Ross Video Limited

Installation Guide

Volume II

Software Version: 16-S1

ROSS

Cool Practical Technology™

Synergy 1 • Installation Guide

- Ross Part Number: **4216D-002A**
- Document Issue: **16A**
- Release Date: December 7, 2005. Printed in Canada.
- Software Issue: **v16.02-S1**

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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. This includes power-supply cord or plug damage, liquid being spilled or objects having fallen into the apparatus, the apparatus being exposed to rain or moisture, the apparatus having been dropped, or the apparatus not operating normally.

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.)

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 manual, 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, as defined by Ross, may occur from time to time. Ross will notify customers of such upgrades and, subject to a customer-initiated request, such upgrades will be provided free of charge within three years of the original ship date, with shipping FOB Ross dock.

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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Additional Installation Setups

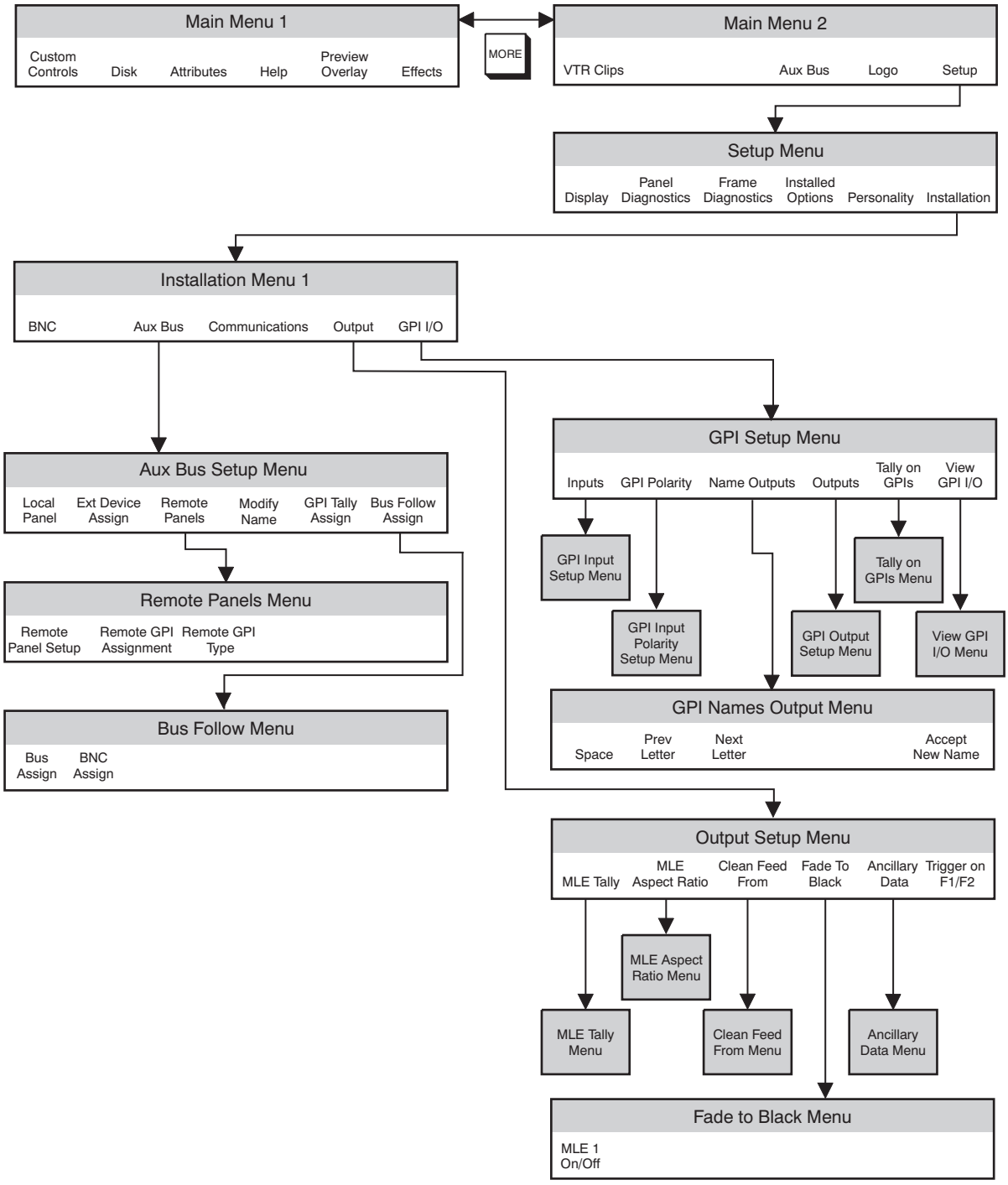
In This Chapter

This chapter provides instructions for additional installation setup procedures. The following procedures are discussed:

- Installation Setup Menu Tree
- Aux Bus Setup
- Output Setup
- Standard GPI Setup
- Remote Aux Panel GPI Setup
- Switcher Calibration
- DSK (CDK-111A-M) Setup
- Chroma Key Setup
- Favorite CG Setup
- System Timing
- Peripheral Control
- Tally Connections
- Switcher Personality

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.

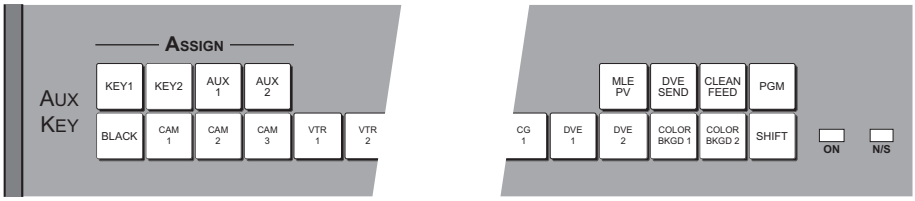


Installation Setup Menu Tree

Aux Bus Setup

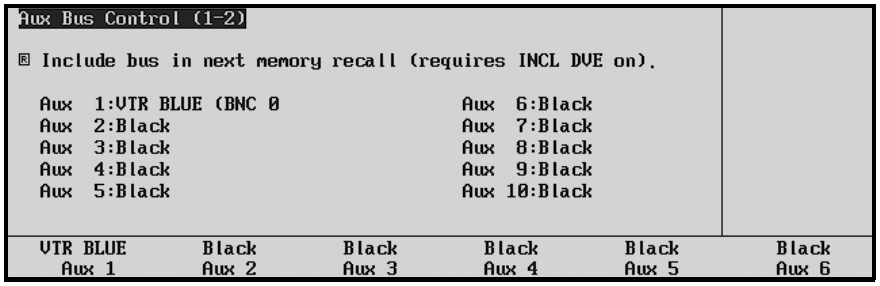
The **Aux Bus Setup Menu 1-2** allows you to set up Aux (Auxiliary) panels and assign "rights" to those panels. The setup procedures cover both *local* and *remote* Aux panels.

- The "**Local**" Aux panel consists of the **Aux Bus** (on the Switcher control panel), plus the switcher's **Aux Bus Menu**. The following figure illustrates the Aux Bus.



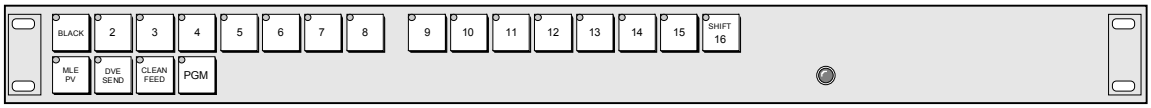
Aux Bus Group

The **Aux Bus Menu** is automatically activated whenever you press **AUX 1** or **AUX 2** on the **Aux/Key Bus**. The following figure illustrates the **Aux Bus Menu**.



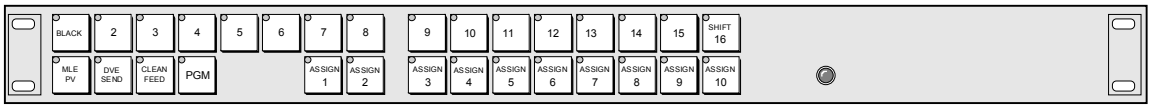
Aux Bus Menu

- The "**Remote**" Aux panels consist of two different types of panels. A **Dedicated Remote Aux Panel** controls *one* Aux bus output as shown below:



Dedicated Remote Aux Panel

An **Assignable Remote Aux Panel** controls *all 10* Aux bus outputs, as shown below:



Assignable Remote Aux Panel

Note

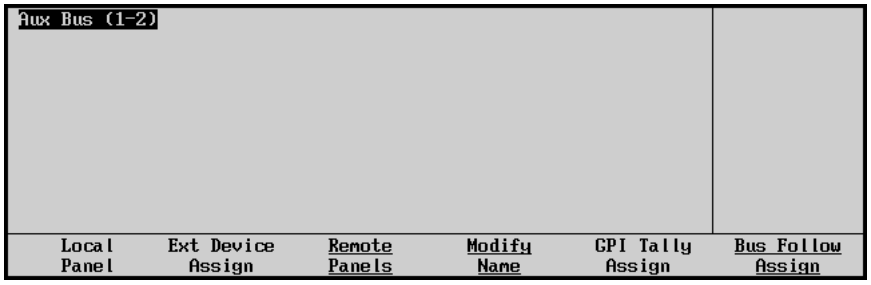
The **Dedicated** and **Assignable** Remote Aux Panels include a feature that allows a camera operator to manually override the Aux panel selection via GPI trigger.

Modifying Aux Bus Names

Each Aux Bus can be named to represent the function that it will actually control.

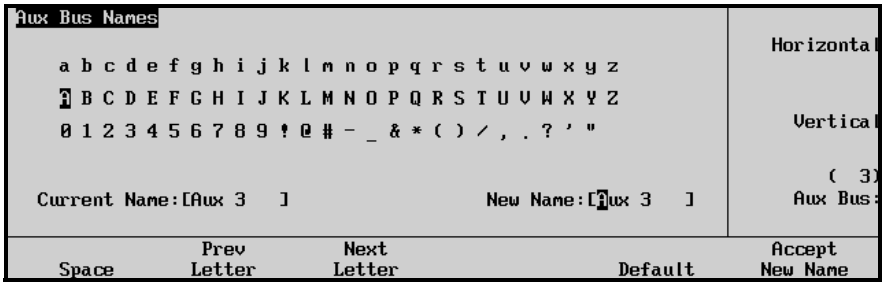
Use the following procedure to modify the name of the Aux Bus:

1. Navigate to the **Aux Bus Menu 1-2** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).
   - **Aux Bus** (to display the **Aux Bus Menu 1-2**).



Aux Bus Menu 1-2

2. Press **Modify Name** to display the **Aux Bus Names Menu**.



Aux Bus Names Menu

   - 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.

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 Chapter 2 "**Control Panel Introduction**" of the ***Synergy 1 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 bottom **Aux Bus** knob to select the Aux Bus that you want to name. .

Note

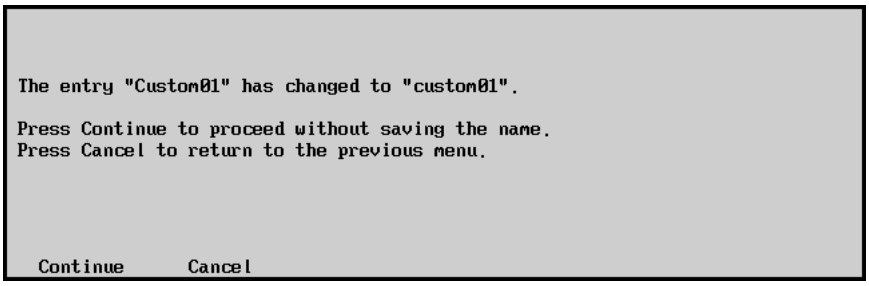
As you rotate the knob, both the **Current Name** and **New Name** fields change to display the Aux Bus names (as stored in switcher memory).

The factory default name for *all Aux Buses* is [**Aux #**].

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.
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 steps 3 through 5 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

Refer to the section, "**Output Connection**" on page 4-9 to verify the destinations and functions of all Aux Bus outputs.

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 local Aux Panel.
- **Defining Aux Panel Crosspoints** — This method enables you to map BNC connectors to physical buttons on the local 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.

Both methods are described below.

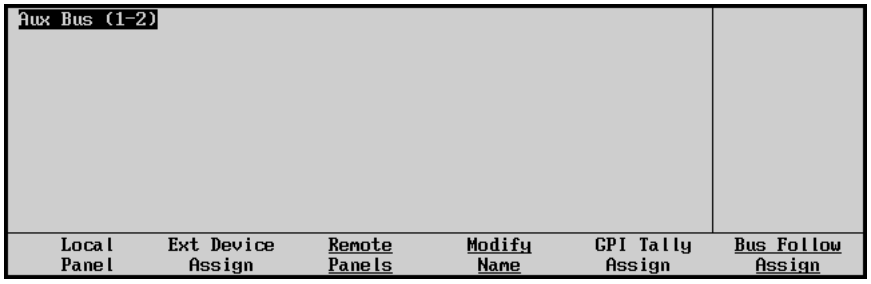
Note

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 "**Setting Up Remote Aux Panels**" on page 9-13 for more information.

Assigning MLE Crosspoints to the Local Aux Panel

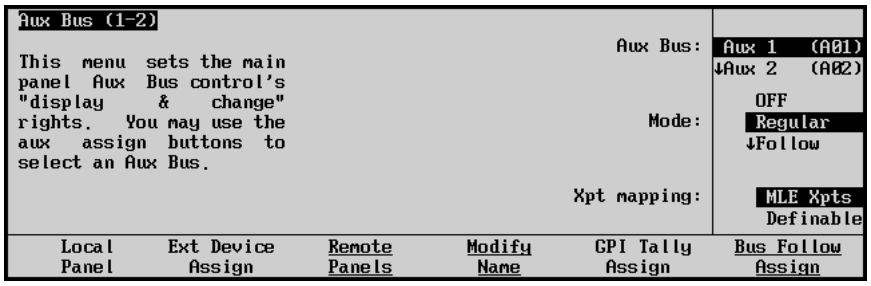
Use the following procedure to map MLE crosspoints to the local Aux Panel:

1. As required, refer to your **Auxiliary Output Worksheet** (located in the section "**Output Connection**" on page 4-9) 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** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 1-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).
   - **Aux Bus** (to display the **Aux Bus Setup Menu 1-2**).



Aux Bus Setup Menu

3. Press **Local Panel** to display the **Aux Bus Local Panel Setup Menu**.



Aux Bus – Local Panel Setup Menu

The **Local Panel** menu allows you to set specific switching parameters (or "rights") for each of the 10 Aux buses that are accessible from the control panel and the **Aux Bus Menu**. Each bus can be set up individually.

4. Use the top **Aux Bus** knob to select the Aux Bus that you want to configure.
5. Use the middle **Mode** knob to assign the mode for the selected local bus. You can choose from 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** — Select **Regular** to place the specific Aux Bus in normal operating mode. The bus can be selected and sources can be changed from the control panel and menu. 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** — Select **Follow** to place the specific Aux Bus in *follow* (or "view only") mode. You can select the bus in the **Assign Group** and **Aux Bus Menu** and follow what crosspoints are being selected (remotely), but *you* can not change crosspoints. In this configuration, the bus is controlled from another location.
   - **Bus Follow** — Select **Bus Follow** to assign a particular Aux Bus to follow a selected switcher bus. Refer to the section, "**Bus Mode Setup**" on page 15-18 for instructions.

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 bottom **Xpt** knob to select the method for assigning the selected Aux Bus. You can select between the following:
   - **MLE Xpts** — Select this option to assign your Aux Bus crosspoints using MLE crosspoints.
   - **Definable** — Select 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. Refer to the next section, "**Assigning BNCs to Aux Panel Crosspoints**" on page 9-7 for more information.

This concludes the procedure to assign MLE crosspoints to the Aux Panel crosspoints.

Assigning BNCs to Aux Panel Crosspoints

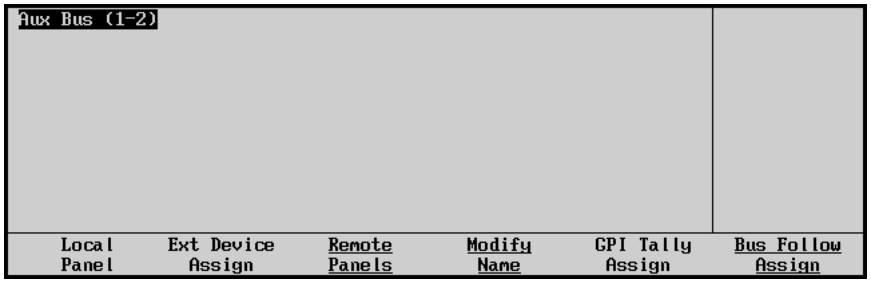
All Definable Aux Buses, as assigned in the **Aux Bus Setup Menu**, have the same crosspoint mapping. As a result, when you change a crosspoint assignment on one definable Aux Bus, the new assignment applies to *all* definable Aux Buses.

Refer to the section, "**Notes on Assigning an Aux Panel Crosspoint**" on page 9-9 for

Use the following procedure to assign a crosspoint on the local Aux Panel to a BNC:

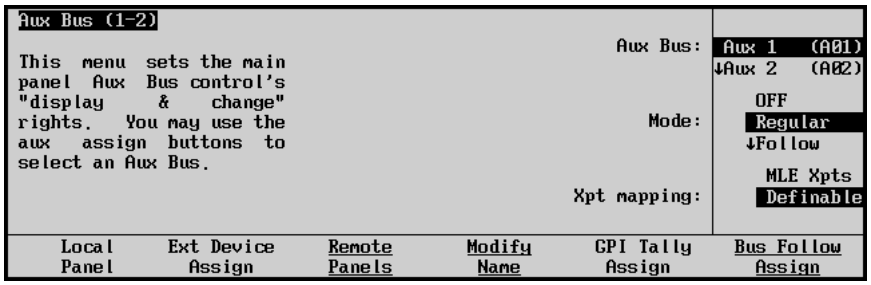
1. As required, refer to your **Auxiliary Output Worksheet** (located in the section "**Connecting and Verifying Outputs**" on page 4-9) to verify the destinations and functions of all Aux Bus outputs.
2. Navigate to the **Aux Bus Setup Menu 1-2** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).

- **MORE** (to display the **Main Menu 2-2**)
- **Setup** (to display the **Setup Menu**)
- **Installation** (to display the **Installation Menu 1-2**)
- **Aux Bus** (to display the **Aux Bus Menu 1-2**)



Aux Bus Menu 1-2

3. Press **Local Panel** to display the **Aux Bus Local Panel Setup Menu**.



Aux Bus – Local Panel Setup Menu

The **Local Panel** menu allows you to set specific switching parameters (or "rights") for each of the 10 Aux buses that are accessible from the control panel and the **Aux Bus Menu**. Each bus can be set up individually.

4. Configure an Aux Bus to **Definable** as follows:
   - Use the top **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 middle **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 bottom **Xpt** 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

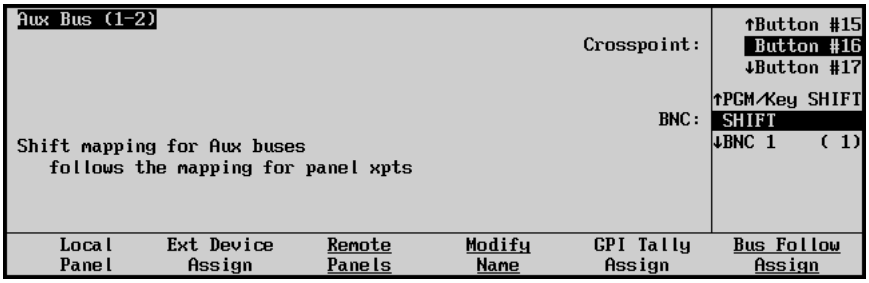
7. Assign an Aux Panel crosspoint to a BNC as follows:
   - Use the top **Crosspoint** knob to select the Aux Bus crosspoint you wish to assign to a BNC.
   - Use the middle **BNC** knob to select the BNC you wish to assign to the selected Aux Bus crosspoint.

This concludes the procedure to assign a crosspoint on the local Aux Panel to a BNC.

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** and the following message is displayed:



Aux Bus Setup Menu — Shift Mapping Message

Assigning Router Follow

The **Router Follow** feature allows the Synergy 1 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 "**Router Communications Setup**" on page 7-48 for more information.

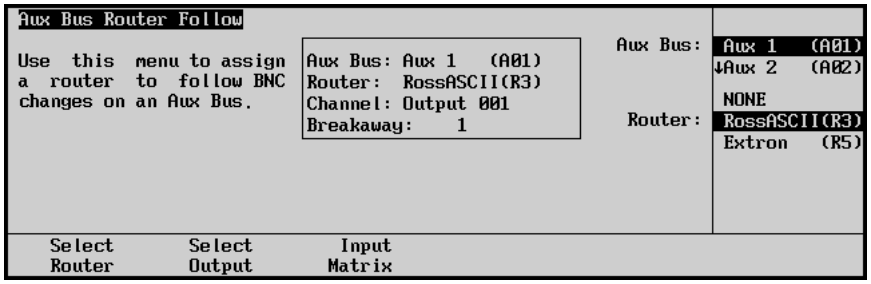
During this procedure you will assign a particular router output channel and level, or breakaway, to an Aux Bus. You will then associate particular inputs on the router with particular BNCs on the router. As a result, when you select a BNC on the Aux Bus, the router will respond by sending the associated input out on the channel and level you set.

Use the following procedure to set up Router Follow:

1. Navigate to the **Aux Bus Menu 1-2** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).
   - **Aux Bus** (to display the **Aux Bus Menu 1-2**).
2. Press **MORE** to display the **Aux Bus Menu 2-2**.

Aux Bus Menu 2-2

3. Press **Router Follow** to display the **Aux Bus Router Follow Menu**.
4. Press **Select Router** to display the **Select Router Menu**.

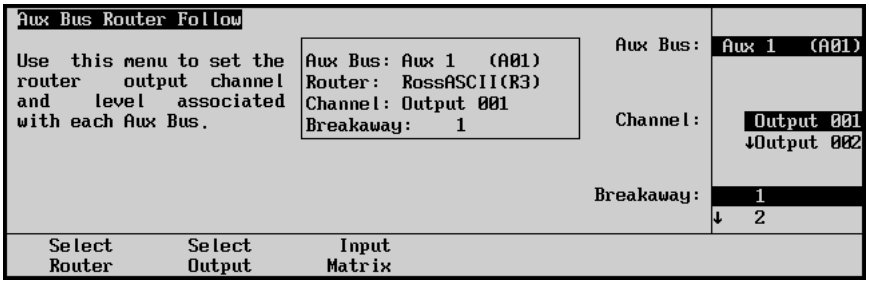


Aux Bus Router Follow — Select Router Menu

5. Assign a router to an Aux Bus as follows:
   - Use the top **Aux Bus** knob to select the Aux Bus you want to assign the router to.
   - Use the middle **Router** knob to select the router you want to assign to the Aux Bus.
6. Press **Select Output** to display the **Select Output Menu**.

Note

On the **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.



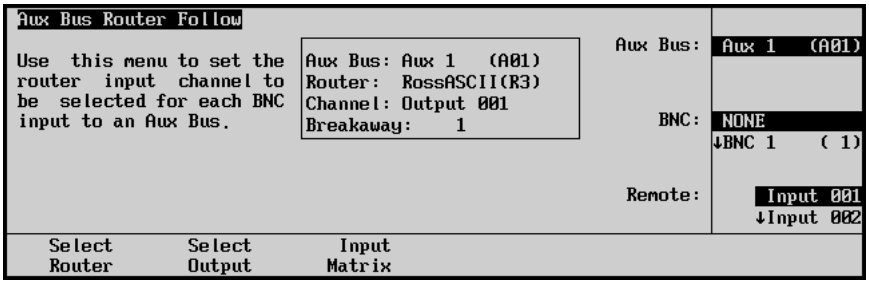
Aux Bus Router Follow — Select Output Menu

7. Assign the output channel and level, or breakaway, for the Router as follows:
   - Use the top **Aux Bus** knob to select the Router (assigned to the selected Aux Bus) that you want to set the outputs for.
   - Use the middle **Channel** knob to select the associated router output channel.
   - Use the bottom **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**.

8. Press **Input Matrix** to display the **Input Matrix Menu**.



Aux Bus Router Follow — Input Matrix Menu

9. Assign an input on the Router to a crosspoint BNC on the Aux Bus as follows:
   - Use the top **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 middle **BNC** knob to select the Aux Bus crosspoint you want to assign the Router channel for.

Operating Tip

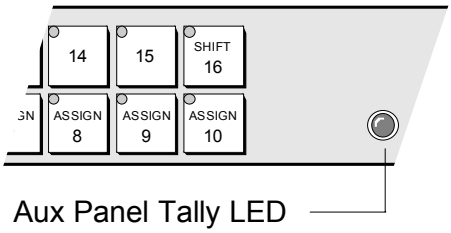
A crosspoint (BNC) can also be selected by pressing the corresponding crosspoint on the **PGM** Bus.

   - Use the bottom **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.



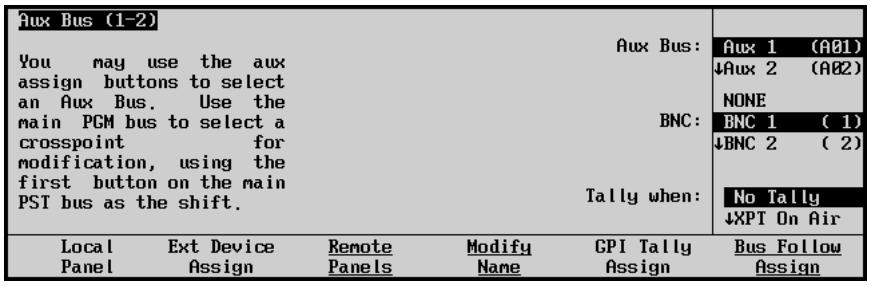
Aux Panel Tally LED

For example, configuring the switcher so that Aux Bus #1 feeds DVE #1, the switcher will tally Aux Bus #1 whenever DVE 1 is taken on air.

Refer to the section "**Output Verification**" on page 4-9 to verify the destinations and functions of all Aux Bus outputs.

Use the following procedure to select the Aux Bus tally method:

1. As required, refer to your **Auxiliary Output Worksheet** (located in the section "**Output Connection**" on page 4-9) to verify the destinations and functions of all Aux Bus outputs.
2. Navigate to the **External Device Assignment Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).
   - **Aux Bus** (to display the **Aux Bus Menu 1-2**).
   - **Ext Device Assign** (to display the **Aux Bus External Device Assignment Menu**).



Aux Bus Setup – External Device Assignment Menu

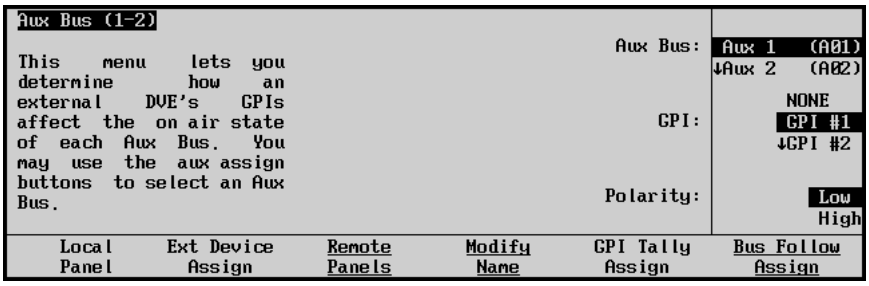
3. Use the top **Aux Bus** knob to select the Aux Bus whose output is physically connected to the input of the external device.
4. Use the middle **BNC** knob to select the BNC *input*, of the Synergy 1 Switcher, that is connected to the output of the external device.
5. Use the bottom **Tally when** knob to select the method by which the Aux Bus is tallied. You can select from 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 select **GPI & XPT On**, an input GPI port must be associated with the Aux Bus that you chose in step 2.

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). Refer to the section **"Remote Control Connections**" on page 12-6 for additional information.

6. Press **GPI Tally Assign** to display the **GPI Tally Assign Menu**.



Aux Bus Setup– GPI Tally Assignment Menu

7. Associate an input GPI trigger to the selected Aux Bus as follows:
   - Use the top **Aux Bus** knob to select the Aux Bus that you wish to associated with a GPI input trigger.
   - Use the middle **GPI** knob to select the desired input GPI port.
   - Use the bottom **Polarity** knob to select if the GPI triggers on a low or high level pulse.
8. Repeat steps 3 through 7 for each additional Aux Bus that is connected to an external device, that requires tallies.

This completes the procedure to select the Aux Bus tally method.

Setting Up Remote Aux Panels

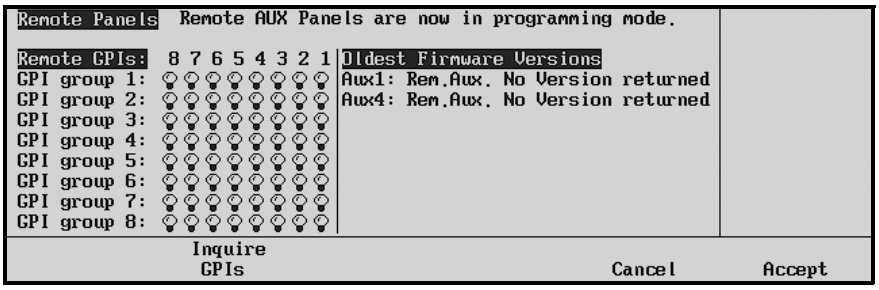
For all assignable and dedicated remote Aux panels, this procedure allows you to program the access "rights" for each Aux bus output.

Refer to the section "**Output Connection**" on page 4-9 to verify the destinations and functions of all Aux Bus outputs.

Use the following procedure to set up your remote Aux panels:

1. As required, refer to your **Auxiliary Output Worksheet** (located in the section "**Output Verification**" on page 4-9) to verify the destinations and functions of all Aux Bus outputs.

2. Navigate to the **Remote Panels Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).
   - **Aux Bus** (to display the **Aux Bus Menu 1-2**).
   - **Remote Panels** (to display the **Remote Panels Menu**).



Aux Bus Remote Panels Menu

Note

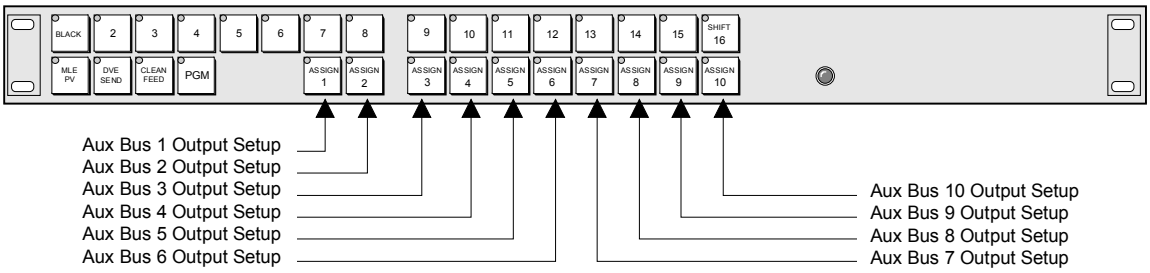
The **Main Area** of the **Aux Bus Remote Panels Setup Menu** deals mainly with the Aux Panel CCU Joystick Override and GPI function. Refer to the section, "**Remote Aux Panel GPI Setup**" on page 9-35 for details.

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).
- On all panels, the on-air LED flashes to alert you that programming mode is now in effect.

With the programming mode in effect, selected buttons, or crosspoints, on each panel now represent the 10 Aux bus outputs. These buttons differ depending on the type of remote **Aux Panel** (dedicated or assignable).

- Using the **Synergy 1 Assignable Remote Aux Panel**, the 10 **Aux Assign** buttons represent the 10 Synergy 1 Aux bus outputs, respectively. The following figure illustrates this association:



Aux Panel Button Assignments when in Programming Mode — Synergy 1 Panel

On **Assignable** panels, each button programs the rights for its associated Aux bus — as controlled from the *current* assignable panel. For **dedicated** panels go to Step 4.

3. To assign the rights for an **assignable** panel, perform the following steps *at each assignable panel* connected to the Synergy 1 Switcher:

   a) Go to the assignable panel itself.

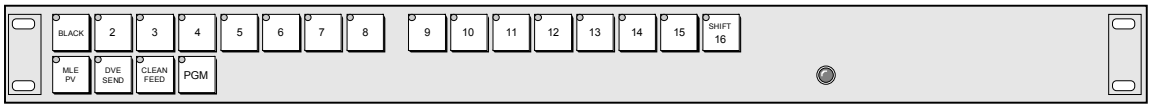
   b) Ensure that the panel is in "programming" mode (with the on-air LED flashing).

   c) Press the **Assign** (**1** - **10**) that corresponds to the Aux bus that you want to program, then select the desired option. *Each button* can be toggled between two states:

      ~ **On** — when a button is lit steadily, the associated Aux bus is in "regular mode." The current remote Aux panel has full access. The Aux bus can be selected and sources can be changed from both the remote Aux panel and the *local* control panel.

      ~ **Flashing** — when a button's light is flashing, the associated Aux bus is in *follow* (or "view only") mode. You can select the bus and follow what crosspoints are being selected (remotely, by another user), but *you* can not change crosspoints from the current panel.

   d) Repeat step **c** for each of the 10 Aux buses.



Dedicated Remote Aux Panels

4. To assign the rights for a dedicated panel, perform the following procedure at each dedicated panel connected to the switcher:

   a) Go to the dedicated panel itself.

   b) Ensure that the panel is in "programming" mode (with the on-air LED flashing).

   c) Press the crosspoint (**1** - **10**) that corresponds to the single 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.

   d) Select the desired option. The selected button can be toggled between two states and each press cycles to the next option:

      ~ **On** — when the *one* selected button is lit steadily, the selected Aux bus output is in "regular mode," and the current 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.

      ~ **Flashing** — when the *one* selected button's light is flashing, the associated Aux bus is in *follow* (or "view only") mode. You can follow what crosspoints are being selected (remotely, by another user), but *you* can not change crosspoints from the current dedicated panel.

5. Press **Accept**, on the **Aux Bus Remote Panels Setup Menu**, 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 non-volatile memory of the remote panel.

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.

When Remote Aux 5 is assigned the following note will be displayed on the Panel:

```
Remote 5 unavailable while AUX is assigned
   for Remote Aux Panels or Automation.
Disconnect cable from Remote 5 before using AUX
                    port.
```

Refer to the section, "**Aux Panel Programming Mode Summary**" on page 13-19 for a comprehensive table that lists all Aux panel programming modes.

Note

Special modes such as the **PRG/Key SHIFT** mode are not available on remote panels.

For reference only, note the state of the **SHIFT** button (#16) — 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 can not be selected. This mode is set *automatically* to match that of the main Control Panel.

Output Setup

The **Output Setup Menu** allows you to set up five specific output parameters:

- MLE Tally Setup
- Aspect Ratio
- Clean Feed Setup
- Fade to Black Setup
- Ancillary Data
- Trigger Field Setup

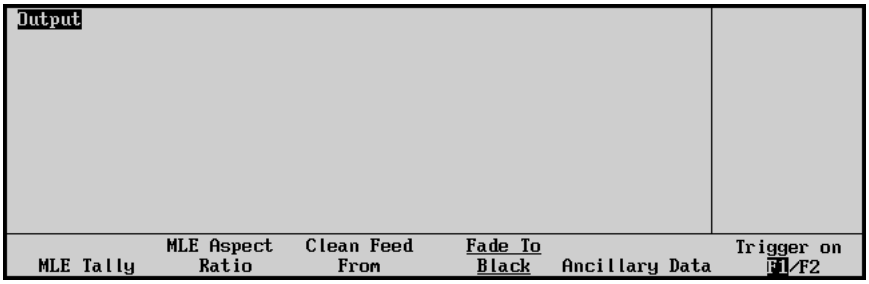
Each topic is discussed in detail in the following sections.

MLE Tally Setup

The **MLE Tally** feature allows you to force the MLE to always function as if it is on air — regardless of whether or not it is selected on the **BKGD/Preset Bus**.

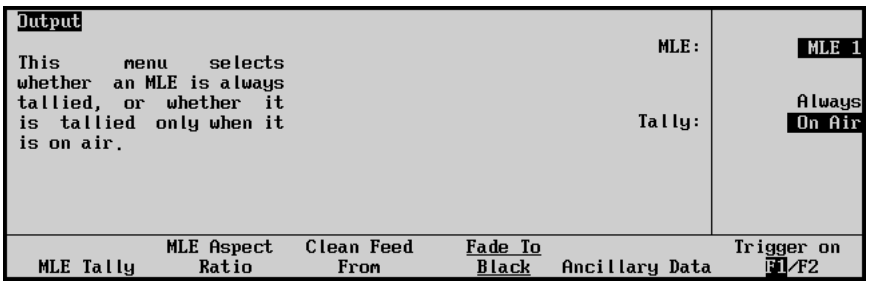
Use the following procedure to select the desired tally function:

1. Navigate to the **Output Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).
   - **Output** (to display the **Output Menu**).



Output Menu

2. Press **MLE Tally** to display the **MLE Tally Menu**.



Output Menu – MLE Tally

3. Use the middle **Tally** knob to select the desired tally function:
   - **Always** — Select this option to tally the MLE regardless of what is selected on the **Program/Preset Bus** of the switcher. The red **ON** LED of the MLE will always be lit and all sources selected on the MLE will tally accordingly.
   - **On Air** — Select this option when you want the MLE to be tallied only when it is selected on the **Program/Preset Bus** of the switcher.

   Once selected, the MLE tally settings remain in effect until changed.

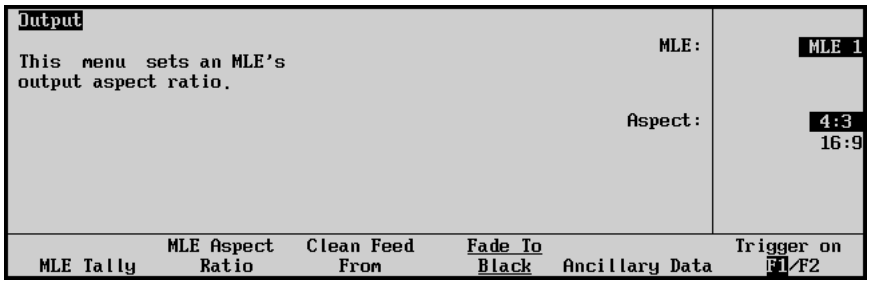
This completes the procedure to select the desired tally function.

Aspect Ratio

In the **Output Menu**, the **MLE Aspect Ratio** function allows you to change the aspect ratio of the MLE. This parameter is valid only when the **Aspectizer** option is installed.

Use the following procedure to set the MLE output:

1. Ensure that the **Aspectizer** option is properly installed. Refer to the section "**Dual Aspectizer Option and Overview**" on page 15-4 for details.
2. Navigate to the **MLE Aspect Ratio Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).
   - **Output** (to display the **Output Menu**).
   - **MLE Aspect Ratio** (to display the **MLE Aspect Ratio Menu**).



MLE Aspect Ratio Menu

3. Use the middle **Aspect** knob to select either **16:9** or **4:3** mode.

This completes the procedure to select the MLE aspect ratio.

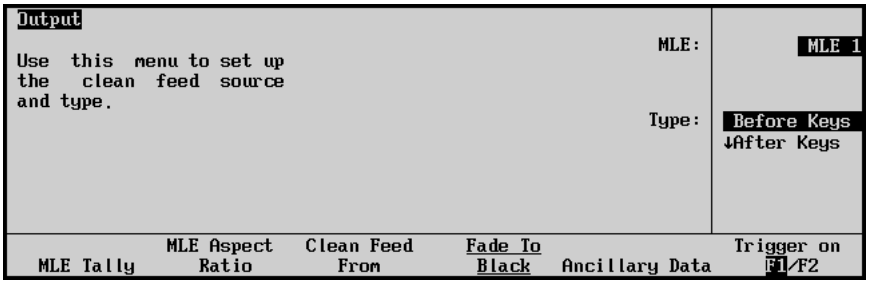
Clean Feed Setup

The **Clean Feed Menu** allows you to set the point from which the clean feed signal is derived. The selected signal then appears on the **CLEAN** output connector on the rear of the chassis.

Use the following procedure to set up the **Clean Feed** output:

1. Ensure that the **Clean Feed** option is installed. Refer to the section "**Clean Feed Installation**" on page 15-3 for details.

2. Navigate to the **Clean Feed Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).
   - **Output** (to display the **Output Menu**).
   - **Clean Feed From** (to display the **Clean Feed Menu**).



Output Menu – Clean Feed

3. Use the middle **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** — Select this option to have the **Clean Feed** output pulled after the MLE's **BKGD/PST** bus, but *before* the two keys are added.
   - **After Keys** — Select this option to have the **Clean Feed** output pulled downstream of the two MLE Keyers — effectively, an additional output.
   - **Split** — Select this option to split your two keys, sending **PGM** out with **Key 1** and **Clean Feed** out with **Key 2**. Both keys are independently switched.
   - **Split Follow** — Select this option to also split your two keys, sending **PGM** out with **Key 1** and **Clean Feed** out with **Key 2**. However, both keys are slaved together, in sync with each other. If you *cut* one key, the other one automatically cuts in sync.
   - **AlphaNomadCK** — The clean feed output will follow the last selected Chroma key. When a Chroma Key is selected on any Keyer, the clean feed signal will change to the alpha signal for the selected Keyer.

Note

The **AlphaNomadCK** option is not available when the **Dual Aspectizer** option is in Downstream Mode, as both require a Clean Feed output.

   - **Alpha Key 1** — The clean feed output will be the alpha signal for **Key 1** of the MLE.
   - **Alpha Key 2** — The clean feed output will be the alpha signal for **Key 2** of the MLE.

This completes the procedure to set up the **Clean Feed** output.

Fade to Black Setup

The **Fade to Black Menu** allows you to have the MLE fade to black when a **Fade to Black** transition is initiated.

Use the following procedure to set up the Fade to Black for you MLE:

1. Navigate to the **Fade to Black Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).
   - **Output** (to display the **Output Menu**).
   - **Fade to Black** (to display the **Fade to Black Menu**).

Fade to Black Menu

2. Toggle the MLE **On** or **Off**, as required.

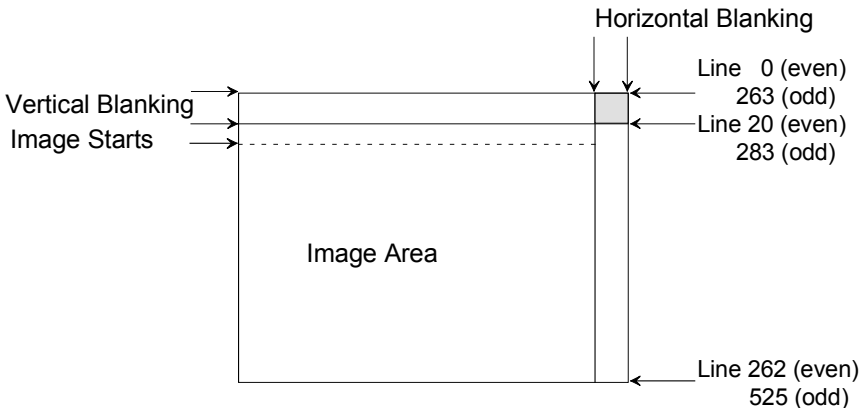
This completes the procedure to set up the Fade to Black for you MLE.

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, for example, in which you want to pass embedded audio or closed captioning.

You can also define the line where the image starts, to prevent any switcher effects (keys, wipes, etc.) 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.



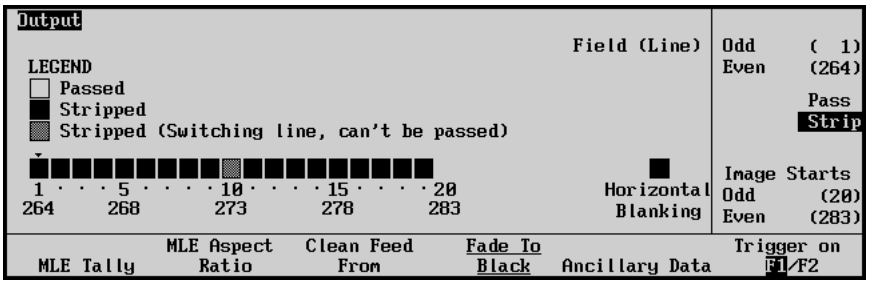
Vertical/Horizontal Blanking Area

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** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Installation** (to display the **Installation Menu 1-2**)
   - **Output** (to display the **Output Menu**)
   - **Ancillary Data** (to display the **Ancillary Data Menu**)



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
  - ~ The 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.
- Knobs area
  - ~ Top **Field (Line)** knob
  - ~ Middle **Pass/Strip** knob
  - ~ Bottom **Image Starts** knob

2. Use the top **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. Use the top **Field (Line)** knob clockwise to select the **Horizontal Blanking** box (on the far right of the bar graph) to its maximum value. 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 middle **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

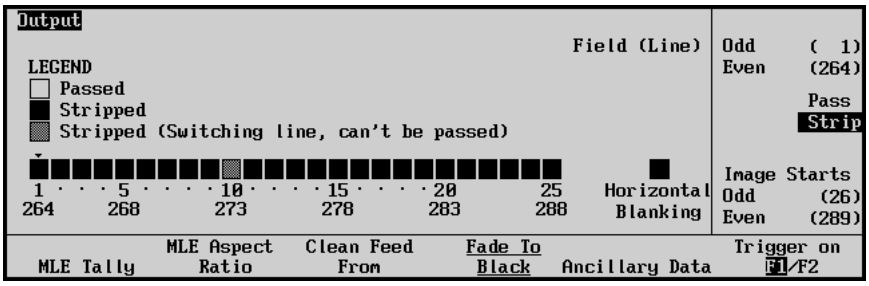
All non-image (vertical blanking) lines and the horizontal blanking should be set to pass if embedded audio is to be passed.

The Switching line (line 10 in 525 systems and line 6 in 625 systems) is always stripped and cannot be changed.

5. Use the bottom **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, for example, 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, adjust the **Image Starts** knob to 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 diagram).



Ancillary Data Menu with Additional Lines Stripped

Contact Ross Video Technical Support for any additional assistance with **Ancillary Data** setup.

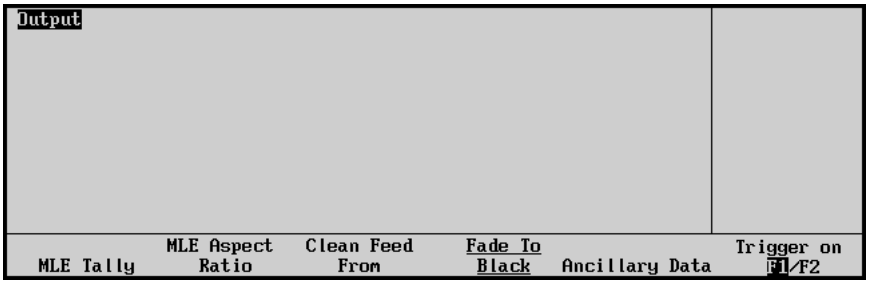
Trigger Field Setup

The **Trigger on** feature allows you to select when the Synergy 1 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**.

- Selecting Field 1 (**F1**) on the **Output Menu** enables the Synergy 1 Switcher to trigger the second video source after the **Odd Field** of the first source is drawn.
- Selecting Field 2 (**F2**) on the **Output Menu** enables the Synergy 1 Switcher to trigger the second video source after the **Even Field** of the first source is drawn.

Use the following procedure to set up the **Trigger on** feature:

1. Navigate to the **Output Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).
   - **Output** (to display the **Output Menu**).



Output Menu

2. Toggle **Trigger on** between **F1** and **F2** as follows:

   - **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. Prior to 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 the ***Installation Guide***. For each standard GPI input port (1 to 12):

- In the **Transition Type** column, fill in the type of transition that you want to trigger. Choose between:
  - Off
  - Auto
  - Cut
  - Cust Ctrl
- In the **Transition Area** column, fill in the area of the switcher where you would like the transition to occur. Choose between:
  - MLE 1
  - Fade to black (DSK)
- In the **Polarity** column, fill in the polarity of the input trigger. Choose between:
  - Low
  - High
- To avoid marking up the ***Installation Guide***, use the worksheet provided in the section "**Standard GPI Input Worksheet**" on page 16-6 to make extra copies.

Standard GPI Input Worksheet

Standard GPI Input #	Transition Type	Transition Area	Polarity
Sample GPI Input #1	Auto	MLE 1	Low
Sample GPI Input #2	Cut	Fade to black	High
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

Standard GPI Output Worksheet

Complete the following "standard" GPI Output worksheet. 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
- To avoid marking up the ***Installation Guide***, use the worksheet provided in section "**Standard GPI Output Worksheet**" on page 16-7 to make extra copies.

Standard GPI Output Worksheet

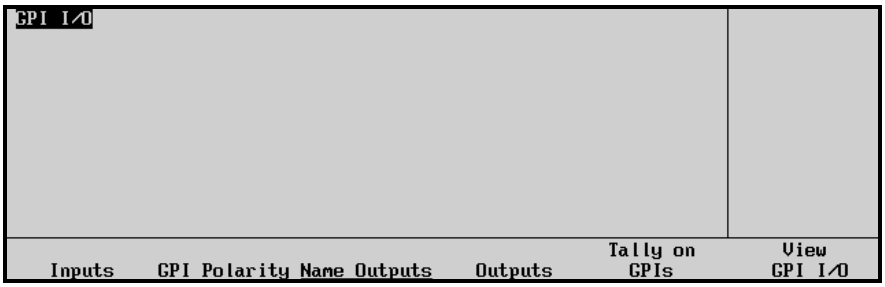
Standard GPI Output #	Output Name	Trigger Type	Trigger Level
sample GPI Output #1	PrevStill	Edge	Low
sample GPI Output #2	Roll VTR	Level	High
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

Programming Standard GPI Inputs

Use the following procedure to set up your standard GPI ports:

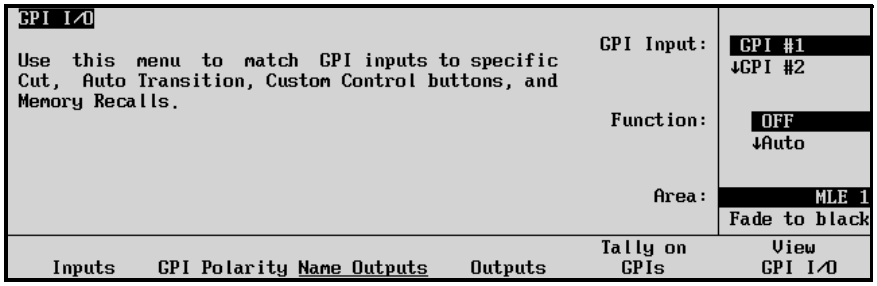
1. Navigate to the **GPI/O Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).

- **GPI I/O** (to display the **GPI/O Menu**).



GPI I/O Setup Menu

2. Press **Inputs** to display the **GPI Inputs Setup Menu**.



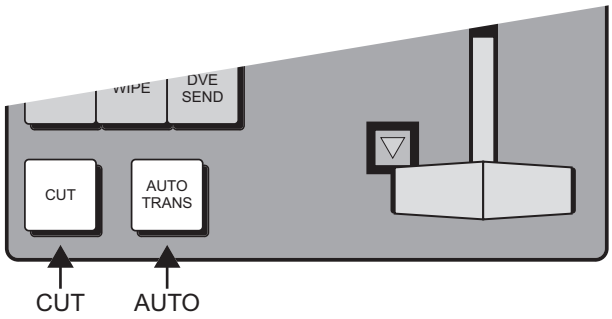
GPI Input Setup Menu

This 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 **Main Area** provides a mini "help" message.
- The **Label Area** provides access to additional GPI setup menus.
- The **Scroll Area** provides three functions:
  - ~ The top **GPI Input** knob selects the GPI Input port (**1** to **12**) to which you want to assign a switcher transition type and location (area).
  - ~ The middle **Function** knob selects between **Off**, **Auto**, **Cut**, **Cust Ctrl,** and **Mem Recall**. Specific functions are listed below.
  - ~ The bottom **Area** knob selects the area of the switcher that you want to trigger. Choose between **MLE 1** or the **Fade to Black** group.

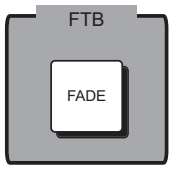
Transition functions are listed below:

- Select **OFF** to perform *no transition* when an incoming pulse is received from an external device.
- When **Auto** or **Cut** is selected and the **MLE** option is chosen, the **CUT** or **AUTO TRANS** button in the switcher's **Transition** area is triggered, respectively — when a specific GPI input pulse is received from the external device.



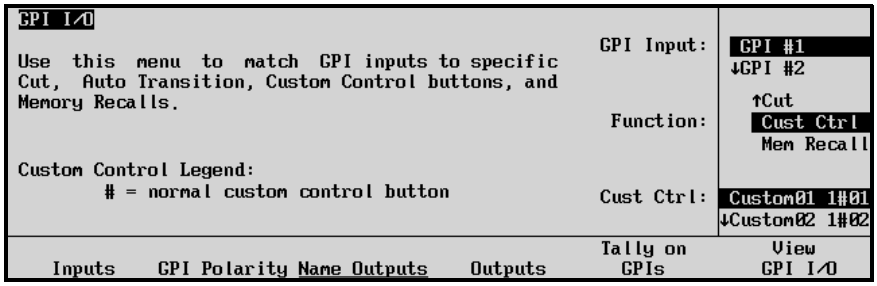
GPI Trigger Locations — MLE Transition Group

- When **Auto** or **Cut** is chosen and the **Fade to Black** area is selected, the **FADE** button in the **Fade to Black** group is triggered when a GPI input pulse is received from the external device.



GPI Trigger Location — Fade to Black Group

- When **Cust Ctrl** is selected, the label for the bottom knob changes to **Cust Ctrl** and the values change to a list of the custom control buttons in the format **Custom## 1 ##**, representing the custom control name (default is **Custom##**), bank (**1-9**), status as defined in the legend area, and button numbers (**01-99**). This allows a GPI input to trigger a complex series of operations that have been assigned to a custom control button. A custom control button that has a macro assigned to it is prefixed in the list with an asterisk.



GPI Input Setup Menu – "Cust Ctrl" selected

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.

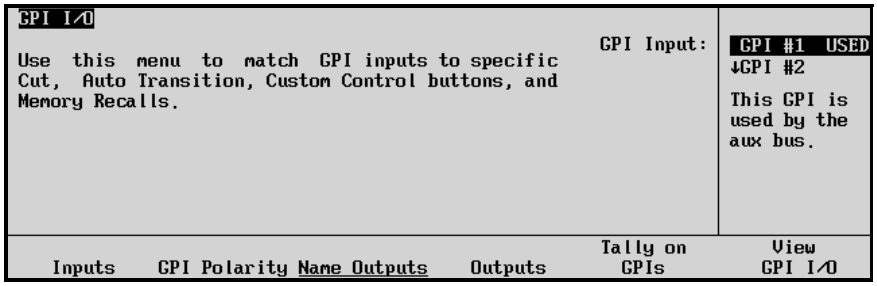
It is also possible to specify the custom control setting by pressing the actual custom control button.

- When **Mem Recall** is selected, the label for the bottom knob changes to **Memory** and the values change to a list of memories that can be triggered by a GPI input.

3. Using the information from the Transition Type and Transition Area columns in your Standard GPI Input Worksheet, select the first Input GPI port that you want to program. Assign a "transition type" and select an "area" of the switcher to trigger.

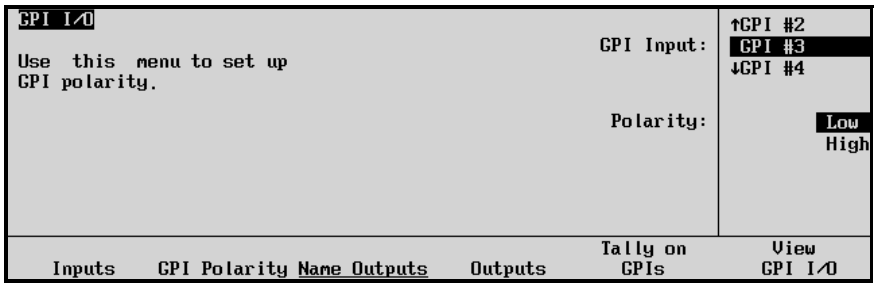
   Note that if the label **USED** appears to the right of the GPI input port number, it indicates that the selected port is already in use by the Aux Bus, as assigned on the **Aux Bus External Device Assignment Menu**. Refer to the section, "**Assigning Aux Bus Tallies**" on page 9-12 for instructions.

   For reference, the following figure illustrates the **USED** label on the **GPI Input Setup Menu**.



GPI Input Setup Menu — GPI Port in Use

4. To set the polarity of each GPI input port, press **GPI Polarity**. The **GPI Input Polarity Menu** appears, as shown below:



GPI Input Polarity Menu

   - The **Main Area** provides a mini "help" message.
   - The **Label Area** provides access to additional GPI setup menus.
   - The **Scroll Area** provides two functions:
     - ~ The top **GPI Input** knob selects the GPI Input port (**1** to **12**) for which you want to set the polarity.
     - ~ The middle **Polarity** knob selects the port's polarity — **Low** or **High**.

