



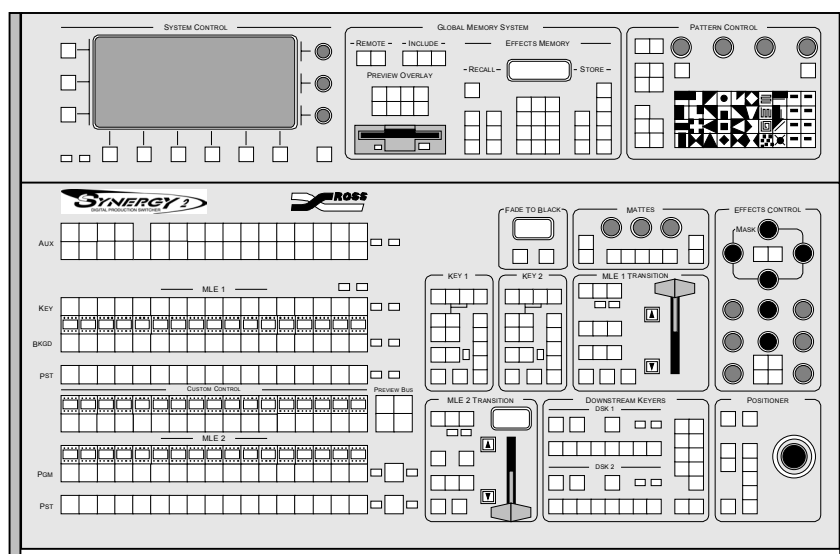
# ORDERING GUIDE



Ross Video Incorporated, P.O. Box 880, Ogdensburg, New York, USA 13669 0880  
Ross Video Limited, P.O. Box 220, 8 John St., Iroquois, ON., Canada K0E 1K0

Tel. (613) 652-4886  
Fax. (613) 652-4425

[www.rossvideo.com](http://www.rossvideo.com)



Synergy 2 Control Panel

## Product Overview

Thank you for considering the purchase of a Synergy 2 SD Digital Production Switcher. Ross Video has designed and manufactured production switchers for over thirty years. We hope that you join the many thousands of satisfied video professionals around the world that are proud owners of Ross Production Switchers. Ross has been known for innovation in production switcher technology and has had many industry firsts, including such patented technology as Soft Edge Borders and Transition Preview, which have become industry standard features. As you read through this Ordering Guide, you will discover that Ross has again broken new ground with our Synergy SD Series ...

### *Designed for Live!*

Ross Video developed the Synergy series of digital production switchers for live news, live sports, and live production. Because the switcher is the center of the action, it is important that it be powerful and versatile yet maintain its ease of operation. This frees the operator to concentrate on the programming instead of the equipment.

### *Designed for DTV!*

Synergy is the only production switcher that can truly handle dual aspect ratio production. In the transition period to DTV, there is a need for dual aspect ratio production. Synergy now includes, as an option, multiple internal aspect ratio converters (Aspectizers). Since the Aspectizers are internal and integrated with the Synergy control system, simultaneous dual aspect production is enabled. Both 16:9 and 4:3 programs can be put together with your existing crew at the same time!



***Designed to be HDTV Upgradeable!***

Ross provides an HDTV upgrade path for our Synergy customers. It is possible to upgrade all existing Synergy Series SD digital production switchers to HDTV simply by exchanging the rack frame electronics. Ask your Ross sales representative for details on this unique program.

***Designed for You!***

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 provide switcher demonstrations, assist with switcher installation, and train operators. As a result, the Synergy line continues to advance Ross Video's tradition of easy to use and logical panel layouts.

Please do not hesitate to contact us with any questions or comments you have related to this Ordering Guide at Tel: +1-613-652-4886, Fax: +1-613-652-4425 or email: [solutions@rossvideo.com](mailto:solutions@rossvideo.com)

## Product Highlights

- **Huge Input Matrix.** The Synergy frame can accept up to 64 video inputs, purchased in sets of 8.
- **Aspectizer®.** Ideal for DTV requirements, the Aspectizer is an internal aspect ratio converter that makes Synergy capable of handling simultaneous dual aspect ratio production. It allows conversion from 4:3 to 16:9, 16:9 to 4:3, and now with version 2, six of the Aspectizer looks can be moved horizontally or vertically to provide even more real estate on the screen for added flexibility. Any number of switcher inputs and outputs can have aspect ratio conversion and, because the Aspectizers are built in, they are tightly controlled from the Synergy 2 control panel.
- **OverDrive™ Compatible.** The Synergy Series has evolved to control every single piece of equipment in the control room. The next step in this evolution is the revolutionary OverDrive Production Control System. With dual touch screens, the TD can now automate a production when required. Thumbnail based, the TD can step through the show's run-down or instantly break away to unscripted events. When connected to a newsroom automation system, a live MOS-based link keeps the two systems in constant and instant synch, providing clear communication between the producer and the TD.
- **Mnemonics.** Mnemonics are now available for each of your MLEs and your Custom Control buttons. Each individual display is completely modifiable – change the display color, text size, and backlighting to customize your source names for different applications. Perfect for mobiles and other applications that require different crosspoint names from one production to another.
- **Powerful Keys.** These full function keys have dedicated pushbuttons, flying borders for every key type, Squeeze & Tease®, chroma keying, key over transition, quick key preview, transition generators, and bicolor on-air status.
- **Squeeze & Tease®.** A 2D DVE can be built into every keyer - up to two channels per MLE. Every type of key can be repositioned, squeezed, and zoomed. In fact, it's possible to simultaneously crop, reposition, flip, squeeze or zoom, mask, border, and add a glowing transparent color-washed drop shadow to a key inside a *single* keyer. These options also make Squeeze & Tease wipes possible, where you can push, squeeze, tumble and swoop in keys, over the shoulder boxes, and backgrounds.
- **Squeeze & Tease® WARP.** A 3D DVE with over 20 WARP effects can be built into every keyer - up to two per MLE. Every type of key can be squeezed or zoomed, cropped, repositioned, and rotated in 3D space. You can perform 3D key or background transitions, or build your own sequences with complex timelines, keyframe editing, and quick "shot box" sequence recall. In addition, the 3D WARP functionality opens up a new world for the creative mind. You get 2 channels of 10-bit 3D modifiable WARP effects including page turn, positionable light source, on-board still store, preprocessor effects such as defocus, mosaic, posterization, colorization, strobe, picture frame borders, object builder for slabs, timeline sequences, and lots more.
- **Chroma Keying Standard.** Synergy's standard chroma keyers feature natural and simulated shadows, spill suppression, and hue rejection.
- **Ultimatte® Insider™ Matting Device.** Award winning Ultimatte Technology on a

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\* Ultimatte is a trademark of Ultimatte Corporation.

card that plugs right into Synergy, for extra critical chroma keying requirements.

- **Networked Still and Clip Server.** Imagine hours of video storage, virtually unlimited stills, and animations all playing out with their companion key channels. Next, combine live video and key capture with Ethernet drag and drop capability, and you have the perfect marriage of video and networkability. Even better, this solution comes bundled with Synergy's powerful Video Server Control.
- **VTR Control.** Select a VTR on the PST bus, display its current time code on the preview monitor, roll it from the transition area, and take it to air. Fast forward, rewind, and cue to time code are also available at the touch of a button on the control panel.
- **Video Server Control.** Select, play, and monitor server clips by name right from the Synergy 2 control panel. The clip menu keeps track of clips and allows instant recall and cue.
- **Audio Server Control.** Controls the DigiCart™ audio server. Dial up the desired clip and see the name and duration. Use a Custom Control macro button to link audio clips to a switcher or DVE transition.
- **Router Control.** Synergy 2 can connect to several different routers, and even several different *brands* of routers, simultaneously. Any number of the 64 inputs can be assigned as a router input, and setup is fast and easy with our router control menu.
- **Serial Tally Interface.** This option enables Serial Tally Interface using industry standard protocols to Under Monitor Display and Tally Systems.
- **Peripheral Bus II Interface.** This option provides support for Thompson GVG Peripheral Bus II Protocol for external device integration. Coordinate the store and recall of the settings of some still stores, CGs, and device controllers with the store and recall of your Synergy 2 settings.
- **Still Store (Aprisa\*) Interface.** Access any still or clip on your Chyron Aprisa directly, through any of Synergy 2's serial ports.
- **Audio Mixer Interface.** There are two options available, depending on the number of inputs on your audio mixer. Large or small mixers can be controlled serially from your Synergy 2 panel, making an integrated A/V production possible.
- **Robotic Camera System Interface.** Pan, tilt, zoom, and more, directly from your Synergy 2 control panel.
- **Editable Custom Control Macros.** 17 macro buttons (shiftable to 72) have been positioned close to the operator for powerful single touch control. Recall any combination of switcher memories, button pushes, and external device control. The time saving Custom Control editing feature allows you to display the contents of the macro directly on the switcher menu, and insert, delete, or modify events as desired.
- **Two Pattern Generators per MLE - Standard.** The Synergy series comes standard with a primary pattern generator for wipes and PST PATT 1 and a secondary pattern generator for PST PATT 2. The primary generator comes equipped with extensive traditional, rotary, and matrix wipes.
- **Fully Featured "Program/Preset".** We didn't skimp when we designed this switcher. The bottom MLE, normally referred to as the Program/Preset area, has full effects capability including complete wipes and dual DSKs with chroma keys and preset

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\* Chyron Aprisa is a trademark of Chyron Corporation.

patterns.

