Ross Video Limited

Synergy Q/MD
Engineering Manual
Volume II

Software Issue: 9.1 MD

ROSS

Live Production Technology™

Synergy Q/MD • Engineering Manual Volume II

- • Ross Part Number: **4400DR-001A-09.1**

- • Release Date: June 15, 2009. Printed in Canada.

- • Software Issue: **9.1 MD**

The information contained in this manual is subject to change without notice or obligation.

Copyright

Patents

This product is protected by the following US Patents: 4,205,346; 5,115,314; 5,280,346; 5,561,404; 7,034,886; 7,508,455. This product is protected by the following Canadian Patents: 2039277; 1237518; 1127289. Other patents pending.

Notice

The material in this manual is furnished for informational use only. It is subject to change without notice and should not be construed as commitment by Ross Video Limited. Ross Video Limited assumes no responsibility or liability for errors or inaccuracies that may appear in this manual.

Trademarks

- • is a registered trademark of Ross Video Limited.

- • Ross, ROSS, ROSS®, and MLE are registered trademarks of Ross Video Limited.

- • All other product names and any registered and unregistered trademarks mentioned in this guide are used for identification purposes only and remain the exclusive property of their respective owners.

Important Regulatory and Safety Notices to Service Personnel

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

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

Symbol Meanings

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

Important Safety Instructions

⚠ **Warning**

1) Read these instructions.

2) Keep these instructions.

3) Heed all warnings.

4) Follow all instructions.

5) Do not use this apparatus near water.

6) Clean only with a dry cloth.

7)   Do not block any ventilation openings. Install in accordance with manufacturer's instructions.

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

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

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

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

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

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

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

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

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

17) The QMD-X, MD-X, QMD, or MD (Live Production Engine) chassis is to be rack mounted only.

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

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

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

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

⚠ **Caution**   22) These apparatus contain Lithium batteries, which if replaced incorrectly, or with an incorrect type, may cause an explosion. Replace only with the same type. Dispose of used batteries according to the manufacturer's instruction.

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

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

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

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

27) The safe operation of this equipment requires that the user heed and adhere to all installation and servicing instruction contained within the equipment's Engineering Manuals.

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

EUROPE

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

INTERNATIONAL

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

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

General Handling Guidelines

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

A Word About Static Discharge

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

⚠️ **Notice**

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

Warranty and Repair Policy

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

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

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

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

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

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

An extended warranty is available. Contact your dealer or Ross Video for details.

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.

Company Address

Ross Video Limited

8 John Street
Iroquois, Ontario, K0E 1K0
Canada

Ross Video Incorporated

P.O. Box 880
Ogdensburg, New York
USA 13669-0880

General Business Office:	(+1) 613 • 652 • 4886
Fax:	(+1) 613 • 652 • 4425
Technical Support:	(+1) 613 • 652 • 4886
After hours emergency:	(+1) 613 • 349 • 0006
E-mail (Technical Support):	techsupport@rossvideo.com
E-mail (General Information):	solutions@rossvideo.com
Website:	http://www.rossvideo.com

Contents

Volume I

Volume II

Routers 17

External Still Stores 18

Audio Mixers 19

Robotic Cameras 20

Character Generators 21

Monitor Walls 22

Editors/OverDrive 23

Calibration and Diagnostics 24

Hardware Options   28

Control Panel Maintenance   29

Appendix A. Specifications   30

Glossary of Terms GL

Index IX

VTRs (Betacam)

In This Chapter

This chapter provides instructions for connecting, setting up and operating a **VTR**, **DDR**, or **Video Server** using the **Sony Betacam** protocol, with your Synergy Q/MD switcher. Before you begin, ensure that the **VTR Remote Control** option is installed. If not, please contact **Ross Video** for details. Refer to Chapter 6, "**Software Upgrades and Options**" for instructions on verifying the status of installed options.

Note The **VTR Remote Control** option is required for any VTR, DDR, or Video Server that uses the Sony Betacam Protocol. This group of devices will be referred to as VTRs for this chapter.

The following topics are discussed:

- Supported VTRs
- Communications Connections
- Communications Setup
- Setting up VTR BNCs
- Roll VTR Setup
- VTR Custom Controls
- VTR Clip Setup
- VTR Operation

Supported VTRs

The Synergy Series Switcher has been tested with a number of VTRs (VTRs, DDRs and Video Servers), using the Betacam Protocol, to ensure the highest standard for compatibility and reliability. The following devices are currently supported by your Synergy Q/MD switcher:

Note   The Synergy Q/MD switcher will support any VTR that uses the **Generic Sony Betacam Protocol**. Refer to the section "**Generic VTR Cabling**" on page 14–6 for more information.

- **Fast Forward Video Omega Digital Recorder** (using the Betacam protocol)
- **Alcorn McBride Digital Video Machine 2** (using the Betacam protocol)
- **Accom APR Clipstore** (using the Betacam protocol)
- **BitCentral Précis** (using the Betacam protocol)

Communications Connections

You can connect a number of VTRs to your Synergy Q/MD switcher. The procedure for connecting the VTR will depend on the type of VTR you have. This section will provide general instructions for connecting the VTR to one of the Remote Ports on the back of the Synergy Control Panel.

Note | These instructions are provided as a guide, for specific information on the VTR you are connecting to the Synergy Q/MD switcher, refer to the documentation provided with the VTR.

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

- **VTR Remote Control** — This is the software option from Ross Video that allows your Synergy Q/MD switcher to control a VTR.

- **Interface Cable** — This is a 9-Pin cable with a 9-Pin, D-Type (DB9) male connector on one end, to connect to the remote port on the control panel, and a connector on the other end to connect to your VTR. Refer to the section "**VTR Interface Cable Pinouts**" on page 14–4 for information on the pin-outs and connector required for your VTR. Ross Video does not supply this cable.

Use the following procedure to connect a VTR to your Synergy Q/MD switcher:

1. Connect and secure the **9-Pin**, **Male**, end of the **Interface Cable** to one of the **Remote Ports** on the back of the Synergy Q/MD control panel.

Note | You must use **Remote 5** with a **RJ-12 to DB9 Male Adaptor** to connect a remote Aux Panel to the **Synergy 1** control panel. If you intend to connect a Remote Aux Panel to the switcher, you will have to leave the Remote 5 port open.
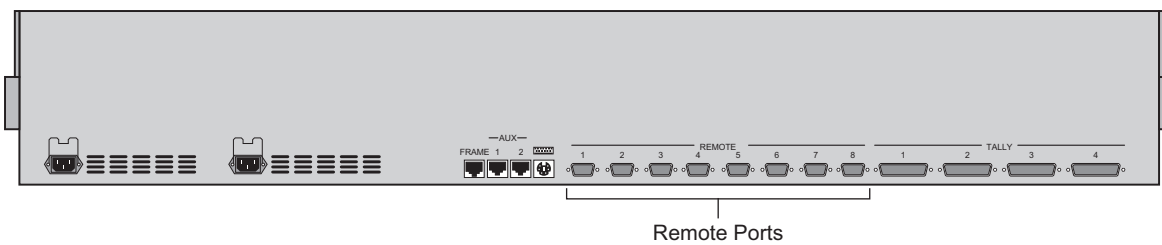
Synergy 2 Q/MD — Control Panel

Synergy 1 Q/MD — Control Panel

2. Connect and secure the other end of the cable to the appropriate port on the VTR. The suggested port for each supported VTR is listed below:

    *   **Fast Forward Video Omega Digital Recorder** — Connect the Interface cable to the RS-422 port on the Omega chassis. Refer to the section "**Fast Forward Video Omega Digital Recorder VTR Cabling**" on page 14–4 for more information on the cabling for this VTR.