5. Using the information from the **Polarity** column in your **Standard GPI Input Worksheet**, assign a polarity to each GPI input port (that you set up in step 3).

   - When **Low** is assigned, the incoming GPI line is normally high. The selected port triggers when the line goes low (to ground).
   - When **High** is assigned, the incoming GPI line is normally low. The selected port triggers when the line goes high (released from ground).

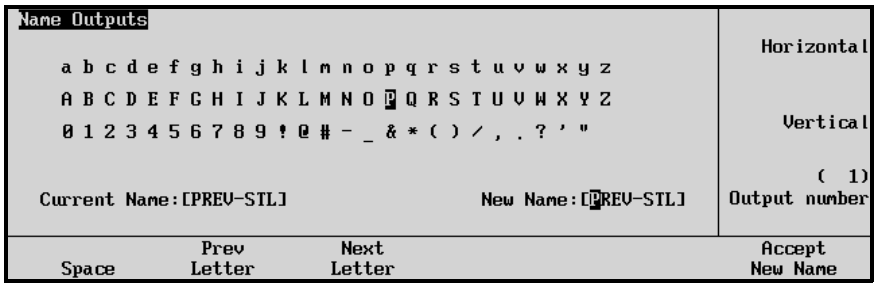
   Refer to your source device's ***Installation Manual*** for details on the specific type of GPI pulse that the device provides.

6. Repeat steps 2 through 4 for each remaining GPI Input port.

Programming Standard GPI Outputs

Use the following procedure to set up your standard GPI output ports:

1. Navigate to the **GPI Setup Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Installation** (to display the **Installation Menu 1-2**)
   - **GPI I/O** (to display the **GPI/O Menu**)
2. Press **Name Outputs** to display the **GPI Name Outputs Menu**.



GPI Name Outputs Menu

- 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 knobs. The **Current Name** and **New Name** fields are located below the array.

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 Chapter 2 "**Control Panel Introduction**" of the ***Synergy 1 Operation Guide*** for details.

Important

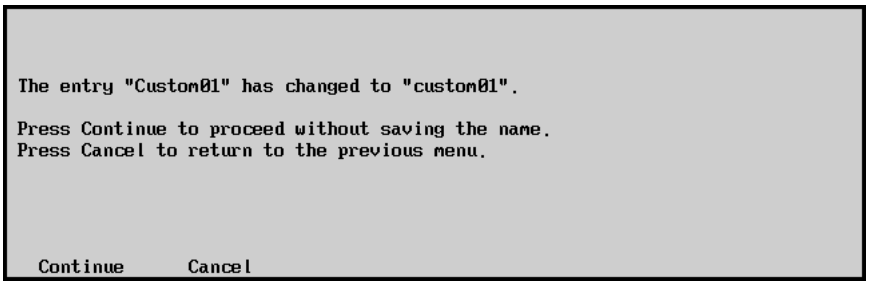
Do NOT place anything on your keyboard or place your keyboard in a position where any of the keys could be accidently pressed. This could result in the Switcher acting unpredictably.

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 their respective **Scroll 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.

3. Using the data from the **Output Name** column in your **Standard GPI Output Worksheet**, rotate the **Output Number** knob until the desired GPI output port is shown — the one that you want to name. Please note:
   - As you rotate the knob, both the **Current Name** and **New Name** fields change to show the port names (as stored in 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.
   - 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 steps 3 through 5 for each additional GPI output port that you want to name.

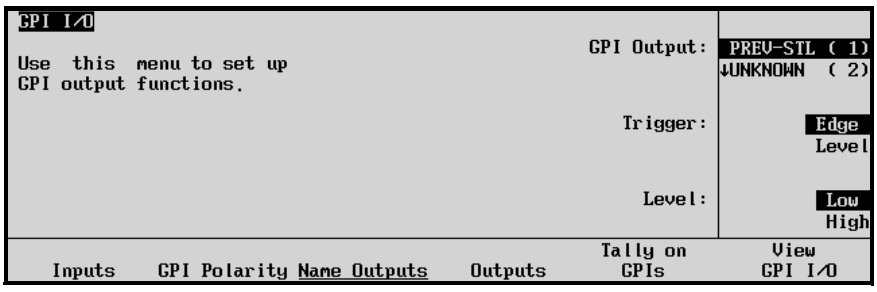
Note If you exit the installation menus without first pressing **Accept New Name**, the following screen is displayed.



Change Name Without Saving Message

   - Press **Yes** to abandon changes and move to the new output port. The name reverts to its previous name as stored in memory.
   - Press **No** to retain changes without moving to the new port.

   Once you have named all of the desired GPI output ports, press **UP ONE** to return to the **GPI Setup Menu**.
7. Press **Outputs** to set the parameters for each GPI output port. The **GPI Output Setup Menu** appears.



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.
- The **Label Area** provides access to additional GPI setup menus.
- The **Scroll Area** provides three functions:
  - ~ 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**.

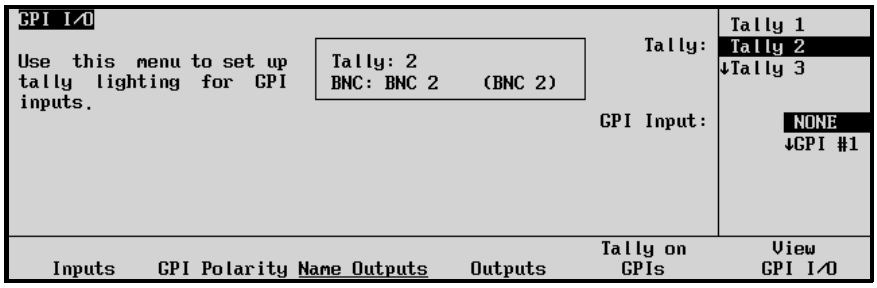
8. Using the information from the **Trigger Type** and **Trigger Level** columns in your **Standard GPI Output Worksheet**, set up the desired parameters for each GPI output (that you named in steps 2 through 6 above). These parameters affect the pulses sent *from* the Synergy switcher to each destination 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 ***Installation Manual*** for details on the specific type of GPI pulse that the device needs to receive.

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.

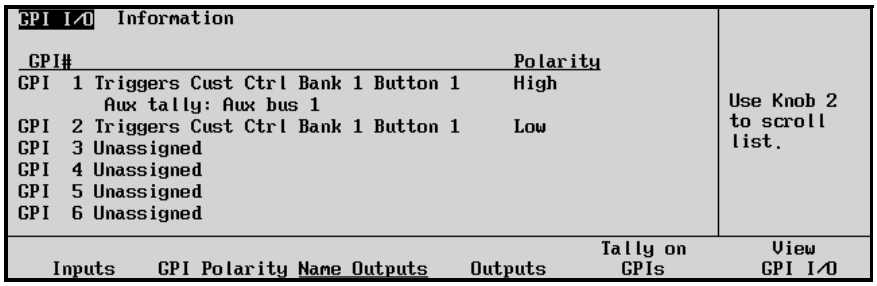


Tally on GPI Setup Menu

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

Press the **View GPI I/O** softkey 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 the following information:

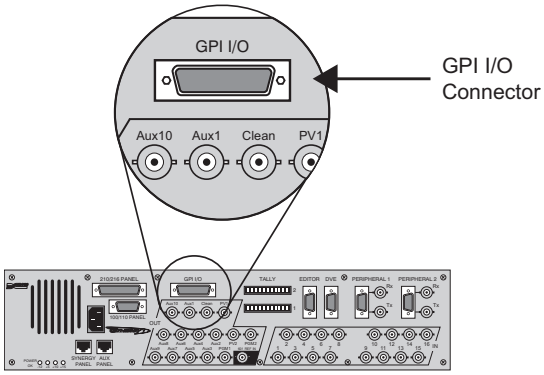
- Transition type
- Transition area
- Associated custom control button location and polarity, if used
- Assignment status
- Associated Aux Bus, if one has been assigned to a GPI in the **Aux Bus Setup** procedure
- A list of tallies that it forces if the GPI has been set up accordingly

Use the middle knob to scroll through the complete list of GPIs.

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.

The GPI connector is located on the rear of the frame as shown below:



Synergy 1 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 ***Installation Manual*** for pinout information on the device's individual GPI output ports.

- Using the "**Standard GPI Pinout Table**" provided in Appendix A and 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 ***Installation Manual*** for pinout information on the device's individual GPI input ports.

Refer to the section "**Standard GPI I/O Connector Pinouts**" on page 13-10 for standard GPI connector specifications.

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

The **Dedicated** and **Assignable** Remote Aux Panels include a special 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 8 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 remote panels, and the practical maximum limit of 16 Aux panels should still be observed with Synergy 1.
- Each 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 offset function is performed during programming mode on the remote Aux panel itself.
- Each GPI port is dedicated *exclusively* to the control of Aux Bus signal selection, such as via a contact closure from the 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 the section, "**Remote Aux Panel GPI Input Worksheet**" on page 16-8 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** - **10**) 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 3	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 3, GPI 8				

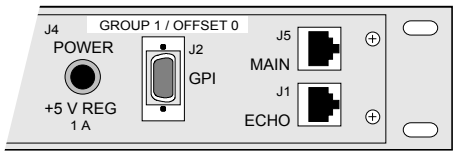
Remote Aux Panel GPI Input Worksheet

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 and 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 the section "**Remote Aux Panel Pinouts**" on page 13-16 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.

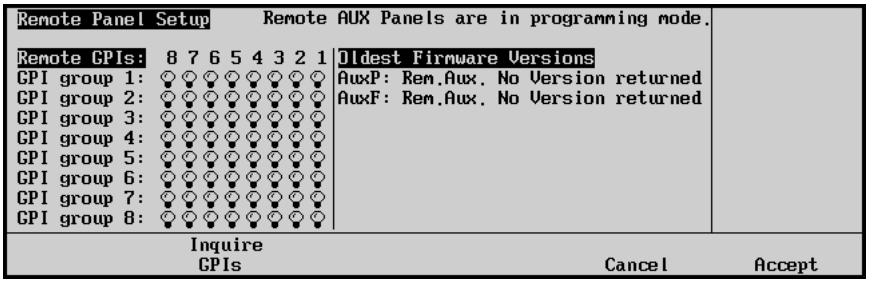
1. Navigate to the **Aux Bus Remote Panels Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).
   - **Aux Bus** (to display the **Aux Bus Menu**).
   - **Remote Panels** (to display the **Aux Bus Remote Panels Menu**).

2. Press **Remote Panel Setup** to display the **Aux Bus Remote Panel Setup Menu**.

   This step automatically places all remote panels (both assignable and dedicated) in programming mode, as shown below on the sample menu.

Operating Tip

The menu also displays the oldest firmware versions of the remote aux connected to the Synergy panel and the Synergy frame, labeled as **AuxP** and **AuxF** respectively.



Aux Bus Remote Panels Menu

Note that the on-air LED (on all panels) flashes to alert you that programming mode is now in effect and the two buttons in the Control Panel's **Assign Group** are inactive.

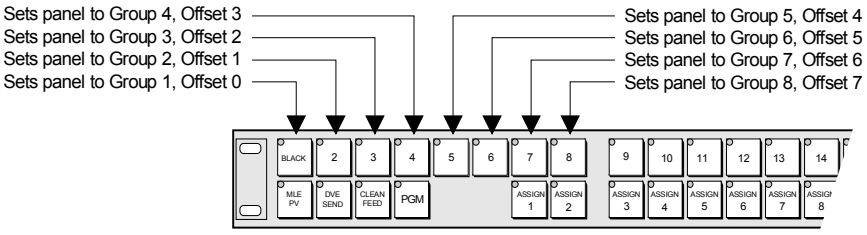
3. Go to the first **assignable** or **dedicated** Aux panel that you want to program.
4. Ensure that the panel is in "programming" mode (with the on-air LED flashing).

Note

This procedure allows you only to program the *current panel*. You can not select other panels to program (from the panel you are currently using) as you could in the previous "assignment" programming mode.

5. 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.

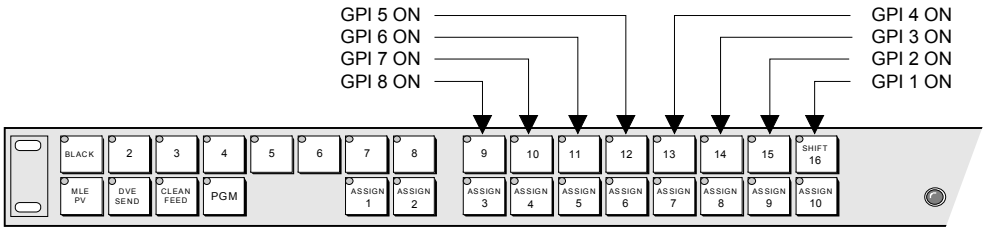
   With the GPI programming mode in effect, the first eight crosspoints on each panel allow you to set the group and offset of the selected panel, as indicated in the following figure.



Remote Aux Panel GPI Group and Offset Programming Buttons

6. 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.
7. 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 displayed in the following figure.



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 the section, "**Monitoring CCU Joystick Selections**" on page 9-42 for details on GPI icons.

8. When programming for this panel is complete, press **Accept** on the **Remote Panels Menu** 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.
9. Repeat steps 2 through 8 for each remaining panel for which you want to program remote Aux GPI groups and offsets.

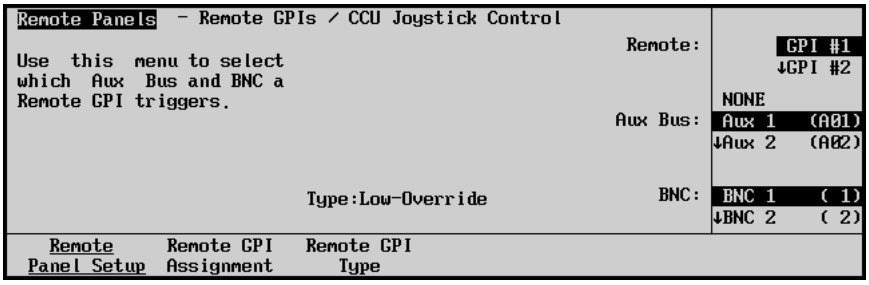
Refer to the section, "**Aux Panel Programming Mode Summary**" on page 13-19 for a comprehensive table that lists all normal, GPI and special diagnostic Aux panel programming modes.

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.

Use the following procedure to configure your CCU joystick Aux control:

1. Navigate to the **Remote Panels Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).
   - **Aux Bus** (to display the **Aux Bus Menu**).
   - **Remote Panels** (to display the **Remote Panels Menu**).
2. Press **Remote GPI Assignment** to display the **Remote GPIs/CCU Joystick Control Menu**.



Remote Panels - Remote GPIs/CCU Joystick Control Menu

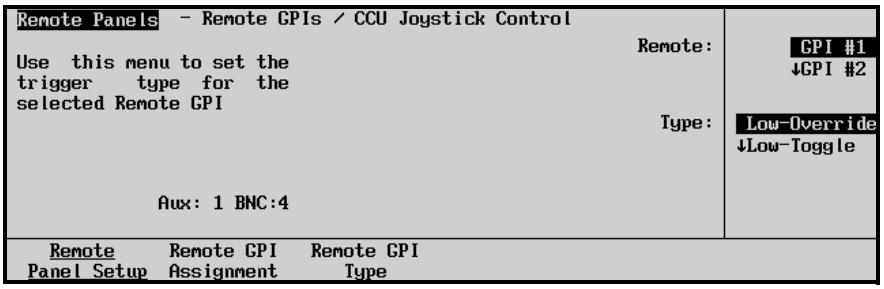
The menu allows you to select a remote GPI (**1** - **64**), assign it to a specific Aux Bus (**1** - **10** or **NONE**), and associate that GPI with a specific BNC (**1** - **16**).

3. Using the data from your **Remote Aux Panel GPI Input Worksheet**, set up each desired remote GPI as follows:
   - Use the top **Remote** knob to select the remote GPI that you want to assign.
   - Use the middle **Aux Bus** knob to select the Aux Bus on which that GPI resides.
   - Use the bottom **BNC** knob to select the switcher BNC input that you want to be selected when the remote GPI is triggered.

Note

The text (in the main area) 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**.



Aux Bus Remote GPI Type Menu

5. Using the data from your **Remote Aux Panel GPI Input Worksheet**, set up the desired remote GPI trigger type as follows:
   - Use the top **Remote** knob to select the remote GPI that you want to set up.
   - Use the middle **Type** knob to select the type of control that you want to assign.
     - ~ **Low-Override** – This type of input trigger causes 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. This is the default setting.
     - ~ **Low-Toggle** – This type of input trigger causes 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).

~ **High-Toggle** – This type of input trigger is 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 overridden by another CCU joystick, a remote aux panel crosspoint button selection, or a switcher Aux Bus crosspoint button selection.

~ **Off** – This setting disables the selected remote GPI.

Note

The text (in the main area) 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.

6. Repeat steps 3 to 5 for all remote GPIs that you wish to assign.

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.

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.

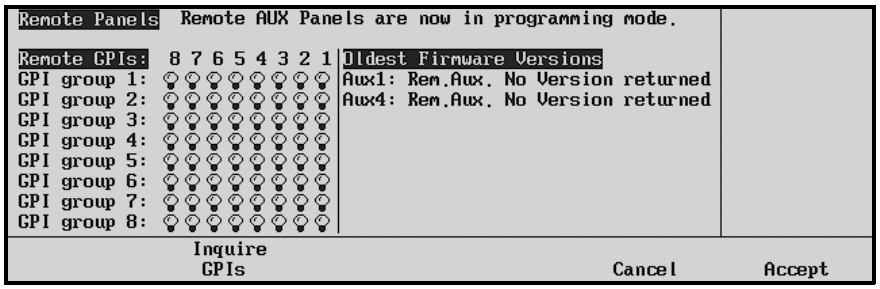
Monitoring CCU Joystick Selections

The status of the Remote Aux Panel GPIs can be viewed on the **Remote Panels 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** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)

- **Installation** (to display the **Installation Menu 1-2**)
- **Aux Bus** (to display the **Aux Bus Menu**)
- **Remote Panels** to display the (**Remote Panels Menu**)



Aux Bus Remote Panels Setup 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.

~ 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 the **Inquire GPIs** softkey 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

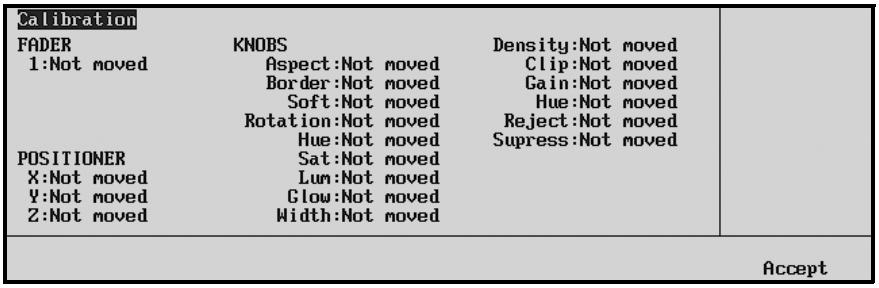
The **Calibration Menu** allows you calibrate all analog controls on the switcher panel, including the faders, the XYZ positioner and all knobs (excluding those to the right of the display).

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.

Use the following procedure to calibrate the analog controls of the Synergy 1 Switcher:

1. Navigate to the **Calibration Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Installation** (to display the **Installation Menu 1-2**)
   - **MORE** (to display **Installation Menu 2-2**)
   - **Calibration** (to display the **Calibration Menu**)



Calibration Menu

The **Main Area** provides a visual display of all analog controls, including the faders, positioner and all knobs.

- The **Scroll Area** is blank.
- 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 operations.

2. To calibrate the fader:
   - Move the fader to its full upper and lower limit.
   - Repeat this procedure two or three times.
   - As you move the fader, you will see a series of numbers appear in the **Main Area**, under the **FADER** heading. The numbers for the 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 and 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**.

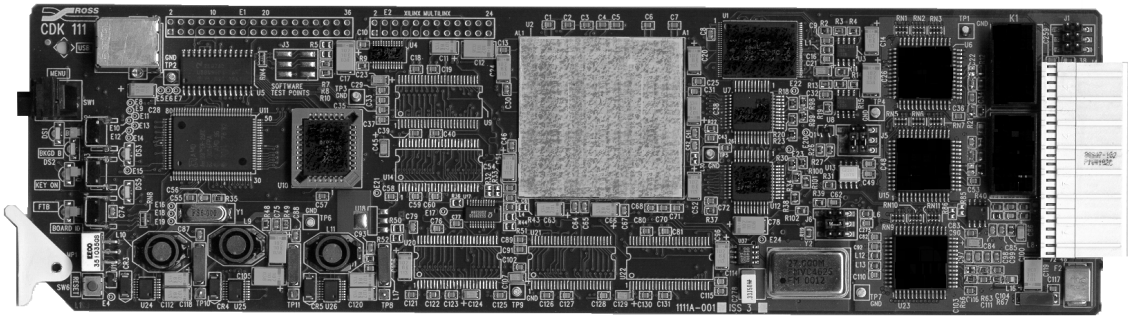
Caution

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 analog controls of the Synergy 1 Switcher.

DSK (CDK-111A-M) Setup

The Synergy 1 switcher uses up to two optional DSKs (CDK-111A-Ms) that are installed in Ross Video's DFR-8110A-C DA frames. Each external DSK has **Self** and **Auto Select** key capabilities only. Borders, DVE Send transitions and Squeeze & Tease capability are *not provided* with external DSKs.



CDK-111A-M Downstream Keyer

Each 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.

Up to two CDK-111A-M keyers can be installed and controlled by the Synergy 1 panel.

The following DSK procedures are discussed in this section:

- Installing the DSK (CDK-111A-M) Board
- Setting up Communications
- Setting up Aux Buses

Each procedure is explained in detail in the following sections.

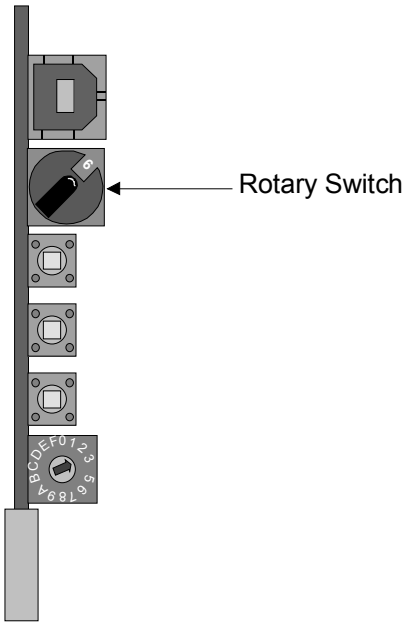
Note

This equipment is intended 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.

Installing the DSK (CDK-111A-M) Board

Use the following procedure to install the DSK (CDK-111A-M) board:

1. Observe all static discharge precautions throughout the procedure.
2. It is not necessary to power down either the Synergy switcher chassis or the DA frame when installing or removing the CDK-111A-M board.
3. Identify the slot in which you want to install the board.
4. If you are replacing a *standard* DA card with a CDK-111A-M, carefully remove the selected card from the chassis slot that you identified in step 3. You can store the board for future use, or you can install it in another appropriate open slot in the frame.
5. Set the CDK-111A-M menu selector rotary switch to position **6** for the card to work as a downstream keyer. Refer to Chapter 2, "**Installation and Setup**" in the ***CDK-111A-M Owner's Guide*** for further details on the menu selector rotary switch.



External DSK (CDK-111A-M) Card Edge

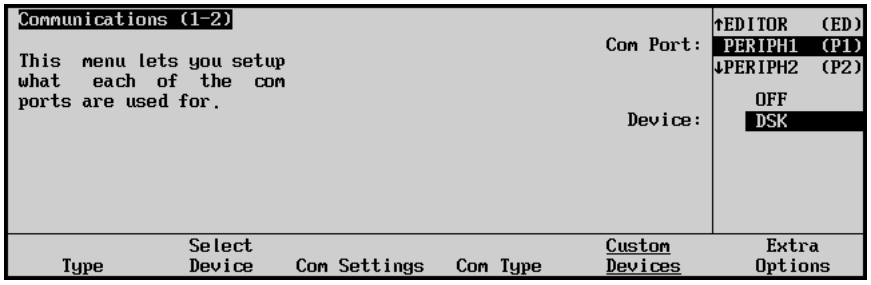
6. Carefully install the new CDK-111A-M card in the chassis and secure it with the ejector latch on the board edge.
7. Repeat steps 3 to 5 if you wish to install a second CDK-111A-M keyer.

This completes the procedure to install the DSK (CDK-111A-M) board.

Setting up Communications

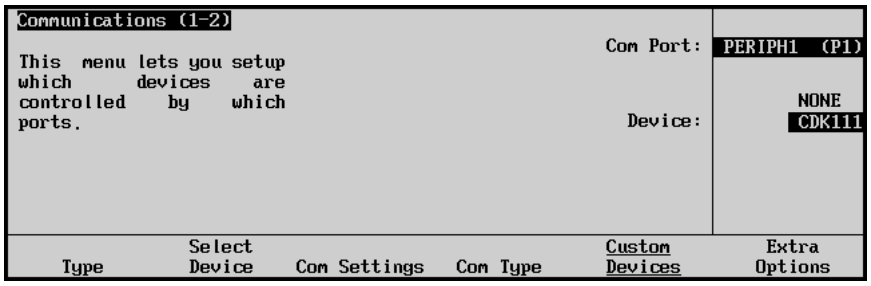
Use the following procedure to set up communications with a CDK-111A-M downstream keyer:

1. Ensure that the CDK-111A-M boards are installed. Refer to the section, "**Installing the DSK (CDK-111A-M) Board**" on page 9-46 and the section "**External Downstream Keyer (CDK-111A-M) Cabling**" on page 3-10.
2. Navigate to the **Communications Menu 1-2** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Installation** (to display the **Installation Menu 1-2**)
   - **Communications** (to display the **Communications Menu 1-2**)
3. Press **Type** to display the **Communications Type Menu**.



Communications Type Menu – Peripheral Port 1 (P1) and DSK Selected

4. Assign a communications port to the external downstream keyer as follows:
   - Use the top **Com Port** knob to select the Synergy com port that is connected to the external downstream keyer.
   - Use the middle **Device** knob to select **DSK**.
5. Press **Select Device** to display the **Select Device Menu**.



Select Device Menu – CDK-111A-M

6. Select the device you want to assign to the DSK communication port as follows:
   - Use the top **Com Port** knob to select the Synergy com port that is connected to the external downstream keyer.
   - Use the middle **Device** knob to select **CDK111**.
7. Repeat Steps 3 and 4 when a second DSK is installed, using the top **Com Port** knob to select the **PERIPH2 (P2)** communications port and the middle **Device** knob to select the **DSK** (external downstream keyer) device.

Important

If, for any reason, the CDK-111A-M board 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**.

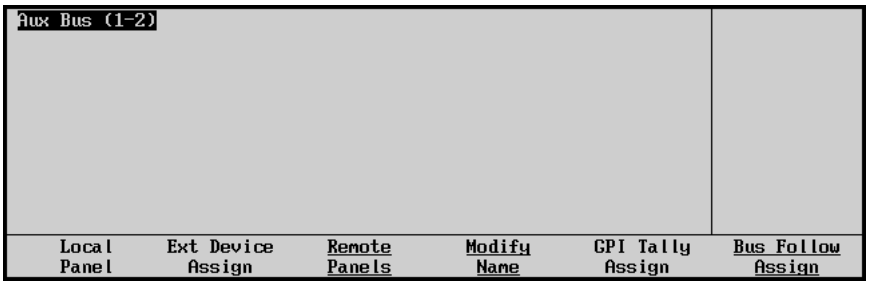
This completes the procedure to set up communications with a CDK-111A-M downstream keyer.

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:

1. Navigate to the **Aux Bus Setup Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)

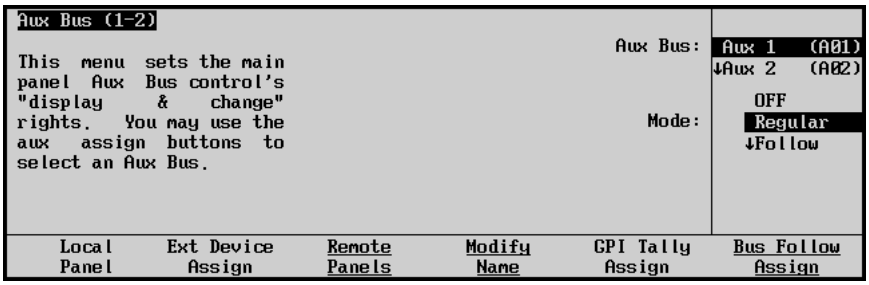
- **Installation** (to display the **Installation Menu 1-2**)
- **Aux Bus** (to display the **Aux Bus Menu 1-2**)



Aux Bus Setup Menu

- The **Main Area** and **Scroll Area** are both blank.
- The **Label Area** provides six Aux Bus setup options.

2. Press **Local Panel** to display the **Aux Bus Local Panel Setup Menu**.



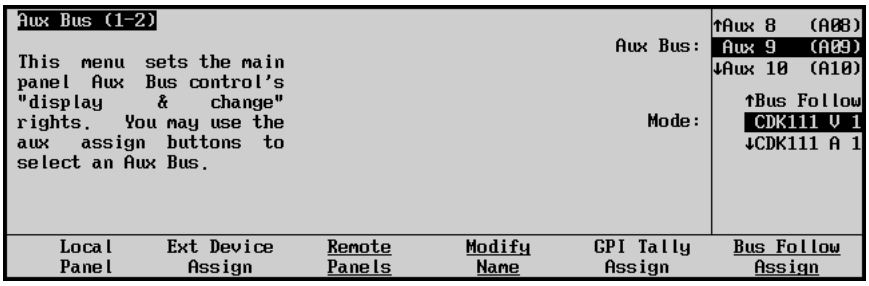
Aux Bus – Local Panel Setup Menu

3. Use the top **Aux bus** knob to select the Aux bus that you want to use to feed the DSK.

Note

Aux Buses may be timed or untimed. However, we recommend using untimed Aux Buses 3 through 10 in order to preserve the timed ones, Aux 1 and 2, for use with external DVEs.

4. Use the middle **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 Setup Menu – CDK-111A-M Setup

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” refers to **video** and the “A” for **alpha**. The numbers indicate which CDK-111A-M board you are feeding, with 1 being the board hooked directly to the PGM and PV outputs, and 2 being the board that is cascaded from the first.

5. Repeat steps 3 and 4 to assign the required Aux Buses for all DSK video and key outputs.

This completes the procedure for setting up the external DSKs.

Chroma Key Setup

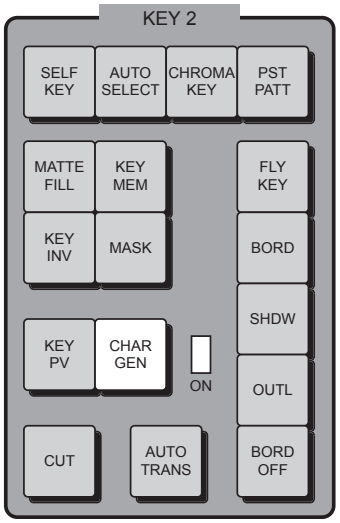
Chroma keying is a standard feature in each Synergy 1 keyer. Each chroma keyer features internal 4:4:4 chroma channel interpolation — from *any* input. This means that *no special input setup procedures* are required in order to perform a chroma key — you can chroma key off of *any serial digital input* as required.

Note

If you have purchased the **Ultimatte Insider** option, refer to the section, "**Ultimatte Insider Installation**" on page 15-29. 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 the MLE's **Key 2 Group**. The location of the button is displayed in the following figure:



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 **Key Bus** — thus saving two steps during production: (1) selecting the key type and (2) selecting the key source.

Use the following procedure to program the "favorite" CG button:

1. Press and *hold* the **CHAR GEN** button.
2. On the **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.

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**.

System Timing

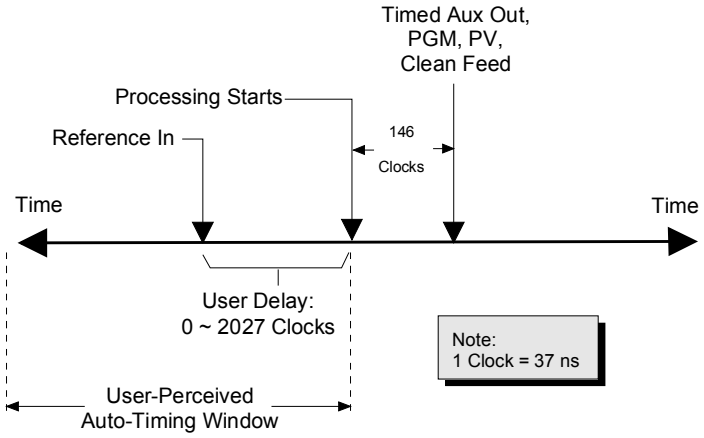
This section provides information regarding Synergy system timing. The following topics are discussed:

- 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 bus that feeds the MLE. The auto-timing function is accomplished by installing **Deserializer Modules** (4000A-061) to the Frame CPU board. The procedure for installing these modules is in the section "**Timed Aux Bus Installation**" on page 15-25.

Use the following diagram for reference throughout this section.



Synergy Auto-timing Diagram

Assume that the MLE 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 isn't 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.

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.

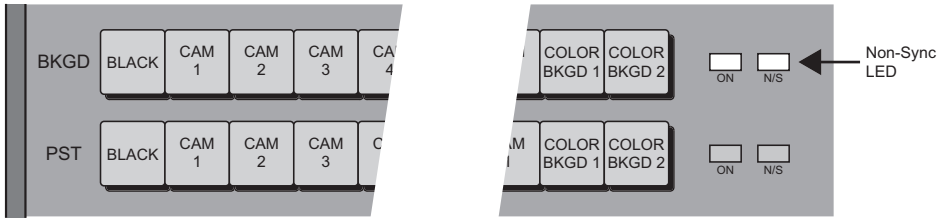
When you adjust the reference delay, you will find that it can actually be adjusted to about 1.5 lines. This is the extreme limit of the hardware's capability and in theory, this capability could time an input that is much later than the supplied reference.

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 the section, **"Reference Delay Adjustment**" on page 9-55. 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 following figure.



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, "**Switcher Basics**", of the ***Synergy 1 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.

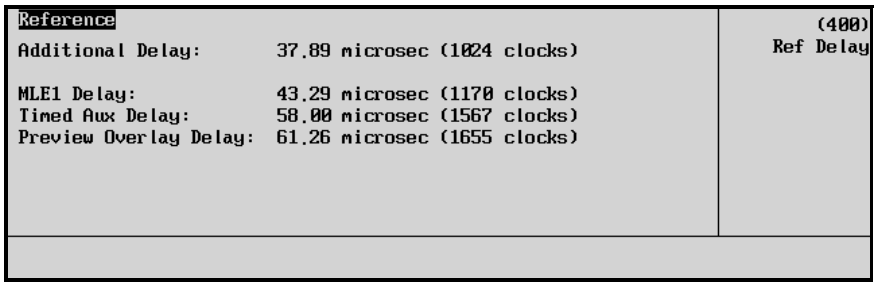
Key Timing

The Synergy switcher provides *no adjustments* for key timing. All key timing adjustments must be made *at the source*.

Reference Delay Adjustment

Use the following procedure to adjust the internal reference delay of the switcher:

1. Navigate to the **Reference Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Installation** (to display the **Installation Menu 1-2**)
   - **MORE** (to display **Installation Menu 2-2**)
   - **Reference** (to display the **Reference Menu**)



Reference Menu

2. Use the top **Ref Delay** knob to adjust the delay.

   The **Reference Menu** lists the **MLE Delay**, 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.

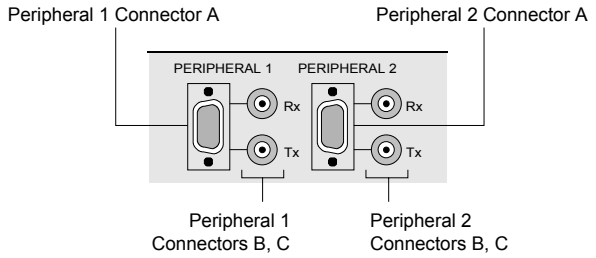
Note

When you adjust the **Additional 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 switcher.

Peripheral Control

Four connectors are provided for peripheral control capability, as illustrated in the following figure:



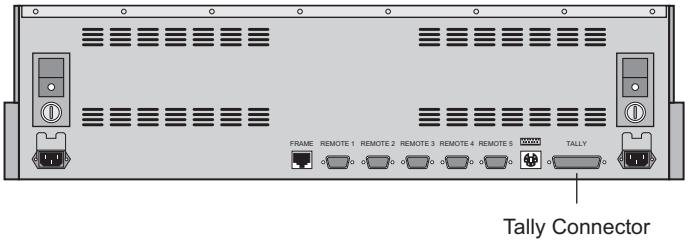
Peripheral Controls

- **Peripheral 1 Connector A** is a 9-pin "D" RS-422 connector that is provided for connection to a primary peripheral device.
- **Peripheral 1 Connectors B and C** are two BNCs that are provided for control requirements such as CDK-111 functionality. The two connectors (one **Rx** and one **Tx**) share the same internal circuitry as **Peripheral 1 Connector A**. Only *one* of the two sets of Peripheral 1 connectors can be used at a time.
- **Peripheral 2 Connector A** is a 9-pin "D" RS-422 or RS-232 connector that is provided for connection to a secondary peripheral device.
- **Peripheral 2 Connectors B and C** are two BNCs that are provided for control requirements such as CDK-111 functionality. The two connectors (one **Rx** and one **Tx**) share the same internal circuitry as **Peripheral 2 Connector A**. Only *one* of the two sets of Peripheral 2 connectors can be used at a time.

Tally Connections

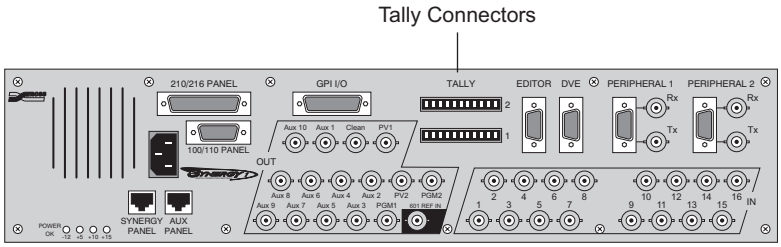
In Chapter 6, you used the **Tally Setup Menu** to select the tallies that activate when control panel buttons are pressed. In this section, using the **Tally Column** on your "**Input Worksheet**" as a guide, you will wire each tally that you have assigned.

- One connector for the 16 panel tallies is located on the rear of the control panel, as shown below.



Tally Connector Location — On Panel

- Two connectors for 16 *optional* frame tallies are located on the rear of the chassis, as illustrated in the following figure. Each connector provides 8 tally relay contacts.



Tally Connectors Location — On Frame

- A grand total of 32 tallies are available with the **Frame Tallies** option installed. Refer to the section, "**Installed Options Menus**" on page 2-31 for instructions on verifying the status of installed options.

Using the tally pinout tables provided in Appendix A and the **Tally Column** data from your "**Input Worksheet**," wire each tally connector. Connect the other end of the tally cable to your external equipment.

- Refer to the section "**Tally Connector Pinouts**" on page 13-7 for the frame tally connector specifications.
- Refer to the section "**Tally Connector Pinouts**" on page 13-14 for control panel tallies specifications.

Notes on Tally Connections

Please note:

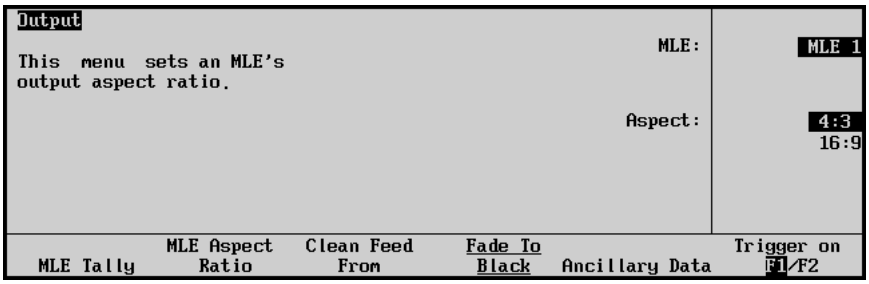
- Each relay provides a contact closure to TALLY COMMON. All relay contacts are normally open.
- Tally relay contacts are rated for a maximum of 10 VA (100 Vmax, 0.5 Amax) into a non-inductive load.
- Make all connection straight on and allow at least four inches of cable clearance at the rear of the 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

The **Video Aspect** function of the **Output Menu** allows you to toggle between **16:9** and **4:3** modes.

Use the following procedure to select **16:9** or **4:3** mode:

1. Navigate to the **MLE Aspect Ratio Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).
   - **Output** (to display the **Outputs Menu**).
   - **MLE Aspect Ratio** (to display the **MLE Aspect Ratio Menu**).



MLE Aspect Ratio Menu

2. Use the middle **Aspect** knob to select either **16:9** or **4:3** mode. 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.

Switcher Personality

The **Personality Menu** provides several functions that allow you to customize certain aspects of switcher performance.

The following personality features are discussed in this section:

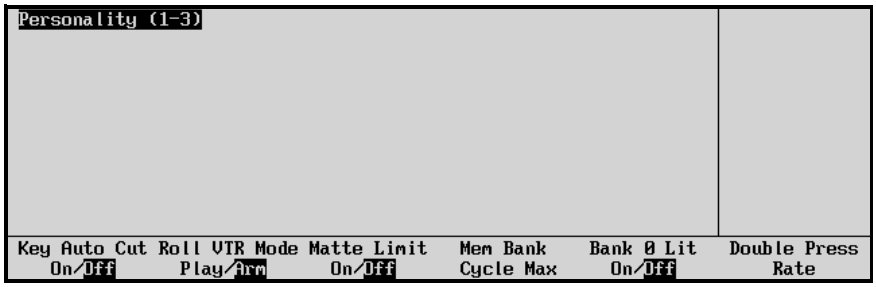
- Key Auto Cut Mode
- Roll VTR Mode
- Matte Limit
- Mem Bank Cycle Max
- Bank 0 Lit
- Double Press Rate
- Ultimatte Quick Recall
- Auto Recall
- 3D Pattern Button Assign Option
- Store Mode
- Panel Sleep Time
- PIP-II Mem
- DVE Send
- White Flash
- Recall Deleted Memories
- Next Available Memory

Key Auto Cut Mode

The **Key Auto Cut** mode determines how the keys behave when sources are taken on the **Program Bus**.

Use the following procedure to configure the **Key Auto Cut** mode:

1. Navigate to the **Personality Menu 1-3** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Personality** (to display the **Personality Menu 1-3**).



Personality Menu 1-3

2. Toggle the **Key Auto Cut** between **On** and **Off** as follows:
   - **On** — Select this option to have all enabled keys, including DSKs, automatically turn off when any source is taken directly on the **PGM** bus.
   - **Off** — Select this option to ensure that taking sources on the **PGM** bus has *no effect* on the keys they behave in the normal manner.

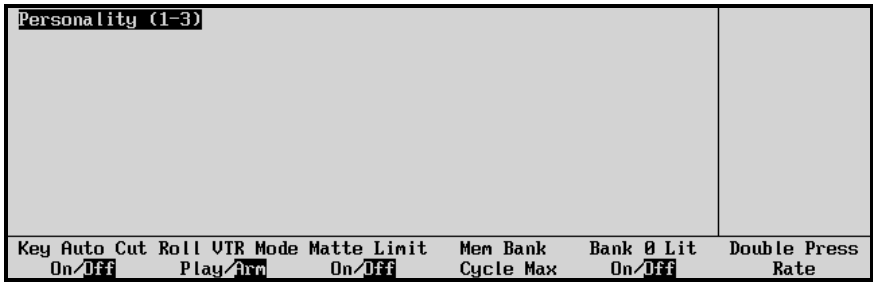
This completes the procedure to configure the **Key Auto Cut** mode.

Roll VTR Mode

The **Roll VTR Mode** determines how the **ROLL VTR** button behaves when a VTR or Video Server is selected.

Use the following procedure to configure the **Roll VTR Mode**:

1. Navigate to the **Personality Menu 1-3** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Personality** (to display the **Personality Menu 1-3**)



Personality Menu 1-3

2. Toggle **Roll VTR Mode** between **Play** and **Arm**. An explanation of the two modes is explained in the following paragraphs.

This concludes the procedure to configure the **Roll VTR Mode**.

Play Mode

When the **ROLL VTR** button is in this mode:

- Pressing the button immediately rolls the serial device selected on the **PST** bus (one device per bus).
- 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 Mode

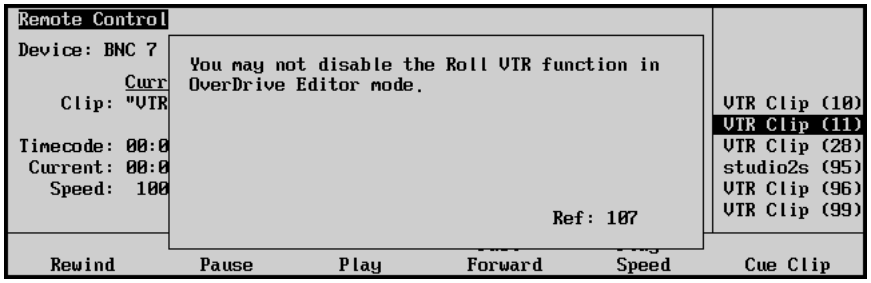
When the **ROLL VTR** button is in this mode:

- Pressing the button arms the switcher to roll the selected serial device (one device per bus) on the **PST** bus in the next transition.
- When the transition is performed by pressing the crosspoint on the **BKGD** 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 **BKGD** bus will override the preroll time and take the VTR to air immediately.
- The button is *latching*. It remains lit until it is pressed again.

Important

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, while in Editor mode (the Editor button is lit) by pressing a lit Roll VTR button will display the following warning:



Warning – Disable Roll VTR Function

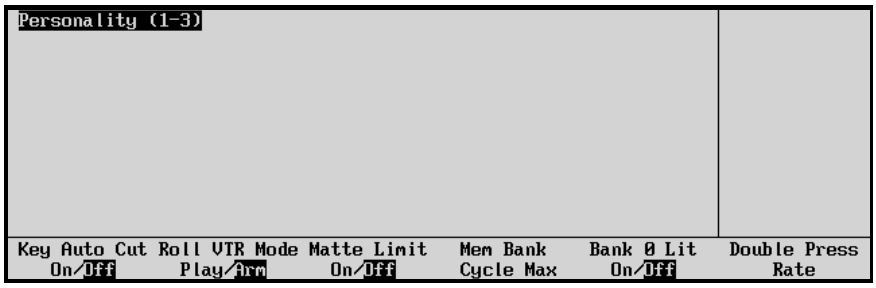
Matte Limit

The **Matte Limit** feature allows the user to set the matte parameters.

Use the following procedure to configure the **Matte Limit Mode**:

1. Navigate to the **Personality Menu 1-3** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)

- **Personality** (to display the **Personality Menu 1-3**)



Personality Menu 1-3

2. Toggle **Matte Limit** between **On** and **Off** as follows:
   - **On** — Select this option to have all color adjustments within the RGB color space.
   - **Off** — Select this option to have colors adjusted outside of the RGB space. This is the default setting.

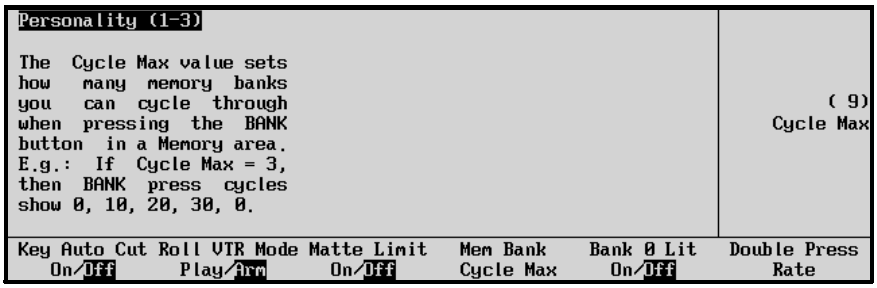
This concludes the procedure to configure the **Matte Limit Mode**.

Mem Bank Cycle Max

The **Memory Bank Cycle Max** option allows you to set the number of registers that will be cycled through when **BANK** is pressed repeatedly. This feature accommodates efficient recall of your important effects and transitions.

Use the following procedure to configure the **Memory Bank Cycle Max** option:

1. Navigate to the **Personality Menu 1-3** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Personality** (to display the **Personality Menu 1-3**)
2. Press **Mem Bank Cycle Max** to display the **Memory Bank Cycle Max Menu**.



Personality — Memory Bank Cycle Max Menu

3. Use the middle **Cycle Max** knob to set the maximum number of Banks to cycle through when pressing the **BANK** button.

   For example, when you only have 27 memory locations stored, set **Cycle Max** to **2**. Then, pressing **BANK** repeatedly will cycle you through banks 0, 1 and 2 only.

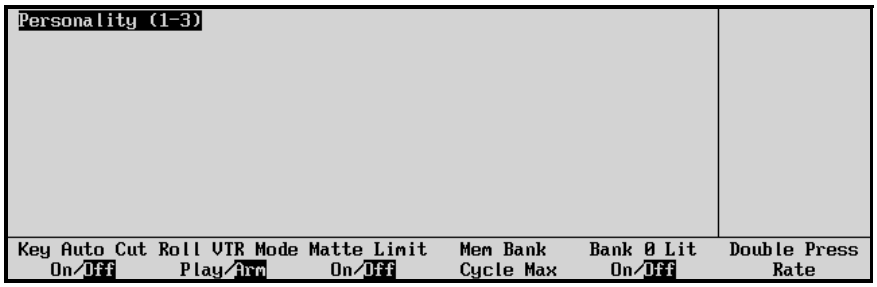
This concludes the procedure to configure the **Memory Bank Cycle Max** option.

Bank 0 Lit

The **Bank 0 Lit** function turns the **BANK** light on whenever the current memory bank location is in the "zero" bank. This provides you with a quick visual reference, without having to read the exact memory register location.

Use the following procedure to configure the **Bank 0 Lit** function:

1. Navigate to the **Personality Menu 1-3** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Personality** (to display the **Personality Menu 1-3**)



Personality Menu 1-3

2. Toggle **Bank 0 Lit** between **On** and **Off** as follows:
   - **On** — Select this option to have all the Bank buttons in the Global Memory System Group lit in any MLE that is set to Bank 0.
   - **Off** — Select this option to disable the **Bank 0 Lit** function.

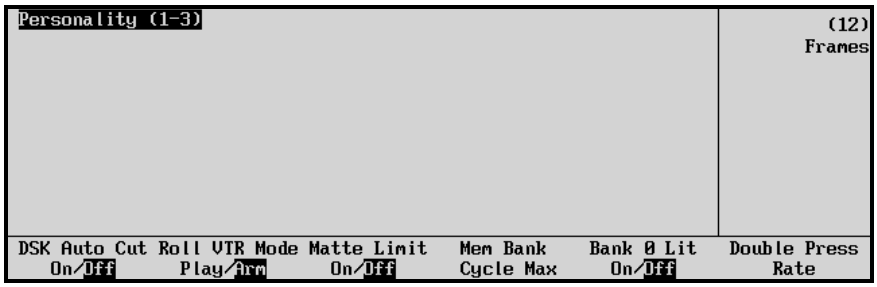
This concludes the procedure to configure the **Bank 0 Lit** function.

Double Press Rate

The **Double Press Rate** option allows you to set the time threshold required between two presses of a button. Double button presses are required for several extended switcher functions.

Use the following procedure to configure the **Double Press Rate**:

1. Navigate to the **Personality Menu 1-3** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Personality** (to display the **Personality Menu 1-3**)
2. Press **Double Press Rate** to display the **Double Press Rate Menu**.



Personality — Double Press Rate Menu

3. Use the top **Frames** knob to adjust the number of frames required between two presses of a button.

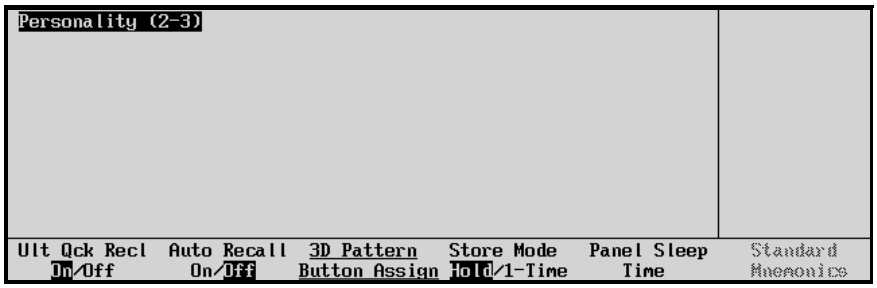
This concludes the procedure to configure the **Double Press Rate**.

Ultimatte Quick Recall

The Ultimatte Quick Recall function allows you to recall saved Ultimatte settings without performing the Auto Chroma function.

Use the following procedure to enable the **Ultimatte Quick Recall** option:

1. Navigate to the **Personality Menu 2-3** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Personality** (to display the **Personality Menu 1-3**)
   - **MORE** (to display the **Personality Menu 2-3**)



Ultimatte Quick Recall Menu Option

2. Toggle **Ult Qck Recl** between **On** and **Off** as follows:
   - **On** — Select this option to recall saved Ultimatte settings. This is the default setting.
   - **Off** — Select this option should you wish to preview and possibly recalculate chroma settings before sending a Chroma key to air.

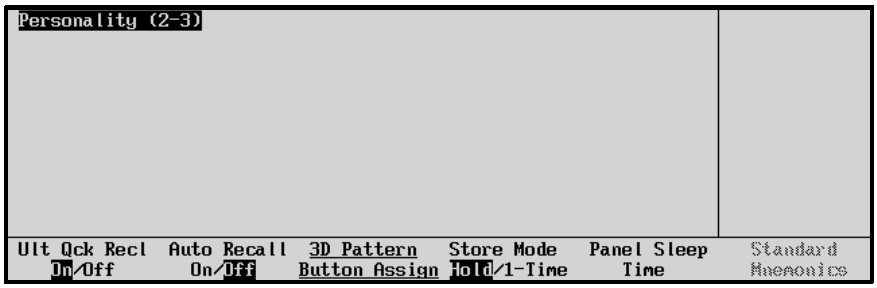
This concludes the procedure to enable the **Ultimatte Quick Recall** option.

Auto Recall

The **Auto Recall** option enables you to recall a memory and have the switcher retrieve the **KEYS ONLY**, **EFF DISS**, and **INCL DVE** button settings used when the memory was saved. When the option is disabled, you must set the **KEYS ONLY**, **EFF DISS**, and **INCL DVE** button settings manually before you recall the memory.

Use the following procedure to enable the **Auto Recall** option:

1. Navigate to the **Personality Menu 2-3** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Personality** (to display the **Personality Menu 1-3**)
   - **MORE** (to display the **Personality Menu 2-3**)



Personality Menu 2-3

2. Toggle **Auto Recall** between **On** and **Off** as follows:
   - **On** — Select this option to enable the Auto Recall option.
   - **Off** — Select this option to disable the Auto Recall option. This is the default setting.

This concludes the procedure to enable the **Auto Recall** option.

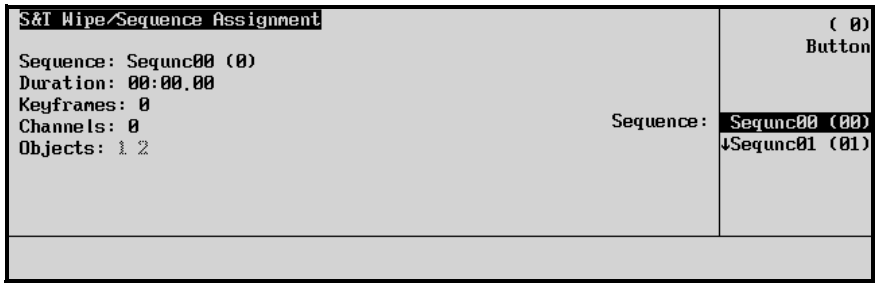
3D Pattern Button Assign Option

To use this function, you require the Squeeze & Tease 3D/WARP option installed to your switcher. For information about obtaining the Squeeze & Tease 3D/WARP option, contact your Ross Video representative. If you have the Squeeze & Tease 3D/WARP option installed, see your ***S&T 3D/ WARP Owner's Guide*** for details on installing sequences and wipes to your switcher.

Use the following procedure to configure the **3D Pattern Button Assign** option:

1. Navigate to the **Personality Menu 2-3** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Personality** (to display the **Personality Menu 1-3**)
   - **MORE** (to display the **Personality Menu 2-3**)

2. Press **3D Pattern Button Assign** to display the **S&T 3D Wipe/Sequence Assignment Menu**.



S&T 3D Wipe/Sequence Assignment Menu

In this menu you can select a **Pattern Control** button and assign a sequence to it.

3. Assign a sequence to a Pattern Control button as follows:
   - Use the top **Button** knob to select a **Pattern Control** button. By default the middle **Sequence** selections track the button selections.
   - Use the middle **Sequence** knob to select a sequence to assign to the chosen button. You may assign the same sequence to several buttons if you wish. In the main menu area, the selected sequence's parameters are displayed.