- **Unique Preview Overlay.** This powerful option presents VTR and video server time code, a count up/down timer, source ID, configurable safe title, and more. They are individually selectable and put on the preview monitor for quick reference.
- **External DVE Integration.** Advanced DVE effects from all popular DVEs are seamlessly integrated as switcher transitions with unmatched ease and power. Not only can a Synergy peel off backgrounds and keys, but it is unique in its ability to pre-key backgrounds and one or two keys together and then peel off the result! The process uses the MLE's third keyer and special layering hardware to make this possible. Even better, Aux Buses, tallies, and video path control are all handled automatically.
- **Minimal Processing Delay.** Synergy has only  $\frac{1}{4}$  line processing delay through the switcher. This is significant in reducing system timing issues.
- **Compact Size.** The 11 RU Synergy frame can hold 64 inputs, 4 fully optioned MLEs, 64 simultaneous channels of aspect ratio conversion, 8 channels of 2D or 3D DVE, 12 timed Aux Buses, an extender board, and full redundant power.
- **Low Power.** A fully loaded frame requires 600 watts - only 200 watts without Aspectizers.
- **Growth Path.** The same video processing frame is used for our 2, 3 and 4 MLE switchers. Buy a smaller system now and then add another MLE and a larger control panel as your needs grow.
- **HDTV Upgrade Path.** The Synergy 2 SD can be upgraded to HDTV by exchanging the SDI electronic chassis for a Synergy MD multi-definition chassis, capable of production in either SD or HD. If an HDTV upgrade path is important to you, please ask your Ross Video representative about our written guarantee.
- **Upgrades from the Web.** Software and even some hardware can be upgraded by downloading files from our web site onto a standard floppy disk. It's fast and it's easy.
- **Affordable.** A powerful switcher at a great price!
- **Built to Last.** It's no secret that Ross products are tough. They're built to handle years of demanding, continuous use. The Synergy series is backed by a comprehensive **3-year transferable** warranty. The design of our fourth generation fader bars is so good, that they are guaranteed for life.

Your purchase decision must be based on a careful look at your present and future programming requirements. To ensure your investment is an informed one, and that the switcher is equipped for your programming needs, Ross Video has put together this Ordering Guide for the Synergy 2. In this guide, we describe the Synergy 2 and its many standard and optional features. As you go through the information, please feel free to call us. We will be happy to address any of your questions.

## Standard Features

### 16 Serial Digital Inputs

The Synergy 2 switcher comes standard with 16 serial digital inputs (optionally expandable in groups of 8 up to 64). Any input can be assigned to any control panel pushbutton - simplifying installation. These inputs can be used for video, alpha channel, or switcher reference. Any serial digital input can be assigned to be the switcher reference. If an analog reference is desired, Ross Video will optionally provide external conversion to digital.

### Two Full MLE Effects Systems

Standard equipment on the Synergy 2 includes two full MLE (Multi-Level Effect) systems. Two wipe generators come standard with every MLE. Both keyers in an MLE can matte fill, key invert, mask, self key, linear key, preset pattern key, and chroma key. Both keyers also offer extensive optional bordering that works with every key type. Of special note is the optional Squeeze & Tease® feature allowing up to two simultaneous squeezes or zooms of any key or full screen image. Each MLE also features five comprehensive matte generators, two of which incorporate noise effects and complex mattes that far exceed traditional wash generators. Full preview is always available to reduce on-air surprises. Don't forget, all of these capabilities are available on both MLEs - including MLE 2, an area often reduced to a mix bus by other manufacturers.

### Four Pattern Generators

There are two primary generators used for wipe transitions and PST PATT 1 and two secondary generators for PST PATT 2. The primary generators come equipped with extensive traditional, rotary, and matrix wipes. The secondary generators provide additional traditional patterns.

### Chroma Keying

Chroma keying is available to every keyer in the switcher - including the downstream keyers. The Synergy 2 is capable of putting up to four different chroma keys on air at the same time.

The chroma keying is of a high quality and features internal 4:4:4 chroma channel interpolation from any of the 4:2:2 inputs.

The chroma keyer provides clip, gain, hue, hue reject, and chroma suppress controls directly on the control panel. Additional chroma suppression, natural shadow insertion, and shadow transparency are available through the menu system.

A "chroma key memory" button is also available on the panel that instantly recalls a previously stored chroma key setup into any keyer.

When the **S2-032: Preview Overlay** option is installed, auto chroma keying is as easy as positioning the crosshairs over the backing and pressing a button!

Chroma key shadows can either be extracted from the source image or simulated using the optional switcher border generators. (Refer to option **S2-x41: Dual Border Generator**).

## 12 Untimed Aux Buses

All twelve of the Aux Buses can be used to route video to monitors, DVEs, still stores, tape machines, technical areas, etc. If any of the destinations require outputs with stable timing regardless of the source, then the option **S2-051: Timed Aux Bus** is required.

The following signals are available on a Synergy 2 Aux Bus:

- Black,
- All primary inputs,
- DVE SEND (if purchased, used to integrate external DVE effects into switcher transitions),
- Clean feed,
- MLE 1 and MLE 2 program outputs.

## 19 Standard Digital Outputs

In addition to the 12 untimed Aux Bus outputs that come standard with the Synergy 2, many program and preview outputs also come standard:

Output Type	Quantity
MLE 1 PGM	1
MLE 1 PV	1
MLE 2 PGM (main PGM)	2
MLE 2 PV	1
Main PV (no overlay)	1
Clean Feed	1
Aux Bus (one per bus)	12
<b>Total Outputs</b>	<b>19</b>

## Two Downstream Keyers

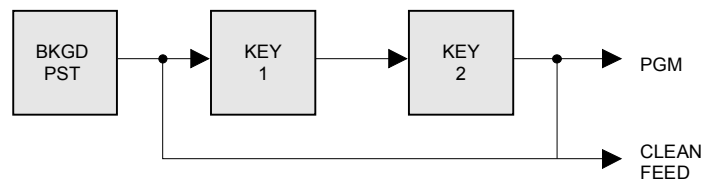
Time, temperature, and bug logos are often added using one or both of the two internal downstream keyers. The keyers have full access to the internal crosspoint matrix making every source available as a downstream key.

## Clean Feed

This feature provides a second “program” output that is derived from a different location than the standard program output. It is used for bilingual and live-to-tape productions. Another frequent application is the recording of shows for later airing without “call in” phone numbers inserted.

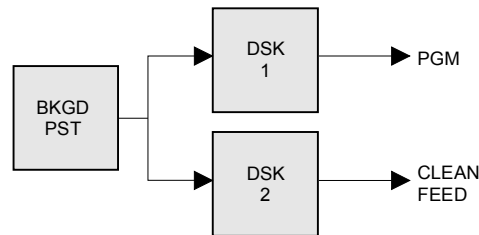
The clean feed output can be generated from many different locations in the video path. It can come from before or after the keyers in any MLE. Refer to the figure on the following page.





*Clean Feed Modes*

For bilingual applications a special “dual output mode” is also provided. This provides DSK1 over the PGM/PST bus on the normal program output and DSK2 over the PGM/PST bus on the clean feed output. The DSKs can be switched independently or configured so that transitions performed on one keyer automatically follow on the other keyer. This allows French/English, English/Spanish, etc. simultaneous broadcasts from a single switcher. Refer to the figure below.



*Clean Feed Dual Output Mode*

Our enhanced clean feed capabilities also allow you to view the alpha feeding a selected keyer on an MLE. The Clean Feed alpha output can be derived from any key type on Key 1 or Key 2 of a selected MLE, or it can be derived from the last selected Chroma key on any keyer on the switcher.

## Disk Drive and System Control Area

This feature makes it possible to store and recall complete switcher setups including memory functions, switcher personalities, installation parameters and more, to a standard high density 3.5 inch floppy disk. The flexibility that this option offers can help save setup times and allows operators to store their switcher setups to their own disks.

Also included in this feature is a large crisp display that is used to configure the switcher and to provide advanced operational features.

## Custom Control Macros

This feature brings the power of macros to the switcher operator. A series of button presses can be easily recorded and attached to any of 17 dedicated buttons (shiftable to 72) close to the operator. Step through complex show openings as easily as pressing Custom Control buttons 1, 2, then 3. Confusing timeline programming is now a thing of the past.

Custom Control buttons can also be used to control remote devices or other optional switcher features.

- Trigger a GPI to advance to the next page of your still store.
- Attach live DVE remote control commands such as go to start, run forward, and run reverse to simplify your productions.
- Play, stop, or shuttle, up to eight VTRs or Video Servers.