    *   **Alcorn McBride Digital Video Machine 2** — Connect the Interface cable to the RS-422 port on the Alcorn McBride DVM2 chassis. Refer to the section "**Alcorn McBride Digital Video Machine 2 VTR Cabling**" on page 14–5 for more information on the cabling for this VTR.

    *   **BitCentral Précis** — Connect the Interface cable to the RS-422 Port on the BitCentral Précis chassis. Refer to the section "**BitCentral Précis Cabling**" on page 14–6 for more information on the cabling for this device.

    *   **Generic** — Connect the Interface cable to the communications port on the chassis of the VTR. Refer to the section "**Generic VTR Cabling**" on page 14–6 for more information on general VTR cabling.

This completes the procedure for connecting a VTR to the Synergy Q/MD switcher. Refer to the section "**Communications Setup**" on page 14–7 for instructions on how to set up communications protocols on the Switcher, as well as on the VTR.

VTR Interface Cable Pinouts

Use the information in this section to connect the Interface Cable from the Synergy Q/MD switcher to the VTR.

Fast Forward Video Omega Digital Recorder VTR Cabling

The Synergy control panel connects to the Fast Forward Video Omega via the remote ports on the Synergy Q/MD switcher, and the RS-422 port on the Fast Forward Video Omega.

Cable connections in the following table refer only to those between the Synergy control panel and the Fast Forward Video Omega. Other cable connections present on the Fast Forward Omega can be found in the Fast Forward Video documentation.

Synergy Q/MD-to- Fast Forward Video Omega Wiring Chart

Synergy Control Panel			Fast Forward Video Omega	
Remote Port	Signal		RS-422 Port	Signal
1	Chassis			
2	RxA (Rx-)	→	2	TxA (Tx-)
3	TxB (Tx+)	→	3	RxB (Rx+)
4	n/c			
5	Ground			
6	Ground	→	6	Ground
7	RxB (Rx+)	→	7	TxB (Tx+)
8	TxA (Tx-)	→	8	RxA (Rx-)
9	Chassis			

n/c = Not Connected

Alcorn McBride Digital Video Machine 2 VTR Cabling

The Synergy control panel connects to the Alcorn McBride DVM2 via the remote ports on the Synergy Q/MD switcher, and the RS-422 port on the Alcorn McBride DVM2.

Cable connections in the following table refer only to those between the Synergy control panel and the Alcorn McBride DVM2. Other cable connections present on the Alcorn McBride DVM2 can be found in the Alcorn McBride documentation.

Synergy Q/MD -to- Alcorn McBride DVM2 Wiring Chart

Synergy Control Panel			Alcorn McBride DVM2	
Remote Port	Signal		RS-422 Port	Signal
1	Chassis			
2	RxA (Rx-)	→	2	TxA (Tx-)
3	TxB (Tx+)	→	3	RxB (Rx+)
4	n/c			
5	Ground			
6	Ground	→	6	Ground
7	RxB (Rx+)	→	7	TxB (Tx+)
8	TxA (Tx-)	→	8	RxA (Rx-)
9	Chassis			

n/c = Not Connected

Accom APR Clipstore VTR Cabling

The Synergy control panel connects to the Accom APR via the remote ports on the Synergy Q/MD switcher, and the RS422 Master Port on the Accom APR.

Cable connections in the following table refer only to those between the Synergy control panel and the Accom APR. Other cable connections present on the Accom APR can be found in the Accom APR documentation.

Synergy Q/MD -to- Accom APR Wiring Chart

Synergy Control Panel			Accom APR Clipstore	
Remote Port	Signal		RS422 Master Port	Signal
1	Chassis			
2	RxA (Rx-)	→	2	TxA (Tx-)
3	TxB (Tx+)	→	3	RxB (Rx+)
4	n/c			
5	Ground			
6	Ground	→	6	Ground
7	RxB (Rx+)	→	7	TxB (Tx+)
8	TxA (Tx-)	→	8	RxA (Rx-)
9	Chassis			

BitCentral Précis Cabling

The Synergy control panel connects to the BitCentral Précis via the remote ports on the Synergy Q/MD switcher, and the RS-422 Port on the BitCentral Précis.

Cable connections in the following table refer only to those between the Synergy control panel and the BitCentral Précis. Other cable connections present on the BitCentral Précis can be found in the BitCentral documentation.

Synergy Q/MD -to- BitCentral Précis Wiring Chart

Synergy Control Panel				BitCentral Précis	
Remote Port	**Signal**			**RS-422 Port**	**Signal**
1	Chassis				
2	RxA (Rx-)	→		2	TxA (Tx-)
3	TxB (Tx+)	→		3	RxB (Rx+)
4	n/c				
5	Ground				
6	Ground	→		6	Ground
7	RxB (Rx+)	→		7	TxB (Tx+)
8	TxA (Tx-)	→		8	RxA (Rx-)
9	Chassis				

Generic VTR Cabling

The Synergy control panel connects to a VTR via the remote ports on the Synergy Q/MD switcher.

*Synergy **Q/MD** RS-422 Wiring Chart*

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

Refer to the documentation that came with your VTR for port and pinout information for your specific VTR.

Communications Setup

Setting up the Switcher

In order to have the Synergy Q/MD switcher communicate with a VTR, the remote port on the control panel that the VTR is connected to must be set up to communicate with the particular VTR you have connected.

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

1. Navigate to the **Communications Menu 1-2** as follows:

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

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

Communications — Type Menu

3. Assign a Remote Com Port to the VTR as follows:

   • Use the **Com Port** knob to select the remote port on the Synergy Q/MD switcher that is connected to the VTR.

✎ **Note** | You must use **Remote 5** with a **RJ-12 to DB9 Male Adaptor** to connect a remote Aux Panel to the **Synergy 1** control panel. If you intend to connect a Remote Aux Panel to the switcher, you will have to leave the Remote 5 port open.

   • Use the **Device** knob to select **VTR (CLIP)**.

4. Press **Select Device** to display the **Select Device Menu**.

Communications — Select Device Menu

5. Select the device you want to assign to the VTR communications port as follows:

    •   Use the **Com Port** knob to select the communications port you want to assign a specific VTR to.

    •   Use the **Device** knob to select **Betacam**.