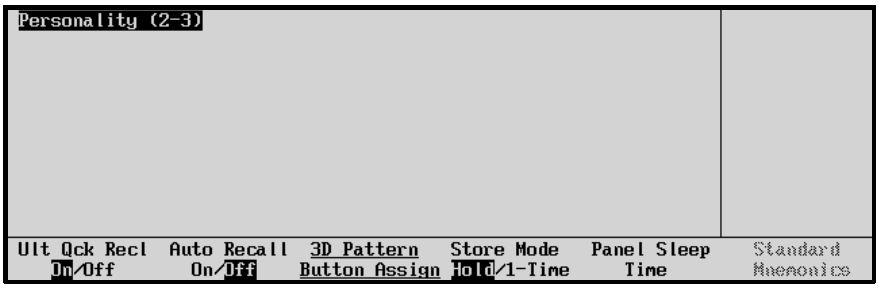
This concludes the procedure to configure the **3D Pattern Button Assign** option.

Store Mode

Use the **Store Mode** option to have the Memory area switch to **Recall** mode or stay in **Store** mode after saving a memory in the switcher.

Use the following procedure to configure the **Store Mode** option:

1. Navigate to the **Personality Menu 2-3** as follows:
   - Press **HOME** (to display **Main Menu 1-2**)
   - **MORE** (to display **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Personality** (to display **Personality Menu 1-3**)
   - **MORE** (to display **Personality Menu 2-3**)



Personality Menu 2-3

2. Toggle the **Store Mode** button between **Hold** (Store mode) and **1-Time** (Recall mode) as follows:
    - **Hold** — The memory area remains in **Store mode** when the **ENTER** button is pressed to store a memory. The Store Mode is set to **Hold** by default.
    - **1-Time** — The memory area switches to **Recall mode** when the **ENTER** button is pressed to store a memory.

This concludes the procedure to configure the **Store Mode** option.

Panel Sleep Time

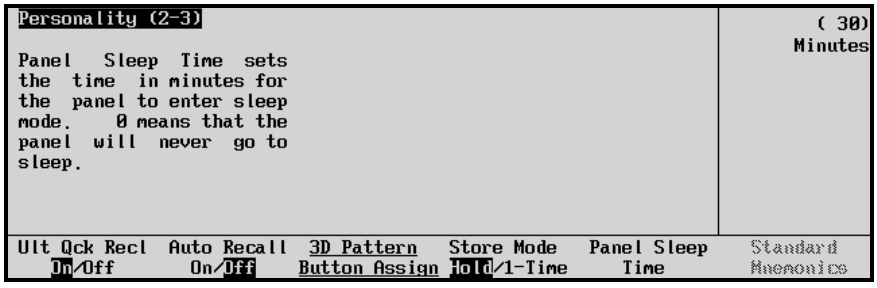
Use the **Panel Sleep Time** function to set the length of time it takes the panel to go into sleep mode. The panel enters sleep mode when no buttons are touched and no fader is moved for the designated period of time. This function is specifically designed to extend the life of the displays and button bulbs.

If the panel does go to sleep, press any button or move a fader or joystick to "wake" the switcher and turn on all the lights. Please note:

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

Use the following procedure to configure the Panel Sleep Time function:

1. Navigate to the **Personality Menu 2-3** as follows:
    - Press **HOME** (to display **Main Menu 1-2**)
    - **MORE** (to display **Main Menu 2-2**)
    - **Setup** (to display the **Setup Menu**)
    - **Personality** (to display **Personality Menu 1-3**)
    - **MORE** (to display **Personality Menu 2-3**)
2. Press **Panel Sleep Time** to display the **Panel Sleep Time Menu**.



Personality — Panel Sleep Time Menu

3. Use the top **Minutes** knob to set the length of time in minutes for the panel to fall asleep.

Note

The panel will *not* "go to sleep" if the panel is left in a storage device related menu such as the **Disk Store** or **Recall Menus**.

This completes the procedure to configure the Panel Sleep Time.

PIP-II Mem

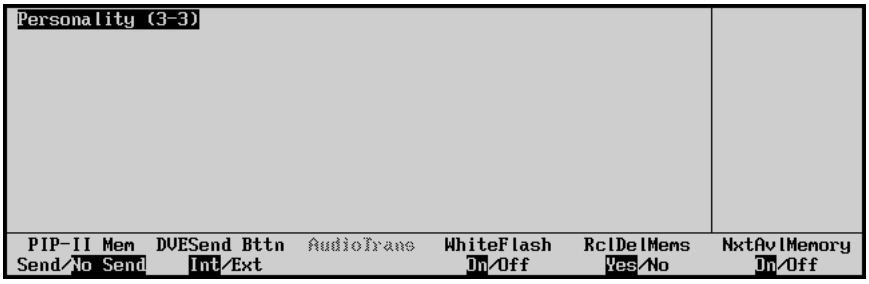
Use the **PIP-II Mem** Personality Menu settings to enable Synergy memory store and recall functions to all devices.

To use this function, ensure that the **Peripheral Interface II Protocol** option is installed and configured. If not, please contact **Ross Video** for details.

Refer to the section, "**Installed Options Menus**" on page 2-31 for instructions on verifying the status of installed options. For configuration procedures, refer to the section, "**Peripheral Interface II Protocol Setup**" on page 7-97.

Use the following procedure to enable Synergy memory store and recall functions to **PIP-II** devices:

1. Navigate to the **Personality Menu 1-3** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Personality** (to display the **Personality Menu 1-3**)
2. Press **MORE** (to display the **Personality Menu 2-3**)
3. Press **MORE** (to display the **Personality Menu 3-3**)



Personality Menu 3-3

4. Toggle the **PIP-II Mem** between **Send** and **No Send** as follows:
   - **Send** — Select this option to enable the PIP-II Mem function. When the Synergy 1 Switcher does a memory store or recall, the corresponding command is sent to every PIP-II device to store or recall its settings in the same memory number as was specified for Synergy. This enables the current settings for all of the PIP-II devices to be coordinated with the Synergy 1 switcher.
   - **No Send** — Select this option if you do not want the Synergy 1 Switcher to send memory commands to PIP-II devices. This is the default setting.

This completes the procedure to enable Synergy memory store and recall functions to **PIP-II** devices. Refer to the section "**Peripheral Interface II Protocol**" on page 8-41 for information on configuring custom controls using the PIP-II interface option.

DVE Send

To use the **DVE Send** button for internal Squeeze & Tease wipes, ensure that the optional Squeeze & Tease card is installed and configured. If not, please contact **Ross Video** for details.

Refer to the section, "**Installed Options Menus**" on page 2-31 for instructions on verifying the status of installed options.

Important

The default setting for the **DVE SEND** button, in version 14 or higher system software, is **Internal**.

When the **DVE SEND** button is set to **Internal**:

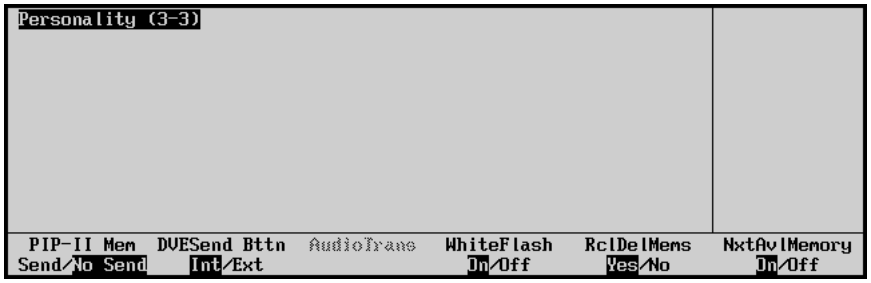
- the **DVE SEND** button will *not* access an **External** DVE.
- pressing either the **DVE SEND** or **WIPE** + **DVE SEND** buttons will activate the **Internal** Squeeze & Tease DVE.

When the **DVE SEND** button is set to **External**:

- the **DVE SEND** button will *only* access an **External** DVE.
- pressing the **WIPE** + **DVE SEND** buttons will activate the **Internal** Squeeze & Tease DVE.

Use the following procedure to toggle the functionality of the **DVE Send** button between **Internal** and **External**:

1. Navigate to the **Personality Menu 1-3** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Personality** (to display the **Personality Menu 1-3**)
2. Press **MORE** to display the **Personality Menu 2-3**.
3. Press **MORE** to display the **Personality Menu 3-3**.



Personality Menu 3-3

4. Toggle **DVESend Bttn** between **Int** and **Ext** as follows:
   - **Int** – When **Internal** is selected, the **DVE Send** button selects the internal Squeeze & Tease DVE.
   - **Ext** – When **External** is selected, the **DVE Send** button selects the external DVE.

This completes the procedure to toggle the functionality of the **DVE Send** button between **Internal** and **External**.

White Flash

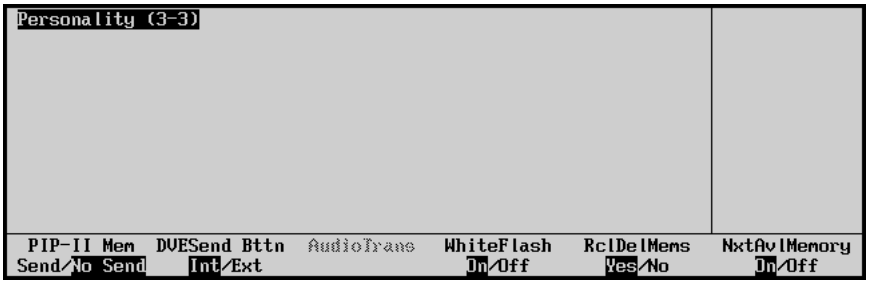
White Flash is a single button effect that allows you to set the flash color and timing of a transition. Once enabled, this effect performs a double transition from **PGM** to White Flash to **PST** using a free background color generator to produce the White Flash instead of Preset Black. This is achieved by enabling the White Flash effect, setting the color and timing of the transition and using the **PST BLACK** button in the **Transition Group**.

Note

The White Flash effect differs from Preset Black because it automatically performs the transition when **PST BLACK** is pressed.

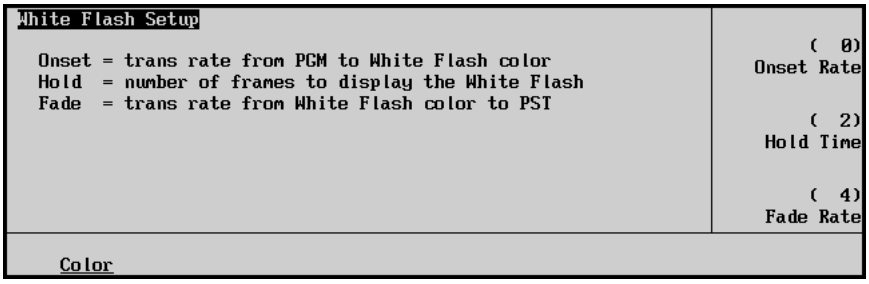
Use the following procedure to configure the White Flash effect:

1. Navigate to the **Personality Menu 1-3** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Personality** (to display the **Personality Menu 1-3**).
2. Press **MORE** to display the **Personality Menu 2-3**.
3. Press **MORE** to display the **Personality Menu 3-3**.



Personality Menu 3-3

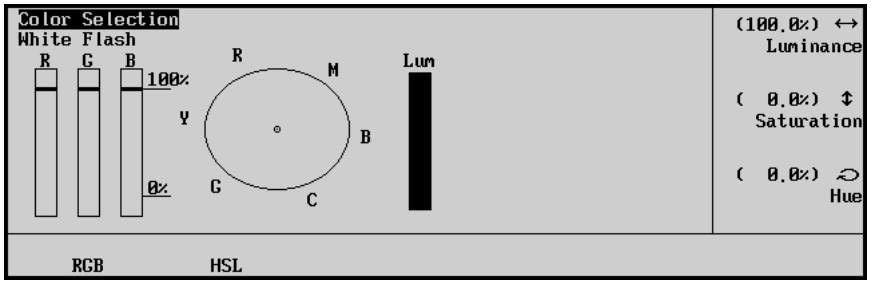
4. Toggle the **White Flash** softkey to **On** to display the **White Flash Setup Menu**.



White Flash Setup Menu

5. Set the timing of the White Flash as follows:
   - Use the top **Onset Rate** knob to set the transition rate (0 to 150 frames) from **PGM** to the White Flash.
   - Use the middle **Hold Time** knob to set the length (in number of frames) of the White Flash before fading out.
   - Use the bottom **Fade Rate** knob to set the transition rate from the White Flash to **PST**.

6. Press **Color** to display the **Color Selection Menu**



Color Selection Menu.

Note

The White Flash default is set to **HSL**. Press **RGB** if you wish to edit the White Flash in **RGB** colors.

7. Adjust the appearance of the White Flash as follows:
   - Use the top **Luminance** knob to adjust the luminance level of the White Flash.
   - Use the middle **Saturation** knob to adjust the saturation level of the White Flash.
   - Use the bottom **Hue** knob to adjust the hue levels of the White Flash.

Operating Tip

You can turn the White Flash effect off by repeating steps 1 and 2 and toggling the **White Flash** softkey to **Off**.

This concludes the procedure to configure the **White Flash** feature.

Recall Deleted Memories

The **Recall Deleted Memories** feature enables you to configure the switcher to recall memories that have been marked as deleted in the **Memories Setup Menu**. If you do not enable this feature, a popup message will display every time you attempt to recall a deleted memory and the memory will not be recalled.

All empty version 16 memory registers are tagged as **Deleted**. Once you store a register to memory, the Synergy 1 Switcher automatically sets it to **Undeleted**, allowing you to recall it from the **Global Memory System Group**.

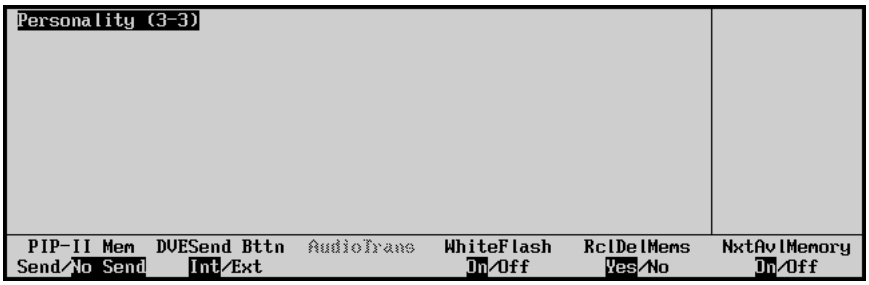
Note

By default, all empty pre-version 16 memory registers are tagged as **Undeleted**. Refer to the section, "**Deleting Memory Registers**" in chapter 8 of the ***Synergy 1 Operation Guide*** for information on deleting memory registers.

Use the following procedure to configure the **Recall Deleted Memories** feature:

1. Navigate to the **Personality Menu 1-3** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Personality** (to display the **Personality Menu 1-3**)

2. Press **MORE** to display the **Personality Menu 2-3**.
3. Press **MORE** to display the **Personality Menu 3-3**.



Personality Menu 3-3

4. Toggle the **RclDelMems** softkey between **Yes** and **No**.
   - **Yes** — Use this option to recall memories even if they have been tagged as deleted in the **Memories Setup Menu**.
   - **No** — Use this option to *not* have the switcher recall deleted memories. The switcher will only recall those memories that have not been tagged as deleted. This is the default setting.

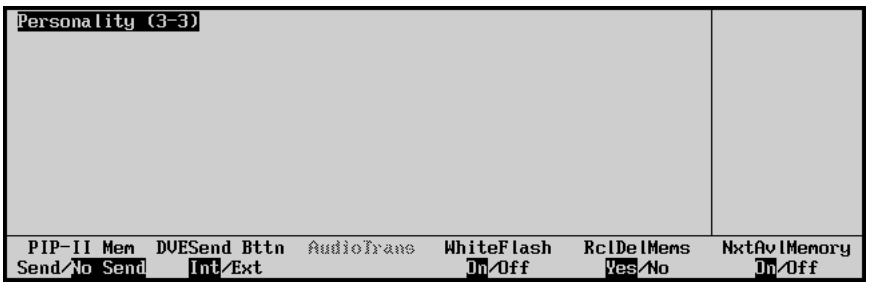
This concludes the procedure to configure the **Recall Deleted Memories** feature.

Next Available Memory

The **Next Available Memory** feature enables the Synergy 1 Switcher to display the next available, unnamed memory register in the **Global Memory System Group**.

Use the following procedure to configure the **Next Available Memory** feature:

1. Navigate to the **Personality Menu 1-3** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Personality** (to display the **Personality Menu 1-3**)
2. Press **MORE** to display the **Personality Menu 2-3**.
3. Press **MORE** to display the **Personality Menu 3-3**.



Personality Menu 3-3

4. Toggle **NxtAvlMemory** between **On** and **Off** as follows:

   - **On** — Use this option to enable the Synergy 1 Switcher to recall the next available memory register to the **Global Memory System Group**.
   - **Off** — Use this option to *not* have the switcher recall the next available memory register. This is the default setting.

This completes the procedure to configure the **Next Available Memory** feature.

Completing Setup

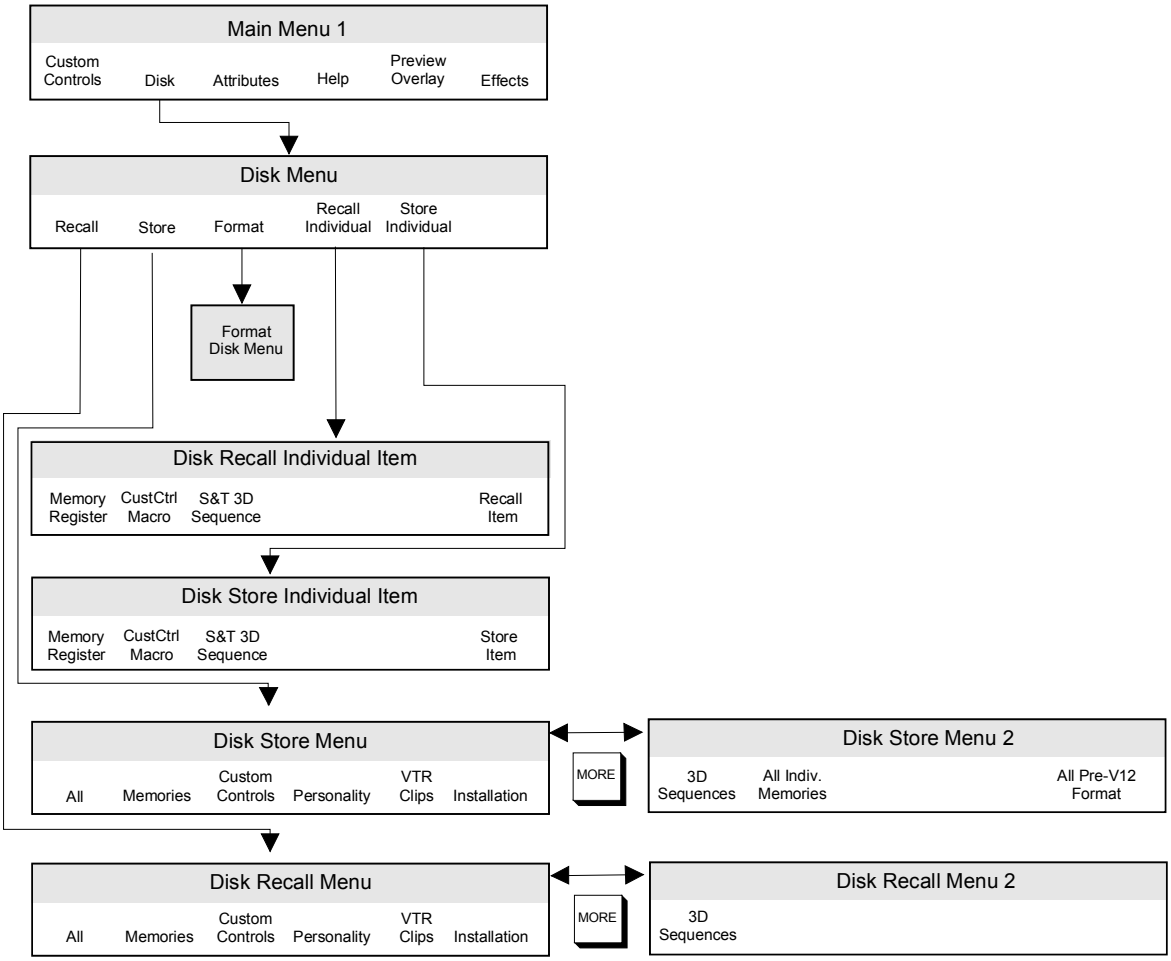
In This Chapter

This chapter provides instructions for storing switcher configurations on a storage device 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 following figure illustrates the *portion* of the menu tree that is used for saving and recalling switcher setups. Use this figure for reference during the procedures in this chapter.



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.

Note

You must have the **USB Removable Media Drive** option installed in order to use a USB key for storing registers.

- **Memory Registers**

  This category stores and recalls MLE settings or "snapshots" of the switcher MLE. A memory register can be programmed in the **Global Memory System Group**. When saved to a storage device, all 100 memory registers are stored in the file **MEMORY.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 user'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
  - PIP II Memory
  - DVE Send Internal/External
  - Audio Transitions
  - White Flash
  - Preset Black
  - Fade to Black
  - Aspectizer input/mode select
  - Aspectizer border color for Input Mode
  - User Wipes
  - Ultimatte Quick Recall
  - CG Mode, Channel and file/folder settings
  - Double Press Rate
  - Memory Bank Cycle Max
  - Memory Attributes
  - Matte Limit
  - Auto-Recall
  - Key Cut
  - Next Available Memory
  - 3D Button Pattern Assignment
  - Panel Sleep Time
  - Recall Deleted Memories
  - All Preview Overlay

- **VTR Clip Registers**

  This category stores and recalls VTR (and server and DigiCart) 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.

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

One 1.4 MB high-density floppy disk stores one complete set of registers (all five categories), as outlined above.

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" backup 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 saved to a 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

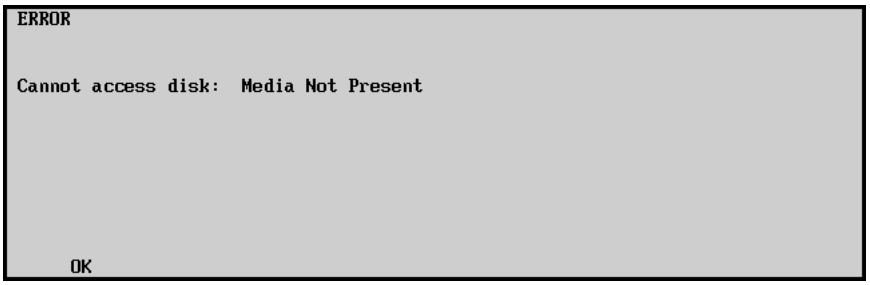
A decrease in performance will result from storing more than one set of Synergy files on your USB key. One set of Synergy files should not comprise more than half of the available memory on your USB key.

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 root 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 from it.
- A delay can be expected when saving files to a USB key with limited memory space.
- You may receive an "**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 PC 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 PC 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 PC 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 PC 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 of 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 PC 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 stored 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** (to display the **Main Menu 1-2**)
   - **DISK** (to display the **Disk Menu**)

Disk Menu

   - The **Main Area** and **Scroll Area** are both blank.
   - The **Label Area** provides five options.
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.

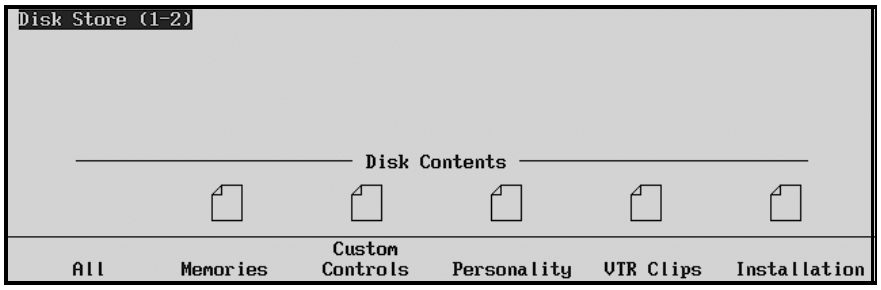
OR

- 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 store to it.

Note

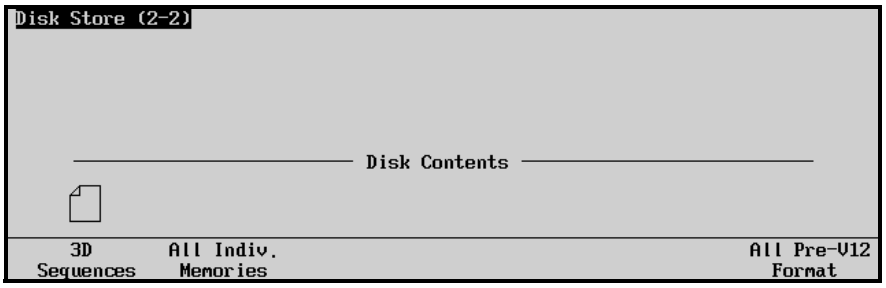
You must have the **USB Removable Media Drive** option installed in order to use a USB key for saving and recalling setup configurations.

3. Press **Store** to display the **Disk Store Menu 1-2**.



Disk Store Menu 1-2

4. Press **MORE** to display the **Disk Store Menu 2-2**.



Disk Store Menu 2-2

If a **File Icon** is displayed above a softkey label (such as **3D Sequences**), the storage device contains a file of that type.

5. If you wish to store *all categories* of registers to a storage device, press **All**. This action writes files to the storage device in succession:
   - **Memory Registers** are stored in the file **MEMORY.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**.
6. If you wish to store *only* the three files that pertain to your installation setups, proceed as follows:
   - Press **Custom Controls** to store **Custom Control Registers** to a storage device. The file **CUSTCTRL.SYN** is saved to your storage device.
   - Press **Personality** to store **Personality Registers** to a storage device. The file **PERS.SYN** is saved to your storage device.
   - Press **Installation** to store **Installation Registers** to a storage device. The file **INSTALL.SYN** is saved to your storage device.

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.

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 switcher.
8. Label the to your storage device and store it in a safe place. It is recommended that you place the following information on the label:
   - Synergy Switcher 1
   - 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 device* for different switcher set up configurations. Refer to the section, "**Recalling Configurations**" on page 10-10 for details on recalling files from a storage device.

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.

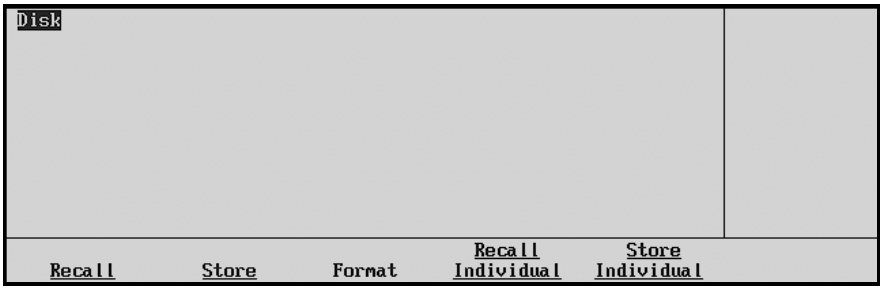
Use the following procedure to recall your setup configurations from a storage device:

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** (to display the **Main Menu 1-2**)
   - **DISK** (to display the **Disk Menu**)



Disk Menu

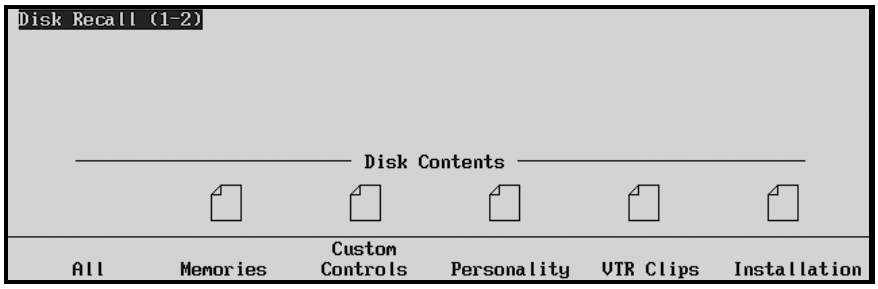
3. Insert a storage device as follows:
   - Insert the floppy disk with the desired setups into the floppy disk drive of the Synergy switcher.

   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 recall registers from it.
4. Press **Recall** to display the **Disk Recall Menu 1-2**.

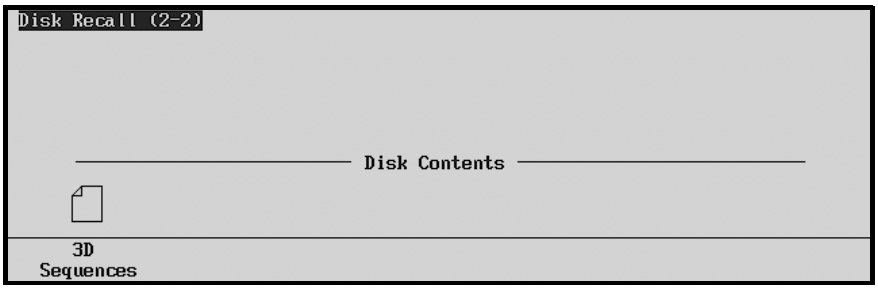
Note

If you encounter an error, refer to the section "**Storage Errors**" on page 10-5 for more information.



Disk Recall Menu 1-2

5. Press **MORE** to display the **Disk Recall Menu 2-2**.



Disk Recall Menu 2-2

If a **File Icon** is displayed above a softkey label (such as **Memories**), the storage device contains a file of that type.

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 store *only* the three files that pertain to your installation setups, proceed as follows:
   - Press **Custom Controls** to recall **Custom Control Registers** from a storage device. Registers are loaded from the file **CUSTCTRL.SYN**.
   - Press **Personality** to recall **Personality Registers** from a storage device. Registers are loaded from the file **PERS.SYN**.
   - Press **Installation** to recall **Installation Registers** from a storage device. 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 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.

8. Eject the storage device from the switcher.

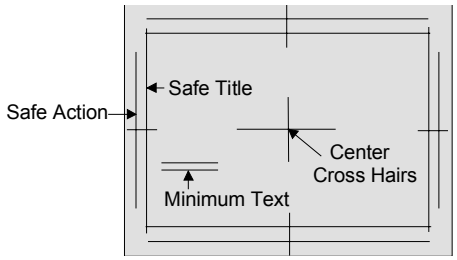
This completes the procedure for recalling your engineering setups from a storage device.

Setting Up Safe Title and Center Preview Overlay

The **Safe Title/ Center Preview Overlay** places a SMPTE standard **S**afe 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 Lines, and Center Cross Hairs are modifiable. These modified files can be renamed and saved as separate files for recall as macros. Refer to the section, "**Center and Safe Title Setup**" on page 10-13 for configuration details.

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.

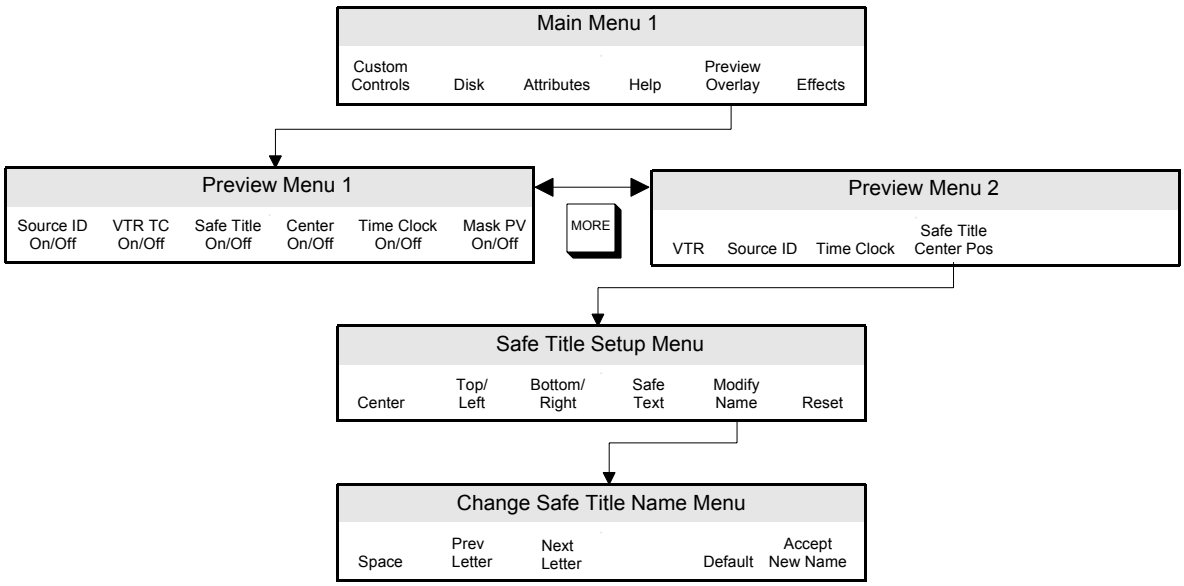
Note

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.

Preview Overlay Menu Tree

The following figure illustrates the *portion* of the menu tree that is used for accessing the Safe Title setups. Use this figure for reference during the following procedures.



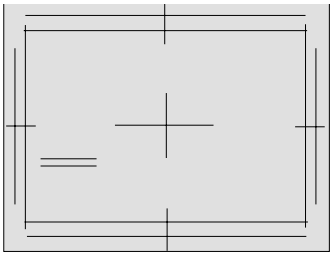
Preview Overlay Menu Tree

Center and Safe Title Setup

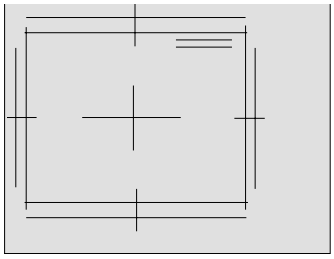
The position and size of the following elements of the overlay can be configured and saved for recall from the **Safe Title Setup Menu**:

- **Center** — Use this option to reposition the **Center Cross Hairs**.
- **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

Modifying the Center Crosshairs Overlay

Use the following procedure to modify the location of the **Center Crosshairs** overlay:

1. Navigate to the **Safe Title Setup Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **PREVIEW OVERLAY** (to display the **Preview Menu 1-2**).
   - **MORE** (to display the **Preview Menu 2-2**).
   - **Safe Title/Center Pos** (to display the **Safe Title Setup Menu**).

Safe Title Setup Menu

2. Press **Center** to display the **Safe Title Setup — Center Menu**.

Safe Title Setup — Center Menu

3. Reposition the Center Crosshairs as follows:
   - Use the top **X** knob to reposition the Center Crosshairs along the horizontal x-axis. You can also move the **Positioner** left and right.
   - Use the middle **Y** knob to reposition the Center Crosshairs along the vertical y-axis. You can also move the **Positioner** up and down.
   - Use the bottom **Safe ID** knob to select the safe identification memory you wish to modify. You can also rotate the **Positioner** clockwise and counterclockwise.

Note

The values set for each **Safe ID** will remain stored in the "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** (to display the **Main Menu 1-2**).
   - **PREVIEW OVERLAY** (to display the **Preview Menu 1-2**).
   - **MORE** (to display the **Preview Menu 2-2**).
   - **Safe Title/Center Pos** (to display the **Safe Title Setup Menu**).

Safe Title Setup Menu

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 top **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 middle **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 bottom **Safe ID** knob to select the safe identification memory you wish to modify. You can also rotate the **Positioner** clockwise and counterclockwise.

Note

The values set for each **Safe ID** will remain stored in the "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

Us 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** (to display the **Main Menu 1-2**).
   - **PREVIEW OVERLAY** (to display the **Preview Menu 1-2**).
   - **MORE** (to display the **Preview Menu 2-2**).
   - **Safe Title/Center Pos** (to display the **Safe Title Setup Menu**).

Safe Title Setup Menu

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 top **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 middle **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 bottom **Safe ID** knob to select the safe identification memory you wish to modify. You can also rotate the **Positioner** clockwise and counterclockwise.

Note

The values set for each **Safe ID** will remain stored in the "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** (to display the **Main Menu 1-2**).
   - **PREVIEW OVERLAY** (to display the **Preview Menu 1-2**).
   - **MORE** (to display the **Preview Menu 2-2**).
   - **Safe Title/Center Pos** (to display the **Safe Title Setup Menu**).

Safe Title Setup Menu

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 top **X** knob to reposition the **Safe Text** borders along the horizontal x-axis. You can also move the **Positioner** left and right.
   - Use the middle **Y** knob to reposition the **Safe Text** borders along the vertical y-axis. You can also move the **Positioner** up and down.
   - Use the bottom **Safe ID** knob to select the safe identification memory you wish to modify. You can also rotate the **Positioner** clockwise and counterclockwise.

Note

The values set for each **Safe ID** will remain stored in the "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.

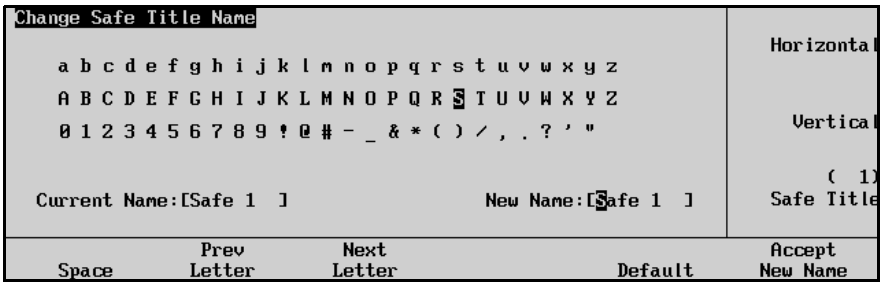
Modifying the Safe ID Name

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** (to display the **Main Menu 1-2**).
   - **PREVIEW OVERLAY** (to display the **Preview Menu 1-2**).
   - **MORE** (to display the **Preview Menu 2-2**).
   - **Safe Title/Center Pos** (to display the **Safe Title Setup Menu**).

Safe Title Setup Menu

2. Press **Modify Name** to display the **Change Safe Title Name Menu**.



Change Safe Title Name Menu

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 Chapter 2 "**Control Panel Introduction**" of the ***Synergy 1 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. 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.
4. Press **Accept New Name** to save the new name.

Note

The new name will remain stored in the "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 can not be overwritten by the user. Typically, once all of your switcher setups and configurations have been completed and successfully saved to a storage device, you will *not need* to perform this step.

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) sets 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 switcher's default values fall into six 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
  - PIP II Memory
  - DVE Send Internal/External
  - Audio Transitions
  - White Flash
  - Preset Black
  - Fade to Black
  - Recall Deleted Memories
  - 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
  - Key Cut
  - Aspectizer input/mode select
  - 3D Button Pattern Assignment
  - Panel Sleep Time
  - Next Available Memory

- **Memory Registers**

  This set of registers stores default values for the **Global Memory System** group. 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 "**Preliminary Functional Check**" on page 3–13. 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**

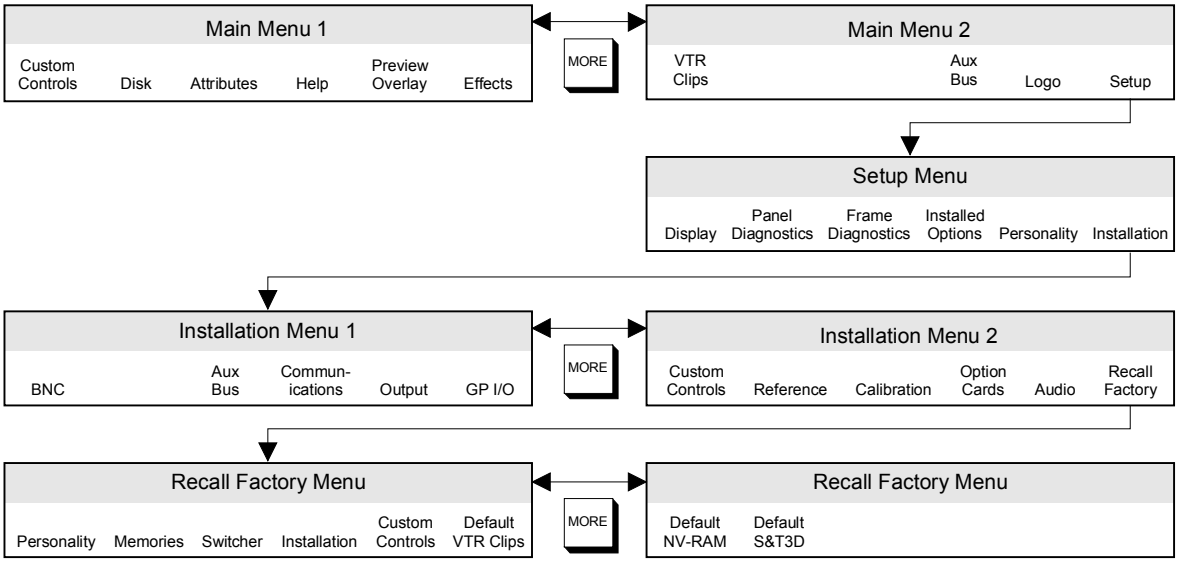
  When reset, the switcher's non-volatile RAM is cleared.

- **Default S&T3D**

  When reset, the 3D card present in the switcher is defaulted to factory settings.

Recall Factory Menu Tree

The following figure illustrates the *portion* of the menu tree that is used for recalling factory default settings. Use this figure for reference during the following procedure.

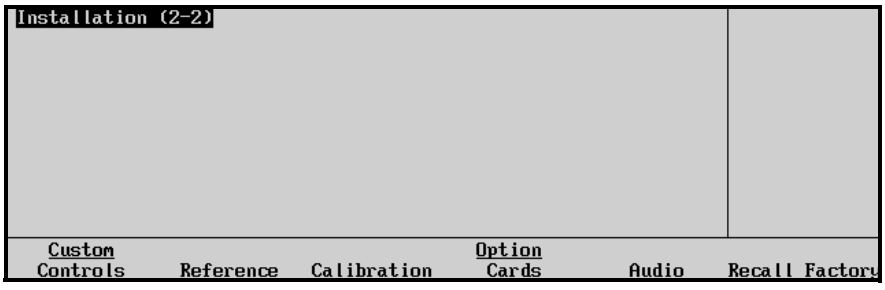


Recall Factory Menu Tree

Recall Factory Procedure

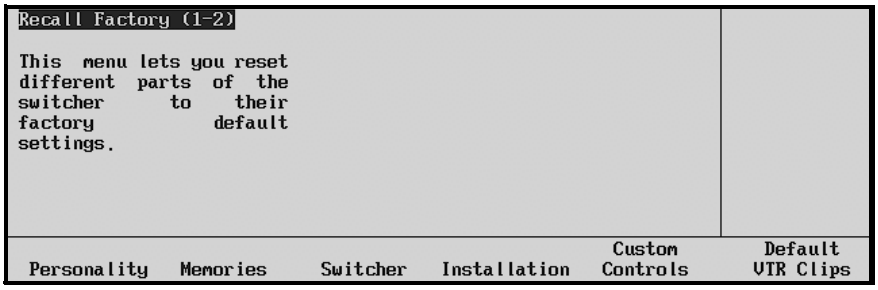
Use the following procedure to restore factory default values:

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** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).
   - **MORE** (to display the **Installation Menu 2-2**).



Installation Menu 2-2

3. Press **Recall Factory** to display the **Recall Factory Menu 1-2**.

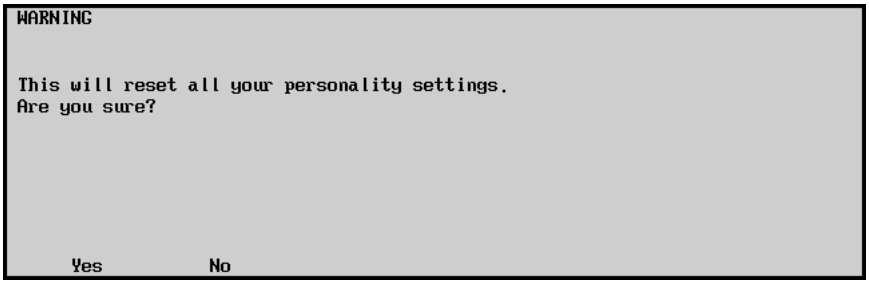


Recall Factory Menu 1-2

The **Main Area** provides a mini "help" message, while the **Scroll Area** is blank. The **Label Area** lists the six categories of default registers that you can restore. Any combination of registers can be restored.

4. Use the following method to **Reset** your **Personality Settings**:

   - Press **Personality** to display the **Reset Personality Settings Warning Screen**.

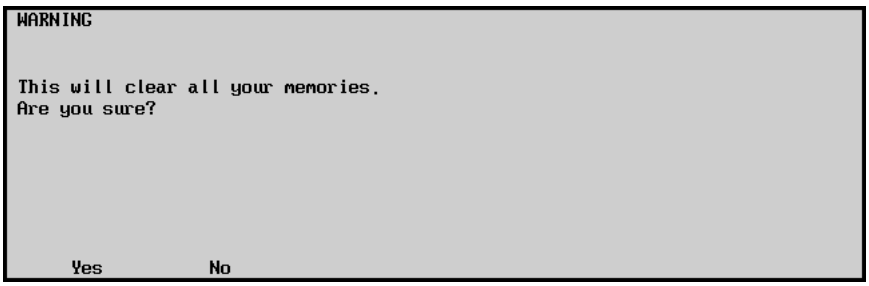


Warning — Reset Personality Settings

   - Press **Yes** to reset all **Personality Registers**.
   - Press **No** to retain the current set of **Personality Registers** and exit the menu safely.

5. Use the following method to **Reset** your **Memory Registers**:

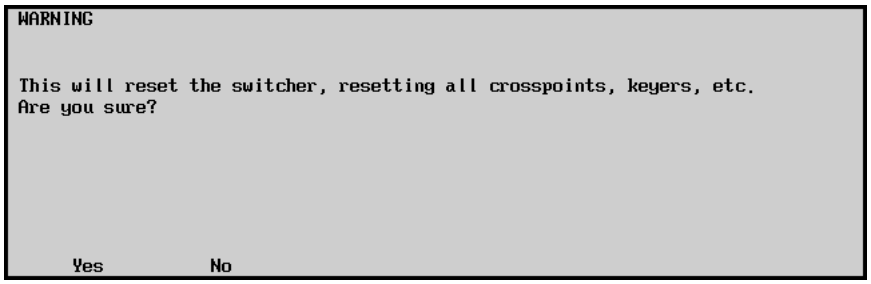
   - Press **Memories** to display the **Reset Memory Registers Warning Screen**.



Warning — Reset Memory Registers

   - Press **Yes** to clear all **Memory Registers**.
   - Press **No** to retain the current set of **Memory Registers** and exit the menu safely.

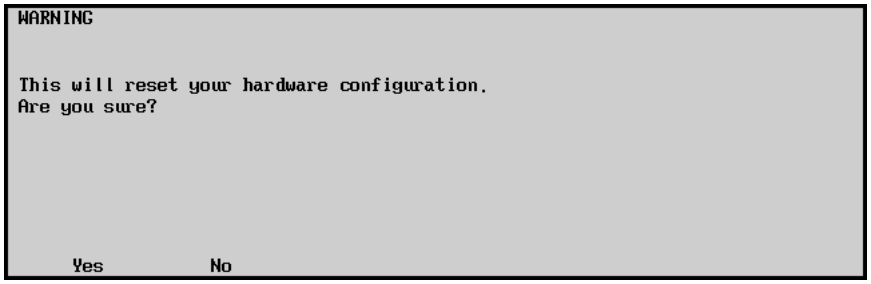
6. Use the following method to **Reset** your **Switcher Registers**:
   - Press **Switcher** to display the **Reset Switcher Registers Screen**.



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.

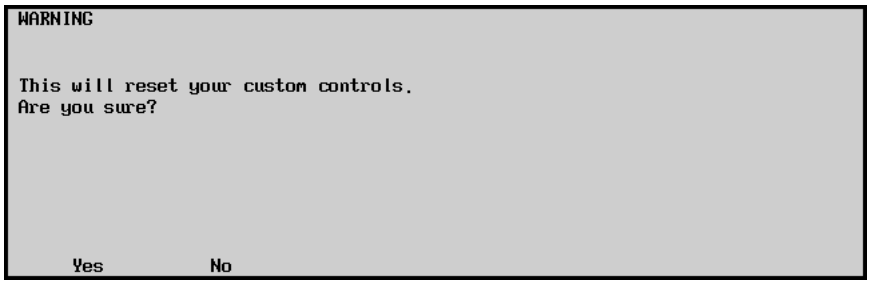
7. Use the following method to **Reset** your **Installation Registers**:
   - Press **Installation** to display the **Reset Installation Registers Screen**.



Warning — Reset Installation Registers

   - Press **Yes** to reset all **Installation Registers**.
   - 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**.

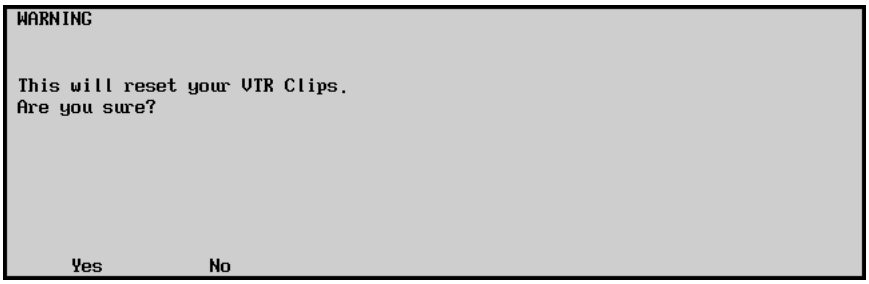


Warning — Reset Custom Control Registers

   - Press **Yes** to reset all **Custom Control Registers**.
   - 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

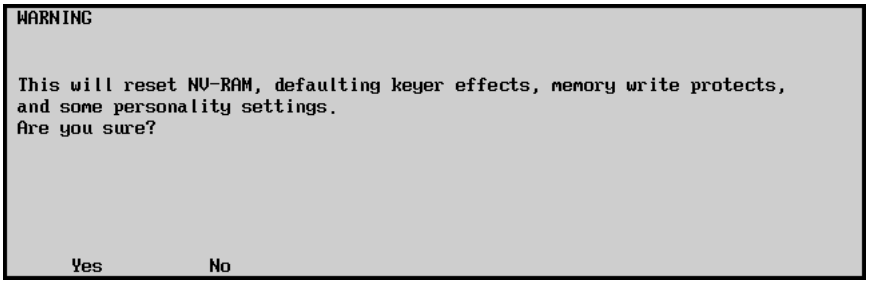
   - Press **Yes** to reset **VTR Clips**.
   - Press **No** to retain the current set of VTR Clip registers and exit the menu safely.

10. Press **MORE** to display the **Recall Factory Menu 2-2**.

Recall Factory Menu 2-2

11. Use the following method to **Reset** the contents of the **Non-Volatile RAM (NV-RAM)**:

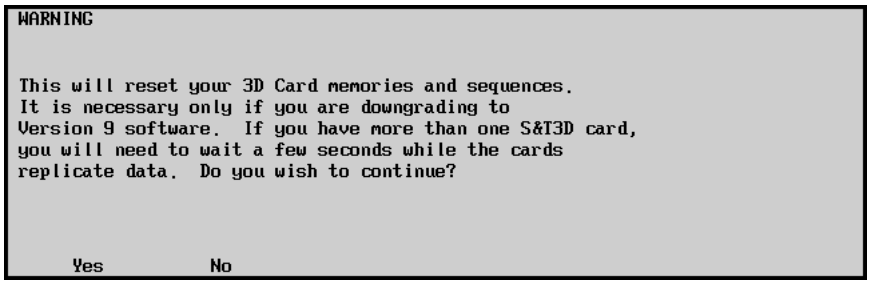
   - Press **Default NV-RAM** to display the **Reset NV-RAM Warning Screen**.



Warning — Reset NV-RAM

   - Press **Yes** to reset **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 your **S&T WARP** card.
    - Press **No** to retain the current **S&T WARP** card settings and exit the menu safely.
13. Exit the **Recall Factory** menus by pressing **HOME**.

Note

If you have defaulted the **Installation Registers**, the following message is displayed.

- 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, place the **Installation Enable Jumper** (**DIP Switch 4**, **SW7** on the **Frame CPU Board**) in the **Up** position. This position restricts access to installation settings as follows:

- The **Installation Menu** is displayed 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 "**Frame Jumpers and Switches**" on page 2-23 for additional details.

Remote Audio Mixers

In This Chapter

This chapter provides instructions for connecting, setting up and operating a Remote Audio Mixer with your Synergy 1 Switcher. Before you begin, ensure that the **Small Audio Mixer Interface** (16 or fewer inputs) or **Large Audio Mixer Interface** (up to 240 inputs) software option is installed. If not, please contact **Ross Video** for details.

The following topics are discussed:

- Supported Remote Audio Mixers
- Communication Connections
- Communications Setup
- Audio Channel/Group Setup
- Audio Channel Assignment
- Audio Override Setup
- Audio Modes
- Operation Overview

Supported Remote Audio Mixers

The Synergy 1 Switcher has been tested with a number of Remote Audio Mixers to ensure the highest possible standard for compatibility and reliability. The following Remote Audio Mixers are currently supported by your Synergy Switcher:

- **Yamaha 01V** — Small Audio Mixer Interface option required.
- **Yamaha 01V96** — Small Audio Mixer Interface option required.
- **Yamaha 02R96** — Large Audio Mixer Interface option required.
- **Yamaha DM2000** — Large Audio Mixer Interface option required.

Communication Connections

You can connect up to two Remote Audio Mixers to your Synergy Switcher via the **MIDI Solutions Merger**. The procedure for connecting the Remote Audio Mixers will depend on the type of Remote Audio Mixer you have and the Audio Mixer Interface option you have. Refer to the section "**Supported Remote Audio Mixers**" on page 11–2 for details about which Audio Mixer Interface option is required for your particular Remote Audio Mixer.

This section will identify how to make the communication connections between the Remote Audio Mixers and the Switcher.

Note

These instructions are provided as a guide, for specific information on the Remote Audio Mixer you are connecting to the Synergy 1 Switcher, refer to the documentation provided with your device.

Connecting a Small Remote Audio Mixer

Use this procedure to connect a single small Remote Audio Mixer using the **Small Audio Mixer Interface** option.

In order to properly complete this procedure you will need the following software options, cables and equipment:

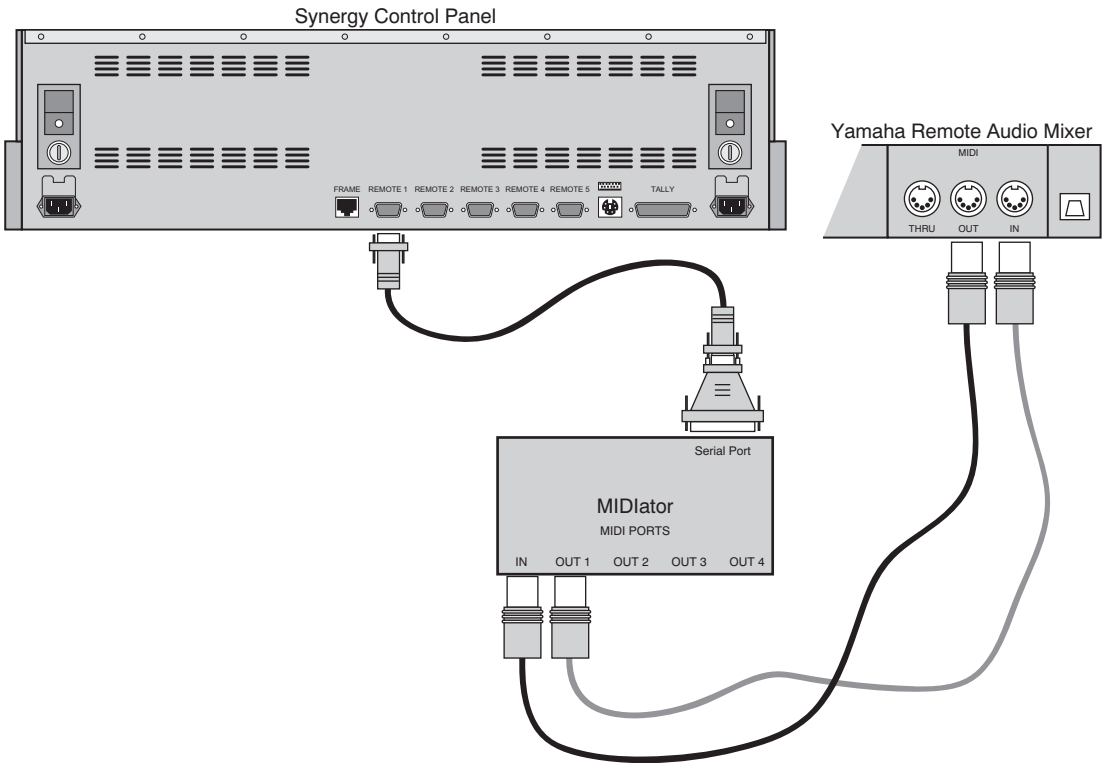
- **Small Audio Mixer Interface** — This is the software option from Ross Video that allows your Synergy Switcher to control up to 16 audio channels on a Remote Audio Mixer.
- **MIDIator** (MS-124W) — This device converts the serial interface from the Synergy control panel to a MIDI format.
- **MIDIator Interface Cable** — This is a null modem cable with a DB9 to DB25 converter at one end. This cable connects the 9-Pin, D-Type port on the Synergy control panel to the 25-Pin, D-Type port on the MIDIator. Refer to the section "**MIDIator Interface Cable Specifications**" on page 11–9 for information on this cable.
- **MIDI Cable** — This is a MIDI cable that connects the 5 pin din port on the MIDIator to the 5 pin din port on the Remote Audio Mixer. You will need two of these cables.