- Trigger a DigiCart™ audio server and tie sound effects to wipes and external DVE effects.
- Any number of pauses can be added to any macro.

Custom Control macros can now be viewed and edited directly on the switcher menu.

When the **S2-505: Mnemonics for Custom Control Macros** option is installed, macro names are presented directly above the buttons. This is especially useful when several banks of macros are in use.

## 100 Event Memory System

The Synergy 2 comes standard with storage for 100 complete switcher snapshots. They're easily stored and recalled at the touch of a single button. If you don't want to recall the entire switcher at once (as this might have disastrous consequences on air) you can recall any area of the switcher: MLE 1 or MLE 2 in any combination you want from a keypad dedicated to that MLE.

All of these memories can be stored to disk providing custom tailored memories for every operator and every show.

You can even give your memories names - such as "SPORTS". An alphanumeric display in each MLE will tell you what you've recalled - or what you're about to recall.

## 10 Matte Generators

Each MLE has three simple color generators and two complex ones capable of multi-color washes. Any one of the color generators can be assigned to COLOR BKGD1 or 2, key fill 1 or 2, key border 1 or 2, or wipe pattern edges. Note that each MLE has its own dedicated COLOR BKGD video inputs to make memory recalls of individual MLEs simple and predictable.

## Lots of Displays and Indicators

The Synergy 2 always lets you know what's going on. Bright red lights at the end of every bus quickly show what's on air. Yellow non-sync lights warn you that an input is untimed and might cause problems. Lights under the key transition buttons and in the keyers glow red when the key is on air or green when they are active but the MLE is not on air.

Every auto transition rate is constantly visible - including the main transition rates, the dedicated keyer rates, and the fade to black rate. The last memory number recalled per MLE is also displayed along with an associated eight-character memory name.

## General Purpose Interface

The Synergy 2 is equipped with twelve dedicated GPI inputs and twelve dedicated GPI outputs. The GPI inputs allow the switcher to interface with peripheral equipment such as editors and DVEs. Each GPI input can be used to perform simple editing and switcher functions such as fade to black or an auto transition on one of the switcher's MLEs. For more complex editing capabilities with the switcher, option **S2-060: Editor Interface** is available. GPIs can also be used by DVEs to indicate Aux Bus on air status to the switcher. For more complex DVE integration, refer to option **S2-062: DVE Send and Remote Control**. GPI outputs are used to trigger remote events like "Still Store Next Page" and can be tied to the switcher's Custom Control buttons.

## 36 Tally Outputs

The standard system includes 36 tally relays located in the control panel conveniently close to your monitors. Any tally can be assigned to any video input (or MLE program output) making 36 enough for most systems - even those fully loaded with 64 inputs. As each tally is assignable, more than one tally can be assigned to the same source. This can simplify system cabling in situations like camera tallies in which a tally must be supplied to both the camera itself and the control room monitor wall.

An optional 36 additional tallies can be ordered for red/green preview tally systems and Aux Bus tally systems that require twice as many tallies or for cases where more than 36 inputs must be tallied. See option **S2-070: Extended Tallies**.

## System Manuals

The Synergy 2 comes with a complete set of system documentation that includes an Operation Guide, an Installation Guide, a Maintenance Guide, and a Squeeze & Tease WARP Owner's Guide.

## 10 Meter Control Cable

The Synergy 2 control panel and rack frame are connected by a single, standard 8-pin flat-shielded Telco cable that uses RS-422 communication. The maximum cable length between the control panel and its rack frame is 1,000 feet or 305 meters.

## 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, emergency technical support is available. A telephone answering device will provide the names and phone numbers of technical support and field service personnel who are on call. These people are available to react to any problem and to do whatever is necessary to ensure customer satisfaction.

Although Synergy was designed to be as easy as possible to install and operate, training is *highly* recommended to ensure that the process of taking your Synergy to air is a smooth one.

## Repair and Warranty Policy

The Synergy Series is backed by a comprehensive three-year warranty with the exception of Synergy fader assemblies, which are guaranteed for the life of the product. Our warranty is transferable to subsequent owners. For a more detailed description, please see our warranty document.

## Standard System

**Note**

When ordering, please specify the Ross Part Number listed with the option description.

**Synergy 2****S2-001BC****Digital Production Switcher  
(CLASSIC COLOR buttons)**

Order your Synergy 2 with the distinctive Ross CLASSIC COLOR buttons on the MLEs and keyers - white, yellow, orange, and red/white.

**Synergy 2****S2-001BW****Digital Production Switcher  
(ALL WHITE buttons)**

Order your Synergy 2 with the new Ross ALL WHITE buttons on the MLEs and keyers.

**Note**

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

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

Please see the section titled **Standard Features** for a full description of the Synergy 2 and its many included features.

## System Options

Options are typically ordered when the switcher is purchased. However, if you are not 100% certain which options you will need in the future, you don't need to feel pressured into making that decision today. All of our options can be easily installed in the field. You can take comfort in knowing that you can purchase options as your needs develop and that installation at your site will be a smooth process.

### **Synergy 2**

**S2-002BC**

#### **Control Panel**

##### **(CLASSIC COLOR buttons)**

Order a Synergy 2 Control Panel with the distinctive Ross CLASSIC COLOR buttons on the MLEs and keyers – white, yellow, orange, and red/white.

### **Synergy 2**

**S2-002BW**

#### **Control Panel**

##### **(ALL WHITE buttons)**

Order a Synergy 2 Control Panel with the new Ross ALL WHITE buttons on the MLEs and keyers.

### **USB Removable Media Drive**

**S2-USB**

#### **(Factory-Installed)**

This USB drive replaces the control panel's floppy disk drive, 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. This allows operators and technical staff to back up their switcher setups and easily transfer these settings to other Synergy production switchers.

**Note:** This option requires version 16 or higher Synergy SD software, and version 10 or higher of the control panel CPU board.

### **USB Removable Media Drive - Upgrade**

**S2-USB-UPG**

This USB drive replaces the control panel's floppy disk drive, 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. This allows operators and technical staff to back up their switcher setups and easily transfer these settings to other Synergy production switchers.

Included in this option are the USB Drive, the cable kit, and a USB Memory Key.

**Note:** This option requires version 16 or higher Synergy SD software, and version 10 or higher of the control panel CPU board.

## Mnemonics Controller Board Set

**S2-005**

This pair of circuit boards is a prerequisite for mnemonics on the Synergy 2. Together, they control all of the mnemonic displays in the switcher. Note that this option only needs to be ordered once per switcher to enable mnemonics.

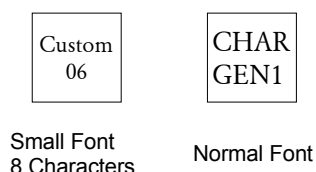
## Mnemonics for MLE Sources

**S2-x05**

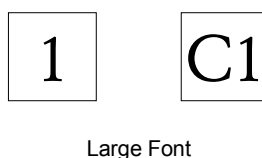
This option puts 17 mnemonic indicators for the display of source names directly above the program (background) bus of the MLE selected. Note that “x” in the model number can be 1, or 2 corresponding to MLE 1 and 2. Any combination of MLEs can have mnemonics installed either in the factory, or retrofitted in the field. (For the 2003 edition control panel only).

Source names can be displayed in three formats, and all formats can be intermixed on a single bus as desired:

- 8 character mnemonics. The full eight-character source name is displayed in two lines, in either small or normal font. If the shift button is pressed, the display changes to the shifted source name.



- 1 or 2 character large font mnemonics. These large characters fill the entire display. This is an ideal way to identify sources like cameras as **1, 2, 3** and VTRs as **A, B, C**.



- Dual six character mnemonics. This uses the small font to simultaneously display the first six characters of the shifted and unshifted source names associated with a crosspoint button. The shifted crosspoint appears in “reverse video” mode.



Mnemonics can be displayed with green, yellow, and orange backlighting, chosen on a source-by-source basis. Backlighting can also turn off for sources that have been deactivated. Source names can also be displayed in normal and inverted (“reverse video”) in all modes. These extensive display appearance choices provide an excellent way of differentiating between source buttons during a live production.

When the **S2-065: Routing Switcher Interface** option is installed, switcher source names are replaced by router source names!

This option is ideal for mobile and other applications where sources are constantly being associated with different crosspoint buttons from one production to another. This option is also useful when it is desirable to simplify a production by showing only those sources that will be used in that production and not all of the sources currently connected to the switcher.

Note that **S2-005: Mnemonics Controller Board Set** must be ordered once to enable mnemonics.

## **Mnemonics for Custom Control Macros**

**S2-505**

This option puts 17 mnemonic indicators for the display of Custom Control macro names directly above the Custom Control macro row of the switcher.

It is common for operators to create and name their own Custom Control macros for a given production. This option allows those customized macros to be named for easy selection.

A very important feature to note is that Synergy supports up to eight banks of Custom Control macros simultaneously. Up to eight macro buttons can be configured as “shift” buttons that change the assignment of all of the other macro buttons. Installing the mnemonics makes this feature considerably easier to use by instantly relabeling all of the Custom Control buttons when a new bank of macros is selected.

