
Ross Video Limited



Installation Guide

Software Issue: 16.10-S100


Cool Practical Technology™

Synergy 100 • Installation Guide

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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 Voltage	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.
- 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.



Warning

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** 1.00mm² 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 appareil numérique de la classe "A" est conforme à la norme NMB-003 du Canada.

EUROPE

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

INTERNATIONAL

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



Notice

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

General Handling Guidelines

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

A Word About Static Discharge

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



Notice

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

Warranty and Repair Policy

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

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

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

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

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

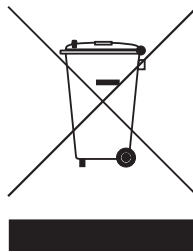
This warranty is TRANSFERABLE to subsequent owners, subject to Ross' notification of change of ownership.

Environmental Information

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

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

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



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

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

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Introduction

A Word of Thanks

Congratulations on choosing the Ross **Synergy 100 SD** digital video production switcher. You have purchased the power and versatility of an advanced Multi-Level Effects (MLE) digital switcher that is ready to take on all creative challenges in today's competitive broadcast environment. You will be pleased at how easily your Synergy 100 switcher fits into your working environment.

About This Guide

This guide covers the installation of the Synergy 100 switcher. The following chapters are included:

- Chapter 1, “**Introduction**” summarizes the guide and provides important terms, conventions and a system-wide comparison chart.
- Chapter 2, “**Installation**” provides instructions for installing Synergy 100 hardware and software, and performing software upgrades.
- Chapter 3, “**Preliminary Cabling and Check**” outlines procedures for making basic control panel, main frame, reference and monitor connections. A preliminary functional check procedure is provided.
- Chapter 4, “**Preliminary Video Installation**” provides instructions for connecting video and key signals to all areas of the switcher.
- Chapter 5, “**Using the Menu System**” provides an introduction to the menu system of the Synergy 100.
- Chapter 6, “**BNC Configuration and Check**” provides instructions for configuring and checking your BNC inputs.
- Chapter 7, “**Communication Setup**” provides instructions for setting up communication parameters with an audio mixer, a serial tally interface, or external editors.
- Chapter 8, “**Additional Installation Setups**” provides instructions for additional setup procedures such as setting up outputs, clean feed, GPIs, and DSK Drop.
- Chapter 9, “**Completing Setup**” provides instructions for storing switcher configurations to a storage device and resetting factory defaults.
- Appendix A, “**Specifications**” provides technical specifications and connector pinout diagrams.
- Appendix B, “**Hardware Options**” provides instruction for installing a variety of hardware options.
- Appendix C, “**Diagnostics**” provides information on the Synergy 100 panel diagnostics tools.
- Appendix D, “**Switcher Installation Worksheets**” contains copies of the worksheets described throughout this guide. Use these blank worksheets to plan and record your switcher installation and wiring connections.
- The **Glossary** provides a reference list of important switching and video terms used throughout this guide.
- An **Index** is also provided for your reference.



Note

Refer to the *Synergy 100 Operation Guide* for a comprehensive outline of product highlights, plus a complete overview of standard and optional system features.

If, at any time, you have a question pertaining to the installation of your Ross **Synergy 100** switcher, please contact us at the numbers listed in the front of this guide. Our technical staff are always available for consultation, training or service.

Documentation Conventions

The following conventions are used throughout this guide:

- Rear panel connectors are indicated in bold-faced upper case letters. For example:
The **AUX 1** connector is ...
- Control Panel buttons are indicated in bold-faced upper case letters, using a sans-serif font. For example:
Press **WIPE** to ...
- Menu names on the preview overlay are indicated in bold-faced text. For example:
The **Inputs Menu** allows you to...

Documentation Terms

The following terms are used throughout this guide:

- A “**1+1 DVE**” has both a video (fill) and an key (alpha) connection from Synergy to the DVE. Both key and fill signals are connected from the DVE to Synergy.
- “**Crosspoint**” is synonymous with “**Button**”. Both refer to the switcher crosspoints or buttons on the Synergy 100 control panel.
- “**DVE**” refers to the DVE (either single or multi-channel) that is connected to a Synergy 100 switcher via RS-422 serial control.
- “**Input #**” refers to the “**BNC input #**” on the rear of the Synergy 1 frame and vice versa.
- “**Frame**” and “**Electronics Frame**” both refer to the Synergy switcher’s electronics frame.
- “**Operator**” and “**User**” refer to the person who uses the Synergy 100 production switcher.
- “**Panel**” and “**Control Panel**” both refer to the Synergy switcher’s large multi-button control panel.
- “**SDI**” refers to Serial Digital Interface, a digital video signal that is distributed via a single coaxial cable with BNC connectors.
- “**Storage device**” refers to a standard 1.44 MB high-density floppy disk or a USB key. Either type of storage device can be used to save and recall configurations, setups and certain files to the Synergy switcher.
- “**System**” refers to the entire Synergy 100 system, consisting of its electronics frame and control panel.
- “**Video system**” refers to the mix of interconnected digital equipment (including the edit controller, VTRs, DVEs, etc.) in which the Synergy 100 system is included.

Abbreviations

The following abbreviations are used throughout the text:

Abbreviations

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

Product Overview

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

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

Product Highlights

The following list summarizes the Synergy 100's key features:

- **Fully Digital System.** The Synergy 100 switcher is fully-digital, including the reference video connection. No analog input/output circuitry is provided. This unique concept simplifies the design, minimizes the power requirements and reduces the overall cost.

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

- **Multi-Panel Flexibility.** For superb flexibility and versatility, the Synergy 1 frame is designed to operate with eight different control panels, four of which previously operated in an analog environment:
 - ~ GVG 100 (analog)
 - ~ GVG 110 (analog)
 - ~ RVS-210A (analog)
 - ~ RVS-216A (analog)
 - ~ RVS-210D (digital)
 - ~ RVS-216D (digital)
 - ~ Synergy 1 (digital)
 - ~ Synergy 100 (digital)
- **Large Input Matrix.** The Synergy 1 frame can accept up to 16 digital video inputs — not including black and two color background signals (which are generated internally). On the Synergy 100 panel with its 10 available crosspoints, you have several crosspoint layout options:
 - ~ Assuming that **Black** and **Color Background** are mapped to crosspoints 1 and 10, respectively, and you have not mapped a **SHIFT** button, the panel gives you direct access to 8 inputs. The remaining sources can be mapped internally, allowing you to associate key (alpha) signals with their respective fill sources.
 - ~ If you wish to map a **SHIFT** button to crosspoint 10, with **Black** and **Color Background** mapped to crosspoints 1 and 9, respectively, the panel gives you direct (and shifted) access to all 16 inputs. In this configuration you can also internally associate key and fill inputs, for full input matrix flexibility.



Note

If you prefer, the **SHIFT** button can be mapped to crosspoint 1, with **Black** being mapped to an alternate crosspoint.

- **Compact Size.** The 2 RU frame accepts 16 inputs and one fully optional MLE, including eight untimed Aux Buses. There is no extender board available, but the frame top can be removed easily for servicing if required. The CPU board has convenient ejector handles on each side and plugs easily into the frame's backplane.
- **Low Power.** The only power requirements are a maximum 180 watts for the frame and a maximum of 19 watts for the control panel. The frame's power supply is designed for easy removal if an exchange is required.
- **Growth Path.** The Synergy 1 frame provides a versatile growth path, regardless of your entry point within the system. If you start with a GVG 100, GVG 110, Ross RVS-210A or 210D, Ross RVS-216A or 216D control panel, or a Synergy 100 control panel, you can move up to the Synergy 1 control panel and benefit from a full range of advanced features. If you start with the Synergy 1 control panel already in place, you can optionally add two more Downstream Keyers for added flexibility and creativity in your productions. Furthermore, knowledge and skill gained on the Synergy 1 panel allows a seamless transition to the larger Synergy switchers — as operation is almost identical.
- **Three Powerful Keyers** (Standard). The Synergy 100 panel provides access to three powerful keyers (two Effects keyers and one Downstream keyer):
 - ~ The **Effects Keyers** provide self, auto select, preset pattern and chroma key capabilities.
 - ~ The **Downstream Keyer** provides self and auto select keys.
 - ~ A key border can be generated on the downstream key if the optional border card is installed.
 - ~ With the optional **Squeeze & Tease 2D** or **Squeeze & Tease WARP** feature installed, the **Effects Keyers** can also perform simple 2D or more complex 3D DVE effects and **Squeeze & Tease 2D** boxes. Refer to the section “**Squeeze & Tease**” on page 1-12 or the *Squeeze & Tease 3D/WARP Owner's Guide* for more information.
- **Squeeze & Tease 2D** and **Squeeze & Tease WARP.** A simple 2D or more complex 3D DVE can be built into the **Effects Keyers**. With either option installed, all key types can be repositioned, squeezed, and zoomed.

With 2 D, you can simultaneously crop, reposition, squeeze or zoom, and adjust the border on a key inside a *single* keyer. With WARP, you can simultaneously crop, rotate, squeeze or zoom, and reposition a key in 3D space inside a *single* keyer.

Refer to the section “**Squeeze & Tease**” on page 1-12 or the *Squeeze & Tease 3D/WARP Owner's Guide* for more information.

- **Chroma Keying.** A standard feature in the **Effects Keyers**, the chroma keyer features auto chroma key, hue suppression, rejection, and adjustable clip and gain parameters. Our chroma keyer was designed for use in today's fast-paced productions.
- **Two Pattern Generators** (Standard). The Synergy 100 is equipped with a primary pattern generator for creating wipes, plus a secondary pattern generator for **PST PATT** keys. The primary generator is equipped with extensive classic, rotary, and matrix wipes.

- **Fully Featured “Program/Preset.”** The Program/Preset buses have *full multi-level effects capability* including wipes, chroma keys, and preset patterns.
- **Effects Functions (Preview Overlay).** This powerful feature presents safe title, center crosshairs, and more. Displays are individually selectable on the preview monitor for quick reference.
- **Rugged Construction.** Ross products are tough — they’re built to handle years of demanding, continuous use. In addition, the Synergy series is backed by a **three-year transferable warranty**.

Standard Features

The following features are standard in the Synergy 100 switcher:

- **Complete Control Panel**
Regardless of what options are ordered, your control panel is always equipped with every button, knob, display, and light. This means that your Synergy 100 switcher and your control room will look their very best – even if your budget is tight.
- **Serial Digital Inputs**
Sixteen serial digital inputs are standard on the Synergy 100. Any input can be assigned to any button on the Program/Preset bus, thus simplifying installation and your ability to customize the panel layout. Inputs can be used for either video or alpha channels.
- **Panel Tallies**
There are 16 panel tallies on the Synergy 100 control panel.

Full MLE Effects

The Synergy 100 switcher includes a *full-featured* MLE that includes the following functions:

- Two wipe generators are standard.
- The MLE includes three keyers that each offer matte fill, key invert, mask, adjustable clip and gain, and self (luminance) key and linear (auto select) key modes.
- The downstream keyer offers extensive optional bordering that works with both key types.
- The optional **Squeeze & Tease 2D** or **Squeeze & Tease WARP** feature can be installed in the Effects Keyers, allowing you to squeeze, zoom, or in the case of the WARP option, rotate any key type. Refer to the section “**Squeeze & Tease**” on page 1-12 or the *Squeeze & Tease 3D/WARP Owner’s Guide* for details.
- The MLE features five comprehensive matte generators.
- Full preview capability is provided.

Copy and Swap Functions

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

- **Copy Key** – allows you to copy the contents of one keyer to another keyer.
- **Swap Key** – allows you to swap the contents of one keyer with another keyer.

Pattern Generators

The Synergy 100 includes (as standard) both primary and secondary pattern generators that are used for wipe transitions and preset patterns. The primary generator is equipped with extensive classic, rotary, and matrix wipes. The secondary generator provides classic patterns.

Chroma Keying

Chroma keying is available in the **Effects Keyers**. Each high quality chroma keyer features internal 4:4:4 chroma channel interpolation from any of the 4:2:2 inputs. Using the control panel, you can adjust the Chroma key's clip, gain, rejection, suppression, and hue. The **Auto Chroma Key** feature allows the user to quickly and automatically achieve the best chroma key for a selected color.

Untimed Aux Buses

Eight untimed Aux Buses are standard, each of which can be used to route video to monitors, DVE channels, still stores, tape machines, etc. Aux Buses 3 through 10 can be used to route any untimed signals to other external sources, including:

- Black (as supplied by the "601 REF IN" BNC), plus all primary inputs
- Clean feed (if the option is installed)
- MLE program and preview outputs



Note

Black, clean feed, and program and preview outputs can only be routed to the Aux Buses using a Remote Aux Panel. All other signals (primary inputs) can be routed using either the remote panels or the Synergy 100 control panel itself.

Since the Synergy 1 frame generates its own internal black signal, selecting **BLACK** on an untimed Aux Bus will route to the output whatever is connected to your "**601 REF IN**" BNC. See table below.

Aux Bus Capabilities by Timing Status

Aux Bus	Timing	Black	PV	Clean Feed	PGM
3 - 10	Untimed	Ref	Yes	Yes	Yes

Standard Digital Outputs

The following table lists all standard Synergy 100 digital outputs:

Synergy 100 Digital Outputs

Output Type	Quantity
Program	2
Preview	2
Aux Bus	8
Total Outputs	12



Note

If the **Clean Feed** option is installed, an additional output is provided, for a total of 13 outputs.

Aux Buses 1 and 2 are available with the Synergy 1 panel. Contact **Technical Support** for information.

Disk Drive

Using a standard high-density 3.5-inch floppy disk, you can quickly and easily upgrade your switcher software as new versions are released. In addition, each operator can store and recall their own complete switcher setups, including memory functions, switcher personalities, installation parameters, and 3D wipes.

Memory System

The Synergy 100 switcher is equipped with a standard 100-event memory for complete switcher snapshots. At the touch of a button, the entire switcher setup can be recalled using the numbered buttons in the **Effects Control** group, or the **10** and **1** buttons (in conjunction with the **SEL** button) in the **System Control** group.

Matte Generators

The Synergy 100 switcher has five simple color generators. These color generators allow you to adjust the hue, color saturation, and luminance of the BKGD, wipe pattern borders, Effects key fill, or the Downstream key border and matte fill.

Displays and Indicators

The Synergy 100 switcher always keeps you informed.

- **PGM** bus crosspoints are illuminated red, signifying “on-air” status, except when the panel is faded to black. In this case, the crosspoint LEDs will be orange.
- **PST** bus crosspoints are lit orange, except during a background transition, when they will be red.
- **KEY** bus crosspoints will be lit orange when the key is not on air, and red when the key is contributing to the program output.
- The secret-till-lit LEDs to the left of each crosspoint bus will be lit green when the source selected on the bus is synchronous, and orange if the source is non-synchronous.
- Functions that have control of the **Effects Control** groups will be lit green (e.g. **FLY KEY**).
- The **ON AIR** secret-till-lit LEDs in the **Effects Keyers** group and under the key and DSK transition buttons in the **Transition Control** group glow red when the key is on air.
- The **EDIT** secret-till-lit LED under the **MENU** button in the **System Control** group is lit when the **Editor** option is installed and enabled.
- The auto transition rate in the **System Control** group is constantly visible.
- When the switcher is in “memory mode”, the last memory register accessed is displayed in the **System Control** group.
- The four-character **MODE** displays in the **Effects Control**, **Mattes**, and **System Control** groups, always inform you of which function has control of each group.
- The LEDs in the **Transition Progress Bar** show you how far the transition has progressed, and which direction the fader must travel to complete it.

General Purpose Interface

The Synergy 100 switcher is equipped with twelve dedicated GPI inputs.

- **GPI Inputs** allow the switcher to interface with peripheral equipment. Each input can be assigned to perform functions such as a fade-to-black, a memory recall, or an MLE auto transition.

Effects Functions (Preview Overlay)

The **Effects** function makes it possible to present various types of useful information on the two preview outputs. The overlay can be displayed according to user preferences. A variety of overlay information is available:

- The “**Safe Title and Safe Action Area**” overlay places a SMPTE standard safe title or safe action area indication over the switcher’s main preview output.
 - ~ Safe title is a box that outlines the area within which the vast majority of home TV sets will be able to read text.
 - ~ Safe action area is a box that outlines the region within which viewers should be able to follow the action on the screen.
- The “**Center Cross Hairs**” overlay places cross hairs on the preview output to indicate the center of the picture. It is useful in the alignment of text and other information.
- The “**Menu Bkgd**” gives you the option of placing a blue background behind the menu, as opposed to having the text on top of the preview output.

Digital Reference

The Synergy 100 switcher requires a digital reference signal connected to the **601 REF IN** BNC. Internal black is regenerated from this digital reference. If only an analog reference is available, an external A-D converter is required.

Synergy Slots

The Synergy 100 incorporates a special mode in which pseudo-random information is statistically measured on a cumulative basis.

System Options

This section lists the options available for the Synergy 100.



Note

Refer to the section “**Options Menu**” on page 2-28 for instructions on how to verify the status of your installed hardware options.

USB Removable Media Drive

The **USB Removable Media Drive** replaces the floppy disk drive in the control panel, and supports industry standard USB keys. This option makes it possible to store and recall complete switcher setups including memory functions, switcher personalities, installation parameters, and more, to a USB key. Operators and technical staff can easily back up switcher setups and transfer these settings to other Synergy production switchers.



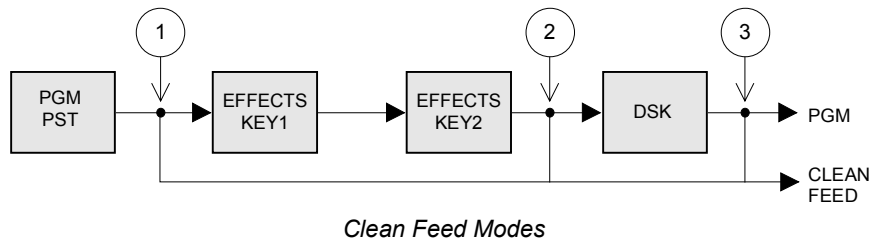
Note

This option requires version 16 or higher Synergy 100 SD software, and version 3 or higher of the control panel CPU board.

Clean Feed

The **Clean Feed** option provides an additional “program” output that is derived from a *different location* than the standard program output. Typical applications are live-to-tape productions and recording shows for later airing without “call in” numbers inserted.

The **Clean Feed** output can be generated from different locations in the video path. It can come from *before* or *after* all keys, including the DSK, or after the Effects Keyers but before the DSK. The Clean Feed alpha output can be derived from any key type on Key 1. The point from which the feed is derived is software-configurable. Refer to the following diagram:



1. At point **1** above, the clean feed output is pulled after the MLE’s program/preset bus, but *before* the three keys are added.
2. At point **2** above, the clean feed output is pulled downstream of the two Effects keyers, but upstream of the DSK.
3. At point **3** above, the clean feed output is pulled downstream of the three MLE keyers and effectively mirrors the program output.

Note that the **Clean Feed** option comprises software plus a hardware “serializer” module that installs on the Frame Processor Board. Please call Ross Video **Technical Support** for more details.

Squeeze & Tease

One **Squeeze & Tease** option puts the power of a simple 2-D (two dimensional) or 3D (three dimensional), 2 channel, WARP DVE into both Effects keyers. Once installed, the Squeeze & Tease 2D option can perform the following digital video effects – using only one keyer.

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

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

- 10-bit processing using sub-pixel motion for great looking pictures.
- Warp effects include page turn, ripple, wave, mirror, swirl, melt, twist, slats, spheres, lens, gnarl, organics, pixie dust, sand, and more.
- Squeeze, crop, rotate, and reposition any kind of key.
- Create objects (such as slabs) from two images and manipulate them in 3D space.

- Preprocessor effects include defocus, mosaic, posterization, colorization, and strobe effects.
- Advanced picture frame borders can be the simple, single color type, or a fancy picture frame, including Roman column, tubular, beveled, computer style, tri-color, and more.
- All images can have natural lighting effects applied using a positionable light source with ambient light min/max controls.

Operationally, Squeeze & Tease is exceptionally easy to control. Most effects can be produced simply by pressing the **FLY KEY** button in the **Effects Keyer** group and using the 3-axis joystick and associated end stop knobs. Additional adjustment can be made through the menu system. Please note:

- Both Squeeze & Tease options comprise software plus “daughter boards” that install on the Frame Processor Board.

Tally Outputs

There are 16 optional frame tally relays available. Any tally can be assigned to any video input or the program output. Note that the **Tallies** option comprises the hardware relays that install in the switcher frame.

Floating Border Generator

The **Floating Border Generator** option provides visually dynamic border, shadow, and outline effects to the **Downstream Keyer** group, with either hard or “soft” edges. You can move the border to any position on the screen — even above the key.

Borders are “flown” in real time with the joystick (just like wipe patterns and DVE effects). Please note:

- All border edge effects can be modified through the parameters of **X** and **Y** position, border size, border color, density, and glow (giving a soft defocused look).
- The **Floating Border Generator** option comprises software plus a “daughter board” that installs on the Frame Processor Board.

Editor Interface

The **Editor Interface Option** allows the Synergy 100 to interface with all popular editing systems. The option itself comprises software plus security codes and once installed, the switcher can be controlled using an RS-232 or RS-422 interface and industry standard editor protocol. The editor can be used to read and write switcher functions including video input selection, pushbutton enable and disable, control settings, and memory registers. If GPI control is not sufficient and control of all switcher parameters from an editor is necessary, this option is required.

Remote Audio Mixer Control Interface

The **Remote Audio Mixer Control Interface Option** enables serial control from the Synergy 100 over an audio mixer for enhanced audio-follow-video, making an integrated A/V production possible.

This protocol supports the association of any audio input with any video input, as well as easy audio voice-over and level control directly from the Synergy 100 control panel.

Serial Tally Interface

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

Ultimatte Insider

Ultimatte Insider™ Option is a hardware option that adds true Ultimatte capability — directly *inside* the Synergy 100 switcher. The option comprises a hardware board designed by Ultimatte, the Oscar-winning industry leader in compositing technology.

Dedicated and Assignable Remote Aux Panels

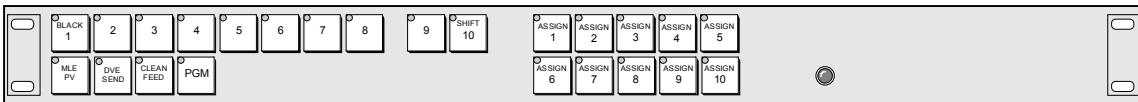
A **Remote Aux Panel** is a self-contained switching unit that has its own power supply. It mounts in a 19-inch rack and fills 1 RU (Rack Unit). There are two types of remote Aux panels available for the Synergy 100 switcher:

- A **Dedicated Remote Aux Panel** controls one Aux Bus output. A sample panel is shown below:



Dedicated Remote Aux Panel

- An **Assignable Remote Aux Panel** controls all 8 Aux Bus outputs. A sample panel is shown below:



Assignable Remote Aux Panel

In addition to the source buttons, each panel includes dedicated buttons for MLE PV, Clean Feed, Program, and future DVE Send capabilities, plus a bright “on air” LED. Assignable panels include buttons that are used to access the 8 Aux Bus outputs.

The remote panel itself is connected to the rear of the switcher’s frame via a single six-conductor Telco control cable. Typical applications include routing signals to one or more DVE channels and switching a monitor between various signals.

Up to eight Aux panels can be connected to the frame in daisy-chain fashion.

Please note:

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

Conversion Frames

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

Ross Converters

Converter	Description
ADC-8032B	Analog Composite to SDI Digital Decoder
ADC-8032B-S	Analog Composite to SDI Digital Decoder with Frame Sync
ADC-8033	Analog Component to SDI Converter
ADC-8035	Dual Analog Composite to SDI Converter
CMA-8011A	SDI Component Monitoring Amplifier
CMA-8011A-7	SDI Component Monitoring Amplifier with 7 reclocked SDI Outputs
DAC-8013	SDI to Analog Component Converter
DAC-8016A	SDI to Analog Composite Converter
DAC-8016A-S	SDI to Analog Composite Converter with Frame Sync
DAC-8016A-SX	SDI to Analog Composite Converter with Frame Sync and X-Color Filter
DAC-8016A-X	SDI to Analog Composite Converter with X-Color Filter
QMA-8044	Quad SDI to Analog Composite Monitoring Amplifier
UMA-8017	Universal SDI Monitoring Amplifier

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

Spare Parts Kit

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

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

Custom Main Panel Cable

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

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

A Word about Technical Support

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

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

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

Product Comparison Charts

For your reference, following are detailed charts that compare the features and options that are available with the Synergy 1's different control panel configurations.

Feature Comparison Chart

Feature	Synergy 100	Synergy 1	GVG 110/100	Ross 210A/D	Ross 216A/D
100 Event Memory	Yes (*10)	Yes	Yes (*10)	Yes (*10)	Yes (*10)
Number of Keyers	3	4 (3)	2	2	3 (*4)
All 16 Inputs Accessible	Yes (*1)	Yes	Yes (*1)	No (*2)	Yes
Chroma Key Clip, Gain and Hue controls	Yes	Yes	Yes	Yes	Yes
Chroma Key Reject, Blue spill suppression controls	Yes	Yes	Yes (*8)	No (*9)	No (*9)
Custom Control (Macros)	No	Yes	No	No	No
DSK Borders	Yes	No (*6)	Yes	Yes	Yes
DSK DVE Send Transitions	No (*7)	No (*6)	No (*7)	Yes	Yes
DSK Still Store and Animated Logo Generator	No	Yes (*6)	No	No	No
DVE Send	No	Yes	Yes	Yes	Yes (*5)
Extended Wipe Patterns	Yes	Yes	Yes	Yes	Yes
Favorite CG Button	Yes	Yes	No	Yes	Yes
Internally Generated Black	Yes	Yes	Yes	Yes	Yes
Internally Generated Color	Yes	Yes	Yes	Yes	Yes
Key 1 Borders	No	Yes	No	No	No
Key 1 Squeeze and Tease	Yes	Yes	Yes	Yes	Yes
Non-Sync LEDs	Yes	Yes	No	Yes	Yes
Preview Overlay	Yes (*11)	Yes	Yes (*11)	Yes (*11)	Yes (*11)
Remote Aux Panel GPIs	Yes	Yes	No	No	No
Software Reset from Panel	Yes	Yes	No	No	No
Transition Preview	Yes	Yes	No	Yes	Yes

Notes:

- (*1) Panel supports **SHIFT** button.
- (*2) The hidden (inaccessible) inputs can be configured as key signals.
- (*3) 2 keyers are standard and 2 external DSKs are optional.
- (*4) The Encoded Chroma Key button becomes the MLE Key 2 button. In this mode, external DVE Sends are not available. The DSK "next transition" button becomes the MLE Key 2 button and the DSK is then controlled by dedicated buttons (for CUT, AUTO TRANS).
- (*5) In 2 Keyer mode only. Timed Aux Bus option must be installed.
- (*6) DSKs on Synergy 1 are optional and external. They only have Self and Auto Select key capability.
- (*7) DSK can only perform Mix (dissolve) and Cut transitions.
- (*8) Variable via Chroma Key button hold down.
- (*9) Fixed settings.
- (*10) Bank selectable via the Auto Trans (System Control) display.
- (*11) Centre mark and safe title only.

Options Comparison Chart

The following chart details options that are available with each Synergy 1 switcher configuration.

Option	Synergy 100	Synergy 1	GVG-100/110	Ross 210A/D 216A/D
Audio Server Control	No	Yes	No	No
Clean Feed	Yes	Yes	Yes	Yes
Dual Aspectizer	No	Yes	No	No
Dual Border Generator (*4)	Yes	Yes	Yes	Yes
DVE Send	No	Yes	Yes	Yes
Editor Interface	Yes	Yes	Yes	Yes
External DSKs (up to 2)	No	Yes	No	No
Frame Tallies	Yes	Yes	Yes	Yes
Panel Tallies	Yes (*2)	Yes (*2)	No	Yes (*2)
Redundant Power	No	Yes (*3)	No	No
Remote Audio Mixer Control Interface	Yes	Yes	No	No
Remote Aux Panels	Yes	Yes	Yes	Yes
Remote Camera Control	No	Yes	No	No
Routing Switcher Control	No	Yes	No	No
Serial Tally Interface	Yes	Yes	No	No
Squeeze & Tease	Yes	Yes	Yes	Yes
Squeeze & Tease 3-D	Yes	Yes	No	No
Still Store Control	No	Yes	No	No
Timed Aux Buses	No	Yes (*1)	Yes (*1)	Yes (*1)
Ultimatte Insider	Yes	Yes	No	No
Video Server Control	No	Yes	No	No
VTR Remote Control	No	Yes	No	No

Notes:

(*1) Aux Bus 1 and 2 can be timed.

(*2) Panel tallies are standard. See table below.

(*3) In the control panel only.

(*4) Floating Border Generator option for the Synergy 100.

Tally Comparison Chart

The following chart details the *optional* tally combinations that are available with each Synergy 1 switcher configuration.

Tally Configuration	Synergy 100	Synergy 1	GVG-100/110	Ross 210A/D	Ross 216A/D
Panel Tallies	16 (Standard)	16 (Standard)	—	8 (Standard)	14 (Standard)
Frame Tallies	16	16	16	16	16
Maximum Tallies	32	32	16	24	30

Installation

In This Chapter

This chapter provides instructions for installing your **Synergy 100 SD** switcher hardware. The following topics are discussed:

- Static Discharge
- Getting Started
- Equipment Overview
- Installation at a Glance
- Hardware Installation
- Installing the Control Panel
- Installing Optional Remote Aux Bus Panels
- Installing the Electronics Frame
- Connecting Frame Power
- Jumpers and Switches
- Software Upgrade
- Options Menu
- Installing Software Options



Operating Tip

Refer to **Appendix D. Installation Worksheets** on page 13–1 for worksheets you can use to record switcher installation and wiring connections.

Static Discharge

Throughout this chapter, please heed the following cautionary note:



Caution

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

Getting Started

The following topics are covered in this section:

- Unpacking
- A Word About Serial Numbers

Unpacking

A complete Synergy 100 system is typically shipped in three boxes as outlined below. Your shipping configuration may vary.

- **Box 1** contains the Synergy 100 control panel, including its power supply, manuals, and installation kit.
- **Box 2** contains the Synergy 1 electronics frame, with circuit boards installed inside the frame itself.
- **Box 3** contains the remote Aux panels, coax cables, and all other options and accessories.

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

A Word About Serial Numbers

Serial numbers have now been implemented to allow Ross Video to properly track which options have been purchased by each customer. Refer to the section “**Options Menu**” on page 2-28 for instructions.

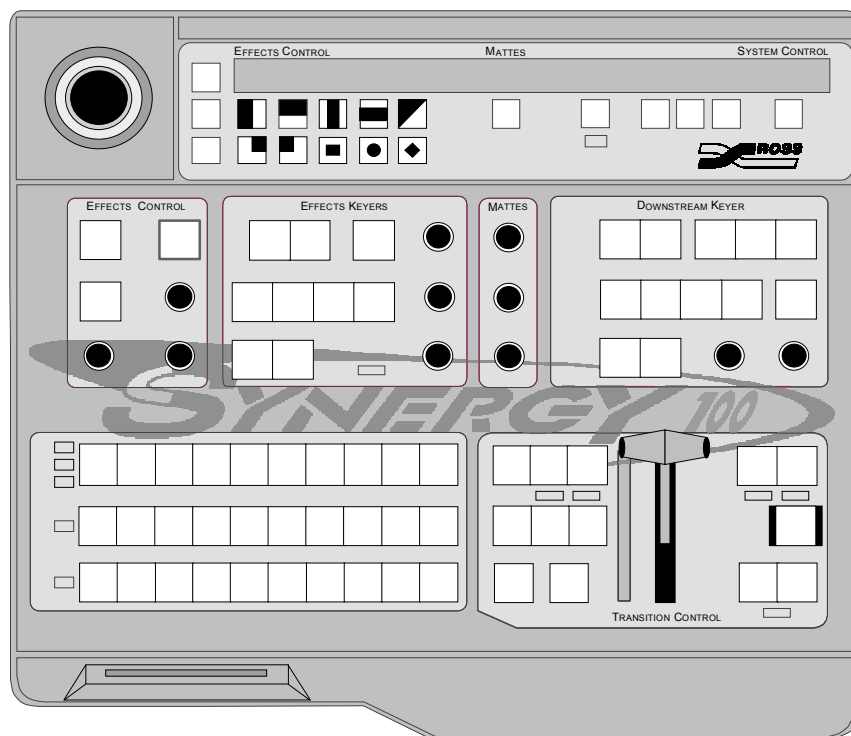
Equipment Overview

This section provides a hardware overview of the Synergy 100 switcher. The following sections are included:

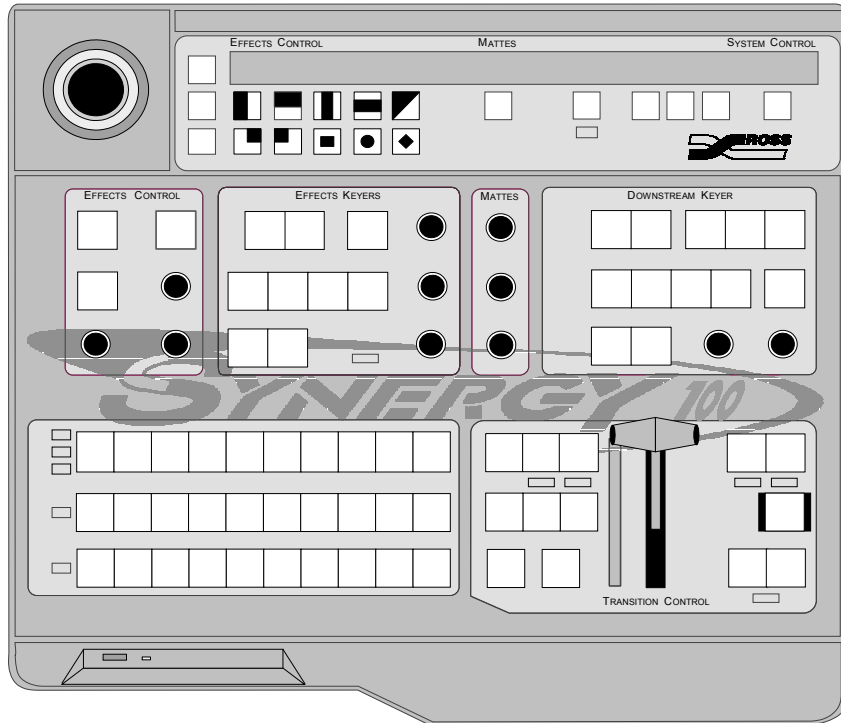
- Control Panel, Top View
- Control Panel, Rear Connector Panel
- Frame, Front View
- Frame, Rear Connector Panel View

Control Panel, Top View

The following figure illustrates a top view of the Synergy 100 control panel. Full details are provided in the *Synergy 100 Operation Guide*.



Synergy 100 Control Panel — Floppy Disk Drive



Synergy 100 Control Panel — USB Port



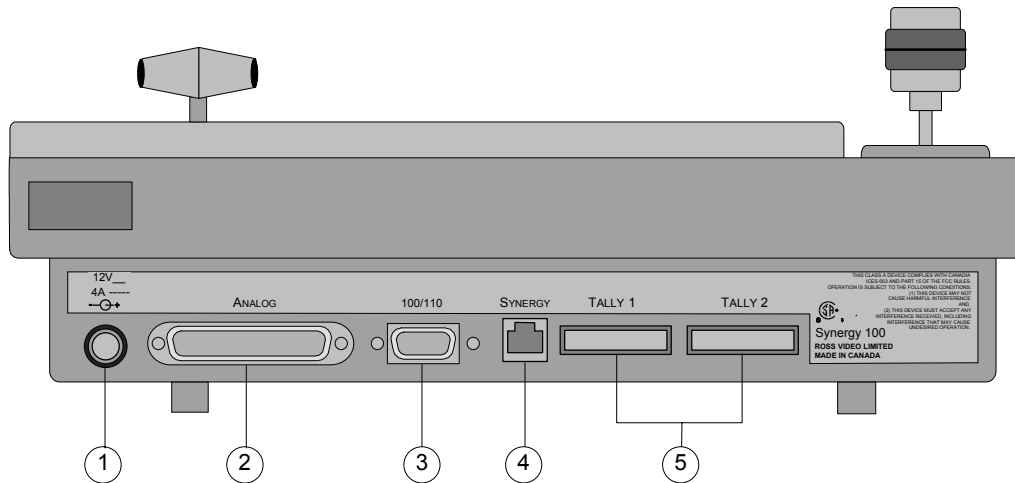
Important

Accessory Identification:

This control panel must be used with the Synergy 1 Rack Frame. In addition, the power supply used must be the Globtek Inc. Power Adaptor, Model GT-21097-4812.

Control Panel, Rear Connector Panel

The following figure illustrates the rear connectors on the Synergy 100 control panel.



Synergy 100 Control Panel — Rear View, Connector Section

1) Power	3) 100/110 Connector	5) Tally Connectors
2) Analog Connector	4) Synergy Connector	

1. Power

One DC connector is provided to supply power to the control panel.

2. Analog Connector

One 50-pin connector labeled **ANALOG** is provided for those users who wish to use their existing Ross RVS 210 or Ross RVS 216 control cable to connect their Synergy 100 panel to the frame.

3. 100/110 Connector

One 15-pin “D” connector labeled **100/110** is provided for those users who wish to use their existing GVG 100/110 control cable to connect their Synergy 100 panel to the frame.

4. Synergy Connector

One 8-pin shielded Telco connector labeled **SYNERGY** is provided for those users who wish to use a Telco control cable (supplied) to connect their Synergy 100 panel to the frame.