✎ **Note** | You can setup a custom device using the **CUSTOM 1** and **CUSTOM 2** options. Use these options, in conjunction with the **Custom Devices** button, to manually configure the communications protocol for your particular device. Refer to Appendix F, "**Custom Device Serial Protocol"** for more information.

    •   Use the **VTR Preroll** knob to select the preroll interval (in frames).

✎ **Note** | Preroll is applied when the **ROLL VTR** button is "armed" and the device is taken to air with a cut or auto-transition. When the transition is performed, the system will *wait* the selected preroll interval, and then roll the VTR. Refer to the section "**Roll VTR Setup**" on page 14–16 for more information.

6. Press **Com Settings** to display the **Com Settings Menu**.

```
Communications (1-2)
                                                    Com Port: Betacam  (R1)
This  menu  lets  you set
up    your    com    port
parameters.                                                    ↑19200
                                                    Baud:       38400
                                                               ↓57600

                                                               NONE
                                                    Parity:     ODD
                                                               EVEN
           Select                          Custom       Extra
    Type   Device    Com Settings  Com Type  Devices     Options
```
Communications — Com Settings Menu

7. Set the communications protocols for the VTR as follows:

    •   Use the **Com Port** knob to select the VTR port you are setting the communications settings for.

    •   Use the **Baud** knob to select the baud rate for the VTR. Refer to the section "**Setting up the VTR**" on page 14–11 for the specific settings for your VTR.

    •   Use the **Parity** knob to select the parity, **NONE**, **ODD** or **EVEN** for the specific VTR. Refer to the section "**Setting up the VTR**" on page 14–11 for the specific settings for your VTR.

8. Press **Com Type** to display the **Com Type Menu**.

```
Communications (1-2)
                                                    Com Port: BNC C01  (R1)
This  menu  lets  you set
up your com port types.
                                                               RS-232
                                                    Type:      RS-422
                                                              ↓Network UDP

           Select                          Custom       Extra
    Type   Device    Com Settings  Com Type  Devices     Options
```
Communications — Com Type Menu

9.   Select the type of serial communications that will be used to communicate with the VTR as follows:

- •   Use the **Com Port** knob to select the VTR port you want to set the communications type for.

- •   Use the **Type** knob to select the type of serial communications (**RS-232** or **RS-422**) for the selected port. Refer to the section "**Setting up the VTR**" on page 14–11 for the specific settings for your VTR.

> **Note**   **Network UDP** and **Network TCP** are not supported for this device type.

> **Note**   The **Synergy 1** allows you to select **RS-232 Null** and **RS-422 Null**, as well as the standard **RS-232** and **RS-422**. Refer to the section "**Setting up the VTR**" on page 14–11 for information on when to use these settings.

10. Press **Extra Options** to display the **Extra Options Menu**.

Communications — Extra Options Menu

11. Assign a particular VTR to the selected com port as follows:

- •   Use the **Com Port** knob to select the VTR port you want to assign a specific VTR to.

- •   Use the **Option** knob to select **TargetMachine**.

- •   Use the **Value** knob to select the VTR you want to assign to the selected com port. You can chose between the following:

    ~   **Generic** — Select this option to set up a device not specified in the list.

    ~   **FFV Omega** — Select this option to set up a **Fast Forward Video Omega Digital Disk Recorder**.

    ~   **DVM 2** — Select this option to set up an **Alcorn McBride DVM2**.

    ~   **Accom APR** — Select this option to set up an **Accom APR Clipstore**.

    ~   **BC Precis** — Select this option to set up a **BitCentral Précis**.

12. Set up the Decode NAKs (Not Acknowledgement) as follows:

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

```
Communications (1-2)

Protocol: Betacam                                          Com Port:  Betacam  (R1)

                                                                      ↑TargetMachine
Decode and count errors in NAK messages?          Option:   Decode NAKs
                                                                      ↓Wait nFields

                                                                           ↑No
                                                            Value:            Yes

                  Select                              Custom        Extra
       Type       Device     Com Settings  Com Type   Devices       Options
```

Communications — Extra Options (Decode NAKs) Menu

✔ **Operating Tip**

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

- Use the **Com Port** knob to select the VTR you want to enable the Decode NAKs option for.

- Use the **Option** knob to select **Decode NAKs**.

- Use the **Value** knob to select Yes or No as follows:

  ~ **Yes** — Select Yes to enable the Decode NAKs option.

✎ **Note**

The **Decode NAKs** option is set to **Yes** by default.

  ~ **No** — Select No to disable the Decode NAKs option.

```
Communications (1-2)

Protocol: Betacam                                          Com Port:  Betacam  (R1)

                                                                      ↑Decode NAKs
If 0 ignore replies Else MAX reply Delay          Option:   Wait nFields
                                                                      NPlayRetries

                                                            Value:        (  0)
                                                                          Decimal
                  Select                              Custom        Extra
       Type       Device     Com Settings  Com Type   Devices       Options
```

Communications — Extra Options (Wait nFields) Menu

13. Set the number of fields the switcher will wait before assuming the last Play command failed, or was not received, as follows:

- Use the **Com Port** knob to select the VTR you want to set up Decode NAKs for.

- Use the **Option** knob to select **Wait nFields**.

- Use the **Value** knob to select the number of fields you want the switcher to wait before assuming a NAK by default.

✎ **Note**

The **Wait nFields** value is set to **0** by default.

```
┌────────────────────────────────────────────────────────────┐
│ Communications (1-2)                                         │
│                                            Com Port: Betacam (R1) │
│ Protocol: Betacam                                            │
│                                                              │
│                                            ↑Wait nFields     │
│    Max Play retries on failed or no reply  Option: NPlayRetries │
│                                                              │
│                                                              │
│                                            Value:    ( 4)    │
│                                                    Decimal   │
├──────────────┬──────────┬─────────────┬─────────┬──────────┬────────┤
│              │ Select   │             │         │ Custom   │ Extra  │
│     Type     │ Device   │ Com Settings│ Com Type│ Devices  │ Options│
└──────────────┴──────────┴─────────────┴─────────┴──────────┴────────┘
```

Communications — Extra Options (NPlayRetries) Menu

14. Set the number of Play command retries the switcher will attempt to send to the VTR as follows:

   • Use the **Com Port** knob to select the VTR you want to set up Decode NAKs for.

   • Use the **Option** knob to select **NPlayRetries**.

   • Use the **Value** knob to select the number times the switcher will attempt to send a Play command to the VTR.

Note   The **NPlayRetires** value is set to **4** by default.

15. Press **HOME** to display the **Installation Change Confirmation Screen**.

```
┌────────────────────────────────────────────────────────────┐
│                                                              │
│                                                              │
│ You are about to change the switcher's installation settings.│
│ Press 'Confirm' to save the new settings, or 'Cancel' to revert│
│ to the old settings.                                         │
│                                                              │
│                                                              │
│                                                              │
│                                                              │
│                                                              │
│  Confirm      Cancel                                         │
└────────────────────────────────────────────────────────────┘
```

Installation Change Confirmation Screen

16. Accept or reject the changes you have made as follows:

   • Press **Confirm** to accept the changes.