All Custom Control macros can have names of up to eight characters, and can be displayed in any of the formats outlined in **S2-x05: Mnemonics for MLE Sources** above.

Mnemonics can be displayed with green, yellow, and orange backlighting, chosen on a macro-by-macro basis. Backlighting can also turn off for macros that are empty. Macro names can also be displayed in normal and inverted (“reverse video”) modes. These extensive display appearance choices provide an excellent way of differentiating between Custom Control buttons during a live production.

Note that **S2-005: Mnemonics Controller Board Set** must be ordered once to enable mnemonics.

## **Panel Serial Port Expander (Adds 3 RS-422 Ports)**

**S2-015**

This option connects to any one of the control panel serial ports, and provides four serial port outputs, effectively increasing the number of available panel ports by three. This is a “smart” port expander and works with the Synergy 2 control panel to seamlessly manage external device traffic.

Each Panel Serial Port Expander allows up to four different device types to be simultaneously connected and independently controlled by Synergy. Multiple Port Expander units may be connected to a Synergy 2 control panel at one time.

The unit is about 4 inches by 6 inches and is designed to easily mount under the console near the Synergy 2 control panel.

**Note:** This option requires version 15 or higher Synergy SD software, and version 10 or higher of the control panel CPU board. Also note that you cannot control a 360 Systems DigiCart audio server using this option.

## Network Still & Clip Server Option (4 Models)

**S2-016-x**

This option adds a fully integrated Still and Clip Server to the system. The -x portion of the part number represents the model of the server that you require.

The following models are available:

Option Number	Description of Network Still and Clip Server
S2-016-N	48 hours of clip storage at 12 Mb/s MPEG-2 compression for NTSC standard
S2-016-P	48 hours of clip storage at 12 Mb/s MPEG-2 compression for PAL standard
S2-016-250-N	100 hours of clip storage at 12 Mb/s MPEG-2 compression for NTSC standard
S2-016-250-P	100 hours of clip storage at 12 Mb/s MPEG-2 compression for PAL standard

The following features are included in all of the above:

- Virtually unlimited still storage, incorporating both key and fill
- Video animation playout with synchronized key and fill
- Animated logo playout with synchronized key and fill
- 2 dedicated playout channels
- 1 record/play channel for live capture and/or additional playout
- Ethernet connectivity allowing drag and drop of stills and clips over a network
- Included Synergy Video Server Control Interface

This option is the result of a collaborative effort between 360 Systems and Ross Video to provide a comprehensive networkable, high storage, clip and still store system solution.

Note that **S2-063: Video Server Control** *is included* with this option and does not need to be purchased separately. Any number of control panel ports are now activated to control this and any other video server that can be controlled using VDCP (Harris/Louth) Protocol.

Unlike other systems on the market, this solution allows totally synchronized key and fill playout of clips, animations, and stills. Add the ability to drop in graphics and animations over a network using simple MPEG or Targa files, and this becomes an extremely practical and attractive package.



## **\$1 Conversion Frame (DFR-8110A, includes One Power Supply)**

**S2-023A**

## **Conversion Frame (DFR-8110A-C, as above with Cooling Fan Unit in Door)**

**S2-023A-C**

All switcher inputs and outputs are 10-bit 4:2:2 serial digital 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.

Ross Video is known as a world-class and competitive supplier of encoders, decoders, A-Ds, and D-As. In order to encourage you to purchase the entire system from Ross, sets of conversion rack frames and power supplies can be purchased for the nominal price of \$1 US each (cooling fan unit extra) according to the following conditions:

- The order for conversion frames is made at the same time as the order for the switcher.
- The number of frames covered is equal to the number of converters ordered, divided by 10, with all fractions rounded up (i.e. 1 converter = 1 frame, 9 converters = 1 frame, 15 converters = 2 frames, etc.).
- Ross products that qualify as converters are as follows:

<b>Converter</b>	<b>Description</b>
ADC-8032B	Analog Composite to SDI Digital Decoder
ADC-8032B-S	Analog Composite to SDI Digital Decoder with Frame Synchronizer
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 Synchronizer
DAC-8016A-SX	SDI to Analog Composite Converter with Frame Synchronizer 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

If your system requires power redundancy don't forget to order an additional power supply per conversion rack frame (PS-8102). These additional power supplies are not included in the \$1 offer. Please obtain a current Ross Video Catalog for detailed information on Ross Video's complete line of converters. You may also want to consult with Ross Video or check out our web site at [www.rossvideo.com](http://www.rossvideo.com) to determine if new converters have been added to our product line since the catalog was released.

**Note**

Ross Video also offers the GearLite™ line of converters. Contact your Ross representative or visit our website to determine the best solution for your needs.

**Standard Input Board****S2-022****8 Additional Serial Digital Inputs**

The Synergy 2 comes standard with 16, 4:2:2 serial digital inputs plus re-entries. All digital inputs can be used direct to air, as key alpha channels, or as chroma key sources.

Additional inputs can be purchased in sets of 8 up to a maximum of 64 serial digital inputs. Therefore, input quantities of 16, 24, 32, 40, 48, 56, and 64 inputs are possible.

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

Conversion to and from serial digital from other formats is sold separately.

**Input Carrier Board****S2-024****8 Additional Inputs w/ Option Slots**

The Input Carrier Board is an input board as described above that adds 8 inputs and has 4 option card slots. The option card slots can hold any combination of up to 4 Dual Channel Aspectizers® or Ultimatte® Insider™ Matting Devices. Input Carrier Boards have a built-in assignment Matrix that allows any of the 8 inputs to be routed to any of the option cards on that Input Carrier Board. This allows sharing of Aspectizers and Ultimatte Insiders.

**Downstream Keyer (3<sup>rd</sup> DSK) – Card Only****S2-501**

This option adds a third downstream keyer to the standard internal DSKs, and requires the purchase of a 2-rack unit **S2-023A-C: Conversion Frame** and single power supply. (For redundant power purchase a PS-8102 power supply).

Note that this downstream keyer has access to every Synergy video source, and also has internal storage for bugs and animated logos.

**Downstream Keyer (4<sup>th</sup> DSK) – Card Only****S2-502**

This option adds a fourth downstream keyer to the rack frame purchased with the **S2-501: Downstream Keyer (3<sup>rd</sup> DSK)** above.

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\* Ultimatte is a trademark of Ultimatte Corporation.

Note that this downstream keyer has access to every Synergy video source, and also has internal storage for bugs and animated logos.

## **Dual Channel Aspectizer®**

**S2-027**

The Dual Channel Aspectizer allows the user to perform live, dual aspect ratio, DTV production *inside* a Synergy system. Each Aspectizer can be configured in one of three modes; Input Mode, to convert the aspect ratio of 2 separate channels (sources) of video; Bus Mode, to convert the aspect ratio of all of the inputs on a BKGD/PST bus-pair of an MLE; and Downstream Mode, to provide a second switcher output with a different aspect ratio for delivery to two transmission towers – one 4:3 and the other 16:9. This option may require the purchase of an additional Input Carrier Board.

The Aspectizer provides the following features:

- full 10 bit processing with broadcast quality horizontal and vertical interpolation,
- conversion of 4:3 aspect ratio images to 16:9 aspect ratio images using the following methods:
  - Pillar box
  - 14:9
  - 14:9 wide
  - Vertical “Pan-and-Scan”
- conversion of 16:9 aspect ratio images to 4:3 aspect ratio images using the following methods:
  - Letter box
  - 14:9
  - 14:9 tall
  - Horizontal “Pan-and-Scan”

Six of the Aspectizer looks can be repositioned on screen, either vertically or horizontally depending on the look, to give you more real estate for additional flexibility.

The whole issue of dual aspect ratio production can be quite complex, especially considering the great number of format names currently being used. If you are unsure on any issue, please contact your Ross Video representative who will be pleased to review your production requirements and assist you in configuring your system. We also have additional literature available on the topic.

In general, the Aspectizer supports the 525, 625, 270Mb/s anamorphic 16:9, 270Mb/s 14:9, 480i formats, several of which mean the same thing.

## **Ultimatte Insider™ Matting Device**

**S2-028**

The Synergy 2 comes standard with 4 quality chroma keyers, 1 in each of the MLE keyers and one in each of DSK 1 and DSK 2. For super critical keying applications, the Ultimatte Insider Matting Device is available. The Ultimatte Insider is manufactured by Ultimatte Corporation and integrated within Synergy by Ross. This option requires the purchase of an additional Input Carrier Board.

## **Preview Overlay**

**S2-032**

This option makes it possible to present various types of useful information on one of the two main preview outputs.

This information is color-coded and can be positioned and displayed according to user preferences. Three different sizes of text are selectable and can be individually assigned to each type of information.

There are eight buttons in the Preview Overlay area of the switcher panel to control and display the following types of information:

#### **Source Identification**

Source ID is up to 8 characters and displays the name of the current background video, current preset video and transition type. It will show this information for MLE 1 or MLE 2 as selected on the Main Preview Output. An example follows: “CAM1 -W-> CHAR GEN”, indicates Camera 1 is on air and a wipe transition to Character Generator will be initiated by moving the fader handle or pressing the auto transition button.