The following diagram and procedure describe the physical connection of a Yamaha 01V96 Audio Mixer to your Synergy 1 Switcher. The locations or names of ports may vary with your Remote Audio Mixer.

Use the following procedure to connect a single Remote Audio Mixer to your Synergy 1 Switcher:

1. Connect and secure the **9-Pin** end of the **MIDIator Interface Cable** to one of the **Remote Ports** on the back of your Synergy 1 control panel.
2. Connect and secure the **25-Pin** end of the **MIDIator Interface Cable** to the **Serial Port** on the MIDIator.
3. Install the first **MIDI Cable** connecting the **MIDIator** to the **Remote Audio Mixer** as follows:
   - Connect one end of a MIDI Cable to the **OUT 1** port on the **MIDIator**.
   - Connect the other end of the MIDI Cable to the **MIDI IN** port on the **Remote Audio Mixer**.

4. Install the second MIDI Cable connecting the **MIDIator** to the **Remote Audio Mixer** as follows:
   - Connect one end of a MIDI Cable to the **IN** port on the **MIDIator**.
   - Connect the other end of the MIDI Cable to the **MIDI OUT** port on the **Remote Audio Mixer**.
5. Set up the MIDIator to **Multiple Burst** as follows:
   - Set the **B–A** switch to **B**.
   - Set the **S–M** switch to **M**.



Connecting a Single Small Remote Audio Mixer to the Synergy Switcher

This completes the procedure for connecting a single Small Remote Audio Mixer to a Synergy Switcher. Refer to the section "**Communications Setup**" on page 11–10 for instructions on how to set up the communications protocols on the Switcher, as well as the Small Remote Audio Mixer.

Connecting a Large Remote Audio Mixer

Use this procedure to connect a single large Remote Audio Mixer using the **Large Audio Mixer Interface** option.

In order to properly complete this procedure you will need the following software options, cables and equipment:

- **Large Audio Mixer Interface** — This is the software option from Ross Video that allows your Synergy Switcher to control up to 240 audio channels on a Remote Audio Mixer.

Note

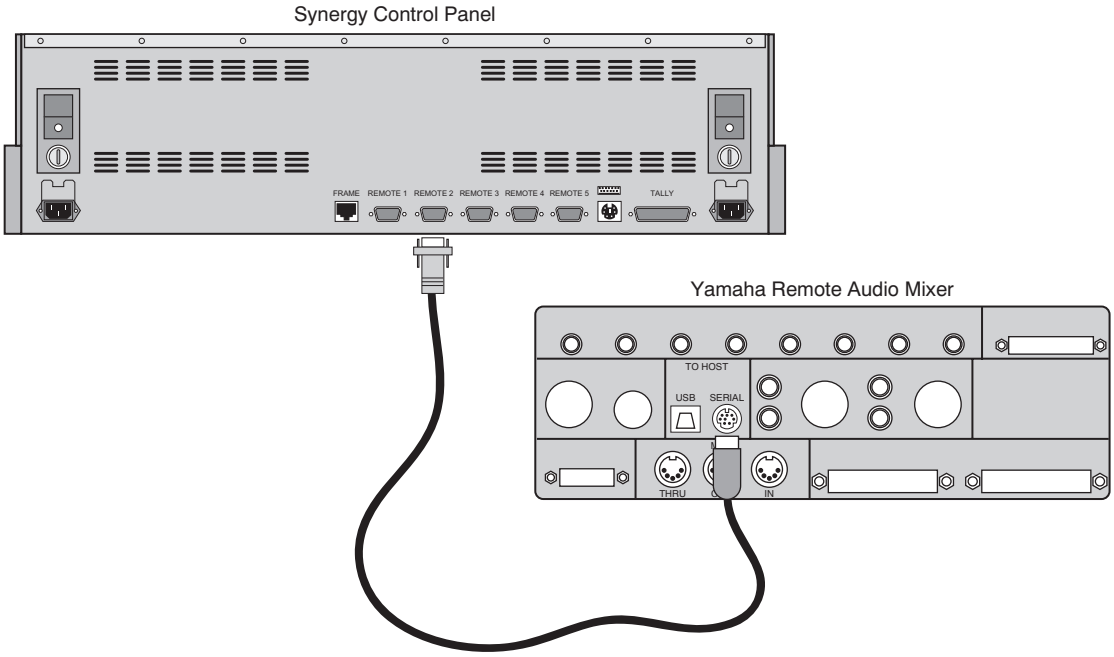
A single Remote Audio Mixer may not be able to support **240** audio channels. Multiple Remote Audio Mixer can be ganged together, or connected using a **MIDI Solutions Merger**, to increase the number of audio channels your Remote Audio Mixers can support. Refer to the section "**Connecting Multiple Remote Audio Mixers**" on page 11–6 for more information on connecting multiple Remote Audio Mixers together.

- **Yamaha RS-422 Control Cable** — This is a 15 foot serial cable that connects the 9-Pin, D-Type port on the Synergy control panel to the 8-Pin, mini DIN port on the Remote Audio Mixer. Refer to the section "**Yamaha RS-422 Control Cable Specifications**" on page 11–9 for information on this cable.

The following diagram and procedure describe the physical connection of a Yamaha 02R96 Audio Mixer to your Synergy 1 Switcher. The locations or names of ports may vary with your Remote Audio Mixer.

Use the following procedure to connect a single Remote Audio Mixer to your Synergy Switcher:

1. Connect and secure the **9-Pin D-Type** end of the **Yamaha RS-422 Control Cable** to one of the **Remote Ports** on the back of the Synergy 1 control panel.
2. Connect and secure the **8-Pin mini DIN** end of the **Yamaha RS-422 Control Cable** to the **TO HOST SERIAL** port on the Remote Audio Mixer.



Connecting a Single Large Remote Audio Mixer to the Synergy Switcher

This completes the procedure for connecting a single Large Remote Audio Mixer to a Synergy 1 Switcher. Refer to the section "**Communications Setup**" on page 11–10 for instructions on how to set up the communications protocols on the Switcher, as well as the Remote Audio Mixer.

Connecting Multiple Remote Audio Mixers

When connecting multiple Remote Audio Mixers together you are telling the two Remote Audio Mixers to act as one larger Remote Audio Mixer. The total number of audio channels available will depend on the Remote Audio Mixer you have, as well as the Audio Mixer Interface option you have.

Note

If you have the **Small Audio Mixer Interface** option, you can control up to **16** audio channels. You will have to purchase the **Large Audio Mixer Interface** if you want to control more.

In order to properly complete this procedure you will need the following software options, cables and equipment:

- **Audio Mixer Interface** — This is the software option, either the Large Audio Mixer Interface or Small Audio Mixer Interface, from Ross Video that allows your Synergy 1 Switcher to control Remote Audio Mixers.
- **Audio Mixer Ganging** — This is the hardware option from Ross Video that supplies a **MIDIator** and a **MIDI Solutions Merger**.
- **MIDIator** (MS-124W) — This device converts the serial interface from the Synergy 1 control panel to a MIDI format.
- **MIDIator Interface Cable** — This is a null modem cable with a DB9 to DB25 converter at one end. This cable connects the 9-Pin, D-Type port on the Synergy 1 control panel to the 25-Pin, D-Type port on the MIDIator. Refer to the section "**MIDIator Interface Cable Specifications**" on page 11–9 for information on this cable.
- **MIDI Solutions Merger** — This device allows you to connect two Remote Audio Mixers and control them from the Synergy 1 control panel. The **Merger** is MIDI-powered from the **Out** MIDI cable. When the Merger is powered and operating normally, the red **MIDI** LED will illuminate. This **MIDI** LED will flash when the Merger is passing information.

Note

If the **MIDI** LED goes out, and the MIDI cables are still properly connected to it, the Synergy 1 Switcher is no longer receiving information from the Remote Audio Mixers. Normal control of the Remote Audio Mixers is *still possible*, but any manual level adjustment on the mixers will not be recorded by the switcher. To regain full communication between the Synergy 1 Switcher and the Merger, cycle the power on the Merger by unplugging and reconnecting the **Out** MIDI cable.

- **MIDI Cables** — This is a MIDI cable that connects the 5 pin din port on the MIDIator to the 5 pin din port on the Remote Audio Mixer. You will need at least two of these cables, plus one for the MIDI Solutions Merger.

The following procedure describes the physical connection of two Yamaha 01V96 Audio Mixers to your Synergy 1 Switcher. The locations or names of ports may vary with your Remote Audio Mixer. Refer to the diagram on page 11-8 during the procedure.

Note

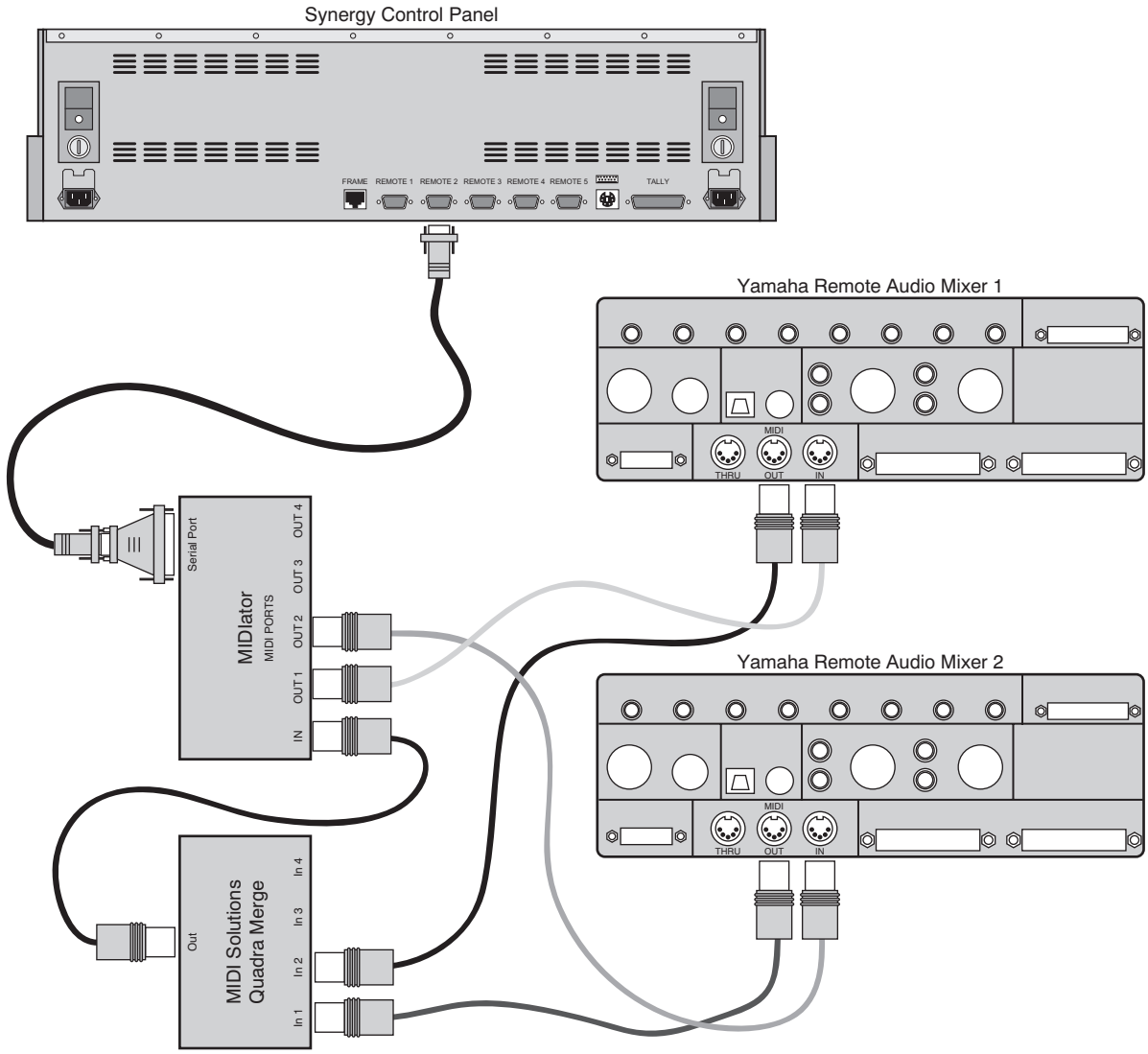
When connecting multiple Remote Audio Mixers together, you must set the first Remote Audio Mixer to **Channel 1** and the second to **Channel 2** on the Remote Audio Mixers themselves. Refer to the section "**Setting up the Remote Audio Mixer**" on page 11–13 for more information.

Use the following procedure to connect multiple Remote Audio Mixers to your Synergy 1 Switcher:

Note

You must use a **MIDIator**, and not the Yamaha 01V96 serial cable, to connect multiple Remote Audio Mixers to your Synergy 1 Switcher.

1. Connect and secure the **9-Pin** end of the MIDIator Interface Cable to one of the **Remote Ports** on the back of the Synergy 1 control panel.
2. Connect and secure the **25-Pin** end of the MIDIator Interface Cable to the **Serial Port** on the MIDIator.
3. Connect the MIDI Solutions **Merger** to the **MIDIator** as follows:
   - Connect one end of a MIDI Cable to the **IN** port on the **MIDIator**.
   - Connect the other end of the MIDI Cable to the **Out** port of the **Merger**.
4. Install the first MIDI Cable connecting the **MIDIator** to **Remote Audio Mixer 1** as follows:
   - Connect one end of a MIDI Cable to the **OUT 1** port on the **MIDIator**.
   - Connect the other end of the MIDI Cable to the **MIDI IN** port on **Remote Audio Mixer 1**.
5. Install the second MIDI Cable connecting the **MIDIator** to **Remote Audio Mixer 2** as follows:
   - Connect one end of a MIDI Cable to the **OUT 2** port on the **MIDIator**.
   - Connect the other end of the MIDI Cable to the **MIDI IN** port on **Remote Audio Mixer 2**.
6. Install the first cable connecting the **Merger** to **Remote Audio Mixer 1** as follows:
   - Connect one end of a MIDI Cable to the **In 1** port on the **Merger**.
   - Connect the other end of the MIDI Cable to **MIDI OUT** port on **Remote Audio Mixer 1**.
7. Install the second cable connecting the **Merger** to **Remote Audio Mixer 2** as follows:
   - Connect one end of a MIDI Cable to the **IN 2** port on the **Merger**.
   - Connect the other end of the MIDI Cable to **MIDI OUT** port on **Remote Audio Mixer 2**.
8. Set up the MIDIator to **Multiple Burst** as follows:
   - Set the **B–A** switch to **B**.
   - Set the **S–M** switch to **M**.



Connecting Two Remote Audio Mixers to the Synergy Switcher

Note

On the Remote Audio Mixers you will have to set each one up so that the first Remote Audio Mixer controls the first set of channels and the second one the second set of channels. Refer to the section "**Setting up the Remote Audio Mixer**" on page 11–13 for more information on setting up multiple Remote Audio Mixers.

This completes the procedure for connecting multiple Remote Audio Mixers to a Synergy 1 Switcher. Refer to the section "**Communications Setup**" on page 11–10 for instructions on how to set up the communications protocols on the Switcher, as well as the Remote Audio Mixers.

MIDIator Interface Cable Specifications

The serial cable that connects the MIDIator to the Remote Port on the Synergy 1 Switcher has the following pinouts.

Synergy-to-MIDIator MS-124 Wiring Chart

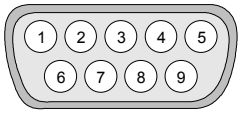
Synergy Panel			MIDIator MS-124 Converter	
Remote Ports 1 - 5	**Signal**		**Serial Port**	**Signal**
1	n/c			
2	Tx	→	3	Rx
3	Rx	→	2	Tx
4	n/c			
5	Ground	→	5	Ground
6	n/c			
7	n/c			
8	n/c			
9	n/c			

Yamaha RS-422 Control Cable Specifications

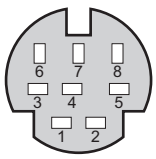
The serial cable that connects the Large Remote Audio Mixer to the Remote Port on the Synergy switcher has the following pinouts.

Synergy-to-Yamaha Remote Audio Mixer Wiring Chart

Synergy Panel			Yamaha Remote Audio Mixer	
Remote Ports 1 - 5	**Signal**		**Serial Port**	**Signal**
1	Chassis			
2	RxA (Rx-)	→	3	TxA (Tx-)
3	TxB (Tx+)	→	8	RxB (Rx+)
4	n/c			
5	Ground	→	4	Ground
6	Ground			
7	RxB (Rx+)	→	6	TxB (Tx+)
8	TxA (Tx-)	→	5	RxA (Rx-)
9	Chassis			



RS-422 Connector to Remote Port 1-5 on Synergy control panel



8-Pin Mini DIN Connector to Serial Port on Yamaha Remote Audio Mixer

Communications Setup

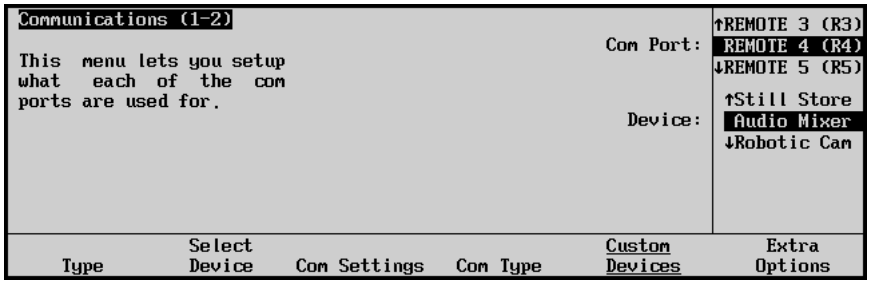
Setting up the Switcher

In order to have the Synergy 1 Switcher communicate with a Remote Audio Mixer, the remote port on the control panel that the Remote Audio Mixer is connected to must be setup to communicate with the particular Remote Audio Mixer you have connected. Refer to the section "**Supported Remote Audio Mixers**" on page 11–2 for a list of supported Remote Audio Mixers.

When configured, a Remote Audio Mixer channel (or group of channels) will follow a crosspoint when that button is selected and taken to air. Channels will be brought up as the crosspoint is taken to air and unused channels will be brought down on the same transition.

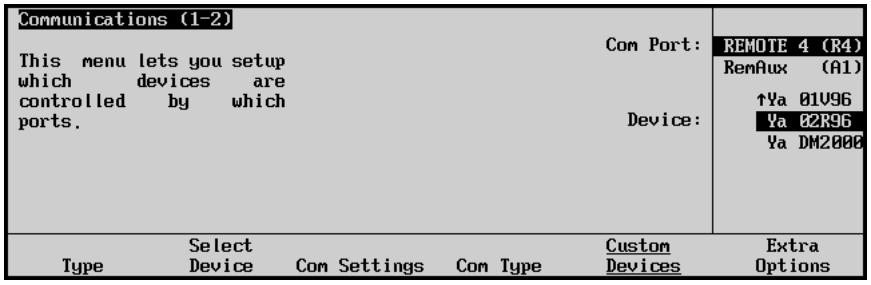
Use the following procedure to configure the Remote port on the control panel to connect with a Remote Audio Mixer:

1. Navigate to the **Communications Menu 1-2** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).
   - **Communications** (to display the **Communications Menu 1-2**).
2. Press **Type** to display the **Type Menu**.



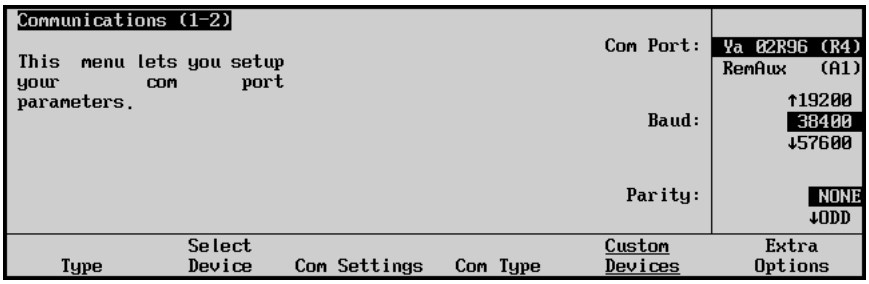
Communications – Type Menu

3. Assign a Remote Com Port to the Remote Audio Mixer as follows:
   - Use the top **Com Port** knob to select the Synergy remote port that is connected to the Remote Audio Mixer.
   - Use the middle **Device** knob to select **Audio Mixer**.
4. Press **Select Device** to display the **Select Device Menu**.



Communications – Select Device Menu

5. Assign a specific Remote Audio Mixer to the Remote Com Port as follows:
   - Use the top **Com Port** knob to select the Remote Com Port that the desired Remote Audio Mixer is connected to.
   - Use the middle **Device** knob to select the specific Remote Audio Mixer that is connected to the selected Remote Com Port. The following Remote Audio Mixers are currently supported:
     ~ **Ya 01V** — Use this option to assign a **Yamaha 01V Audio Mixer** to the selected com port.
     ~ **Ya 01V96** — Use this option to assign a **Yamaha 01V96 Audio Mixer** to the selected com port.
     ~ **Ya 02R96** —Use this option to assign a **Yamaha 02R96 Audio Mixer** to the selected com port.
     ~ **Ya DM2000** — Use this option to assign a **Yamaha DM2000 Audio Mixer** to the selected com port.
6. Press **Com Settings** to display the **Com Settings Menu**.



Communications – Com Settings Menu

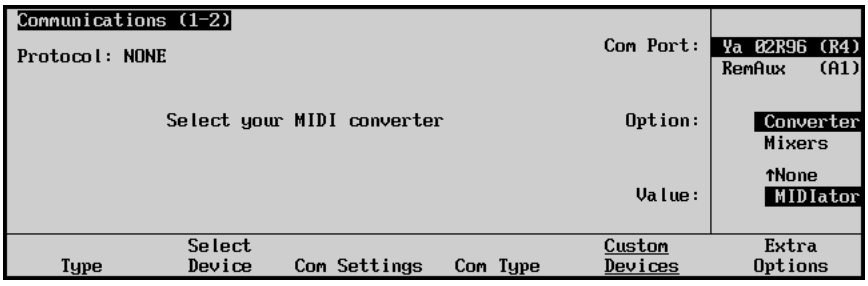
Note

The baud rate and parity for most remote audio mixers should already be correctly set. Use these controls only if required.

7. Set up the communications parameters for the specific Remote Audio Mixer as follows:
   - Use the top **Com Port** knob to select the Remote Com Port that the desired Remote Audio Mixer is connected to.
   - Use the middle **Baud** knob to select **38400**.
   - Use the bottom **Parity** knob to select **NONE**.
8. Press **Com Type** to display the **Com Type Menu**.

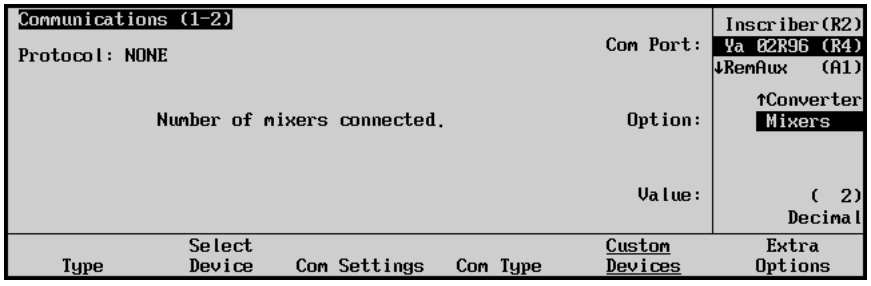
Communications – Com Type Menu

9. Select the serial communications protocol for the Com Port as follows:
   - Use the top **Com Port** knob to select the Remote Com Port that the desired Remote Audio Mixer is connected to.
   - Use the middle **Type** knob to select either RS-232 or RS-422.
     ~ **RS-232** — Select this option when you are using the MIDIator to connect a small Remote Audio Mixer, or multiple Remote Audio Mixers to the Synergy Switcher.
     ~ **RS-422** — Select this option when you are using the Yamaha RS-422 Control Cable to connect a large Remote Audio Mixer to the Synergy Switcher.
10. Press **Extra Options** to display the **Extra Options Menu**.



Communications – Extra Options Menu (Converter)

11. Set the Converter used to connect the Remote Audio Mixers to your Synergy 1 Switcher as follows:
   - Use the top **Com Port** knob to select the Remote Com Port that the desired Remote Audio Mixer is connected to.
   - Use the middle **Option** knob to select the converter you wish to use.
     ~ **NONE** — Select this option when you are using the Yamaha RS-422 Control Cable to connect a large Remote Audio Mixer to the Synergy Switcher.
     ~ **MIDIator** — Select this option when you are using a MIDIator to connect a small Remote Audio Mixer, or Multiple Remote Audio Mixers to the Synergy Switcher.
   - Use the bottom **Value** knob to select **MIDIator**.



Communications – Extra Options Menu (Mixers)

12. Set the number of Remote Audio Mixers you want to connect to your Synergy 1 Switcher as follows:

Important

You will need to use a **MIDI Solutions Merger** to combine the inputs from the multiple Remote Audio Mixers to a single input for the **MIDIator** that connects to your Synergy Switcher. Refer to the section "**Connecting Multiple Remote Audio Mixers**" on page 11–6 for information on connecting multiple Remote Audio Mixers.

- Use the top **Com Port** knob to select the Remote Com Port that the desired Remote Audio Mixers are connected to.

Note

When connecting multiple Remote Audio Mixers, *both* must be of the type specified in the **Select Device Menu**.

You cannot gang multiple Yamaha 01V Remote Audio Mixers.

- Use the middle **Option** knob to select **Mixers**.
- Use the bottom **Value** knob to select the number of Remote Audio Mixers (to a maximum of **2**) you have connected.

This completes the procedures for basic setup of a Remote Audio Mixer device.

Setting up the Remote Audio Mixer

In order to complete the communications setup you must configure the Remote Audio Mixer to accept commands and communicate with the Synergy 1 Switcher. This section covers setting up the following Remote Audio Mixers:

- Yamaha 01V
- Yamaha 01V96
- Yamaha 02R96
- Yamaha DM2000

Yamaha 01V

In order to allow the Synergy 1 Switcher to communicate with this Remote Audio Mixer, you must configure it as described in this section.

Note

For information on the Function Buttons and navigating the menu system on your Remote Audio Mixer, refer to the documentation that came with your Remote Audio Mixer.

Use the following procedure to setup your Yamaha 01V Audio Mixer:

1. Press the **MIDI** function button to display the **MIDI SETUP Menu**. You may have to press the MIDI button several times to cycle through the MIDI menus.
2. Use the **Cursor** buttons to navigate to the following:
   - **Tx PORT** — Use the Parameter Dial to set this to **MIDI**.
   - **Rx PORT** — Use the Parameter Dial to set this to **MIDI**.

- **Tx CH** — Use the Parameter Dial to set this to **1**.
- **Rx CH** — Use the Parameter Dial to set this to **1**.

Note

You can not gang multiple 01V Audio Mixers together.

- Use the following table to set the indicated parameters

Yamaha 01V Setup

	Tx	Rx	OMNI	ECHO
Program Change	ON	ON	OFF	OFF
Control Change	ON	ON	OFF	OFF
Param Change	ON	ON	--	OFF
Bulk	--	OFF	--	--

3. Press **ENTER** to save your changes.

This completes the procedure for setting up the Remote Audio Mixer to communicate with the Synergy 1 Switcher.

Yamaha 01V96

In order to allow the Synergy 1 Switcher to communicate with this Remote Audio Mixer, you must configure it as described in this section.

Note

For information on the Function Buttons and navigating the menu system on your Remote Audio Mixer, refer to the documentation that came with your Remote Audio Mixer.

Use the following procedure to setup your Yamaha 01V96 Audio Mixer:

1. Press the **DIO/SETUP** function button in the **Display Access Group** to display the **DIO/SETUP Menu**.
2. Press the **MIDI/HOST** tab to display the **MIDI I/O HOST SETUP Menu**.
3. Use the **Cursor** buttons to navigate to the following (you will have to press **ENTER** after each selection):
   - **Tx PORT** — Use the Parameter Dial to set this to **MIDI**.
   - **Rx PORT** — Use the Parameter Dial to set this to **MIDI**.
4. Press the **MIDI** function button in the **Display Access Group** to display the **MIDI Menu**.
5. Press the **SETUP** tab to display the **MIDI SETUP Menu**.
6. Use the **Cursor** buttons to navigate to the following (you will have to press **ENTER** after each selection):
   - **Tx CH** — Use the Parameter Dial to set this to **1**.

- **Rx CH** — Use the Parameter Dial to set this to **1**.

Note

If you are ganging multiple Remote Audio Mixers, you will have to set the second Remote Audio Mixer to **Tx CH 2** and **Rx CH 2**.

- Use the following table to set the indicated parameters:

Yamaha 01V96 Setup

	Tx	Rx	OMNI	ECHO
Program Change	ON	ON	OFF	OFF
Control Change	ON	ON	OFF	--
Param Change	ON	ON	--	OFF
Bulk	--	OFF	--	--
Other Commands	--	--	--	OFF

- **Fader Resolution** — Use the Parameter Dial to set this to **LOW**.

This completes the procedure for setting up the Remote Audio Mixer to communicate with the Synergy 1 Switcher.

Yamaha 02R96

In order to allow the Synergy 1 Switcher to communicate with this Remote Audio Mixer, you must configure it as described in this section.

Note

For information on the Function Buttons and navigating the menu system on your Remote Audio Mixer, refer to the documentation that came with your Remote Audio Mixer.

Use the following procedure to setup your Yamaha 02R96 Audio Mixer:

1. Press the **SETUP** function button in the **Display Access Group** to display the **SETUP Menu**.
2. Press the **MIDI/HOST** tab to display the **MIDI/HOST SETUP Menu**.
3. Use the **Cursor** buttons to navigate to the following (you will have to press **ENTER** after each selection):
   - **TO SERIAL HOST** — Use the Parameter Dial to set this to **PC-2**.

Note

If you are ganging multiple Remote Audio Mixers, you will have to set the **Rx PORT** and **Tx PORT** values to **MIDI**, to connect to the MIDIator.

   - **Rx PORT** — Use the Parameter Dial to set this to **SERIAL**.
   - **Tx PORT** — Use the Parameter Dial to set this to **SERIAL**.
4. Press the **MIDI** function button in the **Display Access Group** to display the **MIDI Menu**.
5. Press the **SETUP** tab to display the **MIDI SETUP Menu**.

6. Use the **Cursor** buttons to navigate to the **RECEIVE Section** and select the following, all other parameters should be deselected (you will have to press **ENTER** after each selection):
   - **Channel 1**
   - **PROGRAM CHANGE**
   - **PARAMETER CHG**

Note

If you are ganging multiple Remote Audio Mixers, you will have to set the second Remote Audio Mixer to **Channel 2**.

7. Use the **Cursor** buttons to navigate to the **TRANSMIT Section** and select the following, all other parameters should be deselected (you will have to press **ENTER** after each selection):
   - **Channel 1**
   - **PROGRAM CHANGE**
   - **PARAMETER CHG**.

Note

If you are ganging multiple Remote Audio Mixers, you will have to set the second Remote Audio Mixer to **Channel 2**.

8. Deselect all items in the **OMNI Section**.
9. Press **ENTER** to save your changes.
10. Deselect all items in the **ECHO Section**.
11. Press **ENTER** to save your changes.

This completes the procedure for setting up the Remote Audio Mixer to communicate with the Synergy 1 Switcher.

Yamaha DM2000

In order to allow the Synergy 1 Switcher to communicate with this Remote Audio Mixer, you must configure it as described in this section.

Note

For information on the Function Buttons and navigating the menu system on your Remote Audio Mixer, refer to the documentation that came with your Remote Audio Mixer.

Use the following procedure to setup your Yamaha DM2000 Audio Mixer:

1. Press the **SETUP** function button in the **Display Access Group** to display the **SETUP Menu**.
2. Press the **MIDI/HOST** tab to display the **MIDI/HOST SETUP Menu**.
3. Use the **Cursor** buttons to navigate to the following (you will have to press **ENTER** after each selection):

- **TO SERIAL HOST** — Use the Parameter Dial to set this to **PC-2**.

Note

If you are ganging multiple Remote Audio Mixers, you will have to set the **Rx PORT** and **Tx PORT** values to **MIDI**, to connect to the MIDIator.

- **Rx PORT** — Use the Parameter Dial to set this to **SERIAL**.
- **Tx PORT** — Use the Parameter Dial to set this to **SERIAL**.

4. Press the **MIDI** function button in the **Display Access Group** to display the **MIDI Menu**.
5. Press the **SETUP** tab to display the **MIDI SETUP Menu**.
6. Use the **Cursor** buttons to navigate to the **RECEIVE Section** and select the following, all other parameters should be deselected (you will have to press **ENTER** after each selection):
   - **Channel 1**
   - **PROGRAM CHANGE**
   - **PARAMETER CHG**

Note

If you are ganging multiple Remote Audio Mixers, you will have to set the second Remote Audio Mixer to **Channel 2**.

7. Use the **Cursor** buttons to navigate to the **TRANSMIT Section** and select the following, all other parameters should be deselected (you will have to press **ENTER** after each selection):
   - **Channel 1**
   - **PROGRAM CHANGE**
   - **PARAMETER CHG**

Note

If you are ganging multiple Remote Audio Mixers, you will have to set the second Remote Audio Mixer to **Channel 2**.

8. Deselect all items in the **OMNI Section**.
9. Press **ENTER** to save your changes.
10. Deselect all items in the **ECHO Section**.
11. Press **ENTER** to save your changes.

This completes the procedure for setting up the Remote Audio Mixer to communicate with the Synergy 1 Switcher.

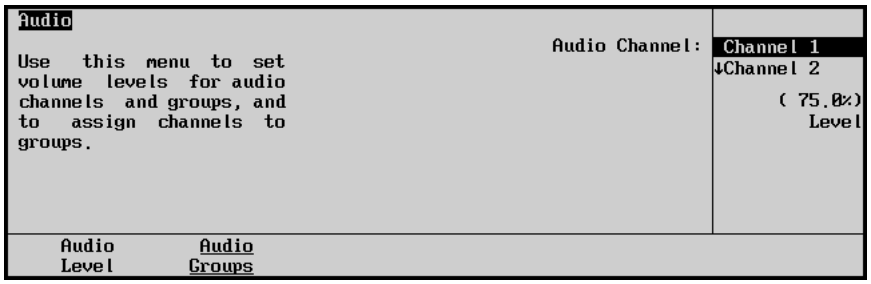
Audio Channel/Group Setup

Audio from a remote mixer can be configured as individual channels or grouped together, with up to three channels per group. When you set up the audio channels, you also set the **Default Levels** for the individual channels. These default levels are the ones that the switcher will set the channels to when you perform an audio reset custom control. Refer to the section "**Audio Override Setup**" on page 11–21 for more information on audio custom controls.

Setting Up Audio Channels

Use the following procedure to setup the default audio level for a channel:

1. Navigate to the **Audio Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).
   - **MORE** (to display **Installation Menu 2-2**).
   - **Audio** (to display the **Audio Menu**).
2. Press **Audio Level** to display the **Audio Level Menu**.



Audio Level Menu

3. Set the level for each audio channel as follows:
   - Use the top **Audio Channel** knob to select the audio channel that you want to set the default audio level for.

Note

If you have programmed **Audio Assign Custom Controls**, the top **Audio Channel** knob will display the name of the custom control that you assigned the channel to.

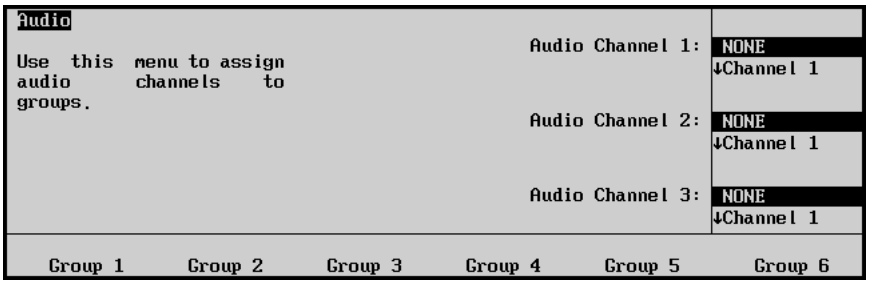
   - Use the middle **Level** knob to select the default audio level for the selected channel. All channels are initially set at 75%.

This completes the procedure for setting up the default audio levels for audio channels.

Setting Up Audio Groups

Use the following procedure to assign audio channels to groups:

1. Navigate to the **Audio Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).
   - **MORE** (to display **Installation Menu 2-2**).
   - **Audio** (to display the **Audio Menu**).
2. Press **Audio Groups** to display the **Audio Group Menu**.



Audio Group Menu

3. Press **Group 1** to assign audio channels to that group. There are a total of six audio groups you can assign audio channels to.
4. Assign up to three audio channels to the selected group as follows:

Note

If you have programmed **Audio Assign Custom Controls**, the top **Audio Channel** knob will display the name of the custom control that you assigned the channel to.

- Use the top **Audio Channel 1** knob to select the first audio channel that you want to assign to the group.
- Use the middle **Audio Channel 2** knob to select the second audio channel that you want to assign to the group.
- Use the bottom **Audio Channel 3** knob to select the third audio channel that you want to assign to the group.

This completes the procedure for assigning audio channels to groups.

Note

Assigning audio channels to groups does not alter the default or custom audio levels that you have set for them.

Audio Channel Assignment

You can assign up to two audio sources to each BNC. Each source can be a channel or a group of channels. Channels and groups that are assigned to BNC inputs follow the BNC inputs to air on a transition. This Audio-Follow-Video (AFV) is the normal interaction of a Remote Audio Mixer and the Synergy 1 Switcher. You can alter this normal AFV operation at any time by applying an Audio Override. Refer to the section "**Audio Override Setup**" on page 11–21 for more information on applying an audio override.

Use the following procedure to assign audio channels, or groups, to a BNC:

1. Navigate to the **BNC Menu 1-2** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).
   - **BNC** (to display the **BNC Menu 1-2**).
2. Press **MORE** to display the **BNC Menu 2-2**.
3. Press **Audio** to display the **Audio Setup Menu**.

BNC – Audio Setup Menu

4. Assign audio channels, or groups, to your BNCs as follows:

Note

The total number of channels that you have available to assign to the BNCs will depend on the **Audio Mixer Interface Option** you have and the number of audio channels your Remote Audio Mixer can control.

- Use the top **BNC** knob to select the BNC, or video, that the Remote Audio Mixer will follow for normal AFV operation.
- Use the middle **Audio 1** knob to select a channel or group you want to assign to the selected BNC.
- Use the bottom **Audio 2** knob to select another channel or group you want to assign to the selected BNC.

Note

If you have programmed **Audio Assign Custom Controls**, the audio channels may display the name of the custom control rather than **Channel ##**.

Your configured Remote Audio Mixer channels will now follow crosspoint transitions for normal AFV operation.

Audio Override Setup

In normal operation, the switcher works in an Audio-Follow-Video (AFV) mode. In this mode, the audio channels, or groups, are faded on and off automatically following each video transition. In more complex audio situations, the AFV mode can be *overridden*, allowing audio to be transitioned independently, or multiple audio channels to be taken to air without their associated video. This *override* mode is useful if, for example, you are producing an interview, or debate, and you want to keep several audio channels on-air, even when the associated video signals are not.

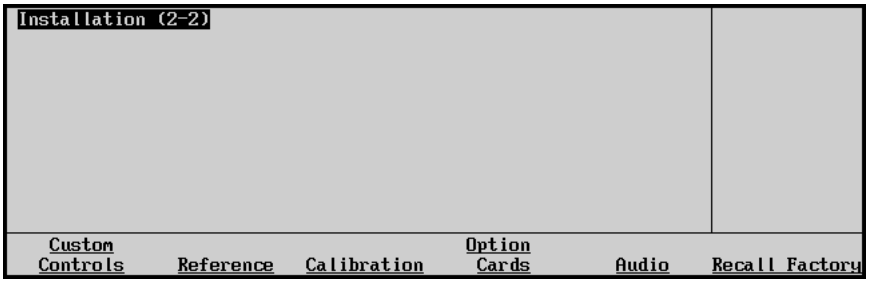
In order to perform an audio override, you must set up an Audio Custom Control Bank and a number of audio specific custom controls. These custom controls will allow you to have the **BKGD/PST** MLE act as a Remote Audio Mixer, turning the buttons on each bus into audio crosspoints.

Audio Custom Control Bank Setup

Audio banks are used to store audio custom controls, like normal custom control banks, as well as put the **BKGD/PST** MLE into Audio Mixer Mode. When *held*, the **Audio Bank** button will allow you to perform overrides on the AFV settings, as well as perform audio only transitions. Refer to the section "**Audio Only Transitions**" on page 11–39 for more information.

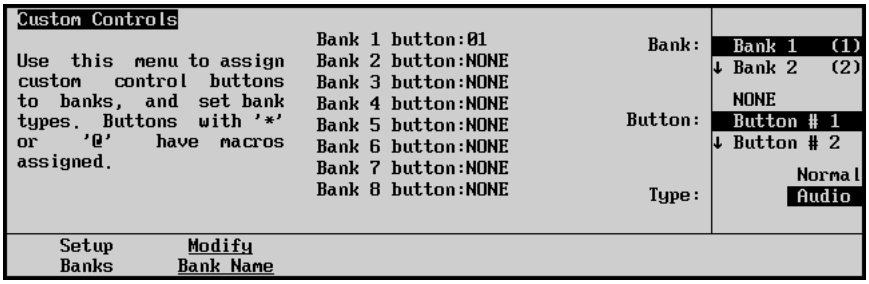
Use the following procedure to set up an Audio Custom Control Bank:

1. Navigate to the **Installation Menu 1-2** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).
2. Press **MORE** to display the **Installation Menu 2-2**.



Installation Menu 2-2

3. Press **Custom Controls** to display the **Setup Banks Menu**.



Custom Controls — Setup Banks Menu

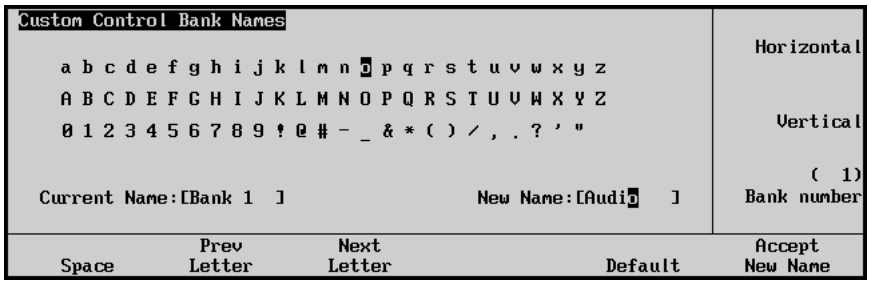
4. Assign a custom control button to an audio bank as follows:

Note

In this example we use **Button # 1** because the corresponding video crosspoint (the crosspoint directly below it) is usually set to **BLACK** and will not have any associated audio. You can use any button you like.

- Use the top **Bank** knob to select the bank that you want to assign to Audio.
- Use the middle **Button** knob to select the desired custom control button that you want to assign as the Audio Bank.
- Use the bottom **Type** knob to select **Audio**.

5. Press **Modify Bank Name** to display the **Custom Control Bank Names Menu 1-2**.



Custom Control Bank Names Menu 1-2

6. Use the knobs and softkeys to name your audio bank as follows:

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.

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.

- Use the top **Horizontal** knob to move the cursor horizontally.
- Use the middle **Vertical** knob to move the cursor vertically.
- Use the bottom **Bank number** knob if you want to name a different bank.
- Use the **Space** button to insert a space in the **New Name** field.
- Use the **Prev Letter** button to select the previous letter in the **New Name** field.
- Use the **Next Letter** button to select the next letter in the **New Name** field.

7. Press **Accept New Name** when you are done naming the Audio bank
8. Press **HOME** and **Confirm** to save the new settings.

This completes the procedure to set up an Audio Custom Control Bank.

Audio Custom Controls

When an audio source is assigned as a single channel (or in a group) in an Audio Assign Custom Control, that channel can be controlled and brought to air independently, without being associated with any video input. In this way, audio output from microphones, audio servers, and other devices can be brought to air without associated video.

The following Custom Controls are covered in this section:

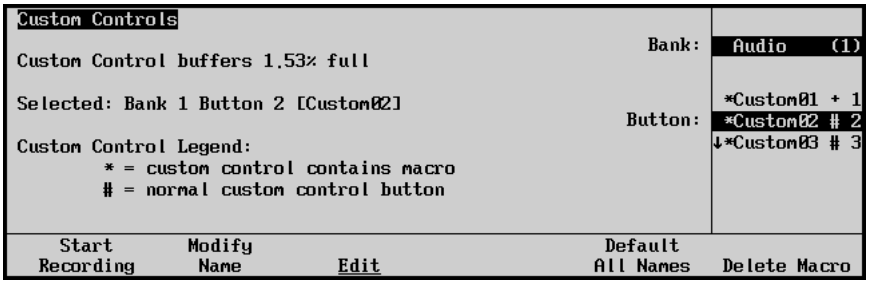
- Assign Audio
- Reset Audio
- Audio All Off
- Audio Memory
- Audio CH On
- Audio CH Off
- PGM Audio Level
- PST Audio Level

Assign Audio

The **Assign Audio** custom control has two roles when working with audio. In normal mode, it allows you to access the levels for the audio channel or group you have assigned to that button. When the **Audio Bank Custom Control** button is pressed and held, the audio channel or group that is assigned to that custom control will be mapped onto the **BKGD** and **PST** buses of the MLE. This allows you to change the audio channels that are on-air, by selecting them on the **BKGD** bus, or they will be taken to air during the next transition, by selecting them on the **PST** bus. Refer to the section "**Audio Modes**" on page 11–37 for more information.

Use the following procedure to create an **Assign Audio** custom control:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **Custom Controls** (to display the **Custom Controls Menu**).



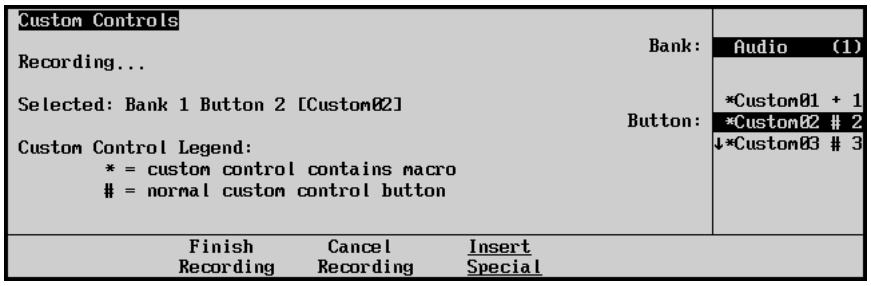
Custom Controls Menu

2. Select the custom control button you want to record as follows:
   - Use the top **Bank** knob to select the Audio bank you created.
   - Use the middle **Button** knob to select the custom control button that you want to program.

Note

If you have assigned **Custom01** button as your Audio Bank, you will not be able to press it to access the **Audio Level Menu**.

3. Press **Start Recording** to display the **Custom Controls Recording Menu**.



Custom Controls — Recording Menu

4. Press **Insert Special** to display the **Insert Special Menu 1-2**.
5. Press **Special** to display the **Special Menu**.

Insert Special — Special Menu

6. Select the audio channel you want to assign to the selected custom control as follows:
   - Use the top **Function** knob to select **Assign Audio**.
   - Use the middle **Channel** knob to select the channel or group you wish to assign to the custom control.

Operating Tip

The Audio Channel that you assign to this custom control will be the channel that is mapped down to the **BKGD** and **PST** buses when you are in Audio Mixer mode. You should assign the same audio channel that is assigned to the BNC crosspoint to the corresponding custom control. For example, if you have **Channel 01** assigned to **BNC crosspoint 4**, you should assign **Channel 01** to **Custom04**. This way, as you go back and forth to Audio Mixer Mode, the audio channels that are assigned to the video channels for AFV will be the same crosspoint buttons.

7. Press **Insert** to enter the command in your custom control macro and display the **Audio Level Menu**.

Note

Note that the name of the selected channel or group changes to the name of the custom control when you press **Insert**.

Audio Level Menu

When you press this custom control this **Audio Level Menu** will be displayed. Each menu allows you to adjust the level for the channel, as well as the Master Audio Level. Refer to the section "**Audio Levels and Pan Settings**" on page 11–39 for more information.

8. Press **HOME** to display the **Main Menu 1-2**.
9. Press **Custom Controls** to return to the **Custom Controls Menu**.
10. Press **Finish Recording**, or the flashing custom control button.

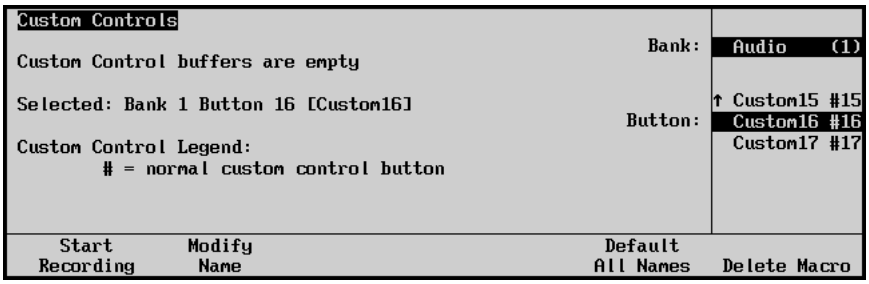
This completes the procedure for creating an audio assign custom control. You will need to repeat this procedure for each audio channel you want to be able to override.

Reset Audio

The **Reset Audio** custom control allows you to return to the normal AVF mode and remove all currently selected overrides. This can be performed for either the **BKGD** bus, or the **PST** bus. You will have to set up two custom controls if you want to be able to perform both.

Use the following procedure to program a **Reset Audio**:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **Custom Controls** (to display the **Custom Controls Menu**)

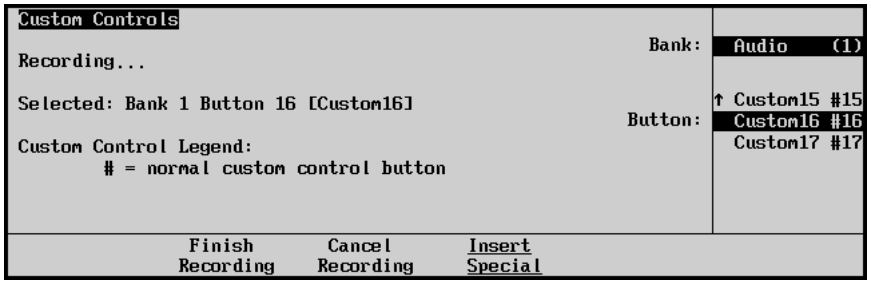


Custom Controls Menu

Note

If you do not have any available custom control buttons on your **Audio Bank**, you can create a second **Normal Bank**.

2. Select the custom control button you want to assign the **Audio All Off** to as follows:
   - Use the top **Bank** knob to select the Audio Bank you created.
   - Use the middle **Button** knob to select the custom control button that you wish to program.
3. Press **Start Recording** to display the **Custom Controls Recording Menu**.



Custom Controls — Recording Menu

4. Press **Insert Special** to display the **Insert Special Menu 1-2**.
5. Press **Special** to display the **Special Menu**.

Insert Special — Special Menu

6. Assign **Reset Audio** to the selected custom control button as follows:
   - Use the top **Function** knob to select **Reset Audio**.
   - Use the middle **Audio Bus** knob to select the bus that you want to assign the **Reset Audio** to:
     ~ **Program** — This function will restore all AFV for the *on-air* audio. All audio channels that are associated with a BNC that is on-air will be turned on at the level they were last on at, and all other audio channels will be turned off.
     ~ **Preset** — This function will restore all Audio-Follow-Video and levels for the *next* transition. At the next audio transition, all audio channels and levels associated with a BNC on the PST bus will be turned on at their default levels during the transition.

Note

A **Reset Audio** for the Preset bus will not change the **Preset** audio values for the audio channels, or groups, that are currently on-air. When this channel, or group, is taken off-air, the custom control button that is assigned to the **Reset Audio** for the Preset bus will have to be pressed *again* in order to set these channels, or groups, to their default values.

7. Press **Insert** to enter the command in your custom control macro.
8. Press **HOME** to display the **Main Menu 1-2**.
9. Press **Custom Controls** to return to the **Custom Controls Menu**.
10. Press **Finish Recording**, or the flashing custom control button.

This completes the procedure for creating an **Reset Audio** custom control.

Audio All Off

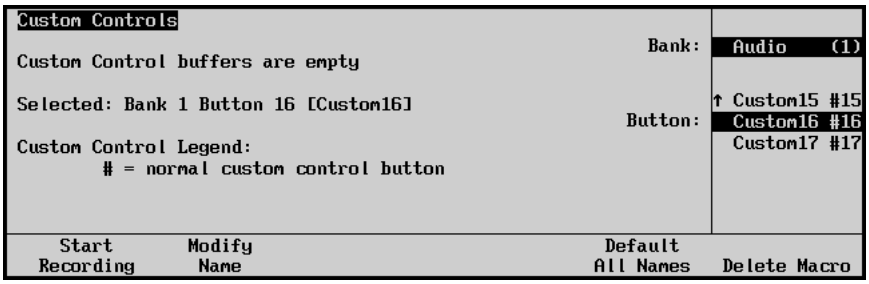
The **Audio All Off** custom control will fade *all* audio channels on either the **BKGD** bus or the **PST** bus off. This can be useful for quickly removing all audio from either bus or taking all audio channels off-air after you have performed an Audio Memory Recall. Refer to the section "**Audio Memory**" on page 11–28 for more details.

Note

This custom control functions as an override and will take all audio channels, including AFV off. In order to reinstate AFV you will have to run a **Reset Audio** custom control. Refer to the section "**Reset Audio**" on page 11–25 for more details.

Use the following procedure to create an **Audio All Off** custom control:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **Custom Controls** (to display the **Custom Controls Menu**).

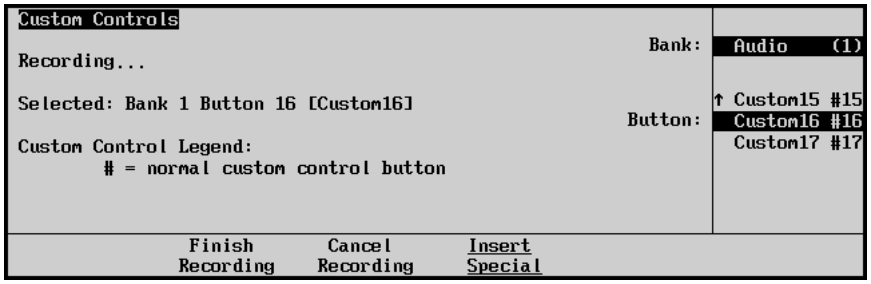


Custom Controls Menu

Note

If you do not have any available custom control buttons on your **Audio Bank**, you can create a second **Normal Bank**.

2. Select the custom control button you want to assign the **Audio All Off** to as follows:
   - Use the top **Bank** knob to select the Audio Bank you created.
   - Use the middle **Button** knob to select the custom control button that you wish to program.
3. Press **Start Recording** to display the **Custom Controls Recording Menu**.



Custom Controls — Recording Menu

4. Press **Insert Special** to display the **Insert Special Menu 1-2**.
5. Press **Special** to display the **Special Menu**.

Insert Special — Special Menu

6. Assign **Audio All Off** to the selected custom control button as follows:
   - Use the top **Function** knob to select **Audio All Off**.
   - Use the middle **Audio Bus** knob to select the bus that you want to assign the **Audio All Off** to:
     ~ **Program** — This option will fade off all audio channels on the Background bus.
     ~ **Preset** — This option will fade off all audio channels on the Preset bus.
7. Press **Insert** to enter the command in your custom control macro.
8. Press **HOME** to display the **Main Menu 1-2**.
9. Press **Custom Controls** to return to the **Custom Controls Menu**.
10. Press **Finish Recording**, or the flashing custom control button.

This completes the procedure for creating an **Audio All Off** custom control.

Audio Memory

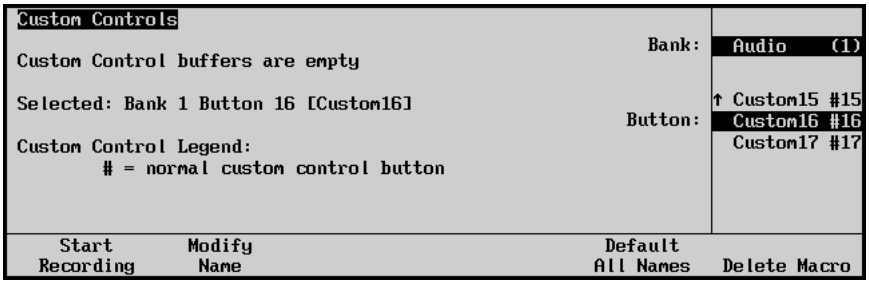
The **Audio Memory** custom control will recall a memory that has been stored on the Remote Audio Mixer. This can be useful to take a number of channels to air at different levels all at once. Refer to the documentation that came with your Remote Audio Mixer for information on storing audio memories.

