPlayRetries) Menu

   - Use the **Value** knob to select the number of fields you want the switcher to wait before assuming a NAK by default. The **NPlayRetires** value is set to **4** by default.

This concludes the procedure to enable the Decode NAKs option for your Betacam DVE device.

External DVE Custom Controls

Once your primary external DVE has been connected, and once communication has been established, you can program one or more custom control buttons to perform specific DVE-related functions. These custom control functions are provided *in addition* to the **DVE Send** mode of the Synergy switcher, and the ability to recall DVE effects in the **Pattern Control Group** (in "shot box" fashion) when the **DVE** button is active.

Note that you can program one single function per custom control button, or you can string together a *group* of functions that will all run in succession when the button is pressed. These functions will be used in the procedure for completing the **DVE Custom Control Worksheet** on page 13–43.

Operating Tip

If you enable banks and do not have the Mnemonic Display option installed, be sure to re-label the keycaps on the control panel accordingly.

DVE Functions

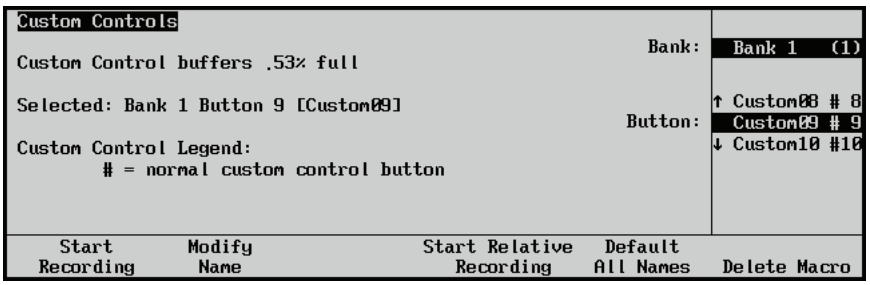
The Synergy Series switcher allows you to program custom control buttons with external DVE functions. Refer to the ***Squeeze & Tease 3D/WARP Owner's Guide*** for information on internal DVE functions.

Use the following procedure to program custom control buttons that include special DVE macros:

Note

You must have your external DVE properly installed in order to add it to a custom control. Refer to the section "**Communication Connections**" on page 13–6 for more information.

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME ⇨ Custom Controls**.



Custom Controls Menu

2. Select the custom control button you want to record to as follows:
   - Use the **Bank** knob to select the custom control bank you want to record the custom control to.
   - Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*) or an (@) in the list have already been programmed.

Operating Tip

As a recommendation, keep DVE functions grouped together on your *physical* custom control buttons.

3. Navigate to the **Insert DVE Menu** as follows:

   - Press **Start Recording** ⇨ **Insert Special** ⇨ **DVE**.

   This menu allows you to choose specific DVE control functions to assign to the button.

Insert DVE Menu

Note

If an error message is displayed stating that there are no communications ports assigned to DVE, ensure that the DVE you are trying to control has been properly set up on the Synergy DVE port. Refer to the section "**Communications Setup**" on page 13-11 for more information.

4. Select a DVE function to insert as follows:

   - Use the **Device** knob to select the DVE that you want to assign the custom control to.
   - Use the **Function** knob to select the function that you want to assign to the selected DVE. Use the table below to determine which function you want to insert.

Important

The **Frame Advance**, **Frame Reverse**, **Key Frame Adv**, **Key Frame Rev**, and **Rewind** commands have not yet been implemented.

DVE — Custom Control Functions

DVE Function	Description
Frame Advance	(**Not Implemented**) Advances the DVE effect forward by one frame.
Frame Reverse	(**Not Implemented**) Reverses the DVE effect backwards by one frame.
Go To Start	Cues the DVE to the start of its effect.
Go To End	Cues the DVE to the end of its effect.
Key Frame Advance	(**Not Implemented**) Cues the DVE effect to the next Keyframe boundary.
Key Frame Reverse	(**Not Implemented**) Cues the DVE effect to the previous Keyframe boundary.
Play	Plays the DVE effect forward.
Play Reverse	Plays the DVE effect in reverse.
Recall	Recalls a selected DVE effect (from **1** to **99**).
Rewind	(**Not Implemented**) Rewinds the DVE effect (simulates a shuttle reverse).
Stop	Stops the DVE effect.
Pause	Pauses the DVE effect.

Operating Tip

DVE functions can be strung together (during the programming mode), allowing one custom control button to perform *multiple functions* when it is pressed. For example, you can have the **Recall Effect 24** function followed by the **Play** function, allowing a single custom control macro to recall an effect and then run it.

- Use the **Effect** knob to select the effect you want to insert with the **Recall** command.