When the **S2-065: Routing Switcher Interface** option is installed, router source names are displayed in addition to switcher source names.

#### **VTR Time Code**

If a VTR, disk recorder, Video Server, or other device using a time code is the current background of your main preview output, its current time code will be displayed (e.g., 12:59:59:23). The device's remote port must be connected to the switcher and Option **S2-061: VTR Remote Control** and/or Option **S2-063: Video Server Control** must also be purchased.

#### **Configurable Safe Title and Safe Area**

This places a SMPTE standard safe title and safe area indication over the main preview output that can be configured and adapted to fit your specific application. Safe title is a box that outlines the area within which the vast majority of home TV sets will be able to read text. Safe area is a box that outlines the region within which viewers should be able to follow action. Two horizontal lines inside the box indicate the minimum size that text should be to ensure that it is legible on nearly all sizes of television receivers.

#### **Center Cross Hairs**

This places cross hairs on the main preview output to indicate the center of the picture. It is useful in the alignment of text and other information.

#### **Time Clock**

This places a count down, count up, or count down then up timer on the main preview output to time commercial durations or other events. Custom Control buttons on the switcher panel can be assigned to reset, start, stop, or set the clock in addition to the menu controls. A particularly useful feature of this clock is the “auto clock” mode, which resets and starts the clock every time a transition (e.g., cut or auto transition) occurs on air. This is ideal as a show or segment timer.

#### **Mask Preview**

This places a thin outline on the main preview output around any active box mask. The AREA buttons in the effects control area determine which box mask is currently being viewed.

And more!!! The Preview Overlay option works in conjunction with the chroma keyer, providing backing selection crosshairs for auto chroma keying, and also works with S&T WARP's StillStore to grab small regions of the screen.

## **Squeeze & Tease® 2D**

**S2-x40**

One Squeeze & Tease 2D option puts the power of a simple 2D DVE into both keyers and the transition area of an MLE. Squeeze & Tease (either 2D or WARP) is an extremely popular option that is sold with almost every Ross digital switcher. It is available for all MLEs including the DSK area. The "x" in the Ross part number refers to the MLE into which it should be factory installed (i.e., S2-240 refers to MLE 2). It is a very simple matter to later move this option to another MLE if you change your mind.

The Synergy 2 can be ordered with up to two Squeeze & Tease (either 2D or WARP) options - putting a DVE into every keyer. This incorporates the power of up to 4 DVEs into the switcher.

One Squeeze & Tease 2D option can do the following effects using only one keyer:

- squeeze, crop, and reposition an image with a variable-sized colored border;
- squeeze, crop, and reposition a self key;
- squeeze, crop, and reposition a chroma key;
- squeeze, crop, and reposition an auto select key (note: this function "steals" the other keyer's S&T to process the alpha signal. The other keyer is otherwise unaffected);
- push on and push off any type of key as a transition.

Either full screen video or keys can be frozen at the touch of a button. This puts the power of a frame store into every keyer. If full screen video is frozen, it can be used as a background to the other keyer in the MLE. Alternatively, a character generator key can be frozen to free up your character generator for further key generation.

The Squeeze & Tease 2D is very easy to control and most effects can be produced simply by pressing the Fly Key button, and then using the 3-axis joystick. Further tweaks can be made through the menu system.

All Squeeze & Tease 2D effects can be subsequently bordered using the keyer's optional border generator.

Squeeze & Tease 2D wipes also become activated when you buy this option. These are built-in DVE effects that can transition backgrounds or keys. If a key is already being modified by Squeeze & Tease 2D, the transition effect is added "on top" for the duration of the transition. Squeeze & Tease 2D transitions are selected by pressing the WIPE and DVE SEND transition buttons at the same time. The pattern area acts as a "shot box" where you can select at least 40 types of effects such as push, squeeze, tumble, and swoop.

## **Squeeze & Tease® WARP**

**S2-x42A**



Squeeze & Tease WARP is the latest in built-in switcher digital effects from Ross Video. S&T WARP puts a fully loaded 3D DVE with curvilinear effects into both keyers and the transition area of an MLE. The picture quality is simply stunning and we think you'll agree that this is our best Squeeze & Tease DVE yet! **This is a "MUST HAVE" option!**

The Synergy 2 can be ordered with up to two Squeeze & Tease WARP options - putting a DVE into every keyer. This incorporates the power of up to four DVEs into the switcher.

Squeeze & Tease is an extremely popular option that is sold with almost every Ross digital switcher. It is available for all MLEs including the DSK area. The “x” in Ross’ part number refers to the MLE into which it should be factory installed (i.e. S2-242 refers to MLE 2). It is a very simple matter to later move this option to another MLE if you change your mind. Note that any combination of Squeeze & Tease card types (2D, 3D, and Warp) can be installed in Synergy simultaneously.

**Fly ANY kind of key!** Pressing the FLY KEY button easily activates Squeeze & Tease WARP allowing you to transform self keys, linear keys, and chroma keys. You are automatically taken into a comprehensive and intuitive user menu, where you can set up your desired effects. If you prefer, the 3-axis joystick can also be used to adjust your key’s parameters.

### ***Still Stores and Frame Stores***

The on board, dual channel, 32MB (30 – 512 frames, dependant upon image size) still store allows you to capture graphics or stills and have them available in S&T at a moment’s notice. All images load in 1/15 of a second or less! The on-board still store allows you to quickly grab a full frame or just a small region like a CG “lower third” or a “bug”, extending your storage capability. All images are stored as frames but can be displayed in field mode if the capture involves a moving object. Up to 4 channels of still store are available on a Synergy 2.

When capturing images, you can also hold 2 images in the quick and simple frame store, OR you can name them and store them into non-volatile “flash” memory to be used again and again.

### ***Preprocessor Effects***

Preprocessor effects include wide range defocus with separate H and V controls, mosaic, posterization, colorization, and a strobe effect that allows you to vary the number of on and off frames to provide enhanced creative possibilities. All preprocessor effects are available simultaneously and can be combined in any combination.

### ***Planar Transforms with Lighting***

Squeeze & Tease WARP has dedicated circuitry incorporating 10-bit processing, superb filtering, and full sub-pixel resolution to manipulate 2D images in 3D space with crystal clear quality.

Planar transforms include squeeze or zoom, crop, reposition, aspect, and rotate. These effects can be applied to images and keys.

All images and keys can also have realistic natural lighting applied to them. Squeeze & Tease WARP makes it easy with “quick presets”, a positionable light source, and powerful ambient and min/max lighting controls.

### ***Advanced Picture Frame Generator***

Squeeze & Tease WARP can add a picture frame to border over the shoulder boxes. This variable width border perfectly tracks all image resizing and special effects. The picture frame generator instantly adds a polished, professional look to your squeeze backs.

This picture frame can be the simple, single color type, or one of many fancy picture frame effects including roman column, tubular, beveled, computer style, tri-color, and more. These picture frame effects have the following adjustable controls:

- hard or variable edge softness
- edge width/scaling
- inside/outside edge softness symmetry
- diagonal, horizontal, and vertical corner joint selection
- full control of all three picture frame color generators.

An additional transparent shadow effect can be added behind all Squeeze & Tease WARP effects using the Dual Border Generator option. This is an ideal tool to work in conjunction with the picture frame generator built into Squeeze & Tease.

### **Advanced Planar Controls**

The following advanced controls make building the ideal look for your show just that much easier:

- **Front Side/Back Side** in one channel and one keyer. When you look at the backside of an effect, you can have it automatically select a different video signal on the key bus. This makes it possible, for example, to rotate between 2 channels of still store in an over the shoulder box in a single keyer, using only 1 channel of S&T WARP.
- **Auto Flip.** When you rotate an image in normal mode, the backside appears upside down or mirrored. Turning on Auto Flip ensures that the front side of an image is always presented. This is great for the manipulation of still store and CG text.
- **Internal Key Combiner.** Two squeeze backs can be combined and displayed in a single keyer. This effectively adds yet another keyer to the Synergy MLE.
- **Key Combiner Priority Control.** Getting the channels the way you want them is easy with S&T WARP. When two squeeze backs are combined in a single keyer, you can choose channel one on top, channel two on top, auto-priority, or intersecting planes. Auto-priority automatically puts the correct channel on top based on their relative positions in 3D space. With the intersecting planes choice, one channel will literally cut into another channel hiding the portion that is hidden behind it.
- **Easy Slabs and Objects.** Squeeze & Tease WARP provides a simple and intuitive user interface to combine two planes into a slab and then manipulate it as a single object. S&T WARP deals with the math and you get a great looking slab the way you want it within seconds.

### **Warp Effects**

Warp effects include page turn, ripple, wave, swirl, melt, twist, slats, splits, sphere, lens, magnifier, star, heart, old film, shards, corner pinning, lens flare, and many more.