Important

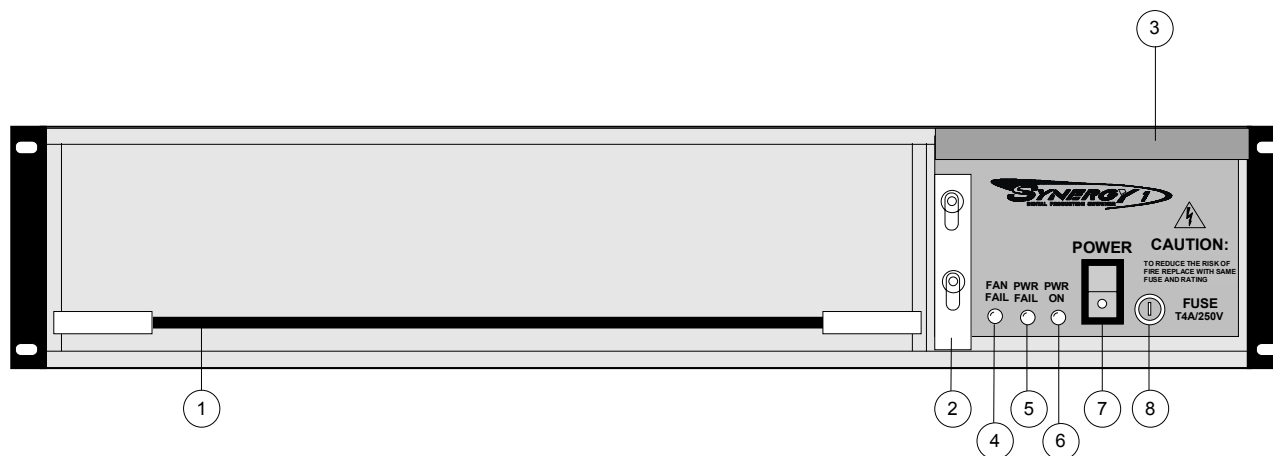
The cable for connecting the Synergy 100 Control Panel to the Synergy 1 Frame is not wired as a standard CAT5 ethernet cable. If you need a cable of a specific length, contact your Ross Video Representative for ordering information.

5. Tally Connectors

Two 12-pin connectors labeled **TALLY 1** and **TALLY 2** are provided for a total of 16 standard panel tally relays.

Frame, Front View

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



Synergy 1 SD Frame, Front View

1) Frame CPU Board	4) Fan Fail LED	7) Power Switch
2) Power Supply Lock Down Plate	5) Power Fail LED	8) Fuse
3) Power Supply Handle	6) Power On LED	

Following are descriptions of each front component.

1. Frame CPU Board

The **Frame CPU Board** provides all the electronics required for the Synergy 1 SD Switcher. The board also houses several “daughter” boards for options such as **Squeeze & Tease 2D** or **WARP, Ultimatte Insider**, or **Floating Border Generator**.

2. Power Supply Lock Down Plate

The power supply is held in place with a single lock-down plate that is secured with two screws. These screws must be loosened and the lock-down plate moved up in order to be able to remove the power supply.

3. Power Supply Handle

A small handle is provided to assist in removing and inserting the power supply. The tray houses the power supply and frame fan. For chassis cooling, note that air flows in from the sides of the frame, across the circuit boards and out the rear exhaust port.



Warning Hazardous Voltage

When the power supply is inserted into the frame, it mates with male power pins that carry *live voltage* if the frame is plugged in. All power *must* be disconnected before servicing. Caution — do *not* insert your fingers into the power supply slot when the unit is plugged in!

4. Fan Fail LED

The **FAN FAIL** LED, when lit, indicates that the fan is drawing too much current or has stopped turning.

5. Power Fail LED

The **POWER FAIL** LED, when lit, indicates that the power supply has failed or is not connected properly.

6. Power On LED

The **POWER ON** LED should be lit *green* during normal operations. It indicates that there are no error conditions in the fan or power supply. This LED is off if any of the two “fail” LEDs are lit.

7. Power Switch

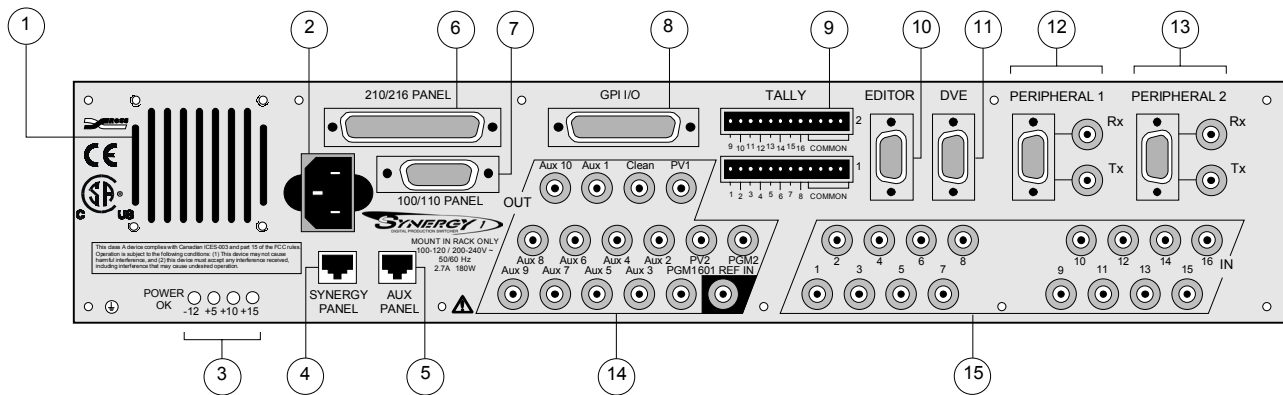
The **POWER** switch turns on the power supply.

8. Fuse

One **FUSE** is provided for the power supply. The fuse is rated at 250V, 4A.

Frame, Rear Connector Panel View

The following figure illustrates the rear connector panel of the Synergy 1 SD frame.



Synergy 1 SD Frame, Rear View

1) Fan Exhaust Vent	6) Ross 210/216 Panel Connector	11) DVE Connector
2) Power Connector	7) GVG 100/110 Panel Connector	12) Peripheral 1 Connectors
3) Power Supply LEDs	8) GPI I/O Connector	13) Peripheral 2 Connectors
4) Synergy 100 Panel Connector	9) Tally Connectors	14) Output Section
5) Aux Panel Connector	10) Editor Connector	15) Input Section

The following are descriptions of each rear panel connector.

1. Fan Exhaust Vent

A grill is provided for **FAN EXHAUST**, behind the power supply. To prevent the frame from overheating, do not block the exhaust vent with cables or other equipment.

2. Power Connector

One AC **POWER** connector is provided for frame power.

3. Power Supply LEDs

Four **POWER SUPPLY LEDs** are provided to indicate the condition of the power supply (-12, +5, +10 and +15V). Under normal operating conditions, each should be lit green.

4. Synergy 100 Panel Connector

One 8-pin shielded telco connector labeled **SYNERGY PANEL** is provided for communications between the frame and the Synergy 100 control panel.



Important

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

5. Aux Panel Connector

One 6-pin shielded Telco connector labeled **AUX PANEL** is provided for communications between the frame and remote Aux panels.

6. Ross 210/216 Panel Connector

One 50-pin connector labeled **210/216 PANEL** is provided for communications between the frame and the Ross RVS 210 or Ross RVS 216 control panel.

7. GVG 100/110 Panel Connector

One 15-pin “D” connector labeled **100/110 PANEL** is provided for communications between the frame and the GVG 100 or GVG 110 control panel.

8. GPI Input/Output Connector

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

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

9. Tally Connectors

Two 12-pin connectors labeled **TALLY** are provided for a total of 16 optional tally relays.

10. Editor Connector

One 9-pin “D” RS-422 connector labeled **EDITOR** is provided for connection to a external edit controller. The connection allows the Synergy 100 to be controlled by the editor using RS-422 commands.

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

11. DVE Connector

One 9-pin “D” RS-422 connector labeled **DVE** is provided.



Note

The **DVE** connector is *not* currently implemented for the Synergy 100.

12. Peripheral 1 Connectors

The **PERIPHERAL 1** group includes three connectors:

- One 9-pin “D” RS-422 connector is provided for connection to a primary peripheral device. The connection is for control purposes. The port can be configured for additional serial control purposes through the menu system.

- Two BNCs labeled **Rx** and **Tx** are provided for future peripheral control requirements such as control panel networking.



Note

The two **Peripheral 1** BNCs share the same internal circuitry as the 9-pin “D” **Peripheral 1** connector. Only *one* of the two sets of connectors can be used at a time.

13. **Peripheral 2 Connectors**

The **PERIPHERAL 2** group includes three connectors:

- One 9-pin “D” RS-422/RS-232 connector is provided for connection to a primary peripheral device. The connection is for control purposes. The port can be configured for additional serial control purposes through the menu system.
- Two BNCs labeled **Rx** and **Tx** are provided for future peripheral control requirements such as control panel networking.



Note

The two **Peripheral 2** BNCs share the same internal circuitry as the 9-pin “D” **Peripheral 2** connector. Only *one* of the two sets of connectors can be used at a time.

14. **Output Section**

Fifteen BNCs are provided as the switcher outputs, plus the digital 601 reference input, as follows:

- Two program outputs (**PGM1** and **PGM2**).
- Two preview outputs (**PV1** and **PV2**). Both outputs, Aux outputs 1 and 2 display the overlay as controlled from the menu system.
- Eight Aux bus outputs (**Aux3** through **Aux10**). Aux outputs 3 through 10 are always untimed.
- One optional clean feed output (**CLEAN**).
- One digital reference input (**601 REF IN**).

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

15. **Input Section**

Sixteen BNCs are provided for the digital inputs of the switcher.

Installation at a Glance

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



Note

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

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

- Install the control panel.
- Install any remote Aux panels.
- Install the electronics frame in an equipment rack.

- Perform the basic cabling:
 - ~ control panel to frame interconnection



Important

The cable for connecting the Synergy 100 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.

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



Note

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

Hardware Installation

This section describes procedures for installing the following main components of the Synergy 100 switcher system:

- Control panel
- Optional Sliding Shelf
- Remote Aux panels
- Electronics frame

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.



Caution

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

Installing the Control Panel

The control panel is shipped with all its circuit boards in place — you only have to install the control panel tub and some push-button inserts. The tub is available in two models — one which is designed to be set into a desk (or console cutout) and the other which simply can be set on the desktop.

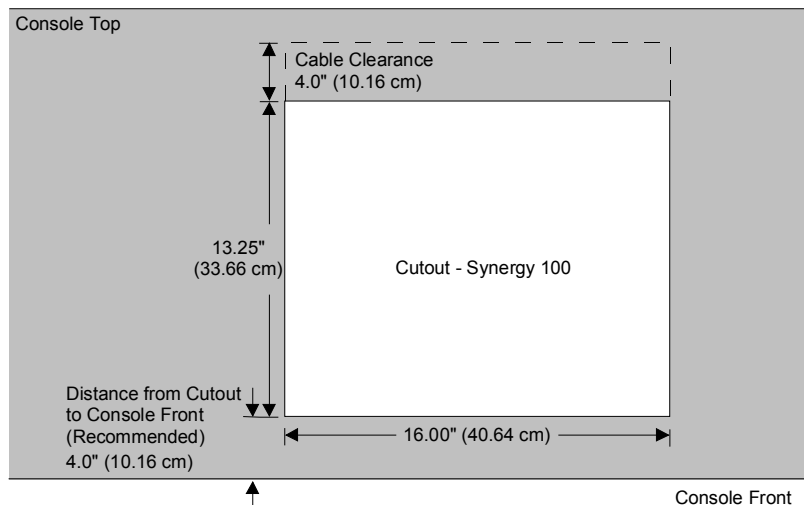


Note

The control panel is designed as a closed unit and as such there is no need to access the inside of the panel under normal conditions.

Use the following procedure to install the control panel into a desk or console cutout:

1. For in-console installation, measure your console according to the measurements illustrated in the following diagram. Centimeters are shown in parenthesis.



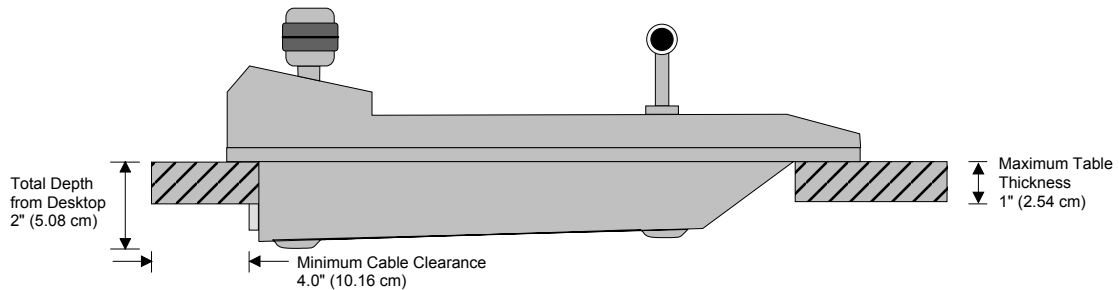
Synergy 100 Control Panel Cutout Dimensions



Operating Tip

When measuring for the cutout, it is recommended that you place the *front lip* of the panel within four inches (10.16 cm) of the console front (as shown in the diagram “**Synergy 100 Control Panel Cutout Dimensions**” on page 2-12). This placement is designed for the convenience of the operator.

2. In addition to the cut-out measurement, ensure that there is sufficient clearance *under the desktop* for connectors and cables on the rear of the control panel. Approximately four inches (10.16 cm) of clearance should be sufficient, as displayed in the following figure.



Detail — Control Panel Connector Clearance Requirements

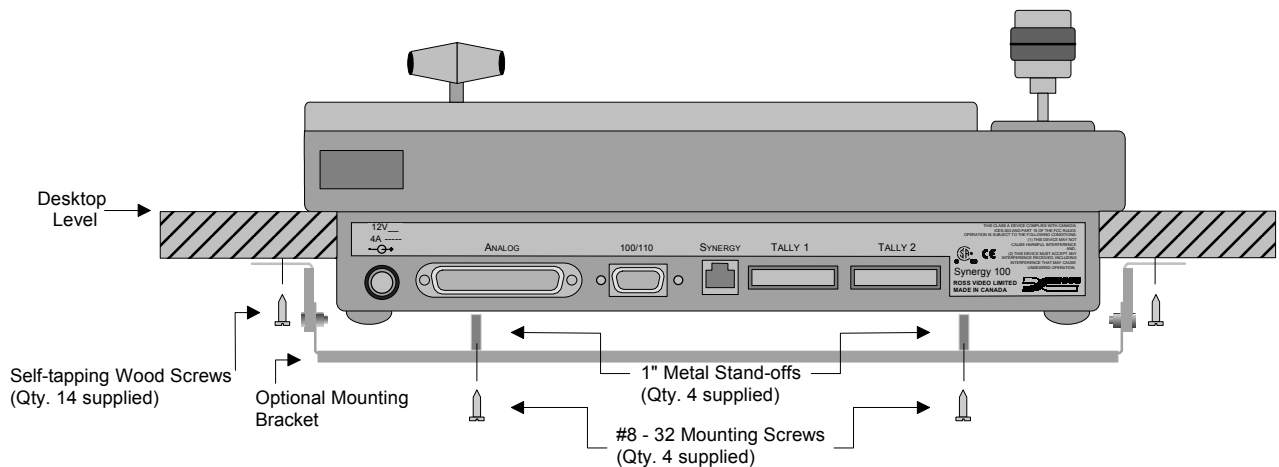
3. Install the control panel in your console. The tub drops into the cut-out from above and rests on edge supports at the sides



Note

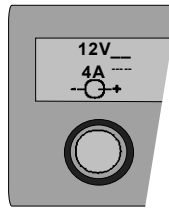
The Synergy 100 control panel can simply be set on the desktop.

4. Normally, fasteners are not required to hold the control panel in place. However, if your installation requires it (particularly for remote trucks), you can attach the tub to the desk using the optional mounting bracket assembly.



Detail — Optional Mounting Bracket Assembly

5. Install control panel power.



Rear Panel Power Connector

6. Connect the Model GT-21097-4812 power supply (supplied by Ross Video) to the DC connector.



Warning

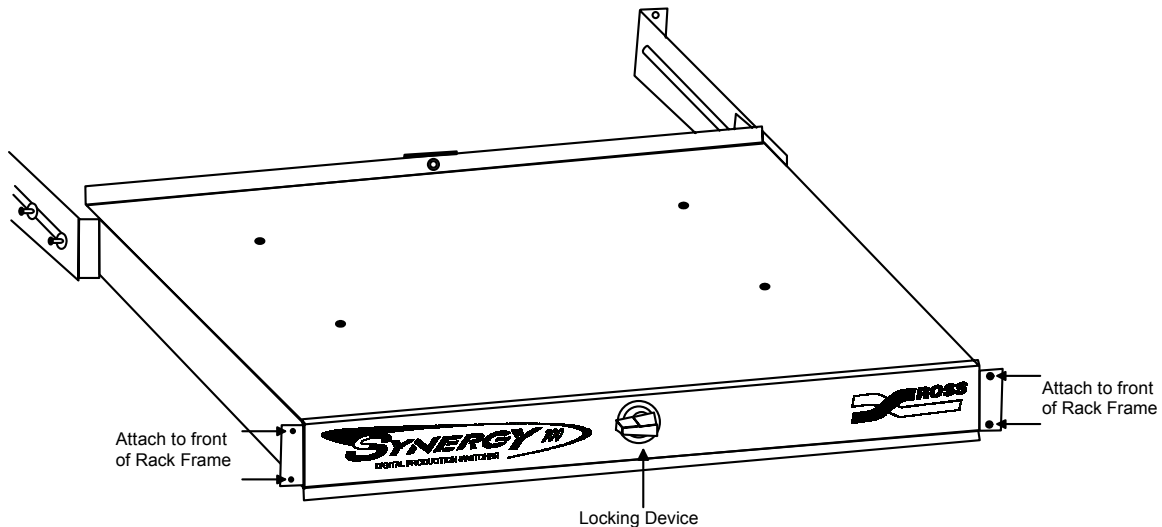
The control panel's power supply is not intended to be field serviced — it is serviced by *replacement only*. In case of power supply failures, please contact your dealer or Ross Video. The power supply cover should only be removed by qualified service personnel.

This completes the procedure to install the Synergy control panel into a desk or console cutout.

Installing the Sliding Shelf (Optional)

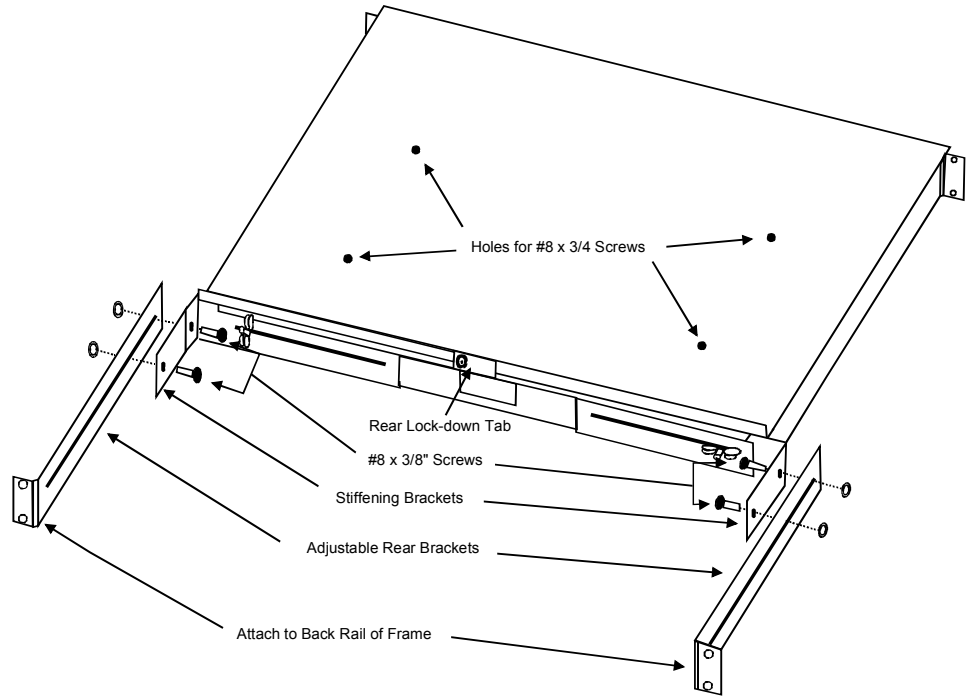
Use the following recommended procedure to install the optional sliding shelf within the rack frame:

1. You must have 5 RUs of rack space available in order to install the optional sliding shelf. The shelf itself is installed at the bottom, with 4 RUs above it providing the space required for the Synergy 100 control panel.
2. Attach the front of the shelf brackets to the frame through the holes provided. Please note that we do not supply the screws for this step.



Front View of Sliding Shelf

- At the rear of the shelf, there are two stiffening brackets which have been attached with one screw and a nut each. The *nuts* must be removed for the next step. Refer to the diagram below.



Rear View of Sliding Shelf

- Attach the two adjustable rear brackets to the rack, with the screw from the stiffening bracket extending through the adjustment slots. Please note that we do not supply the screws for the bracket-to-rack installation.
- Replace the nuts that you removed in step 3, and tighten.
- Insert the #8 x 3/8 screws (supplied) through the second hole in the stiffening brackets and through the slots in the adjustable brackets. Install the nuts over the screws and tighten.
- From the front of the rack frame, set the Synergy 100 control panel on top of the shelf, with the four holes on the bottom of the control panel lining up with the four holes on the shelf.
- Insert the four #8 x 3/4 screws (supplied) up through the *underside* of the shelf into the control panel tub, and tighten.
- This completes the installation procedure. You can now slide the shelf into the rack and secure it by turning the locking device on the front panel. In addition, the rear lock-down tab (as illustrated in “**Rear View of Sliding Shelf**” on page 2-15) can be rotated downward and tightened for added security during transportation of your unit.



Note

If you have purchased the Synergy 100 panel to interface with your existing Synergy 1 frame, you may require two additional de-serializers to ensure full three-keyer functionality. For more information, please contact **Ross Video Technical Support**.

.This completes the control panel installation.

Installing Optional Remote Aux Bus Panels

Remote Aux Bus control panels are self-contained units that have their own power supply. The main **AUX PANEL** connects to the frame via a 6-pin shielded Telco connector labeled **MAIN**, on the rear of the remote panel. Multiple remote panels may be connected in a daisy-chain fashion through the **ECHO** port.

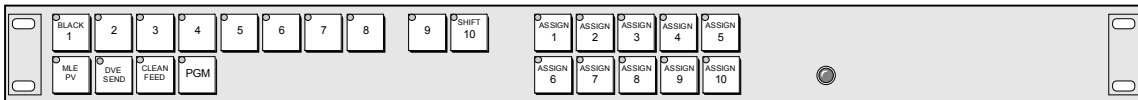
Even though an unlimited number of Aux panels can be connected to each of the **AUX PANEL** connectors, for example **ECHO** to **MAIN**, a *practical limit* of 8 Aux panels should be observed. This limit provides better response time and reduces delay.

There are two types of remote Aux panels available:

- **Assignable** panels control all 8 Aux Bus outputs.
- **Non-assignable** (or “dedicated”) panels control a single Aux Bus output.

Assignable Remote Aux Panel (Front)

Assignable Remote Aux Bus Panels act as a 20 x 8 routing switcher, enabling the user to assign any one of the possible 20 sources on the panel, to any one of the 8 Aux Buses.



Assignable Remote Aux Panel

Dedicated Remote Aux Bus Panel (Front)

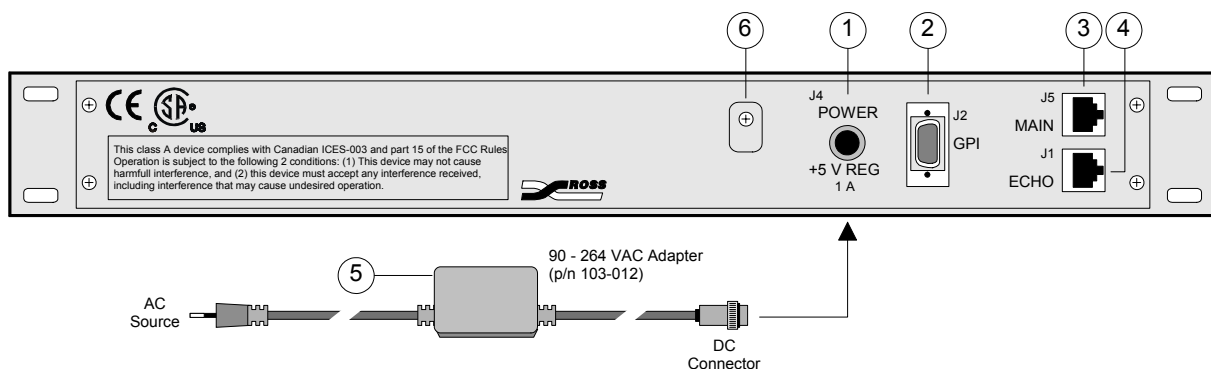
Dedicated Remote Aux Bus Panels (non-assignable) act as a 20 x 1 routing switcher, enabling the user to assign any one of the 20 possible sources on the panel, to a predetermined specific Aux Bus. Dedicated Remote Aux Bus panels are ordered to control a specific Aux Bus and are preset at the factory. Contact your Ross Video representative for ordering information.



Dedicated Remote Aux Panel

Remote Aux Bus Panels (Rear)

Both panel types require one rack unit of space for installation and both types require their own AC source for DC power.



Aux Panel Rear Layout and Connection

1) Power Connector	3) Switcher Connector	5) AC Adapter
2) GPI Connector	4) Remote Connector	6) Cable Retainer

Connector layout is identical for all remote Aux panels.

1. Power Connector

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

2. GPI Connector

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

3. Switcher Connector

One 6-pin RJ-12 Telco connector is provided for connecting to the Aux connectors on the rear of the frame. Refer to the section “**Remote Aux Panel Cabling**” on page 3-3 for connection details. For pinout details, refer to the section “**Pinouts**” on page 10-8.

4. Remote Connector

One 6-pin RJ-12 Telco connector is provided for daisy-chaining the remote panel to the next remote Aux panel in line. Refer to the section “**Remote Aux Panel Cabling**” on page 3-3 for connection details. Refer to the section “**Pinouts**” on page 10-8 for pinout details.

5. AC Adapter

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

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

Refer to the section “**Remote Aux Panel Cabling**” on page 3-3 for connection details.

6. Cable Retainer

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



Note

There are no user-settable jumpers in the Aux panels.

Installation Procedure

Use the following procedure to install remote Aux panels:

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

This completes the remote Aux bus panel installation procedure.

Installing the Electronics Frame

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

- **Rack Units:** 2 RU
- **Height:** 3.5 inches (8.89 cm)
- **Depth:** 15.75 inches (40.01 cm)
- **Rack:** standard 19 inch wide equipment rack

Install the frame for maximum stability during operation and in such a way as to allow adequate ventilation. Ensure that *both sides* of the frame are clear, so that switcher air flow is not restricted in any way. The frame's location should be accessible, reasonably dry and dust free.

Please note:

- The system is shipped with the door on.
- The system is shipped with all circuit boards installed and the power supply installed.
- As a precaution after installation, ensure that the CPU board is tightly pushed into its rear frame connector. The circuit board extractors on the sides of the board allow easy installation and removal.



Caution

If, for any reason, you remove a circuit board from the frame, it must be put back in the exact same position. Failure to do so will result in damage to the board, the frame, or both! Double check your work!

In order to provide adequate ventilation, the top and front panel covers must be in place during operation.

Connecting Frame Power



Caution

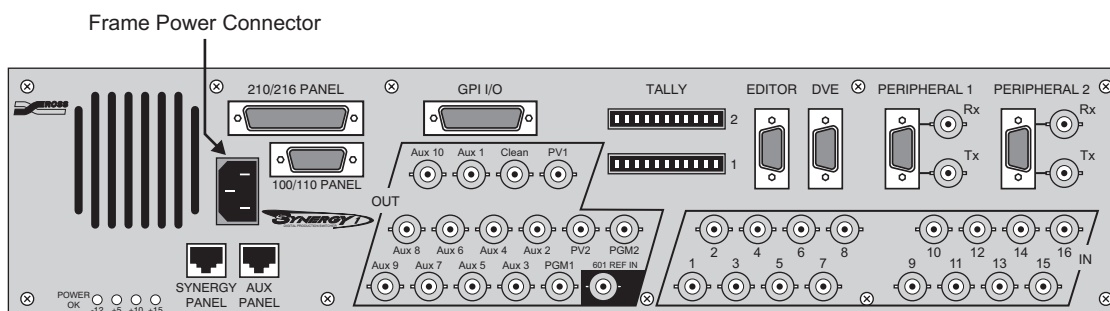
In some countries, it may be necessary to supply the correct mains supply cord. Use only an approved IEC 320 C-13 type A/C line cord rated for a minimum 10A at 250V and certified for the country of use.



Protective Earth

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

Use the following procedure to install frame power:



Synergy 1 SD – Frame Power Connector

1. Connect the socket end of the Power connector to the DC power port at the rear of the Synergy frame.
2. Position the stress relief clip over the connector.
3. Connect the **POWER** connector to an AC outlet.

This completes the procedure to install frame power.

Jumpers and Switches

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

- Jumper Positions
- Frame Jumpers and Switches
- System Reset Notes



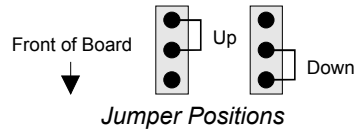
Caution

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

The equipment still presents a safety hazard with the power switches in the **OFF** position.

Jumper Positions

The following legend indicates the jumper positions used in the following section.



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

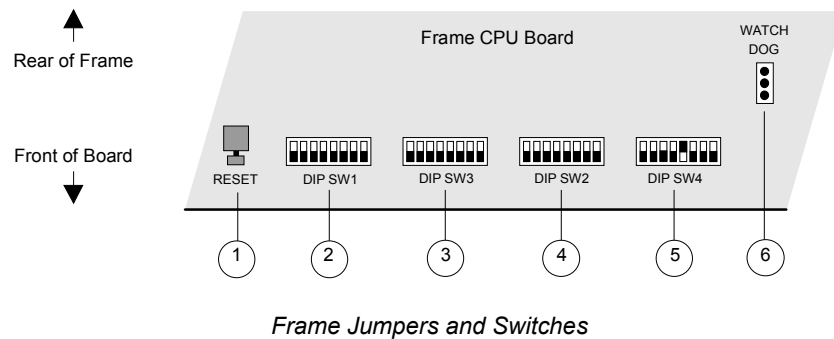
Frame Jumpers and Switches

The following figure illustrates the location of jumpers and switches on the front edge of the **Frame CPU Board**:



Caution

Observe all static discharge precautions throughout the procedure.



- | | | |
|---------------------------|-----------------|---------------------|
| 1) Reset Switch | 3) DIP Switch 3 | 5) DIP Switch 4 |
| 2) DIP Switch 1, Reserved | 4) DIP Switch 2 | 6) Watch Dog Jumper |

1. Reset Switch

Press the red **RESET** switch on the frame to initiate a *full system* reset. When the reset is initiated from the frame, the control panel's reset is initiated via a software message that is passed along the RS-422 control cable. In the unlikely event that the control panel has crashed, it may be necessary to *manually* reset the control panel. Refer to the section “**System Reset Notes**” on page 2-23 for additional information.

2. DIP Switch 1

This 8-position DIP switch is reserved for future use. Please leave all switches in the default **Down** position, as labeled on the switch. (Early issue boards may find this switch unpopulated).

3. DIP Switch 3

This 8- position DIP switch has the following system assignments (from left to right):

- **SW1 – SW7 – Reserved.** Leave in the default **Down** position.
- **SW8 – Squeeze & Tease 3D Software Upgrade.** This switch controls the ability to upgrade the **Squeeze & Tease 3D** software from a storage device:
 - ~ **Up:** Software can be upgraded from a storage device, such as a floppy disk or USB key. Refer to Chapter 2 “**Installation and Setup**” in your *Synergy 100 Squeeze & Tease 3D/WARP Owner's Guide* for instructions.
 - ~ **Down:** Software can not be upgraded from a storage device. This is the default position.

4. DIP Switch 2

This 8-position DIP switch has the following system assignments (from left to right):

- **SW1 – SW7 – Reserved.** Leave in the default **Down** position.
- **SW8 – Preview Overlay.** This switch controls the ability to remove the Preview Overlay from the Preview outputs.
 - ~ **Up:** Preview Overlay is removed from the Preview output and is displayed on Aux 1 and Aux 2 outputs.
 - ~ **Down:** Preview Overlay displays on PV1 and PV2 outputs. This is the default position.

5. DIP Switch 4

This 8-position DIP switch has the following system assignments (from left to right):

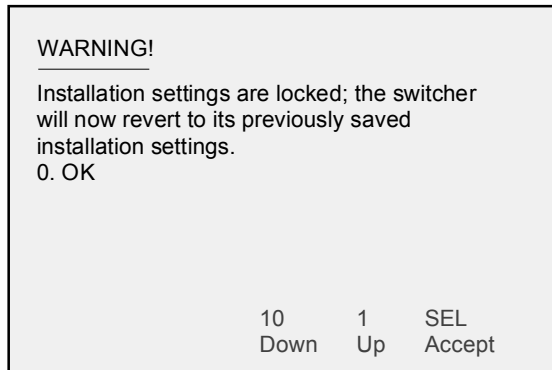
- **SW1 – Reserved.** Leave in the default **Down** position.
- **SW2 – Reserved.** Leave in the default **Down** position.
- **SW3 – Panel Type.** Works with **SW4, SW5** and **SW6**.
- **SW4 – Panel Type.** Works with **SW3, SW5** and **SW6**.
- **SW5 – Panel Type.** Works with **SW3, SW4** and **SW6**.
- **SW6 – Panel Type.** Works with **SW3, SW4** and **SW5**.

Refer to the the section “**DIP Switch 4 Positions**” on page 2-22 for details.

DIP Switch 4 Positions

DIP Switch 4	Synergy 100	Synergy 1	GVG 100/110	Ross 210A/D	Ross 216A/D
SW3	Down	Down	Down	Down	Up
SW4	Down	Down	Down	Up	Up
SW5	Up	Down	Up	Up	Up
SW6	Down	Down	Up	Up	Up

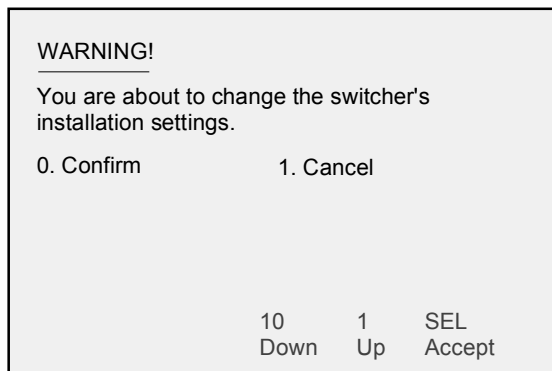
- **SW7 – Installation Enable.** This switch determines the installation status of the switcher:
 - ~ **Up:** Access to installation features is restricted. However, you *are* permitted to view the menus on the preview overlay. A message is displayed, directly above the navigation help, that reads “**Warning: Installation settings are locked.**” If the user has attempted to change the installation in any way, the following message appears:



Warning Message – Locked Installation Settings

In addition, the **Recall Installation** option on the **Disk Recall Menu** will be greyed out, and selecting **Recall All** will recall everything *except* the installation.

- ~ **Down:** Installation settings can be changed without restriction. However, upon exiting the menus, an “**Installation Warning**” alerts you that settings are about to be changed:



Installation Change Confirmation Menu



Note

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

- **SW8 – Software Upgrade.** This switch controls the ability to upgrade software from a storage device:
 - ~ **Up:** Software can be upgraded from a storage device, such as a floppy disk or USB key. Refer to the section “**Software Upgrade**” on page 2-24 for instructions.
 - ~ **Down:** Software can not be upgraded from a storage device. This is the default position.

6. Watch Dog Jumper

Leave the **Watch Dog Jumper** in the default **DIS** (disabled or **Up**) position.

System Reset Notes

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



Note

The rack frame stores all installation, personality, memories, and the current video state. The control panel keeps track of the current menu and the settings of all buttons. Resetting the frame changes the current video state. Simply turning the frame off, or losing power to the control panel, will *not* reset the video state, because a frame reset has not been initiated.

Software Upgrade

This section provides step-by-step instructions for upgrading your **Synergy 100** system software from a storage device, such as a floppy disk or a USB key. You can obtain copies of all previous software upgrade instructions by logging on to our web site at <http://www.rossvideo.com>.

The following topics are discussed:

- System Backup
- Software Upgrade
- Restoring Registers

System Backup



Important

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

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

1. Navigate to the **Disk Menu** as follows:
 - Press **MENU** (to display the **Main Menu**).
 - Press **5. Disk** in the **Effects Control** group (to display the **Disk Menu**).
2. Press button **1. Store** in the **Effects Control** group to display the **Store Menu**.
3. Insert a storage device as follows:
 - Insert a pre-formatted 1.44 MB high-density floppy disk into the floppy disk drive of the Synergy 100 Switcher.



Note

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

OR

- Insert a USB key into the USB port of the Synergy 100 Switcher. You must wait 5 seconds after inserting the USB key into the USB port before you can save setup configurations 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.

4. Press **0. Store All** in the **Effects Control** group.



Caution

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

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

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

- Synergy 100 SD Switcher
- Software Version [vXX.xx] Backup
- Today's Date

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

Software Upgrade

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



Note

If you have received a Synergy 100 system with version 16 software already loaded on it, you will *not* be able to load pre-version 16 software onto it regardless of whether you have a USB port or floppy disk drive.

Using Floppy Disks

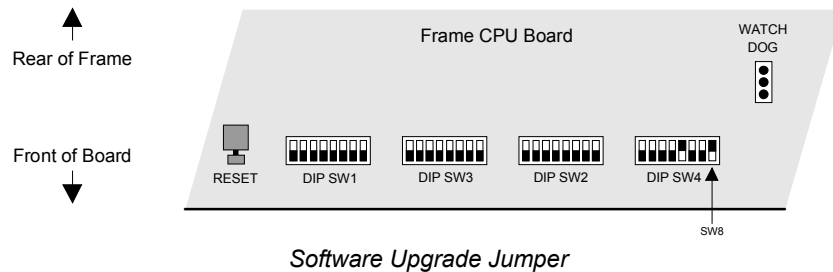
Use the following procedure to initiate the software upgrade from floppy disk:



Caution

Observe all static discharge precautions throughout this procedure.

1. Power off the frame.
2. Move the **Software Upgrade** jumper (**DIP Switch 4, SW8** on the **Frame CPU Board**) to the **Up** position. Refer to the figure “**Software Upgrade Jumper**” on page 2-25.