   • Press **Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure for setting up the communications with the VTR, next you will have finish setting up the VTR to communicate with the Synergy Q/MD switcher.

Setting up the VTR

In order to have the Synergy Q/MD switcher communicate with a VTR, the VTR you are connecting to the switcher must be set up to communicate and accept commands from the switcher.

Fast Forward Video Omega Digital Recorder

This section describes the proper installation configuration required for a Synergy Q/MD switcher to interface with a Fast Forward Video Omega Digital Recorder.

Use the following information to connect a Fast Forward Video Omega to your Synergy Q/MD switcher:

- Use the following communications settings when connecting the Fast Forward Omega to the Synergy Q/MD switcher:

Synergy Q/MD -to- Fast Forward Video Omega Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	Odd
Data Bits	8
Stop Bits	1

Alcorn McBride Digital Video Machine 2

This section describes the proper installation configuration required for a Synergy Q/MD switcher to interface with an Alcorn McBride Digital Video Machine 2 (DVM2).

Use the following information to connect an Alcorn McBride DVM2 to your Synergy Q/MD switcher:

- Use the following communications settings when connecting the Alcorn McBride DVM2 to the Synergy Q/MD switcher:

Synergy Q/MD -to- Alcorn McBride DVM2 Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	Odd
Data Bits	8
Stop Bits	1

Accom APR Clipstore

This section describes the proper installation configuration required for a Synergy Q/MD switcher to interface with an Accom APR Clipstore.

Use the following information to connect an Accom APR Clipstore to your Synergy Q/MD switcher:

- Use the following communications settings when connecting the Accom APR Clipstore to the Synergy Q/MD switcher:

Synergy Q/MD -to- Accom APR Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	Odd
Data Bits	8
Stop Bits	1

BitCentral Précis

This section describes the proper installation configuration required for a Synergy Q/MD switcher to interface with a BitCentral Précis.

Use the following information to connect a BitCentral Précis to your Synergy Q/MD switcher:

- Use the following communications settings when connecting the BitCentral Précis to the Synergy Q/MD switcher:

Synergy Q/MD -to- BitCentral Précis Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	Odd
Data Bits	8
Stop Bits	1

Setting up VTR BNCs

The **VTR Setup Menu** allows you to associate a VTR BNC input with a particular VTR communication port.

Use the following procedure to assign the VTR to a specific BNC input:

1. Navigate to the **BNC Menu 1-3** as follows:

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

2. Press **BNC Type** to display the **BNC Type Menu**.

```
BNC (1-3)
                                                          BNC:  BNC C01 (C01)
Use    this    menu   to   BNC:        BNC C01  (C01)          ↓BNC C02 (C02)
associate  a  function or  Type:       VTR
a  device type with a BNC  Tally:      1                       ↑DVE
input.                     Auto Key:   Black          Type:    VTR
                           Video Mode:1080i 59.94               ↓Alpha

                                                               ↑1080i 60
                                                      Video    1080i 59.94
                                                      Format:  ↓1080i 50
                                                      Auto Key       Router
   BNC Names      BNC Type        Tally      Alpha     Setup          Setup
```

BNC — Type Menu

3. Assign a BNC to VTR as follows:

   - Use the **BNC** knob to select the BNC that the VTR is connected to.

   - Use the **Type** knob to select **VTR**.

   - Use the **Video Format** knob to select the native video format of the VTR output.

✎ **Note**   Assigning a **Video Format** to an **Input BNC**, that is different than the native video format that the switcher is operating in, can only be used for passing non-native video formats out an **Aux Bus**. Video formats may be converted to the operating video format using **Smart Conversion**. Refer to Chapter 13 "**SmartConversion™**", for more information.

4. Press **MORE** to display the **BNC Menu 2-3**.

5. Assign a BNC Input to your VTR as follows:

   - Press **VTR/VDCP Xpts** to display the **VTR/VDCP Xpts Menu**.

```
BNC (2-3)
                                                          BNC:  BNC C01 (C01)
                           BNC:        BNC C01  (C01)          ↓BNC C02 (C02)
                           Type:       VTR
                           Tally:      1                       ↑REMOTE 4 (R4)
                           Auto Key:   Black         Controller: Betacam  (R5)
                           Video Mode:1080i 59.94

      Router        N/S                  Still/CG     Camera      VTR/VDCP
      Other      Disable      Audio       Setup        Setup        Xpts
```

BNC — VTR/VDCP Xpts Menu

- Use the **BNC** knob to select the BNC to assign to your VTR.
- Use the **Controller** knob to select the remote port that the VTR is connected to.

Note If you select **NONE**, the BNC will not be assigned to a VTR nor will it be displayed in other Synergy menus associated with VTR control.

6. Press **HOME** to display the **Installation Change Confirmation Screen**.

7. Accept or reject the changes you have made as follows:

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

This completes the procedure for setting up a VTR to a BNC on the Synergy Q/MD switcher.

Roll VTR Setup

The **Roll VTR Mode** determines how the **ROLL VTR** button behaves when a VTR is selected. When you set the **Roll VTR Mode**, the setting affects all **ROLL VTR** buttons in all MLEs.

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

1. Navigate to the **Personality Menu** as follows:

   • Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Personality**.

2. Use the **Option** knob to select **Roll VTR Mode**.

```
Personality                                          ↑Pnl SleepTime
                                          Option: Roll VTR Mode
↑FTB Display      FTB      Sets ROLL VTR button     ↓S&T Mode
 GlblStoreMem     Off      action.
 Isolate DSKs     Off      Play: Immediately plays     Play
 KeypadClipIDs    MLE      clip.               Value: Arm
 Matte Limit      Off      Arm: Button can be          Armed Always
 MemBank Cycle    9        turned on or off.
 Pnl SleepTime    30       Armed Always: Button
↓Roll VTR Mode    Arm      cannot be turned off.

  3D Pattern      Standard      Assign
  Button Assign   Mnemonics     Bus Maps
```

Personality — Roll VTR Mode Menu

3. Use the **Value** knob to select a mode for the **ROLL VTR** button. You can select between the following:

> ⊛ **Important**
>
> When an OverDrive Production Control System production controller is connected to the switcher, activating the **Editor** button turns on all the **Roll VTR** buttons and sets the Roll VTR Mode to *Arm*, disabling the Roll VTR Mode selection in the **Personality Menu**.

• **Play** — Selecting this mode allows you to play a VTR clip directly by pressing the **ROLL VTR** button. Once pressed, the clip will start to play and will have to be taken on-air manually with the **Fader**, a **Cut** or **Auto Transition**.

• **Arm** — Selecting this mode allows you to have a VTR clip play with the next transition that takes the MLE on-air by pressing the **ROLL VTR** button. This can be used to roll multiple VTRs if they are re-entered. Once pressed, the clip will only start to play when it is taken on-air with a **Cut**, **Auto Transition**, or if you double-press the assigned crosspoint button.