Important

When an **Audio Memory** is recalled, the only way to take the audio channels off-air is to run an **Audio All Off PGM/Reset PGM sequence**, refer to the section "**Audio All Off**" on page 11–27 for more details. The on-air channels will not appear on the **BKGD/PST** buses.

Use the following procedure to create an **Audio Memory** recall custom control:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **Custom Controls** (to display the **Custom Controls Menu**).

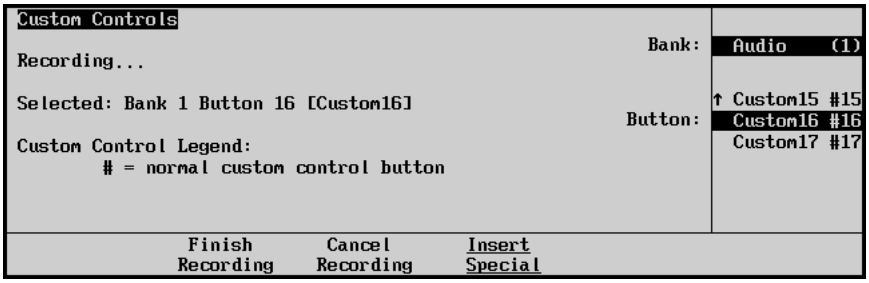


Custom Controls Menu

Note

If you do not have any available custom control buttons on your **Audio Bank**, you can create a second **Normal Bank**.

2. Select the custom control button you want to assign the **Audio Memory** to as follows:
   - Use the top **Bank** knob to select the Audio Bank you created.
   - Use the middle **Button** knob to select the custom control button that you wish to program.
3. Press **Start Recording** to display the **Custom Controls Recording Menu**.



Custom Controls — Recording Menu

4. Press **Insert Special** to display the **Insert Special Menu 1-2**.
5. Press **Special** to display the **Special Menu**.

Insert Special — Special Menu

6. Assign a particular **Audio Memory** to the selected custom control button as follows:
   - Use the top **Function** knob to select **Audio Memory**.
   - Use the middle **Memory** knob to select the bus that you want to assign the **Audio Memory** to.

Note

The **Memory** numbers correspond to the memories that are stored on the Remote Audio Mixer. For example, memory 02 on the Yamaha 02R96 Audio Mixer will be accessed by selecting **2** with the **Memory** knob.

7. Press **Insert** to enter the command in your custom control macro.
8. Press **HOME** to display the **Main Menu 1-2**.
9. Press **Custom Controls** to return to the **Custom Controls Menu**.
10. Press **Finish Recording**, or the flashing custom control button.

This completes the procedure for creating an **Audio Memory** custom control.

Audio CH On

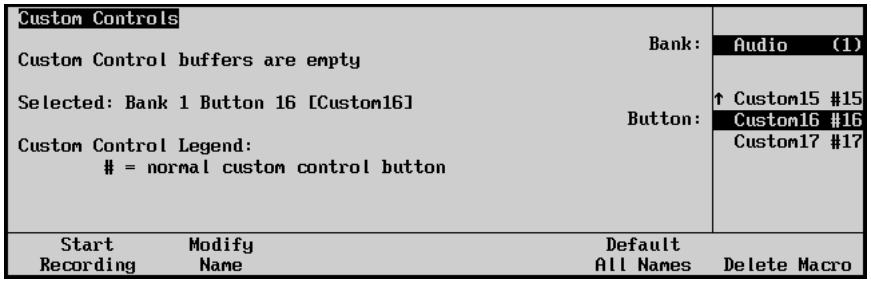
The **Audio CH On** custom control will turn a channel, or group, on at the level it was last on at, or leave it unchanged if the channel is already on. This can be useful if you want to take a channel, or group, to air at once. You can use the **Audio CH On** for either the **BKGD** or **PST** bus.

Note

You can assign multiple **Audio CH On** macros to the same custom control, allowing you to turn a number of channels, or groups, on for either the **BKGD** or **PST** bus. Unlike the Audio Memory function, **Reset Audio** will return the switcher to AFV mode.

Use the following procedure to create an **Audio CH On** custom control:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **Custom Controls** (to display the **Custom Controls Menu**).

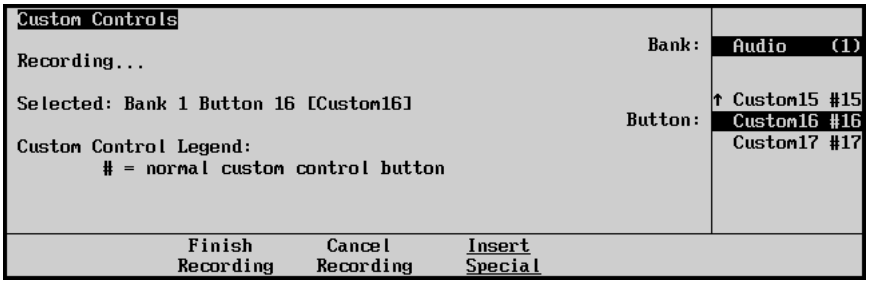


Custom Controls Menu

Note

If you do not have any available custom control buttons on your **Audio Bank**, you can create a second **Normal Bank**.

2. Select the custom control button you want to assign the **Audio CH On** to as follows:
   - Use the top **Bank** knob to select the Audio Bank you created.
   - Use the middle **Button** knob to select the custom control button that you wish to program.
3. Press **Start Recording** to display the **Custom Controls Recording Menu**.



Custom Controls — Recording Menu

4. Press **Insert Special** to display the **Insert Special Menu 1-2**.
5. Press **Special** to display the **Special Menu**.

Insert Special — Special Menu

6. Assign **Audio CH On** to the selected custom control button as follows:
   - Use the top **Function** knob to select **Audio CH On**.
   - Use the middle **Channel** knob to select the audio channel you want to turn on.
   - Use the bottom **Audio Bus** knob to select the which bus, **BKGD** or **PST**, the audio channels will be turned on for.

Note

If you select **Preset**, the audio channels will turn on for the **PST** bus and will be taken to air during the next transition. If you select **Program**, the audio channels will be taken to air immediately.

7. Press **Insert** to enter the command in your custom control macro.
8. Press **HOME** to display the **Main Menu 1-2**.
9. Press **Custom Controls** to return to the **Custom Controls Menu**.
10. Press **Finish Recording**, or the flashing custom control button.

This completes the procedure for creating an **Audio CH On** custom control.

Audio CH Off

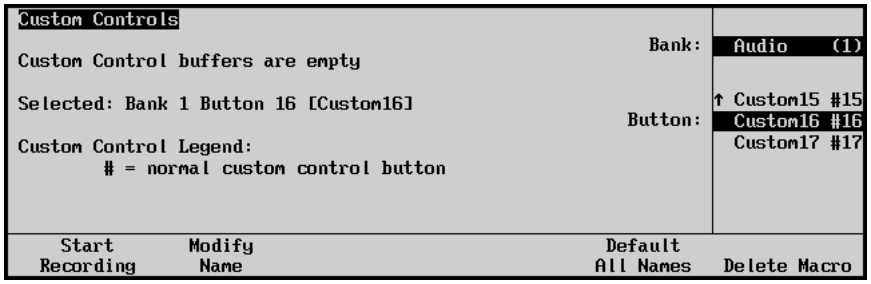
The **Audio CH Off** custom control will turn a channel or group off. This can be useful if you want to turn a specific channel, or group, off while not affecting the other channels. You can use the **Audio CH Off** for either the **BKGD** or **PST** bus.

Note

You can assign multiple **Audio CH Off** macros to the same custom control, allowing you to turn a number of channels or groups off on either the **BKGD** or **PST** bus.

Use the following procedure to create an **Audio CH Off** custom control:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **Custom Controls** (to display the **Custom Controls Menu**).

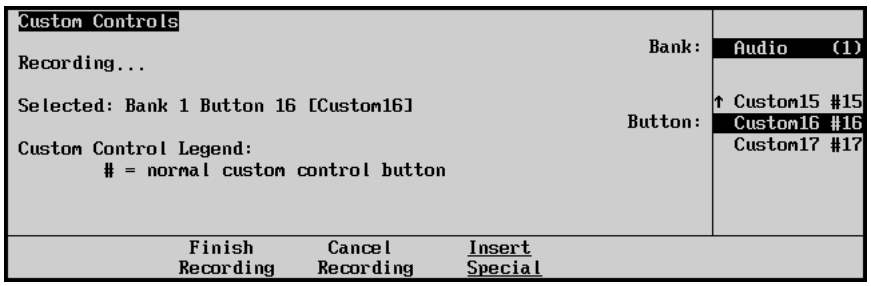


Custom Controls Menu

Note

If you do not have any available custom control buttons on your **Audio Bank**, you can create a second **Normal Bank**.

2. Select the custom control button you want to assign the **Audio CH Off** to as follows:
   - Use the top **Bank** knob to select the Audio Bank you created.
   - Use the middle **Button** knob to select the custom control button that you wish to program.
3. Press **Start Recording** to display the **Custom Controls Recording Menu**.



Custom Controls — Recording Menu

4. Press **Insert Special** to display the **Insert Special Menu 1-2**.

5. Press **Special** to display the **Special Menu**.

Insert Special — Special Menu

6. Assign **Audio CH Off** to the selected custom control button as follows:
   - Use the top **Function** knob to select **Audio CH Off**.
   - Use the middle **Channel** knob to select the audio channel you want to turn off.
   - Use the bottom **Audio Bus** knob to select the which bus, **BKGD** or **PST**, the audio channels will be turned off for.

Note

If you select **Preset**, the audio channels will turn off for the **PST** bus. If you select **Program**, the audio channels will be taken off air immediately.

7. Press **Insert** to enter the command in your custom control macro.
8. Press **HOME** to display the **Main Menu 1-2**.
9. Press **Custom Controls** to return to the **Custom Controls Menu**.
10. Press **Finish Recording**, or the flashing custom control button.

This completes the procedure for creating an **Audio CH Off** custom control.

PGM Audio Level

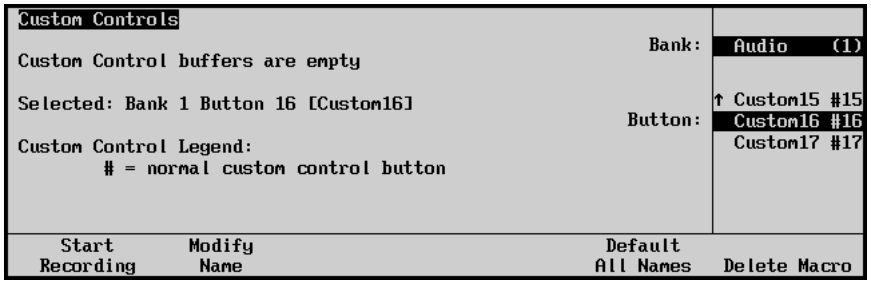
The **PGM Audio Level** custom control will set the **BKGD** bus level for an audio channel or group. If the Channel is *on-air*, this will alter the level for the channel. If the Channel is *not on air*, this will take it to air as an override. **PGM Audio Level** differs from **Audio CH On** in that you select the level that you want the channel to be set to. When run, the custom control will alter the level of the channel, even if it is on. **Audio CH On** will only turn the channel on if it is off and will not change the level. This could be useful when you want to alter the levels of a number of channels, or groups, at the same time.

Note

You can assign multiple **PGM Audio Level** macros to the same custom control, allowing you to alter the levels for a number of channels at the same time.

Use the following procedure to create a **PGM Audio Level** custom control:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **Custom Controls** (to display the **Custom Controls Menu**).

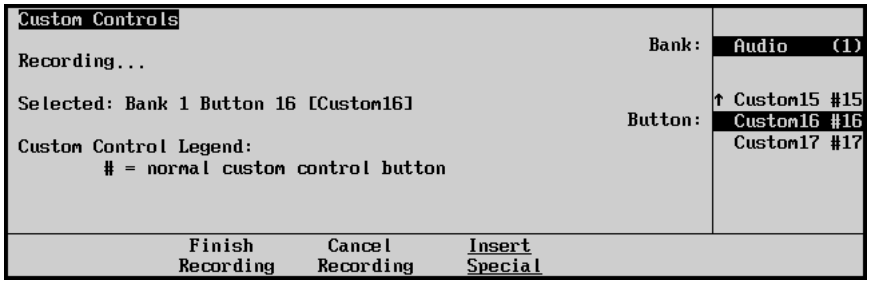


Custom Controls Menu

Note

If you do not have any available custom control buttons on your **Audio Bank**, you can create a second **Normal Bank**.

2. Select the custom control button you want to assign the **PGM Audio Level** to as follows:
   - Use the top **Bank** knob to select the Audio Bank you created.
   - Use the middle **Button** knob to select the custom control button that you wish to program.
3. Press **Start Recording** to display the **Custom Controls Recording Menu**.



Custom Controls — Recording Menu

4. Press **Insert Special** to display the **Insert Special Menu 1-2**.
5. Press **Special** to display the **Special Menu**.

Insert Special — Special Menu

6. Assign **PGM Audio Level** to the selected custom control button as follows:
   - Use the top **Function** knob to select **PGM Audio Lvl**.
   - Use the middle **Channel** knob to select the audio channel you want change the level for.
   - Use the bottom **Level** knob to select the level you want to set the channel to.

7. Press **Insert** to enter the command in your custom control macro.
8. Press **HOME** to display the **Main Menu 1-2**.
9. Press **Custom Controls** to return to the **Custom Controls Menu**.
10. Press **Finish Recording**, or the flashing custom control button.

This completes the procedure for creating an **PGM Audio Level** custom control.

PST Audio Level

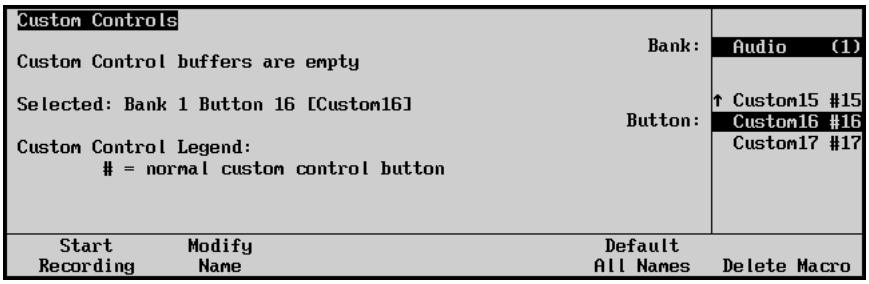
The **PST Audio Level** custom control will set the **PST** bus level for an audio channel or group. If the channel is *on-air*, this will create an override that will take the channel to the new level during the next transition. If the channel is *off-air*, this will create an override that will take the channel to air at the new level on the next transition. This could be useful if you want to prepare a number of channels or groups at a set level to be taken to air on the next transition.

Note

You can assign multiple **PST Audio Level** macros to the same custom control, allowing you to alter the levels for a number of channels at the same time.

Use the following procedure to create an **PST Audio Level** custom control:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **Custom Controls** (to display the **Custom Controls Menu**).

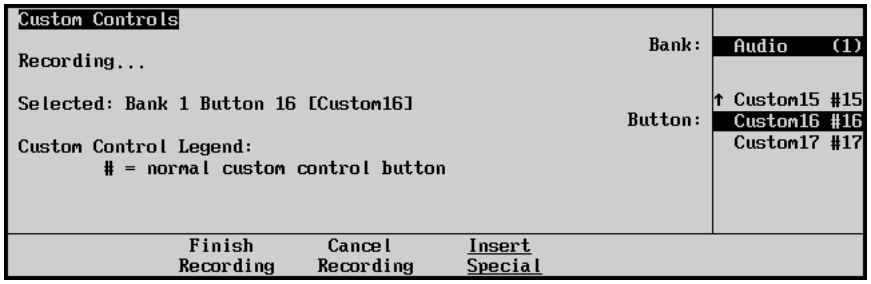


Custom Controls Menu

Note

If you do not have any available custom control buttons on your **Audio Bank**, you can create a second **Normal Bank**.

2. Select the custom control button you want to assign the **PST Audio Level** to as follows:
   - Use the top **Bank** knob to select the Audio Bank you created.
   - Use the middle **Button** knob to select the custom control button that you wish to program.
3. Press **Start Recording** to display the **Custom Controls Recording Menu**.



Custom Controls — Recording Menu

4. Press **Insert Special** to display the **Insert Special Menu 1-2**.
5. Press **Special** to display the **Special Menu**.

Insert Special — Special Menu

6. Assign **PST Audio Level** to the selected custom control button as follows:
   - Use the top **Function** knob to select **PST Audio Lvl**.
   - Use the middle **Channel** knob to select the audio channel you want change the level for.
   - Use the bottom **Level** knob to select the level you want to set the channel to.
7. Press **Insert** to enter the command in your custom control macro.
8. Press **HOME** to display the **Main Menu 1-2**.
9. Press **Custom Controls** to return to the **Custom Controls Menu**.
10. Press **Finish Recording**, or the flashing custom control button.

This completes the procedure for creating an **PST Audio Level** custom control.

Audio Modes

When a Remote Audio Mixer is connected to the Synergy 1 Switcher, it can be operated in one of three ways: normal Audio-Follow-Video (AFV) mode, Override mode and Editor mode.

Audio-Follow-Video Mode

The AFV mode is where an audio channel is taken to air when the video BNC it is assigned to is taken to air. The audio will follow the video on and off air like this for all transitions on the **BKGD/PST** MLE.

For example, there may be a number of camera setups in the studio, each one focusing on a different talent. When a particular camera is taken to air, you also want the audio from the talent's microphone to be taken to air. When that camera is taken off air, you also want the corresponding audio channel to be taken off air. This is the normal AFV mode of operation.

Note

Remember that if you Fly a Key and then expand it to full frame, the underlying video is still on-air, even though you cannot see it. The audio for both video sources will still be on-air. This is also important to remember if you are running shots from memories where you bring a Key full frame from an over the shoulder shot.

Override Mode

The Override mode is when the normal AFV mode has been altered, either by changing the levels, taking more or less channels to air, or altering the channels that will be taken to air on the next transition. Overrides are applied by using one of the custom controls discussed in the section "**Audio Override Setup**" on page 11–21. For example, if you have an over the shoulder shot, the audio channels for both the talent and the Key would be on-air as per normal AFV. If you transition to a shot with only the VTR clip, then the audio from the talent would be taken off. If you wanted both audio channels to remain, you would have to set up an override by turning on the audio crosspoint for the talent on the PST bus. When you make the transition, the switcher will take the video off air, but will keep the audio on.

Operation Overview

This section will provide a brief overview of the operation of the switcher when performing audio transitions.

During all audio transitions, the switcher keeps track of three separate levels for each audio channel, or group:

- **Current** — The Current level is the level of the channel, or group, that is currently on-air. This level can be adjusted using the **PGM Audio Lvl** custom control that is assigned to that channel, or group.
- **Preset** — The Preset level is the level of the channel, or group, that will take effect during the *next* transition of the audio. This level can be adjusted using the **PST Audio Lvl** custom control that is assigned to that channel, or group.

Note

Preset Levels *only* take effect when an audio channel, or group, is transitioned to air, and do *not* take affect during cuts or crosspoint changes.

- **Default** — The Default level is the level that the channel, or group, was set to originally from the **Audio Installation Menu**. When you perform an **Audio Reset**, all off-air audio channels will have their preset levels changed to the default level. This will not change the **Preset** values for the audio channels that are on-air.

Note

The switcher keeps track of all three of these audio levels for each channel, or group, and will use them when that channel, or group, is transitioned.

Audio Transitions

During an audio transition, the switcher prepares to take the Preset audio channels to air as follows:

1. The switcher applies the normal Audio-Follow-Video rules to select which channels, or groups, will be taken to air.
2. The switcher checks for preset *overrides* that will turn channels, or groups, off or on, depending on how they are set in the **Audio PST Bus**.
3. The switcher performs the audio transition by fading the **PST** channels to their **Preset** audio levels. These levels then become the **Current** levels for those channels, or groups.

Note

When an audio channel is *faded* off by dragging the level to zero on the Remote Audio Mixer, that channel will return to the default level the next time it is taken to air.

4. The switcher then saves the **Current** levels of the audio channels that were taken off-air as the **Preset** levels for those channels, or groups. These levels will be used as the **Preset** levels for the next transition.

Audio Specific Functions

This section will describe a number of audio only functions that can be performed on the switcher to adjust the audio setting of the Remote Audio Mixer.

Audio Only Transitions

With the audio override custom controls properly set up, it is possible to perform an audio only transition. This transition will not alter the video signals on the **BKGD** or **PST** bus, but will transition the audio crosspoints on those buses.

Use the following procedure to perform an Audio Only Transition:

Important

You must hold the **Bank** button referred to in step one for the entire procedure.

1. Press and *hold* the **Bank Custom Control Button** to place the **BKGD/PST** MLE into Audio Mixer mode.

Note

The crosspoints on the **BKGD** and **PST** buses are now audio crosspoints and represent the audio channels that are on-air and will be taken to air in the next transition, just like video is represented on the MLE. Each crosspoint represents an audio channel that was assigned to the corresponding custom control button. For example, the audio channel that was assigned to custom control button 03 will be mapped onto the 03 audio crosspoint.

2. Select the audio crosspoints that you want to take to air on the **PST** bus.
3. Press **Auto Trans** in the **BKGD/PST MLE Transition Group** to perform the audio only transition.

Important

Audio Only Transitions should only be performed once as they will create an audio override. In order to properly perform your next transition, you should check the audio crosspoints and run as Audio Reset PST to return to AFV, if needed.

This completes the procedure for performing an Audio Only Transition.

Audio Levels and Pan Settings

You can adjust the Audio Level for a particular channel, or the Master level, and the Pan Settings using the Assign Audio custom control. Refer to the section "**Assign Audio**" on page 11–23 for more information.

Use the following procedure to adjust volume and pan settings of a selected audio channel or group:

1. Press the **Custom Control** button that has been assigned to the channel, or group, that you want to adjust to display the **Audio Level Menu**.

Audio Level Menu — Audio Group

2. Adjust the audio level for the selected channel as follows:
   - Press the **F1** softkey (in this example it is **Custom02**, but will change, depending on what you have named your audio channels).
   - Use the top **Channel** knob to select the audio channel you want to adjust.
   - Use the middle **Level** knob to adjust the level of the channel. (0.0% is off).
   - Use the bottom **Pan** knob to adjust the pan setting left or right. Turning the knob to the right will pan right and turning it left will pan left.
3. Press **Master Level** if you want to adjust the master level.
   - Use the middle **Level** knob to adjust the mixer level.

This completes the procedure for adjusting the pan and level settings for individual channels and the master.

External DVEs

In This Chapter

This chapter provides instructions for interfacing a generic Digital Video Effects system (DVE) with the Synergy 1 Switcher and covers a variety of aspects such as technical requirements, connections, and programming.

Important

These instructions are specific to **External** DVE functions.

Refer to the section "**Setting Up DVE Send**" on page 12-15 and your ***Squeeze & Tease 3D/WARP Owner's Guide,*** for instructions concerning the operation and functionality of your **Internal Squeeze & Tease WARP** card.

The following topics are discussed:

- Primary External DVEs
- DVE Communications Setup
- DVE Interface Specifications
- Programming Custom Control Buttons

Primary External DVEs

Only *one* primary single channel external DVE can be connected to the Synergy 1 Switcher. The connection includes:

- Video and key routed from Synergy Aux Bus outputs **1** and **2** to the DVE. The **Timed Aux Bus** option must be installed.
- Video and key routed from the DVE back to Synergy.
- RS-422 serial control from Synergy to the DVE.

  RS-422 functionality allows you to run the DVE using the **DVE Send** feature, as well as the Custom Control buttons.

The following table illustrates the steps required when interfacing a primary external DVE to the Synergy 1 Switcher:

Primary External DVE Setup Steps

Setup Step	Primary External DVE
Reference Connection	X
DVE Input Connections	X
DVE Output Connections	X
Aux Bus Programming	X
GPI Input Connections	X
GPI Output Connections	
Remote Control Connections	X
Programming Custom Control Buttons	X
Saving the Switcher Personality	X
Testing the Interface	X

In the set up procedures later in this chapter, the specific DVEs to which each procedure applies are clearly listed.

Connection Diagrams

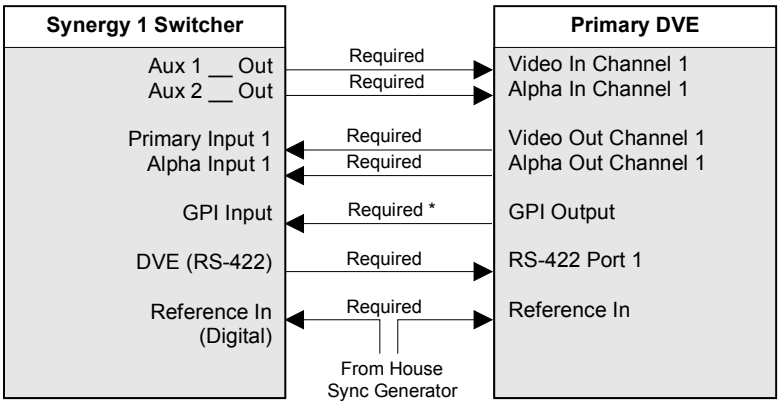
The diagram in this section illustrates the typical connections used to interface the Synergy 1 Switcher with a primary *external* DVE. Use the figure for reference during the interface procedures in this chapter.

Primary External DVE Connections

The following diagram illustrates typical primary external DVE interface connections.

Note

Only a single-channel DVE or one in which a combined key signal (for multiple channels) is supplied to Synergy on one BNC can be interfaced. Synergy can only supply the DVE with *one* timed video input and *one* timed alpha input, thus additional inputs would have to be routed to the DVE manually. The **Timed Aux Bus** option must be installed.



Primary External DVE Interface Connections

Note

If the 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 1frame.

Each of the connections displayed in the diagram above is explained in detail in the following sections.

Communication Connections

This section will help you to make the communication connections between the external DVEs and the Synergy 1 Switcher.

Reference Connection

Use the following procedure to ensure a proper reference connection:

1. Ensure that a *digital* reference signal is connected to the Synergy 1 Switcher. Refer to the section "**Reference Signal Connection**" on page 3-7 for instructions.
2. Connect a suitable reference signal to the DVE's **Reference Input** connector. Ensure that the signal is the *same one* that is used for the switcher's reference input.
3. Most DVEs require an *analog* reference **Black** input. 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 next device's reference input connector. Ensure that the last device in the loop is terminated with a 75 Ohm terminator.
   - If the DVE itself is the *last device* in your reference loop, terminate the open reference connector with a 75 Ohm terminator (customer supplied).

Note

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

This concludes the procedure to ensure a proper reference connection.

DVE Input Connections

The switcher's Aux Bus outputs are used to route video and alpha signals to the DVE's video and key inputs, respectively.

Aux Bus outputs **1** and **2** must be used for connecting the primary external DVE's video and key channels. If you have not already done so, complete the "**Auxiliary Output Worksheet**," found in the "**Output Connection**" section on page 4–9 and on page 17–3. Use the worksheet for reference during this procedure.

Note

Only a single-channel DVE or one in which a combined key signal (for multiple channels) is supplied to Synergy on one BNC can be interfaced. Synergy can only supply the DVE with *one* timed video input and *one* timed alpha input. Additional inputs would have to be routed to the DVE manually and could not be switched from the Synergy 1 Switcher.

Use the following procedure to connect the primary external DVE:

1. Ensure that the **Timed Aux Bus** option is installed. If not, contact Ross Video for details on obtaining the option.
2. Connect a single-channel primary external DVE as follows:
   - Connect the **Aux 1** output to the primary DVE's channel 1 video input.
   - Connect the **Aux 2** output to the primary DVE's channel 1 alpha (key) input.

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 1 Switcher.

This concludes the procedure to connect the primary external DVE to the Synergy 1 Switcher.

DVE Output Connections

The DVE's video and key outputs must be connected to the switcher and properly assigned as primary and alpha video inputs using the switcher's BNC setup menus.

Please note:

- Use your **Input Worksheet** for assistance. The worksheet can be found in the section "**Input Worksheet**" on page 16-2.
- 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 DVE outputs:

1. Connect the DVE's channel 1 video output to the desired video input on the Synergy 1 Switcher.
2. Connect the DVE's channel 1 alpha output to the desired video input on the Synergy 1 Switcher.
3. If you have not already done so, follow all procedures outlined in the section "**BNC Configuration**" on page 12-7. For each 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 concludes the procedure to connect DVE outputs.

Aux Bus Panel Programming

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 2-16 for details.
2. Ensure that each remote Aux panel is properly cabled. Refer to the section "**Remote Aux Panel Cabling**" on page 3-3 for details.
3. Ensure that your **Auxiliary Output Worksheet** is completed as outlined in the section "**Primary Output Worksheet**" on page 16-3.
4. Using the information from your **Auxiliary Output Worksheet**, follow all instructions presented in the section "**Aux Bus Setup**" on page 9-3. In this section you will program each local and remote panel and assign specific switching parameters (or "rights") for

each of the 10 Aux buses that are accessible locally and remotely. Each Aux bus can be set up individually.

This concludes the procedure to program your Aux panels.

GPI Input Connections

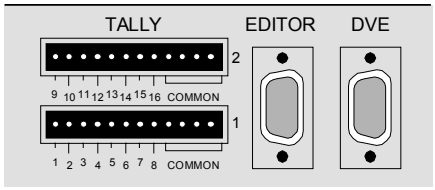
The Synergy 1 Switcher is able to use GPI input pulses (from the DVE) for tallies.

When an Aux Bus is used to route video to an external device (such as a DVE or a VTR), use the procedure "**Aux Bus Panel Programming**" on page 12-5 to set 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.

Remote Control Connections

The Synergy 1 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 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 following figure for reference in the following steps:



Synergy 1 Frame, Rear View – DVE Port

Use the following method to connect remote control capability to the primary external DVE:

- Connect a serial cable between the switcher's **DVE** port and the appropriate RS-422 port on your external DVE.

  Refer to your DVE's ***Installation Guide*** for instructions on connecting RS-422 communications.

Note

Only a single channel can be controlled using RS-422.

Refer to the section "**DVE Interface Specifications**" on page 12-16 for information about interfacing with *specific* DVEs.

For details on establishing RS-422 communications with the primary DVE, refer to the section "**Custom Device Setup**" on page 7-45.

DVE Communications Setup

The **DVE Communications Setup** procedure allows you to set up communications parameters with an external DVE. Your Primary DVE is the external DVE that can be controlled from the **DVE Send** button. Once set up, 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 "**Programming Custom Control Buttons**" on page 12-33 for details. In the ***Synergy 1 Operation Guide***, refer to Chapter 9, "**DVE Send**" for complete instructions on the **DVE Send** feature.

Important

You must have the **DVE Send and Remote Control** option in order to be able to control an external DVE from your Synergy control panel. Refer to the section "**Installed Options Menus**" on page 2-31 for more information on installed options.

BNC Configuration

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 1 Switcher.

Use the following procedure to set your input types for your primary external DVE:

1. Navigate to the **BNC Menu 1-2** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).
   - **BNC** (to display the **BNC Menu 1-2**).
2. Press **BNC Type** to display the **BNC Type Menu**.

BNC — BNC Type Menu

The **Main Area** 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.

3. Assign a BNC input to an external DVE as follows. This will be the fill input from the DVE.
   - Use the top **BNC** knob to select the BNC input that is connected to the fill signal from the DVE.
   - Use the middle **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 bottom **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 top **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 bottom **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 1-2** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).
   - **BNC** (to display the **BNC Menu 1-2**).
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 top **BNC** knob to select the BNC with the input video signal that you want to assign as the fill.
   - Use the middle **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

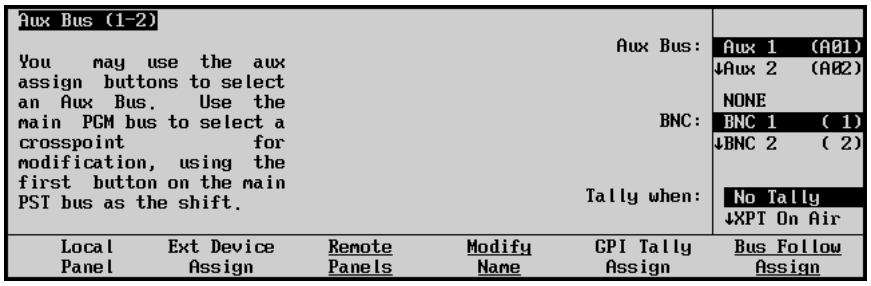
When an Aux Bus is used to route video to an external DVE, this procedure sets up the method for tallying that bus. By selecting certain parameters, you can tally the bus (lighting the red "**ON**" LED on the Aux panel) whenever the external DVE is used on air — or as part of the composite on air image.

For example, by telling the switcher that Aux Bus 1 feeds DVE 1, the Synergy 1 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** (located in the section "**Output Connection**" on page 4-8) to verify the destinations and functions of all Aux Bus outputs.
2. Navigate to the **External Device Assignment Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).

- **Aux Bus** (to display the **Aux Bus Menu 1-2**).
- **Ext Device Assign** (to display the **External Device Assignment Menu**).



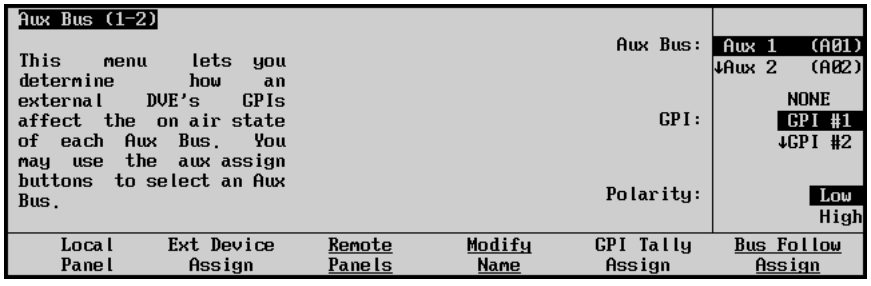
Aux Bus – External Device Assignment Menu

3. Assign the method by which the Aux Bus is tallied as follows:
   - Use the top **Aux Bus** knob to select the Aux Bus whose output is physically connected to the input of the external DVE.
   - Use the middle **BNC** knob to select the BNC *input* on the switcher that is connected to the output of the external DVE.
   - Use the bottom **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 12-16.

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 top **Aux Bus** knob to select the Aux Bus that you wish to associate with a GPI input trigger.
    - Use the middle **GPI** knob to select the desired input GPI port.
    - Use the bottom **Polarity** knob to select if the GPI triggers on a low or high-level pulse.

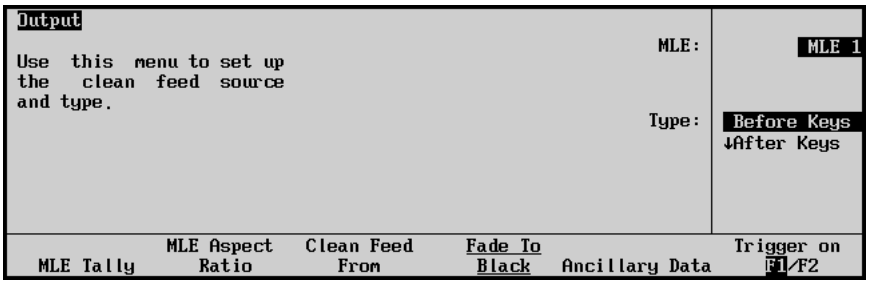
This completes the procedure for setting up Aux Bus tallies for your external DVE.

Clean Feed Setup

The **Clean Feed Menu** allows you to set the point from which the clean feed signal is derived. The selected signal then appears on the **CLEAN** output connector on the rear of the chassis.

Use the following procedure to set up the **Clean Feed** output:

1. Ensure that the **Clean Feed** option is installed. Refer to the section "**Clean Feed Installation**" on page 15-3 for details.
2. Navigate to the **Clean Feed Menu** as follows:
    - Press **HOME** (to display the **Main Menu 1-2**).
    - **MORE** (to display the **Main Menu 2-2**).
    - **Setup** (to display the **Setup Menu**).
    - **Installation** (to display the **Installation Menu 1-2**).
    - **Output** (to display the **Output Menu**).
    - **Clean Feed From** (to display the **Clean Feed Menu**).



Output Menu – Clean Feed

3. Use the middle **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** — Select this option to have the **Clean Feed** output pulled after the MLE's **BKGD/PST** bus, but *before* the two keys are added.
    - **After Keys** — Select this option to have the **Clean Feed** output pulled downstream of the two MLE Keyers — effectively, an additional output.
    - **Split** — Select this option to split your two keys, sending **PGM** out with **Key 1** and **Clean Feed** out with **Key 2**. Both keys are independently switched.
    - **Split Follow** — Select this option to also split your two keys, sending **PGM** out with **Key 1** and **Clean Feed** out with **Key 2**. However, both keys are slaved together, in sync with each other. If you *cut* one key, the other one automatically cuts in sync.

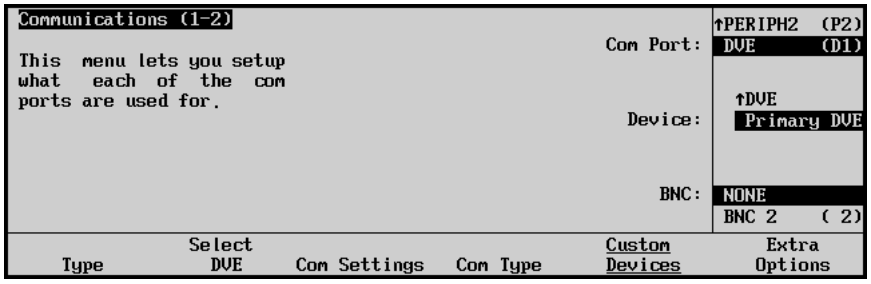
- **AlphaNomadCK** — The clean feed output will follow the last selected Chroma key. When a Chroma Key is selected on any Keyer, the clean feed signal will change to the alpha signal for the selected Keyer.
- **Alpha Key 1** — The clean feed output will be the alpha signal for **Key 1** of the MLE.
- **Alpha Key 2** — The clean feed output will be the alpha signal for **Key 2** of the MLE.

This completes the procedure to set up the **Clean Feed** output.

Setting Up Switcher Communications

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 2-31 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 "**Primary External DVEs**" on page 12-2 for details.
3. Navigate to the **Communications Menu 1-2** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).
   - **Communications** (to display the **Communications Menu 1-2**)
4. Press **Type** to display the **Communications Type Menu**.



Communications — Type Menu

5. Activate the DVE port as follows:
   - Use the top **Com Port** knob to select the DVE port, **DVE (D1)**.
   - Use the middle **Device** knob to select the device:

Note

An external DVE must be assigned as a Primary DVE if you want to trigger it with the **DVE Send** button in the **Transition Group**.

~ **OFF** — Select this option when no DVE is connected to the DVE port.

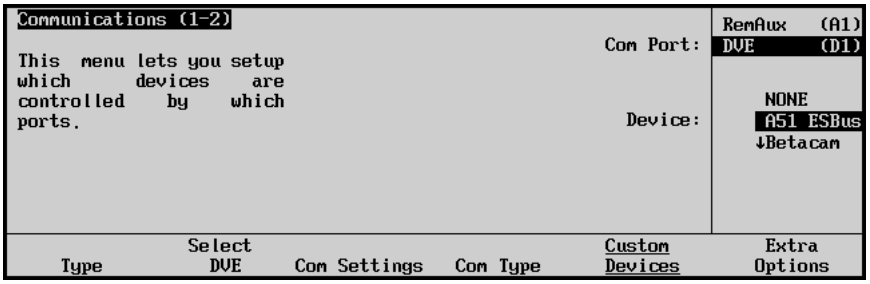
~ **Primary DVE** — Select this option when a Primary DVE is connected to the DVE port. Only the Primary DVE can be controlled with the **DVE Send** button.

Note

You must set **Primary DVE** to **Ext** from the **Personality Menu** if you want the **DVE Send** button to control the external DVE. Refer to the "**Setting Up DVE Send**" on page 12-15 for instructions.

- Use the bottom **BNC** knob to select the input BNC that the fill from the external primary DVE is connected to. Refer to the section "**Connection Diagrams**" on page 12-2 for more information on setting up DVE BNCs.

6. Press **Select DVE** to display the **Select DVE Menu**.



Communications — Select DVE Menu

7. Assign a specific external DVE to the DVE communications port as follows:

- Use the top **Com Port** knob to select the **DVE (D1)** port that the desired external DVE is connected to.

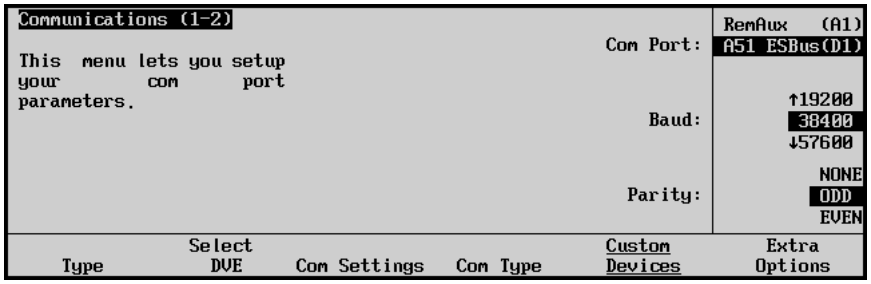
Note

The DVE port will be renamed to the BNC that you assigned to the port.

- Use the middle **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 12-30 for interface specifics.
  - ~ **Charisma** — Use this option to assign a **Questech Charisma VTL DVE** to the DVE port. Refer to the section, "**Questech Charisma VTL**" on page 12-27 for interface specifics.
  - ~ **DVExtreme** — Use this option to assign a **Pinnacle DVEXtreme** to the DVE port. Refer to the section, "**Pinnacle DVEXtreme**" on page 12-16 for interface specifics.
  - ~ **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. Refer to the section, "**Accom (Abekas) Dveous**" on page 12-22 for interface specifics.

- ~ **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 DPM-100** digital picture manipulator 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 **Com Settings Menu**.

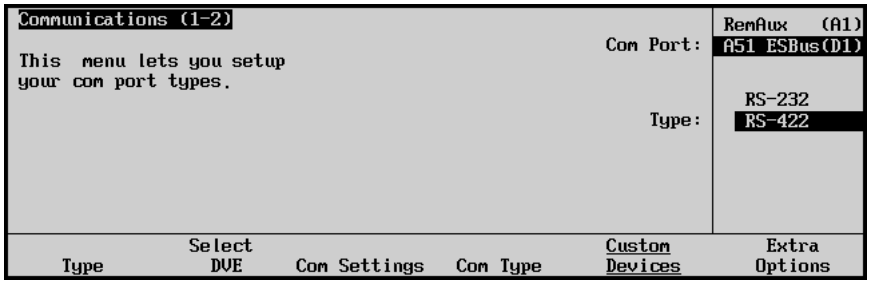


Communications — Com Settings Menu

Note

The baud rate and parity may be fixed depending upon the selected device. Refer to the documentation for your device to confirm the required settings for your DVE.

9. Select the communications protocols for the primary external DVE as follows:
   - Use the top **Com Port** knob to select the DVE you are setting the communications settings for.
   - Use the middle **Baud** knob to select the baud rate for the DVE. Refer to the section "**DVE Interface Specifications**" on page 12-16 for the specific settings for your DVE.
   - Use the bottom **Parity** knob to select the parity, **NONE**, **ODD**, or **EVEN** for the specific DVE. Refer to the section "**DVE Interface Specifications**" on page 12-16 for the specific settings for your DVE.
10. Press **Com Type** to display the **Com Type Menu**.



Communications — Com Type Menu

11. Select the type of serial communication that will be used to communicate with the DVE as follows:
    - Use the top **Com Port** knob to select the DVE you want to set the communications type for.
    - Use the middle **Type** knob to select the type of serial communications (RS-422 or RS-232) for the selected DVE port. Refer to the section "**DVE Interface Specifications**" on page 12-16 for the specific settings for your DVE.

This completes the procedure for setting up the communication with a primary external DVE. Refer to the section "**Programming Custom Control Buttons**" on page 12-33 for details on programming custom control buttons to perform DVE-specific tasks. Depending on the communications protocol that you chose in step 5, there may be additional options that need to be set. These protocol specific options are contained in the **Extra Options Menu**.

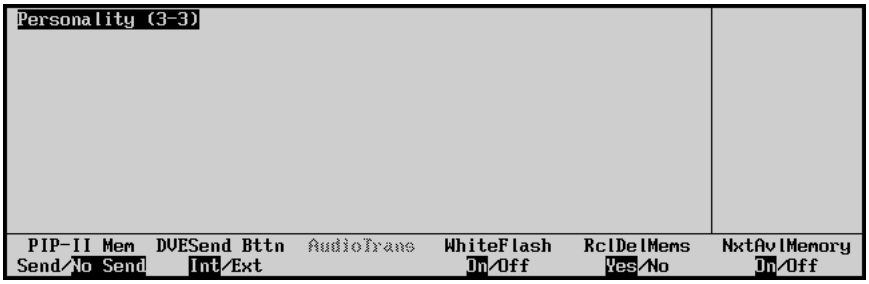
Setting Up DVE Send

Important

> In previous versions of Synergy 1 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 to **External**:

1. Navigate to the **Personality Menu 1-3** as follows:
    - Press **HOME** (to display the **Main Menu 1-2**).
    - **MORE** (to display the **Main Menu 2-2**).
    - **Setup** (to display the **Setup Menu**).
    - **Personality** (to display the **Personality Menu 1-3**).
2. Press **MORE** to display the **Personality Menu 2-3**.
3. Press **MORE** to display the **Personality Menu 3-3**.



Personality Menu 3-3

4. Toggle **DVESend Bttn** between **Int** and **Ext** as follows:
    - **Int** – When **Internal** is selected, the **DVE Send** button can be used for internal Squeeze & Tease wipes.
    - **Ext** – When **External** is selected, the **DVE Send** button is used for external DVE functions.

This completes the procedure for setting 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 1 Switcher interfaces.

Pinnacle DVEXtreme

This section provides information that pertains to interfacing the **Pinnacle DVEXtreme** to the Synergy 1 Switcher — as the *primary* DVE. Once the interface is set up, you will be able to perform a variety of DVEXtreme-specific functions directly from the Synergy 1 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 of the Synergy 1 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 "**Programming Custom Control Buttons**" on page 12-33 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 MLE to the DVEXtreme for processing — and then *back* into the MLE for keying.

Note

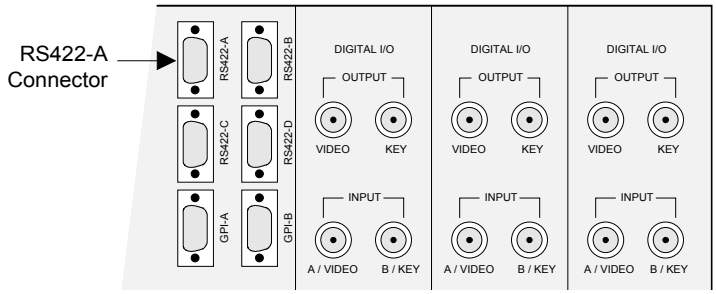
DVEXtreme V2 protocol is now implemented for enhanced external DVEXtreme control. This protocol gives the Synergy 1 Switcher full fader and transition rate control of the DVE.

In the ***Synergy 1 Operation Guide***, refer to Chapter 9, "**DVE Send**" for complete instructions on the **DVE Send** feature.

DVEXtreme Serial Connection

This section describes the requirements for interfacing the Synergy 1 Switcher to the Pinnacle DVEXtreme.

1. On the rear panel of the DVEXtreme, locate the connector marked **RS422-A**, as illustrated in the following figure:



DVEXtreme, Rear Panel – RS422-A Connector

2. Locate the connector marked **DVE** on the Synergy 1 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 Frame to DVEXtreme Wiring

Synergy 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

n/c = not connected

4. Using the custom cable, connect the **RS422-A** connector on the DVEXtreme to the **DVE** connector on the Synergy 1 frame.

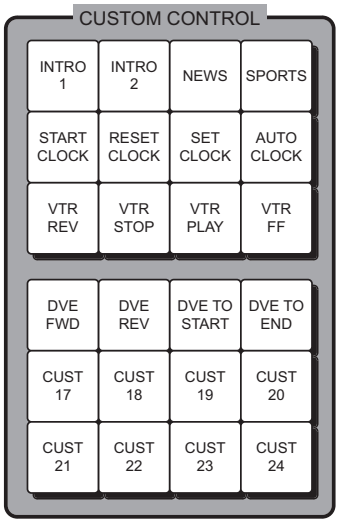
Operating Tip

When programming standard effects from a Synergy 1 Switcher, we recommend the following connections to a DVEXtreme:

Synergy	DVEXtreme
Aux 1	CH1 Video
Aux 2	CH 1 Key

Installing the Inserts

Use the inserts provided with your installation kit to label the DVE buttons in the **Custom Control** group of the Synergy 1 panel. One suggested layout is illustrated in the following figure.



Custom Control Group – Labelled DVE Buttons

Note that this layout is a subset of the available functions listed in the section, "**Available DVEXtreme Functions**" on page 12-16. You should arrange DVE functions as required for your specific operations. Please note:

- Refer to the section "**Installing the Inserts**" on page 12-24 for instructions on installing inserts.
- Refer to the section "**DVE Functions**" on page 12-33 for instructions on mapping DVEXtreme functions to a specific custom control button.

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 illustrated in the following figure:

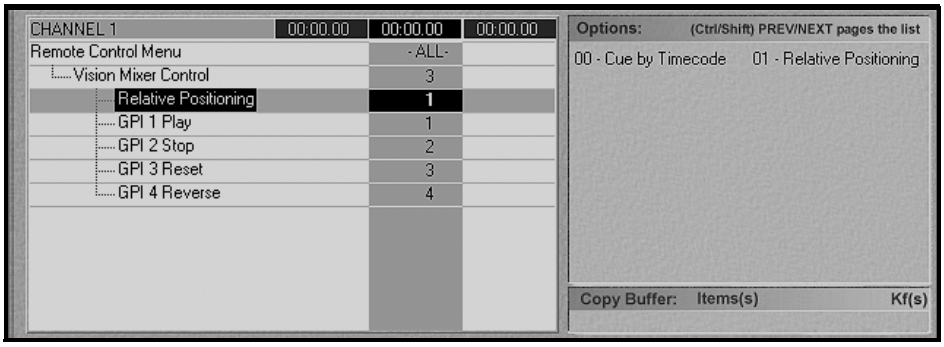
Remote Control Menu – Default Values

The following remote control settings must be used for proper operation with the Synergy 1 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 illustrated in the following figure.

Remote Control Menu – Vision Mixer Control Setting

- 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 programmed duration of the effect.



Remote Control Menu – Relative Positioning Setting

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 Aux panel's red "**ON**" LED 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
1	In 0
2	Ground
3	In 2
4	Ground
5	No connection
6	Ground
7	Out 0 +
8	Out 0 -
9	Out 1 +
10	Out 1 -
11	In 1
12	Ground
13	In 3
14	Ground
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 1 Switcher) to the desired GPI output lines on DVEXtreme.

Note

For the Synergy side of the connection, use the "**Standard GPI Pinout Table**" provided in Appendix A. If required, refer to the section "**Standard GPI Input Worksheet**" on page 16-6.

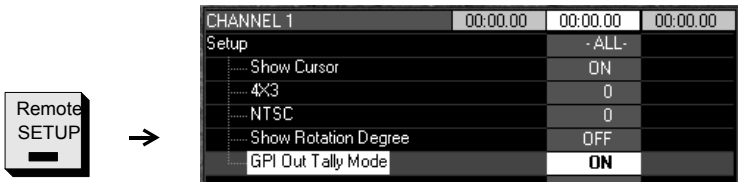
   If you have *already* wired your GPI inputs on DVEXtreme, simply add wiring for your GPI outputs to the same connector.

2. With the cable construction complete, connect one end of the cable to the GPI input connector (on Synergy) and the other cable end to DVEXtreme's **GPI-A** connector.

This concludes the procedure to connect GPI output lines for the DVEXtreme.

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, DVEXtreme's GPI output ports 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

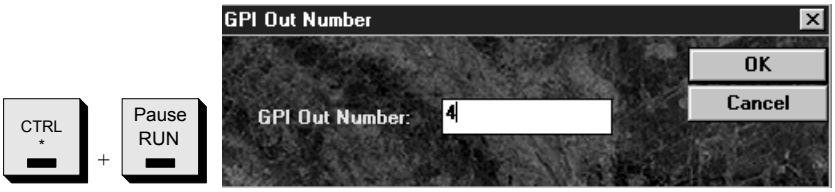
This mode is *recommended* for use with the Synergy 1 Switcher as an "active" source indication.

This concludes the procedure to set up automatic GPI output triggers for the DVEXtreme.

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, DVEXtreme's GPI output ports 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**.



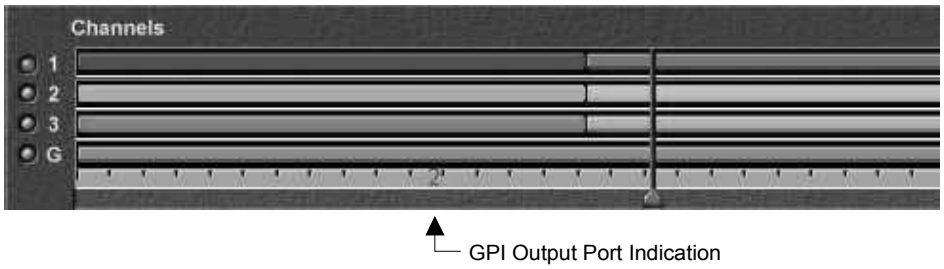
DVEXtreme Control Panel — GPI Out Number Dialog

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

This concludes the discussion for interfacing the **Pinnacle DVEXtreme** to the Synergy Switcher as the *primary* DVE.

Accom (Abekas) Dveous

This section provides information that pertains to interfacing the **Accom Dveous** to the Synergy 1 Switcher — as the primary *external* DVE. Once the interface is set up, you will be able to perform a variety of Dveous-specific functions directly from the Synergy 1 control panel — via RS-422 serial control.

Available Dveous Functions

The following set of basic Dveous functions can be mapped to the Synergy 1 Switcher's custom control buttons:

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 "**Special Functions**" on page 12-36 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 MLE to the Dveous for processing — and then *back* into the MLE for keying.

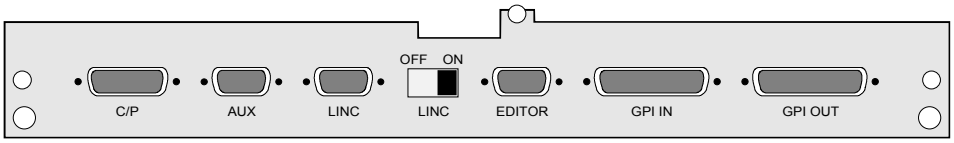
In the ***Synergy 1 Operation Guide***, refer to Chapter 9, "**DVE Send**" for complete instructions on the **DVE Send** feature.

Dveous Serial Connection

This section describes the requirements for interfacing the Synergy 1 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 Communications Board – Editor Connector

2. Locate the connector marked **DVE** on the Synergy 1 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 Frame to Dveous Wiring

Synergy 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

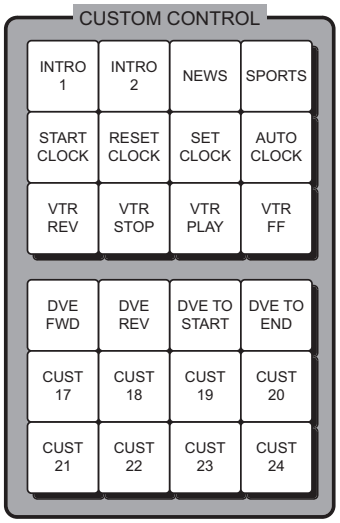
n/c = not connected

4. Using the custom cable, connect the Dveous' **Editor** connector to the **DVE** connector on the Synergy 1 frame.

This concludes the procedure to connect the Synergy Switcher to the Accom Dveous DVE.

Installing the Inserts

Use the inserts provided with your installation kit to label the DVE buttons in the Synergy panel's **Custom Control** group. One suggested layout is shown below.



Custom Control Group – Labelled DVE Buttons

Note that this layout is a subset of the available functions listed in section "**Available Dveous Functions**" on page 12-22. You should arrange DVE functions as required for your specific operations. Please note:

- Refer to the section "**Control Panel Pushbutton Inserts**" on page 4-5 for instructions on installing inserts.
- Refer to the section "**Special Functions**" on page 12-36 for instructions on mapping custom control DVE functions.