3. Power on the frame.
4. At this time, a message will appear in the four-character displays, asking you if you have saved your memories to disk.
 - If you have not, press the **1** (UP arrow) button to display the word “**Quit**” and press **SEL**. This will cause the frame to boot without upgrading the software, and give you a chance to save your setups to disk. Refer to the section “**System Backup**” on page 2-24 for instructions.
 - If you have saved your setups to disk, press **SEL** under the “**Cont**” prompt and continue with the upgrade.
5. Insert the **Synergy Software Upgrade Disk** in the drive.

6. Follow the instructions on the control panel's display and wait for the upgrade process to complete.
7. Turn off the frame.
8. Move **DIP Switch 4, SW8** (on the **Frame CPU Board**) to the **Down** position.
9. Power on the frame.

This completes the procedure for upgrading system software. Please continue to the section “Restoring Registers” on page 2-27.

Using a USB Key



Note

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

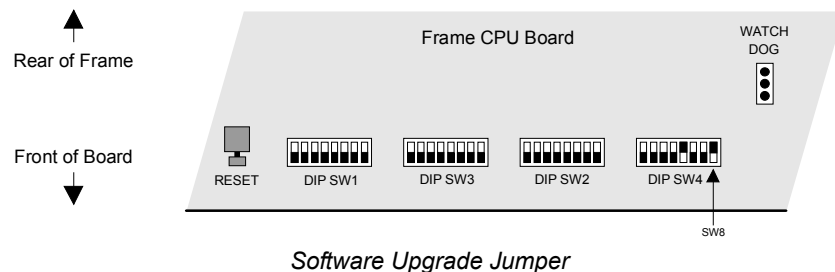
Use the following procedure to initiate the software upgrade from a USB key:



Caution

Observe all static discharge precautions throughout this procedure.

1. Power off the Synergy frame.
2. Move the **Software Upgrade** jumper (**DIP Switch 4, SW8** on the **Frame CPU Board**) to the **Up** position.



3. Power on the frame.
4. At this time, a message will appear in the four-character displays, asking you if you have saved your memories.
 - If you have not, press the **1** (UP arrow) button to display the word “**Quit**” and press **SEL**. This will cause the frame to boot without upgrading the software, and give you a chance to save your setups to a USB key. Refer to the section “**System Backup**” on page 2-24 for instructions.
 - If you have saved your setups to a USB key, press **SEL** under the “**Cont**” prompt and continue with the upgrade.
5. Insert the USB key containing the Synergy 100 software into the USB port of the Synergy 100 switcher. You must wait 5 seconds after inserting the USB key into the USB port before you can proceed to the next step.
6. Follow the instructions on the control panel's display and wait for the upgrade process to complete.
7. Turn off the frame.
8. Move **DIP Switch 4, SW8** (on the **Frame CPU Board**) to the **Down** position.

9. Power on the frame.

This completes the procedure for upgrading system software. Please continue with the “**Restoring Registers**” procedure.

Notes on Upgrading Software with a USB Key

Please note:

- Synergy 100 systems released *before* version 16 are able to load version 16 or later software, and revert back to earlier versions.
- If you have received a Synergy 100 system with version 16 software already loaded on it, you will *not* be able to load pre-version 16 software onto it regardless of whether you have a USB port or floppy disk drive.
- The following messages may be displayed on the Synergy 100 control panel during the software upgrade process:
 - ~ **WAIT USB** — This message informs you that the Synergy 100 control panel is trying to communicate with the USB port and read the USB key. Once the control panel detects the USB key, the message is no longer displayed.
 - ~ **USB UPGD** — This message informs you that the Synergy 100 switcher is in the process of a software upgrade and will be displayed until the process is complete.
 - ~ **USB UPGD FAIL** — This message informs you that the Synergy 100 control panel has failed to upgrade. Contact Ross Video Technical Support for more information.

Restoring Registers

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

1. Ensure that new Synergy software version is properly installed. If not, refer to the section “**Software Upgrade**” on page 2-25.
2. Locate the “backup” storage device that you made in the section “**System Backup**” on page 2-24.
3. Read the entire contents of the storage device into switcher memory as follows:
 - Navigate to the **Recall Menu** as follows:
 - ~ Press **MENU** to display the **Main Menu**.
 - ~ Press **5. Disk** to display the **Disk Menu**.
 - ~ Press button **0. Recall** to display the **Recall Menu**.
 - Insert the backup storage device into the Synergy 100 switcher.
 - Press **0. Recall All**.
 - Press **SEL**.



Caution

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

4. Eject the storage device from the switcher.

This completes the procedure for restoring your registers.

Options Menu

An **Options** menu is available that allows you to verify all of the installed options in your Synergy 100 switcher.

The following topics are discussed in this section:

- Menu Access
- Options Menu
- Installing Software Options



Important

Serial numbers allow Ross Video to properly track which options have been purchased by each customer. Serial numbers are installed in flash memory at the factory.

Menu Access

All menus are accessed in the **Preview Overlay** mode. Refer to the section “**Menu System Basics**” on page 5-2 for complete instructions.

- Press **MENU** to display the **Main Menu**.

Main Menu - Synergy 100		vX.XX-S100		
0. Effects		5. Disk		
1. Inputs		6. Personality		
2. Outputs		7. Options		
3. GPIs		8. S&T 3D		
4. Communication		9. Default		
MENU	100	10	1	SEL
Exit	Previous	Down	Up	Accept

Synergy 100 Main Menu

Options Menu

The **Options Menu** lists the hardware options that have been installed in your system and allows you to link to the **Software Options Menu**. Verify that all options ordered are installed. If not, contact **Ross Video Technical Support**.

Use the following procedure to verify that all options ordered are installed:

1. Navigate to the **Options Menu** as follows:
 - Press **MENU** (to display the **Main Menu**).
 - Press **7. Options** in the **Effects Control** group (to display the **Options Menu**).

Options S/N:F422342234				
0. Software Options		5. Panel ID	4100-2	
1. Opt Card	Ultimatte	6. Frame ID	4216-4	
2. S&T DVE	3D			
3. Border	Yes			
4. Tallies	16			
MENU	100	10	1	SEL
Exit	Previous	Down	Up	Accept

Options Menu

The installation status of hardware **Options 1 – 4** and panel and frame information **Options 5 and 6** are indicated in grey to the right of the option.

The version numbers of the Synergy 100 control panel and Synergy 1 frame processor boards, **Options 5 and 6**, are indicated in grey to the right of the option.



Note

When a word in any menu is “greyed”, this indicates that it is for information only and can not be changed.

2. Verify your installed hardware options as follows:

- The **1. Opt Card** heading displays one of two variables, depending upon your particular configuration.
 - ~ **None** – This variable states that no option card is installed.
 - ~ **Ultimatte** – This variable states that the Ultimatte Insider™ option is installed. In the sample menu of step 1, the Ultimatte Insider option is installed.
- The **2. S&T DVE** heading displays one of three variables:
 - ~ **None** – This variable states that no option card is installed.
 - ~ **2D** – This variable states that the Squeeze & Tease 2D option card is installed.
 - ~ **3D** – This variable states that the Squeeze & Tease 3D DVE option card is installed. In the sample menu of step 1, the Squeeze & Tease 3D DVE option is installed.
- The **3. Border** heading displays one of two variables:
 - ~ **No** – This variable states that no option is installed.
 - ~ **Yes** – This variable states that the Floating Border Generator option is installed. In the sample menu of step 1, the Floating Border Generator option is installed.
- The **4. Tallies** shows either **16** or **32** depending on whether or not you have installed the frame tally option. In the sample menu of step 1, there are 16 tallies installed.



Note

Refer to the section “**Hardware Option Overview**” on page 11-2 for all hardware installation instructions.

3. Verify the version number of the processor boards as follows:
 - The **5. Panel ID** heading displays the version number of the Synergy 100 panel's processor board.
 - The **6. Frame ID** heading displays the version number of the Synergy 1 frame's processor board.

This completes the procedure to verify options.

Installing Software Options

There are three software options that are currently available with the Synergy 100 panel – Editor control, Audio Mixer control, and Serial Tally interface. On the **Software Options Menu**, the headings for these options will indicate if the option is installed, with either an **On** or an **Off** displayed in grey.



Note

The DVE option is not yet implemented.

Use the following procedure to install a software option:

1. Navigate to the **Software Options Menu** as follows:
 - Press **MENU** (to display the **Main Menu**).
 - Press **7. Options** (to display the **Options Menu**).
 - Press **0. Software Options** (to display the **Software Options Menu**).

Software Options - S/N:F422342234				
0. Add	A6F8			
1. Editor	On			
2. DVE	Off			
3. Audio	On			
4. Ser.Tally	On			
MENU	100	10	1	SEL
Exit	Previous	Down	Up	Accept

Software Options Menu

2. Call **Ross Video Technical Support**. Refer to the section “**A Word about Technical Support**” on page 1-16 for contact information.
3. When you speak to the Technical Support representative, tell them your name, your facility name, your serial number, which is displayed at the top of the menu, and the **Encrypt Code**, which is displayed beside the **Add** heading. Technical Support keeps an up-to-date record of each switcher's configuration and option status.



Note

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

4. You will be given a 5-digit numeric code that must be entered in the **Add** field. The **Add** heading will be highlighted.
5. Press **SEL** in the **System Control Group**.
 - The encrypt code will change to **00000**.
 - The left-most digit will be highlighted by changing color.
6. Press the **1** button to scroll through the digits.
7. When you have scrolled to the correct number for that digit, press **SEL** to enter the number. The next digit in line becomes highlighted.
8. Enter all 5 digits, along with any leading zeros.
9. Press **SEL** when you are finished.

The *greyed Off* indicator for that option will change to **On**.
10. Press the **MENU** button to exit the menus.

This completes the procedure for installing a new software option.

Preliminary Cabling and Check

In This Chapter

This chapter outlines procedures for making basic control panel, main frame, reference and monitor connections. A preliminary functional check procedure is also provided.

The following topics are discussed in this chapter:

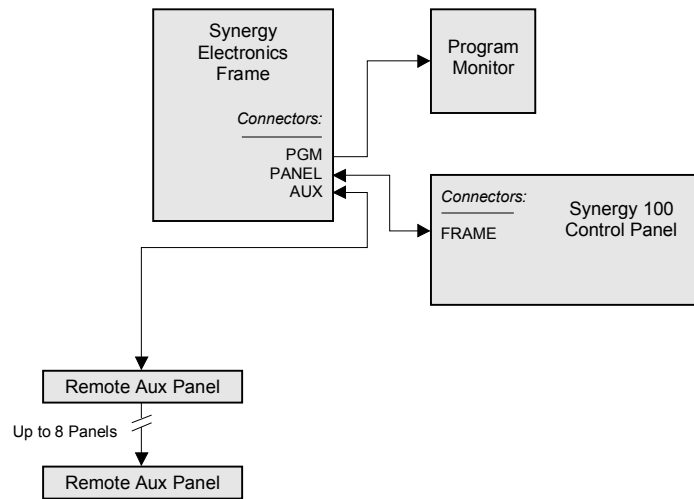
- Cabling
- Control Cable Installation
- Remote Aux Panel Cabling
- Reference Signal Connection
- Monitor Connection
- Power Up
- Resetting the System
- Full Reset
- Software Reset
- Preliminary Functional Check
- Basic Troubleshooting
- Switcher Timeout

Cabling

In this section the following connections are made:

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

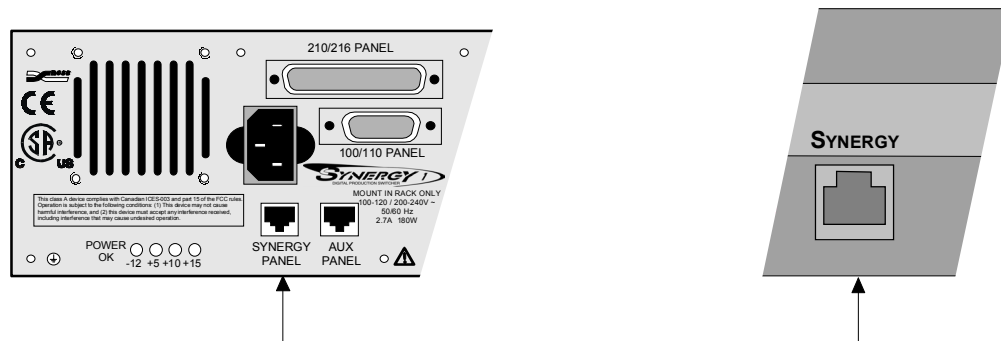
Once these basic connections have been completed, a preliminary functional check can be performed to ensure that the switcher is passing video. The figure below illustrates the connections that you will make in this chapter.



Preliminary Cable Connections

Control Cable Installation

Use the following procedure to install the control cable between the electronics frame and the control panel.



Frame to Control Panel Interconnection

1. Ensure that you have the correct **8-pin** shielded Telco cable, with **8-pin** connectors at each end. Because of their small size, all Telco connectors look quite similar.



Important

The cable for connecting the Synergy 100 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.

2. Using an 8-pin shielded Telco cable, connect the communications port labeled **SYNERGY PANEL** (on the electronics frame) to the communications port labeled **SYNERGY** (on the rear of the Synergy 100 panel).

Please note:

- The maximum cable length is 1000 feet (305 meters).
- The cable must be run in accordance with good engineering practice. Ensure that there is sufficient room for the cable and that enough slack is left in the cable run to permit long, gentle bends. Always install cables so that they will not be subjected to physical abuse.
- The Synergy 100 panel can also be connected to the frame via an existing GVG 100/110 control cable or an existing RVS 210/216 control cable. Refer to the section “**Hardware Installation**” on page 2–12 for more details.

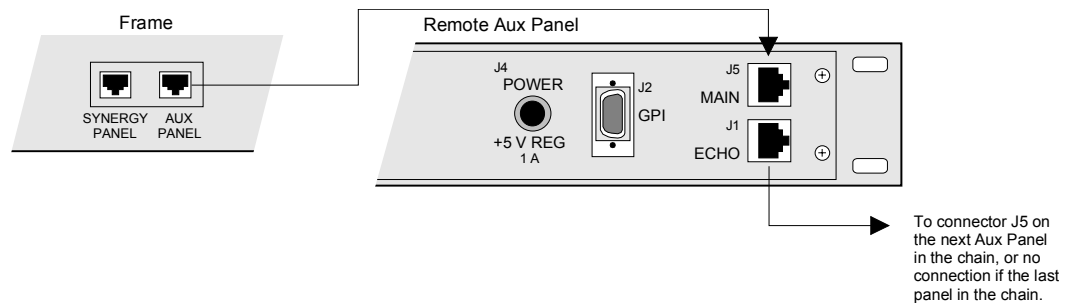
Remote Aux Panel Cabling

This section provides instructions for cabling **Remote Aux Panels**. If your system includes remote Aux Bus panels, one serial cable is shipped with each panel. There are two types of cable available:

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

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

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



Remote Aux Panel Interconnection

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

1. Ensure that you have the correct **6-pin** shielded Telco cable, with **6-pin** connectors at each end. Because of their small size, all Telco connectors look quite similar.

2. Connect a 6-pin shielded Telco cable (of the supplied or custom length) between the frame's **AUX PANEL** connector and the connector labeled **MAIN** on the rear of the *first* Aux panel in line.
3. To daisy-chain additional Aux panels (up to 8), connect a 6-pin shielded Telco cable between the Aux panel connector labeled **ECHO** and the connector labeled **MAIN** on the *next* Aux panel in line.
4. Repeat step 3 for all additional Aux panels in the daisy-chain (up to the maximum of 8 panels per chain).

Aux Panel Cabling Notes

Please note the following points regarding all remote Aux panels:

- All 10 Aux outputs on the frame are provided as standard. However, outputs 1 and 2 are not yet implemented. Aux outputs 3 to 10 are untimed.
- The Aux panel connector on the electronics frame is universal — it can control any of the remote Aux panels.
- Aux panel crosspoint labels are provided with each panel. Refer to the section “**Pushbutton Inserts**” on page 4–5 for labeling instructions.

Reference Signal Connection

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

- Connect the digital reference signal to the connector marked **601 REF IN** on the rear of the frame.
- No menu configuration of the reference signal is required.
- Always use a stable reference signal, preferably black, that is low in jitter and that originates from a reliable digital test signal generator.
- The switcher regenerates black from the assigned reference input.



Note

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

Monitor Connection

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

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

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

Power Up

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

Use the following procedure to power up the system:

1. Ensure all power cables, including the control panel’s DC power supply cable, are fastened and secure.



Note

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

2. The frame power switch is located on the right-hand side of the electronics frame, inside the front cover. Remove the front cover and turn on the **POWER** switch.
3. On the frame, ensure that the **POWER ON** LED is lit (on the front of the frame) and that all power supply LEDs (on the rear of the frame) are lit green.
 - If the **FAN FAIL** or **POWER FAIL** LEDs are lit (on the front of the frame), turn the unit off and check all power connections.
 - If any of the rear panel power supply LEDs are *not* lit, turn the unit off and check all power connections.
 - Turn the unit back on and recheck all LEDs. If a problem still exists, contact Ross Video Technical Support.

This completes the procedure to power up the system.

Resetting the System

If required, the Synergy 100 SD switcher can be reset manually from the frame. A **Full Reset** affects hardware and software simultaneously.

Full Reset

This function performs both a hardware and a software reset simultaneously. Switcher memory registers, personality registers, and installation registers are not affected by the reset, but all other switcher parameters (for example, the current state of the panel) are reset. **BLACK** will be selected on all buses.

- To reset the frame and all system hardware and software, press the blue **RESET** button on the front edge of the **Frame CPU Board**.

Refer to the section “**Frame Jumpers and Switches**” on page 2–20 for more information on the frame **RESET** switch.

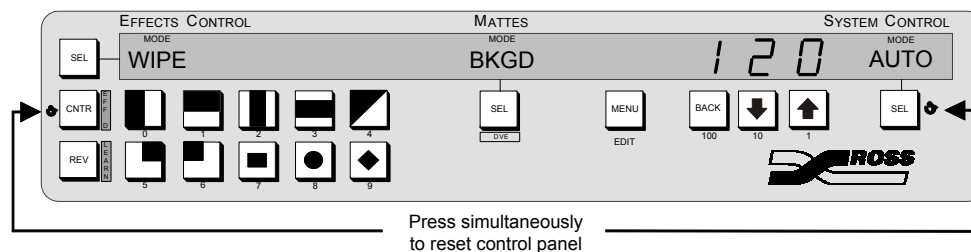


Note

It is not recommended to reset the frame by turning the power off and then on. However if this is done, the frame software will be reloaded, but the panel settings will come back to the point they were at, before the loss of power.

Software Reset

The software reset function is performed in the **Effects Control** and **System Control** groups. Use the following figure for reference:



Software Reset Function

- To perform a full software reset, simultaneously press **CNTR/EFF D** in the **Effects Control** group and **SEL** in the **System Control** group. **BLACK** will be selected on all buses.

Preliminary Functional Check

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

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

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

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

1. Ensure that your reference video is connected to the **601 REF IN** connector.
2. Perform a full software reset, as outlined in the section “**Resetting the System**” on page 3–6. This sets the panel to a *full* reset state.
3. Check the status of the control panel. In a reset (or “default”) condition, the following buttons and indicators will be lit:
 - The first input (typically **BLACK**) is selected on the **PGM** and **PST** buses.
 - On the combined **KEY** bus, **KEY1** is lit and the first crosspoint is selected.
 - In the **Transition Control** group, the **BKGD** and **DISS** buttons are lit. A background dissolve is the switcher’s default transition.
 - In the **System Control** group, the **MENU** button is lit and the display shows **AUTO** as the mode, with a transition rate of 15 frames.
 - In the **Effects Keyers** and **Downstream Keyer** groups, the **AUTO SELECT** button is lit.
 - In the **Effects Control** group, the **CNTR** button and button #0 (the vertical wipe) are lit.
4. Select sources for the transition:
 - Ensure that **BLACK** is selected on the **PGM** bus.
 - Select **BKGD** on the **PST** (Preset) bus.
 - ~ **Color Background** is factory preset to blue.
5. Ensure that **DISS** is selected in the **Transition Control Group**.
6. While watching the monitor, move the fader from one limit to the other and verify that the video dissolves from black to color.



Note

The LEDs in the **Transition Progress Bar** adjacent to the fader indicate the direction of travel. To complete the transition, simply continue moving the fader to the limit where the LEDs are *not* illuminated.

7. Press **WIPE** in the **Transition Control Group**.

8. While watching the monitor, move the fader from one limit to the other and verify that the video *wipes* between color and black.
9. On the active bus, switch between two or three crosspoints to ensure that “cuts” are taking place.

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

Basic Troubleshooting

Note the following basic troubleshooting points:

- If you experience any problems with knobs, the fader, or the joystick during the preliminary functional check, there may be a problem with switcher calibration or MLE communications. Refer to the section “**Switcher Calibration**” on page 12–8 for instructions.
- If the system is not switching and is not outputting video, there may be a problem with the reference connection. Check that a valid digital reference is connected to the **601 REF IN** connector. The system will not output video if the reference signal is invalid or not present.
- If you have the **USB Removable Media Drive** option installed, you may receive the error message, “**USB UPGD FAIL**” after restoring power to the control panel. Contact Ross Video Technical Support for more information on correcting this error.

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

Switcher Timeout

If no control panel buttons or knobs are touched and the fader arm is not moved for a period of 10 minutes, the switcher goes into a “sleep” mode and all lights are automatically turned off. If this timeout occurs, press any button or move the fader or joystick to “wake” the switcher and turn on all lights. Please note:

- The switcher does *not* act on a button push when it is coming out of “sleep” mode.
- The factory default timeout interval is 10 minutes. Refer to the section “**Personality Setup**” on page 8–15 for instructions on programming an alternate timeout interval.

Preliminary Video Installation

In This Chapter

This chapter describes the connections required to provide video and Key signals to all areas of the switcher. You will complete input and output worksheets, connect inputs and alpha signals, install all pushbutton inserts and connect your switcher outputs.

The following topics are discussed in this chapter:

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

Input Worksheet

Complete the following worksheet for all of your video inputs, including primary sources, keys, and fills. Following are basic input recommendations:

- Connect your digital reference video source to the **601 REF IN** connector (as outlined in the section “**Cabling**” on page 3–2). This automatically provides you with **Black** (pushbutton **1**) and your **Color Background** source.



Note

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

- Connect your primary video sources to inputs **1, 2, 3** (etc.) and then continue forward in sequence.

On the control panel, by default, input **1** is mapped to pushbutton **2**, input **2** is mapped to pushbutton **3**, etc. This association will minimize subsequent re-mapping of your inputs and make it *very easy* for you to locate inputs on the panel during the initial cabling procedure.

- Connect your key signals (alphas) to your *highest* available input number and then continue backwards in sequence. For example, start alphas at input **16**, then **15, 14**, etc.

Using the above recommendations, complete the following input worksheet. The majority of this data will be used in the section “**Setting Up BNC Inputs**” on page 6–3 to complete the configuration of each input.

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

- Fill in the *type* of input. Choose between:
 - ~ Off
 - ~ Alpha
 - ~ Other
- If the input is a key fill, choose the alpha with which you want the key fill to be associated. List the primary source’s BNC number.
- If the input is an alpha, choose between Shaped (**Yes**) or unshaped (**No**) keying mode.
- Fill in the audio channel or group associated with the input’s two audio channels, if applicable.
- Fill in the desired panel button on which you want to place the input signal (including “shifted” buttons).
- Fill in the input’s tally number.
- To avoid marking up the *Installation Guide*, use the blank worksheet provided in the section “**Input Worksheet**” on page 13–2 to make extra copies.

Input Worksheet

BNC Input #	Input Type	Auto Key	Shaped	Audio Chan1	Audio Chan2	Panel Button	Tally Number
<i>sample 1</i>	Other	10	—	Chan 1	Group 2	5	12
<i>sample 2</i>	Alpha	—	Yes	Group 1	NONE	10 (Shifted)	—
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							

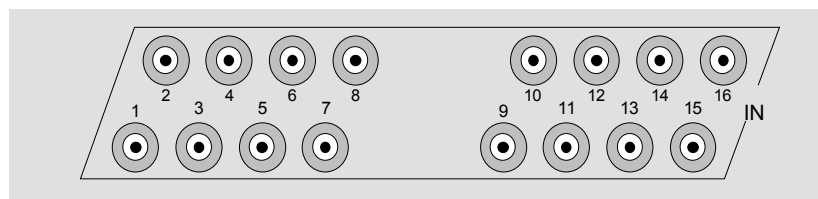
Connecting and Verifying Inputs

This section covers the following topics:

- Input Connection
- Input Verification

Input Connection

Using the data from the previous worksheet, connect your primary inputs and all alpha inputs to the appropriate connectors on the rear of the frame. Remember that there are no specific “Key” inputs — any input can be used for any purpose. All connectors are located in the “**IN**” section on the rear of the frame as shown below.



Synergy 1 Frame, Rear – Input Section

Use cabling techniques in accordance with good engineering practice.



Note

The Synergy 100 switcher passes all embedded audio and ancillary data signals, including “closed captioning” that is present on the background video.

Input Verification

For verification of your inputs, ensure that a monitor is connected to the **PGM 1** or **PGM 2** BNC output. Remember also (at this point in the installation) that factory default mapping is still in effect. Re-mapping (per your input worksheet) will be performed in the section “**Setting Up BNC Inputs**” on page 6–3. During this procedure, you can map *any input* to any button on a bus row.

Factory default mapping is as follows:

- **BLACK** is mapped to button 1 (crosspoint 1), **Input 1 (BNC 1)** is mapped to button 2, etc.
- **SHIFT** is mapped to the last button (10).
- **BKGD** is mapped to the first *shifted* button (SHIFT 1).

If reference has been connected to the **601 REF IN** connector as recommended, you can verify input video signals as they are connected. The following check assumes a *default* switcher condition.

- To view inputs **1** through **8**, press buttons **2** through **9**, respectively. (Buttons **1**, **10**, and **SHIFT 1** are already mapped as indicated above).
- To view inputs **9** through **16**, press buttons **SHIFT 2** through **SHIFT 9**, respectively.

Pushbutton Inserts

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



Operating Tip

A **Lens Cap Remover** is supplied in the **Installation Kit**.

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

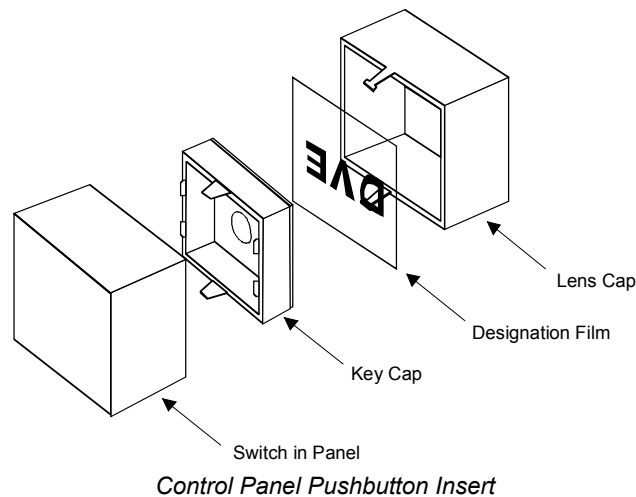


Note

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

Control Panel Pushbutton Inserts

Use the following procedure to install all control panel pushbutton inserts. Use the diagram below for reference.



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



Operating Tip

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

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

This completes the procedure to install all control panel pushbutton inserts.

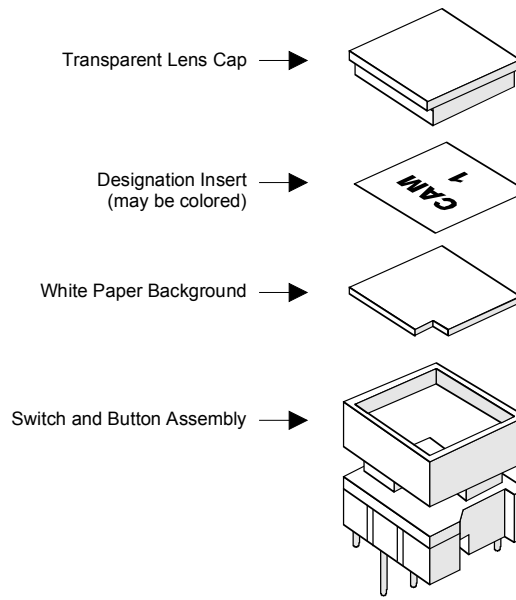
Notes on Installing Control Panel Pushbutton Inserts

Please note the following:

- When reinstalling the lens assembly, line up the alignment and locking tab on the key cap with the alignment tab of the lens cap, and then with the locating slots in the primary input switch in the panel. Otherwise, the lens cap may pop off when the switch is pressed and released.
- The designation film must read correctly with the lens alignment tabs at the top and bottom, *not* at the sides.
- Perform this procedure for all buttons on each bus on your switcher.

Aux Bus Panel Pushbutton Inserts

Use the following procedure to install all Aux Bus pushbutton inserts. Use the diagram below for reference.



Remote Aux Panel Pushbutton Inserts

1. Cut out designation film inserts for Aux Bus pushbuttons in all remote Aux panels. Note that the inserts used will be the same as those used for the switcher primary inputs, with the exception that Aux panels do *not* have **Color Background** labels.



Operating Tip

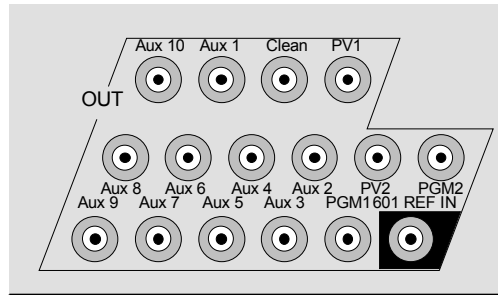
For best results when cutting out the button inserts, use a sharp X-ACTO® knife and a steel-edged ruler.

2. Remove the lens cap by placing a fingernail under the side of the cap and gently pulling upward.
3. Position the insert in the lens cap.
4. Replace the paper background, then replace the lens cap on the switch and button assembly.
5. Press down firmly to re-seat the cap.

This completes the procedure to install all Aux Bus pushbutton inserts.

Output Connection

Complete the following primary output worksheet. Use the following figure for reference.



Synergy 1 Frame, Rear – Output Section

- Fill in the desired destination for each output signal.
- To avoid marking up the *Installation Guide*, use the blank worksheet provided in the section “**Output Worksheet**” on page 13–3 to make extra copies.

Primary Output Worksheet

Output Connector	Synergy 100 Destination
PGM 1	
PGM 2	
PV 1	
PV 2	
AUX 1	(Not yet implemented)
AUX 2	(Not yet implemented)
AUX 3	
AUX 4	
AUX 5	
AUX 6	
AUX 7	
AUX 8	
AUX 9	
AUX 10	
CLEAN	(Optional)



Note

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

Connecting and Verifying Outputs

This section covers the following topics:

- Output Connection
- Output Verification

Output Connection

Using the data from the previous output chart, connect your outputs to the desired destinations. Use cabling and connecting techniques in accordance with good engineering practice.



Note

The optional **Clean Feed** output is software configurable using the menu.

The **Preview Overlay** signal appears on both **PV** outputs.

Output Verification

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

Output Verification

Output to Verify	Verification Method
PGM 1	Switch between inputs on PGM bus.
PGM 2	Switch between inputs on PGM bus.
PV 1	Switch between inputs on PST bus.
PV 2	Switch between inputs on PST bus.
AUX 3 - 10	On a Dedicated Remote Aux Panel , press button 1 , then switch between all subsequent inputs on the Aux panel.
AUX 3 - 10	On the Assignable Remote Aux Panel , assign the Aux output number, press button 1 , then switch between all subsequent inputs on the Aux panel.
CLEAN	Output depends on clean feed point of origin. Refer to the section “ Setting Up Outputs ” on page 8–4 for instructions.

Using the Menu System

In This Chapter

This chapter introduces the menu system of the Synergy 100 SD Switcher.

The following topics are discussed in this chapter:

- Menu System Basics
- Menu Information

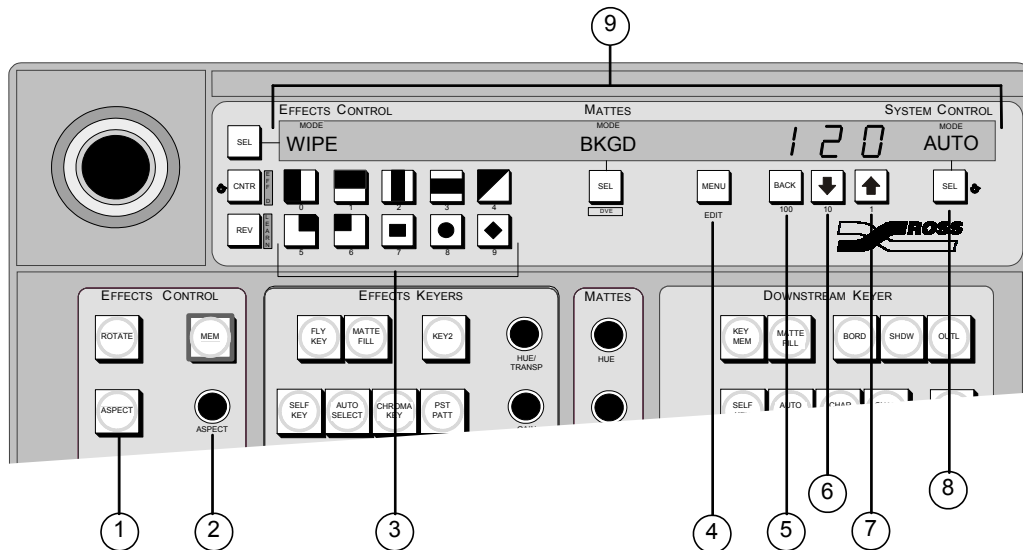
Menu System Basics

The menu system is accessed using the **System Control** group of the Synergy 100 control panel and displayed on the preview monitor as a **Preview Overlay**. The display is in fact a menu *tree*, with various branches that arrange switcher functions into concise categories.

You can navigate manually or **scroll** through the menu tree to reach the desired menu or function using one of the following methods:

- pressing the **100, 10,** and **1** buttons
- pressing the **Effects Control** pattern buttons, or
- rotating the **Aspect** knob in the **Effects Control Group**.

The following figure illustrates the panel buttons that are used to access the menu. Each button has its own specific function.



Synergy 100 Control Panel

1) ASPECT Button	4) MENU Button	7) UP (1) Button
2) Aspect (Scroll) Knob	5) BACK (100) Button	8) SEL Button
3) EFFECTS CONTROL Group	6) DOWN (10) Button	9) Display

1. ASPECT Button

The **ASPECT** button lights to indicate that the **Aspect** knob is functional and can be used to scroll through values in the menus.

2. Aspect (Scroll) Knob

The **Aspect** knob can be used to scroll through the menu values when the **ASPECT** button is lit.

3. **Effects Control Group**

Once you have entered the menu system, you can go directly to any menu, sub menu or heading, by pressing its number in the **Effects Control Group**. As well, when in a particular menu, if you press another **Effects Control** button after you have set a value, it will automatically save the value and jump directly to the new menu heading.



Note

In this guide, display functions are referred to by their actual label names and not by the button that is pressed. For example, the phrase “... press **5. Disk ...**” will be used rather than “... press **button #5** in the **Effects Control Group ...**”

4. **MENU Button**

The **Preview Overlay** menus are *entered* and *exited* by pressing the **MENU** button.

5. **BACK (100) Button**

Pressing the **BACK (100)** button will return you to the *previous* menu or position in the menu tree.

6. **DOWN (10) Button**

Pressing the **DOWN ARROW (10)** button will send you **DOWN** to the next menu heading.

7. **UP (1) Button**

Pressing the **UP ARROW (1)** button will send you back **UP** to the previous menu heading.

8. **SEL Button**

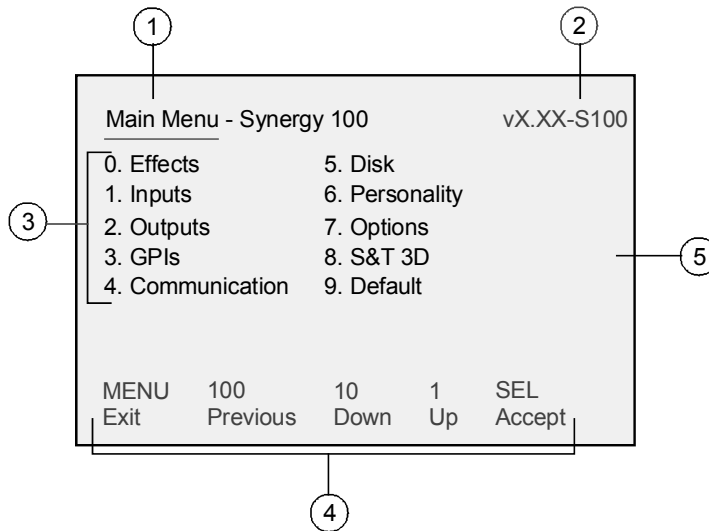
Pressing the **SEL** button will **SELECT / ACCEPT** your option, set-up, or position in the menu tree.

9. **Display**

Located within the display, you will find three individual four-character displays (under the heading “**MODE**”) which identify the area of the panel that has control of the **Effects Control**, **Mattes**, or **System Control** functions. When you are in the menu system, **MENU** will appear in the displays in the **Effects Control** and **System Control** groups.

Menu Information

Each menu comprises the following elements:



Synergy 100 Main Menu

1) Menu Title	3) Headings	5) Background Color
2) Software Version	4) Navigation Keys	

1. Menu Title

Each menu is named in the upper left corner.

2. Software Version

On the **Main Menu** (accessible by pressing **MENU**), note that the software version is displayed in the upper right hand corner.

3. Headings

Headings that have not been selected are white.

There will always be one menu heading highlighted in yellow to indicate that it is *active* and can be accessed using the **SEL** button or its heading number in the **Effects Control Group**. When selected, the information for that heading will be set in cyan.

A heading is *greyed out* to indicate that the value can not be changed. The “**Reserved**” headings will turn yellow when scrolling over them, but they are not selectable. If you try to select it, the heading will turn yellow, but will not lead you to a sub-menu.

4. Navigation Keys

The navigation keys for the **100**, **10** and **1** buttons are displayed on the preview overlay as a reminder.

5. Background Color

The default background color for all the menus is blue. The background can be changed in the **Effects Menu**.



Note

If you have the **Squeeze & Tease WARP** option installed, and the 3D Fan is not installed or not functioning properly, a Help message is displayed on the **Main Menu**, where it will remain until the fan is functioning correctly. Refer to the *Squeeze & Tease 3D/WARP Owner's Guide* for details.