• **Armed Always** — Selecting this mode allows you to have a VTR clip play with the next transition that takes the MLE on-air when you press the assigned crosspoint button.

> ✎ **Note**
>
> If an Auto Transition is performed with the **ROLL VTR** active, and in **Arm Mode**, the switcher will apply the **Pre-Roll** time for the VTR before it takes the VTR on-air.

This completes the procedure for configuring the **Roll VTR Mode**.

VTR Custom Controls

A custom control button can be programmed with the transport functions that are located on the **VTR Clips Menu** and the **Remote Control Menu**. This allows for quick access to these functions, or you can string a number of these functions together in a single custom control.

Use the following procedure to program custom control buttons that include special transport functions for VTRs:

✎ **Note**   You must have the VTR Control option installed in order to control a VTR from the Synergy Q/MD switcher. Refer to the section "**Setting up the Switcher**" on page 14–7 for information on setting up a VTR.

1. Navigate to the **Custom Controls Menu 1-2** as follows:

   • Press **HOME** ⇨ **Custom Controls**.

```
Custom Controls (1-2)
                                                Bank:    Bank 1   (1)
Custom Control buffers .53% full

Selected: Bank 1 Button 9 [Custom09]                   ↑ Custom08 # 8
                                               Button:   Custom09 # 9
Custom Control Legend:                                 ↓ Custom10 #10
       # = normal custom control button



   Start        Modify              Start Relative  Default
  Recording      Name                 Recording    All Names   Delete Macro
```

Custom Controls Menu 1-2

2. Select the custom control button you want to record to as follows:

   • Use the **Bank** knob to select the custom control bank you want to record the custom control to.

   • Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*) or the "at sign" (@) in the list have already been programmed.

✓ **Operating Tip**   As a recommendation, keep transport control functions for similar devices grouped together on your *physical* custom control buttons.

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

```
Custom Controls (1-2)
                                                Bank:    Bank 1   (1)
Recording...

Selected: Bank 1 Button 9 [Custom09]                   ↑ Custom08 # 8
                                               Button:   Custom09 # 9
Custom Control Legend:                                 ↓ Custom10 #10
       # = normal custom control button



              Finish      Cancel      Insert
             Recording   Recording   Special
```

Custom Controls — Recording Menu

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

5. Press **VTR** to display the **Insert VTR Menu**. This menu allows you to choose specific transport control functions to assign to the button.

✎ **Note**
> If an error message is displayed stating that there are no communications ports assigned to VTRs, ensure that the VTR you are trying to control has been properly set up.

```
Insert VTR

                                          Betacam  (R1)


                                          Fast Forward
                                          ↓Frame Advance




   Insert      Cancel
```

Insert VTR Menu

6. Select a VTR function to insert as follows:

   • Use the **Device** knob to select the VTR that you want to assign the custom control to.

   • Use the **Function** knob to select the transport control function that you want to assign to the selected VTR. You can chose between the following:

✎ **Note**
> If you are using a **BitCentral Précis**, you can only choose between the **Play**, **Fast Forward (FFWD)**, and **Stop** commands. The **Fast Forward** command advances the VTR to the next clip in the rundown.

   ~ **Fast Forward** — Select this command to have the VTR go into full fast forward mode.

   ~ **Frame Advance** — Select this command to have the VTR move (jog) the video one frame forward.

   ~ **Frame Reverse** — Select this command to have the VTR move (jog) the video one frame reverse.

   ~ **Go to Clip** — Select this command to have the VTR cue to a selected clip.

✎ **Note**
> When you select **Go To Clip**, the **Go To Clip** knob appears, allowing you to select the number (**00**-**99**) for the clip you want to cue up.

   ~ **Rewind** — Select this command to have the VTR go into full fast rewind mode.

   ~ **Stop** — Select this command to have the VTR stop.

   ~ **Record** — Select this command to have the VTR go into record mode.

   ~ **Play** — Select this command to have the VTR go into play mode, or 1× forward.

~ **Play w/Alpha** — Select this command to have the VTR play two video clips at once (a video and an alpha). The video input BNC must have an associated alpha input BNC and the correct clip must be cued on both.

~ **Pause** — Select this command to have the VTR to into pause mode.

~ **Play Loop On** — Select this command to have the currently cued and playing clip loop back to the beginning when it finishes playing.

~ **Play Loop Off** — Select this command to have a currently looping clip stop playing the next time it reaches the clip end or outpoint.

7. Press **Insert** to insert the selected command into the custom control and display the **Insert Special Menu**.

✓ **Operating Tip**

Transport control functions can be strung together (while in programming mode), allowing one custom control button to perform *multiple functions* when it is pressed. For example, you can have the **Go To Clip** function followed by the **Play** function, allowing a single custom control macro to go to a clip and then run it.

8. Insert additional commands if needed. When you have finished inserting commands, proceed to the next step to complete the procedure.

9. Press **UP ONE** to display the **Recording Menu**.

```
Custom Controls (1-2)
                                          Bank:   Bank 1   (1)
Recording...

Selected: Bank 1 Button 9 [Custom09]            ↑ Custom08 #  8
                                         Button:   Custom09 #  9
Custom Control Legend:                          ↓ Custom10 #10
       # = normal custom control button




          Finish        Cancel       Insert
          Recording     Recording    Special
```

Custom Controls — Recording Menu

10. Press **Finish Recording** to finish recording to the selected custom control.

This completes the procedure for programming custom control buttons that include special transport functions for VTRs.

Refer to Chapter 10, "**Custom Controls**" for more information on custom controls.

VTR Clip Setup

In order to easily recall clips on the VTR from the Synergy Q/MD switcher, you will have to store the clips you want to use to **Clip Registers** on the switcher. These Clip Registers store the location, or timecode, on the VTR for the clip, and the name of the clip.

The **VTR Clips Menu** allows you to perform the following functions:

- Select a VTR and a clip number.

- Grab or enter a timecode (and other device-specific data), name the clip, and store it in a clip register. Up to **100** clips can be stored (using registers **00** to **99**).

- Cue and preview each clip.

Programming VTR Clips

Use the following procedure to program a VTR clip:

1. Navigate to the **VTR Clips Menu 1-2** as follows:

   - Press **HOME** ⇨ **MORE** ⇨ **Clips** ⇨ **VTR Clips**.

2. Press **Clip Type** to display the **Clip Type Menu**.

```
┌─────────────────────────────────────────────────────────────────┐
│ VTR Clips (1-2)                                   ↑VTR Clip (06)  │
│                                            Clip   VTR Clip (07)   │
│ Clip: 07      Clip Name: "VTR Clip"               ↓VTR Clip (08)  │
│ Device: Betacam  (R1)                                             │
│                                           Device  Betacam  (R1)   │
│ Inpoint: 00:00:00:00                                              │
│                                                                   │
│                                                                   │
│                         Hours      Seconds              Cue to    │
│  Clip Type   Name Clip  Minutes    Frames   Grab Timecode Inpoint │
└─────────────────────────────────────────────────────────────────┘
```

VTR Clips Menu — Clip Type Menu

3. Select the Clip Register you want to store a VTR Clip to as follows:

   - Use the **Clip** knob to select the Clip Register that you want to program (**00**-**99**).