Note

The bottom **Effect** knob only applies to the insert **Recall** command. No value will be displayed for other commands.

5. Press **Insert** to insert the selected command into the custom control and display the **Insert Special Menu 1-2**.
6. Insert additional commands if needed. When you have finished inserting commands, proceed to the next step to complete the procedure.
7. Press **UP ONE** to display the **Recording Menu**.
8. Press **Finish Recording**, or the flashing custom control button, to finish recording the selected custom control. The custom control button will stop flashing.

Once your custom control buttons have been programmed, be sure to properly name them. Refer to the section "**Naming Custom Controls**" on page 8-42 for more information on naming custom control buttons. Any recorded custom control can be edited.

To play back your macro, exit the **Custom Controls Menu** and press the custom control button on the control panel that you recorded the custom control macro to.

Special Functions

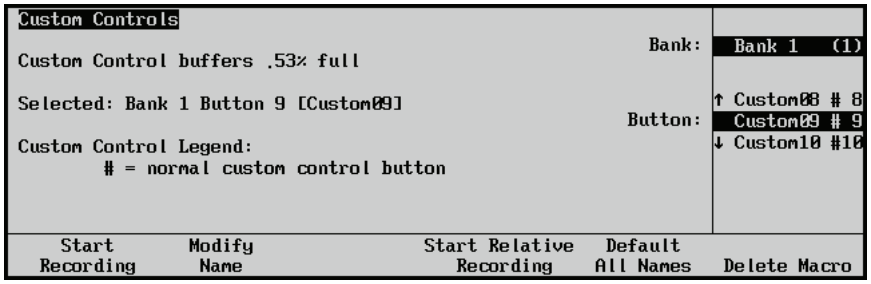
Custom control buttons can be programmed to perform a variety of special functions for operational convenience and efficiency. For external DVEs, these functions include:

- Reset GPI Custom Control
- Trigger GPI Custom Control

Reset GPI Custom Control

Use the following procedure to program a GPI reset custom control macro for your external DVE:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME ⇨ Custom Controls**.



Custom Controls Menu

2. Select the custom control button you want to record to as follows:
   - Use the **Bank** knob to select the custom control bank you want to record the custom control to.
   - Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*) in the list have already been programmed.

Operating Tip

As a recommendation, keep special functions grouped together on your *physical* custom control buttons.

3. Navigate to the **Special Menu** as follows:
   - Press **Start Recording** ⇨ **Insert Special** ⇨ **Special**.

Insert Special — Special Menu

4. Assign the reset GPI to a GPI output as follows:
   - Use the **Selection** knob to select **Reset GPI**.
   - Use the **GPI Output** knob to select the GPI output port you want to reset.

Note

The names that appear in the **GPI Output** list are programmed on the **GPI Output Setup Menu**. Refer to the section "**Standard GPI Setup**" on page 9-22 for details.

5. Press **Insert** to insert the selected command into the custom control and display the **Insert Special Menu 1-2**.
6. Insert additional commands if needed. When you have finished inserting commands, proceed to the next step to complete the procedure.
7. Press **UP ONE** to display the **Recording Menu**.

8. Press **Finish Recording**, or the flashing custom control button, to finish recording to the selected custom control. The custom control button will stop flashing.

This completest the procedure to program a GPI reset custom control macro for your external DVE.

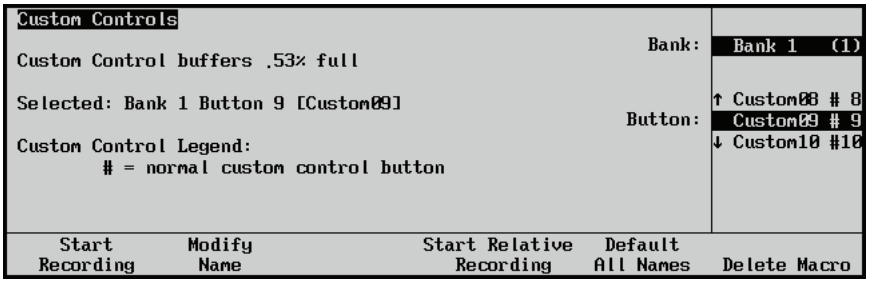
Refer to the section "**Naming Custom Controls**" on page 8-42 for more information on naming custom control buttons.

To play back your macro, exit the **Custom Controls Menu** and press the custom control button on the control panel that you recorded the custom control macro to. Any recorded custom control can be edited, refer to the section "**Editing Custom Control Macros**" on page 8-47 for details.

Trigger GPI Custom Control

Use the following procedure to program a GPI output trigger macro for your external DVE:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME ⇨ Custom Controls**.