BNC Configuration and Check

In This Chapter

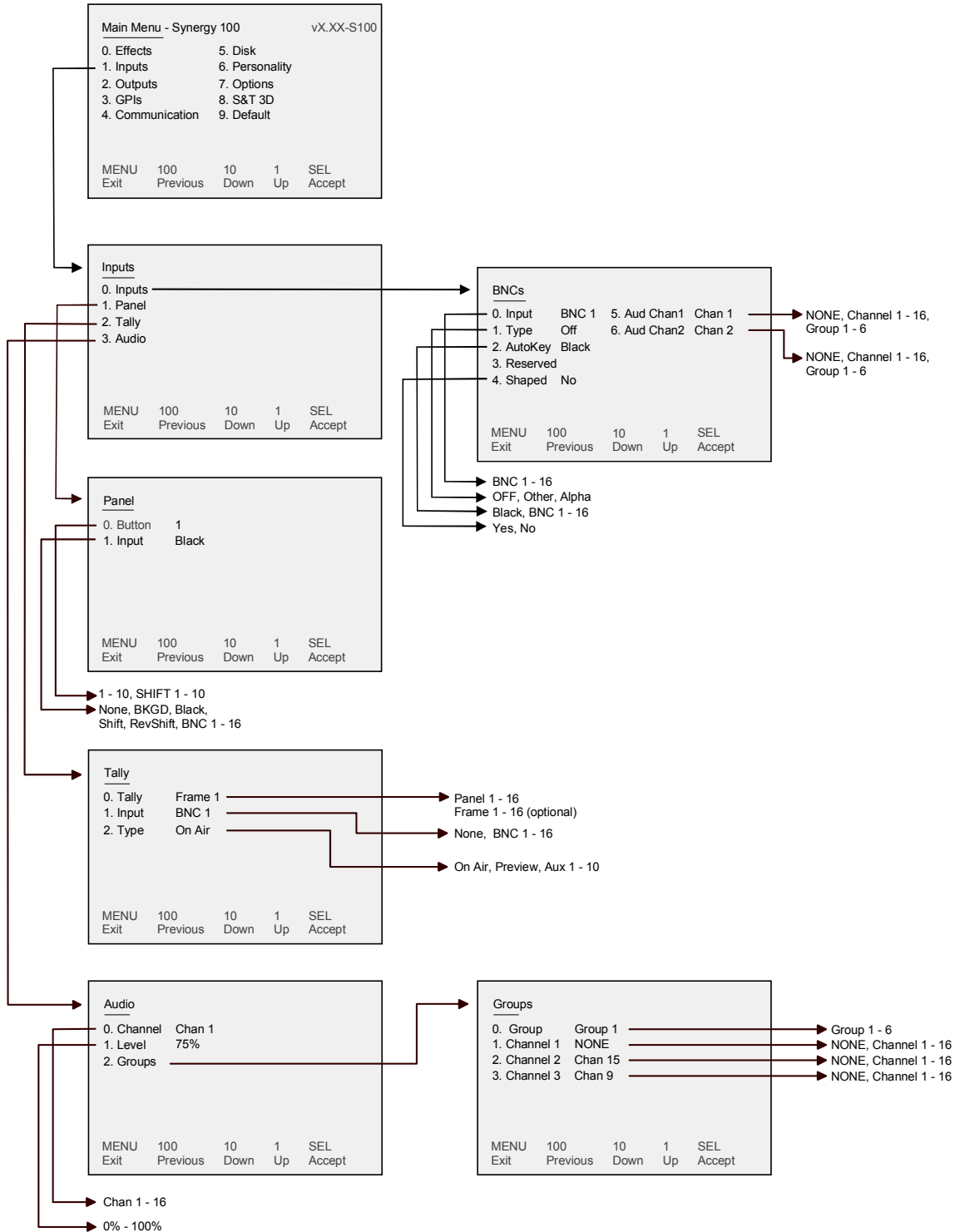
This chapter provides instructions for configuring and checking your BNC inputs. As you follow each procedure, you are, in effect, building a *database* that is used by the switcher to provide the desired names, sources, Key and fill associations, and overall switcher functionality.

The following topics are discussed in this chapter:

- BNC Configuration Menu Setup Tree
- Setting Up BNC Types
- Setting Up Tallies
- Setting Up Auto Keys
- Setting Up Panel Buttons
- Checking Inputs
- Checking Keys

BNC Configuration Menu Setup Tree

The following figure illustrates the *portion* of the menu tree that is used to set up and configure your BNC inputs. Use this figure for reference during the following procedures.



BNC Configuration Menu Tree

Setting Up BNC Inputs

In Chapter 4, you connected your physical inputs, including reference, primary, and alpha inputs. In this section, you will *configure* each physical BNC input using the **Inputs Menu** on the **Preview Overlay**. Ensure that you have completed your **Input Worksheet**. Refer to section “**Input Worksheet**” on page 4–2 for instructions.



Important

Before you begin the configuration process, ensure that the **Installation Enable Jumper (DIP Switch 4, SW7 on the Frame CPU Board)** is in the **Down** position. This position allows all installation settings to be changed without restriction. Refer to the section “**Frame Jumpers and Switches**” on page 2–20 for details.

The following topics are discussed in this section:

- Setting Up BNC Types
- Setting Up Tallies
- Setting Up Auto Keys
- Setting Up Panel Buttons

Setting Up BNC Types

The **Inputs Menu** allows you to associate physical BNC connectors with input *types*. These associations play important roles throughout the system, particularly with regard to *filtering* subsequent BNC setup menus based on specific input types.

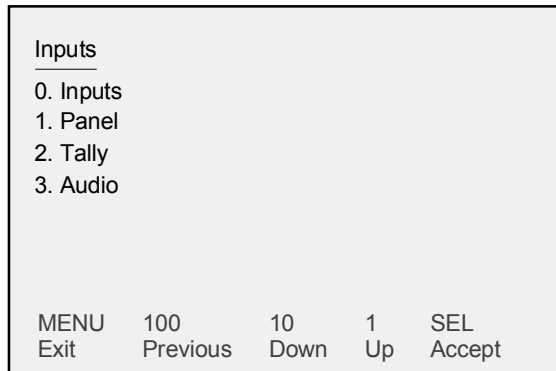


Note

During the procedure, refer to the **Input Type** column in your **Input Worksheet**. These “types” will be entered on the **BNC Type Menu** for each input connected to the frame.

Use the following procedure to set your inputs:

1. Navigate to the **Inputs Menu** as follows:
 - Press **MENU** to display the **Main Menu** on the **Preview Overlay**.
 - Press **1. Inputs** to display the **Inputs Menu**.



Inputs Menu

2. Press **0. Inputs** to display the **Inputs Sub-Menu**.

Inputs				
0. Input	BNC 1	5. Aud Chan1	Chan 1	
1. Type	Off	6. Aud Chan2	Chan 2	
2. AutoKey	Black			
3. Reserved				
4. Shaped	No			
MENU	100	10	1	SEL
Exit	Previous	Down	Up	Accept

Inputs Sub-Menu

3. Select the Input BNC you want to set up as follows:
 - Press **0. Input**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the input BNC you want to set up.
 - Press the right **SEL** button to accept the new settings.
4. Select the input type you want to assign to the selected input BNC as follows:
 - Press **1. Type**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the input type. You can select between the following:
 - ~ **OFF** — Use this option when there is *no input* physically connected to the associated BNC.
 - ~ **Other** — Use this option for devices such as cameras, routing switcher feeds, the fill portion of still stores or DVEs and other devices that provide both FILL and KEY sources.
 - ~ **Alpha** — Use this option when an alpha signal (also known as a “key” signal) is connected to the frame. Devices such as DVEs, character generators, graphics (paint) systems, and still stores typically provide unique alpha signals.
 - Press the right **SEL** to accept the new settings.
5. Press **MENU** to display the **Installation Change Screen**.
6. Accept or cancel these changes as follows:
 - Press **0. Confirm** to accept the changes.
 - Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure for setting up the BNC Types.

Setting Up Tallies

The **Tally Menu** allows you to select the tally relays that will be activated when control panel buttons are pressed. Your associations on this menu affect the tally connectors (and associated relay electronics) on the control panel.

The **Synergy 100** panel comes with 16 standard panel tallies. If the **Frame Tally** option has been purchased, an additional 16 *configurable* tallies are available within the Synergy frame and can be assigned to any video input.

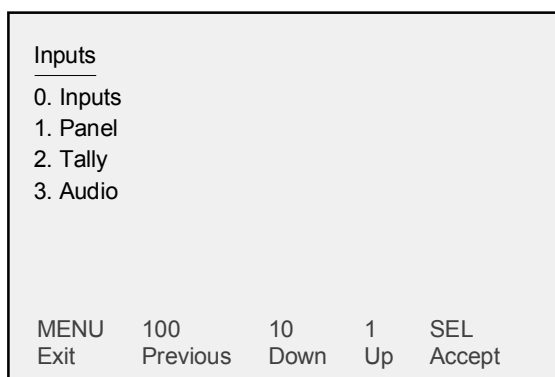


Operating Tip

For wiring convenience, it is recommended that you make your tally associations on a 1:1 basis, with tally numbers matching input BNC numbers, such as Input **8** is assigned to Tally **8**.

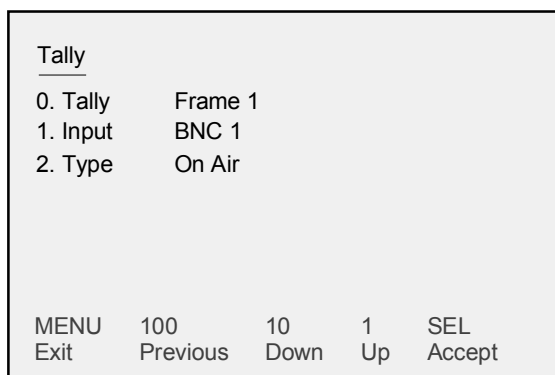
Use the following procedure to set up your tallies:

1. Navigate to the **Inputs Menu** as follows:
 - Press **MENU** to display the **Main Menu**.
 - Press **1. Inputs** to display the **Inputs Menu**.



Inputs Menu

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



Tally Menu

3. Select the tally you want to assign as follows:
 - Press **0. Tally**.
 - Use the **UP ARROW** or **DOWN ARROW** (**1** or **10**) buttons to select the tally you want to assign to the input BNC.
 - Press the right **SEL** button to accept the new settings.

4. Select the Input BNC you want to assign to the selected tally as follows:
 - Press **1. Input**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the input BNC that you want to assign to the selected tally.
 - Press the right **SEL** button to accept the new settings.
5. Select the type of tally you want to assign to the input BNC as follows:
 - Press **2. Type**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the type of tally you want to assign. You can select between the following:
 - ~ **On Air** — Use this option to select a standard tally in which the switcher logic closes the relay (lights the tally) when a selected input forms part of the program output.
 - ~ **Preview** — Use this option to trigger the tally relay when a selected input forms part of the preview output.
 - ~ **Aux** — Use this option to have one of the ten **Aux Buses** to trigger the tally relay when the selected BNC is chosen on the selected **Aux Bus**. For example, if **Tally 8** is associated with **BNC 8** and its “type” is **Aux Bus 5**, the relay closes whenever **BNC 8** is selected on **Aux Bus 5**.
 - Press the right **SEL** button to accept the new settings.
6. Press **MENU** to display the **Installation Change Screen**.
7. Accept or cancel these changes as follows:
 - Press **0. Confirm** to accept the changes.
 - Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

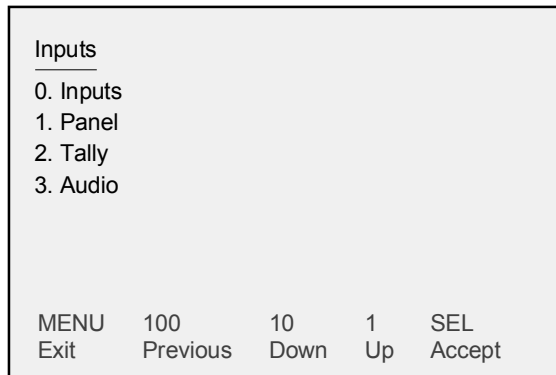
This completes the procedure for setting up BNC tallies.

Setting Up Auto Keys

The **Inputs Sub-Menu** allows you to associate *key* (alpha) signals with their *fill* (video) inputs (for example, associating **CG Video** with **CG Alpha**). This association completely simplifies the keying process on the switcher. When you punch up a key source on the key bus, its fill and alpha are automatically selected.

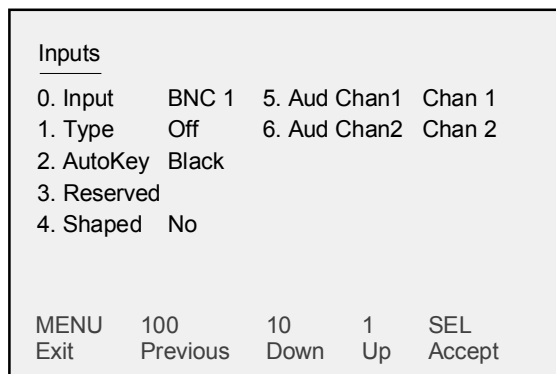
Use the following procedure to set up your alpha inputs:

1. Navigate to the **Inputs Menu** as follows:
 - Press **MENU** to display the **Main Menu**.
 - Press **1. Inputs** to display the **Inputs Menu**.



Inputs Menu

2. Press **0. Inputs** to display the **Inputs Sub-Menu**



Inputs Sub-Menu

3. Select the input BNC you want to assign an alpha to as follows:
 - Press **0. Input**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the input BNC you want to assign an alpha to.
 - Press the right **SEL** button to accept the new setting
4. Assign an alpha to the selected input BNC as follows:
 - Press **2. AutoKey**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the input BNC.



Operating Tip

If the input that you are presently configuring does *not* have an alpha associated with it, set the **AutoKey** association for that BNC to **Black**.

- Press the right **SEL** button to accept the new settings.
5. Assign a Keying mode to the selected Auto Selected Key as follows:
 - Press **4. Shaped**.
 - Press the right **SEL** button to toggle the **Shaped** setting between **Yes** and **No** as follows:
 - ~ **Yes (Shaped)** — Use this option to have the switcher perform an *additive key*. Here, the fill video signal is precisely shaped (e.g., characters, in the case of

some CGs). The fill video signal, in turn, is matched *perfectly* by the alpha signal.

- ~ **No (Unshaped)** — Use this option to have the switcher perform a *multiplicative key*. Here, the fill video signal is typically full screen and the key (alpha) signal simply drops in — cutting a clean hole in the background.



Operating Tip

If you are unsure about which mode to select, check the documentation for your device that provides the alpha signal.

6. Press **MENU** to display the **Installation Change Screen**.
7. Accept or cancel these changes as follows:
 - Press **0. Confirm** to accept the changes.
 - Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

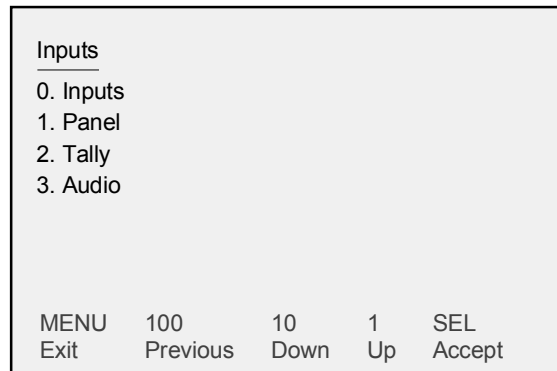
This completes the procedure for setting up an alpha input.

Setting Up Panel Buttons

As the last step in the BNC configuration process, you can map BNC connectors to physical buttons on the control panel.

Use the following procedure to set up your control panel inputs:

1. Navigate to the **Inputs Menu** as follows:
 - Press **MENU** to display the **Main Menu**.
 - Press **1. Inputs** to display the **Inputs Menu**.



Inputs Menu

2. Press **1. Panel** to display the **Panel Menu**.

<u>Panel</u>				
0. Button	1			
1. Input	Black			
MENU	100	10	1	SEL
Exit	Previous	Down	Up	Accept

Panel Menu

3. Select the crosspoint button you want to assign to an input as follows:
 - Press **0. Button**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the crosspoint button you want to assign to an input BNC.
 - Press the right **SEL** button to accept the new settings.
4. Assign an input to the selected crosspoint button as follows:
 - Press **1. Input**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the input you want to assign to the selected button.
 - Press the right **SEL** button to accept the new settings.
5. Press **MENU** to display the **Installation Change Screen**.
6. Accept or cancel these changes as follows:
 - Press **0. Confirm** to accept the changes.
 - Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure for setting up your control panel buttons.

Checking Inputs

At this point in the installation process, ensure that you have performed the following tasks for *each BNC input*:

- Set up its BNC type
- Set up its auto key association (if the input has an alpha signal)
- Set up its alpha parameters (shaped or unshaped if the input is an alpha signal)
- Set up its control panel button mapping
- Set up its tally

Now, use the following procedure to check your inputs:

1. Ensure that the program monitor is connected to the **PGM 1** output connector (on the rear chassis).
2. Ensure that each source device connected to the switcher is putting out a signal. These will include cameras, VTRs, DVEs, character generators, still stores, etc.
3. Using your “**Input Worksheet**” as a guide, press each control panel button on the **PGM** bus, starting with crosspoint 1. Verify that each signal is present on the crosspoint (as mapped) and that it matches each connected signal as written on your worksheet.
4. For each *shifted* crosspoint, *press and hold* the **SHIFT** button, then press the desired button on the **PGM** bus.
5. If any signal does not match, check your “**Input Worksheet**” against the settings that you made on the **Panel Menu**.

This completes the procedure to check your inputs.



Important

If all installation changes are now complete, return the **Installation Enable Jumper (DIP Switch 4, SW7 on the Frame CPU Board)** to the **Up** position (toward the Rear of the board).

Checking Keys

Once your inputs have been checked, you should now check each auto-key association that you have made. This procedure allows you to verify that each alpha-fill combination is working properly and generating a proper linear key.

Use the following procedure to check your keys:

1. On the **PGM** bus, select a background source (such as a camera or VTR).
2. In the **Transition Control** group, press **KEY1**.
3. In the **Effects Keyers** group, press **AUTO SELECT**.
4. On the **Key Bus**, select a crosspoint that has previously been defined as the fill for a key signal.
5. After adjusting the **Clip** and **Gain**, if required, visually check the key's appearance on the Preview monitor:
 - The assigned alpha signal should be properly cutting the hole in the background.
 - The selected fill signal should be properly filling the hole.
 - The edges of the key should be clean.
 - If the key does not appear visually correct, the alpha and fill sources may be *incorrectly paired* or *improperly assigned*. Please check the associations in the **AutoKey** section of the **Inputs Menu**.
6. If the key alpha and fill sources are correct, but the key still does not appear correct *visually*, reassign the shaped designation and recheck the key's visual appearance.

This completes the procedure to check your keys.

Communication Setup

In This Chapter

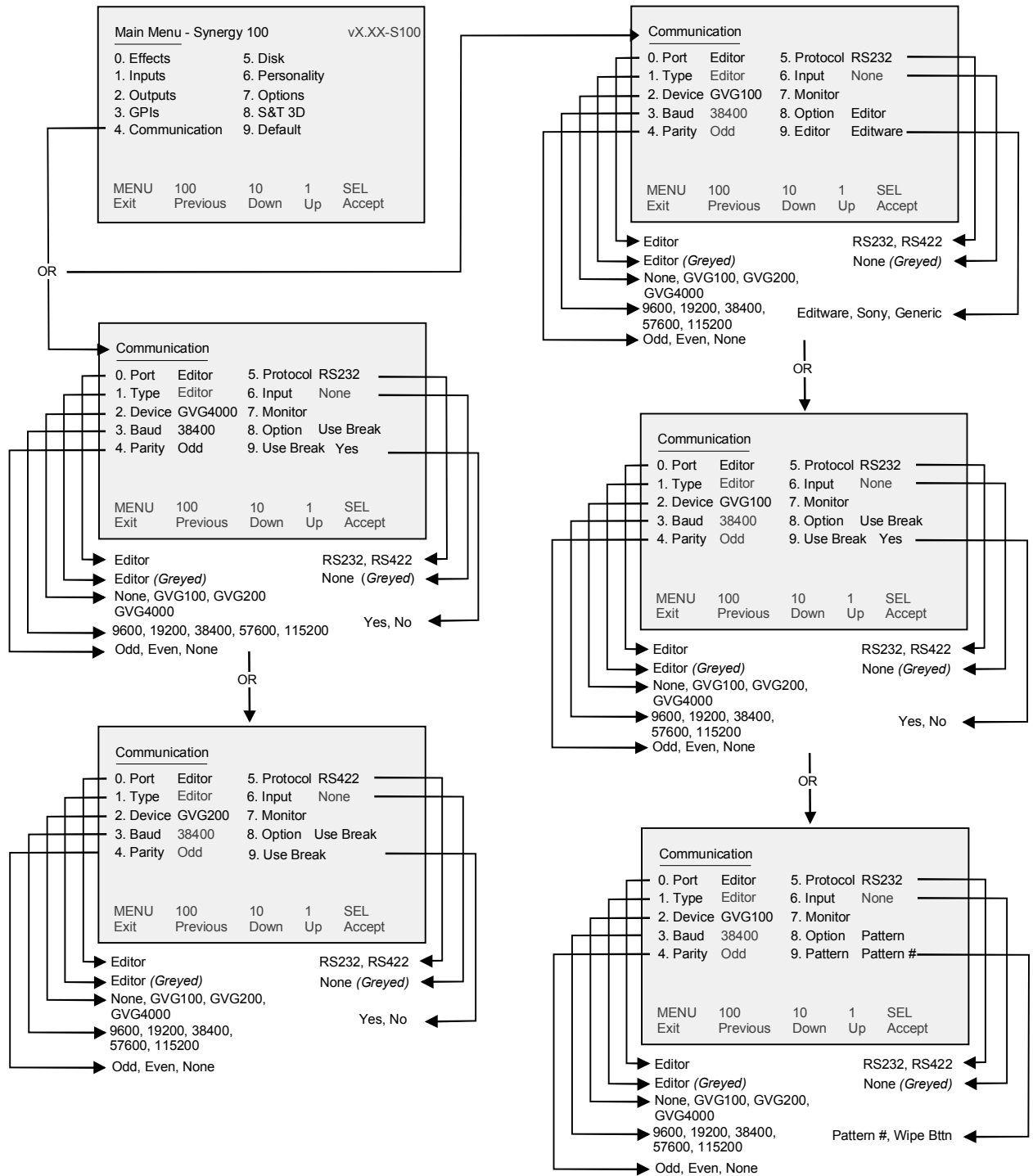
This chapter provides instructions for setting up communication parameters with external equipment, such as editors and audio mixers.

The following topics are discussed:

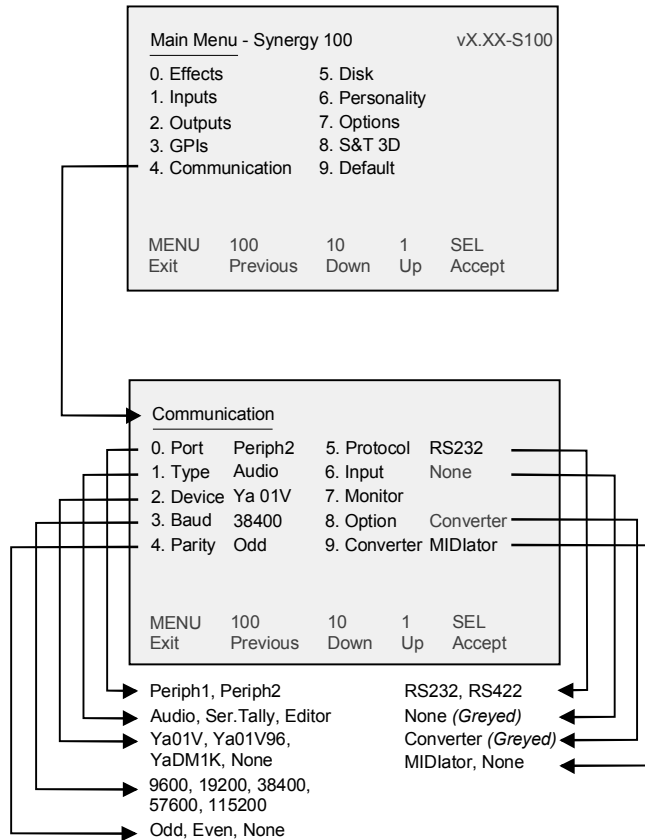
- Communication Menu Trees
- Editor Communication Setup
- Remote Audio Mixer Communication Setup
- Serial Tally Protocol Setup

Communication Menu Trees

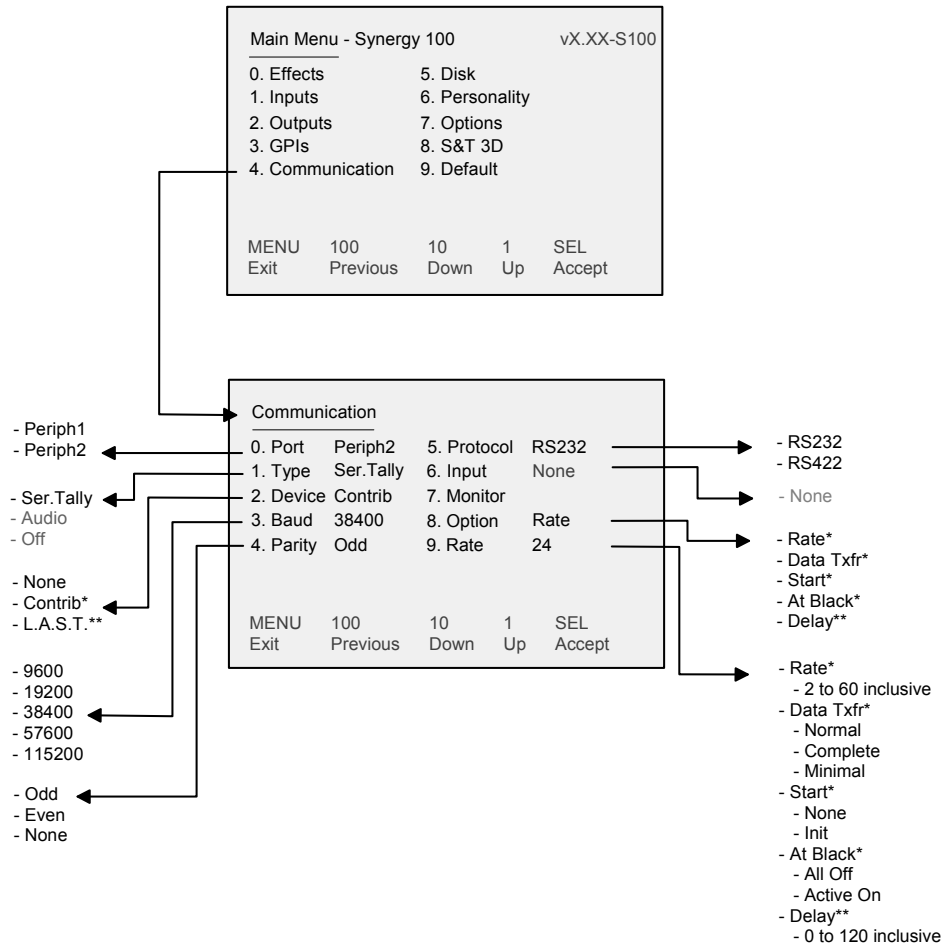
The figures below illustrates the *portion* of the Synergy menu tree that is used for communication setup procedures. Use these figures for reference throughout this chapter.



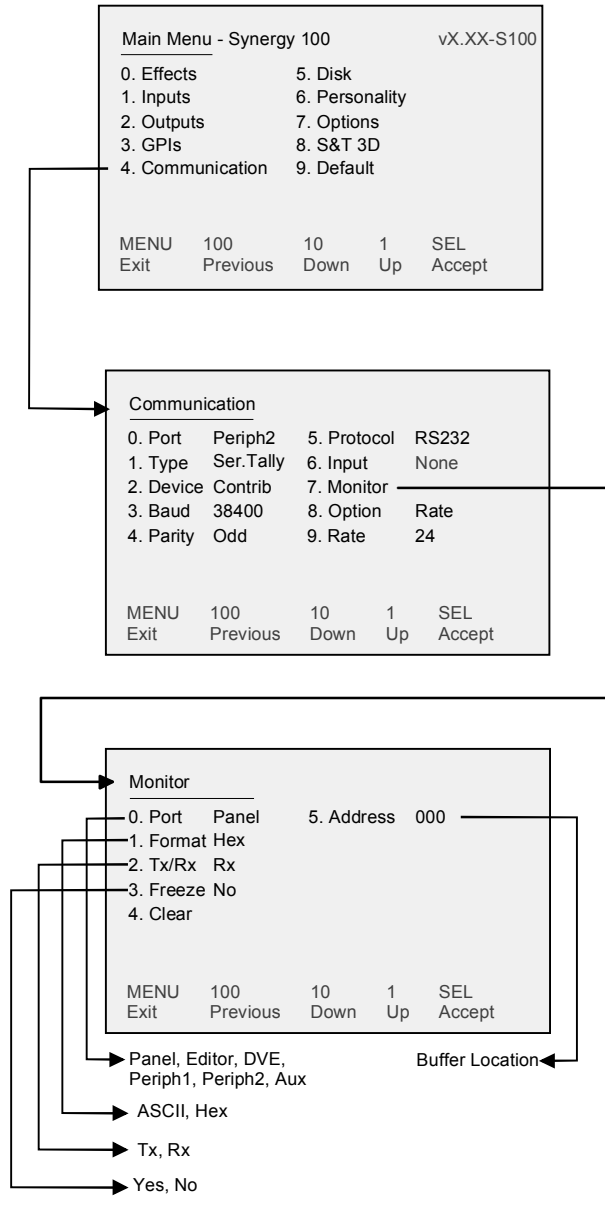
Communication Menu Tree — Editor Setup



Communication Menu Tree — Audio Setup



Communication Menu Tree — Serial Tally Setup

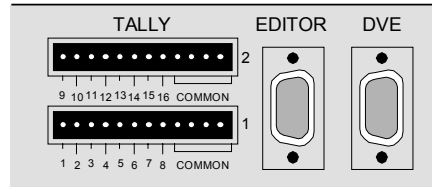


Communication Menu Tree — Monitor Setup

Editor Communication Setup

The **Communication Menu** allows the user to setup an external edit controller to control your Synergy 1 frame and Synergy 100 panel.

The communication port for the edit controller is located on the rear of the Synergy 1 frame as shown below.



Editor Communication Port

- The port requires a 9-pin “D” serial cable.
- Refer to the edit controller’s *Installation Manual* for details on its specific remote control communication port.

Editor Setup

The **Editor Communication Setup** procedure allows you to set up communication with an external edit controller. Once completed, the editor can control the Synergy 1 frame and Synergy 100 panel with a variety of standard and advanced edit control functions.



Note

Refer to section “**Options Menu**” on page 2–28 to ensure that the **Editor option** is installed. If not, please contact Ross Video Technical Support for details.

Use the following procedure to set up communication with an external editor:

1. Navigate to the **Communication Menu** as follows:
 - Press **MENU** to display the **Main Menu** on the **Preview Overlay**.
 - Press **4. Communication** to display the **Communication Menu**.

Communication				
0. Port	Editor	5. Protocol	RS232	
1. Type	Editor	6. Input	None	
2. Device	GVG4000	7. Monitor		
3. Baud	38400	8. Option	Use Break	
4. Parity	Odd	9. Use Break	Yes	
MENU	100	10	1	SEL
Exit	Previous	Down	Up	Accept

Communication Menu — Editor

2. Select the peripheral port that is connected to the editor as follows:
 - Press **0. Port**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the **Editor** peripheral port.
 - Press the right **SEL** button to accept the new settings.



Operating Tip

Editor is greyed out in the **1. Type** heading to indicate that an editor is the only type of device that can be used in the **Editor** port.

3. Select the device you want to assign to the editor communications port as follows:
 - Press **2. Device**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the device protocol. You can select between the following:
 - ~ **None** — Use this option to not assign an editor to the selected port.
 - ~ **GVG100** — Use this option to assign an editor to the Editor port using the **GVG 100 Editor** protocol.
 - ~ **GVG200** — Use this option to assign an editor to the Editor port using the **GVG 200 Editor** protocol.
 - ~ **GVG4000** — Use this option to assign an editor to the Editor port using the **GVG 4000 Editor** protocol.
 - Press the right **SEL** button to accept the new settings.
4. Select the baud rate for the editor you have connected to the port as follows:
 - Press **3. Baud**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the baud rate for the editor. Refer to the *Installation Manual* for your editor to determine the correct setting. You can select between the following:
 - ~ **9600**
 - ~ **19200**
 - ~ **38400**
 - ~ **57600**
 - ~ **115200**
 - Press the right **SEL** button to accept the new settings.
5. Select the parity for the editor you have connected to the port as follows:
 - Press **4. Parity**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the parity for editor. Refer to your editor documentation for the parity for your device.
 - Press the right **SEL** button to accept the new settings.

6. Select the communications protocol for the editor you have connected to the port as follows:
 - Press **5. Protocol**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the communications protocol for the editor. Refer to your editor documentation for the parity for your device. You can choose between the following:
 - ~ **RS232** — Use this option if the editor uses the RS-232 communications protocol.
 - ~ **RS422** — Use this option if the editor uses the RS-422 communications protocol.
 - Press the right **SEL** button to accept the new settings.
7. Toggle the **Use Break** feature as follows:
 - Press **8. Option**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select **Use Break**.
 - Press the right **SEL** button.



Note

When menu item **8. Option** is set to **Use Break**, menu item **9. Reserved** changes to **9. Use Break**.

- Press **9. Use Break**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to toggle between **Yes** and **No** as follows:
 - ~ **Yes** — Use this option to enable the Synergy 100 switcher to go into Active mode once a Break and address has been received. This is the default setting.
 - ~ **No** — Use this option to enable the Synergy 100 switcher to remain in Active mode and the editor does *not* have to send Breaks to the Synergy 100 switcher. The editor will send commands and messages without Breaks to the Synergy 100 switcher.
 - Press the right **SEL** button to accept the new settings.
8. If you are using the **GVG 100** protocol, complete the procedure in the section “**GVG 100 Editor Protocol Extra Options**” on page 7–9 to finish setting up your editor.
 9. Press **MENU** to display the **Installation Change Screen**.
 10. Accept or cancel these changes as follows:
 - Press **0. Confirm** to accept the changes.
 - Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure to set up communication with an external editor.



Note

Refer to the section “**Editor Interface**” in Chapter 8 of the *Synergy 100 Operation Guide* to ensure that the **Editor** option is enabled.

GVG 100 Editor Protocol Extra Options

The GVG100 editor protocol has extra options that must be set up to properly interface with specific editors, and determine how you want to interface with it.

Use the following procedure to set up the extra option for your editor:

1. Ensure that the **Communication Menu** is displayed and that menu item **0. Port** is set to the editor you want to set up the extra options for.
2. Assign a specific editor device to the Editor Port as follows:
 - Press **8. Option**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select **Editor**.
 - Press the right **SEL** button to accept the new settings.



Note

When menu item **8. Option** is set to **Editor**, menu item **9. Reserved** changes to **9. Editor**.

- Press **9. Editor**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the specific editor device you have connected to the Editor port. You can choose between the following:
 - ~ **Editware** — Use this option to assign an Editware™ editor.
 - ~ **Sony** — Use this option to assign a Sony™ editor.
 - ~ **Generic** — Use this option to assign an editor that is produced by a company not listed here.
 - Press the right **SEL** button to accept the new settings.
3. Assign the wipe pattern selection method you want to use for the editor as follows:
 - Press **8. Option**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select **Pattern**.
 - Press the right **SEL** button to accept the new settings.



Note

When menu item **8. Option** is set to **Pattern**, menu item **9. Reserved** changes to **9. Pattern**.

- Press **9. Pattern**.
- Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to assign a wipe pattern assignment method to the editor. You can choose between the following:
 - ~ **Pattern #** — Use this option to have wipe patterns selected by their actual wipe pattern number.
 - ~ **Wipe Btn** — Use this option to have wipe patterns selected by the physical wipe button number the wipe is assigned to.
- Press the right **SEL** button to accept the new settings.

4. Press **MENU** to display the **Installation Change Screen**.
5. Accept or cancel these changes as follows:
 - Press **0. Confirm** to accept the changes.
 - Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure for setting up the extra options for the GVG 100 editor protocol.



Note

Refer to Chapter 8, “**Memory Functions and More**” of the *Synergy 100 Operator’s Manual* for more information on using an editor.

Remote Audio Mixer Communication Setup

Use the **Remote Audio Mixer Setup** procedure to set up communication parameters with an audio mixer.



Note

Refer to the section “**Options Menu**” on page 2–28 to ensure that the **Audio option** is installed. If not, please contact Ross Video Technical Support for details.

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.

When an audio channel (or group) is assigned to a crosspoint, 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 may be brought to air independent of video.

Remote Audio Mixer Setup

In order to properly set up your Remote Audio Mixer to be controlled from your Synergy 100 Switcher, you will have to connect the control cables from the switcher to the Audio Mixer and then set up the communications protocols for the Audio Mixer on the peripheral port that you connected the Audio Mixer to.



Note

The **Small Audio Mixer Interface** option must be installed in order to set up and communicate with the audio mixer.

Connecting a Remote Audio Mixer

Use this procedure to connect the control cables from the switcher to the Remote Audio Mixer.