Dveous Setup Specifics

This section provides information regarding Dveous setups. The following topics are discussed:

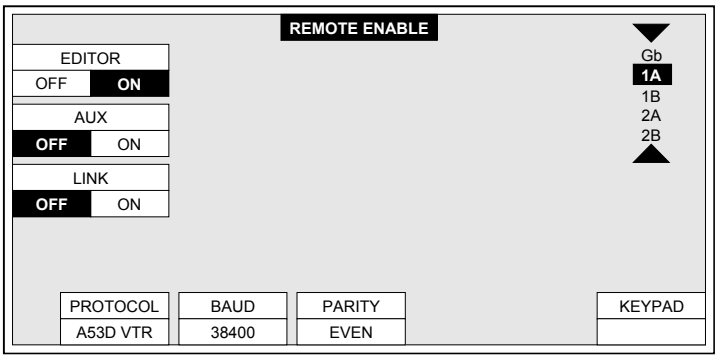
- Dveous Remote Control Setup
- Dveous GPI Output Connection

Dveous Remote Control Setup

On the Dveous, the **Remote Enable Menu** controls the way Dveous operates when connected to an external device.

Use the following procedure to set up the Dveous Remote Control:

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

In the example above, the following parameters are set:

- The Editor is On.
- The protocol is set to A53D VTRm-remt02.bmp(55%).
- The Baud rate is 38400.
- The Parity is 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.

Note

The settings for **Baud** and **Parity** on the Dveous should match those in the Synergy **Communications Menu**. A baud of **38400** and parity of **Even** are the *default* values in the Synergy **Communication Menu** 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, and 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, GPI outputs 6, 8, 10, and 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. (e.g. 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 1 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 lit on the Dveous panel. The Dveous remote interface can not 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** operations, 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 (e.g. if the cable is disconnected in the middle of a message or if an incorrect communication setup is sending incorrect messages etc.). 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 should not need to be reset but 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 specifies 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 1 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* DVE. Once the interface is set up, you will be able to 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 Synergy switcher's custom control buttons:

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 "**Programming Custom Control Buttons**" on page 12-33 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.

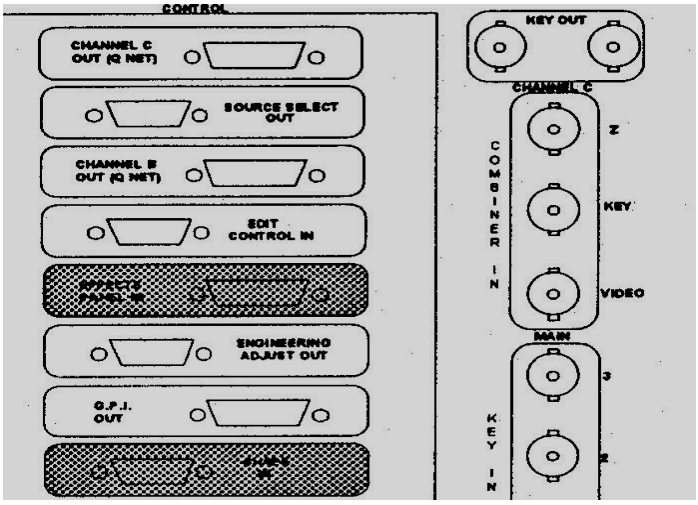
In the ***Synergy 1 Operation Guide***, refer to Chapter 9, "**DVE Send**" for complete instructions on the **DVE Send** feature.

Charisma Serial Connection

This section describes the requirements for interfacing the Synergy 1 Switcher to the Questech Charisma VTL.

Use the following procedure to interface the Synergy 1 Switcher to the Charisma VTL:

1. On the rear panel of the Charisma, locate the connector labelled **EDIT CONTROL IN**, as shown below:



Rear Panel — Questech Charisma VTL

2. Locate the connector labelled **DVE** on the Synergy 1 frame.
3. Construct an RS422 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 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

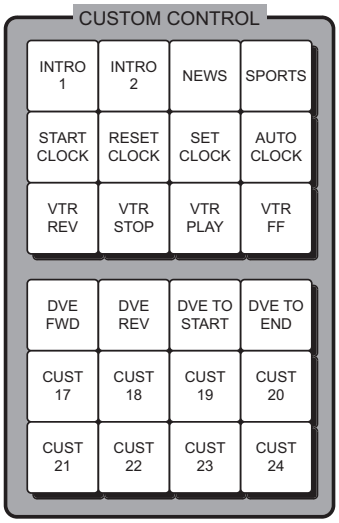
n/c = not connected

4. Using the Null Modem cable, connect the Charisma's **Edit Control In** connector to the Synergy frame's **DVE** connector.

This concludes the procedure to interface the Synergy 1 Switcher to the Charisma VTL.

Installing the Inserts

Use the inserts provided with your installation kit to label the DVE buttons in the Synergy 1 panel's **Custom Control** group. One suggested layout is shown below.



Synergy 1 Custom Control Group

Note that this layout is a subset of the available functions listed in the section "**Available Charisma Functions**" on page 12-27. You should arrange DVE functions as required for your specific operation. Please note:

- Refer to the section "**Control Panel Pushbutton Inserts**" on page 4-5 for instructions on installing inserts.
- Refer to the section "**Programming Custom Control Buttons**" on page 12-33 for instructions on mapping DVE functions to a specific custom control button.

Charisma Setup Specifics

This section provides instructions for setting up the Charisma. The Editor protocol on the Charisma itself 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. Select **SSVR protocol** using the first **modify** softkey below the screen.
5. Select the **Mainframe** device using the third **modify** softkey.
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. You must now set up the key transitions for the effect to ensure 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 1 Switcher.

DVE Betacam Protocol Specifics

This section provides set up information for the Decode NAKs (Not Acknowledgement) for those DVE devices using the Betacam protocol.

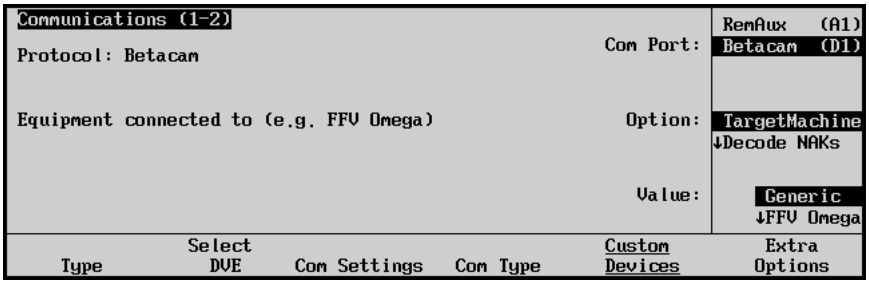
A NAK message is sent from the DVE device to the Synergy switcher to indicate that a Play command was received but not carried out. When you enable the **Decode NAKs** option, the Synergy switcher will act upon the NAK message and resend the Play command back to the DVE device. You can assign the number of fields for the switcher to wait for a message before resending the Play command.

Important

The **Decode NAKs** option is enabled by default. The settings should only be modified should you encounter problems using the Play commands with your DVE device or as advised by Ross Video Technical Support.

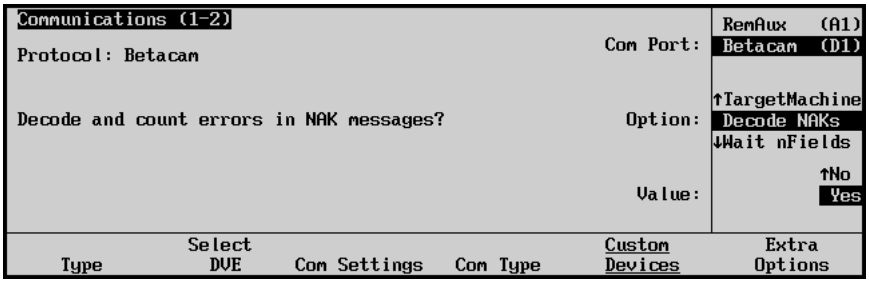
Use the following procedure to set up the Decode NAKs option:

1. Navigate to the **Communications Menu 1-2** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).
   - **Communications** (to display the **Communications Menu 1-2**).
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 top **Com Port** knob to select the device you want to assign a target machine for.
   - Use the middle **Option** knob to select **TargetMachine**.
   - Use the bottom **Value** knob to select the target machine that you are using.
4. Enable the Decode NAKs option as follows:



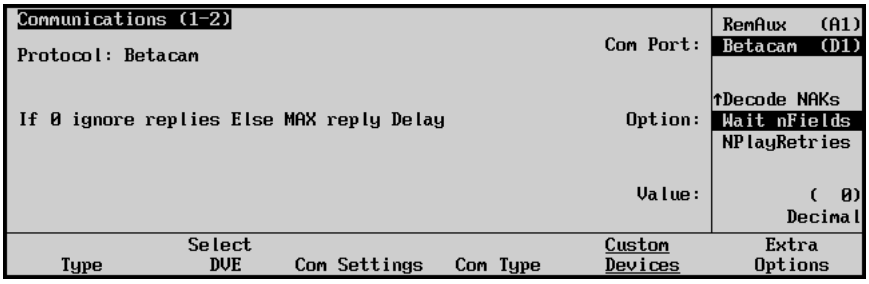
Communications — Extra Options (Decode NAKs) Menu

   - Use the middle **Option** knob to select **Decode NAKs**.
   - Use the bottom **Value** knob to select Yes or No as follows:
     ~ **Yes** — Select Yes to enable the Decode NAKs option.

Note

The **Decode NAKs** option is set to **Yes** by default.

     ~ **No** — Select No 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:



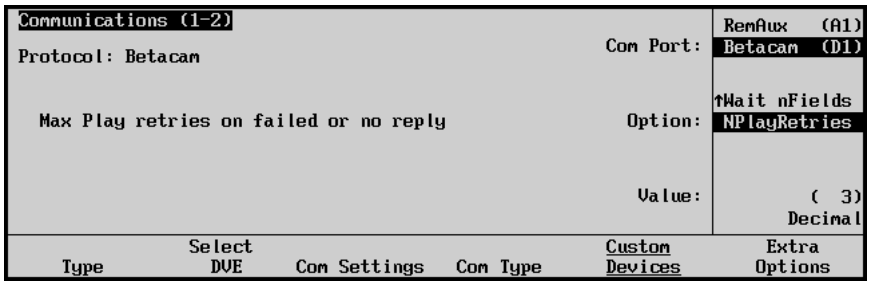
Communications — Extra Options (Wait nFields) Menu

- Use the middle **Option** knob to select **Wait nFields**.
- Use the bottom **Value** knob to select the number of fields you want the switcher to wait before assuming a NAK by default .

Note

The **Wait nFields** value is set to **3** by default.

6. Set the number of Play command retries the switcher will attempt to send to the device as follows:



Communications — Extra Options (NPlayRetries) Menu

- Use the middle **Option** knob to select **NPlayRetries**.
- Use the bottom **Value** knob to select the number of fields you want the switcher to wait before assuming a NAK by default.

Note

The **NPlayRetires** value is set to **4** by default.

This concludes the procedure to enable the Decode NAKs option for your Betacam DVE device.

Programming Custom Control Buttons

Once your primary DVE has been connected, and RS-422 communications have 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 switcher's **DVE Send** mode 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 (for example, **Recall Effect 24**, **Play**).

For complete details on setting up custom control banks and programming your custom control buttons, refer to the section "**Programming Control Panel Functions**" on page 8-10.

Operating Tip

As a recommendation, keep DVE functions *grouped* together on your custom control buttons, and label the keycaps accordingly.

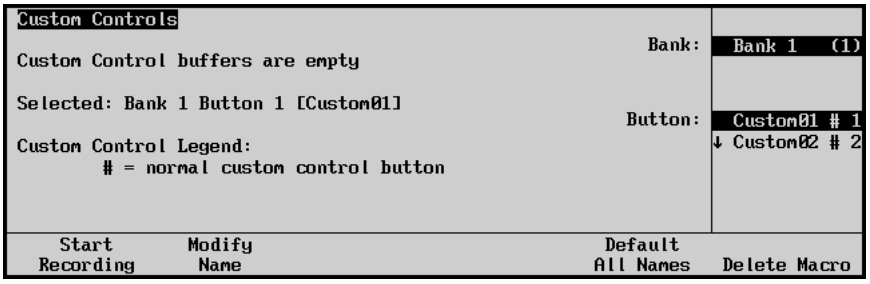
Make a note of the DVE *functions* that you wish to place on a button. These functions will be used in the procedure for completing the DVE Custom Control Worksheet.

DVE Functions

The Synergy 1 Switcher allows you to program custom control buttons with External DVE functions. Refer to the ***S&T 3D/WARP Owner's Guide*** for information on Internal DVE functions. Refer to the section "**DVE Interface Specifications**" on page 12-16 and your device documentation to learn more about the available functions of your DVE.

Use the following procedure to program custom control buttons that include special DVE functions:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **Custom Controls** (to display the **Custom Controls Menu**).



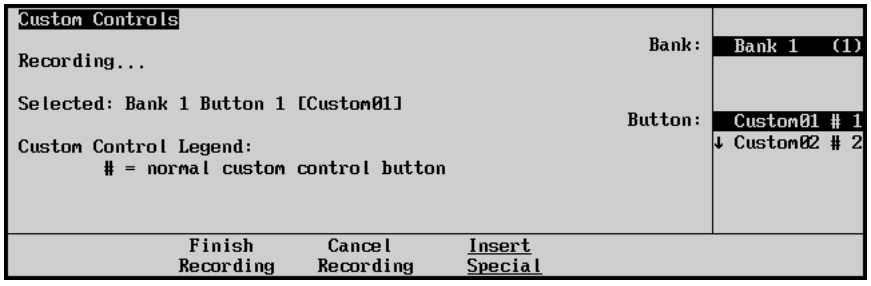
Custom Controls Menu

2. Select the custom control button you want to record to as follows:
   - Use the top **Bank** knob to select the custom control bank you want to record the custom control to.
   - Use the middle **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 functions grouped together on your *physical* custom control buttons.

3. Press **Start Recording** to display the **Recording Menu**.



Custom Controls — Recording Menu

4. Press **Insert Special** to display the **Insert Special Menu 1-2**.

Insert Special Menu 1-2

5. Press **DVE** to display the **Insert DVE Menu**. 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 connected to the Synergy 1 frame. Refer to the section "**DVE Communications Setup** " on page 12-7 for more information.

6. Select a DVE function to insert as follows:

   - Use the top **Device** knob to select the DVE that you want to assign the custom control to.

Important

The **Frame Advance**, **Frame Reverse**, **Key Frame Adv**, **Key Frame Rev**, and **Rewind** commands have not yet been implemented.

   - Use the middle **Function** knob to select the function that you want to assign to the selected DVE. Use the table "**DVE — Custom Control Functions**" on page 12-35 to determine which function you want to insert.

Note

The bottom **Effect** knob only applies to the insert **Recall** command. No value will be displayed for other commands.

   - Use the bottom **Effect** knob to select the effect you want to insert with the **Recall** command.

DVE — Custom Control Functions

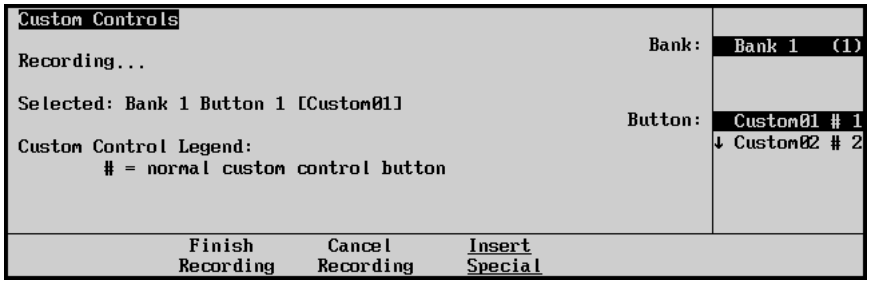
DVE Function	Description
Frame Advance	Advances the DVE effect forward by one frame.
Frame Reverse	Reverses the DVE effect backwards by one frame.
Go To Start	Cues the DVE to the start of its effect.
Go To End	Cues the DVE to the end of its effect.
Key Frame Advance	Cues the DVE effect to the next keyframe boundary.
Key Frame Reverse	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.

7. Press **Insert** to insert the selected command into the custom control and display the **Insert Special Menu 1-2**.
8. Insert additional commands if needed. When you have finished inserting commands, proceed to the next step to complete the procedure.

9. Press **UP ONE** to display the **Recording Menu**.



Custom Controls — Recording Menu

10. Press **Finish Recording** to finish recording to the selected custom control. The custom control button will stop flashing.

Operating Tip

You can also press the flashing custom control button, rather than the **Finish Recording** button, to finish recording.

Note

Any recorded custom control can be edited. Refer to the section **"Editing Custom Control Macros"** on page 8-71 for details.

This completes the procedure to program custom control buttons that include special DVE functions.

Once your custom control buttons have been programmed, be sure to properly name them. Refer to the section "**Naming Custom Controls**" on page 8-68 for more information on naming custom control buttons.

To play back your macro, press the custom control button on the control panel that you recorded the custom control macro to.

Special Functions

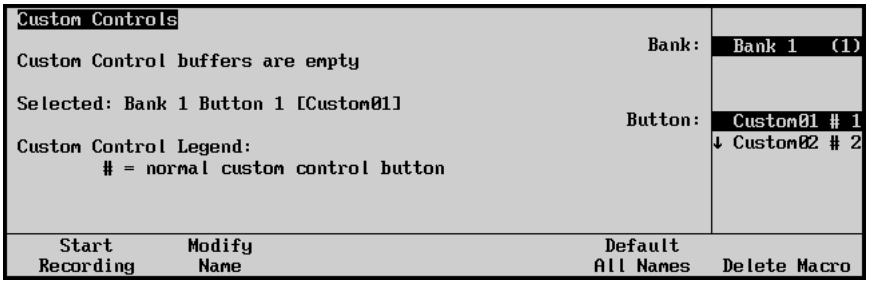
Custom control buttons can be programmed to perform a variety of special functions for operational convenience and efficiency. For external DVEs, these functions include:

- Reset GPI Custom Control
- Trigger GPI Custom Control

Reset GPI Custom Control

Use the following procedure to program a GPI reset:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **Custom Controls** (to display the **Custom Controls Menu**).



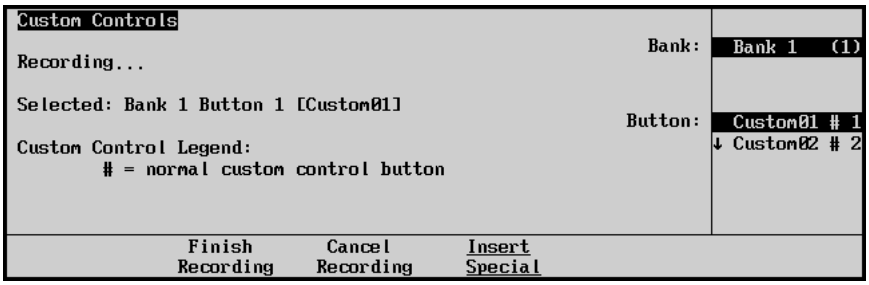
Custom Controls Menu

2. Select the custom control button you want to record to as follows:
   - Use the top **Bank** knob to select the custom control bank you want to record the custom control to.
   - Use the middle **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. Press **Start Recording** to display the **Recording Menu**.



Custom Controls — Recording Menu

4. Press **Insert Special** to display the **Insert Special Menu 1-2**.

5. Press **Special** to display the **Special Menu**.

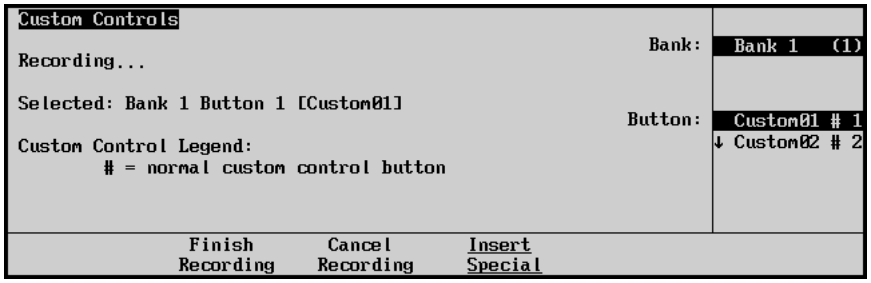
Insert Special — Special Menu

6. Assign the Reset GPI function to a GPI output as follows:
   - Use the top **Selection** knob to select **Reset GPI**.
   - Use the middle **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 9-25 for details.

7. Press **Insert** to insert the selected command into the custom control and display the **Insert Special Menu 1-2**.
8. Insert additional commands if needed. When you have finished inserting commands, proceed to the next step to complete the procedure.
9. Press **UP ONE** to display the **Recording Menu**.



Custom Controls — Recording Menu

10. Press **Finish Recording** to finish recording to the selected custom control. The custom control button will stop flashing.

Operating Tip

You can also press the flashing custom control button, rather than the **Finish Recording** button, to finish recording.

Note

Any recorded custom control can be edited. Refer to the section **"Editing Custom Control Macros**" on page 8-71 for details.

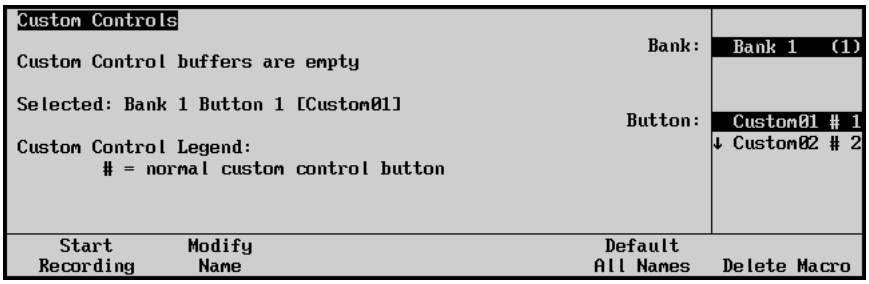
This completes the procedure to program a GPI reset custom control macro for your external DVE.

Once your custom control buttons have been programmed, be sure to properly name them. Refer to the section "**Naming Custom Controls**" on page 8-68 for more information on naming custom control buttons. To play back your macro, press the custom control button on the control panel that you recorded the custom control macro to.

Trigger GPI Custom Control

Use the following procedure to program a GPI output trigger:

1. Navigate to the **Custom Controls Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **Custom Controls** (to display the **Custom Controls Menu**)



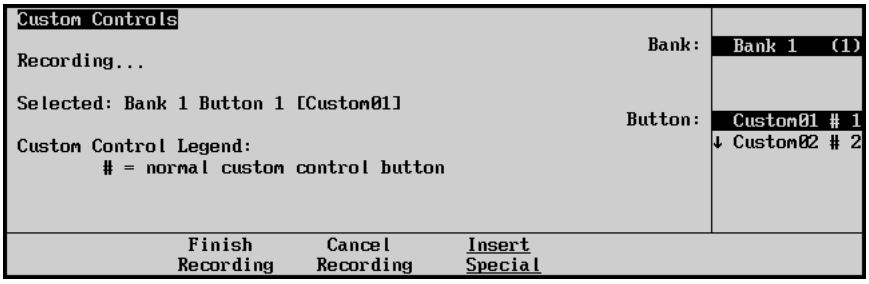
Custom Controls Menu

2. Select the custom control button you want to record to as follows:
   - Use the top **Bank** knob to select the custom control bank you want to record the custom control to.
   - Use the middle **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. Press **Start Recording** to display the **Recording Menu**.



Custom Controls — Recording Menu

4. Press **Insert Special** to display the **Insert Special Menu 1-2**.

Insert Special Menu 1-2

5. Press **Special** to display the **Special Menu**.

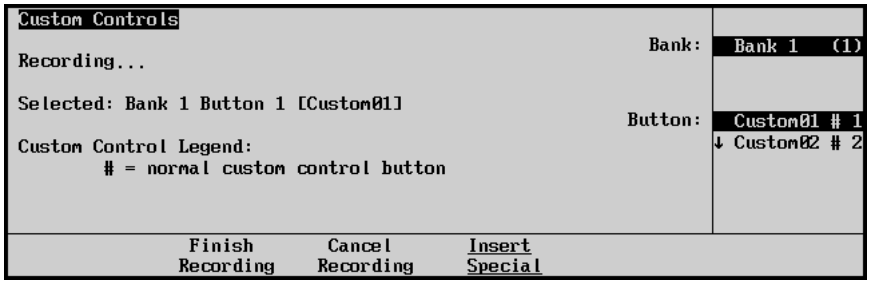
Insert Special — Special Menu

6. Assign the trigger GPI to a GPI output as follows:
   - Use the top **Selection** knob to select **Trigger GPI**.
   - Use the middle **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 9-25 for details.

7. Press **Insert** to insert the selected command into the custom control and display the **Insert Special Menu 1-2**.
8. Insert additional commands if needed. When you have finished inserting commands, proceed to the next step to complete the procedure.
9. Press **UP ONE** to display the **Recording Menu**.



Custom Controls — Recording Menu

10. Press **Finish Recording** to finish recording to the selected custom control. The custom control button will stop flashing.

Operating Tip

You can also press the flashing custom control button, rather than the **Finish Recording** button, to finish recording.

Note

Any recorded custom control can be editing. Refer to the section **"Editing Custom Control Macros**" on page 8-71 for details.

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 the section "**Naming Custom Controls**" on page 8-68 for more information on naming custom control buttons.

To play back your macro, press the custom control button on the control panel that you recorded the custom control macro to.

Completing the DVE Custom Control Worksheet

Use the following procedure to complete your Custom Control Worksheet:

1. Ensure that you have programmed and named your DVE custom control buttons. Refer to the section "**DVE Functions**" on page 12-33 for details.
2. Write the selected custom control bank at the top of the DVE Custom Control Worksheet.

Operating Tip

To avoid marking up the ***Synergy Series Installation Guide***, make extra copies of the worksheet provided in Appendix F, "**Switcher Installation Worksheets**".

3. Fill in the desired DVE function for each custom control button that you wish to program.
   - Remember that DVE functions can be strung together — on the same button.
   - Remember that there are 24 buttons available.
4. Ensure to specify the effect number (from **1** to **99**) if you are using the "**Recall**" function.

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	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

Appendix A. Specifications

In this Appendix

This appendix provides technical specifications and connector pinout diagrams. In addition, a comprehensive table is provided that lists all normal, GPI and special diagnostic Aux panel programming modes. The following sections are provided:

- Standard Components
- Physical Characteristics
- General Specifications
- Control Panel Specifications
- Rack Frame
- Rack Frame Connector Types
- Control Panel Connector Types
- Power Consumption
- Environmental
- Video Characteristics
- Video Processing
- Video Inputs
- Video Outputs
- Output Characteristics
- System Timing
- Frame Pinouts
- Control Panel Pinouts
- Remote Aux Panel Pinouts
- Aux Panel Programming Mode Summary

Note

All specifications are subject to change without notice.

Standard Components

The following components are standard on all Synergy series models:

- Complete Control Panel
- Chroma Keying in Every Keyer
- 2 Pattern Generators
- Wipes in Program/Preset
- 10 Untimed Aux Buses
- System Control Area
- Custom Control Macro Buttons
- 100 Event Memory System
- 12 GPI Inputs and 12 GPI Outputs
- 16 Tally Outputs
- 10 Meter (33 feet) Control Cable
- System Manuals
- 3 Year Transferable Warranty

Physical Characteristics

General Specifications

Parameter	Specification
# MLE System	1
# Serial Digital Inputs	16
# Crosspoint Buttons	16
# Serial Digital Outputs	14 (15 with optional Clean Feed)
# Matte Generators	5

Control Panel Specifications

Parameter	Specification
Width (Panel only)	27.75" (70.5 cm)
Width (with Desktop Wings)	28.75" (73.0 cm)
Height	9.25" (23.5 cm)
Depth (Panel only)	17.3125" (44.0 cm)
Depth (with Desktop Wings)	17.8125" (45.2 cm)
Height above desktop	7.0" (17.8 cm)
Desk cutout width	28.0" (71.12 cm)
Desk cutout depth	17.625" (44.77 cm)

Rack Frame

Parameter	Specification
# Rack Units (RU)	2
Width	19.00” (48.3 cm)
Height	3.5" (8.9 cm)
Depth	15.75" (40.0 cm)

Rack Frame Connector Types

Parameter	Specification
Video	BNC Type
Editor	D type, 9 pin
Peripheral 1 and 2	BNC and D type, 9 pin
DVE	D type, 9 pin
GPI I/O	D type, 25 pin
To control panel	8 pin shielded telco
AC power	3 pin IEC
Tally on Frame	12 pin detachable terminal block

Important

The cable for connecting the Synergy 1 Control Panel to the Synergy 1 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.

Control Panel Connector Types

Parameter	Specification
Remote 1 through 5	D type, 9 pin
Tally	D type, 25 pin
To rack frame	8 pin shielded telco
AUX	6 pin shielded telco
AC power 1 and 2	3 pin IEC

Power Consumption

Parameter	Specification
Input voltage	90V~250 VAC, 47~63 Hz
Frame (with all options)	Maximum of 180 Watts
Control panel	65 Watts

Environmental

Parameter	Specification
Panel and rack frame separation	1000 ft. (305m) max.
Ambient temperature range	0 - 40 degrees C

Please note:

- The video processing circuitry is air cooled.
- The control panel is convection cooled (no fans) for silent operation.

Video Characteristics

Video Processing

Parameter	Specification
Digital video and key processing	10-bit 4:2:2 component
Key transparency	256 levels
Video standards	525/625 line support, auto detect
Aspect Ratio	4:3 and anamorphic 16:9 switchable

System Timing

- All video inputs are zero-time relative to reference input. Auto timing corrects for inputs out of time by up to ± ¼ line (16us).
- Refer to the section **"System Timing"** on page 9-53 for a complete technical overview of Synergy auto-timing.

Video Inputs

Parameter	Specification
Number of inputs:	16
Equalization	>150m to 270 MHz
Impedance	75 ohm, terminating
Return loss	>20 dB

Please note:

- All 16 inputs are BNC Male, STMPE 259M-C serial digital, non-looping.
- Inputs can be used for either key or video.
- The reference input is STMPE 259M-C. External A-D conversion is required for analog references.

Video Outputs

Output Type	Quantity
PGM	2
PV	2
Aux Bus	10
Clean Feed (Optional)	1
Total Outputs	15

Please note:

- All outputs are BNC Male, 75 ohm.

Output Characteristics

Parameter	Specification
Return loss	>18 dB @ 270 MHz
Rise time	800ps +/- 10%
Signal level	800 mV +/- 10%
DC offset	0 volts
Rise & fall time	1 ns (20 - 80%)
Overshoot	<8%

Please note:

- All video outputs are 10 bit STMPE 259M-C serial digital.
- EDH is inserted into all video outputs except untimed Aux buses and can be disabled (via jumper) on a per-output basis.

Frame Pinouts

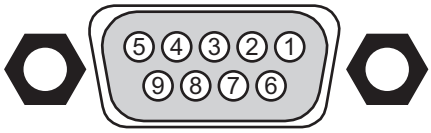
This section provides pinouts for the following frame connectors:

- Editor Connector Pinouts
- Tally Connector Pinouts
- DVE and Peripheral (9-pin D SUB) Connector Pinouts
- Panel Connector Pinouts
- Standard GPI I/O Connector Pinouts
- AC POWER Connector Pinouts

Editor Connector Pinouts

The following table lists pinouts for the **EDITOR** connector.

- **Connector type:** 9-pin "D" SUB Female
- **Format:** software selectable between RS-232 and RS-422



Peripheral Port on Frame

Pinouts — Editor Port

Pin #	RS-232	RS-422
1	n/c	n/c
2	Tx	TxA (Tx-)
3	Rx	RxB (Rx+)
4	Ground	Ground
5	Ground	Ground
6	n/c	n/c
7	n/c	TxB (Tx+)
8	n/c	RxA (Rx-)
9	n/c	n/c

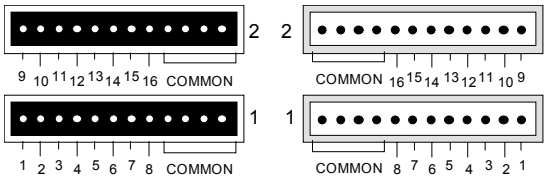
Note: n/c = not connected

Tally Connector Pinouts

The following table lists pinouts for the two **TALLY** connectors.

- **Connector type:** 12-pin detachable terminal block

- **Format:** Solid state relay contact closure to TALLY COMMON



Male on Frame

Female on Connector
(Connector Supplied)

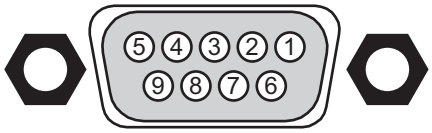
Pinouts — TALLY Connector

CONNECTOR 1		CONNECTOR 2	
PIN #	**FUNCTION**	**PIN #**	**FUNCTION**
1	Tally 1	1	Tally 9
2	Tally 2	2	Tally 10
3	Tally 3	3	Tally 11
4	Tally 4	4	Tally 12
5	Tally 5	5	Tally 13
6	Tally 6	6	Tally 14
7	Tally 7	7	Tally 15
8	Tally 8	8	Tally 16
9	Common	9	Common
10	Common	10	Common
11	Common	11	Common
12	Common	12	Common

DVE and Peripheral (9-pin D SUB) Connector Pinouts

The following table lists pinouts for the **DVE**, **Peripheral 1** and **Peripheral 2** (9-pin D SUB) connectors.

- **Connector type:** 9-pin “D” SUB Female
- **Format:** RS-422 Serial
- ***Peripheral 2A only*** Format: RS-232 Serial



Peripheral Port on Frame

Pinouts — DVE, PERIPHERAL 1, PERIPHERAL 2 (9-pin D SUB Female) Connector

Pin #	RS-422
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

Note: n/c = not connected

Pinouts — PERIPHERAL 2 (9-pin D SUB Female) Connector

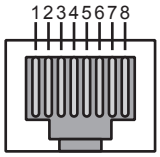
Pin #	RS-232
1	n/c
2	Tx
3	Rx
4	n/c
5	Ground
6	n/c
7	n/c
8	n/c
9	n/c

Note: n/c = not connected

Panel Connector Pinouts

The following table lists pinouts for the **PANEL** connector.

- **Connector type:** 8-pin RJ-45 Telco Jack, Shielded
- **Format (PANEL):** RS-422 Data Link to Control Panel



Panel Port on Frame

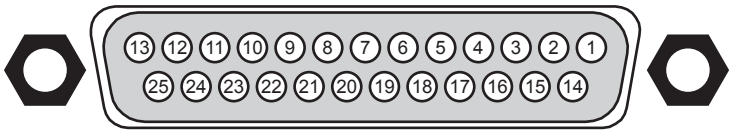
Pinouts — Panel Connector

Pin #	Function
1	TxB (Tx+)
2	TxA (Tx-)
3	RxB (Rx+)
4	RxA (Rx-)
5	ODD/EVEN+ (Transmit)
6	ODD/EVEN- (Transmit)
7	Ground (AC coupled)
8	Ground (AC coupled)

Standard GPI I/O Connector Pinouts

The following table lists pinouts for the **GPI I/O** connector.

- **Connector type:** 25-pin “D” SUB Female
- **GPI Out 1-12:** 0 ~ +5V swing (TTL-compatible) outputs
- **GPI In 1-12:** TTL-compatible inputs



GPI I/O Port on Frame

Pinouts — GPI I/O Connector

Pin #	Function
1	Ground
2	GPI In 12
3	GPI In 11
4	GPI In 10
5	GPI In 9
6	GPI In 8
7	GPI In 7
8	GPI In 6
9	GPI In 5
10	GPI In 4
12	GPI In 2
13	GPI In 1

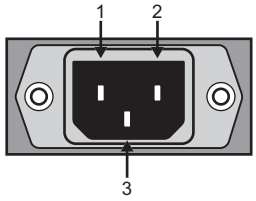
Pinouts — GPI I/O Connector

Pin #	Function
14	GPI Out 12
15	GPI Out 11
16	GPI Out 10
17	GPI Out 9
18	GPI Out 8
19	GPI Out 7
20	GPI Out 6
21	GPI Out 5
22	GPI Out 4
23	GPI Out 3
24	GPI Out 2
25	GPI Out 1

AC POWER Connector Pinouts

The following table lists pinouts for the **AC POWER** connector.

- **Connector type:** 3-Pin IEC Male



AC Power Port on Frame

Pinouts — AC POWER Connector

Pin #	Function
1	Neutral/Line 2
2	Line
3	Ground

Control Panel Pinouts

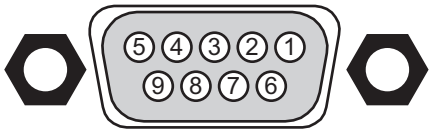
This section provides information for the following control panel connectors:

- Remote 1-5 Connector Pinouts
- Frame Connector Pinouts
- Aux Port
- Tally Connector Pinouts
- AC Power Connector

Remote 1-5 Connector Pinouts

The following table lists pinouts for the **REMOTE 1-5** connectors.

- Connector type: 9-pin “D” SUB Female
- Format: software selectable between RS-232 and RS-422



Remote Port on Control Panel

Pinouts — Remote Ports

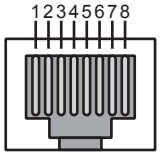
Pin #	RS-232	RS-422
1	Chassis	Chassis
2	Rx	RxA (Rx-)
3	Tx	TxB (Tx+)
4	n/c	n/c
5	Ground	Ground
6	n/c	n/c
7	n/c	RxB (Rx+)
8	n/c	TxA (Tx-)
9	n/c	n/c

Note: n/c = not connected

Frame Connector Pinouts

The following table lists pinouts for the **Frame** connector.

- **Connector type:** 8-pin RJ-45 Telco Jack, Shielded
- **Format:** RS-422 Data Link to Frame



Frame Port on Control Panel

Pinouts — Frame Connector

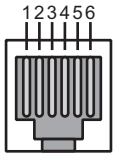
Pin #	Function
1	RxB (Rx+)
2	RxA (Rx-)
3	TxB (Tx+)
4	TxA (Tx-)
5	ODD/EVEN + (Receive)
6	ODD/EVEN – (Receive)
7	Ground
8	Ground

Aux Port

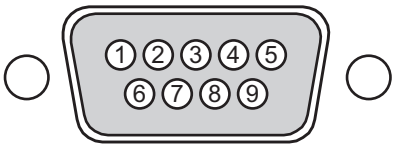
The Synergy 1 control panel requires an RJ-12 to DB9 adapter installed in **Remote Port 5** in order to connect a Remote Aux Panel.

The following table lists pinouts for the **AUX** connector.

- **Connector type:** 6-pin RJ-12 (Female) to DB9 (Male)



RJ-12 Port on Adapter



DB9 Port on Adapter

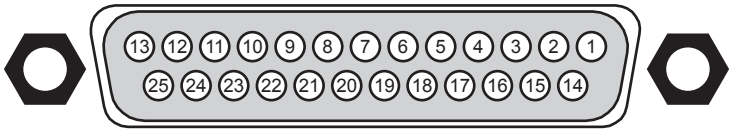
Pinouts — RJ-12 to DB9 Adapter

RJ-12 Pin #	DB9 Pin#
1 (white)	8
2 (black)	3
3 (red)	2
4 (green)	7
5 (yellow)	9
6 (blue)	1

Tally Connector Pinouts

The following table lists pinouts for the **Tally** connector.

- **Connector type:** 25-pin “D” SUB Female
- **Format:** Solid state relay contact closure to TALLY COMMON



Tally Port on Control Panel

Pinouts — Tally Connector

Pin #	Function
1	Tally 1
2	Tally 3
3	Tally 5
4	Tally 7
5	Tally 9
6	Tally 11
7	Tally 13
8	Tally 15
9	n/c
10	Common
11	Common
12	Common
13	Common
14	Tally 2
15	Tally 4
16	Tally 6

Pinouts — Tally Connector

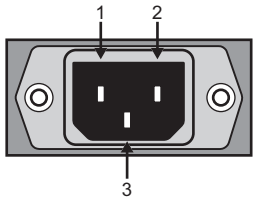
Pin #	Function
17	Tally 8
18	Tally 10
19	Tally 12
20	Tally 14
21	Tally 16
22	n/c
23	Common
24	Common
25	Common

Note: n/c = not connected

AC Power Connector

The following table lists pinouts for the **AC Power** connector.

- **Connector type:** 3-Pin IEC Male



AC Power Port on Control Panel

Pinouts — AC Power Port

Pin #	Function
1	Neutral/Line 2
2	Line
3	Ground

Remote Aux Panel Pinouts

This section provides pinouts for the following remote Aux panel connectors:

- Aux Panel GPI Connector
- Aux Panel J1 Connector Pinouts
- Aux Panel J5 Connector Pinouts

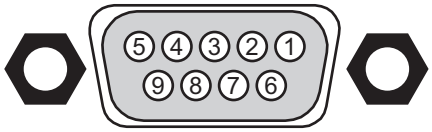
Aux Panel GPI Connector

The following table lists pinouts for the Remote Aux Panel **GPI** connector.

Note

These specifications apply to *new version* remote Aux panels only. Old version panels do not include the **GPI** connector.

- **Connector type:** 9-pin "D" SUB Female
- **Format:** Active low, short-to-ground to activate



GPI Connector Port on Remote Aux Panel

Pinouts — Remote Aux Panel GPI Connector

Pin #	Function *	GPI
1		Input 1
2		Input 2
3		Input 3
4		Input 4
5		Input 5
6		Input 6
7		Input 7
8		Input 8
9	n/a	Ground (common)
Programmed Group #		

* Copy the *Remote Aux Panel GPI Connector Pinouts* table page for each Remote Panel. Fill in the intended function (in the **Function** column) and fill in the **Programmed Group** number in the space provided. Store each sheet in a safe place for reference.

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.

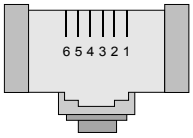
Aux Panel J1 Connector Pinouts

The following table lists pinouts for the Remote Aux Panel **J1** connector.

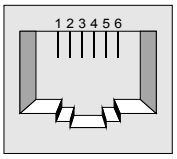
Note

These specifications apply to both old version panels (**J1**, **Extension**) and new version panels (**J1**, **Echo**).

- **Connector type:** 6-pin RJ-12 Telco Jack, Shielded
- **Format:** RS-422 Data Link from Remote Aux Panel to Panel



Male on Cable



Female on Remote Aux Panel

Pinouts — Aux Panel J1 Connector

Pin #	Function
1	RxA (Rx-)
2	RxB (Rx+)
3	TxA (Tx-)
4	TxB (Tx+)
5	RESET (Out)
6	Ground

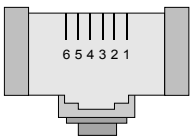
Aux Panel J5 Connector Pinouts

The following table lists pinouts for the Remote Aux Panel **J5** connector.

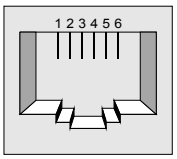
Note

These specifications apply to both old version panels (**J5**, **Control**) and new version panels (**J5**, **Main**).

- **Connector type:** 6-pin RJ-12 Telco Jack, Shielded
- **Format:** RS-422 Data Link from Switcher to Remote Aux Panel



Male on Cable



Female on Remote Aux Panel

Pinouts — Aux Panel J5 Connector

Pin #	Function
1	TxA (Tx-)
2	TxB (Tx+)
3	RxA (Rx-)
4	RxB (Rx+)
5	RESET (In)
6	Ground

Aux Panel Programming Mode Summary

The following table summarizes all normal, GPI and special diagnostic Aux panel programming modes for new generation remote Aux panels.

Aux Panel Programming Mode Button Assignment

Button LED	Normal Mode	Program Mode Bus Assignment	Program Mode GPI Offset	Program Mode GPI Status	Power Up Diagnostic
1 (Black)	Select Xpt 1	Display/modify this panel's rights to Aux Bus 1 (*6)	Set GPI to group 1 (offset 0) (*1)	GPI 8 Status (ON = shorted to ground)	Start Walking LED Test (*3)
2	Select Xpt 2	Display/modify this panel's rights to Aux Bus 2 (*6)	Set GPI to group 2 (offset 1)	GPI 7 Status (ON = shorted to ground)	Start Pushbutton LED Test (*3)
3	Select Xpt 3	Display/modify this panel's rights to Aux Bus 3 (*6)	Set GPI to group 3 (offset 2)	GPI 6 Status (ON = shorted to ground)	Start DUART Test (*3) (*4)
4	Select Xpt 4	Display/modify this panel's rights to Aux Bus 4 (*6)	Set GPI to group 4 (offset 3)	GPI 5 Status (ON = shorted to ground)	Start EEPROM Test (*3)
5	Select Xpt 5	Display/modify this panel's rights to Aux Bus 5 (*6)	Set GPI to group 5 (offset 4)	GPI 4 Status (ON = shorted to ground)	
6	Select Xpt 6	Display/modify this panel's rights to Aux Bus 6 (*6)	Set GPI to group 6 (offset 5)	GPI 3 Status (ON = shorted to ground)	
7	Select Xpt 7	Display/modify this panel's rights to Aux Bus 7 (*6)	Set GPI to group 7 (offset 6)	GPI 2 Status (ON = shorted to ground)	
8	Select Xpt 8	Display/modify this panel's rights to Aux Bus 8 (*6)	Set GPI to group 8 (offset 7)	GPI 1 Status (ON = shorted to ground)	
9	Select Xpt 9	Display/modify this panel's rights to Aux Bus 9 (*6)	**Switch to GPI Program Mode – GPI Status and LED will start flashing.**	**Switch to GPI Program Mode – GPI Offset and LED will stop flashing**.	
10	Select Xpt 10	Display/modify this panel's rights to Aux Bus 10 (*6)			
11	Select Xpt 11				
12	Select Xpt 12				
13	Select Xpt 13				
14	Select Xpt 13				
15	Select Xpt 15				
16 (Shift)	Select Xpt 16 or Shift	Toggle between allowing Shifted Xpts or allowing only simple Xpts (*3)	Xpt 16 to be used as Shift button for shifted Xpts when lit. (*2)	Xpt 16 to be used as Shift button for shifted Xpts when lit. (*2)	LED used in EEPROM test

Aux Panel Programming Mode Button Assignment

Button LED	Normal Mode	Program Mode Bus Assignment	Program Mode GPI Offset	Program Mode GPI Status	Power Up Diagnostic
Assign 1-10	Select Aux Bus	Display/modify this panel's rights to the 10 Aux Buses (assignable panels only).			
Clean Feed	Select Clean Feed	Switch to GPI program mode, LED flashes.	Switch to Assignment Program mode, LED off.	Switch to Assignment Program mode, LED off.	
Program	Select program	Send software version message to main panel	Send software version message to main panel	Send software version message to main panel	
Active LED	Indicates selected Aux Xpt is used in Program output	Flashing	Flashing (along with Clean Feed)	Flashing (along with Clean Feed)	Test Fail Status (*5)

Notes:

(*1) LED indicates the current group setting. Only one LED in the first eight switches can be ON at a time. A panel that has never been programmed may have all eight LEDs OF*F*, until it is programmed to one of the eight possible GPI groups. It is possible to set the group to off by pressing the current group button (all 8 buttons will flash when group is set to OFF in this way).

(*2) Changing the shift setting locally has no lasting effect. The main panel and frame software sets this value automatically to be the same as the panel during normal operations. The LED displays the state of this option when first entering program mode. The Remote Panel does not support special modes of shifted cross-points (such as Reverse Shift, etc.).

Note: Shift Indication is not present in GPI modes prior to remote panel firmware version 2.14.

(*3) To start a power-up diagnostic hold the button while applying power. Release button after panel has powered up. Tests are automatic except the Button test. In the button test, press the buttons and verify that the corresponding LEDs light.

(*4) DUART test requires special loop-back tester cables. Contact Technical Support for details.

(*5) In the EEPROM and DUART tests, the "Active" LED indicates Test Failed if the "Active" LED remains lit. In the same tests, the Xpt 1 (Black) LED indicates Test Passed when lit.

(*6) This function applies to dedicated Remote Aux Panels only.

Appendix B. Diagnostics

In This Appendix

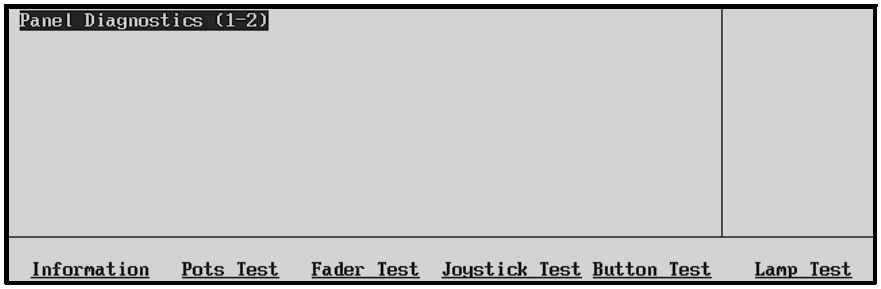
This appendix provides information on the full array of Synergy diagnostic tools. The following topics are discussed:

- Synergy Panel Diagnostic Tools
- Displaying Panel Information
- Potentiometer Test
- Fader Test
- Joystick Test
- Button Test
- Lamp Test
- Memory Test
- Display Test
- Disk Test
- TX/RX Test
- Tally Test
- DIP/Jump Test
- Frame Diagnostic Tools
- TX/RX Test
- DIP/Jump Test
- GPI Test
- Tally Test
- Internal Video Test

Synergy Panel Diagnostic Tools

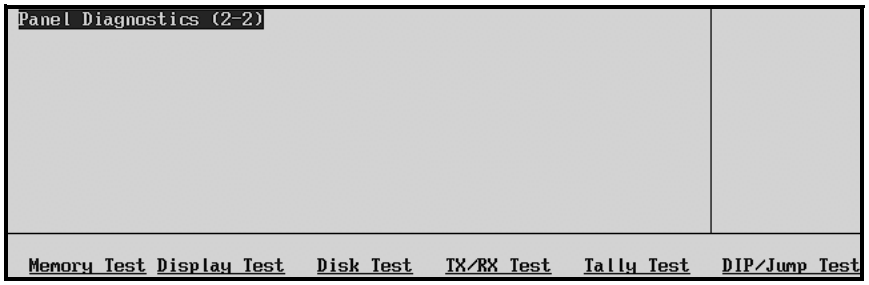
The Synergy 1 switcher provides a full array of panel diagnostic tools. Use the following procedure to reach the **Panel Diagnostics Menus**:

1. Navigate to the **Panel Diagnostics Menu 1-2** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Panel Diagnostics** (to display the **Panel Diagnostics Menu 1-2**)



Panel Diagnostics Menu 1-2

2. Press **MORE** to display the **Panel Diagnostics Menu 2-2**.



Panel Diagnostic Menu 2-2

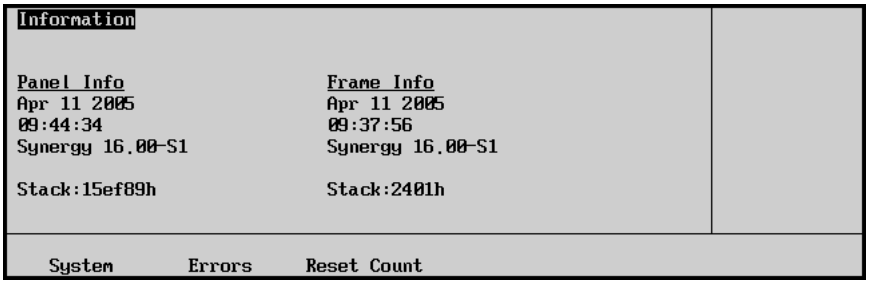
Each panel diagnostic function is discussed in the following sections.

Displaying Panel Information

Use the following procedure to display panel information:

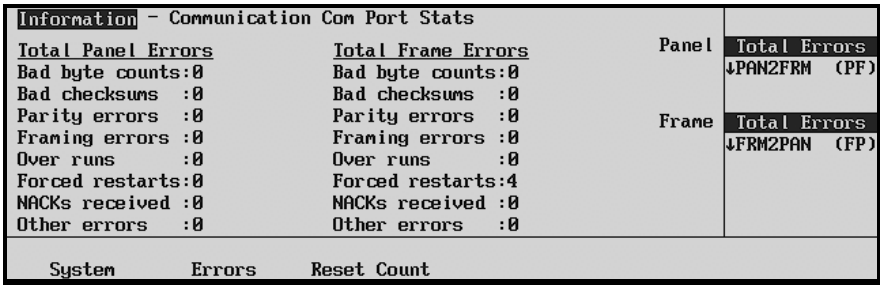
1. Navigate to the **Panel Diagnostics Menu 1-2** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Panel Diagnostics** (to display the **Panel Diagnostics Menu 1-2**)

2. Press **Information** to display the **Panel Information Menu**. The following figure is an example. Information is provided for both the panel and the frame.



Information Menu — System Display

3. Press **Errors** to display a list of **Errors**, a sample of which is shown below. Information is provided for both the panel and frame.



Information Menu — Errors Display

- Use the top **Panel** knob to scroll through a list of individual panel ports. The communication errors for the selected port is displayed in the main area of the display. If **Total Errors** is selected, the displayed information will include *all* communication errors for the entire panel.
- Use the middle **Frame** knob to scroll through a list of individual frame ports. The communication errors for the selected port is displayed in the main area of the display. If **Total Errors** is selected, the displayed information will include *all* communication errors for the entire frame.

4. Press **Reset Count** to manually reset the error counts. Please note, however, that all counts are automatically reset on power up.

All of the above menus are for reference only. No action can be taken.

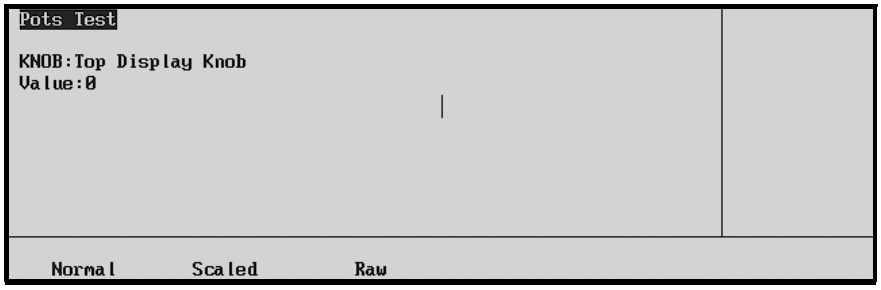
Potentiometer Test

The **Pots Test Menu** allows you to test the response of all potentiometers on the panel.

Use the following procedure to test the pots:

1. Navigate to the **Panel Diagnostics Menu 1-2** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Panel Diagnostics** (to display the **Panel Diagnostics Menu 1-2**)

2. Press **Pots Test** to display the **Pots Test Menu**.



Pots Test Menu

3. Select **Normal**, **Scaled** or **Raw** values for the menu display, and test each panel potentiometer as required.

Note

Contact **Technical Support** for details on each display value.

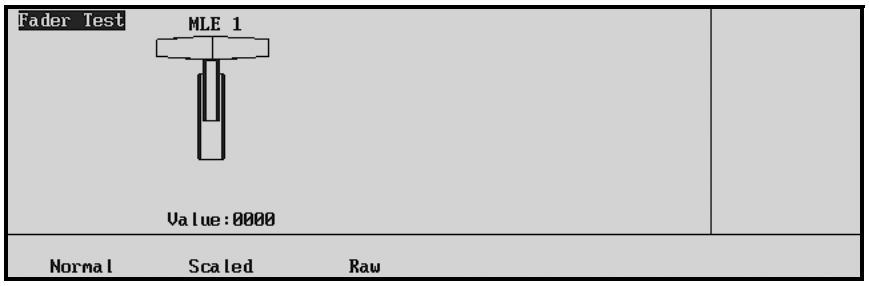
This completes the procedure to test the pots.

Fader Test

The **Fader Test Menu** allows you to test the MLE fader on the panel.

Use the following procedure to test the fader:

1. Navigate to the **Panel Diagnostics Menu 1-2** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Panel Diagnostics** (to display the **Panel Diagnostics Menu 1-2**)
2. Press **Fader Test** to display the **Fader Test Menu**.



Fader Test Menu

3. Select **Normal**, **Scaled** or **Raw** values for the menu display, and test the panel fader as required.

Note

Contact **Technical Support** for details on each display value.

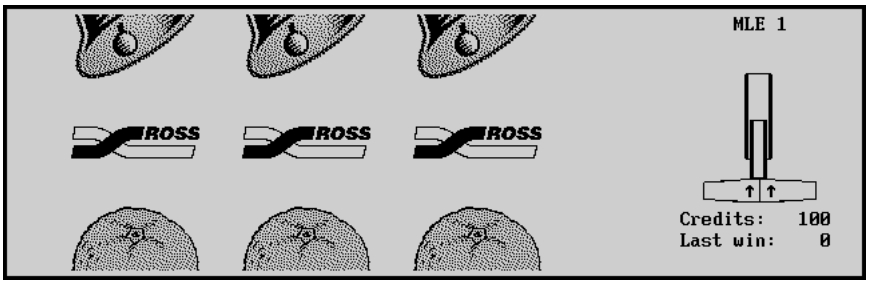
This completes the procedure to test the fader.

Synergy Slots

The Synergy control panel incorporates a special mode in which pseudo-random information is statistically measured on a cumulative basis.