Custom Controls Menu

2. Select the custom control button you want to record to as follows:
   - Use the **Bank** knob to select the custom control bank you want to record the custom control to.
   - Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*) in the list have already been programmed.

Operating Tip

As a recommendation, keep DVE Special Functions grouped together on your *physical* custom control buttons.

3. Navigate to the **Special Menu** as follows:
   - Press **Start Recording ⇨ Insert Special ⇨ Special**.

Insert Special — Special Menu

4. Assign the trigger GPI to a GPI output as follows:
   - Use the **Selection** knob to select **Trigger GPI**.
   - Use the **GPI Output** knob to select the GPI output port you want to trigger.

Note

The names that appear in the **GPI Output** list are programmed on the **GPI Output Setup Menu**. Refer to the section "**Standard GPI Setup**" on page 9-22 for details.

5. Press **Insert** to insert the selected command into the custom control and display the **Insert Special Menu 1-2**.
6. Insert additional commands if needed. When you have finished inserting commands, proceed to the next step to complete the procedure.
7. Press **UP ONE** to display the **Recording Menu**.
8. Press **Finish Recording**, or the flashing custom control button, to finish recording to the selected custom control. The custom control button will stop flashing.

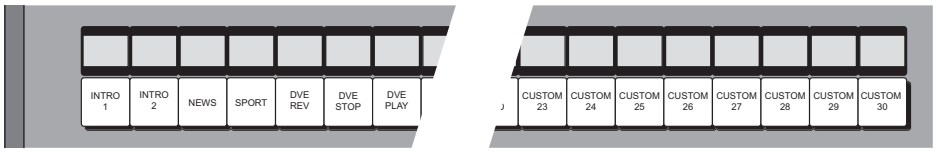
This completes the procedure to program a GPI output trigger macro for your external DVE.

Once your custom control buttons have been programmed, be sure to properly name them. Refer to section "**Naming Custom Controls**" on page 8-42 for more information on naming custom control buttons.

To play back your macro, exit the **Custom Controls Menu** and press the custom control button on the control panel that you recorded the custom control macro to. Any recorded custom control can be edited, refer to the section "**Editing Custom Control Macros**" on page 8-47 for details.

Installing the Inserts

If you do not have the Mnemonic Display option installed, use the inserts provided with your installation kit to label the DVE buttons in the **Custom Control** group on the Synergy panel. One suggested layout is shown below.



Custom Control Group

Note that this layout is a subset of the available functions listed in the section "**DVE Interface Specifications**" on page 13–21 for your specific device. You should arrange DVE functions as required for your specific operation. Please note:

- Refer to the section "**Pushbutton Inserts**" on page 4–9 for instructions on installing inserts.
- Refer to the section "**External DVE Custom Controls**" on page 13-37 for instructions on mapping DVEXtreme functions to a specific custom control button.

Completing the DVE Custom Control Worksheet

When completing the DVE Custom Control Worksheet, remember that DVE functions can be strung together — on the same button and the numbering scheme is in ascending order, from left to right.

Use the following procedure to complete your **Custom Control Worksheet**:

1. Ensure you have programmed and named your DVE custom control buttons as outlined the section "**DVE Functions**" on page 13–37.
2. Write the selected custom control bank and name at the top of the worksheet in the section "**DVE Custom Control Worksheet**" on page 13–44. Fill in the desired DVE function for each custom control button that you have programmed.
   - The **Synergy 2 Panel** numbering scheme runs from **1** to **17**.
   - The **Synergy 3 Panel** numbering scheme runs from **1** to **30**.
   - The **Synergy 4 Panel** numbering scheme runs from **1** to **35**.
3. Ensure to specify the effect number (from **1** to **99**) if you are using the "**Recall**" function.

This concludes the section on programming custom controls for your external DVE.

DVE Custom Control Worksheet

Custom Control Bank Name/ Number:_____	
Custom Control Button Name	**DVE Custom Control Function(s)**
1	
2	
3	
4	
5	
6	
7	
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14	
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35	

Glossary of Terms

Active Video Lines — All video lines not occurring in the vertical blanking interval. The portion of the video signal that contains picture information.

Aspect Ratio — The numerical ratio of picture width to height, for example, 4:3 or 16:9.

Auto Transition — An automatic transition that electronically simulates the manual movement of the fader handle. The transition starts when the AUTO TRANS button is pressed and takes place over a pre-selected time period, measured in frames.

Border — Effects created around the edges of a pattern or on a keyer. If an optional dual border generator card is installed, several border, shadow, and outline effects are available on that keyer as well.

Border Generator — Circuitry that generates various border effects on keys created by the switcher.

Chroma Key — An effect where video from one source replaces video of a specific hue in a second video source. The blue and green hues are most commonly used for chroma keying.