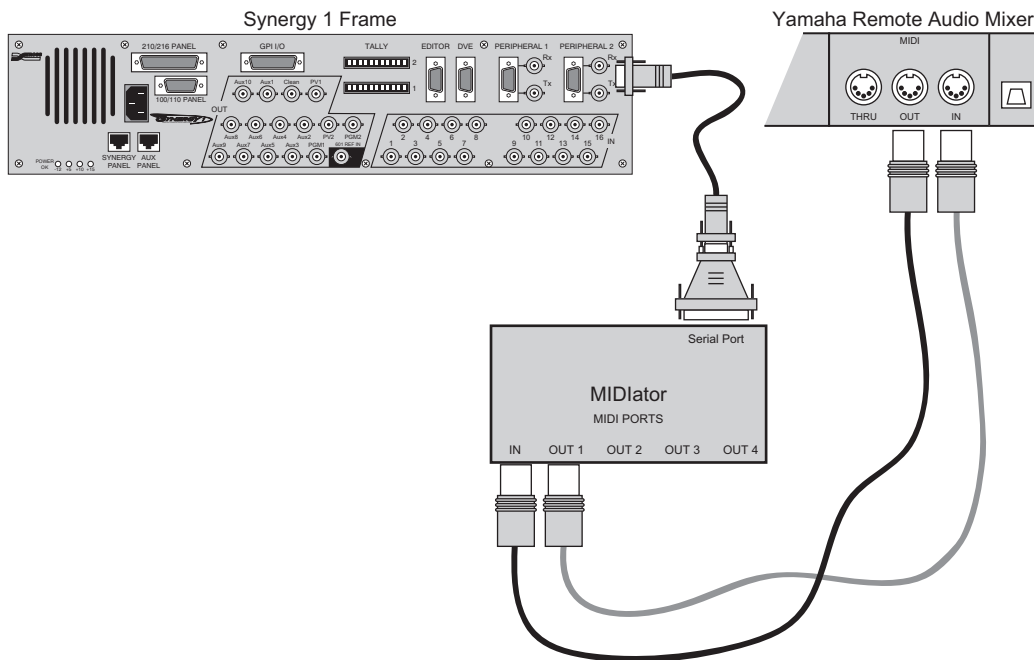
In order to properly complete this procedure you will need the following software options, cables, and equipment:

- **Small Audio Mixer Interface** — This is the software option from Ross Video that allows your Synergy 100 Switcher to control up to 16 audio channels on an audio mixer.
- **MIDIator (MS-124W)** — This device converts the serial interface from the Synergy 100 Switcher to a MIDI format.
- **MIDIator Interface Cable** — This is a null modem cable with a DB9 to DB25 converter at one end. This cable connected the 9-pin, D-Type Peripheral port on the frame to the 25-pin, D-Type port on the MIDIator. Refer to the section “**MIDIator Interface Cable Specifications**” on page 7–21 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 connections of a Yamaha 01V96 Audio Mixer to your Synergy 100 Switcher. The locations or names of ports may vary with your audio mixer.

Use the following procedure to connect a single Remote Audio Mixer to your Synergy 100 Switcher:

1. Connect and secure the **9-Pin** end of the **MIDIator Interface Cable** to one of the **Peripheral Ports** on the back of the Synergy 1 frame.
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 100 Switcher. Refer to the section “**Setting Up Communication with a Remote Audio Mixer**” on page 7–13 for instructions on how to set up the communications protocols on the Synergy 100 Switcher.

Setting Up Communication with a Remote Audio Mixer

In order to have the Synergy 100 Switcher communicate with the Remote Audio Mixer, the peripheral port on the frame that the Audio Mixer is connected to must be set up to communicate with the particular Remote Audio Mixer you have connected.

Use the following procedure to set up communication with an external audio mixer:

1. Navigate to the **Communication Menu** as follows:
 - Press **MENU** to display the **Main Menu** on the **Preview Overlay**.
 - Press **4. Communication** to display the **Communication Menu**.

Communication				
0. Port	Periph2	5. Protocol	RS232	
1. Type	Audio	6. Input	None	
2. Device	Ya 01V	7. Monitor		
3. Baud	38400	8. Option	Converter	
4. Parity	Odd	9. Converter	MIDlator	
MENU	100	10	1	SEL
Exit	Previous	Down	Up	Accept

Communication Menu — Audio

2. Select the peripheral port that is connected to the Audio Mixer as follows:
 - Press **0. Port**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the peripheral port that is connected to the audio mixer.
 - Press the right **SEL** button to accept the new settings.
3. Assign a peripheral port to Audio as follows:
 - Press **1. Type**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select **Audio**.
 - Press the right **SEL** button to accept the new settings.
4. Select the device you want to assign to the Audio Mixer communications port as follows:
 - Press **2. Device**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the specific Audio Mixer that is connected to the port. You can choose between the following:
 - ~ **Ya01V** — Use this option to assign a Yamaha™ 01V audio mixer.
 - ~ **Ya01V96** — Use this option to assign a Yamaha 01V96 audio mixer.
 - ~ **YaDM1K** — Use this option to assign a Yamaha DM1000 audio mixer.
 - Press the right **SEL** button to accept the new settings.

5. Select the baud rate for the Audio Mixer you have connected to the port as follows:
 - Press **3. Baud**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the baud rate for the audio mixer. Refer to the documentation for your Audio Mixer to determine the correct setting.



Note

The baud rate and parity for most Remote Audio Mixers should already be correctly set. Use these controls only if required.

- Press the right **SEL** button to accept the new settings.
6. Select the parity for the Audio Mixer you have connected to the port as follows:
 - Press **4. Parity**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the parity for the audio mixer. Refer to the documentation for your Audio Mixer to determine the correct setting.
 - Press the right **SEL** button to accept the new settings.
 7. Select the communications protocol for the Audio Mixer you have connected to the port as follows:
 - Press **5. Protocol**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the communications protocol for the audio mixer. Refer to the Yamaha documentation for your Audio Mixer to determine the correct setting.



Important

True RS-232 is only available on **Peripheral Port 2**. However, you can connect an audio board using RS-232 protocol to **Peripheral Port 1** if the **Protocol** heading is set to **RS-422**, and an RS-422-to-RS-232 converter is used.

- Press the right **SEL** button to accept the new settings.
8. Select the converter you want to use for communicating with the Audio Mixer as follows:
 - Press **9. Converter**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the type of converter, if any, that you are using. There are two choices:
 - ~ **None** — Use this option if you are not using a converter.
 - ~ **MIDIator** — Use this option if you are using a **MIDIator** converter.



Note

If you are using a Yamaha 01V96 audio board or a Yamaha DM1000 audio board, the **MIDIator MS-124W** converter box is *required* to connect the mixer to the Synergy switcher. This converter is *not* required when interfacing with the Yamaha 01V, but can be used, if desired.

- Press the right **SEL** button to accept the new settings.
9. Press **MENU** to display the **Installation Change Screen**.

10. Accept or cancel these changes as follows:

- Press **0. Confirm** to accept the changes.
- Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure for setting up communications with a Remote Audio Mixer. Next you must set up the Remote Audio Mixer to properly communicate with the Synergy 100 switcher.

Audio Mixer Interface Specifics

In order to complete the communications setup, you must configure the Remote Audio Mixer to accept commands and communicate with the switcher. This section covers setting up the following audio mixers:

- Yamaha 01V
- Yamaha 01V96
- Yamaha DM1000

Yamaha 01V

Please note the following important information regarding the Yamaha 01V audio mixer:



Note

For information on the function buttons and navigating the menu system on your audio mixer, refer to your Audio Mixer documentation.

- The Synergy 100 connects to the Yamaha 01V via the Synergy 1 frame's Peripheral ports (1 or 2) and the Yamaha 01V's TO HOST port.
- Baud rate: 38400, Parity: none, Data bits: 8, Stop bit: 1.
- The Yamaha 01V is controlled using a null modem cable with the following connectors:
 - ~ 9-pin, D-type, Male RS-232 **OR** RS-422 at one end
 - ~ 8-pin Mini DIN-to-PC male connector at the other end
- The following pin-outs are required for the NULL modem cable:

RS-232 Synergy-to-Yamaha 01V Wiring Chart

Synergy 1 Frame			Yamaha 01V Panel	
Peripheral 1-2 Connector Male	Signal		TO HOST Port Connector Male	Signal
1	n/c			n/c
2	Tx	→	2	Rx
3	Rx	→	3	Tx
4	n/c			n/c
5	Ground	→	5	Ground
6	n/c			n/c
7	n/c			n/c
8	n/c			n/c
9	n/c			n/c

**Note**

For RS-232 cables, only pins 2, 3, and 5 should be connected. All other pins must be disconnected.

**Important**

True RS-232 is only available on **Peripheral Port 2**. However, you can connect an audio board using RS-232 protocol to **Peripheral Port 1** if the **Protocol** heading is set to **RS-422**, and an RS-422-to-RS-232 converter is used.

RS-422 Synergy-to-Yamaha 01V Wiring Chart

Synergy 1 Frame			Yamaha 01V Panel	
Peripheral 1-2 Connector Male	Signal		TO HOST Port Connector Male	Signal
1	n/c			n/c
2	Tx-	→	5	Rx-
3	Rx+	→	6	Tx+
4	Ground			n/c
5	Ground	→	4	Ground
6	n/c			n/c
7	Tx+	→	8	Rx+
8	Rx-	→	3	Tx-
9	n/c			

n/c = Not connected

Use the following procedure to set up 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**.
 - 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 100 Switcher.

Yamaha 01V96

The Synergy 1 frame connects to the Yamaha 01V96 via the MIDIator Systems MS-124W converter box, using a 9-pin, D-type, Male RS-232 NULL modem cable from the frame's Peripheral port (1-2) to the MIDI box's 25-pin to 9-pin adapter cable. The MIDI converter box is then connected to the Yamaha 01V96 mixer.

The MIDI box uses two cables, one for output and one for input, to connect to the audio mixer.

- The MIDI box's **In** port connects to the **MIDI OUT** port of the Yamaha 01V96 mixer.
- Any one of the MIDI box's four **Out** ports can be connected to **MIDI IN** port of the Yamaha 01V96.

Please note the following important information regarding the Yamaha 01V96 audio mixer:

- Baud rate: 38400, Parity: none, Data bits: 8, Stop bit: 1.
- The following pin-outs are required for the NULL modem cable:

Synergy-to-MIDIator MS-124 Converter Wiring Chart

Synergy 1 Frame			MIDIator MS-124 Converter	
Peripheral 1-2 Connector Male	Signal		Adapter Cable Connector Male	Signal
1	n/c			n/c
2	Tx	→	3	Rx
3	Rx	→	2	Tx
4	n/c			n/c
5	Ground	→	5	Ground
6	n/c			n/c
7	n/c			n/c
8	n/c			n/c
9	n/c			n/c

n/c = Not connected



Note

For RS-232 cables, only pins 2, 3, and 5 should be connected. All other pins must be disconnected.



Important

It is recommended that you use **Peripheral Port 2** for controlling a Yamaha 01V96, as true RS-232 is only available on **Peripheral Port 2**. However, you can connect an audio board using RS-232 protocol to **Peripheral Port 1** if the **Protocol** heading is set to **RS-422**, and an RS-422-to-RS-232 converter is used.

In order to allow the Synergy 100 Switcher to communicate with the 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 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 **SETUP** tab to display the **MIDI SETUP Menu**.
5. 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**.
 - 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 100 Switcher.

Yamaha DM1000

The Synergy 1 frame connects to the Yamaha DM1000 via the MIDIator Systems MS-124W converter box, using a 9-pin, D-type, Male RS-232 NULL modem cable from the frame's Peripheral port (1-2) to the MIDI box's 25-pin to 9-pin adapter cable. The MIDI converter box is then connected to the Yamaha DM1000 audio mixer.

The MIDI box uses two cables, one for output and one for input, to connect to the audio mixer.

- The MIDI box's **In** port connects to the **MIDI OUT** port of the Yamaha DM1000 mixer.
- Any one of the MIDI box's four **Out** ports can be connected to **MIDI IN** port of the Yamaha DM1000.

Please note the following important information regarding the Yamaha DM1000 audio mixer:

- Baud rate: 38400, Parity: none, Data bits: 8, Stop bit: 1.
- The following pin-outs are required for the NULL modem cable:

Synergy-to-MIDIator MS-124 Converter Wiring Chart

Synergy 1 Frame			MIDIator MS-124 Converter	
Peripheral 1-2 Connector Male	Signal		Adapter Cable Connector Male	Signal
1	n/c			n/c
2	Tx	→	3	Rx
3	Rx	→	2	Tx
4	n/c			n/c
5	Ground	→	5	Ground
6	n/c			n/c
7	n/c			n/c
8	n/c			n/c
9	n/c			n/c

n/c = Not connected



Note

For RS-232 cables, only pins 2, 3, and 5 should be connected. All other pins must be disconnected.



Important

It is recommended that you use **Peripheral Port 2** for controlling a Yamaha DM1000, as true RS-232 is only available on **Peripheral Port 2**. However, you can connect an audio board using RS-232 protocol to **Peripheral Port 1** if the **Protocol** heading is set to **RS-422**, and an RS-422-to-RS-232 converter is used.

In order to allow the Synergy 100 Switcher to communicate with the 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 Audio Mixer.

Use the following procedure to setup your Yamaha DM1000 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**.
 - **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):

Yamaha DM1000 Setup

	Tx	Rx	OMNI	ECHO
Channel	1	1	--	--
Program Change	ON	ON	OFF	OFF
Control Change	ON	ON	--	OFF
Param Change	ON	ON	--	OFF
Bulk	--	OFF	--	--
Other Commands	--	--	--	--

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

This completes the procedure for setting up the Yamaha DM1000 Remote Audio Board to communicate with the Synergy 100 switcher.

MIDIator Interface Cable Specifications

The NULL modem cable that connects the MIDIator to the Peripheral Port on the **Synergy 1** frame has the following pinouts.

Synergy-to-MIDIator MS-124 Converter Wiring Chart

Synergy 1 Frame			MIDIator MS-124 Converter	
Peripheral Port 1-2	Signal		Cable Adapter	Signal
1	n/c			n/c
2	Rx	→	3	Tx
3	Tx	→	2	Rx
4	n/c			n/c
5	Ground	→	5	Ground
6	n/c			n/c
7	n/c			n/c
8	n/c			n/c
9	n/c			n/c

Assigning Audio Channels

The **Audio Menu** allows you to set the level that each audio channel will fade up to when faded in by the switcher. A different level can be set for each of the 16 audio channels and you can assign up to two audio sources to each BNC. Each source can be a channel or a group, with up to 3 channels per group. Channels and groups that are assigned to BNC inputs, follow the BNC inputs to air on a transition.



Note

You must have an audio mixer properly connected to the Synergy 100 Switcher to be able to assign audio channels to Input BNCs. Refer to the section “**Remote Audio Mixer Communication Setup**” on page 7–11 for more information.

Use the following procedure to assign audio channels or groups to an input BNC:

1. Navigate to the **Inputs Menu** as follows:
 - Press **MENU** to display the **Main Menu**.
 - Press **1. Inputs** to display the **Inputs Menu**.

Inputs				
0. Inputs				
1. Panel				
2. Tally				
3. Audio				
MENU	100	10	1	SEL
Exit	Previous	Down	Up	Accept

Inputs Menu

2. Press **0. Inputs** to display the **Inputs Sub-Menu**

Inputs				
0. Input	BNC 1	5. Aud Chan1	Chan 1	
1. Type	Off	6. Aud Chan2	Chan 2	
2. AutoKey	Black			
3. Reserved				
4. Shaped	No			
MENU	100	10	1	SEL
Exit	Previous	Down	Up	Accept

Inputs Sub-Menu

3. Select the input BNC you want to assign an alpha to as follows:
- Press **0. Input**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the input BNC that you want to assign the audio channels or groups to.
 - Press the right **SEL** button to accept the new settings.
4. Assign an audio channel or group to the selected input BNC as follows:
- Press **5. Aud Chan1**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the audio channel or group you want to assign to the selected input BNC. You can select between the following:
 - ~ **NONE** — Use this option when no audio channel is connected.
 - ~ **Chan 1 to Chan 16** — Use this option when a single mixer channel is connected.
 - ~ **Group 1 to Group 6** — Use this option when a group of channels is connected. These groups are set up in the next section.
 - Press the right **SEL** button to accept the new settings.



Operating Tip

You can assign a second audio channel or group to the selected input BNC by assigning it to **6. Aud Chan2**.

This completes the procedure to assign audio channels or groups to an input BNC.

Setting Up Audio Groups

The **Audio Groups Menu** allows you to set up groups of audio channels, if desired, by connecting up to three channels together. As you can assign up to two groups per BNC, as described in the section “**Assigning Audio Channels**” on page 7–21, a total of six audio channels can be linked to a single BNC.

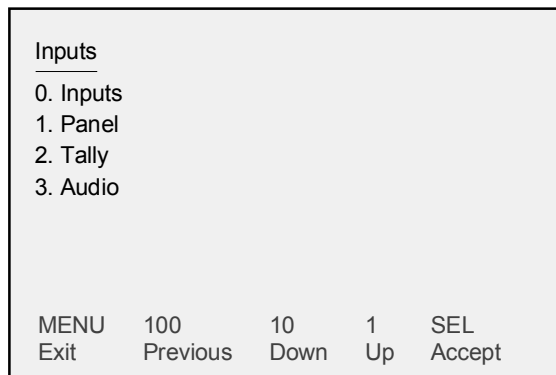


Note

It is not necessary to set up groups in order to use the audio mixer interface.

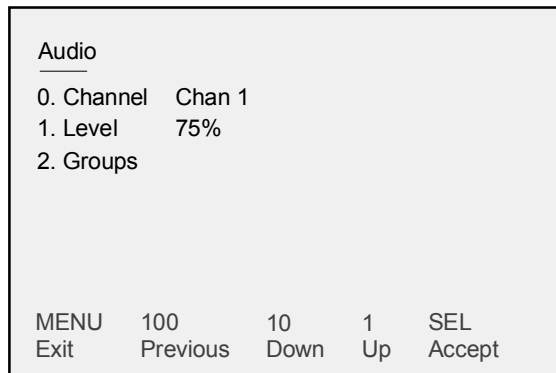
Use the following procedure to assign audio channels to an Audio Group:

1. Navigate to the **Inputs Menu** as follows:
 - Press **MENU** to display the **Main Menu**.
 - Press **1. Inputs** to display the **Inputs Menu**.



Inputs Menu

2. Press **3. Audio** to display the **Audio Menu**.



Audio Menu

3. Press **2. Groups** to display the **Audio Groups Menu**.

Groups				
0. Group				Group 1
1. Channel 1				NONE
2. Channel 2				Chan 15
3. Channel 3				Chan 9
MENU	100	10	1	SEL
Exit	Previous	Down	Up	Accept

Audio Groups Menu

4. Select an Audio Group to set up as follows:
 - Press **0. Group**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the Audio Group number (**Group 1 – Group 6**) that you want to set up.
 - Press the right **SEL** button to accept the new settings.
5. Assign an audio channel to the selected Audio Group as follows:
 - Press **1. Channel 1**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select an audio channel that you want to include in this group. You can selected between **Chan 1 – Chan 16** or **None**.
 - Press the right **SEL** button to accept the new settings.
6. Assign a second audio channel to the selected Audio Group as follows:
 - Press **2. Channel 2**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select a second audio channel to include in this group. You can selected between **Chan 1 – Chan 16** or **None**.
 - Press the right **SEL** button to accept the new settings.



Operating Tip

You can assign a third audio channel to the selected Audio Group by assigning it to **3. Channel 3**.

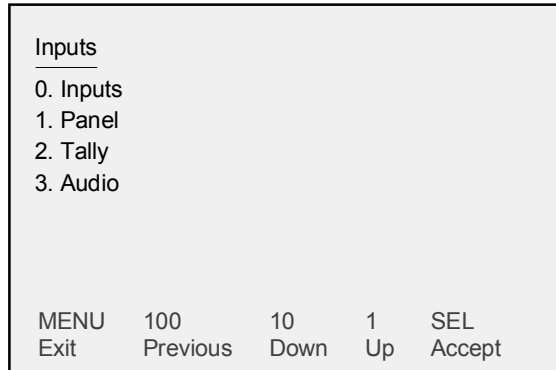
7. Press **MENU** to display the **Installation Change Screen**.
8. Accept or cancel these changes as follows:
 - Press **0. Confirm** to accept the changes.
 - Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure to assign audio channels to an Audio Group.

Setting Audio Levels

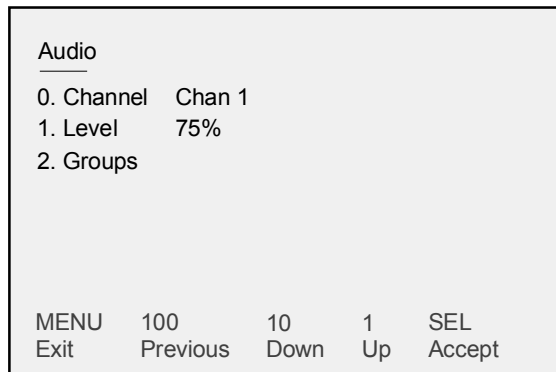
Use the following procedure to set a level for an audio channel:

1. Navigate to the **Inputs Menu** as follows:
 - Press **MENU** to display the **Main Menu**.
 - Press **1. Inputs** to display the **Inputs Menu**.



Inputs Menu

2. Press **3. Audio** to display the **Audio Menu**.



Audio Menu

3. Select the audio channel that you want to set a level for as follows:
 - Press **0. Channel**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the audio channel that you want to set a level for.
 - Press the right **SEL** button to accept the new settings.
4. Assign a level for the selected audio channel as follows:
 - Press **1. Level**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the level that you want the channel to fade up to. You can select a value between the following:
 - ~ **0%** — Use this option to turn the audio level off.
 - ~ **100%** — Use this option to turn the audio level to full volume.
 - Press the right **SEL** button to accept the new settings.

5. Press **MENU** to display the **Installation Change Screen**.
6. Accept or cancel these changes as follows:
 - Press **0. Confirm** to accept the changes.
 - Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure to set a level for an audio channel.

Audio Cut Mode Setup

The **Audio Cut** mode enables you to specify that all audio transitions perform a “cut” between your sources regardless of whether you press the **AUTO TRANS** button, the **CUT** button, or use the Fader for the transition. Note that this is not a true “cut” transition — the speed that one channel is taken off air and the next channel is taken on air depends on the Audio Mixer.

If you disable the **Audio Cut** mode by selecting the **Off** option, the audio transition will reflect the type of transition selected. For example, if you press the **AUTO TRANS** button, the audio transition will be performed at the same rate as the video transition. If the Fader handle is used to perform a manual transition, the audio transition will progress at the same rate as the **Transition Progress Bar**. Refer to Chapter 5, “**Transitions**” in the *Synergy 100 Operation Guide*, for more information on performing transitions.

Use the following procedure to setup the **Audio Cut** mode:

1. Navigate to the **Personality Menu** as follows:
 - Press **MENU** to display the **Main Menu**.
 - Press **6. Personality** to display the **Personality Menu**.

Personality - Synergy 100				
0. Trans PV	On	5. GPIO Mode	Disabled	
1. DSK Drop	Manual	6. Show Knob	0	
2. SleepTime	10 min	7. Audio Cut	On	
3. Menu Btn	Menu Only			
4. AutoRcall	On			
MENU	100	10	1	SEL
Exit	Previous	Down	Up	Accept

Personality Menu

2. Setup the **Audio Cut** mode as follows:
 - Press **7. Audio Cut**.
 - Use the **UP ARROW** or **DOWN ARROW** (**1** or **10**) buttons to select between **On** and **Off** as follows:
 - ~ **On** — Use this option to enable the Synergy 100 Switcher to perform a “cut” between the **PST** and **PGM** audio sources. This is the default setting.
 - ~ **Off** — Use this option to set the audio transition rate to the video transition rate.
 - Press the right **SEL** button to accept the new setting.

3. Press **MENU** to display the **Installation Change Screen**.
4. Accept or cancel these changes as follows:
 - Press **0. Confirm** to accept the changes.
 - Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure to setup the **Audio Cut** mode.

Serial Tally Protocol Setup

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

The following topics are discussed in this section:

- Serial Tally Setup
- Contribution Serial Tally Extra Options
- Look Ahead Serial Tally Extra Options

Serial Tally Setup

In order to connect a serial tally interface device to your Synergy 100 switcher, you must set up communication with the serial tally device.



Note

The **Serial Tally Interface** option must be installed in order to set up serial tally communications. Refer to the section “**Installing Software Options**” on page 2–30 for instructions on verifying the status of installed options.

Use the following procedure to configure the Contribution Serial Tally protocol:

1. Navigate to the **Communication Menu** as follows:
 - Press **MENU** to display the **Main Menu** on the **Preview Overlay**.
 - Press **4. Communication** to display the **Communication Menu**.

Communication				
0. Port	Periph2	5. Protocol	RS232	
1. Type	Ser.Tally	6. Input	None	
2. Device	Contrib	7. Monitor		
3. Baud	38400	8. Option	Rate	
4. Parity	Odd	9. Rate	24	
MENU	100	10	1	SEL
Exit	Previous	Down	Up	Accept

Communication Menu — Serial Tally

2. Select the peripheral port that is connected to the serial tally interface device as follows:
 - Press **0. Port**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the peripheral port that your serial tally interface equipment is connected to. You can choose between the following:
 - ~ **Periph1** — Use this option if serial tally interface equipment is connected to Peripheral port 1.
 - ~ **Periph2** — Use this option if serial tally interface equipment is connected to Peripheral port 2.

- Press the right **SEL** button to accept the new settings.
3. Assign a peripheral port to Serial Tally as follows:
 - Press **1. Type**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select **Ser. Tally**.
 - Press the right **SEL** button to accept the new settings.
 4. Select the device you want to assign to the serial tally communications port as follows:
 - Press **2. Device**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the particular protocol that the serial tally equipment is using. You can choose between the following:
 - ~ **None** — Use this option to not assign a communication protocol to the serial tally interface device connected to the selected port.
 - ~ **Contrib** — Use this option to assign the **Contribution Serial Tally Protocol** to communicate with a serial tally interface device.
 - ~ **L.A.S.T.** — Use this option to assign the **Look Ahead Serial Tally Protocol** to communicate with a serial tally interface device.



Operating Tip

When menu item **2. Device** is set to **L.A.S.T.**, menu item **8. Option** changes to **Delay** and is greyed out.

- Press the right **SEL** button to accept the new settings.
5. Select the baud rate for the serial tally interface device you have connected to the port as follows:
 - Press **3. Baud**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the baud rate for the serial tally interface device. Refer to the *Installation Manual* for your device to determine the correct setting.
 - Press the right **SEL** button to accept the new settings.
 6. Select the parity for the serial tally interface device you have connected to the port as follows:
 - Press **4. Parity**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the parity for the serial tally interface device. Refer to the *Installation Manual* for your device to determine the correct setting.
 - Press the right **SEL** button to accept the new settings.
 7. Select the communications protocol for the serial tally interface device you have connected to the port as follows:
 - Press **5. Protocol**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the communications protocol for the serial tally interface device. Refer to the *Installation Manual* for your device to determine the correct setting. You can choose between the following:
 - ~ **RS-232** — Use this option if the device uses the RS-232 communications protocol.

~ **RS422** — Use this option if the device uses the RS-422 communications protocol.

- Press the right **SEL** button to accept the new settings.



Important

True RS-232 is only available on **Peripheral Port 2**. However, you can connect an audio board using RS-232 protocol to **Peripheral Port 1** if the **Protocol** heading is set to **RS-422**, and an RS-422-to-RS-232 converter is used.

8. If you are using the **Contribution** protocol, you must set up the extra options for your serial tally interface device. Complete the procedure in the section “**Contribution Serial Tally Extra Options**” on page 7–30 to finish setting up your serial tally interface device. If you are not using the Contribution protocol, proceed to the next step.
9. If you are using the **Look Ahead Serial Tally** protocol, you must set up the extra options for your serial interface device. Complete the procedure in the section “**Look Ahead Serial Tally Extra Options**” on page 7–32 to finish setting up your serial tally interface device. If you are not using the **Look Ahead Serial Tally** protocol, proceed to the next step.
10. Press **MENU** to display the **Installation Change Screen**.
11. Accept or cancel these changes as follows:
 - Press **0. Confirm** to accept the changes.
 - Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure for setting up a serial tally interface device on a peripheral port.

Contribution Serial Tally Extra Options

The **Contribution** protocol has extra options that *must* be setup to properly communicate with a serial tally interface device.

Use the following procedure to set up the Extra Options for your serial tally interface device:

1. Ensure that the **Communication Menu** is displayed and that menu item **0. Port** is set to the serial tally interface device you want to set up the extra options for.
2. Assign a specific serial tally interface device to the selected peripheral port as follows:
 - Press **8. Option**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select **Rate**.
 - Press the right **SEL** button to accept the new settings.



Note

When menu item **8. Option** is set to **Rate**, menu item **9. Reserved** changes to **9. Rate**.

- Press **9. Rate**.
- Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the length of time (in fields) between update messages sent by Synergy to the serial tally interface device. The default value of **26** is the recommended setting, but you can choose *any* value between **2** and **60**, inclusive.
- Press the right **SEL** button to accept the new settings.

3. Assign the number of messages that are sent to the serial tally interface device as follows:
 - Press **8. Option**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select **Data Txfr**.
 - Press the right **SEL** button to accept the new settings.

**Note**

When menu item **8. Option** is set to **Data Txfr**, menu item **9. Reserved** changes to **9. Data Txfr**.

- Press **9. Data Txfr**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the amount of messages sent to the serial tally device. You can choose between the following:
 - ~ **Normal** — Use this option to have what is on the MLE, Keys, and Aux buses, plus the names of the currently loaded stills sent to the serial tally interface device.
 - ~ **Complete** — Use this option to have all switcher information sent to the serial tally interface device.
 - ~ **Minimal** — Use this option to have only what is on MLE and Keys sent to the serial tally interface device.
 - Press the right **SEL** button to accept the new settings.
4. Assign whether or not an initialization message is sent to the serial tally interface device when the switcher starts sending data as follows:
 - Press **8. Option**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select **Start**.
 - Press the right **SEL** button to accept the new settings.

**Note**

When menu item **8. Option** is set to **Start**, menu item **9. Reserved** changes to **9. Start**.

- Press **9. Start**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select whether or not an initialization message is sent when the switcher starts sending data. You can choose between the following:
 - ~ **None** — Use this option to have no initialization message sent.
 - ~ **Init** — Use this option to have an initialization message sent when the switcher starts sending data to the serial tally interface device.
 - Press the right **SEL** button to accept the new settings.
5. Assign the messages that the switcher will sent to the serial tally interface device when the switcher is at black as follows:
 - Press **8. Option**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select **At Black**.
 - Press the right **SEL** button to accept the new settings.

**Note**

When menu item **8. Option** is set to **At Black**, menu item **9. Reserved** changes to **9. At Black**.

- Press **9. At Black**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select what message you want to send to the serial tally interface device when the switcher is at black. You can choose between the following:
 - ~ **All Off** — Use this option to have the switcher report that nothing is on-air to the serial tally interface device.
 - ~ **Active On** — Use this option to have the switcher not report any change to the serial tally interface device.
 - Press the right **SEL** button to accept the new settings.
6. Press **MENU** to display the **Installation Change Screen**.
 7. Accept or cancel these changes as follows:
 - Press **0. Confirm** to accept the changes.
 - Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedures for setup of the Contribution Serial Tally Protocol option. If you require further information on the various options and their associated values, contact **Ross Video Technical Support**.

Look Ahead Serial Tally Extra Options

The **Look Ahead Serial Tallies (L.A.S.T.)** protocol enables you to inform external devices of a key crosspoint change before the crosspoint change is performed on any bus of the Synergy switcher. When a key source changes, the L.A.S.T. protocol informs the device while delaying the crosspoint change for the duration you set in the **Communication Menus**. Once set up, the L.A.S.T. protocol will continually transmit the information about every Synergy 100 switcher bus.

The **Look Ahead Serial Tally** protocol has extra options that *must* be setup to properly communicate with a serial tally interface device.

Use the following procedure to set up the Extra Options for your serial tally interface device:

1. Ensure that the **Communication Menu** is displayed and that menu item **0. Port** is set to the serial tally interface device you want to set up the extra options for.
2. Set the delay duration (in fields) for the Look Ahead Serial Tally protocol as follows:.



Note

When menu item **2. Device** is set to **L.A.S.T.**, menu item **9. Reserved** changes to **9. Delay**.

- Press **9. Delay**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the number of fields for the delay. You can select between **0** and **120** fields for the delay duration.
 - Press the right **SEL** button to accept the new settings.
3. Press **MENU** to display the **Installation Change Screen**.

4. Accept or cancel these changes as follows:
 - Press **0. Confirm** to accept the changes.
 - Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedures for setup of the Look Ahead Serial Tally Protocol option. If you require further information on the various options and their associated values, contact **Ross Video Technical Support**.

Additional Installation Setups

In This Chapter

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

- Before You Begin
- Additional Installation Setup Menu Tree
- Setting Up Outputs
- Setting Up Remote Aux Panels
- Remote Aux Panel GPI Programming
- Personality Setup
- GPI Setup Menu Tree
- Setting up Frame GPIs
- Setting up Remote Aux Panel GPIs
- Setting Up GPI Outputs

Before You Begin

Before you continue with the installation process, please heed the following note:

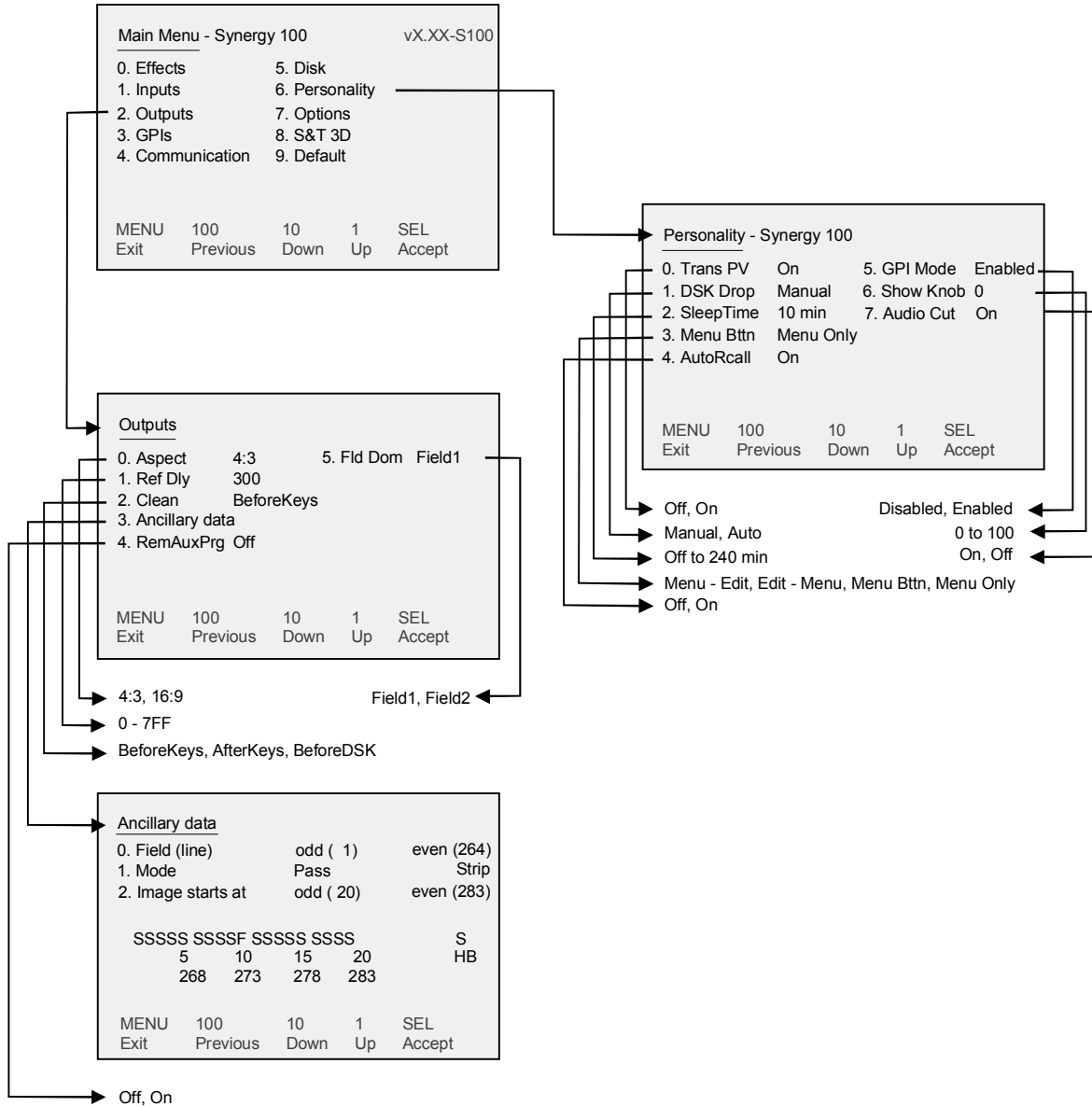


Important

Ensure that the **Installation Enable Jumper (DIP Switch 4, SW7)** on the **Frame CPU Board** is in the **Down** position. This position allows all installation settings to be changed without restriction. Refer to the section “**Frame Jumpers and Switches**” on page 2-20 for details.

Additional 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 section.



Additional Installation Setup Menu Tree

Setting Up Outputs

Now that you have set up your inputs in the previous chapter, the next step is to configure the output of the switcher. The **Outputs Menu** allows you to configure five output parameters: Aspect Ratio, Reference Delay, Clean Feed, Ancillary data, and Remote Aux Panels.

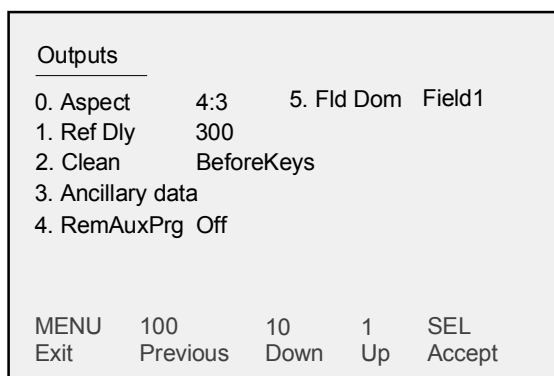
The following topics are discussed in this section:

- Aspect Ratio
- Reference Delay
- Clean Feed Setup
- Ancillary Data Setup
- Setting Up Remote Aux Panels
- Remote Aux Panel GPI Programming
- Field Dominance

Aspect Ratio

Use the following procedure to set the output aspect ratio:

1. Navigate to the **Outputs Menu** as follows:
 - Press **MENU** to display the **Main Menu** on the **Preview Overlay**.
 - Press **2. Outputs** to display the **Outputs Menu**.



Outputs Menu

2. Set the output aspect ratio as follows:
 - Press **0. Aspect**.
 - Toggle the 0. Aspect button to select a mode. You can choose between the following:
 - ~ **4:3** — Setting the output aspect ratio to 4:3 automatically defines the aspect ratio of all the inputs as 4:3.
 - ~ **16:9** — Setting the output aspect ratio to 16:9 automatically defines all of the inputs as 16:9.
 - Press the right **SEL** button to accept the new settings.