Use the following procedure to play the Synergy Slots:

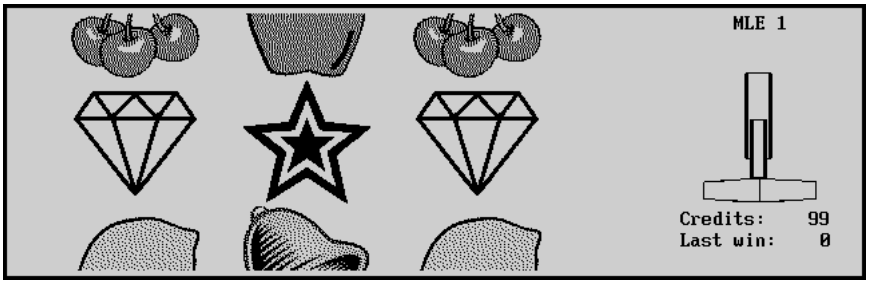
1. Navigate to the **Fader Test Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu 1-2**).
   - **Panel Diagnostics** (to display the **Panel Diagnostics Menu 1-2**).
   - **Fader Test** (to display the **Fader Test Menu**)
2. Press the **F6** softkey to display the **Synergy Slots Menu**.



Synergy Slots Menu

This action causes all button LEDs to turn off, with only the **F1** and **MORE** softkeys, and the **Fader** in the **Transition Area** of MLE 1 remaining active. The Fader serves as a "slot machine arm".

3. Move the fader in the Transition Area of MLE 1 first to the upper limit and then to the lower limit.
   - This will cause the Synergy Slots to cycle for several seconds, and then settle on various pay line symbols.



Synergy Slots Menu — Pay line Symbols

   - When a winning combination of pay line symbols occurs, the panel reacts as follows:
     ~ the button LEDs on the lower area of the control panel flash randomly
     ~ the number of credits won flashes with the new total number of credits on the **Synergy Slots Menu**

- Winning pay line symbol combinations award credits as per the payout table "**Pay Line Payout Table**" on page 14-6. The average payoff rate is approximately 239.4 percent.

Operating Tip

You can also press **MORE** to display the **Pay Line Payout Table**.

Pay Line Payout Table

Pay Line Symbols	Credit Payout
3 Ross Logos	1000
3 Lucky 7s	250
3 Oranges	30
3 Lemons	25
3 Apples	20
3 Cherries	20
3 Bells	15
3 Bars	15
3 Stars	10
3 Diamonds	10
2 Ross Logos	10
1 Ross Logo	3

- The amount of credits won on any one pull of the arm will determine the number of flashing buttons on the panel. There are three "levels" of a "win". Refer to the "**LED Illumination Levels Table**" on page 14-6 for detailed information.
- The highest number of credits you can accumulate is 9999, and the lowest is 0.

LED Illumination Levels Table

Level	% of LEDs Illuminated	Credits Won
1	6.25%	< 10
2	12.5%	10 to 100
3	25%	> 100

4. Exit the Synergy Slots as follows:
   - Press **HOME** to display the **Main Menu 1-2**.

   OR

   - Press **UP ONE** to display the **Fader Test Menu**.

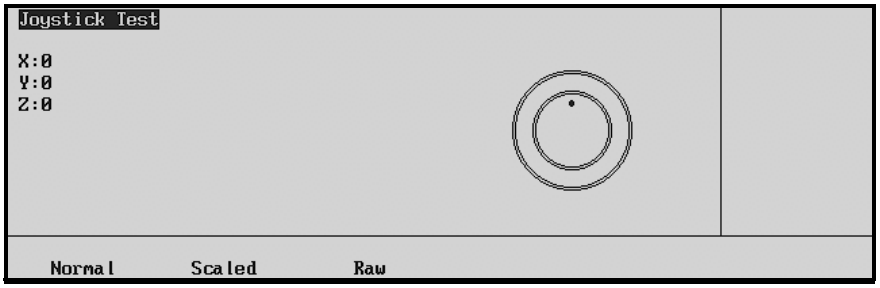
This concludes the procedure to play the Synergy Slots.

Positioner Test

The **Joystick Test Menu** allows you to test all three axes of the Positioner.

Use the following procedure to test the Positioner:

1. Navigate to the **Panel Diagnostics Menu 1-2** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Panel Diagnostics** (to display the **Panel Diagnostics Menu 1-2**).
2. Press **Joystick Test** to display the **Joystick Test Menu**.



Joystick Test Menu

3. Select **Normal**, **Scaled** or **Raw** values for the menu display, and test each Positioner axis as required.

Note

Contact **Technical Support** for details on each display value.

This completes the procedure to test the Positioner.

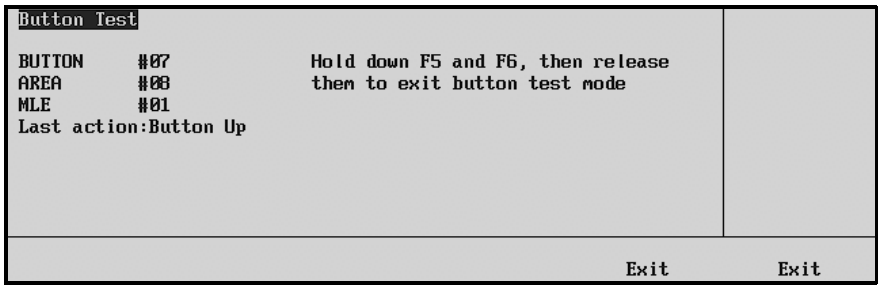
Button Test

The **Button Test Menu** allows you to test all pushbuttons on the switcher panel.

Use the following procedure to test the buttons:

1. Navigate to the **Panel Diagnostics Menu 1-2** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Panel Diagnostics** (to display the **Panel Diagnostics Menu 1-2**).

2. Press **Button Test** to display the **Button Test Menu**.



Button Test Menu

3. Press each button as required.
4. To exit the menu, press *both* **Exit** buttons beneath the display.

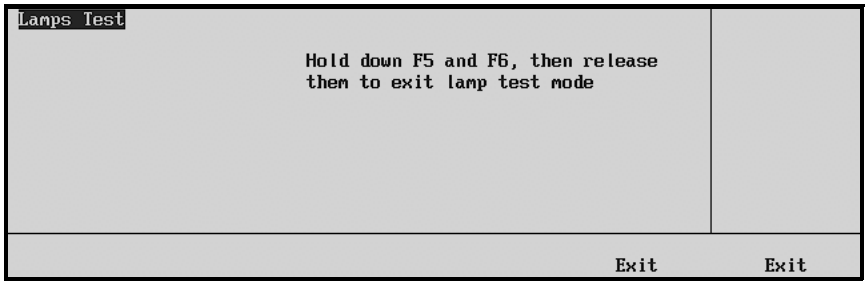
This completes the procedure to test the buttons.

Lamp Test

The **Lamp Test Menu** allows you to test large groups of buttons on the panel.

Use the following procedure to test the lamps:

1. Navigate to the **Panel Diagnostics Menu 1-2** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Panel Diagnostics** (to display the **Panel Diagnostics Menu 1-2**).
2. Press **Lamp Test** to display the **Lamp Test Menu**.



Lamp Test Menu

3. Press buttons in selected panel regions, to test *all lamps* in those regions as required.
4. To exit the menu, press *both* **Exit** buttons beneath the display.

This completes the procedure to test the lamps.

Memory Test

The **Memory Test Menu** allows you to test various system EPROMs.

Use the following procedure to test the memory:

1. Navigate to **Panel Diagnostics Menu 2-2** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Panel Diagnostics** (to display the **Panel Diagnostics Menu 1-2**)
   - **MORE** (to display the **Panel Diagnostics Menu 2-2**)
2. Press **Memory Test** to display the **Memory Test Menu**.

Memory Test Menu

3. Press **Test** to initiate the test of the first EPROM.
   - Press **Test** again to continue testing each EPROM in succession. The menu will report **Pass** or **Fail** per the results of each test.

This completes the procedure to test the memory.

Display Test

The **Display Test Menu** allows you to test the system's main menu display.

Use the following procedure to test the display:

1. Navigate to **Panel Diagnostics Menu 2-2** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Panel Diagnostics** (to display the **Panel Diagnostics Menu 1-2**)
   - **MORE** (to display the **Panel Diagnostics Menu 2-2**)

2. Press **Display Test** to display the **Display Test Menu**.

Display Test Menu

3. Press *any button* below the display to advance to the next in the series of display tests. A variety of tests are available.

This completes the procedure to test the display.

Disk Test

The **Disk Test Menu** allows you to test the floppy disk drive.

Use the following procedure to test the disk:

1. Navigate to **Panel Diagnostics Menu 2-2** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Panel Diagnostics** (to display the **Panel Diagnostics Menu 1-2**)
   - **MORE** (to display the **Panel Diagnostics Menu 2-2**)
2. Press **Disk Test** to display the **Disk Test Menu**.

Disk Test Menu

3. Insert a blank disk or a pre-formatted disk into the drive.
4. Press **Test** to begin the disk read/write test. The menu will report **Pass** or **Fail** per the results of the test.

Caution

Do NOT remove the disk from the disk drive before the LED on the disk drive goes out. Doing so may destroy the data on your disk, as well as the data on the next disk you insert into the disk drive.

This completes the procedure to test the disk.

TX/RX Test

The **TX/RX Test Menu** allows you to test panel communications with various remote control and communications ports.

Use the following procedure to test panel TX/RX functions:

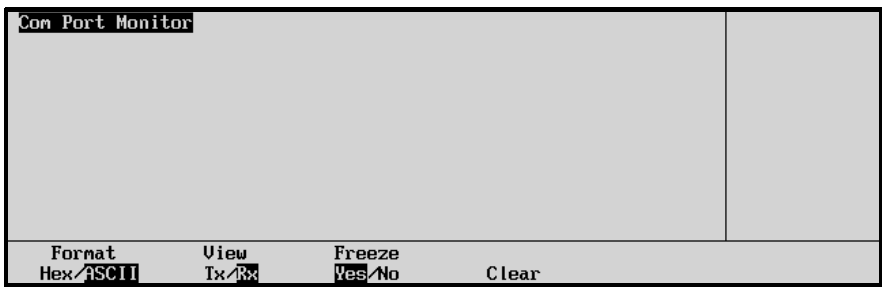
1. Navigate to **Panel Diagnostics Menu 2-2** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Panel Diagnostics** (to display the **Panel Diagnostics Menu 1-2**)
   - **MORE** (to display the **Panel Diagnostics Menu 2-2**)
2. Press **TX/RX Test** to display the **Panel TX/RX Test Menu**.
3. Attach the proper RS-232 or RS-422 loop back device.

Panel TX/RX Test Menu

4. Use the middle **Com Port** knob to select the port that you wish to test.
5. Press **Test** to begin the TX/RX test. The menu will report **Pass** or **Fail** per the results of the test.
6. Repeat steps 4 and 5 for additional ports that you wish to test.
7. Press **Monitor** to display the **Com Port Monitor Menu**. This menu monitors the traffic on the port selected in step 3.

Note

This option is used primarily for troubleshooting and diagnostic purposes. Therefore, the user should not need to use this menu. Contact **Ross Video Technical Support** for further information if necessary.



Com Port Monitor Menu

8. Press **Format** to toggle between **Hex** and **ASCII**. This will change the way the information is displayed. In **Hex** mode, the raw data is displayed as Hexadecimal numbers. In **ASCII** mode, the data is displayed as printed characters.
9. Press **View** to toggle between **Tx** and **Rx**. **Tx** displays the traffic being transmitted from the panel, while **Rx** shows the traffic being received by the panel.
10. Press **Freeze** to toggle between **Yes** and **No**. If **Yes** is selected, the current data is frozen on the display and new traffic data is not recorded. If **No** is selected, the old traffic data is continuously cycled out to allow space for the newest traffic data to be displayed.
11. Press **Clear** to clear all recorded data for the selected **Tx** or **Rx** traffic.

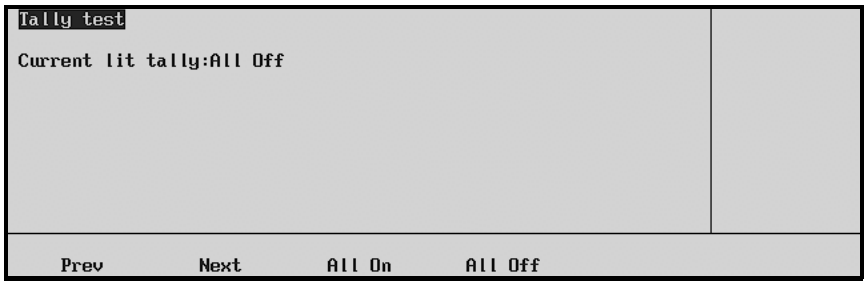
This completes the procedure to test panel TX/RX functions.

Tally Test

The **Tally Test Menu** allows you to test all tally relays.

Use the following procedure to test tally relays:

1. Navigate to **Panel Diagnostics Menu 2-2** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Panel Diagnostics** (to display the **Panel Diagnostics Menu 1-2**)
   - **MORE** (to display the **Panel Diagnostics Menu 2-2**)
2. Press **Tally Test** to display the **Tally Test Menu**.



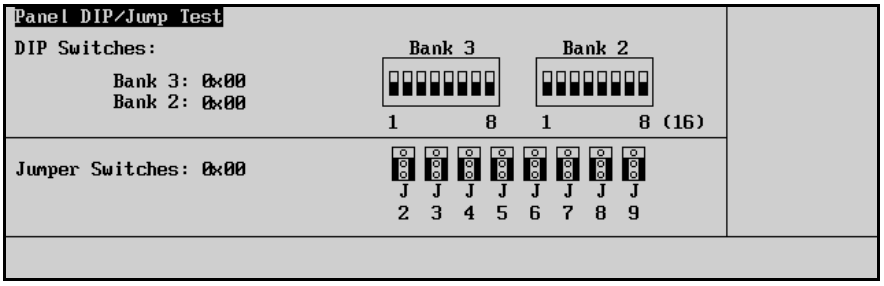
Tally Test Menu

3. Select the desired tally function:
   - Press **Prev** to test the previous relay (as indicated on the menu).
   - Press **Next** to test the next relay (as indicated on the menu).
   - Press **All On** to turn all tally relays on.
   - Press **All Off** to turn all tally relays off.

DIP/Jump Test

The **DIP/Jump Test** allows you to test the DIP and jumper switches in the panel with the aid of a graphical representation on the display. Use the following procedure to test the panel DIP and jumper switches:

1. Navigate to **Panel Diagnostics Menu 2-2** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Panel Diagnostics** (to display the **Panel Diagnostics Menu 1-2**)
   - **MORE** (to display the **Panel Diagnostics Menu 2-2**)
2. Press **DIP/Jump Test** to display the **DIP/Jump Test Menu**:



Panel DIP/Jump Test Menu

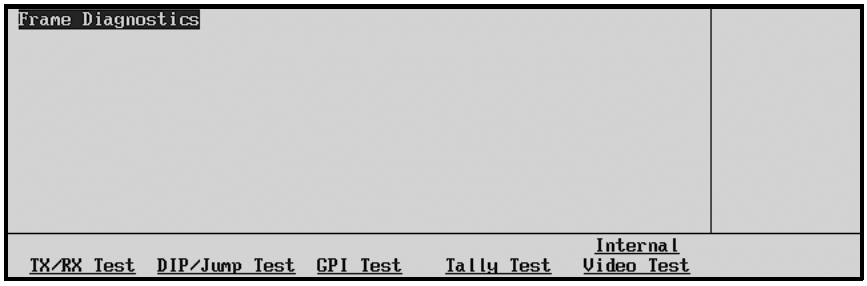
The graphical representation runs in real time, meaning any changes made to the physical state of the panel DIP or jumper switches will be displayed instantly. However, as the switches are located within the electronics bay inside the control panel and are for factory use only, we do not advise accessing these switches without first contacting Technical Support for assistance.

Frame Diagnostic Tools

All Synergy switchers provide several frame diagnostic tools.

Use the following method to navigate to the **Frame Diagnostics Menu**:

- Press **HOME** (to display the **Main Menu 1-2**)
- **MORE** (to display the **Main Menu 2-2**)
- **Setup** (to display the **Setup Menu**)
- **Frame Diagnostics** to display the **Frame Diagnostics Menu**.



Frame Diagnostics Menu

Each diagnostic function is discussed in the following sections:

- TX/RX Test
- Frame Monitoring
- DIP/Jump Test
- GPI Test
- Tally Test
- Internal Video Test

TX/RX Test

The **TX/RX Test Menu** allows you to test frame communications with various remote control and communications ports.

Frame Testing

Use the following procedure to test frame TX/RX functions:

1. Navigate to the **Frame Diagnostics Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Frame Diagnostics** (to display the **Frame Diagnostics Menu**)

2. Press **TX/RX Test** to display the **Frame TX/RX Test Menu**.

Frame TX/RX Test Menu

3. Attach the proper RS-232 or RS-422 loop back device.
4. Use the middle **Com Port** knob to select the port that you wish to test.
5. Press **Test** to begin the Frame TX/RX test. The menu will report **Pass** or **Fail** per the results of the test.

Note

Remote 5 can only be tested if it is enabled in the **Installation Communications Menu**. **Auxpan 1** cannot be tested while **Remote 5** is enabled.

Testing of the **Pan2Frm** panel /frame port must be performed when the panel is not connected to the frame (stand alone mode). If the menu reverts to the splash screen, press **HOME** three times to get back to the main menu, then re-enter the **Diagnostics Tx/Rx Menu** and perform the test (a loop back test connector is required).

6. Repeat steps 4 and 5 for additional ports that you wish to test.

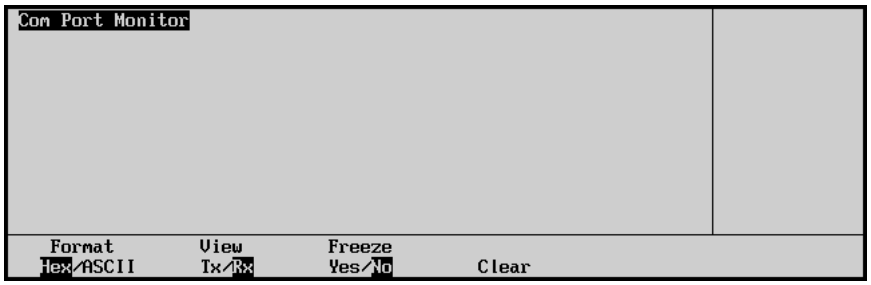
Frame Monitoring

Use the following procedure to monitor frame TX/RX functions:

1. Navigate to the **Frame Diagnostics Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Frame Diagnostics** (to display the **Frame Diagnostics Menu**)
2. Press **TX/RX Test** to display the **Frame TX/RX Test Menu**.

Frame TX/RX Test Menu

3. Use the middle **Com Port** knob to select the port that you wish to monitor.
4. Press **Monitor** to display the **Com Port Monitor Menu**.



Com Port Monitor Menu

5. Toggle the **Format** button between **Hex** and **ASCII** to set how the information is displayed.
   - **Hex** — Use this option to display the raw data as Hexadecimal numbers.
   - **ASCII** — Use this option to display the data as printed characters.
6. Toggle the **View** button between **Tx** and **Rx** to display traffic flow.
   - **Tx** — Use this option to display the traffic being transmitted from the panel.
   - **Rx** — Use this option to display the traffic being received by the panel.
7. Toggle the **Freeze** button between **Yes** and **No**.
   - **Yes** — Use this option to freeze the current data on the display and not record any new traffic data.
   - **No** — Use this option to continuously cycle traffic data to allow for the newest data to be displayed.
8. Press **Clear** to clear all recorded data for the selected traffic flow.

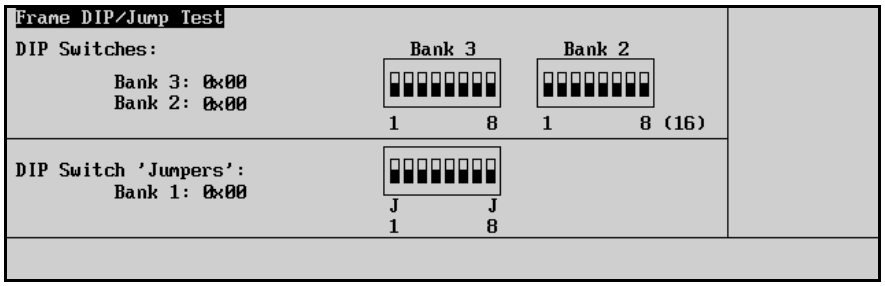
This concludes the procedure to monitor frame TX/RX functions.

DIP/Jump Test

The **DIP/Jump Test** allows you to test the DIP and jumper switches in the frame with the aid of a graphical representation on the display. Use the following procedure to test the frame DIP and jumper switches:

1. Navigate to the **Frame Diagnostics Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Frame Diagnostics** (to display the **Frame Diagnostics Menu**)

2. Press **DIP/Jump Test** to display the **Frame DIP/Jump Test Menu**.



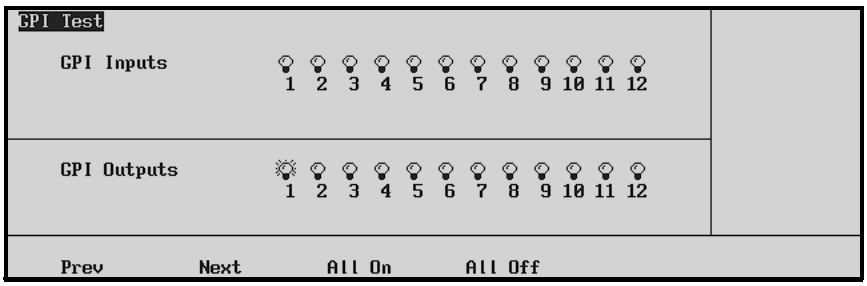
Frame DIP/Jump Test Menu

The graphical representation runs in real time, meaning any changes made to the physical state of the frame DIP or jumper switches will be displayed instantly. However, as the majority of these switches are for factory use only, we do not advise accessing these switches without first contacting Technical Support for assistance.

GPI Test

The **GPI Test** uses a graphical display of light bulbs to indicate to the user which GPI inputs and outputs are on or off. Use the following procedure to test the GPI inputs and outputs:

1. Navigate to the **Frame Diagnostics Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Frame Diagnostics** (to display the **Frame Diagnostics Menu**)
2. Press **GPI Test** to display the **GPI Test Menu**.



GPI Test Menu

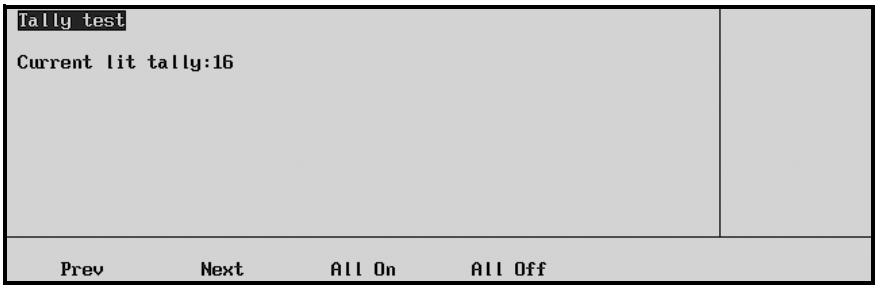
3. Select the desired GPI function:
   - Press **Prev** to test the previous input or output (as indicated on the menu).
   - Press **Next** to test the next input or output (as indicated on the menu).
   - Press **All On** to turn all GPI inputs and outputs on.
   - Press **All Off** to turn all GPI inputs and outputs off.

Tally Test

The **Tally Test Menu** allows you to test all frame tally relays.

Use the following procedure to test tally relays:

1. Navigate to the **Frame Diagnostics Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Frame Diagnostics** (to display the **Frame Diagnostics Menu**)
2. Press **Tally Test** to display the **Tally Test Menu**.



Tally Test Menu

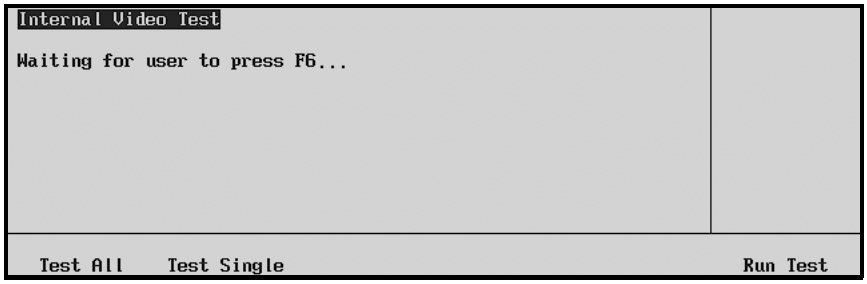
3. Select the desired tally function:
   - Press **Prev** to test the previous relay (as indicated on the menu).
   - Press **Next** to test the next relay (as indicated on the menu).
   - Press **All On** to turn all tally relays on.
   - Press **All Off** to turn all tally relays off.

Internal Video Test

The **Internal Video Test** allows you to test the video paths within the Synergy 1 frame. To perform this test, you will need a test disk, which is provided by **Ross Video Technical Support**. This disk contains stored memories, which were created using the switcher's internally generated video sources, namely color backgrounds and washes. When *any* memory is stored, the system does a video checksum and saves the information. Then, when the memory is recalled from the provided disk, it compares the checksum with the one on the memory and gives a Pass/Fail result. Use the following procedure to test the internal video paths:

1. Navigate to the **Frame Diagnostics Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Frame Diagnostics** (to display the **Frame Diagnostics Menu**)

2. Press **Internal Video Test** to display the **Internal Video Test Menu**.



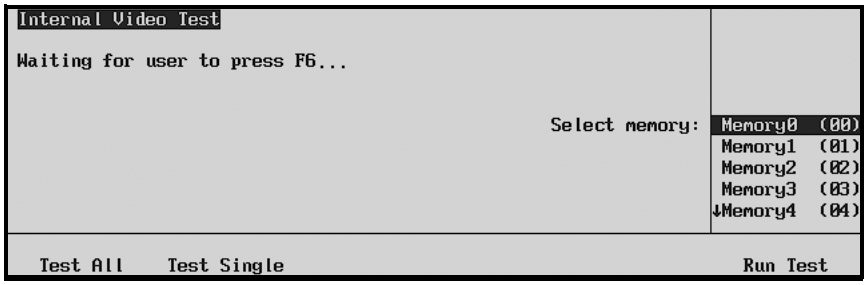
Internal Video Test Menu

3. Select an internal video test option as follows:

   - **Test All** — Select this option to test all of the memory registers at once. This is the switcher default option.

   OR

   - **Test Single** — Select this option to test a selected memory register only and display the **Test Single Menu**.



Internal Video Test — Test Single Menu

   ~ Use the middle **Select memory** knob to select the memory you wish to test.

4. Press **Run Test** to begin the internal video test.

   The menu will report **Pass** or **Fail**, followed by the current and saved checksums, as per the results of the test.

This completes the discussion of the Synergy diagnostic tools.

Appendix C. Hardware Options

In This Appendix

This appendix provides instruction for installing a variety of hardware options. The following options are discussed:

- A Hardware Option Overview
- Clean Feed Installation
- Dual Aspectizer Option and Overview
- Dual Aspectizer Mode Descriptions
- Dual Aspectizer Mode Comparisons
- Dual Aspectizer Board Installation
- Upgrading Dual Aspectizer Boards
- Dual Aspectizer Setup
- Dual Aspectizer Mode Setup
- Dual Border Generator Installation
- Squeeze & Tease 2D Installation
- Squeeze & Tease 3D / WARP Installation
- Timed Aux Bus Installation
- Remote Port Expander Cabling (BSS4)
- Ultimatte Insider Installation

Note

If you wish to add any of the listed options to your switcher, contact **Ross Video Technical Support** for ordering information.

Important

For all installation procedures, 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.

A Hardware Option Overview

The following optional cards and modules may be installed on the **Frame CPU Board** to provide additional functionality:

- The **Clean Feed** option provides an additional "program" output that is derived from a *different location* in the flow of video than the standard program output.
  - ~ Requires **1 Serializer Module** (p/n 4000A-062)
- The **Dual Aspectizer** option allows you to perform live, dual aspect ratio DTV production from the Synergy 1 panel.
  - ~ Requires the **Dual Aspectizer Board** (p/n 4000A-050)

Important

The **Dual Aspectizer** option is mutually exclusive with the **Ultimatte Insider** option. Only one of the two can be installed.

- The **Dual Border Generator** option provides visually dynamic border, shadow and outline effects to both linear MLE keyers, with either hard or "glowing" edges.
  - ~ Requires the **Dual Border Generator Board** (p/n 4000A-049)
- The **DVE Send** option can control a DVE with the fader bar.
  - ~ Requires 2 **Timed Aux Buses**.
- The **Squeeze & Tease** option puts the power of a simple 2D (two dimensional) or WARP (three dimensional) DVE into both MLE keyers.
  - ~ 2D requires the **Squeeze & Tease Board** (p/n 4000A-048)
  - ~ WARP requires the **S&T WARP Board** (p/n 4000A-148)
- The **Timed Aux Bus** option allows you to convert two untimed Aux bus outputs (Aux 1 and Aux 2) to *timed* Aux bus outputs.
  - ~ Requires **2 Serializer Modules** (p/n 4000A-062)
  - ~ Requires **2 Deserializer Modules** (p/n 4000A-061)
- The **Ultimatte Insider** is a hardware option that adds true Ultimatte capability — directly *inside* the Synergy 1 switcher.
  - ~ Requires the **Ultimatte Insider Board**

Important

The **Dual Aspectizer** option is mutually exclusive with the **Ultimatte Insider** option. Only one of the two can be installed.

Clean Feed Installation

The **Clean Feed** option provides a second "program" output that is derived from a *different location* than the standard program output. This output can be generated *before* or *after* the keyers. The point from which the feed is derived is software-configurable. The output itself is labeled **CLEAN** on the rear chassis panel.

Use the following procedure to install the **Clean Feed** option:

1. Observe all static discharge precautions throughout the procedure.
2. Power down the Synergy 1 switcher chassis.
3. Carefully remove the **Synergy 1 Frame Board** from the chassis, and set it on a clean, flat, static free surface, with the rear of the board away from you.
4. Unpack the **Clean Feed** kit, which consists of one **Serializer Module** (4000A-062).
5. Locate the socket labeled "**Clean Feed Out**" on the **Synergy 1 Frame Board**, near the right, rear of the board.
   - Carefully align the module over the socket.
   - Ensure that the Serializer Module board's components are facing to the rear.
   - Use your fingers to "feel" for the proper pin-to-socket alignment.
   - While applying downward pressure, slowly rock the module vertically (top to bottom), until the module is fully seated. Avoid flexing the board — so as not to bend the pins.
   - After installation, "sight" down the board at the connector level, to make sure that there are no exposed pins. It is recommended that you rotate the board 360 degrees to check all planes.

Caution

Failure to reinstall a module with a precise 1:1 pin-to-socket orientation will damage the Synergy 1 Frame Board, the selected module — or both! Double check your work!

6. When complete, carefully replace the **Synergy 1 Frame Board** into the chassis, and secure with the outer latches on the board edges.
7. Using the menu system, set the point from which the clean feed signal is derived. Refer to section, "**Clean Feed Setup**" on page 9–18 for instructions.

   Once complete, the selected signal appears on the **CLEAN** output connector on the rear of the chassis.

Dual Aspectizer Option and Overview

The **Dual Aspectizer** hardware option allows the user to perform live dual aspect ratio DTV production from a Synergy 1 panel. The **Aspectizer**, as it is more commonly referred to, dynamically converts the aspect ratio of a video signal in real time, *within* the switcher itself. Conversions can occur from 4:3 to 16:9 and vice-versa.

The **Dual Aspectizer Board** is a **two-channel** board capable of aspectizing either two independent BNC inputs or a "bus-pair" (i.e. BKGD and PST bus) on the MLE.

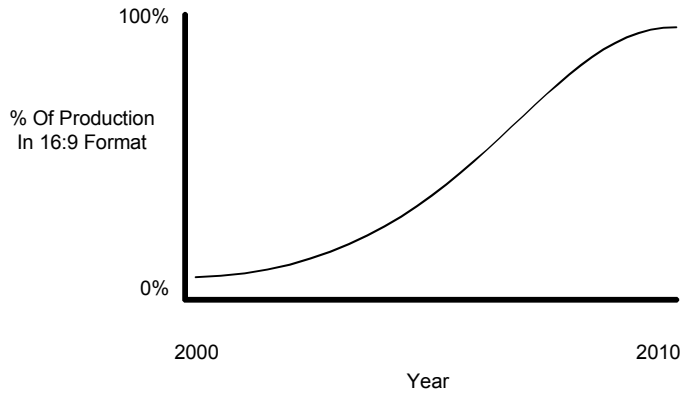
Dual Aspect Ratio Production Overview

Now that DTV has become a reality, we have begun the transition from the traditional 4:3 world of production to the innovative 16:9 wide-screen world. Television can now take its rightful place beside motion picture film as an equal visual partner.

What is the best path to follow during the transition? Is it merely a question of continuing to produce with a 4:3 mindset and simply converting the picture to a 16:9 format or should we look at this as an opportunity to rethink our production concepts in general and explore how to best take advantage of the additional visual real estate?

Ultimately this is a production issue, not just a conversion issue. It will be management and the production people, from network executives, to station managers, to news directors, to senior producers who will decide how this new 16:9 "look" will be handled. And as always has been the case in the past, the station engineers and technical personnel will be assigned the task of getting it to air.

If we chart the transition from one aspect ratio to the other, starting in today's predominantly 4:3 production world and finishing several years from now as a predominantly 16:9 production world, the graph would look something like this:



Aspect Ratio Production - Transition

In the next few years, market and legislative pressures will drive the transition and compel the facilities to accelerate the change. Most places will phase in 16:9 production over a few years by first introducing a few 16:9 inputs into the production mix and converting them to 4:3. Then in a year or so, having the benefit of some experience with dual aspect ratio production, they will make a major change over to the 16:9 world.

However, some facilities will no doubt make the change all at once, changing from a 4:3 to a 16:9 production capability in one fell swoop. Some will offer dual aspect ratio outputs to feed separate transmitters, some will not. It will depend upon many factors, but however your facility decides to effect the change, we do know that the next few years of transition will be as exciting as they are challenging.

In order to make the transition as smooth as possible, each facility should begin the process by having a clearly defined vision of where they want to go in terms of the 16:9 world. Defining that vision has to start with the most important question of all:

Question

What are your production goals?

You have to have a strong, clear understanding of where you want to end up, so that you can develop a well thought out plan to get there. As part of defining your overall production goals, you'll have to answer questions like:

- What are management's expectations?
- How do they want you to operate?
- What do you want your "look" to be?
- Are you an affiliate?
- Do you have to fit into a network's style?
- How long do you have to make the transition?
- Will you be feeding one transmitter or two?

And once some of these big picture questions have been asked, you'll have to get into the more subtle technical questions like:

- How many inputs are there with a different aspect ratio?
- Do you want to do memory recalls that involve aspect ratio manipulation?
- Should I operate in Input Mode or Bus Mode or Downstream Mode?

The answers to these and a host of other questions will provide you with a framework to plan a cost effective and orderly transition into a new era of production.

Dual Aspectizer Mode Descriptions

Each facility has its own unique set of parameters that will dictate its method of operation in the dual aspect ratio world. Although there are as many different ways to operate with dual aspect ratios as there are facilities, for the sake of this discussion, we have grouped them into three main categories:

1. Single Output Production – Input Mode
2. Single Output Production – Bus Mode
3. Dual Output Production – Downstream Mode

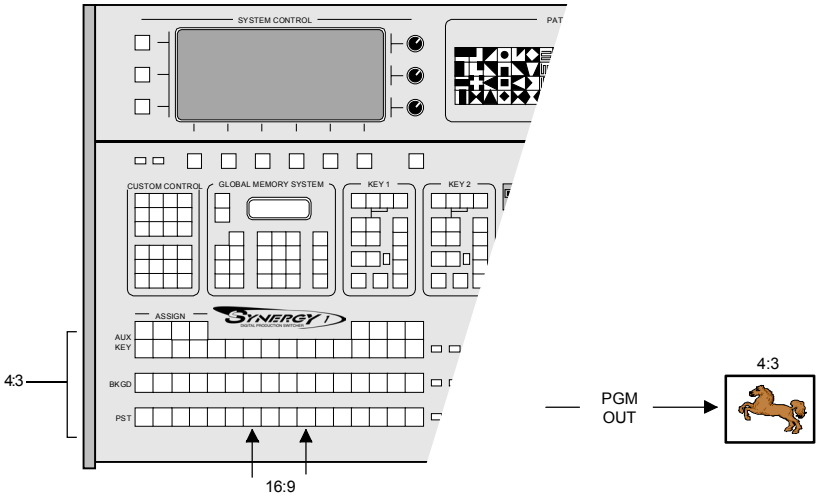
The words *primary* and *secondary* describe the two outputs in the dual output situation. These words are for description purposes only and are not meant to represent a priority of one over the other. Likewise, whenever an aspect ratio is defined, it is used as an example to illustrate one situation. The example would be just as appropriate if the aspect ratios were reversed.

The term **Aspectizer *look*** or simply ***look*** is used to describe the different visual possibilities available when 4:3 video is converted to 16:9 or vise versa (i.e. Letterbox, Pillarbox, etc.). A full description of the different ***looks*** follow later in this chapter.

If your situation does not fit exactly into one of our examples and you have questions about how you would like your facility to operate, please call your Ross Video service representative for assistance.

Single Output Production – Input Mode

This method of operation is characterized by a single **PGM** output, which is the same aspect ratio as the MLE and most of the inputs. However, one or two of the inputs have a different aspect ratio from the rest. These are sent to the **Aspectizer**, converted to the aspect ratio of the output, given an aspectized ***look*** and then typically, but not always, remain unchanged during the course of the production.



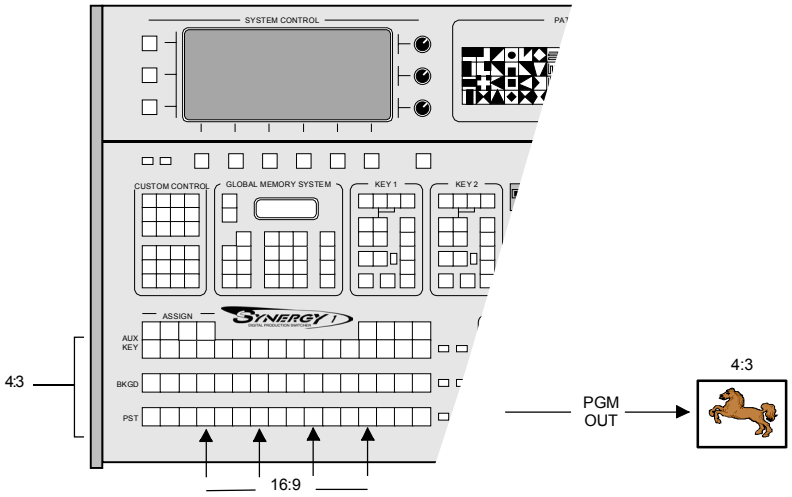
Single Output Production – Input Mode

In the above configuration, the **Aspectizer** would be setup in **Input Mode**.

A complete description of how to setup and operate your switcher in **Input Mode** is discussed in the section, "**Input Mode**" on page 15–9.

Single Output Production – Bus Mode

This mode uses a single **PGM** output, which is the same aspect ratio as the MLE. In this example, a number of inputs have aspect ratios that are different from the MLE. In this case, the bus-pair (usually the BKGD and PST buses) on the MLE is sent to the **Aspectizer** in **Bus Mode**. Then, whenever a crosspoint is selected on the MLE, a comparison of the aspect ratio of the input and the MLE is done and if they are the same, the signal is passed through the **Aspectizer** without any change. Subsequently, if the aspect ratios are different, the **Aspectizer** becomes *active* and the signal is aspectized to the predetermined ***look*** selected.



Single Output Production – Bus Mode

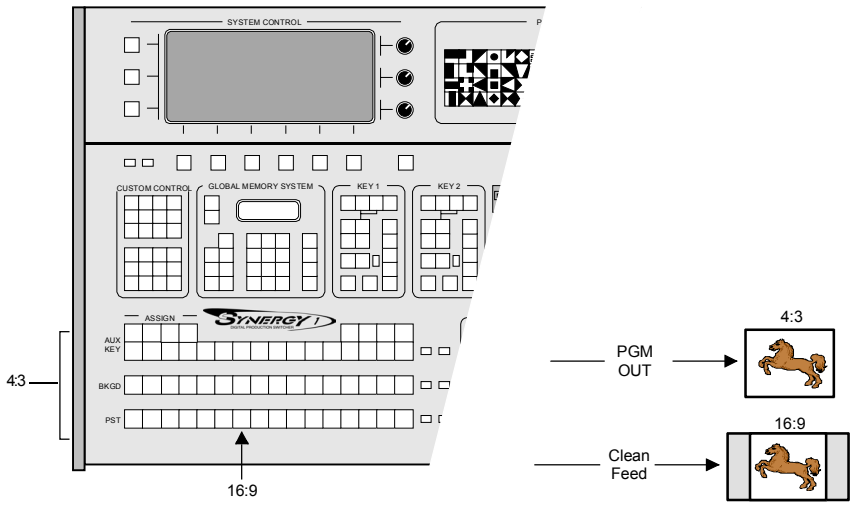
A complete description of how to setup and operate your switcher in **Bus Mode** is discussed in the section, "**Bus Mode**" on page 15–10.

Dual Output Production – Downstream Mode

This method of operation is characterized by dual outputs – the *primary* (4:3) from the **PGM** out and the *secondary* (16:9) from the **Clean Feed**. However, the MLE and the inputs have the same aspect ratios, with the possible exception of one input that may be different. This is sent to the **Aspectizer**, converted to the aspect ratio of the primary output, given an aspectized ***look*** and then typically, but not always, remains unchanged during the course of the production.

The secondary output (16:9) on the other hand, is simply an aspectized version of the primary and available from the **Clean Feed** output.

One of the main advantages of this mode is that the TD has complete *internal* control over the aspectized ***look*** of the output, since like the other modes, all of the aspectizing is being done inside the switcher.



Dual Output Production – Downstream Mode

A complete description of how to setup and operate your switcher in **Downstream Mode** is discussed in the section, "**Downstream Mode**" on page 15–11.

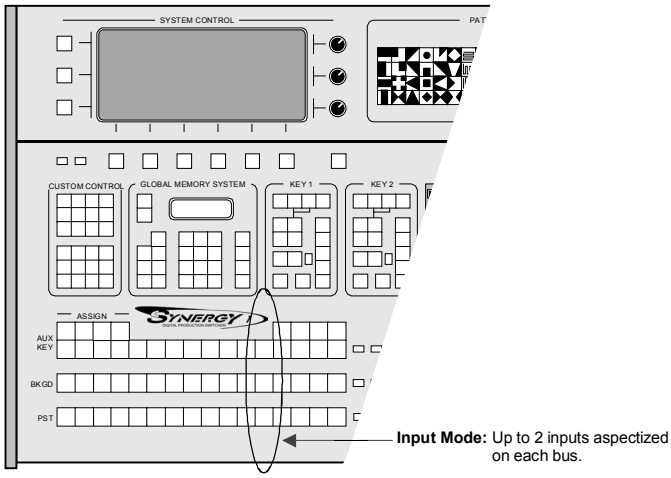
Dual Aspectizer Mode Comparisons

As part of the planning process for dual aspect ratio production, there are several other questions that need to be addressed in order to decide whether your facility should operate in **Input Mode**, **Bus Mode** or **Downstream Mode**. The right choice will ultimately depend upon your particular set of circumstances.

The following points will not make the choice for you but will outline some of the considerations that should be taken into account as you go through the decision making process.

Input Mode

In **Input Mode**, you can aspectize up to two inputs.

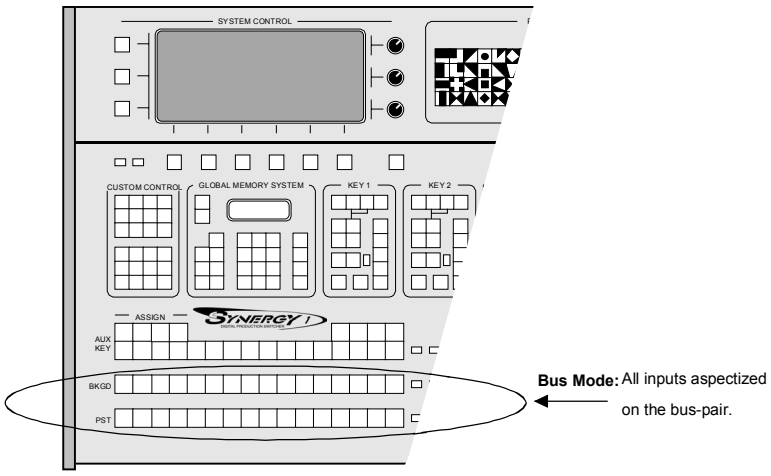


Aspectizer - Input Mode

- Each input that is assigned to an **Aspectizer** is aspectized on each of the three buses of the MLE – in other words, *vertically.*
- Used for both single and dual aspect ratio output production.
- Each **Aspectizer** will aspectize two inputs independently, on two separate channels.
- Each aspectized input retains its own unique characteristics.
- Individual **Aspectizer** settings do not follow in **Memory Recalls**.
- **Input Mode** is usually used when the number of inputs requiring aspectization is 2 or less.

Bus Mode

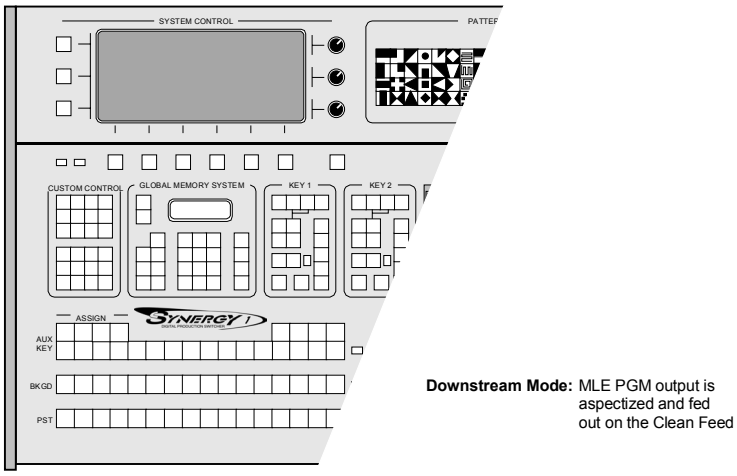
In **Bus Mode**, you can aspectize all the inputs on a bus-pair – namely the BKGD and PST, or the fill and alpha channels of the KEY bus.



Aspectizer – Bus Mode

- Each input on a bus-pair that is assigned to an **Aspectizer** is aspectized along the MLE – in other words, *horizontally.*
- **Bus Mode** *links* two buses *together* on the MLE to create a bus-pair.
- Each bus-pair shares the same **Aspectizer** characteristics.
- Since the **Aspectizer** settings are stored to **Memories** in **Bus Mode**, the setups can be used in **Memory Recalls**.
- Any bus-pair on the MLE is assigned to the **Aspectizer** in **Bus Mode**.
- **Bus Mode** is usually used when the number of inputs requiring aspectization are more than two.

Downstream Mode



Aspectizer – Downstream Mode

- Only used for dual aspect ratio output configurations.
- Can be used in conjunction with **Input Mode**.
- In effect, aspectizes a **PGM** output downstream of the switcher.
- Has no effect on any input or the MLE during the production process.
- The **Clean Feed** provides the Downstream Mode output, and Downstream Mode output will not display any external DSKs in use.

Conclusion

The rest of this chapter deals with the installation of your **Aspectizer**. However, before you continue, do yourself a favor and make sure that everyone in your production facility truly understands the benefits that can be gained with a well thought out transition plan. Take the time to think about tomorrow's requirements. Make an informed decision as to which of the output production formats will best serve your operational requirements in the years to come, because if you are not sure today where you are going, you'll never know when you get there.

Dual Aspectizer Board Installation

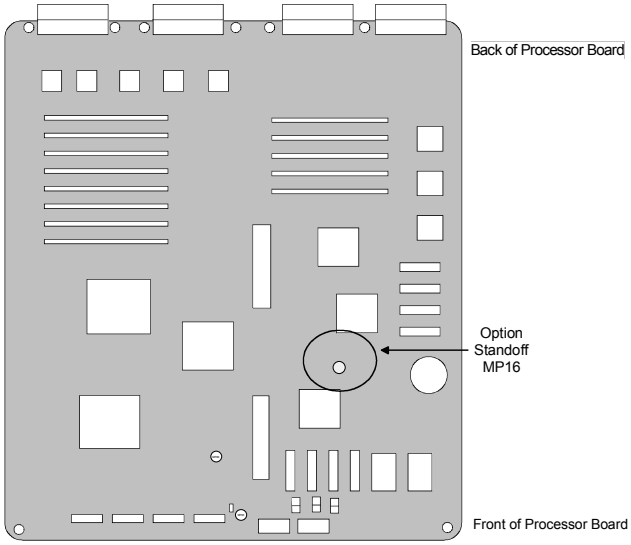
This document provides instructions for installing the **Dual Aspectizer** (usually referred to as simply the **Aspectizer**) option on the Synergy 1 Frame Board.

Important

The **Aspectizer** option is mutually exclusive with the **Ultimatte Insider** option. Only one of the two can be installed at any time.

Use the following procedure to install the **Aspectizer** option:

1. Observe all static discharge precautions throughout the procedure.
2. Power down the Synergy 1 switcher frame.
3. Carefully remove the Synergy 1 Frame Board (4216A-001B) from the chassis, and set it on a clean, flat, static free surface, with the rear of the board away from you.
4. Unpack the **Aspectizer kit**, which consists of one Aspectizer Module (4000A-050).
5. If your Synergy 1 Frame Processor Board is an *Issue 2* or an early *Issue 4* Board, the option standoff MP16 must be removed before installing the Aspectizer Module. (If no standoff MP16 is installed in your board, then no action is required). It can be removed as follows:
   - The option standoff MP16 is located in the circled area on the diagram below.



Synergy 1 Frame Processor Board (4216A-001B)

   - Using pliers or vice-grips, gently wiggle the standoff until it detaches itself from the board.
6. Locate the 2 sockets labeled "**Option Conn**" on the **Synergy 1 Frame Board**, near the right front of the board.
   - Carefully align the Aspectizer module over the sockets.
   - Ensure that the Aspectizer Module board's components are facing up.
   - Use your fingers to "feel" for the proper pin-to-socket alignment.
   - While applying downward pressure, slowly rock the module until the module is fully seated. Avoid flexing the board — so as not to bend the pins.

- After installation, “sight” down the board at the connector level, to make sure that there are no exposed pins. It is recommended that you rotate the board 360 degrees to check all planes.

Caution

Failure to reinstall a module with a precise 1:1 pin-to-socket orientation will damage the Synergy 1 Frame Board, the selected module — or both! Double check your work!

7. When complete, carefully replace the **Synergy 1 Frame Board** into the chassis, and secure with the outer latches on the board edges.

This completes the installation for the **Dual Aspectizer** option.

Upgrading Dual Aspectizer Boards

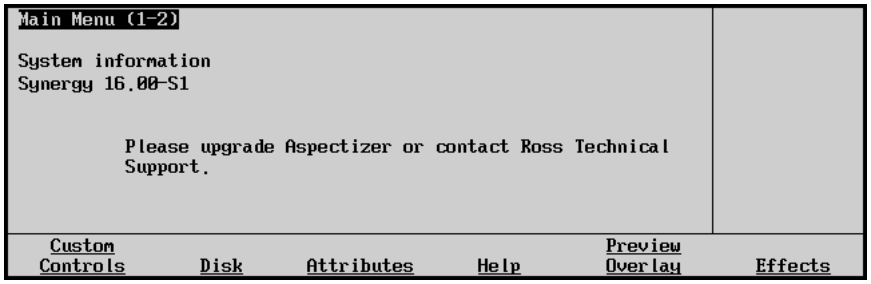
Important

If you purchased a **Dual Aspectizer Board** containing a software version prior to version 2.10, you will need to upgrade your board in order to take advantage of our new "**Aspectizer** looks". Refer to section, "**Installed Options Menus**" on page 2–31 for verification of the version of your **Aspectizer** board.

Use the following procedure to upgrade your **Dual Aspectizer** board(s).

1. Ensure the **Dual Aspectizer** board is installed. Refer to section, "**Dual Aspectizer Board Installation**" on page 15–12 for details.
2. Power on the frame and the control panel – in any order desired.

   If your **Aspectizer** contains a version of software prior to version 2.10, the following message will be displayed in the **Main Menu 1-2**:



Main Menu 1-2

Note

As the upgrade process takes approximately ten minutes, you may choose to update at a later time. Press **HOME** to return to the main Synergy menu without performing the upgrade. However, the message displayed will remain on the Main Menu until the upgrade has been performed.

3. Access the Aspectizer Upgrade software as follows:
   - Insert the floppy disk containing the Aspectizer Upgrade software into the floppy disk drive of the Synergy switcher.

   OR

   - Insert the USB key containing the Aspectizer Upgrade software 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 access the Aspectizer upgrade software.

Note

You must have the **USB Removable Media Drive** option installed in order to upgrade the Aspectizer with a USB key.

4. Navigate to the **Option Cards Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Installation** (to display the **Installation Menu 1-2**)
   - **MORE** (to display **Installation Menu 2-2**)
   - **Option Cards** (to display the **Option Cards Menu**)

Option Cards Menu

5. Press **Upgrade Aspectizers.**

   When the upgrade procedure is complete the **Option Cards Menu** is displayed.

Dual Aspectizer Setup

Note

Before the **Aspectizer** option will function properly, the following steps must be completed. Refer to the section, "**BNC Configuration**" on page 6–4 for detailed instructions on how to:

- **Connecting and Verifying Inputs –** a complete explanation of how to connect the physical switcher inputs, including reference, video and alpha.
- **Set up BNC Types** – a complete explanation of how to associate each physical BNC connector with an input *type*.
- **Set Up Panel Buttons** — a complete explanation of how to map each BNC connector to a physical button on the control panel.
- **Set Up BNC Aspect Ratios** – a complete explanation of how to setup the *native aspect ratios* of a BNC input and the MLE output.

Refer to the section, "**Aspect Ratio**" on page 9–59 for detailed instructions on how to setup the *output aspect ratio* of the MLE.

After the switcher inputs and outputs have been configured as per the above, use the following procedure to set up the **Aspectizer** for operation:

1. Ensure that the **Aspectizer** is properly installed and recognized by the system.
2. Navigate to the **Aspectizer Setup Options Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Installation** (to display the **Installation Menu 1-2**)
   - **MORE** (to display **Installation Menu 2-2**)
   - **Option Cards** (to display the **Option Cards Menu**)
   - **Aspectizer** (to display the **Aspectizer Setup Options Menu**)

The following menu is displayed, allowing you to configure your **Aspectizer** and defines:

- Where the **Aspectizer Board** is physically located
- What mode it is in
- Which BNCs you wish to aspectize

Note

Refer to the section "**Dual Aspectizer Mode Setup**" on page 15-18 for procedures on setting up the Dual Aspectizer.

Main Aspectizer Menu

There are three operational modes for the **Aspectizer** – **Input, Bus** and **Downstream**.

Please note that there is also a **Not In Use** mode that can be selected to *turn off* the **Aspectizer**.

Note

There are two other softkeys on the **Option Cards Menu**:

- The **Ultimatte** softkey will take you into the Ultimatte setup menus.
- The **Upgrade Aspectizer** softkey is used for upgrading the **Aspectizer** to version 2.10 firmware. Refer to the section, "**Upgrading Dual Aspectizer Boards**" on page 15–14 for details.

Dual Aspectizer Mode Setup

Input Mode Setup

In **Input Mode**, the user assigns one or two input BNCs to the dual channel **Aspectizer**. The BNCs are treated independently throughout the switcher. When either of these inputs is selected on the MLE, its aspect ratio is compared to that of the MLE, and if different, is sent through the **Aspectizer**. In other words, in **Input Mode** an input is aspectized *vertically* through all buses.

All information and values associated with an **Aspectizer** in **Input Mode** are stored in the switcher's **Personality Registers**.

Aspectizer Menu – Input Mode

Once you have entered the **Aspectizer Setup Menu**, as described in the previous section, use the following procedure to configure the **Aspectizer** in **Input Mode**:

1. Use the top **Aspectizer Channel** knob to select the **Channel** that you want to define. Each channel of the **Aspectizer** is defined as **Carr1** and **Socket** number – either **SockA** or **SockB**.
2. Use the middle **MODE** knob to choose the mode you wish to achieve – in this case **INPUT**. Selecting **INPUT** will change the bottom knob to **BNC**.
3. Use the bottom **BNC** knob to assign a BNC to the channel selected in Step 1.
4. Repeat steps 1 through 3 for the second channel of the **Aspectizer**.

This completes the **Aspectizer** setup procedure for **Input Mode**. Refer to Chapter 11, "**Dual Aspectizer**" of the ***Synergy 1 Operation Guide*** for additional notes on **Input Mode** menus and operational examples.

Bus Mode Setup

In **Bus Mode**, the user assigns a bus-pair on the MLE to the **Aspectizer**. Each bus of the pair feeds an **Aspectizer** channel. Usually it is the **BKGD** and **PST** buses. However, the respective fill and alpha channels of **Key1** or **Key2** also constitute a bus-pair and can be assigned as the two inputs. The most important thing to remember when operating in **Bus Mode** is that every crosspoint on the designated bus-pair is being sent to the **Aspectizer**. In other words, you can think of **Bus Mode** as being *horizontal* in nature.

All information and values associated with an **Aspectizer** in **Bus Mode** are stored in the switcher's **Memory Registers**, with the exception of the **16:9/4:3 toggle** information, which is stored in the **Personality Registers**.