Chrominance — The "depth" or saturation of a color. The three characteristics of a TV color signal are chrominance, luminance and hue.

Cut — An instantaneous switch from one video signal to another.

Dissolve — A transition from one video signal to another where one signal is faded down while the other is simultaneously faded up. The term "mix" is often used interchangeably with "dissolve".

Downstream Keyer (DSK) — A keyer that places a key "downstream" of the MLE effects system output. This "top level" effect usually consists of a character generator title.

External Key — A video input (non-primary video) used to produce a key effect. Examples of external key sources are character generators and cameras.

Fade-to-Black — A controlled change of the on-air picture signal level down to black level.

Field — One half of a complete picture (or frame) interval containing all of the odd, or all of the even lines in interlaced scanning. One scan of a TV screen is called a "field"; two fields are required to make a complete picture (which is a "frame").

Field Frequency — The rate at which one complete field is scanned, approximately 50 times per second in 625 video, or 60 times per second in 525 video.

Frame — One complete picture consisting of two fields of interlaced scanning lines.

GPI — An abbreviation for General Purpose Interface, a device that typically allows remote control of the switcher's automatic transition functions.

Hue — The characteristic of a color signal that determines whether the color is red, yellow, green, blue, purple, etc. (the three characteristics of a TV color signal are chrominance, luminance, and hue). White, black, and gray are not considered hues.

Internal Key — The use of a primary input to produce a key effect.

Key — An effect produced by "cutting a hole" in background video, then filling the hole with video or matte from another source. Key source video cuts the hole, key fill video fills the hole. The video signal used for cut and fill can come from the same or separate sources.

Key Fill — A video input which is timed to "fill the hole" provided by the key source video. An example of key fill is the video output of a character generator.

Key Invert — An effect that reverses the polarity of the key source so that the holes in the background are cut by dark areas of the key source instead of bright areas. The **KEY INV** push-button selects this effect.

Key Mask — A keying technique in which a pattern is combined with the key source to block out unwanted portions of the key source.

Key Source — The video signal which "cuts a hole" in the background video to make a key effect possible. Also called "Key Video". In practice, this signal controls when a video mixer circuit will switch from background to key fill video.

Key Video — See Key Source.

Linear Keys — Linear keys make it possible to fully specify the transparency of a key from opaque, through transparent, to fully off. The transparency is specified by the key signal (also known as the "hole cutter" or "alpha channel") that is associated with the key fill. A keyer capable of a linear key converts the key signal voltage directly to the transparency effect on the screen. Our switcher's **KEY MEM** button allows the user to store the CLIP and GAIN settings required to match the incoming key signal to the keyer's requirements.

Line Frequency — The number of horizontal scans per second. For 525 line 60 Hz systems, this is approximately 15734 scans per second.

Luminance Key — An effect in which video from one source is replaced by video that exceeds a set level in a second video source.

Mask — See Key Mask.

Matte — A solid color signal that is generated by the switcher and can be adjusted for hue, saturation, and luminance levels.

Matte Key — A key effect in which the fill video is matte, provided by one of the switcher's matte generators.

Memory — The memory feature provides storage and recall of complete switcher setups.

MIX — See Dissolve.

MLE — An abbreviation for multi-level effects.

PGM Output — The on-air video output of the system.

Primary Input — Video sources selected by the control panel push-buttons for the crosspoint buses. These buses are normally labeled “KEY”, “PGM”, and “PST”.

PV Output — A switcher output that shows the scene that will go on-air when the next automatic or manual transition takes place.

Self Key — A key effect in which the same video signal serves as both the key signal and key fill.

Soft Edge — A pattern edge effect produced by mixing key source and key fill signals in such a way that the edge of the pattern is not sharp.

Split Screen — An effect in which a wipe pattern provides the key source signal. This is known as a “preset pattern” key.

Tally — An indicator which illuminates when the associated push-button or control is selected or is on-air.

Termination — A means of closing a circuit by connecting a resistive load to it. In video systems, a termination is typically a 75 ohm resistive load.

Transition — A controlled change from one video input to another video input or black. The change can occur through a wipe, cut, dissolve or “DVE Send” effect.

Transition Preview — A transition seen only on the preview monitor. It may be observed and adjusted without disturbing the program or “on-air” output.

Video — The electrical signal produced by a television camera, character generator or other image source. The signal amplitude varies in relation to the tonal scale from black to white presented at the source. White produces the highest amplitude; black produces the lowest signal amplitude.

Wipe — A transition from one video signal to another, in which the change proceeds according to the shape of a specific pattern. A moving transition line separates the two picture signals.

Index

Numerics

A

B

C

D

E

F

G

H

I

J

K

L

M

N

O

P

Q

R

S

T

U

V

W

X