3. Press **MENU** to display the **Installation Change Screen**.
4. Accept or cancel these changes as follows:
 - Press **0. Confirm** to accept the changes.
 - Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure to set the output aspect ratio.

Reference Delay

Each Synergy frame auto-times any source that is within $\pm \frac{1}{4}$ line of the reference input. Typically, no special procedures are required in order to time your inputs. However, if you wish to adjust the switcher's reference delay in order to match the **PGM** and **PST** buses to incoming sources, select the **Ref Dly** in the **Outputs Menu**.



Note

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

Use the following procedure to adjust the reference delay of the Synergy 100 switcher:

1. Navigate to the **Outputs Menu** as follows:
 - Press **MENU** to display the **Main Menu** on the **Preview Overlay**.
 - Press **2. Outputs** to display the **Outputs Menu**.

Outputs				
0. Aspect	4:3	5. Fld Dom	Field1	
1. Ref Dly	300			
2. Clean	BeforeKeys			
3. Ancillary data				
4. RemAuxPrg Off				
MENU	100	10	1	SEL
Exit	Previous	Down	Up	Accept

Outputs Menu

2. Adjust the reference delay of the switcher as follows:

- Press **1. Ref Dly**.



Note

When the **Ref Dly** is selected, the value in the sub heading changes color and becomes *active*.

- Use the **Aspect** knob on the control panel to set the reference delay. The full adjustable range is **0** through **7FF** hex, which represents 64 microseconds or a full line of video.

As the **Aspect** knob is adjusted, the secret-til-lit bus indicators on the control panel will change color as the buses drift in and out of sync.

~ *Orange* indicates non-synchronous sources.

~ *Green* LEDs signify synchronous sources.

- Press **SEL** when both buses indicate that they are in sync.

3. Press **MENU** to display the **Installation Change Screen**.
4. Accept or cancel these changes as follows:
 - Press **0. Confirm** to accept the changes.
 - Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure to adjust the reference delay of the Synergy 100 switcher.

Clean Feed Setup

The Clean Feed option in the **Outputs 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 frame.

Use the following procedure to set the Clean Feed output:

1. Navigate to the **Outputs Menu** as follows:
 - Press **MENU** to display the **Main Menu** on the **Preview Overlay**.
 - Press **2. Outputs** to display the **Outputs Menu**.

Outputs				
0. Aspect	4:3	5. Fld Dom	Field1	
1. Ref Dly	300			
2. Clean	BeforeKeys			
3. Ancillary data				
4. RemAuxPrg	Off			
MENU	100	10	1	SEL
Exit	Previous	Down	Up	Accept

Outputs Menu

2. Set the Clean Feed of the switcher as follows:
 - Press **2. Clean**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the point from which the clean feed signal is derived. You can choose between the following:
 - ~ **BeforeKeys** — Use this option to have the clean feed pulled before keys are added.
 - ~ **AfterKeys** — Use this option to have the clean feed pulled after keys are added, effectively giving you another **PGM** output.
 - ~ **AlphaKey1** — Use this option to have the clean feed output as the alpha signal for Key 1.
 - ~ **BeforeDSK** — Use this option to have the clean feed pulled downstream of the two Effects keyers, but upstream of the DSK.
 - Press the right **SEL** button to accept the new settings.
3. Press **MENU** to display the **Installation Change Screen**.
4. Accept or cancel these changes as follows:

- Press **0. Confirm** to accept the changes.
- Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure to set the Clean Feed output.

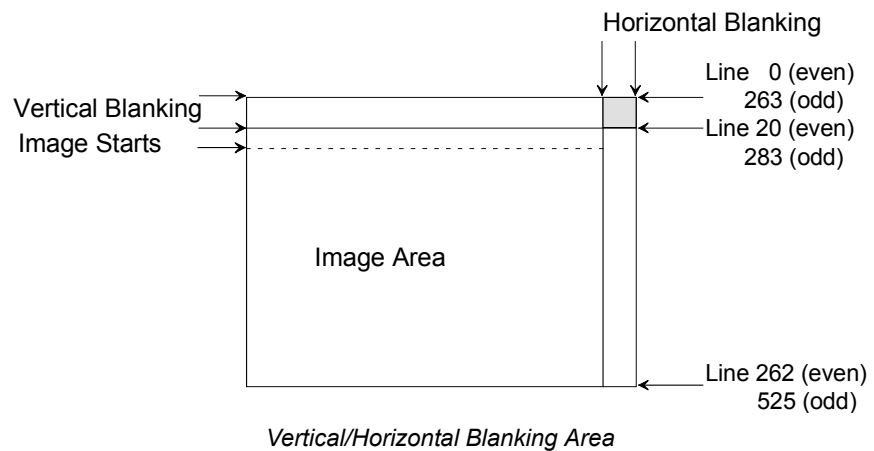
Ancillary Data Setup

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. Refer to the following figure for a visual description of vertical/horizontal blanking.



Important

Contact Ross Technical Support for additional assistance with the **Ancillary Data Menu**.



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 adjust the ancillary data parameters:

1. Navigate to the **Outputs Menu** as follows:
 - Press **MENU** to display the **Main Menu** on the **Preview Overlay**.
 - Press **2. Outputs** to display the **Outputs Menu**.

Outputs				
0. Aspect	4:3	5. Fld Dom	Field1	
1. Ref Dly	300			
2. Clean	BeforeKeys			
3. Ancillary data				
4. RemAuxPrg	Off			
MENU 100 10 1 SEL				
Exit	Previous	Down	Up	Accept

Outputs Menu

2. Press **3. Ancillary data** to display the **Ancillary Data Menu**.

Ancillary data				
0. Field (line)		odd (1)		even (264)
1. Mode		Pass		Strip
2. Image starts at		odd (20)		even (283)
SSSSS SSSSF SSSSS SSSS				S
	5	10	15	20
	268	273	278	283
MENU	100	10	1	SEL
Exit	Previous	Down	Up	Accept

Ancillary Data Menu

3. Select the desired field (line) as follows:

- Press **0. Field (line)**.
- Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the desired field (line).



Note

The highlighted value on the graphical display moves to indicate the selected line.

- Press the right **SEL** button to accept the new settings.
4. Set the mode for the selected line as follows:
 - Press **1. Mode**.
 - Toggle the **SEL** button to choose between **Pass** and **Strip**. The graphical display will show either a **P** or an **S**, depending on your selection.



Note

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

If your Synergy 100 switcher is a 625 system (operating in PAL), included on the menu is a legend identifying the abbreviations used in the graphical display.

- Press the right **SEL** button to accept the new settings.
5. Select an image start point as follows:
 - Press **2. Image starts at**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the image start point. As the line number increases, the legend area displays additional S's with line numbers to reflect this change. You can then pass or strip these lines as required.

Ancillary data				
0. Field (line)	odd (1)		even (264)	
1. Mode	Pass		Strip	
2. Image starts at	odd (26)		even (289)	
	SSSSS	SSSSF	SSSSS	SSSS PSS S
	5	10	15	20 25 HB
	268	273	278	283 288
MENU	100	10	1	SEL
Exit	Previous	Down	Up	Accept

Ancillary Data Menu with Additional Lines Stripped

Adjustment of the “Image starts at” line prevents any switcher effects (e.g., keys, wipes, etc.) from modifying lines prior to the selected line. This is useful for protecting information such as closed-captioning, which may reside beyond the normal blanking area.

6. Press **MENU** to display the **Installation Change Screen**.
7. Accept or cancel these changes as follows:
 - Press **0. Confirm** to accept the changes.
 - Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure to adjust the ancillary data parameters.

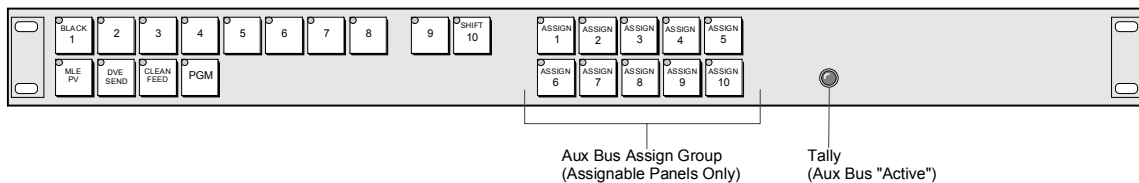
The following sections describe the procedures to follow when programming your Remote Aux Panels.

Setting Up Remote Aux Panels

For all assignable and dedicated Remote Aux Panels, this procedure allows you to set up the Aux Bus output that a specific Remote Aux Panel controls, and to program the access “rights” for each Aux Bus output.

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

Using the **Synergy 100 Assignable Remote Aux Panel**, the **Aux Assign** buttons represent the 8 Synergy 100 Aux Bus outputs, respectively. Refer to the figure on page 8-9.



Aux Panel Button Assignments when in Programming Mode — Synergy 100 Panel



Note

Since Aux Buses 1 and 2 are not implemented, setting “rights” for Aux 1 and 2 (Assign 1 and Assign 2 buttons) is irrelevant.

Use the following procedure to set up your Remote Aux Panels:

1. As required, refer to your **Output Worksheet** (located in the the section “**Output Connection**” on page 4-8) to verify the destinations and functions of all Aux Bus outputs.
2. Navigate to the **Outputs Menu** as follows:
 - Press **MENU** to display the **Main Menu** on the **Preview Overlay**.
 - Press **2. Outputs** to display the **Outputs Menu**.

Outputs				
0. Aspect	4:3	5. Fld Dom	Field1	
1. Ref Dly	300			
2. Clean	BeforeKeys			
3. Ancillary data				
4. RemAuxPrg	Off			
MENU	100	10	1	SEL
Exit	Previous	Down	Up	Accept

Outputs Menu

3. Toggle the **4. RemAuxPrg** to enable Remote Aux Panel programming as follows:
 - **On** — Use this option to enable the Remote Aux Panel programming mode. When **RemAuxPrg** is set to **On**, the following actions occur:
 - ~ All remote panels (both assignable and dedicated) are placed in “programming” mode.
 - ~ On all panels, the on-air LED flashes to alert you that programming mode is now in effect.
 - **Off** — Use this option to disable the Remote Aux Panel programming mode.



Note

Off is the “default” setting for this feature. It is unnecessary to physically return the setting to **Off** when programming is complete. Simply exit the menu system. The Remote Aux Panel will automatically exit programming mode and the **RemAuxPrg** heading will be set to **Off**.

4. To assign the “rights” for an **assignable** panel, perform the following steps at *each* assignable panel connected to the switcher. (For **dedicated** panels, skip down to the next.)
 - Ensure that the panel is in “programming” mode (with the on-air LED flashing).
 - Press the **ASSIGN (3 - 8)** button that corresponds to the Aux Bus that you want to program. Note that *each* press of the button toggles between two states:
 - ~ **On** — when a button is lit steadily, the associated Aux Bus is in “full access” or “regular” mode. The Aux Bus can be selected and sources (crosspoints) 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 cannot change crosspoints on the current panel.

- Repeat for each of the 8 Aux Buses.



Dedicated Remote Aux Panel

5. To select the Aux Bus output that you wish to control and assign the “rights” for a **dedicated** panel, perform the following steps at *each* dedicated panel connected to the switcher:
 - Ensure that the panel is in “programming” mode (with the on-air LED flashing).
 - Press the crosspoint button (**3 - 8**) 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.
 - To assign the “rights” to the current panel, use the same crosspoint button as in step b) above. Note that *each* press of the button toggles between two states:
 - ~ **On** — When the button is lit steadily, the selected Aux Bus output is in “full access” or “regular” mode. The Aux Bus can be selected and sources can be changed from both the remote Aux panel and the *local* control panel.
 - ~ **Flashing** — When the 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 cannot change crosspoints on the current dedicated panel.
6. Press **MENU** to display the **Installation Change Screen**.
7. Accept or cancel these changes as follows:
 - Press **0. Confirm** to accept the changes.
 - Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure to set up your Remote Aux Panels. All Remote Aux Panels return to their normal operating mode. In addition, each panel’s new “rights” are stored in the remote panel’s non-volatile memory.



Note

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 (#10) — but *do not* change its state. If the button is lit, shifted crosspoints are allowed on the panel. If the button is off, shifted crosspoints cannot be selected. This mode is set *automatically* to match that of the main Control Panel.

The next procedure is to set up the desired group and offset for each Remote Aux Panel.

Remote Aux Panel GPI Programming

In this section, you will program your Remote Aux Panels for the desired *group* and *offset*. Refer to your **Remote Aux Panel GPI Input Worksheet** to verify the groups and offsets for all buses.

Use the following procedure to program your Remote Aux Panel GPIs:

1. As required, refer to your **Output Worksheet** (located in the the section “**Output Connection**” on page 4-8) to verify the destinations and functions of all Aux Bus outputs.
2. Navigate to the **Outputs Menu** as follows:
 - Press **MENU** to display the **Main Menu** on the **Preview Overlay**.
 - Press **2. Outputs** to display the **Outputs Menu**.

Outputs				
0. Aspect	4:3	5. Fld Dom	Field1	
1. Ref Dly	300			
2. Clean	BeforeKeys			
3. Ancillary data				
4. RemAuxPrg	Off			
MENU	100	10	1	SEL
Exit	Previous	Down	Up	Accept

Outputs Menu

3. Toggle the **4. RemAuxPrg** to **On** to enable Remote Aux Panel programming.
 - When **RemAuxPrg** is set to **On**, the following actions occur:
 - ~ All remote panels (both assignable and dedicated) are placed in “programming” mode.
 - ~ On all panels, the on-air LED flashes to alert you that programming mode is now in effect.
4. Go to the first **assignable** or **dedicated** Aux panel that you want to program.
5. Ensure that the panel is in “programming” mode (with the on-air LED flashing).

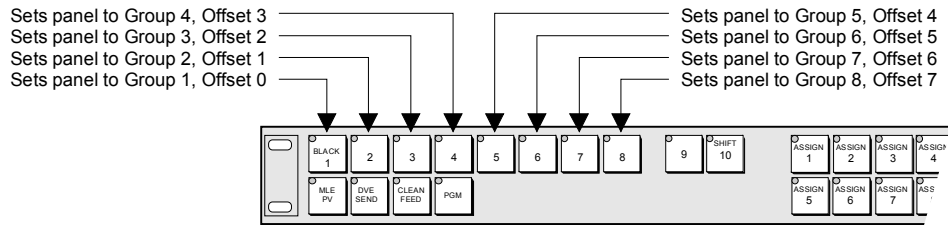


Note

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.

6. Press **CLEAN FEED** to switch the panel from “assignment” programming mode to “GPI” programming mode. The **CLEAN FEED** button flashes to indicate that GPI programming mode is active.

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



Remote Aux Panel GPI Group and Offset Programming Buttons

7. 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.
8. When programming for this panel is complete, press **SEL** in the **System Control** group on the Synergy 100 control panel 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.

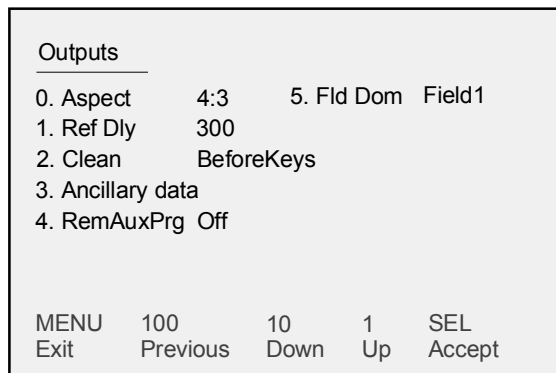
When programming of all of your Remote Aux Panels is complete, proceed to the the section "**Setting up Remote Aux Panel GPIs**" on page 8-27 to configure the Remote Aux Panel GPI inputs.

Field Dominance

The **Field Dominance** feature allows you to select when the Synergy switcher will trigger a transition from one video source to the next. Each video frame is composed of an Odd Field and an Even Field, Field 1 and Field 2 respectively.

Use the following procedure to set up the **Field Dominance** feature:

1. Navigate to the **Outputs Menu** as follows:
 - Press **MENU** to display the **Main Menu** on the **Preview Overlay**.
 - Press **2. Outputs** to display the **Outputs Menu**.



Outputs Menu

2. Toggle **5. Fld Dom** to select a field as follows:
 - **Field1** — Select this option to enable the Synergy 100 switcher to trigger the transition to the next video source after the **Odd Field** of the *previous* video source. This is the default setting.
 - **Field2** — Select this option to enable the Synergy 100 switcher to trigger the transition to the next video source after the **Even Field** of the *previous* video source.

3. Press **MENU** to display the **Installation Change Screen**.
4. Accept or cancel these changes as follows:
 - Press **0. Confirm** to accept the changes.
 - Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure to set up the **Field Dominance** feature for the Synergy 100 switcher.

Personality Setup

The **Personality Menu** for the **Synergy 100** provides users with the ability to enable transition previews, select which output you want your Overlay displayed on, set the switcher’s timeout interval, and *customize* the DSK operation and **MENU** button behavior of their switcher.

The **Personality Menu** allows you to do the following:

- Enable full previews of your selected transitions.
- Define how the **DSK** behaves when sources are taken on the **PGM Bus**.
- Program a desired timeout interval, in minutes, before the switcher goes into “sleep” mode.
- Dictate the behavior of the **MENU** button when you have the **Editor** option installed.
- Enable **AutoRcall** to automatically retrieve the state of the Effects Dissolve button when a memory was saved.
- Enable GPI Outputs to be triggered using the **EFFECTS CONTROL** buttons.
- Display fine tune values, in the **SYSTEM CONTROL** area, when using knobs in the **MATTES** or **KEYERS** areas.



Note

For information on enabling the **Audio Cut** mode, refer to the section “**Audio Cut Mode Setup**” on page 7-26.

Transition Preview

The **Trans Preview** mode allows you to preview a complete transition on the preview monitor without affecting the program output.

Use the following procedure to enable the **Transition Preview** mode:

1. Navigate to the **Personality Menu** as follows:
 - Press **MENU** to display the **Main Menu**.
 - Press **6. Personality** to display the **Personality Menu**.

Personality - Synergy 100				
0. Trans PV	On	5. GPIO Mode	Disabled	
1. DSK Drop	Manual	6. Show Knob	0	
2. SleepTime	10 min	7. Audio Cut	On	
3. Menu Btn	Menu Only			
4. AutoRcall	On			
MENU	100	10	1	SEL
Exit	Previous	Down	Up	Accept

Personality Menu

2. Toggle the **0.Trans PV** between **On** and **Off** as follows:
 - **On** — Use this option to enable the “trans preview mode” and allow complete transition preview.
 - **Off** — Use this option to disable the “trans preview mode” and prohibit any kind of transition preview.

3. Press **MENU** to display the **Installation Change Screen**.
4. Accept or cancel these changes as follows:
 - Press **0. Confirm** to accept the changes.
 - Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure to enable the **Transition Preview** mode.

DSK Drop

The **DSK Drop** setting determines how the **DSK** behaves when a source is taken on the **PGM Bus**.

Use the following procedure to set the **DSK Drop** feature:

1. Navigate to the **Personality Menu** as follows:
 - Press **MENU** to display the **Main Menu**.
 - Press **6. Personality** to display the **Personality Menu**.

Personality - Synergy 100				
0. Trans PV	On	5. GPIO Mode	Disabled	
1. DSK Drop	Manual	6. Show Knob	0	
2. SleepTime	10 min	7. Audio Cut	On	
3. Menu Btn	Menu Only			
4. AutoRcall	On			
MENU	100	10	1	SEL
Exit	Previous	Down	Up	Accept

Personality Menu

2. Toggle the **1. DSK Drop** button between **Auto** and **Manual** as follows:
 - **Manual** — Use this option to set the DSK Drop to take sources on the **PGM Bus** and have *no effect* on the **DSK** – the key remains.
 - **Auto** — Use this option to set the DSK Drop to have an on-air downstream key automatically dropped (turned off) when any source is taken directly on the **PGM Bus**.
3. Press **MENU** to display the **Installation Change Screen**.
4. Accept or cancel these changes as follows:
 - Press **0. Confirm** to accept the changes.
 - Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure to set the **DSK Drop** feature.

Sleep Time

The **SleepTime** setting allows you to specify the number of minutes that pass before the switcher goes into “sleep” mode. “Sleep” mode occurs when no control panel buttons or knobs are touched and the fader arm is not moved for a set amount of time.

Use the following procedure to set up the **Sleep Time** for your Synergy100 switcher:

1. Navigate to the **Personality Menu** as follows:
 - Press **MENU** to display the **Main Menu**.
 - Press **6. Personality** to display the **Personality Menu**.

Personality - Synergy 100				
0. Trans PV	On	5. GPIO Mode	Disabled	
1. DSK Drop	Manual	6. Show Knob	0	
2. SleepTime	10 min	7. Audio Cut	On	
3. Menu Bttn	Menu Only			
4. AutoRcall	On			
MENU	100	10	1	SEL
Exit	Previous	Down	Up	Accept

Personality Menu

2. Set the length of time (in minutes) for the Synergy 100 to fall asleep as follows:
 - Press **2. Sleep Time**.



Operating Tip

The time will change color to indicate that it is *active* and can be changed.

- Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to scroll to the desired time interval between 1 minute and 240 minutes.
 - ~ If you wish to turn the “sleep” mode off, scroll down past 1 minute to **Off** and press **SEL**.
 - Press the right **SEL** button to accept the new settings.
3. Press **MENU** to display the **Installation Change Screen**.
 4. Accept or cancel these changes as follows:
 - Press **0. Confirm** to accept the changes.
 - Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure to set up the **Sleep Time** interval.

Menu Button Setup

The **Menu Bttn** setting allows you to dictate the behavior of the **MENU** button when the **Editor** option is installed. It provides a quick and easy method of enabling the Editor without having to access the **Effects Menu**.

Use the following procedure to program the **MENU** button on the Synergy 100 control panel:

1. Navigate to the **Personality Menu** as follows:
 - Press **MENU** to display the **Main Menu**.
 - Press **6. Personality** to display the **Personality Menu**.

Personality - Synergy 100				
0. Trans PV	On	5. GPIO Mode	Disabled	
1. DSK Drop	Manual	6. Show Knob	0	
2. SleepTime	10 min	7. Audio Cut	On	
3. Menu Bttn	Menu Only			
4. AutoRcall	On			
MENU	100	10	1	SEL
Exit	Previous	Down	Up	Accept

Personality Menu

2. Program the **MENU** button as follows:

- Press **3. Menu Bttn**.



Note

If the **Editor** option is enabled, the secret-til-lit LED under the **MENU** button will be lit.

- Use the **UP ARROW** or **DOWN ARROW** (**1** or **10**) buttons to select
 - ~ **Menu – Edit** — Use this option to have a single press of the **MENU** button display the menu, and a double-press to enable or disable the **Editor**.
 - ~ **Edit – Menu** — Use this option have a single press of the **MENU** button to enable or disable the **Editor**, and a double-press to display the menu.
 - ~ **Menu Only** — Use this option to have the **MENU** button strictly for accessing the menu system, and not to enable the Editor.
 - ~ **Menu Bttn** — Use this option to have the **MENU** button used only for accessing the menu system.
 - Press the right **SEL** button to accept the new settings.
3. Press **MENU** to display the **Installation Change Screen**.
 4. Accept or cancel these changes as follows:
 - Press **0. Confirm** to accept the changes.
 - Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure to program the **MENU** button on the Synergy 100 control panel.

Auto Recall Setup

If a memory is saved with the **Effects Dissolve** feature turned on, enabling the **Auto Recall** option in the **Personality Menu** will automatically retrieve this setting when this same memory is recalled.

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

1. Navigate to the **Personality Menu** as follows:
 - Press **MENU** to display the **Main Menu**.
 - Press **6. Personality** to display the **Personality Menu**.

Personality - Synergy 100				
0. Trans PV	On	5. GPIO Mode	Disabled	
1. DSK Drop	Manual	6. Show Knob	0	
2. SleepTime	10 min	7. Audio Cut	On	
3. Menu Bttn	Menu Only			
4. AutoRcall	On			
MENU	100	10	1	SEL
Exit	Previous	Down	Up	Accept

Personality Menu

2. Enable the Auto Recall option as follows:
 - Press **4. AutoRcll**.
 - Use the **UP ARROW** or **DOWN ARROW** (**1** or **10**) buttons to select On or Off as follows:
 - ~ **On** — Use this option to activate the **Effects Dissolve** button (**CNTR/EFF D** in the **Effects Control** group) when a memory you are recalling was originally saved with the **Effects Dissolve** feature activated.
 - ~ **Off** — Use this option to disable the **Effects Dissolve** button. You must now press the **Effects Dissolve** button during memory recalls in order to “slew” the switcher setup from its current setting to a new recalled setting.
 - Press the right **SEL** button to accept the new settings.
3. Press **MENU** to display the **Installation Change Screen**.
4. Accept or cancel these changes as follows:
 - Press **0. Confirm** to accept the changes.
 - Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

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

GPI Mode

When the **GPI Mode** is **Enabled**, the GPI Outputs can be triggered from the **Effects Control** buttons. Refer to the section “**Setting Up GPI Outputs**” on page 8-34 for GPI configuration details.

Show Knob Values Mode Setup

When the **Show Knob Values** mode is enabled, the **SYSTEM CONTROL** area will display the fine tuning values of the Mattes or Keyers knobs as a percentage. For example, if you rotate the **Aspect** knob to the right. You can set the length of time the values are displayed.

Use the following procedure to enable the **Show Knob Values** mode:

1. Navigate to the **Personality Menu** as follows:
 - Press **MENU** to display the **Main Menu**.
 - Press **6. Personality** to display the **Personality Menu**.

Personality - Synergy 100				
0. Trans PV	On	5. GPIO Mode	Disabled	
1. DSK Drop	Manual	6. Show Knob	0	
2. SleepTime	10 min	7. Audio Cut	On	
3. Menu Bttn	Menu Only			
4. AutoRcall	On			
MENU	100	10	1	SEL
Exit	Previous	Down	Up	Accept

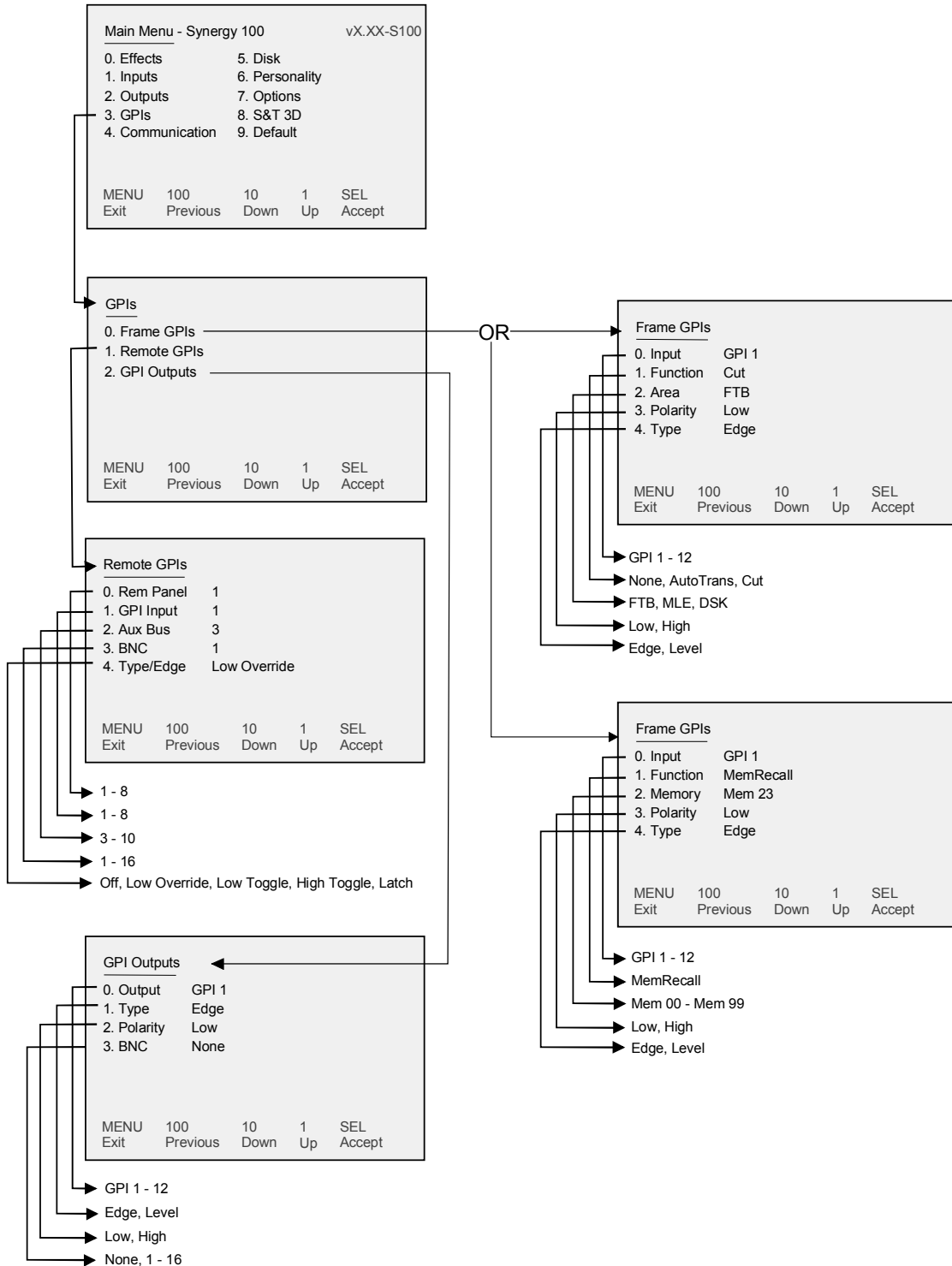
Personality Menu

2. Enable the Show Knob mode and set the display time duration as follows:
 - Press **6. Show Knob**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select a display time for the knob fine tuning values. You can choose between the following:
 - ~ **0** — Use this option to not display any knob fine tuning knobs. This is the default setting.
 - ~ **1-5** — Use this option to set the number of seconds that the values will be displayed in the **SYSTEM CONTROL** area before returning to the previous display.
 - Press the right **SEL** button to accept the new settings.
3. Press **MENU** to display the **Installation Change Screen**.
4. Accept or cancel these changes as follows:
 - Press **0. Confirm** to accept the changes.
 - Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure to enable the **Show Knob Values** mode.

GPI Setup Menu Tree

The following figure illustrates the *portion* of the menu tree that is used for GPI setup procedures. Use this figure for reference throughout these sections.



GPI Setup Menu Tree

Standard Frame GPI Input Worksheet

Prior to setting up your **Frame GPI** (General Purpose Interface) inputs, complete the “standard” Frame GPI Input worksheet. To avoid marking up the *Installation Guide*, use the blank worksheet provided in the the section “**Standard Frame GPI Input Worksheet**” on page 13-4 to make extra copies.

Standard Frame GPI Input Worksheet

Standard Frame GPI Input #	Function	Area	Polarity	Type
<i>sample GPI Input #1</i>	AutoTrans	MLE	Low	Edge
<i>sample GPI Input #2</i>	Cut	FTB	High	Level
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

Setting up Frame GPIs

The **Frame GPIs** allow external devices to trigger certain transition functions in your switcher.



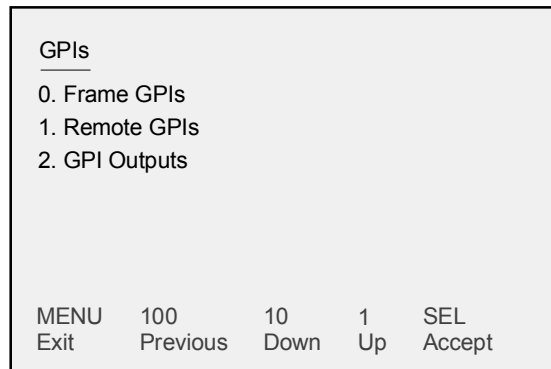
Note

The Frame GPIs will not function unless they are enabled in the **Effects Menu**. Refer to the section, “**Effects Functions**” in Chapter 8 of the *Synergy 100 Operation Guide*.

The **Frame GPIs Setup Menu** allows you to set up your 12 “standard” Frame GPI input ports. During this setup, you will select a GPI input port and assign a **Function** and an **Area** of the switcher that will be effected, when a GPI pulse is received. You will also identify the **Polarity** and **Type** of the incoming GPI pulses. All 12 ports are provided on the **GPI I/O** connector on the rear of the Synergy frame. Refer to the section “**Standard GPI Connections**” on page 8-26 for wiring instructions.

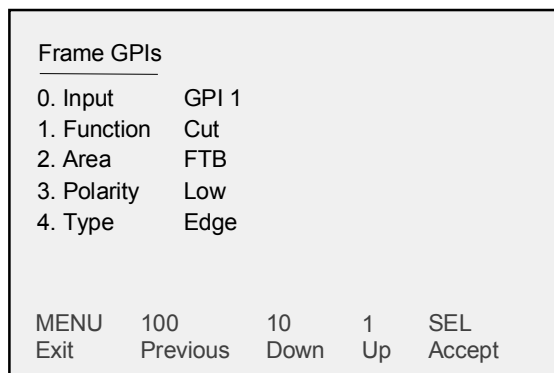
Use the following procedure to set up Frame GPIs:

1. Navigate to the **Frame GPI Setup Menu** as follows:
 - Press **MENU** to display the **Main Menu**.
 - Press **3. GPIs** to display the **GPI Setup Menu**.



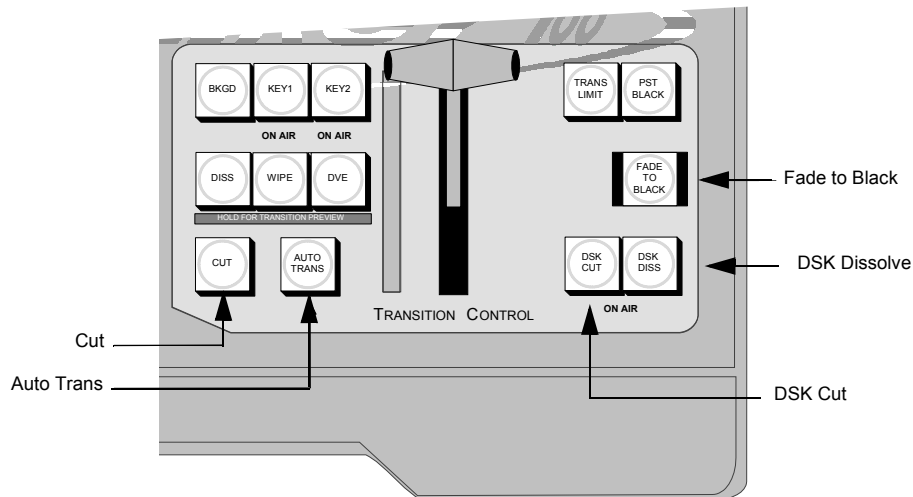
GPIs Menu

2. Press **0. Frame GPIs** to display the **Frame GPIs Menu**.



Frame GPIs Menu

3. Select the GPI you wish to configure as follows:
 - Press **0. Input**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the actual GPI number that you wish to configure. You can choose between **1** and **12**.
 - Press the right **SEL** button to accept the new settings.
4. Assign a panel button to the GPI input as follows:
 - Press **1. Function**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select a button to trigger when a GPI input pulse is received from an external device. You can choose between the following:
 - ~ **Cut** — Use this option when you want the transition to happen as a cut.
 - ~ **AutoTrans** — Use this option when you want the transition to happen at a predetermined rate.



GPI Trigger Functions — Transition Control Group

- ~ **MemRecall** — Use this option when you want to recall one of your previously-stored memories.



Note

When menu item **1. Function** is set to **MemRecall**, menu item **2. Area** changes to **2. Memory**.

- ~ **None** — Use this option to perform *no* function when an incoming pulse is received from an external source.
- Press the right **SEL** button to accept the new settings.

5. If you selected **MemRecall** in the **Function** option, you must select a memory to be recalled when a GPI input pulse is received as follows:
 - Press **2. Memory**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the memory to be recalled when a GPI input pulse is received.
 - Press the right **SEL** button to accept the new settings.
6. If you selected any option other than the **MemRecall** in the **Function** heading, the **Area** heading is displayed. You must now select an area on the switcher panel the input GPI will trigger as follows:
 - Press **2. Area**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the button or transition the incoming GPI will trigger. You can choose between the following:
 - ~ **MLE** — Use this option when you want the incoming GPI to trigger either a **Cut** or an **AutoTrans** in the **Transition Control** area.
 - ~ **FTB** — Use this option when you want the incoming GPI to trigger the **Fade to Black** button.
 - ~ **DSK** — Use this option when you want the incoming GPI to trigger either a **DSK Cut** or a **DSK Dissolve** in the **Transition Control** area.
 - Press the right **SEL** button to accept the new settings.
7. Set the polarity for the select port of the incoming GPI trigger as follows:
 - Press **3. Polarity**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select a polarity for the incoming GPI trigger. You can choose between the following:
 - ~ **Low** — Use this option to have the selected port trigger when the line goes low (to ground). The incoming GPI line is normally high.
 - ~ **High** — Use this option to have the selected port trigger when the line goes high (released from ground). The incoming GPI line is normally low.

If you are assigning the polarity of a GPI input that will trigger a DSK transition, refer to the following table for reference.

GPI Polarity - for DSK Transitions

GPI Polarity	Signal	Key
Low	Low	On Air
Low	High	Off Air
High	Low	Off Air
High	High	On Air

- Press **SEL** the right **SEL** button to accept the new settings.
8. Set the type of trigger for incoming GPIs as follows:
 - Press **4. Type**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the type of trigger for the selected incoming GPI. Refer to your source device's **Installation Manual** for details on the specific type of GPI pulse that each device provides. You can choose between the following:

- ~ **Edge** — Use this option to have the GPI input port’s line 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.
- ~ **Level** — Use this option to have the GPI input 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.



Note

To trigger a GPI to perform a DSK transition, that is, if you selected **DSK** at the **Area** heading, the **Type** *must* be set to **Level**.

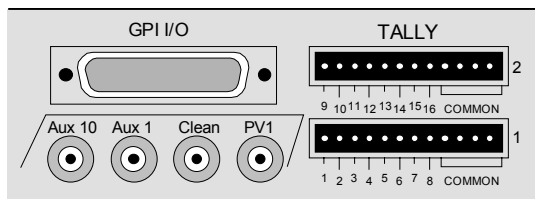
- Press the right **SEL** button to accept the new settings.
9. Press **MENU** to display the **Installation Change Screen**.
 10. Accept or cancel these changes as follows:
 - Press **0. Confirm** to accept the changes.
 - Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure to set up Frame GPIs.