Creative possibilities are endless as S&T WARP effects can be easily combined with preprocessor, planar transformation, lighting, and picture frame effects!

All of the S&T WARP effects are user modifiable to help you get just the look you want.

### **Pre-Built Effects, User-Built Timelines, and Key Sequences**

Squeeze & Tease WARP wipes are selected in a single action by pressing the WIPE and DVE SEND button (or DISS, WIPE, and DVE SEND for a key sequence) in the transition area. Up to 100 wipes can be stored in the system at any time. The pattern area acts as a

“shot box”, where you can select from 40 of these 100 pre-built planar and warp transitions. The other 60 transitions can be loaded from the keypad.

These 100 transitions can be loaded from a floppy disk (supplied by Ross) containing 80 pre-programmed transitions and effects. Other wipes and transitions will be available by download from our web site. You can then modify these or you can create your own! Either backgrounds or keys can be transitioned and, if a key is already being manipulated by Squeeze & Tease WARP, the transition effect is added “on top” for the duration of the transition. You can even create sequences that transform a key in a keyer under manual fader control!

## **Dual Border Generator**

**S2-x41**

This option provides dynamic border, shadow, and outline effects to both keyers in an MLE with either hard or “glowing” edges. You can then move the border to any position on the screen - even above the key. Borders are “flown” in real time with the joystick in the same manner as wipe patterns and DVE effects. This border generator was designed as a creative tool and it can add an impressive visual impact to your keys.

All border edge effects can be modified through the parameters of x and y position, border size, border color (including color washes), density, and glow (giving a soft defocused look).

The border generator can enhance any kind of switcher key including self keys, linear keys, chroma keys, and preset pattern keys. In Synergy, borders are particularly effective for enhancing Squeeze & Tease over the shoulder boxes making them appear to “float” over their backgrounds.

## **Timed Aux Bus**

**S2-051**

Untimed Aux Buses will follow the timing of the input sources or re-entries with a short additional processing delay. Re-entries will have progressively larger delays depending upon where they are in the cascade (i.e. MLE 2 will have more delay than MLE 1). You may, therefore, wish to time some (or all) of your Aux Buses.

Timed Aux Buses will ensure that all “synchronous” sources will have stable timing relative to the switcher’s program output. This greatly simplifies D-A conversion and system timing design. A “synchronous” source is defined as one within +/- one-quarter line of the switcher reference. Sources outside of this timing window will remain horizontally locked but may be shifted vertically.

## **Dedicated Remote Aux Panel (includes 10 meter cable)**

**S2-052A**

One set of pushbuttons on the main control panel is shared among all 12 Aux Buses through assignment buttons. When control of any single Aux Bus is needed either for permanent direct access or for a remote location, a dedicated remote aux panel is required.

A remote panel is a self-contained unit that has its own power supply. It is designed to be mounted in a 19-inch rack and fills 1 RU. Pushbuttons on the remote panel allow direct access to 17 source buttons, DVE send, the MLE outputs, and clean feed. A shift button can be used to access any remaining inputs. The remote panel is connected to the switcher’s control panel via a single six conductor Telco control cable. It can also loop through



another remote panel. See the **Specifications** section at the back of this guide for a picture of a dedicated remote Aux panel.

### **Assignable Remote Aux Panel (includes 10 meter cable)**

**S2-053A**

One set of pushbuttons on the main control panel is shared among all 12 Aux Buses through assignment buttons. When control of multiple Aux Buses is needed either for permanent direct access or for a remote location, an assignable remote aux panel is required.

A remote panel is a self-contained unit that has its own power supply. It is designed to be mounted in a 19-inch rack and fills 1 RU. Pushbuttons on the remote panel allow direct access to 17 source buttons, DVE send, the MLE outputs, and clean feed. A shift button can be used to access any remaining inputs. The remote panel is connected to the switcher's control panel via a single six conductor Telco control cable. It can also loop through another remote panel.

This assignable control panel offers access to Aux Buses 1 through 4, 5 through 8, or 9 through 12. Buttons on the remote aux panel determine which third of the switcher's Aux Buses are currently being selected. See the **Specifications** section at the back of this guide for a picture of an assignable remote Aux panel.

### **Custom Cable for Aux Panel (sold by the meter)**

**S2-054-xxx**

Remote Aux panels come standard with a 10-meter control cable. If lengths of other than 10 meters are needed, this option is required. The -xxx portion of the part number represents the total cable length in meters.

For example: 2 seven-meter cables and one 20- meter cable are required. Order:

- quantity 2 of S2-054-007, and
- quantity 1 of S2-054-020.

### **Editor Interface**

**S2-060**

It is common to use an editor to control a video production switcher. With the editor interface option, the Synergy 2 can interface to all popular editing systems. Any MLE or combination of MLEs can be controlled using an RS-232 or RS-422 interface and industry-standard GVG\* 100 or 4000 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 complete control of all switcher parameters from an editor or remote device is necessary, this option is required.

Note that GPI triggers come standard with the Synergy 2 and can be assigned to press any cut or auto transition button on the control panel.

### **VTR Remote Control**

**S2-061**

This option makes it possible to control VTRs, disk recorders, video servers, or other devices that use the near-universal Sony Betacam protocol - directly from the switcher panel.

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\* GVG is a trademark of Thomson Multimedia.

Each MLE's transition area has a ROLL VTR button. When that button is pressed, a play command is sent to the device selected on the preset bus. Once the preroll time is over, the operator takes the source to air - with precise timing guaranteed. The ROLL VTR button can also be assigned to "arm" the cut and auto transition buttons. In this mode, pressing the cut and auto buttons will roll the VTR on preset, wait the preroll time associated with that device, and *then* proceed with the transition.

The VTR CLIP button in the Global Memory System area is used to cue up the next VTR. Each clip memory has an associated device (e.g., VTR RED) and a stored time code. Frequently used video clips can be accessed over and over at the touch of a button.

VTR Remote Control can also be tied into the Custom Control buttons. Any Custom Control button can be attached to functions such as cue to time code, play, stop, rewind, fast forward, frame advance, gang roll, and more.

## **DVE Send and Remote Control**

## **S2-062**

The Synergy series of switchers was designed to work with most popular brands of DVEs seamlessly as if they were part of the switcher during on air production. The DVE Send and Remote Control option makes this possible.

It's as easy as selecting the next transition (BKGD, BKGD and key, or key), the DVE SEND transition type (as opposed to wipe or dissolve), and pressing the auto transition button. Transitions do not consume a keyer, as there is a third hidden keyer in each MLE just for DVE re-entries. The switcher also handles all Aux Bus and signal routing issues automatically.

Depending upon the capabilities of the DVE, transitions can also be run manually with the fader bar.

DVE effects can be recalled directly using the RECALL DVE button in the Global Memory System area. DVE effects can also be recalled along with an MLE memory recall by pressing the INCL DVE buttons.

To top it off, your tallies will always be correct - regardless of the complexity of the video signal routing.

## **Video Server Control**

## **S2-063**

This is a very powerful interface. It allows control of video servers using the VDCP (Louth) Protocol. Clip name and duration are displayed in the Synergy System Control Area. The Video Server interface can be used to cue and roll clips that are used during a live production. This is ideal for commonly used clips such as opening animations and animated backgrounds that are used again and again.

While setting up a clip for later recall, Synergy can download up to 1000 clip ID's from the server and then sort them alphanumerically. The user then easily chooses the clip for later recall. The server clips can also be chosen directly by name. Once chosen, in points and out points can be added to the clip on Synergy without affecting the original clip on the server. This is done while moving through the video in real time. A constantly updated bar graph summarizes the process. The current time code is also displayed on the preview overlay if

that option was purchased. Finally, the clip can be given a unique name on Synergy to simplify later recall.

During a live production, clips from any device can be cued directly from the Global Memory keypad. Clips for a particular server channel can be accessed by selecting the channel on a preset bus, and then choosing from a list of named Synergy clips. The dedicated menu for that server channel also provides controls for cue, play, stop, fast forward, and rewind.

## Audio Server Control (8 Channels)

**S2-064**

The Audio Server Control option enables control for up to eight 360 Systems DigiCart<sup>™</sup> Audio Servers. This interface uses the DigiCart native protocol and allows the Synergy operator to dial up the hard drive, directory and clip number.

The clip name and duration is displayed on the Synergy System Control Area. Clips can be saved into a clip list and recalled instantly with VTR and Video Server Clips. Using Custom Control Macros, audio clips can be tied to video effects for the *whoosh on page turn* and other effect types.

**Note:** You cannot control a 360 Systems DigiCart Audio Server using the Remote Serial Port Expander.

## Routing Switcher Interface

**S2-065**

This option adds routing switcher interface capability to your Synergy digital production switcher.

Any number of Synergy's 64 inputs can be assigned as a router input. When you select a source fed by a router on the program or preset bus, the router control menu automatically appears. The router menu shows Synergy's name for the source (e.g., ROUTER1) and the router's name for the source (e.g., VTR12). The router menu also displays every source available on that router by name and by router input number. The menu knobs allow for fast access to every available source. A single button push automatically assigns the chosen source to Synergy.