   - Use the **Device** knob to select the remote port for the VTR you want to store the clip information for.

4. Press **Name Clip** to display the **Clip Name Menu**.

✎ **Note** | The **VTR Clip** name is the one that will be displayed for the Clip Register on the display in the **Global Memory System Group**. This name will also be shown on the **Remote Control Menu**.

Clip Name Menu

- Use the **Horizontal** and **Vertical** knobs (in conjunction with the editing softkeys) to enter the desired clip name. A Standard PS/2 keyboard can be used to perform the same actions as pressing or rotating the **System Control** buttons and knobs.

Important

Do not enter a space as the first or last character of a clip name.

- Press **Accept New Name** to complete the naming procedure and return to **VTR Clips Menu 1-2**. The new name is now shown in the status area and as one of the options for the **Clip** knob.

5. Select the **Timecode** to be stored in the **Clip Register** as follows:

Note

If you do not know the timecode for the clip you want to store to the Clip Register, you can manually preview the VTR video using the command on the **VTR Clips Menu 1-2** and grab the timecode. Refer to the section "**Grabbing a Timecode**" on page 14–22 for information on grabbing a timecode.

- Press **Hours Minutes** to display the **Hours Minutes Menu**.

VTR Clips Menu — Hours Minutes Menu

Operating Tip

As you adjust the Hours, Minutes, Seconds and Frames values, the corresponding fields are updated. These fields are as follows: **(hours):(minutes):(seconds):(frames)**.

- Use the **Hours** knob to adjust the hours field value.
- Use the **Minutes** knob to adjust the minutes field value.
- Press **Seconds Frames** to display the **Seconds Frames Menu**.

```
VTR Clips (1-2)

Clip: 07      Clip Name: "Clip 07"
Device: Betacam  (R1)
                                                                    ( 0)
                                                                 Seconds
Inpoint: 00:00:00:00
                                                                    ( 0)
                                                                  Frames

                              Hours        Seconds                Cue to
         Clip Type   Name Clip Minutes     Frames   Grab Timecode Inpoint
```

VTR Clips Menu — Seconds Frames Menu

- • Use the **Seconds** knob to adjust the seconds field value.

- • Use the **Frames** knob to adjust the frames field value.

✓ **Operating Tip**

> You can preview the Inpoint location by selecting the VTR on the PST Bus and pressing **Cue to Inpoint**.

- • Press **Grab Timecode** to use the new timecode value for the Clip Register.

6. Press **HOME** to store your settings.

This completes the procedure for programming VTR clips.

Grabbing a Timecode

If you do not know the timecode for the clip you want to store, you can manually scan the VTR video using the commands on the **VTR Clips Menu 2-2** and grab the timecode.

Use the following procedure to grab a timecode:

1. Navigate to the **VTR Clips Menu** as follows:

- • Press **HOME** ⇨ **MORE** ⇨ **Clips** ⇨ **VTR Clips**.

2. Select the Clip Register and VTR that you want to store. Refer to the section "**Programming VTR Clips**" on page 14–20 for more information on programming VTR Clips.

3. Grab a timecode as follows:

- • Press **MORE** to display **VTR Clips Menu 2-2**.

```
VTR Clips (2-2)

Clip: 07      Clip Name: "Clip 07"
Device: Betacam  (R1)


Inpoint: 00:00:00:00




                  Back                          Ahead       Fast
       Rewind     Frame      Pause      Play     Frame       Forward
```

VTR Clips Menu 2-2 — VTR Transport Controls

- • Cue the VTR to the desired clip location using the transport controls: **Rewind**, **Back Frame**, **Pause**, **Play**, **Ahead Frame** and **Fast Forward**.

- • Press **Pause** to hold the VTR at the desired timecode.

- • Press **MORE** ⇨ **MORE** to display the **VTR Clips Menu 1-2**.

```
┌─────────────────────────────────────────────────────────┬───────────┐
│ VTR Clips (1-2)                                           │           │
│                                                           │           │
│ Clip: 07      Clip Name: "Clip 07"                        │           │
│ Device: Betacam  (R1)                                     │     ( 0)  │
│                                                           │  Seconds  │
│ Inpoint: 00:00:00:00                                      │           │
│                                                           │     ( 0)  │
│                                                           │  Frames   │
│                                                           │           │
├──────────────────────┬─────────┬─────────┬───────────────┼───────────┤
│                       │  Hours  │ Seconds │               │  Cue to   │
│   Clip Type  Name Clip│ Minutes │ Frames  │ Grab Timecode │  Inpoint  │
└───────────────────────┴─────────┴─────────┴───────────────┴───────────┘
```

VTR Clips Menu 1-2

- • Press **Grab Timecode** to grab the current timecode and display it in the **Inpoint** field.

4. Press **HOME** to store your settings.

This completes the procedure for grabbing a VTR timecode.

VTR Operation

VTR clips can be cued and played by selecting the Clip Register on the **Remote Control Menu** or by using the keypad in the **Global Memory System Group**, or by using the Clip ID from the VTR.

Clip Control Overview

There are two methods to recall VTR Clips using the keypad in the **Global Memory System Group** of the Synergy Q/MD switcher.

- **VTR Clip Number** — The **VTR Clip Number** is a **2** digit number that corresponds to the **VTR Clip Register**. Refer to the section "**Programming VTR Clips**" on page 14–20 for more information. When selecting a crosspoint associated with any VTR device, the keypad in the **Global Memory System Group** will be set to **VTR Clip Number** mode.

```
Clip 00  VTR Clip
M:015  D:008  F:20
```
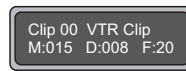
VTR Clip Number

- **VTR Clip ID** — The **VTR Clip ID** is a **6** digit number that is established on the VTR. Leading zeros cannot be specified when entering **VTR Clip ID**. For example, entering **12** on the **Global Memory System** keypad will load **Clip 12** from the device and not **Clip 000012**.

```
Clip ID: 000000
M:015  D:008  F:20
```
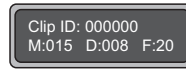
VTR Clip ID

✎	**Note**	All VTRs that support the VTR Clip ID mode, such as the Accom APR Clipstore, can toggle back to the VTR Clip Number mode by pressing the **VTR Clip** button.
		The Clip IDs must be numeric to be able to recall them using the keypad.