Standard GPI Connections

In this section, using the “**Standard GPI Input Worksheet**” as a guide, you will wire each GPI port that you have assigned to source devices.

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



GPI Connector

- Using the “**Standard GPI Pinout Table**” provided in Appendix A and the data from your “**Standard GPI Input Worksheet**”, wire your 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.

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

Notes on Using Standard GPI Connections

Please note:

- Standard GPI Connector type: 25-pin “D” SUB Female
- 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.

Setting up Remote Aux Panel GPIs

The **Dedicated** and **Assignable** Remote Aux Panels include a special feature that allows a camera operator to manually override the Aux panel selection using GPI trigger. For purposes of matching or monitoring cameras, the camera operator can override the selected Aux Bus crosspoint and manually switch to a camera's crosspoint — simply by pushing a button on the joystick of the Camera Control Unit (CCU).

Please note:

- Each 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 from Ross Video.
- A maximum of 64 GPIs can be distributed over eight different remote panels. The practical maximum limit of 8 Aux panels should still be observed.
- 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 selection of Panel # (offset + 1) is performed during programming mode of each Remote Aux Panel that will be used for remote GPIs.
- Each remote GPI port is dedicated *exclusively* to the control of Aux Bus signal selection, such as using a contact closure from a CCU. No other functions can be assigned to these remote GPIs.

Four steps are required to properly set up Remote Aux Panel GPIs:

- Remote Aux Panel GPI Input Worksheet
- Remote Aux Panel GPI connection
- Remote Aux Panel GPI programming
- Setting up Remote GPIs for CCU Joystick Aux Control

Each step is explained in detail in the following sections.

Remote Aux Panel GPI Input Worksheet

Complete the following **Remote Aux Panel GPI Input** worksheet, or, to avoid marking up the **Installation Guide**, use the worksheet provided in the section “**Standard Frame GPI Input Worksheet**” on page 13-4 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 (**3 - 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	Panel # / Offset / Physical GPI	Assigned Aux Bus	Assigned BNC	Type/Edge	Physical Connection
<i>Sample Aux GPI 5</i>	Panel #1, Offset 0, GPI 5	Aux Bus 3	5 (Cam 4)		Cam 4 Joystick
1	Panel #1, Offset 0, GPI 1				
2	Panel #1, Offset 0, GPI 2				
3	Panel #1, Offset 0, GPI 3				
4	Panel #1, Offset 0, GPI 4				
5	Panel #1, Offset 0, GPI 5				
6	Panel #1, Offset 0, GPI 6				
7	Panel #1, Offset 0, GPI 7				
8	Panel #1, Offset 0, GPI 8				
9	Panel #2, Offset 1, GPI 1				
10	Panel #2, Offset 1, GPI 2				
11	Panel #2, Offset 1, GPI 3				
12	Panel #2, Offset 1, GPI 4				
13	Panel #2, Offset 1, GPI 5				
14	Panel #2, Offset 1, GPI 6				
15	Panel #2, Offset 1, GPI 7				
16	Panel #2, Offset 1, GPI 8				
17	Panel #3, Offset 2, GPI 1				
18	Panel #3, Offset 2, GPI 2				
19	Panel #3, Offset 2, GPI 3				
20	Panel #3, Offset 2, GPI 4				
21	Panel #3, Offset 2, GPI 5				
22	Panel #3, Offset 2, GPI 6				
23	Panel #3, Offset 2, GPI 7				
24	Panel #3, Offset 2, GPI 8				
25	Panel #4, Offset 3, GPI 1				
26	Panel #4, Offset 3, GPI 2				
27	Panel #4, Offset 3, GPI 3				
28	Panel #4, Offset 3, GPI 4				
29	Panel #4, Offset 3, GPI 5				
30	Panel #4, Offset 3, GPI 6				
31	Panel #4, Offset 3, GPI 7				
32	Panel #4, Offset 3, GPI 8				

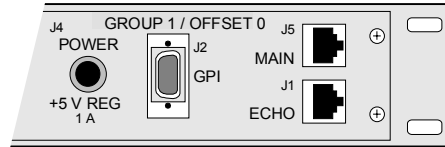
Remote Aux Panel GPI Input Worksheet

Remote GPI	Panel # / Offset / Physical GPI	Assigned Aux Bus	Assigned BNC	Type/Edge	Physical Connection
33	Panel #5, Offset 4, GPI 1				
34	Panel #5, Offset 4, GPI 2				
35	Panel #5, Offset 4, GPI 3				
36	Panel #5, Offset 4, GPI 4				
37	Panel #5, Offset 4, GPI 5				
38	Panel #5, Offset 4, GPI 6				
39	Panel #5, Offset 4, GPI 7				
40	Panel #5, Offset 4, GPI 8				
41	Panel #6, Offset 5, GPI 1				
42	Panel #6, Offset 5, GPI 2				
43	Panel #6, Offset 5, GPI 3				
44	Panel #6, Offset 5, GPI 4				
45	Panel #6, Offset 5, GPI 5				
46	Panel #6, Offset 5, GPI 6				
47	Panel #6, Offset 5, GPI 7				
48	Panel #6, Offset 5, GPI 8				
49	Panel #7, Offset 6, GPI 1				
50	Panel #7, Offset 6, GPI 2				
51	Panel #7, Offset 6, GPI 3				
52	Panel #7, Offset 6, GPI 4				
53	Panel #7, Offset 6, GPI 5				
54	Panel #7, Offset 6, GPI 6				
55	Panel #7, Offset 6, GPI 7				
56	Panel #7, Offset 6, GPI 8				
57	Panel #8, Offset 7, GPI 1				
58	Panel #8, Offset 7, GPI 2				
59	Panel #8, Offset 7, GPI 3				
60	Panel #8, Offset 7, GPI 4				
61	Panel #8, Offset 7, GPI 5				
62	Panel #8, Offset 7, GPI 6				
63	Panel #8, Offset 7, GPI 7				
64	Panel #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.



Remote Aux Panel GPI Port – A Sample Label

- Using the the section “**Remote Aux Panel Pinouts**” on page 10-17 and the data from your “**Remote 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.

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

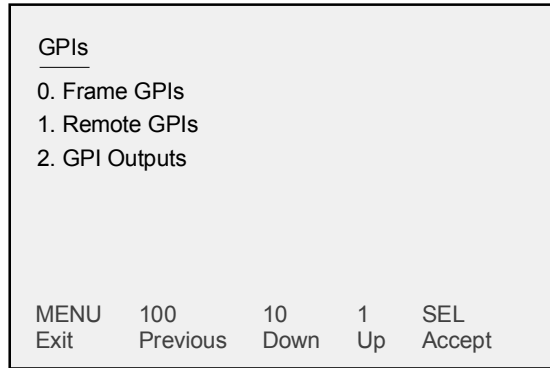
GPI inputs are only intended for connection to “dry contact,” open collector type transistor outputs or 5 VDC signals. Application of any negative voltages or voltages in excess of 5 VDC may permanently damage the GPI inputs.

Setting Up CCU Joystick Aux Control

Once the remote GPIs have been wired, and the remote panels have been programmed with the appropriate offsets, you can now assign each remote GPI to an Aux Bus and a switcher BNC input. This procedure selects the crosspoints that you want to view when CCU Joystick buttons are pressed.

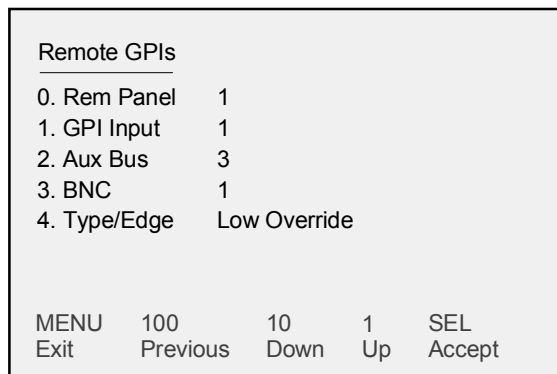
Use the following procedure to configure your remote Aux GPIs:

1. Navigate to the **GPIs Menu** as follows:
 - Press **MENU** to display the **Main Menu**.
 - Press **3. GPIs** to display the **GPIs Menu**.



GPIs Menu

- Press **1. Remote GPIs** to display the **Remote GPIs Menu**.



Remote GPIs Menu

The **Remote GPIs Menu** allows you to select a remote panel (**1-8**) and a GPI (**1 - 8**), assign it to a specific Aux Bus (**3 - 10**) and associate that GPI with a specific BNC.

- Select a remote panel as follows:
 - Press **0. Rem Panel**.
 - Use the **UP ARROW** or **DOWN ARROW** (**1** or **10**) buttons to select the remote panel that contains the GPI input that you wish to assign.
 - Press the right **SEL** button to accept the new settings.
- Select a GPI Input as follows:
 - Press **1. GPI Input**.
 - Use the **UP ARROW** or **DOWN ARROW** (**1** or **10**) buttons to select the GPI input, between 1 and 8, that you wish to assign.
 - Press the right **SEL** button to accept the new settings.
- Assign a specific Aux Bus as follows:
 - Press **2. Aux Bus**.
 - Use the **UP ARROW** or **DOWN ARROW** (**1** or **10**) buttons to select the Aux Bus output, between **3** and **10**, that you wish to override.
 - Press the right **SEL** button to accept the new settings.

6. Select a BNC input for the remote GPI to trigger as follows:
 - Press **3. BNC**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select a BNC input. The input number you choose from the **BNC** heading will determine the switcher BNC input that is selected when the remote GPI is triggered. You can choose between **1** and **16** for the input.
 - Press the right **SEL** button to accept the new settings.
7. Select the type of control that you want to assign as follows:
 - Press **4. Type/Edge**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the type of input trigger. You can choose between the following:
 - ~ **Off** — Use this option to disable the selected remote GPI.
 - ~ **Low-Override** — Use this option to assign an input trigger that 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.



Note

The default type is the **Low-Override** trigger.

- ~ **Low-Toggle** — Use this option to assign an input trigger that 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** — Use this option to assign an input trigger that is similar to the **Low-Toggle**, except that an override is triggered when a contact is opened (low to high signals).
 - ~ **Latch** — Use this option to assign 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.
- Press the right **SEL** button to accept the new settings.
8. Press **MENU** to display the **Installation Change Screen**.
 9. Accept or cancel these changes as follows:
 - Press **0. Confirm** to accept the changes.
 - Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure to configure your remote Aux GPIs. You must repeat the procedure for each remote GPI that you wish to assign.

Verifying Remote Aux Panel Crosspoints

Use the following procedure to verify that the proper crosspoints have been selected:

1. Go to each of the **assignable** or **dedicated** Aux panels (on which you have assigned override crosspoints).
2. Manually select **BLACK** on the Aux bus panel.
3. Press each CCU Joystick button in succession and verify that the associated crosspoint for that programmed BNC is selected — overriding **BLACK**. Verify that when you release the Joystick button, **BLACK** is once again selected.

This completes the procedure to verify that the proper crosspoints have been selected.

Notes on Remote Aux Panel Setup

Please note the following important points regarding the use of the Override-type remote GPIs connected to CCU Joystick buttons:

- The selected override crosspoint 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 crosspoint 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.

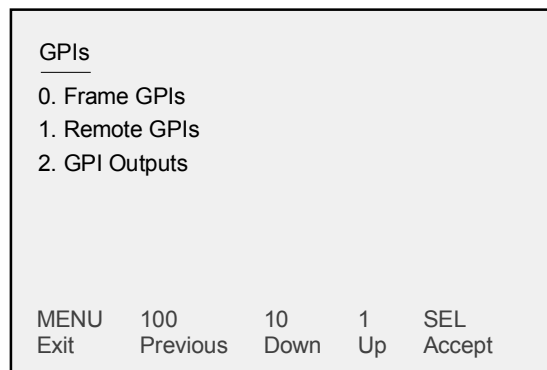
Setting Up GPI Outputs

The **GPI Outputs Setup Menu** is used to configure 12 GPI Outputs. During this setup, you will select a GPI Output and identify the Polarity and Type of the outgoing GPI signals. All 12 ports are provided on the **GPI I/O** connector on the rear of the Synergy frame. Refer to the section “**Standard GPI Connections**” on page 8-26 for wiring instructions.

The **GPI Outputs** can be triggered using the **Effects Control** buttons. Refer to the section “**Personality Setup**” on page 8-15 for **GPIO Mode** configuration details.

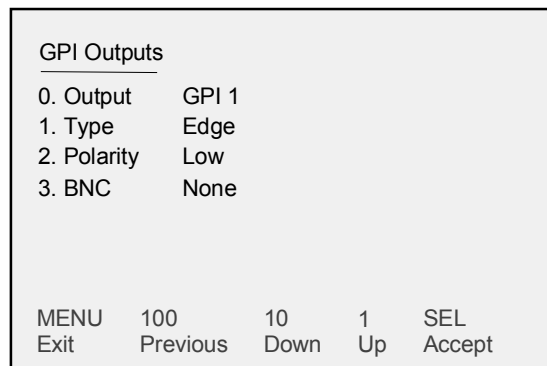
Use the following procedure to configure a GPI Output:

1. Navigate to the **GPIs Menu** as follows:
 - Press **MENU** to display the **Main Menu**.
 - Press **3. GPIs** to display the **GPIs Menu**.



GPIs Menu

2. Press **2. GPI Outputs** to display the **GPI Outputs Menu**.



GPI Output Menu

3. Select an output GPI to configure as follows:
 - Press **0. Output**.
 - Use the **UP ARROW** or **DOWN ARROW** (**1** or **10**) buttons to select a GPI number between 1 and 12.
 - Press the right **SEL** button to accept the new settings.

4. Assign a GPI trigger type to the selected GPI output as follows:
 - Press **1. Type**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select a trigger type. You can choose between the following:
 - ~ **Edge** — Use this option to have the GPI output held at the selected state (low or high) until triggered, whereupon the line switches to the opposite state momentarily – and returns to the original state.
 - ~ **Level** — Use this option to have the GPI output port is held at the selected state (low or high) until triggered, whereupon the line switches to the opposite state – and holds in that state.
 - Press the right **SEL** button to accept the new settings.
5. Assign a polarity for the selected GPI output as follows:
 - Press **2. Polarity**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select a polarity type. You can choose between the following:
 - ~ **Low** — Use this option when the outgoing GPI line is normally high. When triggered, the selected line goes low (to ground).
 - ~ **High** — Use this option when the outgoing GPI line is normally low. When triggered, the selected line goes high (released from ground).
 - Press the right **SEL** button to accept the new settings.
6. Associate a BNC with the selected GPI as follows:
 - Press **3. BNC**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select a BNC with a GPI. When that BNC goes on-air the GPI associated with it is triggered. You can choose a BNC number between **1** and **16**.
 - Press the right **SEL** button to accept the new settings.
7. Press **MENU** to display the **Installation Change Screen**.
8. Accept or cancel these changes as follows:
 - Press **0. Confirm** to accept the changes.
 - Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure to configure a GPI Output.

Completing Setup

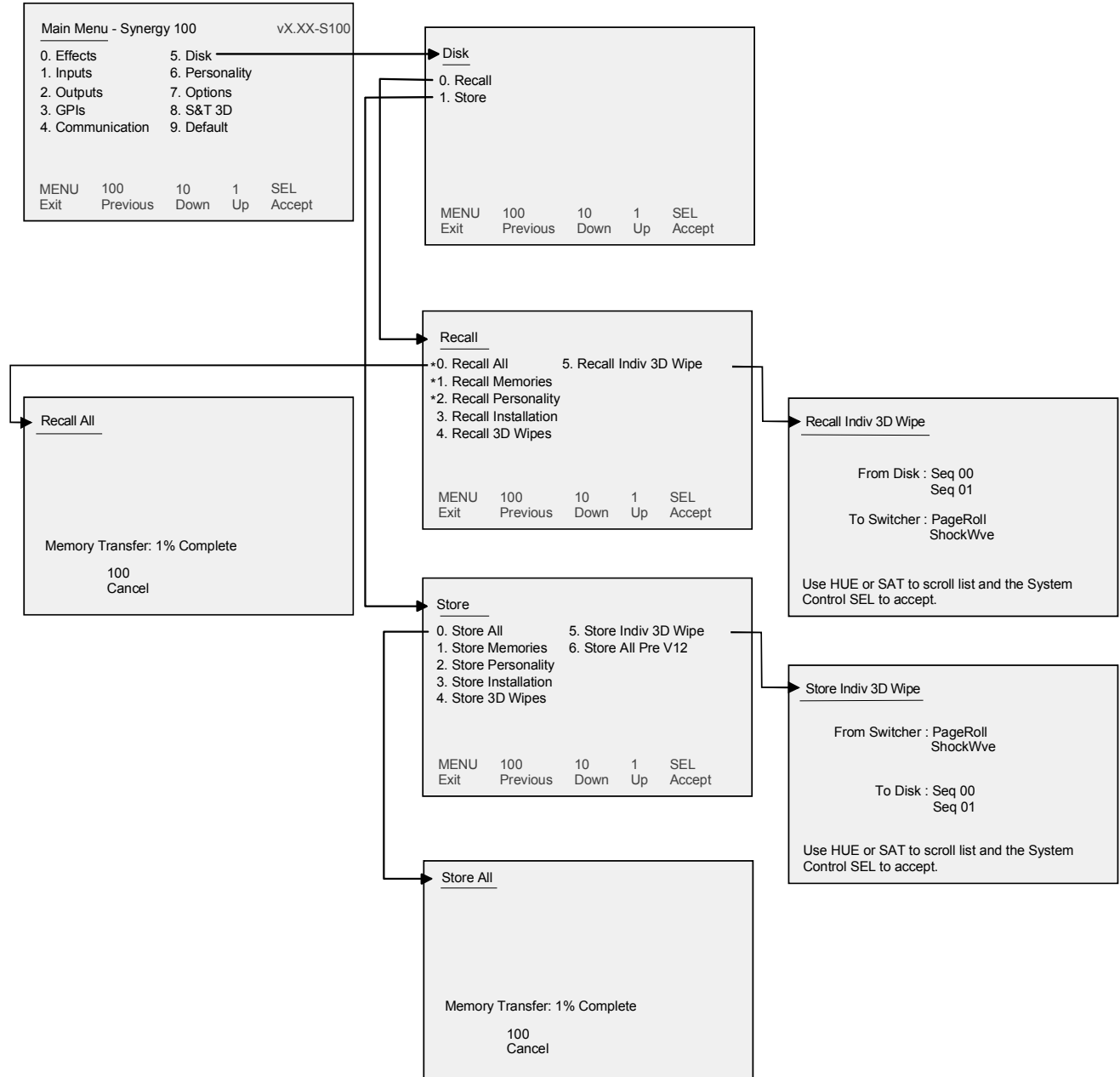
In This Chapter

This chapter provides instructions for storing switcher configurations on a storage device, such as a floppy disk or USB key, and resetting the switcher to factory default values if required. The following topics are discussed:

- Disk Menu Tree
- About the Synergy File Storage System
- Saving Configurations
- Recalling Configurations
- Restoring Factory Default Settings
- 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 following procedures.



Disk Menu Tree

About the Synergy File Storage System

The Synergy 100 file storage system arranges those portions of the switcher that are software-configurable (and user-configurable) into several categories of registers.

- **Memory Registers**

This category stores and recalls MLE settings or “snapshots” of the switcher MLE. A memory register can be programmed in the **System Control** group. When saved to a storage device, all 100 memory registers are stored in the file **MEMORYS.SYN**.



Note

When the **MEMORYS.SYN** file is created, an **ST3DMEM.SYN** file is *automatically* generated if your switcher has the **Squeeze & Tease WARP** option installed. This file is used to store all S&T 3D memories, and subsequent recalling of the memory registers will access *both* of these files.

- **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 default filename **PERS.SYN** is used. The following data is contained in the file:

~ Setup of both Favorite CGs

- **Installation Registers**

This category stores and recalls all setup and configuration settings. When saved to a storage device, the default filename **INSTALL.SYN** is used. The following data is contained in the file:

- ~ BNC Input Types
- ~ Tally Configuration
- ~ Alpha Setup
- ~ Auto Key Configuration
- ~ Panel Button Assignments
- ~ Aux Bus Setup
- ~ Output Setup
- ~ Clean Feed Setup
- ~ GPI Input Setup

- **3D Wipes Registers**

This category stores and recalls all 3D wipes that are present on the switcher. If you have the **Squeeze & Tease WARP** option installed, the pre-programmed wipes on the board can be saved to a storage device, and then over-written by 3D wipes that you have created. When saved to a storage device, the default filename **ST3DSEQ.SYN** is used. Refer to the *Synergy 100 Squeeze & Tease 3D/WARP Owner’s Guide* for information on **Squeeze & Tease WARP**.

- **Individual 3D Wipes Registers**

This category stores and recalls *individual* 3D wipes that are present on the switcher. If you have the **Squeeze & Tease WARP** option installed, the pre-programmed wipes on the board can be individually saved to a storage device, and then over-written by a 3D wipe that you have created. When saved on a storage device, the default filename **STSEQXX.SEQ** (where XX is the wipe number from 00 to 99) is used. Refer to the *Synergy 100 Squeeze & Tease 3D/WARP Owner's Guide* for information on **Squeeze & Tease WARP**.

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, 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" storage device 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 floppy disks or USB keys), 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 registers, 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.

Consider the following notes when using a USB key:

- Write protect should be disabled on any USB key.
- All Synergy files must be stored in the Root directory of the USB key.
- Only DOS or Windows™ partitions in the USB key directory are supported.
- You must wait 5 seconds after inserting the USB key into the USB port before you can save or recall files.
- A delay can be expected when saving files to a USB key with more than half of the available memory allocated.
- You may receive a "**USB UPG FAIL**" error message when the Synergy 100 control panel is powered on. Should you receive this error message, contact Ross Video Technical Support for instructions on how to correct the error.

Upgrading Software Using a USB Key

Please note:

- Synergy 100 systems released *before* version 16 are able to load version 16 or later software, and revert back to earlier versions.
- If you have received a Synergy 100 system with version 16 software already loaded on it, you will *not* be able to load pre-version 16 software onto it regardless of whether you have a USB port or floppy disk drive.
- The following messages may be displayed on the Synergy 100 control panel during the software upgrade process:
 - ~ **WAIT USB** — This message informs you that the Synergy 100 control panel is trying to communicate with the USB port and read the USB key. Once the control panel detects the USB key, the message is no longer displayed.
 - ~ **USB UPGD** — This message informs you that the Synergy 100 switcher is in the process of a software upgrade and will be displayed until the process is complete.
 - ~ **USB UPGD FAIL** — This message informs you that the Synergy 100 control panel has failed to upgrade. Contact Ross Video Technical Support for more information.

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 floppy disks or a USB key. Because the Synergy 100 installation procedure covers such a wide variety of information, the pertinent data spans two categories of registers — **Personality** and **Installation**. As a result, both categories should be saved to a backup storage device.



Note

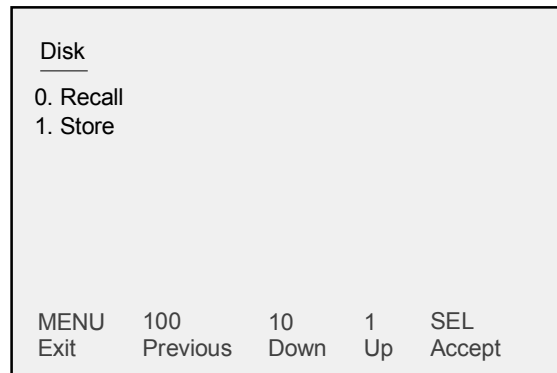
You must have the **USB Removable Media Drive** option installed in order to save your setups to a USB key.

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 **MENU** (to display the **Main Menu**).
 - Press **5. Disk** (to display the **Disk Menu**).



Disk Menu

2. Press **1. Store** to display the **Store Menu**.



Store Menu

3. 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 100 switcher.

OR

- Insert a USB key into the USB port of the Synergy 100 switcher. You must wait 5 seconds after inserting the USB key into the USB port before you can save or recall registers to it.
4. If you wish to store *all categories* of registers to disk, press **0. All**. This action writes four or five files to your storage device in succession, depending on whether or not you have the **Squeeze & Tease WARP** option installed:
 - **Memory Registers** are stored in the file **MEMORY.SYN**.
 - **S&T3D Memories** (if the **Squeeze & Tease WARP** option is installed) are stored in the file **ST3DMEM.SYN**.
 - **Personality Registers** are stored in the file **PERS.SYN**.
 - **Installation Registers** are stored in the file **INSTALL.SYN**.
 - **3D Wipes Registers** are stored in the file **ST3DSEQ.SYN**



Important

Pressing **6. Store All Pre V12** stores all of the above registers to your storage device in a format that is compatible with switcher software versions earlier than version 12. Therefore, if you are downgrading your switcher software from version 12 to an earlier version, use this method to store all your switcher configurations to a storage device.

Note that a floppy disk created in this manner can still be loaded onto a pre-version 16 switcher, but it will load significantly slower than a disk that was saved using the **0. All** option.

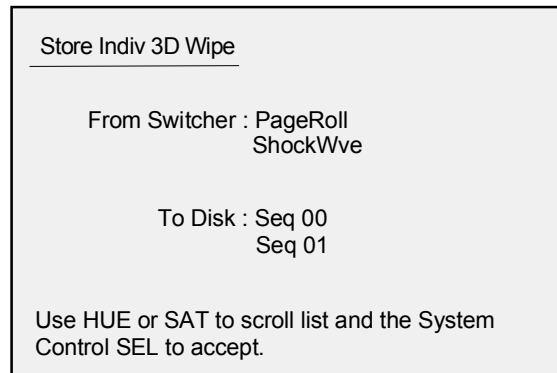
5. If you wish to save *only* the two files that pertain to your installation setups, proceed as follows:
 - Press **2. Personality** to save **Personality Registers** to a storage device. The file **PERS.SYN** is saved.
 - Press **3. Installation** to save **Installation Registers** to a storage device. The file **INSTALL.SYN** is saved.



Note

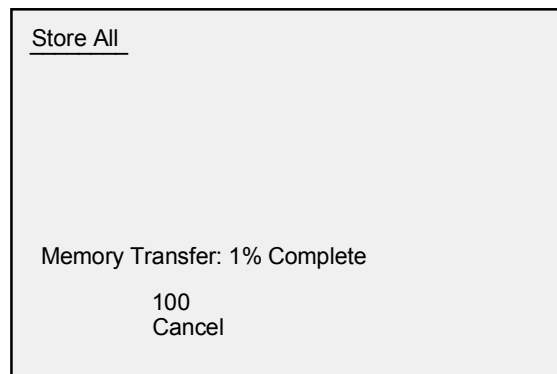
If you wish, you can store *only the memories*, or *only the 3D wipes* to disk in the same manner as outlined for the two categories listed above. To store *only individual 3D wipes*, proceed to step 6. If you store a category that already contains a file on the storage device, the category will be overwritten.

6. If you wish to store *only individual 3D wipes*, press **5. Store Indiv 3D Wipe** to display the **Store Indiv 3D Wipe Menu**.



Store Indiv 3D Wipe Menu

- Use the **HUE** knob in the **Mattes Group** to select the 3D wipe effect *from the switcher* that you want to save.
Note that the wipe location at the **To Disk** heading changes in accordance with the selection at the **From Switcher** heading.
 - Use the **SAT** knob in the **Mattes Group** if you wish to store the 3D wipe effect to a different location on the floppy disk or USB key than currently selected. Rotate the knob to scroll to the desired location.
 - Press **SEL** in the **System Control Group** to accept. The wipe effect is written to the file **STSEQXX.SEQ**, where **XX** is the wipe number from **00** to **99**.
7. During the storing process, and depending on the registers being stored, the following menu (or a variation thereof) is displayed on your preview monitor:



Message Received During Storing Process

This menu follows the progress of your storing procedure, and gives you the opportunity to cancel the operation, if desired.



Caution

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

8. When the transfer is complete, eject the storage device from the switcher.

9. Label the storage device and store it in a safe place. It is recommended that you place the following information on the label:
 - Synergy 100 Switcher
 - Master Engineering Installation Disk (or USB key)
 - Today's Date
 - Synergy 100 Software Version

This completes the procedure for saving your engineering setups.



Note

Remember that you can use *multiple disks or USB keys* for different switcher setup configurations. Refer to the section “**Recalling Configurations**” on page 9-10 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, 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:

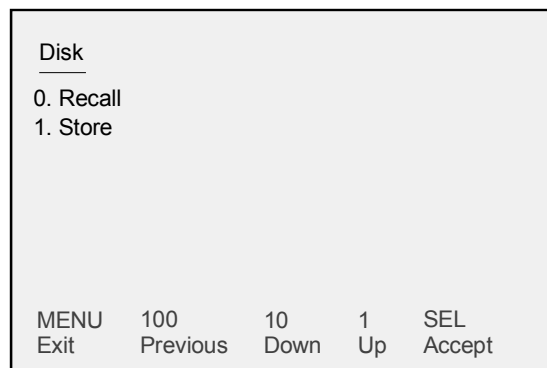
1. Ensure that any custom setups are saved to a storage device. If you have made *any changes* to the switcher setup (in any of the file areas) and you have *not* backed them up, they will be overwritten when you recall files.



Note

Remember that the file areas are independent. For example, if you *only* recall **Memory Registers**, all **Memory Registers**, including S&T 3D memories, if present, will be overwritten by the incoming data from the floppy disk or USB key, but the *other* categories of registers will not.

1. Navigate to the **Disk Menu** as follows:
 - Press **MENU** to display the **Main Menu**.
 - Press **5. Disk** to display the **Disk Menu**.



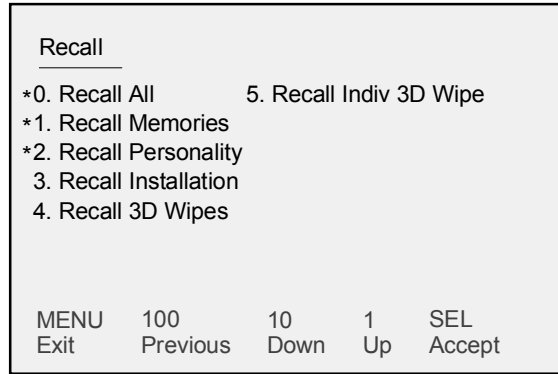
Disk Menu

2. Insert a storage device as follows:
 - Insert the floppy disk with the desired setups into the floppy disk drive of the Synergy 100 switcher.

OR

 - Insert the USB key with the desired setups into the USB port of the Synergy 100 switcher. You must wait 5 seconds after inserting the USB key into the USB port before you can recall registers from it.

3. Press **0. Recall** to display the **Recall Menu**.



Recall Menu



Note

An asterisk in front of a heading (heading 0, 1, and 2 in the sample menu above) indicates that files belonging to this category are present on the storage device. Heading 0, **Recall All**, will have an asterisk preceding it if files belonging to *any* (except **Indiv 3D Wipe**) of the categories are present. Note that this feature does not apply to heading 5, **Recall Indiv 3D Wipe**.

4. If you wish to recall *all categories* of registers from the storage device, press **0. Recall**. This action reads four or five files from the storage device in succession, depending on whether or not you have the **Squeeze & Tease WARP** option installed:

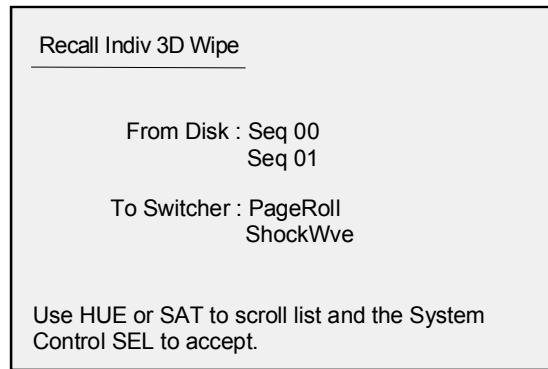


Note

If the switcher's installation settings were locked during hardware installation, you will not be able to recall the **Installation Registers**. Refer to the section "**Jumpers and Switches**" on page 2-20 for details.

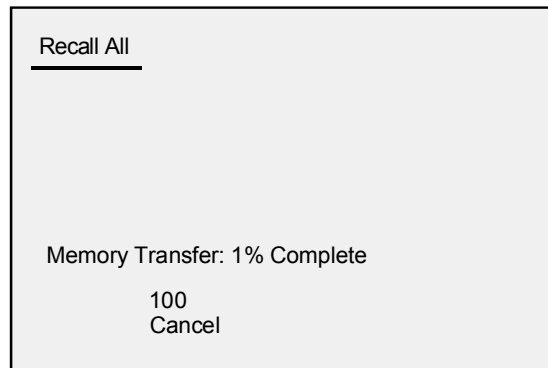
- **Memory Registers** are recalled from the file **MEMORY.SYN**.
 - **S&T3D Memories** (if the **Squeeze & Tease WARP** option is installed) are recalled from the file **ST3DMEM.SYN**.
 - **Personality Registers** are recalled from the file **PERS.SYN**.
 - **Installation Registers** are recalled from the file **INSTALL.SYN**
 - **3D Wipes Registers** are recalled from the file **ST3DSEQ.SYN**.
5. If you wish to recall *only* the file that pertains to a specific portion of the setup, proceed as follows:
 - Press **1. Recall Memories** to recall **Memory Registers**. Registers are loaded from the file **MEMORY.SYN**. If you have the **Squeeze & Tease WARP** option installed, your 3D memories will also be recalled from the file **ST3DMEM.SYN**.
 - Press **2. Recall Personality** to recall **Personality Registers**. Registers are loaded from the file **PERS.SYN**.
 - Press **3. Recall Installation** to recall **Installation Registers**. Registers are loaded from the file **INSTALL.SYN**.
 - Press **4. Recall 3D Wipes** to recall **3D Wipes Registers**. Registers are loaded from the file **ST3DSEQ.SYN**.

6. If you wish to recall *only individual 3D wipes*, press **5. Recall Indiv 3D Wipe** to display the **Recall Indiv 3D Wipe Menu**.



Recall Indiv 3D Wipe Menu

- Use the **HUE** knob in the **Mattes Group** to select the 3D wipe effect *from the storage device* that you want to recall.
Note that the wipe location at the **To Switcher** heading changes in accordance with the selection at the **From Disk** heading.
 - Use the **SAT** knob in the **Mattes Group** to recall the 3D wipe effect to a different location than is currently selected.
 - ~ Scroll to the desired location.
 - ~ Press **SEL** in the **System Control Group**. The wipe effect is recalled from the file **STSEQXX.SEQ**, where **XX** is the wipe number from 00 to 99.
7. During the recalling process, and depending on the registers being recalled, the following menu (or a variation thereof) is displayed on your preview monitor:



Message Received During Recall

This menu follows the progress of your recalling procedure, and gives you the opportunity to cancel the operation, if desired.



Caution

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

8. When the transfer is complete, eject the storage device from the switcher.

This completes the procedure for recalling your engineering and switcher setups.

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.

From time to time, you *may* want to reset your switcher to the factory defaults. This could occur in the following situations:

- If you feel the need to restart the setup or configurations from a base default setting.
- If you wish to reset all control panel values.

Recall Factory Procedure

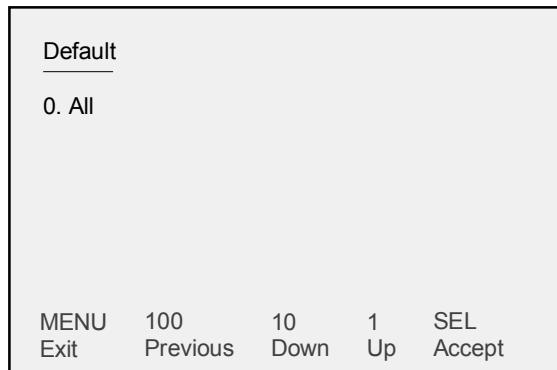


Important

The **Default Menu** enables you to reset the Synergy 100 panel and the frame. All register and panel settings will be lost and reset to the factory defaults.

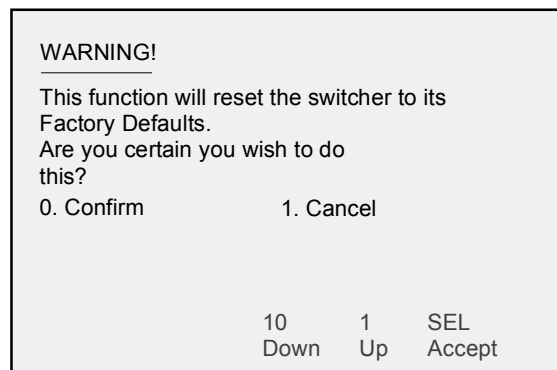
Use the following procedure to restore factory default values:

1. Navigate to the **Default Menu** as follows:
 - Press **MENU** to display the **Main Menu**.
 - Press **9. Default** to display the **Default Menu**.



Default Menu

2. Press **0. All** to display the **Reset Factory Defaults Confirmation Screen**.



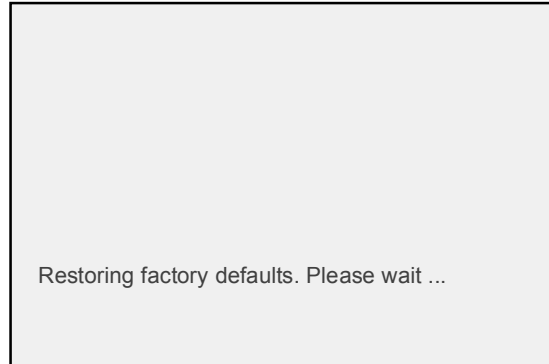
Reset Factory Defaults Confirmation Screen

3. Press **0. Confirm** to restore the default factory settings for the switcher and display the **Reset Menu**.



**Operating
Tip**

Press **1. Cancel** to not restore the default factory settings and return to the **Default Menu**.



Reset Menu

This completes the procedure to restore factory default values.

When Configuration is Complete

Once the entire switcher configuration process is complete, please heed the following important note:



Important

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

- The **Inputs Menu** appears in the switcher's menu tree which you can then view and navigate as usual. However, any changes will be *ignored* upon exiting the installation tree.

Refer to the section “**Frame Jumpers and Switches**” on page 2-20 for additional details.