The Preview Overlay also comes into play with routers. When the Source ID display is active on the preview monitor, router sources selected on the background or preset buses are given extra identification. In the example above, Synergy would display both the name ROUTER 1 and VTR 12 to give the full picture of the source's origins.

In the same example with the Mnemonics option installed, Synergy replaces the pre-programmed Synergy name (ROUTER 1) with the router's name of the source (VTR 12) on the crosspoint's mnemonic display. This provides easy identification of all inputs coming from your router.

Synergy can connect to multiple different routers, and even multiple different brands of routers, *simultaneously*. The following router protocols are just a few which become available with the purchase of this option, and are selectable via the switcher menu system:

- Ross Routing Systems
- Pesa
- Pro-Bel
- Utah Scientific

- Quartz
- Philips
- Extron System 8/10

Call for a list of all currently supported routers, or view the Synergy Interface List on our web site. If your router is not on the list, please contact your Ross sales representative as new routers are being added all the time.

### **Serial Tally Interface**

**S2-066**

This enables Serial Tally Interface using industry standard protocols to Under Monitor Display and Tally Systems. The standard parallel tally interface will continue to operate normally when this option is enabled.

### **Peripheral Bus II Interface**

**S2-067**

This enables support for Thomson GVG Peripheral Bus II Protocol for external device integration. Devices that support this protocol (such as some still stores, CGs, and device controllers) will be directed to store their settings when Synergy stores its settings and then do a coordinated recall when Synergy performs a recall.

### **Still Store (Aprisa) Interface**

**S2-068**

This enables serial ports for control over the Chyron Aprisa Still & Clipstore. It allows a user to randomly access any still or clip under control from Synergy. Custom Control macros can also be created for quick and direct access to clips and switcher scene recalls.

### **Audio Mixer Ganging**

**S2-0610-G**

This option provides the protocol converters required to control a pair of cascaded Yamaha audio mixers simultaneously. Either the Small Audio Mixer Interface option or the Large Audio Mixer Interface option must also be purchased.

**Note:** This option includes the MIDIator Systems MS-124W converter box and adapter, and the Midi Merger unit.

### **Small Audio Mixer Interface (16 and fewer Inputs)**

**S2-0611**

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

Synergy goes far beyond simple audio-follow-video. It allows for easy audio over, easy attachment of several audio sources to one video source, and quick level control of master and individual audio levels. Even audio voice-over control directly from the Synergy control panel is possible.

It is possible to purchase the small but powerful Yamaha 01V96 audio mixer console through any Ross Video distributor. This mixer has up to 16 analog inputs, 16 digital inputs, and a proven interface to our production switchers. Call for the list of other currently supported mixers.

**Note:** This option includes the MIDIator converter box and adapter.

## **Large Audio Mixer Interface (more than 16 Inputs)**

**S2-0612**

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

Synergy goes far beyond simple audio-follow-video. It allows for easy audio over, easy attachment of several audio sources to one video source, and quick level control of master and individual audio levels. Even audio voice-over control directly from the Synergy control panel is possible.

Call for the list of currently supported mixers.

**Note:** This option includes an 8-pin Mini DIN to DB-9 RS-422 cable for communication between the audio mixer and Synergy.

## **Robotic Camera System Interface**

**S2-0613**

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

Call for the list of currently supported robotic camera systems.

## **Character Generator Interface**

**S2-0614**

This option allows you to control your CG directly from the Synergy control panel. Using the keyboard attached to the switcher you can load pages, view the text on the control panel display, and even change the text directly on the CG. Fixing typos has never been easier! As well, you can load and view playlists, move pages within playlists, and set up custom control macros to instantly load frequently used CG pages such as “Breaking News”, “Coming Up At Six”, or talent names.

## **Monitor Wall Interface Option**

**S2-0616**

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

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

Call for the list of currently supported Monitor Walls.

## **Extended Tallies (37-72 or Preview)**

**S2-070**

The standard system includes 36 tally relays. Any tally can be assigned to any video input (or MLE program output) making 36 enough for most systems - even those fully loaded with 64 inputs. An optional 36 additional tallies (bringing the total number of tallies to 72) can be ordered for red/green preview tally systems and Aux Bus tally systems that require twice as many tallies or for cases where every single input must be tallied.

A preview tally system has a “red” output indicating that a source is on air and a “green” output indicating that a source has been selected on a preset bus. This gives the talent an

additional warning as to the director's next move. "Green" tallies require the purchase of the Extended Tallies option.

## **Redundant Power (Frame and Panel)**

### **S2-071A**

The redundant power supply option provides protection against AC power failure. It allows the switcher to receive power from two independent power sources. Complete failure of one source will not affect the operation of the switcher in the slightest. If the main AC power fails, the switcher instantly draws power from the remaining source. The transition from one power source to the other is totally transparent and has no affect on the switcher's output; a critical feature should one power source fail during an on air broadcast.

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

- loss of redundant power in the rack frame,
- loss of redundant power in the control panel.

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

- All okay
- Supply 1 failure
- Supply 2 failure
- Cooling fan failure

Adding redundant power does not increase the amount of rack space required by the switcher. It mounts inside the main electronics chassis.

## **Extender Board**

### **S2-072**

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

All of the video processing boards in the Synergy switcher are mounted horizontally, not vertically, making them convenient to work on.

#### **Note**

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

## **Spare Parts Kit**

### **S2-073**

It would be far too expensive to put every switcher part in the Spare Parts Kit. Parts were chosen for the kit using 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.

ICs that fall outside of the above criteria are not included.

An exception to the above criteria is rack frame and control panel power supplies. These are expensive parts and spares are ordered separately.

### **Critical Spare Boards Kit**

**S2-074**

This is a package of critical boards for which there is no redundancy within the Synergy Switcher. It includes:

- Frame Controller Board (Main Chassis CPU)
- Aux Bus Board
- MLE Carrier Board
- Panel Controller Board (Control Panel CPU)

### **Custom Cable for Main Panel**

**S2-075-xxx**

#### **(sold by the meter)**

This cable connects the control panel to the electronics rack frame. It is a shielded 8-pin Telco cable and the ends are finished with the appropriate connectors. The control panel and rack frame can be separated by a maximum of 300 meters.

The switcher comes standard with a 10-meter control panel cable. If lengths of other than 10 meters are needed, this option is required. The -xxx portion of the part number represents the total cable length in meters.

For example: a 50-meter control panel cable is required. Order:

- quantity 1 of S2-075-050.

### **Redundant Power (Control Panel only)**

**S2-076A**

Redundant power for those who have upgraded their panel and already have redundant power in their frame.

### **Additional Maintenance Guide**

**S2-080**

This manual provides information regarding the maintenance of the Synergy 2 control panel and chassis. It also includes the procedures for installing various options.

### **Additional Operation Guide**

**S2-081**

#### **(Includes S&T WARP Owner's Guide)**

These manuals contain all of the information required to run the switcher on a day-to-day basis.

### **Additional Installation Guide**

**S2-082**

This manual contains instructions on how to install the switcher into a facility. It explains how to connect external devices to the switcher. It also covers after-sale option installation.

### **Synergy Onsite Operational Training**

**S2-090**

#### **- 1<sup>ST</sup> Day**

Training courses can be conducted at the customer's site or at Ross facilities. Expenses are included in North America. A minimum of four weeks advance notice is required for training to ensure we can efficiently schedule the best possible training staff for your requirements. Onsite training is provided on customer's switcher.

Customers are not charged for the travel time of the trainer.

### **Synergy Onsite Operational Training**

**S2-091**

#### **- Additional Day**

One full day of training on the Synergy 2 will meet most customer needs. Additional time may be required to handle multiple training groups or if the operators have never used a production switcher before.

### **Synergy Onsite Technical Training**

**S2-092**

#### **- Two Days**

With Synergy onsite technical training, the customer's technical staff is introduced to the following:

- Basic operation
- Switcher installation and configuration
- Peripheral interfacing
- Video signal flow
- System timing requirements
- Circuit block diagrams
- Circuit board overviews
- Jumpers and indicators
- Troubleshooting tips
- Software upgrading
- Routine maintenance

### **Synergy Onsite Commissioning**

**S2-093**

#### **- Two Days**

Synergy Onsite Commissioning is a great way to ensure that your Synergy is properly installed into your facility and tuned to maximum performance.

Once the customer has installed and cabled the equipment, a Ross Commissioning expert will come on site to get the switcher configured, verify that all peripheral interfaces are operating properly, provide a basic technical orientation, and help you get on the air.

Please note that commissioning does not replace operator or technical training. Contact your Ross representative to discuss which types of assistance are best suited to your needs.

### **Synergy 2 Extended Warranty**

**S2-999**

#### **(adds one year)**

This extends the standard three-year warranty by one year.