Use the following procedure to configure the **Aspectizer** in **Bus Mode**:

1. Navigate to the **Aspectizer Setup Option Cards Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**)
   - **MORE** (to display the **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Installation** (to display the **Installation Menu 1-2**)
   - **MORE** (to display **Installation Menu 2-2**)
   - **Option Cards** (to display the **Option Cards Menu**)
   - **Aspectizer** (to display the **Aspectizer Setup Option Cards Menu**)

Aspectizer Installation Menu – Bus Mode

2. Use the top **Aspectizer Channel** knob to select the **Channel** that you want to define. Each channel of the **Aspectizer** is defined by **Carr1** and **Socket** number – **SockA** and **SockB**.
3. Use the middle **MODE** knob to select the mode you wish to make active – in this case **BUS**. Selecting **BUS** will change the bottom knob to **BUS**.
4. Use the bottom **BUS** knob to select the bus-pair that you wish to aspectize. Note that there are three bus-pairs as setup choices for channel A and B of the **Aspectizer**:
   - **BKGD+PST** buses
   - **Key1**, which includes both the fill and alpha channels, and
   - **Key2**, which includes both the fill and alpha channels.

This completes the **Aspectizer** setup procedure for **Bus Mode**. Refer to Chapter 11, "**Dual Aspectizer**" of the ***Synergy 1 Operation Guide*** for additional notes on **Bus Mode** menus and operational examples.

Downstream Mode Setup

Note

The **AlphaNomadCK** option is not available when the **Dual Aspectizer** option is in Downstream Mode, as both require a Clean Feed output.

Downstream Mode is only used when you require two **PGM** outputs with different aspect ratios. It is the easiest and most economical way to have dual aspect ratio outputs. The **Aspectizer Setup Option Cards Menu** allows you to configure your Aspectizer and defines where the **Aspectizer Board** is physically located and what mode it is in.

Note

When working in **Downstream Mode**, the possibility exists to *double aspectize* an input on the **Downstream Clean Feed** output. This situation will occur if the second channel of the **Aspectizer** is configured in **Input Mode** and that input is on air.

Use the following procedure to setup the **Aspectizer** in **Downstream Mode**:

1. Navigate to the **Aspectizer Setup Option Cards Menu** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).
   - **MORE** (to display **Installation Menu 2-2**).
   - **Option Cards** (to display the **Option Cards Menu**).
   - **Aspectizer** (to display the **Aspectizer Setup Option Cards Menu**).

Aspectizer Installation Menu – Downstream Mode

2. Use the top **Aspectizer Channel** knob to select the **Channel** that you want to define. Each channel of the **Aspectizer** is defined by the **Carr1** and **Socket** number – **SockA** and **SockB**.
3. Use the middle **Mode** knob to select the mode you wish to make active – in this case **Downstream**.

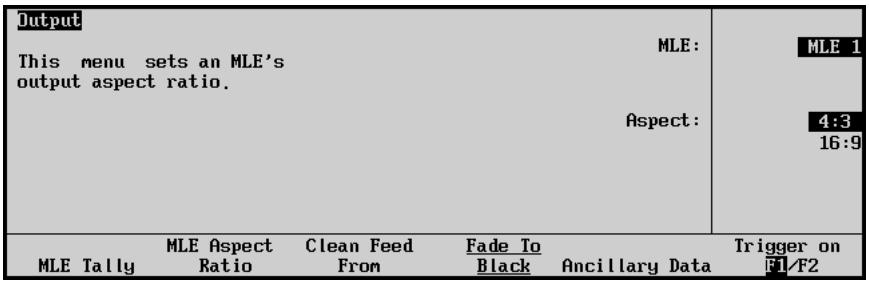
Note

Only one channel, either **A** or **B** of the **Aspectizer** is required for **Downstream Mode**. The other channel is available for use with an input in **Input Mode**.

In **Downstream Mode**, the **Aspectizer** uses the output aspect ratio of the **MLE** to determine which way to do the conversion.

Use the following procedure to convert the signal from the chosen aspect to the opposite one:

1. Navigate to the **Output Menu** as follows:
   - Press **HOME** (to display **Main Menu 1-2**)
   - **MORE** (to display **Main Menu 2-2**)
   - **Setup** (to display the **Setup Menu**)
   - **Installation** (to display **Installation Menu 1-2**)
   - **Output** (to display the **Output Menu**)
2. Press **MLE Aspect Ratio** to display the **MLE Aspect Ratio Menu**.



MLE Aspect Ratio Menu

3. Use the middle **Aspect** knob to the appropriate aspect ratio – either 4:3 or 16:9.

The **Aspectizer** will convert the signal from the chosen aspect to the opposite one.

This completes the **Aspectizer** setup procedure for **Downstream Mode**. Refer to Chapter 11, "**Dual Aspectizer**" of the ***Synergy 1 Operation Guide***, for additional notes on **Downstream Mode** menus and operational examples.

Dual Border Generator Installation

This section provides instructions for installing the **Dual Border Generator** option on the Frame CPU Board.

Use the following procedure to install the **Dual Border Generator** option:

1. Observe all static discharge precautions throughout the procedure.
2. Power down the Synergy 1 switcher chassis.
3. Carefully remove the **Synergy 1 Frame Board** from the chassis, and set it on a clean, flat, static free surface, with the rear of the board away from you.
4. Unpack the **Dual Border Generator** kit, which consists of one **Dual Border Generator Module** (4000A-049).
5. Locate the 2 sockets labeled "**Dual Border Generator**" on the **Synergy 1 Frame Board**, near the left, front of the board.
   - Carefully align the module over the sockets.
   - Ensure that the Dual Border Generator Module board's components are facing up.
   - Use your fingers to "feel" for the proper pin-to-socket alignment.
   - While applying downward pressure, slowly rock the module until the module is fully seated. Avoid flexing the board — so as not to bend the pins.
   - After installation, "sight" down the board at the connector level, to make sure that there are no exposed pins. It is recommended that you rotate the board 360 degrees to check all planes.

Caution

Failure to reinstall a module with a precise 1:1 pin-to-socket orientation will damage the Synergy 1 Frame Board, the selected module — or both! Double check your work!

6. When complete, carefully replace the **Synergy 1 Frame Board** into the chassis, and secure with the outer latches on the board edges.

   This completes the installation for the **Dual Border Generator** option.

Squeeze & Tease 2D Installation

This section provides instructions for installing the **Squeeze & Tease 2D** option on the Synergy 1 Frame Board.

Use the following procedure to install the **Squeeze & Tease 2D** option:

1. Observe all static discharge precautions throughout the procedure.
2. Power off the Synergy 1 switcher frame.
3. Carefully remove the **Synergy 1 Frame Board** from the chassis, and set it on a clean, flat, static free surface, with the rear of the board away from you.
4. Unpack the **Squeeze & Tease 2D** kit, which consists of one **Squeeze & Tease 2D Module** (4000A-048).
5. Locate the 3 sockets labeled "**Squeeze & Tease Conn**" on the **Synergy 1 Frame Board**, near the middle, front of the board.
   - Carefully align the module over the sockets.
   - Ensure that the S&T Module board's components are facing up.
   - Use your fingers to "feel" for the proper pin-to-socket alignment.
   - While applying downward pressure, slowly rock the module until the module is fully seated. Avoid flexing the board — so as not to bend the pins.
   - After installation, "sight" down the board at the connector level, to make sure that there are no exposed pins. It is recommended that you rotate the board 360 degrees to check all planes.

Caution

Failure to reinstall a module with a precise 1:1 pin-to-socket orientation will damage the Synergy 1 Frame Board, the selected module — or both! Double check your work!

6. When complete, carefully replace the **Synergy 1 Frame Board** into the chassis, and secure with the outer latches on the board edges.
7. Power on the Synergy 1 switcher frame.

This completes the installation for the **Squeeze & Tease 2D** option.

Squeeze & Tease 3D / WARP Installation

The Squeeze & Tease WARP (S&T 3D) option is the most advanced single-card 3D DVE available on the market today. The S&T 3D WARP card mounts right on your **Frame Board** and becomes an integrated feature of the **Synergy 1** switcher.

Note

Refer to the ***Squeeze & Tease 3D/WARP Owner's Guide*** for complete installation and operation instructions for this option.

The S&T WARP card utilizes the latest digital processing technologies, accepting 2 independent channels of component digital video in parallel form and outputs 2 independent video and alpha channels – for a total of 4 outputs.

As well, the card features 10-bit, field based processing, two channels of planar processing for 3D rotation with perspective, sub-pixel motion, and scaling.

Finally, all of the S&T WARP feature set and functionality is available to the operator through our easy-to-use interface on the control panel's LCD screen.

Timed Aux Bus Installation

This section provides instructions for installing the **Timed Aux Bus** option on the Synergy 1 Frame Board.

Use the following procedure to install the **Timed Aux Bus module**:

1. Observe all static discharge precautions throughout the procedure.
2. Ensure the Synergy 1 switcher is powered down.
3. Check that you received the following components in your **Timed Aux Bus** kit:
   - 1 **Deserializer Module** (4000A-061). This module installs in a socket on the left, rear side of the Synergy 1 Frame Board.
   - 1 **Serializer Module** (4000A-062). This module installs in a socket on the right, rear side of the Synergy 1 Frame Board.
4. Carefully remove the **Synergy 1 Frame Board** assembly from the chassis, and set it on a clean, flat, static free surface, with the rear of the board away from you.
5. Install the **Deserializer Module** as follows:
   - Read the **Aux Bus** slot labels closely. Locate the "**AUX IN**" slot, either 1 or 2, on the left hand side of the board for the Aux Bus that you want to "time".
   - Carefully align the module over the socket.
   - Ensure the board's components are facing to the rear of the Frame Board.
   - Use your fingers to "feel" for the proper pin-to-socket alignment.
   - While applying downward pressure, slowly rock the module vertically (top to bottom), until the module is fully seated. Avoid flexing the board – so as not to bend the pins.
   - After installation, "sight" down the board at the connector level, to make sure that there are no exposed pins. It is recommended that you rotate the board 360 degrees to check all planes.

Caution

Failure to install the module with a precise 1:1 pin-to-socket orientation will damage the Synergy 1 Frame Board, the selected module — or both! Double check your work!

6. Install the S**erializer Module** as follows:
   - Read the **Aux Bus** slot labels closely. Locate the "**AUX OUT**" slot, either 1 or 2, on the right hand side of the board, for the Aux Bus that you want to "time".
   - Carefully align the module over the socket.
   - Ensure the board's components are facing to the rear of the Frame Board.
   - Use your fingers to "feel" for the proper pin-to-socket alignment.
   - While applying downward pressure, slowly rock the module vertically (top to bottom), until the module is fully seated. Avoid flexing the board – so as not to bend the pins.
   - After installation, "sight" down the board at the connector level, to make sure that there are no exposed pins. It is recommended that you rotate the board 360 degrees to check all planes.

7. Replace the **Synergy 1 Frame Board** assembly in the chassis and power up the Synergy 1 switcher chassis.
8. This completes the installation procedure. Note that there is no software installation required for this option. You can now test the Aux Bus output in several ways.
    - Route the selected Aux Bus output to a monitor, and switch between two signals on the Aux Bus – for example, a primary input and a program signal that you know may *not* be perfectly timed. The signals should now switch seamlessly.
    - Route the selected Aux Bus output to a DVE, and switch between two or more signals. While monitoring the DVE's output, there should be no green flashes on the monitor (flashes that are typically associated with untimed sources).

Remote Port Expander Cabling (BSS4)

To connect the BSS4 Remote Port Expander to the Synergy Switcher, you will have to make a connection from one of the Remote Ports on the back of the control panel to the Master Port on the BSS4.

In order to properly complete this procedure you will need the following:

- **BSS4 Interface Cable** — An RS-422 cable with a male 9-pin, D-type connector on one end, and a female 9-pin, D-type connector on the other end. Refer to the table "**Synergy-to-BSS4 Wiring Chart**" on page 15–27 for wiring information.

Note

The BSS4 will only support RS-422 communication. Any device using RS-232 communication will require a RS-422 to RS-232 converter.

- **BSS4 Power Supply** — The 5 Volt, 100mA power supply that was supplied with your BSS4 switch.

The Synergy Switcher connects to the BSS4 Remote Port Expander via the remote ports (1-5) on the back of the Synergy control panel, and the Master Port on the BSS4.

- The Synergy control panel remote port requires a 9-Pin, D-Type RS-422 connector.
- The BSS4 Master Port requires a 9-Pin, D-Type RS-422 connector.

Synergy-to-BSS4 Wiring Chart

Synergy Panel			BSS4 Remote Port Switch	
Remote Port (1-5) (Female)	Signal		Master Port (Male)	Signal
1	Chassis			
2	RxA (Rx-)	→	2	TxA (Tx-)
3	TxB (Tx+)	→	3	RxB (Rx+)
4	n/c			
5	Ground	→	5	Ground
6	Ground			
7	RxB (Rx+)	→	7	TxB (Tx+)
8	TxA (Tx-)	→	8	RxA (Rx-)
9	Chassis			

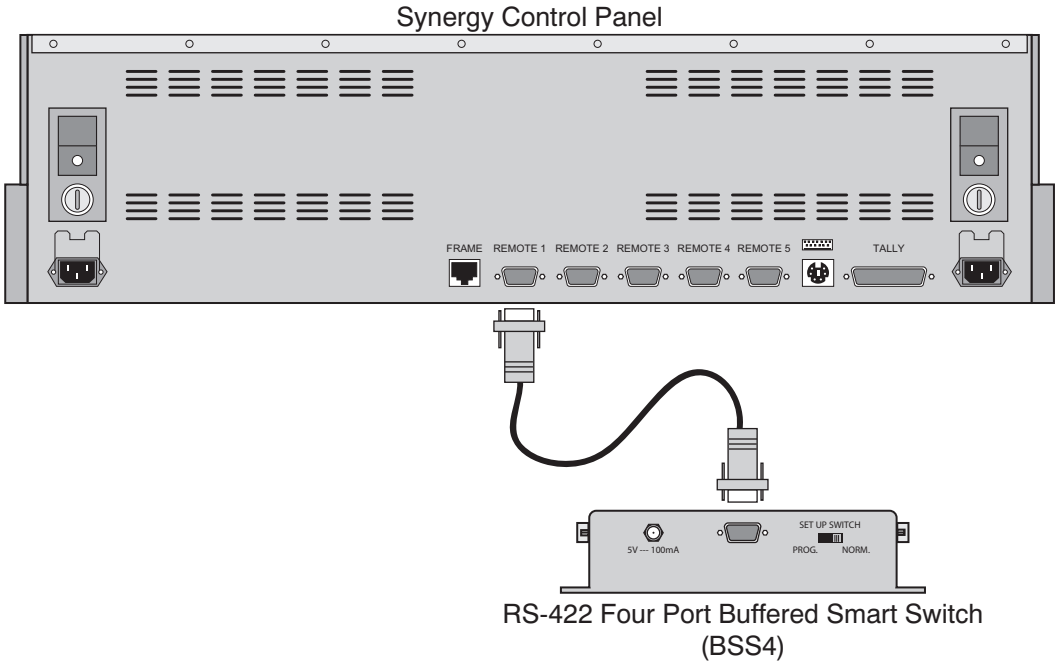
Use the following procedure to connect a BSS4 Remote Port Switch to your Synergy Switcher:

1. Connect and secure the male end of the **BSS4 Interface Cable** to one of the **Remote Ports** (1-5) on the back of the Synergy control panel.
2. Connect and secure the female end of the **BSS4 Interface Cable** to the **Master Port** on the BSS4. Refer to the illustration "**Connecting the BSS4 Remote Port Expander to the Synergy Control Panel**" on page 15–28.

Caution

Ensure that you have the correct power supply for your type of power *before* you attempt to plug the BSS4 Power Supply in a power socket.

3. Connect the **BSS4 Power Supply** to the **BSS4** and plug into an appropriate AC outlet.



Connecting the BSS4 Remote Port Expander to the Synergy Control Panel

This completes the procedure for connecting the BSS4 Remote Port Switch to the Synergy Switcher. Next you will have to set up the communications protocols in order to use the Extended Remote Ports on the BSS4. Refer to the section "**Remote Port Expander Communications Setup (BSS4)**" on page 7-3 for information on how to set up the communications protocols for the BSS4.

Ultimatte Insider Installation

Ultimatte Insider™ is a hardware option that adds true Ultimatte capability — directly *inside* the Synergy 1 switcher. The option is comprised of a hardware board designed by Ultimatte (the Oscar-winning industry leader in compositing technology), plus two Ultimatte-specific menus for controlling the chroma key.

Important

The **Ultimatte Insider** option is mutually exclusive with the **Dual Aspectizer** option. Only one of the two can be installed at any time.

Please note the following important points:

- The **Ultimatte Insider Board** can be assigned to only one of the MLE's two keyers. The board creates one processed foreground and one processed key signal from a selected input video source.
- During option setup, an **Ultimatte Insider** board is designated to one of the keyers. However, any of the 16 inputs can be used as an Ultimatte key.

  For example, suppose that during setup you designate an Ultimatte Insider board to Keyer 1. Your primary cameras are connected to physical BNC inputs 1 through 4. During operations, by using Key 1, selecting **Chroma Key** as the "type" and selecting one of the designated inputs as the source on the MLE's **Key Bus**, the **Ultimatte Insider Menus** are *automatically* displayed. If you select *any other input*, a standard Synergy 1 chroma key menu appears.

Ultimatte Insider Board Installation

This section provides instructions for installing an **Ultimatte Insider** board on the Frame CPU Board.

Important

The **Ultimatte Insider** option is mutually exclusive with the **Dual Aspectizer** option. Only one of the two can be installed at any time.

Use the following procedure to install the **Ultimatte Insider** option:

1. Observe all static discharge precautions throughout the procedure.
2. Power down the Synergy 1 switcher chassis.
3. Carefully remove the **Synergy 1 Frame Board** from the chassis, and set it on a clean, flat, static free surface, with the rear of the board away from you.
4. Unpack the **Ultimatte Insider** kit, which consists of one **Ultimatte Module**.
5. Locate the 2 sockets labeled "**Option Conn**" on the **Synergy 1 Frame Board**, near the right, front of the board.
   - Carefully align the module over the sockets.
   - Ensure that the Ultimatte Module board's components are facing up.
   - Use your fingers to "feel" for the proper pin-to-socket alignment.
   - While applying downward pressure, slowly rock the module until the module is fully seated. Avoid flexing the board — so as not to bend the pins.
   - After installation, "sight" down the board at the connector level, to make sure that there are no exposed pins. It is recommended that you rotate the board 360 degrees to check all planes.

Caution

Failure to reinstall a module with a precise 1:1 pin-to-socket orientation will damage the Synergy 1 Frame Board, the selected module — or both! Double check your work!

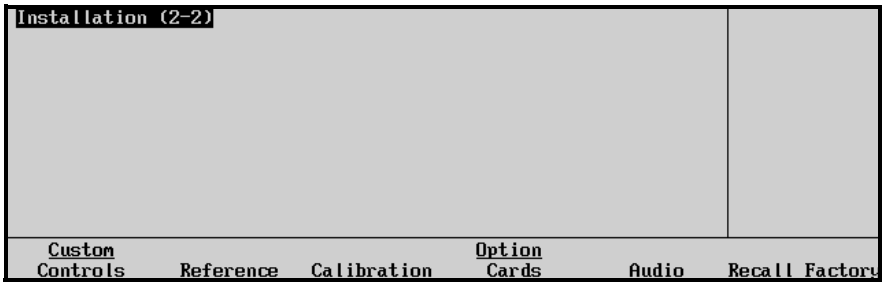
6. When complete, carefully replace the **Synergy 1 Frame Board** into the chassis, and secure with the outer latches on the board edges.

This completes the installation for the **Ultimatte Insider** option.

Ultimatte Insider Setup

Use the following procedure to set up the **Ultimatte Insider** board:

1. Ensure that the **Ultimatte Insider** board is properly installed and properly recognized by the system. Refer to the section, "**Ultimatte Insider Board Installation**" on page 15–29 for instructions.
2. Navigate to the **Option Cards Menu** as follows:
   - Press **HOME** (to display **Main Menu 1-2**).
   - **MORE** (to display **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display **Installation Menu 1-2**).
   - **MORE** (to display **Installation Menu 2-2**).



Installation Menu 2-2

3. Press **Option Cards** to display the **Option Cards Menu**.

Option Cards Menu

4. Press **Ultimatte** to associate a specific keyer with the installed **Ultimatte Insider** board.

Note

Remember that the association is to a keyer and *not* to a specific input. Any of the inputs can be assigned as a chroma key source.

5. Use the bottom **Key** knob to place Ultimatte Insider capability on either **Key 1** or **Key 2**.

This completes the procedure for associating a keyer with the **Ultimatte Insider** board. During switcher operations, when you select the keyer (as chosen above), **Chroma Key** as the "type" and all of the selected BNC inputs on the MLE's **Key Bus**, the **Ultimatte Insider** menus will automatically display.

Important

The source that you select on the **Key Bus** activates the Ultimatte menus and internally calls up the Ultimatte's processed alpha and fill signals. The selected source's panel button on the **Background** and **Preset** buses remains the original *unprocessed* video signal. To place the Ultimatte's *processed* signals on the panel, refer to section, "**Ultimatte Auto Select Key Setup**" on page 15–31 in this appendix.

Ultimatte Auto Select Key Setup

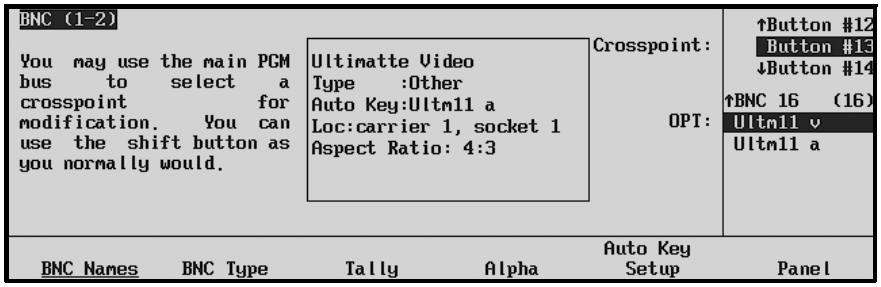
The **Ultimatte Insider** board automatically produces processed alpha and fill signals. These signals are used internally to produce the Ultimatte key in the MLE, but they can *also* be placed elsewhere on the Synergy 1 panel for use as **Auto Select** sources in the normal way.

If you change the base Ultimatte key source or change its clip parameters, each associated **Auto Select** key changes accordingly.

Use the following procedure to set up the Ultimatte's alpha and fill signals as **Auto Select** sources:

1. Ensure that the **Ultimatte Insider** board is properly associated to a keyer. If not, refer to section, "**Ultimatte Insider Setup**" on page 15–30 in this appendix, for instructions.
2. Navigate to the **Panel Button Setup Menu** as follows:
   - Press **HOME** (to display **Main Menu 1-2**).
   - **MORE** (to display **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display **Installation Menu 1-2**).
   - **BNC** (to display the **BNC Setup Menu**).
3. Press **Panel** to display the **Panel Setup Menu**.
4. Use the **Crosspoint** knob to select the button on which you want to associate the Ultimatte's processed fill (video) signal.

5. Use the **BNC** knob to scroll the selection down past input 16. Note that the label **BNC** changes to **OPT** — indicating that this region of the menu is reserved for *internally generated signals.*



Panel Setup Menu

6. Select the desired internal Ultimatte video signal (e.g., **Ultm11 v**). Note that the suffix "**v**" indicates *video* (fill). In the **Status Box**, the system identifies the internal source (**Ultimatte Video**), the type (**Other**), the location of the optional board (e.g., **carrier 1, socket 1**) and the native aspect ratio (**4x3**). Additionally, the internal Ultimatte alpha signal (e.g., **Ultm11 a**) is *automatically* associated with the video as the Auto Key alpha. Note that the suffix "**a**" indicates *alpha*.
7. Repeat steps 3 through 5 for each Ultimatte processed video signal that you want to place on the panel.
8. When all buttons are programmed as desired, press **HOME** to exit the installation menus, and press **Confirm** to confirm your changes.

This completes the procedure for setting up a panel button to use as an Ultimatte **Auto Select** key. Refer to the ***Synergy 1 Operation Guide*** for operating instructions and additional operational notes.

Appendix D. Switcher Installation Worksheets

In This Appendix

This appendix provides worksheet tables to help plan and record switcher installation settings and wiring connections. The following worksheets are included:

- Input
- Primary Output
- External DSK (CDK-111A-M) Cabling Connections
- Remote Control Worksheet
- Standard GPI Input
- Standard GPI Outputs
- Remote Aux Panel GPI Input
- Custom Control

Input Worksheet

Make copies of this blank worksheet for use as required. Complete the following worksheet for all of your video inputs, including primary sources, keys and fills.

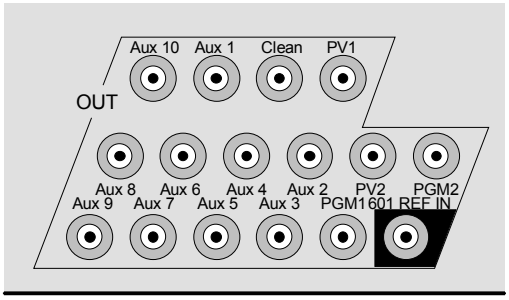
Input Worksheet

BNC #	Actual Source	Input Name	Input Type	Tally Number	Alpha Type	Auto Key	Physical Button
sample 1	VTR 1	VTR Blue	VTR	12	—	—	5
sample 2	CG Alpha	CG Alpha	Alpha	—	S	10	10 (Shifted)
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							

For further details, see the "**Input Worksheet**" section in Chapter 4, **Preliminary Video Installation**.

Primary Output Worksheet

Make copies of this blank worksheet for use as required. Complete the following primary output worksheet. Use the following figure for reference.



Frame Primary Output Area

Fill in the desired destination for each output signal. See the **External DSK (CDK-111A-M) Cabling Connections** section in this chapter for details on DSK BNC assignment for this worksheet.

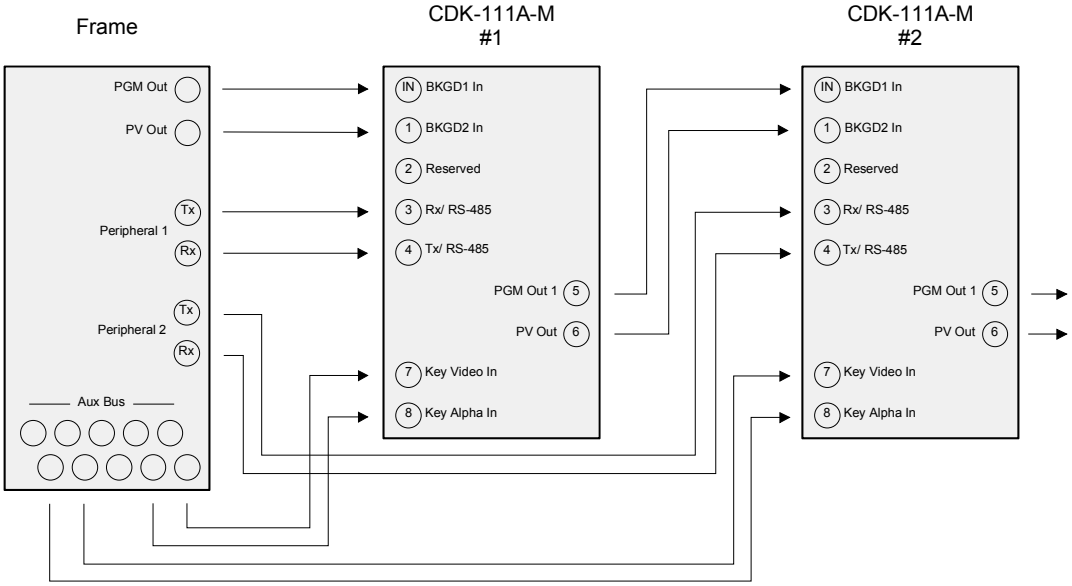
Output Worksheet

Output Connector	Synergy 1 Destination
PGM 1	
PGM 2	
PV 1	
PV 2	
AUX 1	
AUX 2	
AUX 3	
AUX 4	
AUX 5	
AUX 6	
AUX 7	
AUX 8	
AUX 9	
AUX 10	
CLEAN	(Optional)

For further details, see the "**Output Connection**" section in Chapter 4, **Preliminary Video Installation**.

External DSK (CDK-111A-M) Cabling Connections

This diagram indicates connections to the DSK BNCs from the switcher's aux bus BNCs. Note these connections on the Primary Output worksheet.

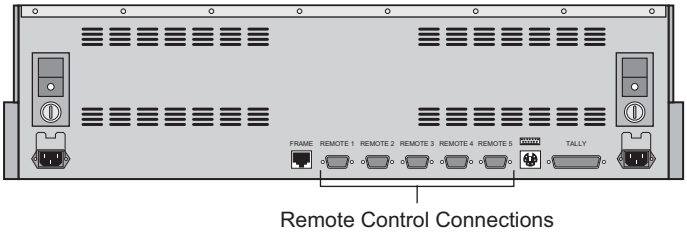


CDK-111A-M Cabling Diagram

For further details, refer to section, **"External Downstream Keyer (CDK-111A-M) Cabling"** on page 3-10 in Chapter 3.

Remote Control Worksheet

Using the following figure for reference, complete the following remote control worksheet. Copy the worksheet as required. Fill in the serial controlled device and the remote control port (on the device) that is used for serial control.



Synergy 1 Control Panel – Rear View, Remote Control Ports

Remote Control Worksheet

Remote Port	Serial Controlled Device	Device Serial Port
Remote 1		
Remote 2		
Remote 3		
Remote 4		
Remote 5*		

*** Note**

You must use **Remote 5** with a **RJ12 to DB9 Male Adaptor** to connect a remote Aux Panel to the Synergy 1 control panel. If you intend to connect a Remote Aux Panel to the switcher, you will have to leave the Remote 5 port open.

Refer to the section, **"VTR Communications Setup"** on page 7-10 for further details.

Standard GPI Input Worksheet

Make copies of this blank worksheet for use as required. Complete the following Standard GPI Input worksheet.

Standard GPI Input Worksheet

Standard GPI Input #	Transition Type	Transition Area	Polarity
Sample GPI Input #1	Auto	MLE 1	Low
Sample GPI Input #2	Cut	Fade to black	High
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

For further details, refer to section **"Standard GPI Setup"** on page 9-25.

Standard GPI Output Worksheet

Make copies of this blank worksheet for use as required. Complete the following Standard GPI Output worksheet.

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			

For further details, refer to the section **"Standard GPI Setup"** on page 9-25.

Remote Aux Panel GPI Input Worksheet

Make copies of this blank worksheet for use as required. Complete the **Remote Aux Panel GPI Input** worksheet on the following pages. In the table, note that remote GPI numbers, group numbers, offset numbers and physical panel GPI numbers have already been filled in.

Remote Aux Panel GPI Input Worksheet

Remote GPI	Group / Offset / Physical GPI	Assigned Aux Bus	Assigned BNC	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 3, GPI 8			

Remote Aux Panel GPI Input Worksheet

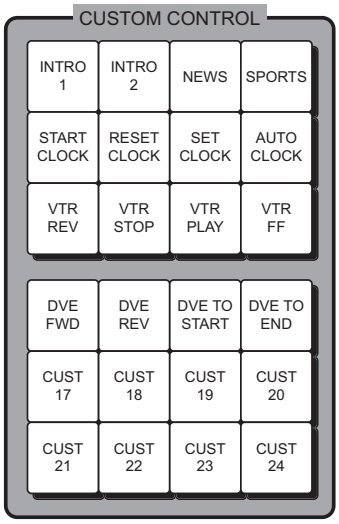
Remote GPI	Group / Offset / Physical GPI	Assigned Aux Bus	Assigned BNC	Physical Connection
33	Group 5, Offset 4, GPI 1			
34	Group 5, Offset 4, GPI 2			
35	Group 5, Offset 4, GPI 3			
36	Group 5, Offset 4, GPI 4			
37	Group 5, Offset 4, GPI 5			
38	Group 5, Offset 4, GPI 6			
39	Group 5, Offset 4, GPI 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			

For further details, refer to section, **“Remote Aux Panel GPI Setup”** on page 9-35.

Custom Control Worksheet

Make copies of this blank worksheet for use as required. Complete the Custom Control worksheet on the following page.

The following figure illustrates a *sample* **Custom Control Group** on the Synergy 1, with *sample* labels included.



Custom Control Group — Synergy 1 Panel

The following table lists the *functions* that you can place on any DVE custom control button.

DVE Custom Control Functions

DVE Function	Description
Go To Start	Cues the DVE to the start of its effect.
Go To End	Cues the DVE to the end of its effect.
Play	Plays the DVE effect forward.
Play Reverse	Plays the DVE effect in reverse.
Recall	Recalls a selected DVE effect (from **1** to **99**).
Stop	Stops the DVE effect.
Pause	Stops the DVE effect.

Operating Tip

Keep custom control functions such as DVE clock, VTR, and DVE *physically grouped* together on your custom control buttons.

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	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

For further details, refer to section, **"DVE Functions"** on page 12-33.

Appendix E. Custom Device Serial Protocols

In This Appendix

This appendix 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. The following sections are provided and discussed:

- Custom Devices – Uses and Limitations
- Custom Devices Modify Menu
- Programming Commands
- Programming Worksheets
- Advanced Topics and Tables

Custom Devices – Uses and Limitations

The **Custom Devices Setup Menu** allows the user to program serial command protocols for controlling external devices not otherwise supported by Synergy. Custom Devices are also useful in testing out currently unsupported commands to external devices, as well as other general communications testing.

There are two user-programmable custom device protocols available, these being **CUSTOM0** and **CUSTOM1**. Ports on both the panel and the frame can be used, with the following limitations and requirements.

- To use custom devices on the panel, you must have purchased and installed the **VTR Remote Control** option. Refer to Chapters 2 and 8 of this guide for details on installing and configuring this option.
- Any data received back from the external device is ignored. Therefore, queries for Current-time-sense (e.g. grab timecode), Inpoint, Outpoint and Clip-ID-names are not supported.
- If suitable commands are programmed (e.g., command tag PLAY, etc.), VTRs and VTR-like devices can be controlled via custom control buttons or by remote menus and ROLL VTR transitions.
- You can control other non-VTR devices (e.g., CCUs, CGs, etc.) by substituting their commands for those in the Command-tag list of the **Custom Device Menu**. Refer to the section, "**Advanced Topics and Tables** " on page 17–9, for a list of available command tags. This list also appears (for applicable commands) in the **VTR Functions** and **DVE Functions** areas of the "**Custom Control**" section of Chapter 8, "**Memory Functions and More**" of the ***Synergy 1 Operation Guide***.

  When substituting for other commands, record these substitutions on the worksheet provided in this appendix. As an aid, we recommend that the custom control used to perform the command be suitably named. As a rule, these devices will have no BNC association, and consequently will not be accessed by ROLL VTR or by any remote menus.
- Custom Devices can use any of the panel's remote ports and any of the frame DVE ports. However, custom devices protocols cannot be used on the Aux, Peripheral and Editor ports.
- To use custom devices on the frame, you must have purchased the **DVE Send and Remote Control** option.
- DVE Send is not supported at this time. Therefore, DVE ports using custom devices can only be accessed via Custom Controls.
- Some protocol usage may exceed the maximum number of bytes (19) allocated per command. In cases where a custom control is used, 2 command slots (and 2 tags) can be used and a custom control programmed to invoke them in immediate succession. Each user-programmed device supports a maximum of 10 command slots. There may be other practical problems with the protocol you are trying to reproduce that may render custom devices unsuitable. Please do not hesitate to contact Ross Video technical support for assistance in using this feature.

Custom Devices Modify Menu

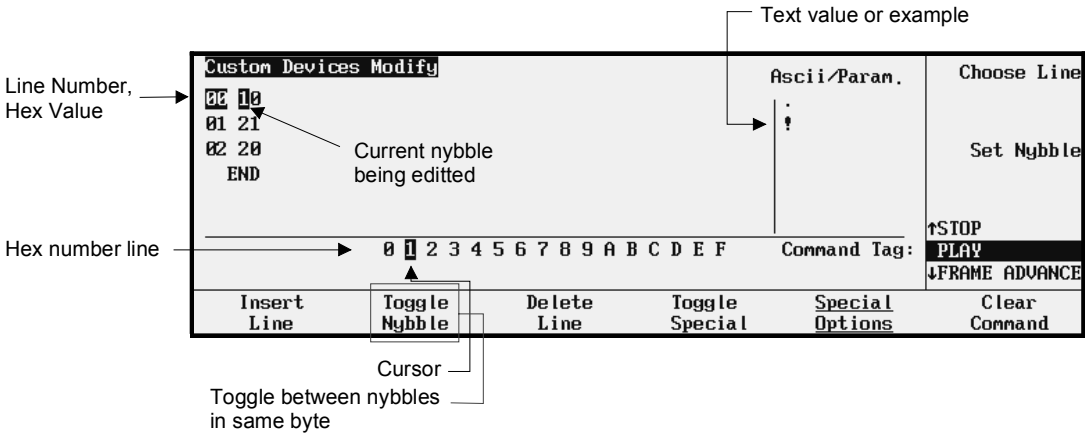
The **Custom Devices Modify** menu is divided into five main areas.

In the upper right hand corner (below the title), line numbers (or byte numbers) are displayed, followed by the Hexadecimal representation of the data byte at that location.

To the right of these line numbers and data values, under the heading Ascii/ Param., are the ACSII text characters equivalent to the data values. Refer to the table at the end of this appendix for converting decimal to hexadecimal to ASCII text. These two areas can also show special option values. Refer to the "**Advanced Topics and Tables"** section later in this appendix.

As with all other Synergy menus, the far right of the LCD lists the options modified by the three optical knobs, and the bottom label area allows for menu selection using the F1 to F6 soft keys.

Just above the label area is a line of single characters from 0 to 9 and A to F. This line is the hexadecimal number line. This line is where the cursor (controlled by the middle **Set Nybble** knob) indicates the value of the currently selected nybble of the byte being edited. The top knob determines which line to edit and the F2 soft key button determines which nybble to edit (upper most significant nybble or lower least significant nybble).



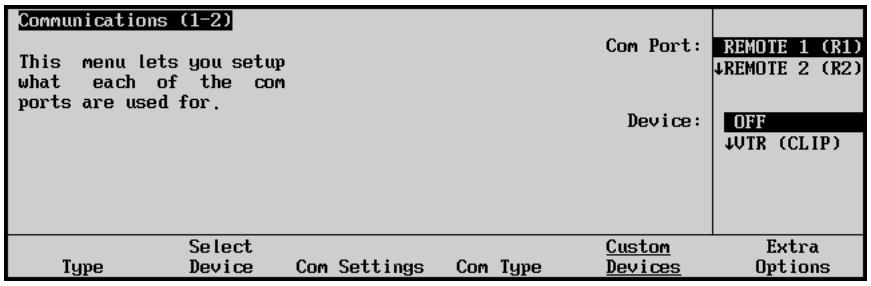
Custom Devices Modify Menu

The following section provides procedures for programming your custom devices.

Programming Commands

Use the following procedure to navigate to the **Custom Devices Menu**:

1. Navigate to the **Communications Menu 1-2** as follows:
   - Press **HOME** (to display the **Main Menu 1-2**).
   - **MORE** (to display the **Main Menu 2-2**).
   - **Setup** (to display the **Setup Menu**).
   - **Installation** (to display the **Installation Menu 1-2**).
   - **Communications** (to display the **Communications Menu 1-2**).



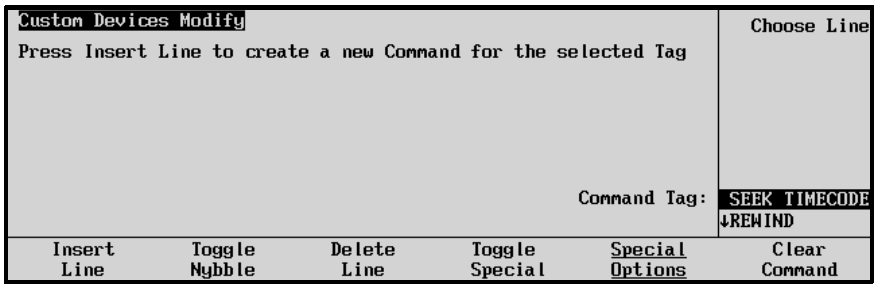
Communications Menu

2. Press **Custom Devices** to display the **Custom Devices Menu**.

Custom Devices Menu

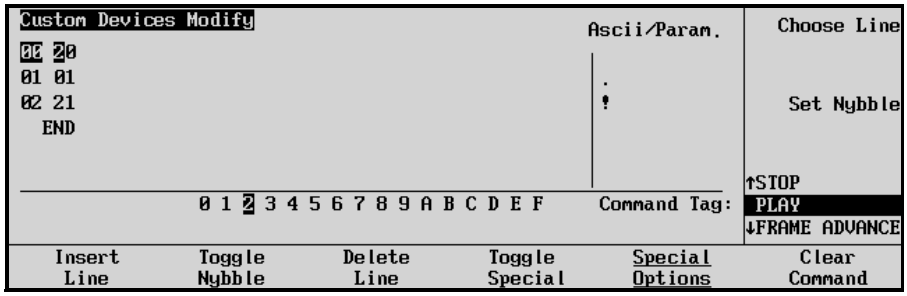
   - Use the middle scroll knob to select the custom device that you wish to modify.

3. Press **Modify** to display the **Custom Devices Modify Menu**.



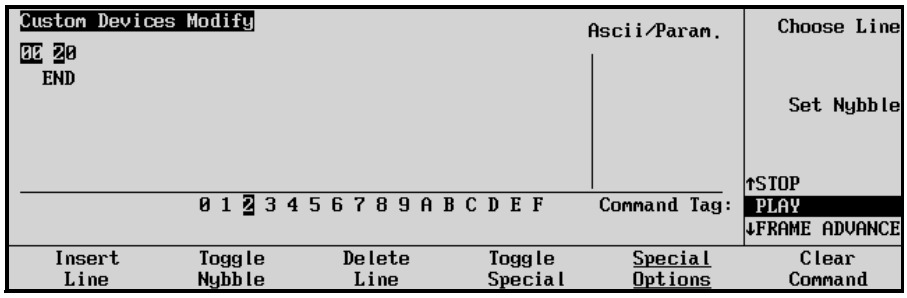
Custom Devices Modify Menu

4. Following are some examples of programming simple commands in a Custom Device Protocol. The first example demonstrates how to set the **PLAY** Command Tag to send the Sony Betacam play message, as shown here.



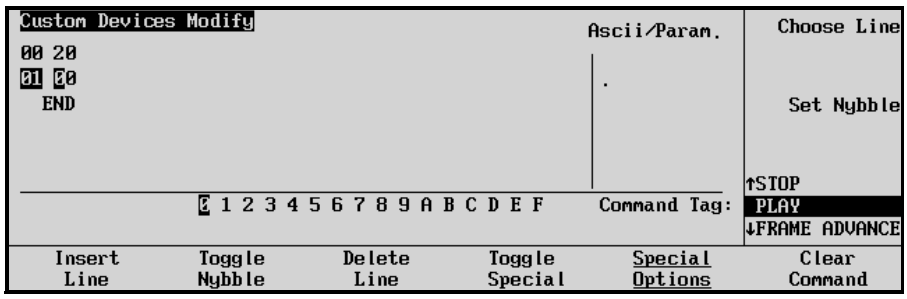
Custom Devices Modify Menu – Setting the Play Command Tag

5. Start the first line by pressing **Insert Line,** and dialing the middle **Set Nybble** knob until the first nybble of the first line (00) indicates a 2. This will also be highlighted on the Hex digit number line to the left of the Command Tag.



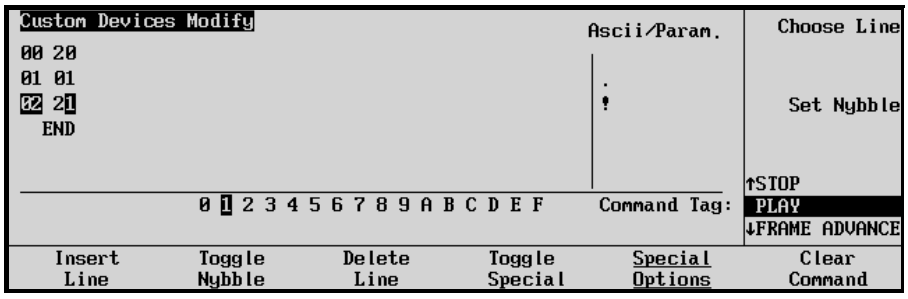
Custom Devices Modify Menu – Starting the FIrst LIne

6. Use **Insert Line** again to add a second byte to the command as shown here.



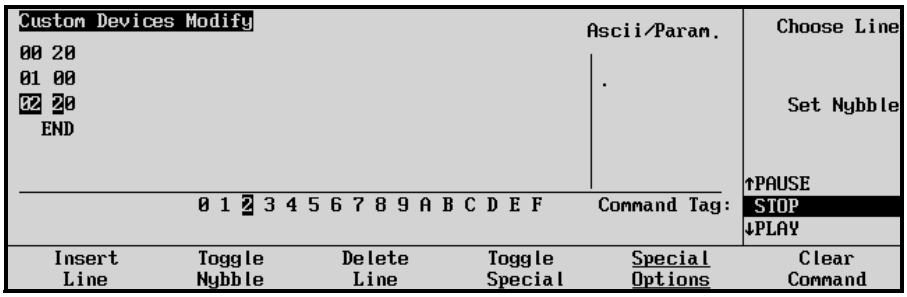
Custom Devices Modify Menu – Adding a Second Byte

7. Use the **Toggle Nybble** soft key to move to the lower nybble of the byte, and dial the middle knob to set the second byte to 01.
8. Press **Insert Line** to add the final line.



Custom Devices Modify Menu – Adding the Final Line

9. Use the **Set Nybble** knob to set the first nybble to 2.
10. Press **Toggle Nybble**, and set the lower nybble to 1.
11. In a similar fashion the Stop tag can be set to hex values of **20, 00 20** as illustrated here.



Custom Devices Modify Menu – Setting the Stop Tag

Program your custom devices in accordance with the information and tables attached.

Programming Worksheets

Use the following ***Programming Worksheets*** to record your substituted commands.

First Custom Device Protocol CUSTOM0 – Programming sheet										
#1	Description:							Tag:		
Bytes										
#2	Description:							Tag:		
Bytes										
#3	Description:							Tag:		
Bytes										
#4	Description:							Tag:		
Bytes										
#5	Description:							Tag:		
Bytes										
#6	Description:							Tag:		
Bytes										
#7	Description:							Tag:		
Bytes										
#8	Description:							Tag:		
Bytes										
#9	Description:							Tag:		
Bytes										
#10	Description:							Tag:		
Bytes										

Suggested abbreviations for parameter flags notation: H – Hex, B- BCD, AH – ASCII Hex, AB – ASCII BCD / 1-8 (digits) or 4,8…32 (bits) / M – Mot, I – Int. / S – Sca, E – Ext, + – Sign.

Example: B4/ M/+ would be a signed 4 digit BCD with Motorola ordering

Second Custom Device Protocol CUSTOM1 – Programming sheet											
#1	Description:								Tag:		
Bytes											
#2	Description:								Tag:		
Bytes											
#3	Description:								Tag:		
Bytes											
#4	Description:								Tag:		
Bytes											
#5	Description:								Tag:		
Bytes											
#6	Description:								Tag:		
Bytes											
#7	Description:								Tag:		
Bytes											
#8	Description:								Tag:		
Bytes											
#9	Description:								Tag:		
Bytes											
#10	Description:								Tag:		
Bytes											

Suggested abbreviations for parameter flags notation: H – Hex, B- BCD, AH – ASCII Hex, AB – ASCII BCD / 1-8 (digits) or 4,8I32 (bits) / M – Mot, I – Int. / S – Sca, E – Ext, + – Sign.

Example: B4/ M/+ would be a signed 4 digit BCD with Motorola ordering

Advanced Topics and Tables

Besides strings of constant Hex values (bytes), commands can be programmed with special characters and with converted parameter values. Examples of the special characters include the two special values to perform a communications break. The communications break is formed by a data zero event that extends beyond the normal data bit length permitted in the serial data word (e.g., serial word length of 8-Odd-1Stop bit is 1+8+1+1 = 11 bits long). The commonly used minimum length for break is 17 bits long or one and a half to two data-words. To implement a break in custom devices, there needs to be a [Break On], a [Break Off], and an optional delay in between.

Certain commands pass a parameter to the custom device driver that can be converted into a string of bytes using a special packed command in place of a single byte. Only one of these special command lines may appear in any given command slot (since only one parameter is ever passed). This command line is converted during runtime into the specified one to four bytes of parameter data, and included at that location in the command string. One command tag that gets a parameter is the Cue to Clip command. The value passed when a Cue to Clip command is triggered is the desired cue time as represented in a packed word timecode format. Typically, this value must then be converted into some representation of packed timecode bytes to be sent to the external device. The packed command flags are described in the following table. You may want to use the Panel Diagnostic\RX/TX\Monitor to view the results when using parameters in commands.

Packed Command Flags

Special Names	Function
[Break On]	Force the outputs to data low value (for RS232 data low is a positive voltage)
[Break Off]	Release the outputs from a forced data low
[Checksum]	Insert the checksum byte (currently supports only simple 8-bit additive checksum)
[Posn X]	Not currently supported
[Posn Y]	Not currently supported
[Posn Z]	Not currently supported
[Param…]	Parameter (see parameter formatting flags below)

Parameter Formatting Flags

Special Formats	Description
Hex	Parameter take as is and converted into string of bytes (1-4) **Note**: if the parameter is already in a packed BCD format then using Hex format will preserve the BCD format of the parameter
ASCII Hex	Text representation of above “Hex” format.
BCD	Binary Coded Decimal (each nybble represents 1 digit 0-9) Converts a parameter that is in non-BCD format to a BCD format
ASCII BCD	Text representation of above “BCD” format. Converts a parameter from a non-BCD format to a text representation of the equivalent BCD format.

Parameter Formatting Flag Addendums

Byte Format Ordering	
Mot	Motorola ordering. Most Significant Byte (MSB) first, LSB last.
Int	Intel ordering. Least Significant Byte (LSB) first, MSB last.

Parameter Formatting Flag Addendums

Special buttons	
Scaled (Sca)	Re-scales a 12-bit parameter to fit output range
ASCII Extended (Ext)	Extends up the output to an even number of digits/characters without changing the output range
Signed (Sign)	Internal use - sign conversion

Parameter Formatting Flag Addendums

BCDWidths	(examples in Motorola ordering)
1 Digit	1 byte of 1 digit, [00] to max [09]
2 Digits	1 bytes of 2 packed digits each, [00] to max [99]
3 Digits	1 bytes of 2 packed digits and 1 byte of 1 digit, [00][00] to max[09][99]
4 Digits	2 bytes of 2 packed digits each, [00][00] to max[99][99]
5 Digits	2 bytes of 2 packed digits and 1 byte of 1 digit, max [09][99][99]
6 Digits	3 bytes of 2 packed digits each, max [99][99][99]
7 Digits	3 bytes of 2 packed digits and 1 byte of 1 digit, max [09][99][99][99]
8 Digits	4 bytes of 2 packed digits each, max [99][99][99][99]

Parameter Formatting Flag Addendums

HexWidths	
4 Bits	[00] to [0F]
8 Bits	[00] to [FF]
12 Bits	[00][00] to [0F][FF] (or Intel [FF][0F])
14 Bits	[00][00] to [3F][FF] (or Intel [FF][3F])
15 Bits	[00][00] to [7F][FF] (or Intel [FF][7F])
16 Bits	[00][00] to [FF][FF]
24 Bits	[00][00][00] to [FF][FF][FF]
32 Bits	[00][00][00][00] to [FF][FF][FF][FF]

List of Available Custom Device Commands

Tag	Available to VTR/DVE	Parameter	Comment
SEEK TIMECODE (use Goto Clip in Custom Controls)	VTR	VTRClip Time as a packed BCD HHMMSSFF	VTR remote menus, Custom controls, VTR Clips. Use Hex to output BCD
REWIND	VTR	None	VTR remote menus, Custom controls
FRAME REVERSE	VTR / DVE	None	VTR remote menus, Custom controls
PLAY REVERSE	DVE	None	Custom controls only.
PAUSE	VTR / DVE	None	VTR remote menus, Custom controls
STOP	VTR / DVE	None	VTR remote menus, Custom controls
PLAY	VTR / DVE	None	Needed for ROLL VTR, VTR remote menus. Also custom controls (VTR and DVE)
FRAME ADVANCE	VTR / DVE	None	VTR remote menus, Custom controls
FAST FORWARD	VTR / DVE	None	VTR remote menus, Custom controls
RECORD	VTR	None	Custom controls only.
DVE RECALL	DVE	Effect Number	Custom controls and DVE shot-box (pattern area) only.
FADER POSITION	Future DVE	Position 0-4095	DVESEND - Not enabled currently
DIAGNOSTIC 1	VTR / DVE	None	Custom controls only.
DIAGNOSTIC 2	VTR / DVE	None	Custom controls only.
DIAGNOSTIC 3	VTR / DVE	None	Custom controls only.

Decimal to Hexadecimal to ASCII Conversion Table

Decimal	Hex	ASCII	Decimal	Hex	ASCII	Decimal	Hex	ASCII	Decimal	Hex	Decimal	Hex	Decimal	Hex
0	00		43	2B	+	86	56	V	129	81	172	AC	215	D7
1	01		44	2C	,	87	57	W	130	82	173	AD	216	D8
2	02		45	2D	-	88	58	X	131	83	174	AE	217	D9
3	03		46	2E	.	89	59	Y	132	84	175	AF	218	DA
4	04		47	2F	/	90	5A	Z	133	85	176	B0	219	DB
5	05		48	30	0	91	5B	[	134	86	177	B1	220	DC
6	06		49	31	1	92	5C	\	135	87	178	B2	221	DD
7	07		50	32	2	93	5D	]	136	88	179	B3	222	DE
8	08		51	33	3	94	5E	^	137	89	180	B4	223	DF
9	09		52	34	4	95	5F	_	138	8A	181	B5	224	E0
10	0A		53	35	5	96	60	`	139	8B	182	B6	225	E1
11	0B		54	36	6	97	61	a	140	8C	183	B7	226	E2
12	0C		55	37	7	98	62	b	141	8D	184	B8	227	E3
13	0D		56	38	8	99	63	c	142	8E	185	B9	228	E4
14	0E		57	39	9	100	64	d	143	8F	186	BA	229	E5
15	0F		58	3A	:	101	65	e	144	90	187	BB	230	E6
16	10		59	3B	;	102	66	f	145	91	188	BC	231	E7
17	11		60	3C	<	103	67	g	146	92	189	BD	232	E8
18	12		61	3D	=	104	68	h	147	93	190	BE	233	E9
19	13		62	3E	>	105	69	i	148	94	191	BF	234	EA
20	14		63	3F	?	106	6A	j	149	95	192	C0	235	EB
21	15		64	40	@	107	6B	k	150	96	193	C1	236	EC
22	16		65	41	A	108	6C	l	151	97	194	C2	237	ED
23	17		66	42	B	109	6D	m	152	98	195	C3	238	EE
24	18		67	43	C	110	6E	n	153	99	196	C4	239	EF
25	19		68	44	D	111	6F	o	154	9A	197	C5	240	F0
26	1A		69	45	E	112	70	p	155	9B	198	C6	241	F1
27	1B		70	46	F	113	71	q	156	9C	199	C7	242	F2
28	1C		71	47	G	114	72	r	157	9D	200	C8	243	F3
29	1D		72	48	H	115	73	s	158	9E	201	C9	244	F4
30	1E		73	49	I	116	74	t	159	9F	202	CA	245	F5
31	1F		74	4A	J	117	75	u	160	A0	203	CB	246	F6
32	20	space	75	4B	K	118	76	v	161	A1	204	CC	247	F7
33	21	!	76	4C	L	119	77	w	162	A2	205	CD	248	F8
34	22	"	77	4D	M	120	78	x	163	A3	206	CE	249	F9
35	23	#	78	4E	N	121	79	y	164	A4	207	CF	250	FA
36	24	$	79	4F	O	122	7A	z	165	A5	208	D0	251	FB
37	25	%	80	50	P	123	7B	{	166	A6	209	D1	252	FC
38	26	&	81	51	Q	124	7C	|	167	A7	210	D2	253	FD
39	27	'	82	52	R	125	7D	}	168	A8	211	D3	254	FE
40	28	(	83	53	S	126	7E	~	169	A9	212	D4	255	FF
41	29	)	84	54	T	127	7F		170	AA	213	D5		
42	2A	*	85	55	U	128	80		171	AB	214	D6		

Note: 7-bit printable ASCII range from 32 to 126 decimal. The Custom device menus represent text values outside that range with a period '.'.

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 in which the manual movement of the fader handle is simulated electronically. 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 which generates various border effects on keys created by the switcher.

Chroma Key

An effect in which 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 in which 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 which 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 which 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 which 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.

Null Modem

Null Modem describes the ability to swap the pinout designations for transmitting (Tx) and receiving (Rx) signals and is used for cabling between devices which use the same pinouts.

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" or "BKGD", and "PST".

PV Output

A switcher output which 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.

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