Appendix A. Specifications

In this Appendix

This appendix provides technical specifications and connector pinout diagrams. 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
- System Timing
- Video Inputs
- Video Outputs
- Output Characteristics
- 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 1 frames used with Synergy 100 panels:

- Complete Control Panel
- 2 Pattern Generators
- Wipes in Program/Preset
- 8 Untimed Aux Buses
- System Control Area
- 100 Event Memory System
- 12 GPI Inputs
- 16 Tally Outputs
- 10 Meter (33 feet) Control Cable
- System Manuals
- 3 Year Transferable Warranty

Physical Characteristics

General Specifications

Parameter	Specification
# MLE Systems	1
# Serial Digital Inputs	16
# Crosspoint Buttons	10
# Serial Digital Outputs	14 (15 with optional Clean Feed)
# Matte Generators	5

Control Panel Specifications

Parameter	Specification
Width	16.95" (43.05 cm)
Height	4.33" (11.00 cm)
Depth	15.35" (38.99 cm)
Height above desktop	1.94" (4.928 cm)
Desk cutout width	16.00" (40.64 cm)
Desk cutout depth	13.25" (33.66 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 OR D type, 15-pin OR 50-pin Centronics
AC power	3-pin IEC
Tally on Frame	12-pin detachable terminal block



Important

The cable for connecting the Synergy 100 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
GVG 100/110 Cable	D type, 15-pin
Tally 1 and Tally 2	12-pin detachable terminal block
To rack frame	8-pin shielded Telco
Analog Cable	50-pin Centronics connector
DC power	12VDC, 2 Amp power jack

Power Consumption

Parameter	Specification
Input voltage	90V~250 VAC, 47~63 Hz
Frame (with all options)	Maximum of 180 Watts
Control panel	19 Watts

Power Rating - Tallies

Parameter	Specification
Input voltage	24V AC (rms) / 40V DC
Maximum current	170mA
Impedance	<15 ohms

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 $\pm \frac{1}{4}$ line (16 μ s).

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, SMPTE 259M-C serial digital, non-looping.
- Inputs can be used for either key or video.
- The reference input is SMPTE 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

* Aux 1 and 2 are not yet implemented.

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 SMPTE 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.

Pinouts

The following sections provide tables of frame and control panel pinouts.

Frame Pinouts

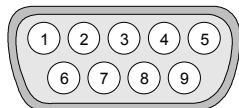
This section provides pinouts for the following frame connectors:

- Editor Connector
- Tally Connectors
- DVE 1
- Peripheral 1A
- Peripheral 2A
- Synergy Panel Connector
- 100/110 Panel Connector
- 210/216 Panel Connector
- Standard GPI I/O Connector
- AC POWER

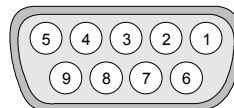
Editor Connector Pinouts

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



Male on Cable



Female on Frame

EDITOR Connector Pinouts

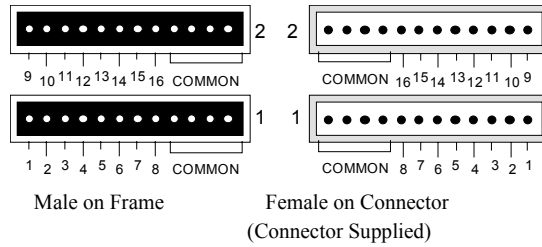
Pin #	RS-232	RS-422	Pin #	RS-232	RS-422
1	n/c	n/c	6	n/c	n/c
2	Rx	TxA (Tx-)	7	n/c	TxB (Tx+)
3	Tx	RxB (Rx+)	8	n/c	RxA (Rx-)
4	Ground	Ground	9	n/c	n/c
5	Ground	Ground			

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
- Rating: Maximum of 10 VA (100 Vmax, 0.5 Amax) into a non-inductive load.
- Format: Solid state relay contact closure to TALLY COMMON

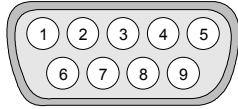


CONNECTOR 1		CONNECTOR 2	
PIN #	FUNCTION	PIN #	FUNCTION
1	Tally 1	1	Tally 9
2	Tally 2	2	Tally 10
3	Tally 3	3	Tally 11
4	Tally 4	4	Tally 12
5	Tally 5	5	Tally 13
6	Tally 6	6	Tally 14
7	Tally 7	7	Tally 15
8	Tally 8	8	Tally 16
9	Common	9	Common
10	Common	10	Common
11	Common	11	Common
12	Common	12	Common

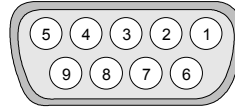
DVE, Peripheral 1A, Peripheral 2A Connector Pinouts

The following table lists pinouts for the **DVE, PERIPHERAL 1A** and **PERIPHERAL 2A** connectors.

- Connector type: 9-pin “D” SUB Female
- Format: RS-422 Serial, RS-232 for Peripheral 2A only



Male on Cable



Female on Frame

DVE, PERIPHERAL 1A, PERIPHERAL 2A Connector Pinouts

Pin #	RS-422	Pin #	RS-422
1	n/c	6	n/c
2	TxA (Tx-)	7	TxB (Tx+)
3	RxB (Rx+)	8	RxA (Rx-)
4	Ground	9	n/c
5	Ground		

Note: n/c = not connected

PERIPHERAL 2A ONLY Connector Pinouts

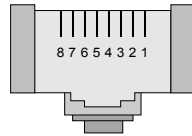
Pin #	RS-232	Pin #	RS-232
1	n/c	6	n/c
2	Tx	7	n/c
3	Rx	8	n/c
4	n/c	9	n/c
5	Ground		

Note: n/c = not connected

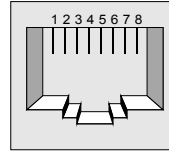
Synergy Panel Connector Pinouts

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



Male on Cable



Female on Frame

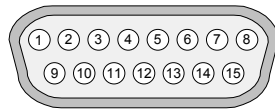
PANEL Connector Pinouts

Pin #	Function	Pin #	Function
1	TxB (Tx+)	5	ODD/EVEN+ (Transmit)
2	TxA (Tx-)	6	ODD/EVEN- (Transmit)
3	RxB (Rx+)	7	Ground (AC coupled)
4	RxA (Rx-)	8	Ground (AC coupled)

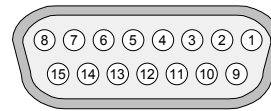
100/110 Panel Connector Pinouts

The following table lists pinouts for the **GVG 100/110** connector.

- Connector type: 15-pin, “D” SUB Female



Male on Cable



Female on Frame

GVG 100/110 PANEL Connector Pinouts

Pin #	Function	Pin #	Function
1	GND / P.S. Return	9	RCV Data -
2	GND / P.S. Return	10	RCV Data +
3	GND / P.S. Return	11	RCV Data Shield – Drain
4	Lamp +14V	12	Xmit Data Shield – Drain
5	Lamp +14V	13	Xmit Data +
6	Panel +9V	14	Xmit Data -
7	+14V Sense -	15	+14V Sense +
8	Outer Shield - Drain		

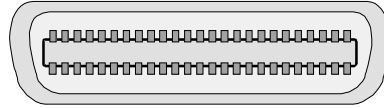
210/216 Panel Connector Pinouts

The following table lists pinouts for the **PANEL** connector.

- Connector type: 50-pin, Centronics Female



Male On Both Ends of Cable



Female on Frame and Panel

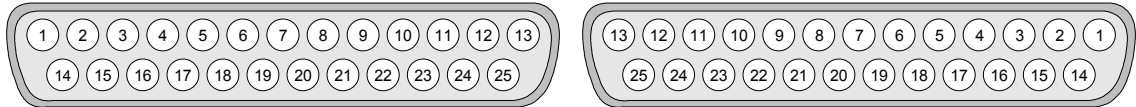
RVS 210/216 Panel Connector Pinouts

Pin #	Function	Pin #	Function
1	-12V Input	26	-12V Input
2	15-20V Input	27	15-20V Input
3	15-20V Input	28	15-20V Input
4	15-20V Input	29	15-20V Input
5	8-12V Input	30	8-12V Input
6	8-12V Input	31	8-12V Input
7	8-12V Input	32	8-12V Input
8	8-12V Input	33	8-12V Input
9	8-12V Input	34	8-12V Input
10	8-12V Input	35	8-12V Input
11	8-12V Input	36	8-12V Input
12	Not Used	37	8-12V Input
13	LGND	38	LGND
14	LGND	39	LGND
15	LGND	40	LGND
16	LGND	41	LGND
17	LGND	42	LGND
18	LGND	43	LGND
19	LGND	44	LGND
20	AGND	45	LGND
21	AGND	46	AGND
22	AGND	47	AGND
23	Reset In	48	AGND
24	TXDB	49	TXDB
25	RXDB	50	RXDB

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



Male on Cable

Female on Frame

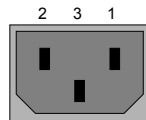
GPI I/O Connector Pinouts

Pin #	Function	Pin #	Function	Pin #	Function
1	Ground	10	GPI In 4	19	GPI Out 7
2	GPI In 12	11	GPI In 3	20	GPI Out 6
3	GPI In 11	12	GPI In 2	21	GPI Out 5
4	GPI In 10	13	GPI In 1	22	GPI Out 4
5	GPI In 9	14	GPI Out 12	23	GPI Out 3
6	GPI In 8	15	GPI Out 11	24	GPI Out 2
7	GPI In 7	16	GPI Out 10	25	GPI Out 1
8	GPI In 6	17	GPI Out 9		
9	GPI In 5	18	GPI Out 8		

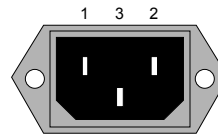
AC POWER Connector Pinouts

The following table lists pinouts for the **AC POWER** connector.

- Connector type: 3-Pin IEC Male



Female on Cable



Male on Frame

AC POWER Connector Pinouts

Pin #	Function	Pin #	Function
1	Neutral/Line 2	3	Ground
2	Line		

Control Panel Pinouts

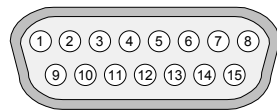
This section provides pinouts for the following control panel connectors:

- 100/110
- ANALOG
- SYNERGY
- TALLY 1, TALLY 2 Connectors

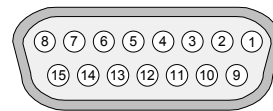
100/110 Connector Pinouts

The following table lists pinouts for the **100/110** connector.

- Connector type: 15-pin, “D” SUB Female



Male on Frame



Female on Cable

GVG 100/110 PANEL Connector Pinouts

Pin #	Function	Pin #	Function
1	GND / P.S. Return	9	Xmit Data -
2	GND / P.S. Return	10	Xmit Data +
3	GND / P.S. Return	11	Xmit Data Shield – Drain
4	Lamp +14V	12	RCV Data Shield – Drain
5	Lamp +14V	13	RCV Data +
6	Panel +9V	14	RCV Data -
7	+14V Sense -	15	+14V Sense +
8	Outer Shield - Drain		



Note

If you have Iss. 2 of the Interface Card, Part #**4100A-039**, in your control panel, the **100/110** connector is female. Therefore, you will require a plug-to-plug adapter if you wish to use this connector for panel-to-frame communication.

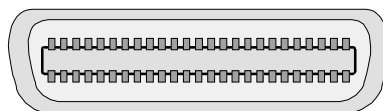
Analog Connector Pinouts

The following table lists pinouts for the **ANALOG** connector.

- Connector type: 50-pin, Centronics Female
- Format: RS-422 Data Link to Frame



Male On Both Ends of Cable



Female on Frame and Panel

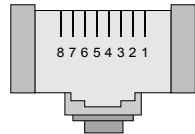
RVS 210/216 Panel Connector Pinouts

Pin #	Function	Pin #	Function
1	-12V Input	26	-12V Input
2	15-20V Input	27	15-20V Input
3	15-20V Input	28	15-20V Input
4	15-20V Input	29	15-20V Input
5	8-12V Input	30	8-12V Input
6	8-12V Input	31	8-12V Input
7	8-12V Input	32	8-12V Input
8	8-12V Input	33	8-12V Input
9	8-12V Input	34	8-12V Input
10	8-12V Input	35	8-12V Input
11	8-12V Input	36	8-12V Input
12	Not Used	37	8-12V Input
13	LGND	38	LGND
14	LGND	39	LGND
15	LGND	40	LGND
16	LGND	41	LGND
17	LGND	42	LGND
18	LGND	43	LGND
19	LGND	44	LGND
20	AGND	45	LGND
21	AGND	46	AGND
22	AGND	47	AGND
23	Reset In	48	AGND
24	RXDB	49	RXDB
25	TXDB	50	TXDB

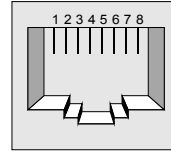
Synergy Connector Pinout

The following table lists pinouts for the **SYNERGY** connector.

- Connector type: 8-pin RJ-45 Telco Jack, Shielded
- Format: RS-422 Data Link to Frame



Male on Cable



Female on Control Panel

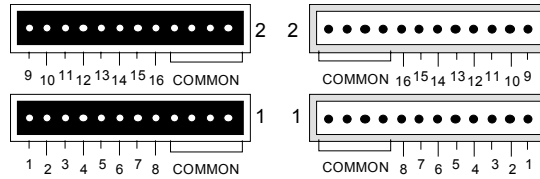
SYNERGY Connector Pinouts

Pin #	Function	Pin #	Function
1	RxB (Rx+)	5	ODD/EVEN+ (Receive)
2	RxA (Rx-)	6	ODD/EVEN- (Receive)
3	TxB (Tx+)	7	Ground
4	TxA (Tx-)	8	Ground

Tally 1, Tally 2 Connector Pinouts

The following table lists pinouts for the two **TALLY** connectors.

- Connector type: 12-pin detachable terminal block
- Rating: Maximum of 10 VA (100 Vmax, 0.5 Amax) into a non-inductive load.
- Format: Solid state relay contact closure to TALLY COMMON



Male on Frame

Female on Connector
(Connector Supplied)

Tally 1, Tally 2 Connector Pinouts

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

Remote Aux Panel Pinouts

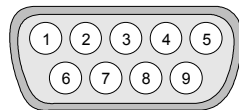
This section provides pinouts for the following remote Aux panel connectors:

- Aux Panel GPI Connector
- Aux Panel J1 Connector
- Aux Panel J5 Connector

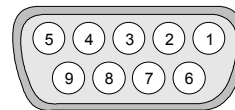
Aux Panel GPI Connector

The table below lists pinouts for the Remote Aux Panel **GPI** connector.

- Connector type: 9-pin “D” SUB Female
- Format: Active low, short-to-ground to activate



Male on Cable



Female on Remote Aux Panel

Remote Aux Panel GPI Connector Pinouts

Pin #	Function *	GPI	Pin #	Function *	GPI
1		Input 1	6		Input 6
2		Input 2	7		Input 7
3		Input 3	8		Input 8
4		Input 4	9	n/a	Ground (common)
5		Input 5	Programmed Group #		

* Copy this 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.



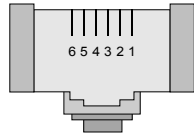
Caution

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.

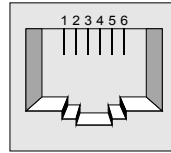
Aux Panel J1 Connector Pinouts

The table below lists pinouts for the Remote Aux Panel **J1** connector.

- 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

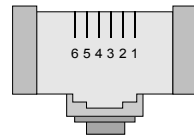
Aux Panel J1 Connector Pinouts

Pin #	Function	Pin #	Function
1	RxA (Rx-)	4	TxB (Tx+)
2	RxB (Rx+)	5	RESET (Out)
3	TxA (Tx-)	6	Ground

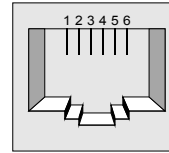
Aux Panel J5 Connector Pinouts

The table below lists pinouts for the Remote Aux Panel **J5** connector.

- 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

Aux Panel J5 Connector Pinouts

Pin #	Function	Pin #	Function
1	TxA (Tx-)	4	RxB (Rx+)
2	TxB (Tx+)	5	RESET (In)
3	RxA (Rx-)	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 for the S100

Aux Panel Programming Mode Button Assignment

Button/ LED	Normal Mode	Program Mode Bus Assignment	Program Mode GPI Offset	Program Mode GPI Status	Power Up Diagnostics
1 (Black)	Select Xpt 1	Display/modify this panel's rights to Aux Bus 1 (Dedicated panels only) (*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 (Dedicated panels only) (*6)	Set GPI to group 2 (offset 1) (*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 (Dedicated panels only)	Set GPI to group 3 (offset 2) (*1)	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 (Dedicated panels only)	Set GPI to group 4 (offset 3) (*1)	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 (Dedicated panels only)	Set GPI to group 5 (offset 4) (*1)	GPI 4 Status (ON = shorted to ground)	
6	Select Xpt 6	Display/modify this panel's rights to Aux Bus 6 (Dedicated panels only)	Set GPI to group 6 (offset 5) (*1)	GPI 3 Status (ON = shorted to ground)	
7	Select Xpt 7	Display/modify this panel's rights to Aux Bus 7 (Dedicated panels only)	Set GPI to group 7 (offset 6) (*1)	GPI 2 Status (ON = shorted to ground)	
8	Select Xpt 8	Display/modify this panel's rights to Aux Bus 8 (Dedicated panels only)	Set GPI to group 8 (offset 7) (*1)	GPI 1 Status (ON = shorted to ground)	
9	Select Xpt 9	Display/modify this panel's rights to Aux Bus 9 (Dedicated panels only)	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 (Shift)	Select Xpt 10	Display/modify this panel's rights to Aux Bus 10 (Dedicated panels only)	Xpt 10 to be used as Shift button for shifted Xpts when lit. (*2)	Xpt 10 to be used as Shift button for shifted Xpts when lit. (*2)	LED used in EEPROM Test
ASSIGN 1 to 10 inclusive	Select Aux Bus	Display/modify this panel's rights to the respective 10 Aux Buses (Assignable Panels only)			
MLE PV	Select MLE Preview				

Aux Panel Programming Mode Button Assignment

Button/ LED	Normal Mode	Program Mode Bus Assignment	Program Mode GPI Offset	Program Mode GPI Status	Power Up Diagnostics
DVE SEND	Select DVE Send				
Clean Feed	Select Clean Feed	Switch to GPI program mode and LED will start flashing.	<i>Switch to Assignment Program mode and LED will stop flashing.</i>	<i>Switch to Assignment Program mode and LED will stop flashing.</i>	
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 a flashing Clean Feed and flashing Button #9)	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 OFF, 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) Although the panel’s rights to Aux Buses 1 and 2 can be modified, it will have no effect on the switcher as Aux Buses 1 and 2 are not implemented.

Appendix B. Hardware Options

In this Appendix

This appendix provides instruction for installing a variety of hardware options. The following topics are discussed:

- Hardware Option Overview
- Clean Feed Installation
- Squeeze & Tease 2D Installation
- Floating Border Generator Installation
- Ultimatte Insider Installation



Note

If you wish to provide your switcher with any of the listed option capabilities, please contact **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.

Hardware Option Overview

The following daughter cards and modules may be installed on the **Frame CPU Board** to provide optional Synergy 100 functionality:



Important

Do not open the Synergy 100 control panel without express instructions from Ross Video Technical Support

- The **Clean Feed** option provides an additional “program” output that is derived from a *different location* than the standard program output.
 - ~ Requires **1 Serializer Module** (p/n 4000-062)
- The **Squeeze & Tease 2D** option puts the power of a simple 2-D (two dimensional) DVE into both MLE keyers.
 - ~ Requires the **Squeeze & Tease 2D Daughter Board** (p/n 4000-048)
- The **Floating Border Generator** option provides visually dynamic border, shadow and outline effects to both linear MLE keyers, with either hard or “glowing” edges.
 - ~ Requires the **Floating Border Generator Daughter Board** (p/n 4000-049)
- The **Ultimatte Insider™** is a hardware option that adds true Ultimatte capability – directly *inside* the Synergy 100 switcher.
 - ~ Requires the **Ultimatte Insider Board**

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* all keys, including the DSK, or after the Effects Keyers but before the DSK. 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:



Caution

Observe all static discharge precautions throughout the procedure.

1. Power down the Synergy 1 frame.
2. 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.
3. Unpack the **Clean Feed** kit, which consists of one **Serializer Module** (4000A-062).
4. 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!

5. When complete, carefully replace the **Synergy 1 Frame Board** into the chassis, and secure with the outer latches on the board edges.
6. Using the menu system, set the point from which the clean feed signal is derived. Refer to the section “**Clean Feed Setup**” on page 8-6 for instructions.

Once complete, the selected signal appears on the **CLEAN** output connector on the rear of the chassis.

This completes the procedure to install the **Clean Feed** option.

Squeeze & Tease 2D Installation



Note

If you have the **Squeeze & Tease WARP** option installed, refer to the *Synergy 100 Squeeze & Tease 3D / WARP Owner's Guide* for complete installation and operation instructions.

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:

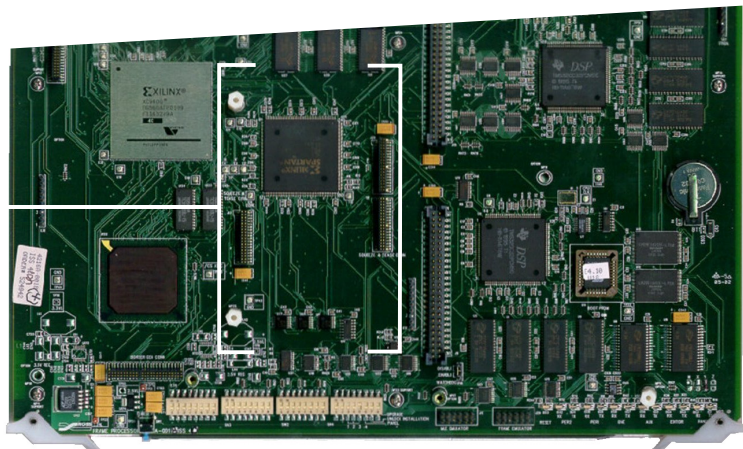


Caution

Observe all static discharge precautions throughout the procedure.

1. Power down the Synergy 1 frame.
2. 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.
3. Unpack the **Squeeze & Tease 2D** kit, consisting of one **Squeeze & Tease 2D Module** (4000A-048).

Squeeze & Tease
Mounting Location



Squeeze & Tease Mounting Location

4. Locate the 3 sockets labeled “**Squeeze & Tease Conn**” on the **Synergy 1 Frame Board**, near the middle, front of the board. Refer to the figure above.
 - Carefully align the module over the sockets.
 - Ensure that the components of the S&T Module board 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!

5. 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 **Squeeze & Tease 2D** option.

Floating Border Generator Installation

This section provides instructions for installing the **Floating Border Generator** option on the Frame CPU Board.

Use the following procedure to install the **Floating Border Generator** option:



Caution

Observe all static discharge precautions throughout the procedure.

1. Power down the Synergy 1 frame.
2. 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.
3. Unpack the **Floating Border Generator** kit, consisting of one **Floating Border Generator Module** (4000A-049).
4. 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 components of the Floating Border Generator Module board 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!

5. 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 **Floating Border Generator** option.

Ultimatte Insider Installation

Ultimatte Insider™ is a hardware option that adds true Ultimatte capability — directly *inside* the Synergy 100 switcher. The option comprises a hardware board designed by Ultimatte, the Oscar-winning industry leader in compositing technology.

Please note the following important points:

- The **Ultimatte Insider** board is allocated to only *one* of the MLE’s two keyers. The **Ultimatte** will *automatically* be associated with the first keyer in which a **Chroma Key** key type is selected.
- The **Ultimatte Insider** board creates two signals from a selected video source — a processed fill and a processed alpha signal.
- Even though the **Ultimatte Insider** board is allocated to only one of the keyers, any of the 16 inputs can be used as an Ultimatte key source.

Ultimatte Insider Board Installation

This section provides instructions for installing an **Ultimatte Insider** board on the Frame CPU Board.

Use the following procedure to install the **Ultimatte Insider** option:



Caution

Observe all static discharge precautions throughout the procedure.

1. Power down the Synergy 1 chassis.
2. 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.
3. Unpack the **Ultimatte Insider** kit, consisting of one **Ultimatte Module**.
4. 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!

5. 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. Refer to the *Synergy 100 Operation Guide* for operating instructions.

Appendix C. Diagnostics

In this Appendix

This appendix provides information on the Synergy 100 panel diagnostic tools. The following topics are discussed:

- Diagnostics Overview
- Potentiometer Test
- Fader Test
- Positioner Test
- Button Test
- Lamp Test
- Communication Port Monitoring
- Switcher Calibration

Diagnostics Overview

The Synergy 100 switcher provides a full array of panel diagnostics tools.

Use the following procedure to enter panel diagnostic mode:

1. Hold down the following three buttons at once:
 - **SEL** in the **Effects Control Group**
 - **SEL** in the **Mattes Group**
 - **SEL** in the **System Control Group**
2. A message will scroll across the 3 four-character displays in the **Effects Control**, **Mattes**, and **System Control** groups. The message advises the user that the control panel is in diagnostic mode, and to exit, you must press and hold the three **SEL** buttons again. This message will continue to scroll until a knob, button, the fader, or the joystick is disturbed.
3. Once a knob, button, the fader, or the joystick has been disturbed, the seven-segment display in the **System Control** group will flash between **LOOP**, and either **PASS** or **FAIL**. This message advises you that a loop-back test has been performed on the Synergy 100 control panel, with the results being either a PASS or a FAIL. The purpose of the loop-back test is to ensure that proper communication exists between the control panel and the Synergy 1 frame.



Note

This test *must* be performed with either the Synergy 1 frame or a Loop-back connector attached to **SYNERGY** communication port on the rear of the Synergy 100 control panel. Otherwise, a **FAIL** result will be received.

Each panel diagnostic function is discussed in the following sections.

Potentiometer Test

The **Potentiometer Test** allows you to test the response of all potentiometers (knobs) on the panel.

Use the following procedure to test the pots:

1. Select a knob to test, and rotate it fully clockwise and counter-clockwise.
2. This action causes the following information to appear in the 3 four-character displays:
 - In the **Effects Control Group**, **Knob** appears in the display.
 - In the **Mattes Group**, a range of numerical values appears in the display.
 - In the **System Control Group**, the name and location of the knob appears in the display (for example, **Dgan** for the **GAIN** knob in the **Downstream Keyer Group** or **KClp** for the **CLIP** knob in the **Effects Keyer Group**).

In addition, the LEDs in the **Transition Progress Bar** will illuminate.

3. 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** allows you to test the MLE fader on the panel.

Use the following procedure to test the fader:

1. Select the fader and move it from one limit to the other, and back to the original fader limit.
2. This action causes the following information to appear in the 3 four-character displays:
 - In the **Effects Control Group**, **Fadr** appears in the display.
 - In the **Mattes Group**, a range of numerical values appears in the display.
 - In the **System Control Group**, **Fadr** appears in the display.In addition, the LEDs in the **Transition Progress Bar** will illuminate.
3. Test the panel fader as required.



Note

Contact **Technical Support** for details on each display value

This completes the procedure to test the fader.

Positioner Test

The **Positioner Test** allows you to test all three axis of the positioner (joystick).

Use the following procedure to test the positioner:

1. Move the positioner from left to right or top limit to bottom limit to test the X- or Y-axis, or rotate it to test the Z-axis.
2. This action causes the following information to appear in the 3 four-character displays:
 - In the **Effects Control Group**, **Pos** appears in the display.
 - In the **Mattes Group**, a range of numerical values appears in the display.
 - In the **System Control Group**, **Pos** and the letter **X**, **Y**, or **Z** appears in the display, depending on which axis you are testing.In addition, the LEDs in the **Transition Progress Bar** will illuminate.
3. Test all axis of the positioner, 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** allows you to test all pushbuttons on the switcher panel.

Use the following procedure to test the buttons:

1. Press any pushbutton on the panel.
2. This action causes the following information to appear in the 3 four-character displays:
 - In the **Effects Control Group**, **Bttn** appears in the display.

- In the **Mattes Group**, **up** or **down** appears in the display, depending on the status of the button.
 - In the **System Control Group**, a numerical value, which represents the actual button number, appears in the display.
3. Press each button, as required.

This completes the procedure to test the buttons.

Lamp Test

The **Lamp Test** allows you to test the LEDs of large groups of buttons on the panel at the same time.

Use the following procedure to test the lamps:

1. Press a button within the section of pushbuttons that you want to test. The sections are as follows:
 - Preset bus crosspoints
 - Program bus crosspoints
 - Key bus crosspoints
 - Transition area buttons
 - Downstream Keyer buttons
 - Effects Keyer buttons, including the Effects Control area to the left of the Effects Keyer group
 - The entire upper pattern board
2. This action causes the green LEDs in that section to turn on, followed by the red LEDs, and then the orange LEDs. If the section does not contain all colors of LEDs, only the available colors will be cycled through.
3. Press buttons in selected panel sections to test *all lamps* in those sections, as required.

This completes the panel diagnostic tests. To exit diagnostic mode, press all three **SEL** buttons at the same time.

Communication Port Monitoring

Use the **Communication Port Monitoring Setup** procedure to set up monitoring capabilities for the data transmitted and received through your communication ports. This function is provided as a troubleshooting tool to assist Ross Video Technical Support.

Use the following procedure to configure the Communication Port Monitoring:

1. Navigate to the **Communication Menu** as follows:
 - Press **MENU** to display the **Main Menu** on the **Preview Overlay**.
 - Press **4. Communication** to display the **Communication Menu**.

Communication				
0. Port	Editor	5. Protocol	RS232	
1. Type	Editor	6. Input	None	
2. Device	GVG4000	7. Monitor		
3. Baud	38400	8. Option	None	
4. Parity	Odd	9. Reserved		
MENU	100	10	1	SEL
Exit	Previous	Down	Up	Accept

Communication Menu



Note

Regardless of the communications parameters you are configuring, for example editor, audio mixer, or tally system interface equipment, **7** will always be **Monitor**.

2. Press **7. Monitor** to display the **Monitor Menu**.

Monitor			
0. Port	Panel	5. Address	000
1. Format	Hex		
2. Tx/Rx	Rx		
3. Freeze	No		
4. Clear			
MENU	100	10	1 SEL
Exit	Previous	Down	Up Accept

Communication – Monitor Menu

3. Select a port to monitor as follows:
 - Press **0. Port**.
 - Use the **UP ARROW** or **DOWN ARROW** (**1** or **10**) buttons to select the communication port you want to monitor. You can choose between the following:
 - ~ Panel
 - ~ Editor

- ~ DVE
 - ~ Periph1
 - ~ Periph2
 - Press the right **SEL** button to accept the new settings.
4. Select a format to display the monitoring information as follows:
 - Press **1. Format**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select a format to display the monitoring information from the selected communications port. You can choose between the following:
 - ~ **Hex** — Use this option to display the raw data in Hexadecimal format.
 - ~ **ASCII** — Use this option to display the raw data in American Standard Code for Information Interchange format.
 - Press the right **SEL** button to accept the new settings.
 5. Select the type of monitoring as follows:
 - Press **2. Tx/Rx**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the traffic flow to monitor on the selected communications port. You can choose between the following:
 - ~ **Tx** — Use this option to monitor the Transmit data from the selected port.
 - ~ **Rx** — Use this option to monitor the Receive data from the selected port.
 - Press the right **SEL** button to accept the new settings.
 6. Send or receive data as follows:
 - Press **3. Freeze**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select whether to receive data or not. You can choose between the following:
 - ~ **Yes** — Use this option to stop receiving data.
 - ~ **No** — Use this option to begin sending or receiving data.
 - Press the right **SEL** button to accept the new settings.
 7. Select to delete all current data from the buffer as follows:
 - Press **4. Clear**.
 - Press the right **SEL** button to accept the new settings.
 8. Select a buffer location that is beyond the visible display parameters as follows:
 - Press **5. Address**.
 - Use the **UP ARROW** or **DOWN ARROW (1 or 10)** buttons to select the buffer location.
 - Press the right **SEL** button to accept the new settings.
 9. Press **MENU** to display the **Installation Change Screen**.

10. Accept or cancel these changes as follows:

- Press **0. Confirm** to accept the changes.
- Press **1. Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedures for setup of the **Communication Port Monitoring** function. If you require further information on the various options and their associated values, contact **Ross Video Technical Support** at the number listed in the front of this guide.

This concludes our discussion of the Synergy 100 panel diagnostics tools.

Switcher Calibration

The **Calibration Mode** allows you to calibrate all analog controls on the switcher panel, including the fader, the positioner and all knobs. In addition, the user is able to set the brightness levels of all panel button LEDs.



Caution

Use the **Calibration 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 switcher’s analog controls and adjust the brightness levels of the LEDs:

1. Enter **Calibration Mode** by holding down the following three buttons at once:
 - **ROTATE**
 - **SEL** in the **Mattes Group**
 - **SEL** in the **System Control Group**

The **Panel Calibration Mode Menu** is displayed on the **Preview** monitor.

```
Panel Calibration Mode
0. Knob/Fader/Positioner Calibration
1. Overall LED Brightness Control
2. Logo Brightness
3. Red Button LED Brightness
4. Orange Button LED Brightness
5. Green Button LED Brightness
6. Red Non-Button LED Brightness
7. Orange Non-Button LED Brightness
8. Green Non-Button LED Brightness
Press any button on lower panel to exit.
```

Panel Calibration Mode Menu

Using pattern buttons **0** through **8** inclusive in the **Effects Control Group**, select the button with the number that coincides with the desired option. The selected button will light. Button #0, Knob/Fader/Positioner Calibration, is the default option.



Important

If you select option **0. Knob/Fader/Positioner Calibration**, 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. Calibrate the fader as follows:
 - Press **0. Knob/Fader/Positioner Calibration**.
 - 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 four-character displays in the **Effects Control** and **System Control** groups.
 - Calibration is complete when the limit values in these four-character displays no longer change.

3. Calibrate the positioner as follows:

- Ensure the **0. Knob/Fader/Positioner Calibration** option is selected.
- Move *each axis* as follows:
 - ~ **X-Axis** — Calibrate the X-Axis by moving the joystick fully left and right. Repeat this procedure two or three times.
 - ~ **Y-Axis** — Calibrate the Y-Axis by moving the joystick fully up and down. Repeat this procedure two or three times.
 - ~ **Z-Axis** — 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 four-character displays in the **Effects Control** and **System Control** groups.

- Calibration is complete when the limit values in these four-character displays no longer change.



Note

The numbers for each axis *may not match* — this is normal.

4. Calibrate the knobs as follows:

- Ensure the **0. Knob/Fader/Positioner Calibration** option is selected.
- 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 four-character displays in the **Effects Control** and **System Control** groups.

- Calibration is complete when the limit values in these four-character displays no longer change.



Note

The numbers for each knob *may not match* — this is normal.

5. Adjust the brightness of *all* the LEDs on the control panel as follows:

- Press **1. Overall LED Brightness Control**.
- Brightness of all button and non-button (secret-til-lit and logo) LEDs is adjusted by rotating *any* knob on the panel.

6. Adjust the brightness of *only* the LEDs in the Ross logo in the upper right-hand corner of the Synergy 100 control panel as follows:

- Press **2. Logo Brightness**.
- Brightness of these LEDs is adjusted by rotating *any* knob on the panel.

7. Adjust the brightness of *only* the LEDs under the panel buttons as follows:

- Select one of the buttons #3 through #5, as applicable.
- Brightness is adjusted by rotating *any* knob on the panel.

8. Adjust the brightness of *only* the LEDs under the secret-til-lit on-air and bus indicators as follows:

- Select one of the buttons #6 through #8, as applicable.
- Brightness is adjusted by rotating *any* knob on the panel.

9. To exit **Calibration Mode**:

- Press *any* button on the lower portion of the panel. In the four-character displays across the top of the panel, you will receive a message asking you if you want to save the calibration:
 - ~ To return the switcher to normal operating mode without accepting the newly calibrated controls, press **SEL** in the **System Control Group**.
 - ~ To complete the calibration and return the switcher to normal operating mode, press **SEL** in the **Mattes Group**.

10. On rare occasions, if you choose to save the calibration, the new settings fail to save correctly. If this occurs, a message will appear in the display area informing you of this. In addition, the **SEL** buttons in the **Mattes** and **System Control** groups will light. Press either of these buttons to confirm receiving the warning.

You can then attempt to save the settings a second time simply by re-entering calibration mode (as per Step 1), and then exiting it. You will again be asked if you wish to save the calibration, to which you can select **Yes** in the **Mattes Group**.

This completes the procedure to calibrate the analog controls of the Synergy 100 switcher.

Appendix D. 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:

- Inputs
- Outputs
- Standard Frame GPI Inputs

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.

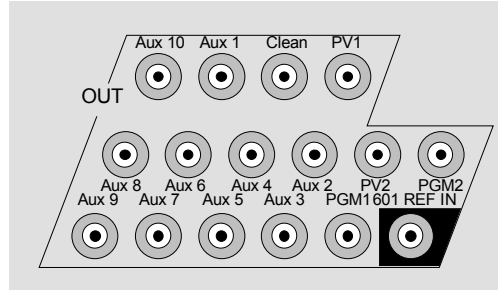
Input Worksheet

BNC Input #	Input Type	Auto Key	Shaped	Panel Button	Tally Number
<i>sample 1</i>	Other	10	—	5	12
<i>sample 2</i>	Alpha	—	Yes	10 (Shifted)	—
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					

Refer to the section “**Input Worksheet**” on page 4–2 for further details.

Output Worksheet

Make copies of this blank worksheet for use as required. Complete the following primary output worksheet. Use the figure below for reference.



Frame Output Area

Fill in the desired destination for each output signal.

Output Worksheet

Output Connector	Synergy 100 Destination
PGM 1	
PGM 2	
PV 1	
PV 2	
AUX 1	(Not yet implemented)
AUX 2	(Not yet implemented)
AUX 3	
AUX 4	
AUX 5	
AUX 6	
AUX 7	
AUX 8	
AUX 9	
AUX 10	
CLEAN	(Optional)

Refer to the section “**Output Connection**” on page 4–7 for further details.

Standard Frame GPI Input Worksheet

Make copies of this blank worksheet for use as required. Complete the following Standard Frame GPI Input worksheet.

Standard Frame GPI Input Worksheet

Standard GPI Input #	Function	Area	Polarity	Type
<i>sample GPI Input #1</i>	AutoTrans	MLE	Low	Edge
<i>sample GPI Input #2</i>	Cut	FTB	High	Level
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

Refer to the section “**Standard Frame GPI Input Worksheet**” on page 8–22 for further details.

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.

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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