Cueing a Clip Using the Keypad

Use the following procedure to cue a **VTR Clip** from a VTR using the keypad in the **Global Memory System Group**:

✓	**Operating Tip**	The same procedure can be used to cue a clip using the **Clip Number**. Toggle the **VTR CLIP** button until **Clip ## VTR Clip** appears in the display.

```
VTR
CLIP
```

1. Toggle the **VTR CLIP** button in the **Global Memory System** to display the VTR Clip ID screen.

```
Clip ID: 000000
M:015  D:008  F:20
```

VTR Clip ID

2. Enter the VTR Clip ID using the keypad in the **Global Memory System Group**.

```
Clip ID: 000012
M:015  D:008  F:20
```
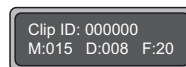
VTR Clip ID

3. Press **Enter**.

This completes the procedure for cueing a clip using the keypad.

VTR Remote Control Menu

The **VTR Remote Control Menu** allows you to cue different clips using the Clip Registers or by using the transport controls to move to different timecodes. You can then play the clip directly, or use the **ROLL VTR** button in the **MLE Transition Group** to play the clip on the next transition.

The **VTR Remote Control Menu** identifies the specific VTR you are controlling by the the BNC that it is connected to, and the communication protocol, or Type, is being used to control the VTR. Below the title are two columns, **Current Clip** and **Clip to Cue**.

- **Current Clip** — This column identifies the name of the clip (**Clip**), the timecode of the start of the clip (**Timecode**), the current timecode as the clip is playing (**Current**), and the speed at which the clip is playing (**Speed**).

- **Clip to Cue** — This column identifies the name of the clip (**Clip**), and the timecode of the start of the clip (**Timecode**).

Use the following procedure to display the **VTR Remote Control Menu**:

1. Navigate to the **Remote Control Select Menu** as follows:

   - Press **HOME** ⇨ **Effects** ⇨ **MORE** ⇨ **Remote Control Select**.

```
Remote Control Select


Select a port to control via
the Remote Menu, then press GO.
                                                    Port:  Betacam  (R1)




    VTR          Router        Robotic                   Character
   Control      Control        Camera                    Generator        GO!!
```
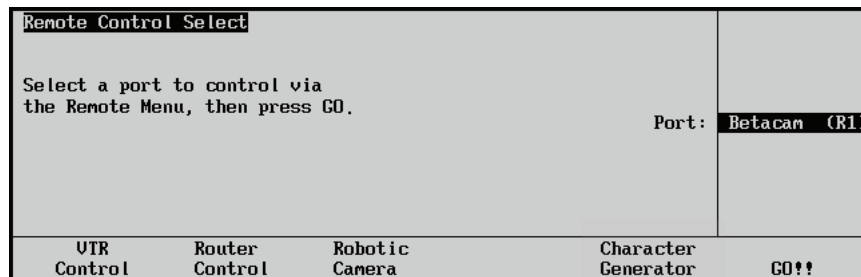
Router Control Select Menu

2. Press **VTR Control** to show a list of BNCs assigned to a VTR, Video Server or Audio Server.

3. Use the **BNC** knob to select the BNC you want to control.

4. Press **GO!!** to display the **VTR Remote Control Menu 1-2**.

✎ **Note** | If a "COMMUNICATIONS LOST" message appears on the menu, the Synergy Q/MD switcher has been unsuccessful at receiving a response from the VTR. Check the cable connections and the configuration on the switcher and the VTR.

```
┌─────────────────────────────────────────────────────────────────┐
│Remote Control (1-2)                    RemTime: 01:38:58:16  ┌──────────────┐│
│                                                             │↑VTR Clip (01)││
│Device: Betacam  (R1)    Type: Betacam                       │ VTR Clip (02)││
│              Current Clip              Clip to Cue           │ VTR Clip (04)││
│        Clip: "VTR Clip"                "VTR Clip"            │ VTR Clip (05)││
│                                                             │ VTR Clip (07)││
│      Inpoint: 00:00:16:25              00:00:16:25          │ VTR Clip (08)││
│      Current: 00:00:16:25                                   │ VTR Clip (28)││
│        Speed:  100%                                         └──────────────┘│
│                                                                             │
│                                           Fast        Play                  │
│      Rewind         Pause         Play    Forward      Speed      Cue Clip  │
└─────────────────────────────────────────────────────────────────┘
```

Remote Control — VTR Remote Control Menu

5.   Use the **Clip** knob to select the **Clip Register** you would like to Cue.

✓ **Operating Tip**

> To play or preview the clip manually from the menu, use the available transport control commands: **Rewind**, **Play**, **Pause,** and **Fast Forward**.

6.   Press **Cue Clip** to have the clip listed in the **Clip to Cue** column. This clip will be the next clip taken on-air with the **ROLL VTR**. Refer to the section "**Roll VTR Setup**" on page 14–16 for more information on Roll VTR.

This completes the procedure for displaying the **VTR Remote Control Menu**.

Audio Servers

In This Chapter

This chapter provides instructions for connecting, setting up and operating an **Audio Server** protocol, with your Synergy Switcher. Before you begin, ensure that the **Audio Server Control** option is installed. If not, please contact **Ross Video** for details. Refer to Chapter 6, "**Software Upgrades and Options**" for instructions on verifying the status of installed options.

The following topics are discussed:

- Supported Audio Servers
- Communications Connections
- Communications Setup
- Roll VTR Setup
- Previewing Audio Server Clips
- Audio Server Custom Controls
- Audio Server Clip Setup
- Audio Server Operation

Supported Audio Servers

The Synergy Series Switcher has been tested with a number of Audio Servers to ensure the highest standard for compatibility and reliability. The following devices are currently supported by your Synergy Q/MD switcher:

- **360 Systems DigiCart Audio Recorder**
- **360 Systems DigiCart/E Audio Recorder**
- **Sony MiniDisc MDS-B4P MD Player** (using the Sony MiniDisc ASCII protocol)
- **Enco Digital Audio Delivery System** (using the DAD Command Language)

Communications Connections

You can connect a number of Audio Servers to your Synergy Q/MD switcher. The procedure for connecting the Audio Server will depend on the type of Audio Server you have. This section will provide general instructions for connecting the Audio Server to one of the Remote Ports on the back of the Synergy Control Panel.

✎ **Note** | These instructions are provided as a guide, for specific information on the Audio Server you are connecting to the Synergy Q/MD switcher, refer to the documentation provided with the Audio Server.

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

- **Audio Server Control** — This is the software option from Ross Video that allows your Synergy Q/MD switcher to control an Audio Server.

- **Interface Cable** — This is a 9-Pin cable with a 9-Pin, D-Type (DB9) male connector on one end, to connect to the remote port on the control panel, and a connector on the other end to connect to your Audio Server. Refer to the section "**Audio Server Interface Cable Pinouts**" on page 15–4 for information on the pin-outs and connector required for your Audio Server. Ross Video does not supply this cable.

Use the following procedure to connect an Audio Server to your Synergy Q/MD switcher:

1. Connect and secure the **9-Pin**, **Male**, end of the **Interface Cable** to one of the **Remote Ports** on the back of the Synergy control panel.

⚠ **Important** | You cannot control a **360 Systems DigiCart Audio Server** from a remote port on a BSS4. If you want to connect a DigiCart to the Synergy Q/MD switcher, you will have to use a standard Remote Port.