## Specifications

### Physical Characteristics

#### Control Panel

Width	36.875" (93.8 cm)
Height	11.25" (28.6 cm)
Depth	22.375" (56.8 cm)
Height above desktop	9.0" (22.9 cm)
Primary pushbuttons	17

#### Desk Cutout Size

Width	35.5" (90.2 cm)
Depth	21.25" (54.0 cm)

#### Rack Frame

Width	19" (48.3 cm)
Height (11 RUs)	19.5" (49.5 cm)
Depth	19.25" (48.9 cm)

### Rack Frame Connector Types

Video	BNC Type
Editor	D type, 9 pin
Peripheral 1 & 2	D type, 9 pin
DVE 1 & 2	D type, 9 pin
GPI I/O	D type, 25 pin
To control panel	8 pin shielded Telco
AC power (primary and redundant)	3 pin IEC

## Control Panel Connector Types

Peripheral 1 through 8	D type, 9 pin
Tally out 1 through 4	D type, 25 pin
To rack frame	8 pin shielded Telco
AC power 1 & 2	3 pin IEC

## Power Consumption

Input voltage	90V~250V AC, 47~63Hz
Control panel	250 VA
Frame (with no options)	175 VA
Frame (with all options)	600 VA

## Environmental Characteristics

Panel and rack frame separation	1000 ft (305 m) max
Ambient temperature range	0 – 40 degrees C

- The video processing circuitry is cooled by three fans using side-to-side airflow. The power supplies have independent fan cooling using bottom to top airflow with intakes and vents at the side.
- The control panel is convection cooled (no fans) for silent operation.

## Video Characteristics

### Video Processing

- 10 bit 4:2:2 component digital video and key processing
- 256 levels of key transparency
- 525/625 line support, auto detect
- 4:3 and anamorphic 16:9 switchable aspect ratio.

### Video Inputs

Number of inputs	16, 24, 32, 40, 48, 56, or 64
Equalization	> 150 m
Impedance	75 ohm, terminating
Return loss	> 20 dB

- All inputs are SMPTE-259M-C serial digital non-looping.
- The Synergy 2 comes standard with 16 inputs and additional inputs are purchased in sets of 8.
- Inputs can be used for either key or video.
- The reference input is SMPTE-259M-C and is chosen as one of the standard inputs. External A-D conversion is required for analog references.

## Video Outputs

Number of Outputs:

MLE 1 PGM	1 each
MLE 1 PV	1 each
MLE 2 PGM (main PGM)	2
MLE 2 PV	1
Main PV without overlay	1
Main PV with overlay (option)	1
Clean feed	1
Expansion (future use)	4
Aux Bus (1 to 12)	1 per bus

Output Characteristics:

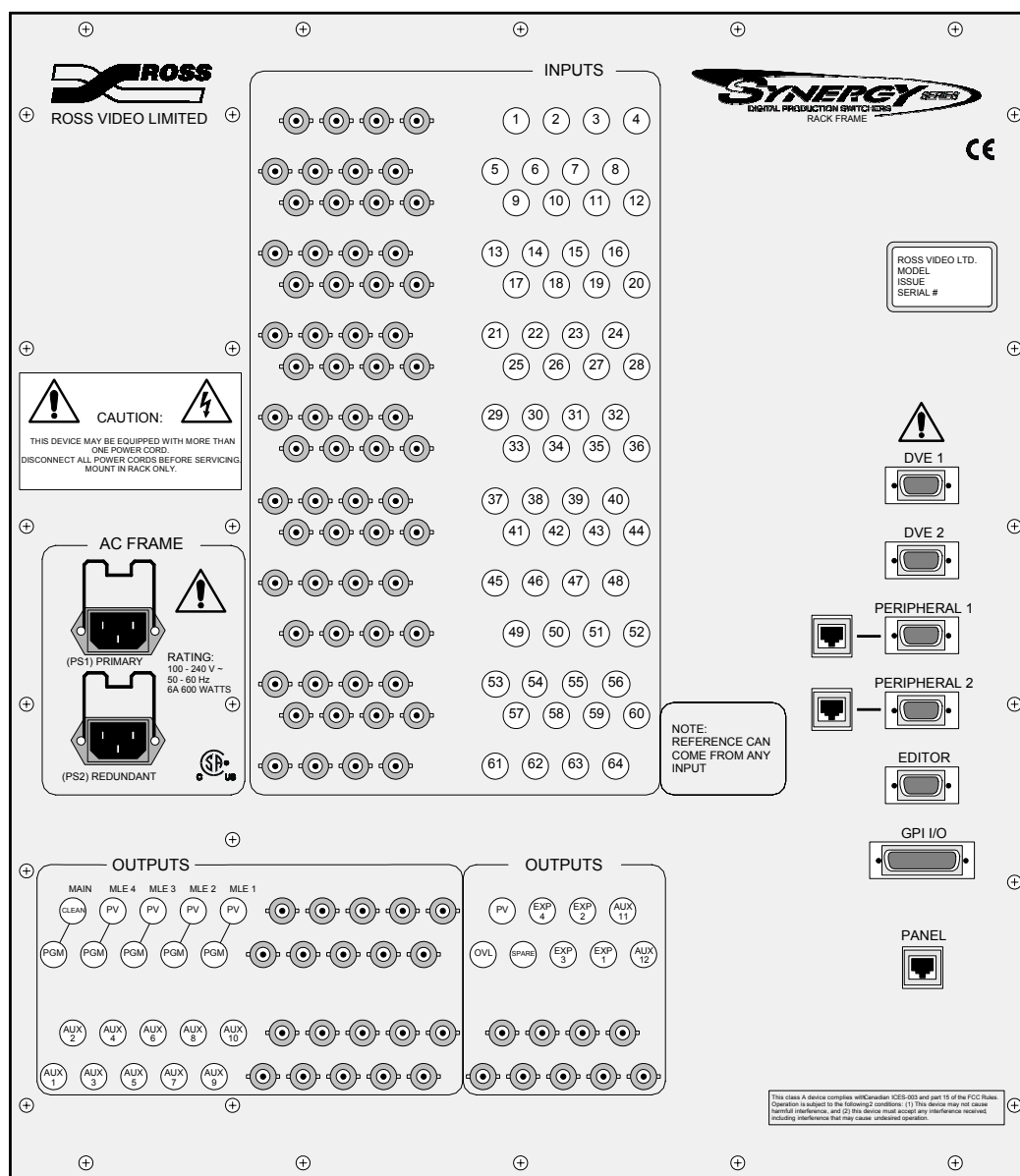
Return loss	> 18 dB @ 270 MHz
Rise time	800 ps +/- 10%
Signal level	800 mV +/- 10%
DC offset	0 volts
Rise and fall time	1 ns (20 – 80%)
Overshoot	< 8%

- 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.

## System Timing

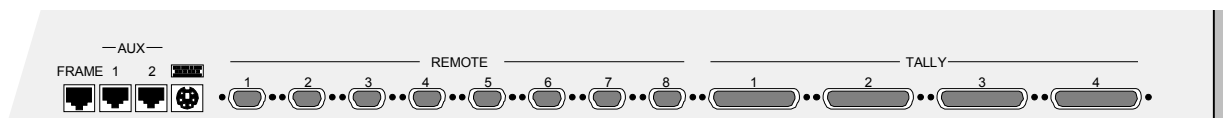
- All video inputs zero time relative to reference input, auto timing will correct for inputs out of time by up to +/- 0.25 line (16us).
- The delay through the switcher is less than one-quarter line (approx. 12us). This delay can be manually increased in 37ns steps to a maximum of 32us in order to accommodate late video signals.

Note: Specifications are subject to change without notice.

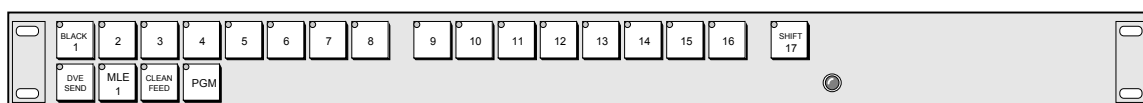


**Synergy Rack Frame – Rear View**

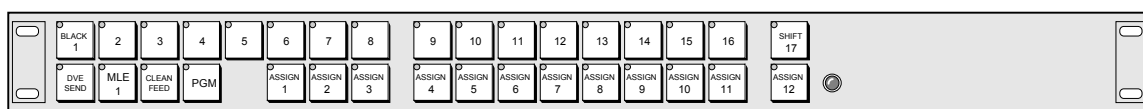
**Note:** Synergy switchers meet applicable world standards for safety, emissions, and immunity.



**Synergy Control Panel - Right Rear View - Serial Ports**



**S2-052A Synergy 2 Dedicated Remote Aux Panel**



**S2-053A Synergy 2 Assignable Remote Aux Panel**

**Notes:**

**Notes:**



## REQUEST FOR QUOTE

**PAGE** \_\_\_\_ **of** \_\_\_\_

### CUSTOMER INFORMATION

Company \_\_\_\_\_

Contact Name

E-mail

Telephone (s) \_\_\_\_\_

Address

[illegible]

FAX TO: Ross Video Limited, P.O. Box 220, 8 John St., Iroquois, ON., Canada K0E 1K0  
Fax. (613) 652-4425