✎ **Note** | You must use **Remote 5** with a **RJ-12 to DB9 Male Adaptor** to connect a remote Aux Panel to the **Synergy 1** control panel. If you intend to connect a Remote Aux Panel to the switcher, you will have to leave the Remote 5 port open.
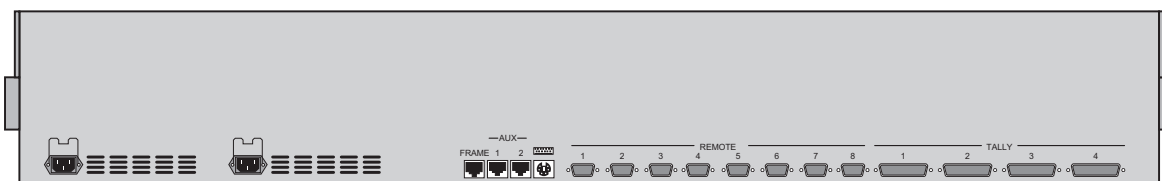
Synergy 2 Q/MD — Control Panel

Remote Ports
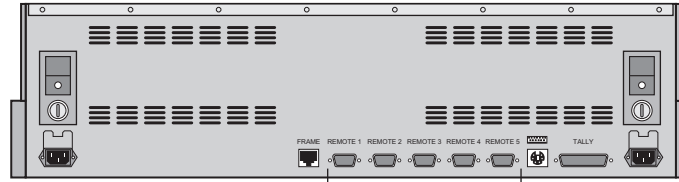
Synergy 1 Q/MD — Control Panel

2. Connect and secure the other end of the cable to the appropriate port on the Audio Server. The suggested port for each supported Audio Server is listed below:

    *   **360 Systems DigiCart Audio Recorder** — Connect the Interface cable to the Serial Port 2 on the DigiCart. Refer to the section "**360 Systems DigiCart Cabling**" on page 15–4 for more information on the cabling for this Audio Server.

    *   **360 Systems DigiCart/E Audio Recorder** — Connect the Interface cable to the AUX Serial Port on the DigiCart/E. Refer to the section "**360 Systems DigiCart/E Cabling**" on page 15–5 for more information on the cabling for this Audio Server.

    *   **Sony MiniDisc MD Player** — Connect the Interface cable to the RS232C port on the Sony MiniDisc. Refer to the section "**Sony MiniDisc MDS-B4P Cabling**" on page 15–6 for more information on the cabling for this Audio Server.

    *   **Enco Digital Audio Delivery System** — Connect the Interface cable to the remote port configured for external automation on the Enco Digital Audio Delivery System. Refer to the section "**Enco Digital Audio Delivery System Cabling**" on page 15–6 for more information on the cabling for this device.

This completes the procedure for connecting an Audio Server to the Synergy Q/MD switcher. Refer to the section "**Communications Setup**" on page 15–7 for instructions on how to set up communications protocols on the Switcher, as well as on the Audio Server.

Audio Server Interface Cable Pinouts

Use the information in this section to connect the Interface Cable from the Synergy Q/MD switcher to the Audio Server.

360 Systems DigiCart Cabling

The Synergy control panel connects to the DigiCart Audio Server via the remote ports on the Synergy Q/MD switcher, and the Serial Port 2 on the DigiCart.

Cable connections in the following table refer only to those between the Synergy control panel and the DigiCart Audio Server. Other cable connections present on the DigiCart can be found in the DigiCart Audio Server documentation.

⚠	**Important**	Do not connect any signals to **Pin 2** of the DigiCart.

Synergy Q/MD -to- DigiCart Wiring Chart

Synergy Control Panel			DigiCart	
Remote Port	Signal		Serial Port 2	Signal
1	Chassis		Do not connect	
2	RxA (Rx-)	→	5	TxA (Tx-)
3	TxB (Tx+)	→	8	RxB (Rx+)
4	n/c			
5	Ground			
6	Ground	→	1	Signal Ground
7	RxB (Rx+)	→	4	TxB (Tx+)
8	TxA (Tx-)	→	9	RxA (Rx-)
9	Chassis		Do not connect	

n/c = Not Connected

360 Systems DigiCart/E Cabling

The Synergy control panel connects to the DigiCart/E Audio Server via the remote ports on the Synergy Q/MD switcher, and the AUX Serial Port on the DigiCart/E.

Cable connections in the following table refer only to those between the Synergy control panel and the DigiCart/E Audio Recorder. Other cable connections present on the DigiCart/E can be found in the 360 Systems documentation.

Synergy Q/MD -to- DigiCart/E Wiring Chart

Synergy Control Panel			DigiCart/E	
Remote Port	Signal		AUX Serial Port	Signal
1	Chassis	→	1	
2	RxA (Rx-)	→	8	TxA (Tx-)
3	TxB (Tx+)	→	7	RxB (Rx+)
4	n/c			
5	Ground	→	4 and 6[*]	
6	Ground			
7	RxB (Rx+)	→	3	TxB (Tx+)
8	TxA (Tx-)	→	2	RxA (Rx-)
9	Chassis			Ground

n/c = Not Connected

[*] Pins 4 and 6 are tied.

Sony MiniDisc MDS-B4P Cabling

The Synergy control panel connects to the Sony MiniDisc MD Player via the remote ports on the Synergy Q/MD switcher, and the RS232C Port on the MiniDisc.

Cable connections in the following table refer only to those between the Synergy control panel and the Sony MiniDisc MD Player using the ASCII protocol. Other cable connections present on the Sony MiniDisc can be found in the Sony documentation.

Synergy Q/MD -to- Sony MiniDisc Wiring Chart

Synergy Control Panel			Sony MiniDisc	
Remote Port	**Signal**		**RS232C Port**	**Signal**
1	Chassis		n/c	
2	Tx	→	2	Rx
3	Rx	→	3	Tx
4	n/c		4	DTR*
5	Ground	→	5	Ground
6	Ground		6	DSR*
7	n/c		7	RTS †
8	n/c		8	CTS †
9	Chassis		n/c	

* Ports 4 and 6 are tied

† Ports 7 and 8 are tied

Enco Digital Audio Delivery System Cabling

The Synergy control panel connects to the Enco Digital Audio Delivery System via the remote ports on the Synergy Switcher, and a remote port configured for external automation on the Enco.

Cable connections in the following table refer only to those between the Synergy control panel and the Enco Digital Audio Delivery System. Other cable connections present on the Enco Digital Audio Delivery System can be found in the Enco documentation.

Synergy Q/MD -to- Enco Digital Audio Delivery System Wiring Chart

Synergy Control Panel			Enco Digital Audio Delivery System	
Remote Port	**Signal**		**Remote Port**	**Signal**
1	Chassis			
2	Tx	→	2	Rx
3	Rx	→	3	Tx
4	n/c			
5	Ground	→	5	Ground
6	Ground			
7	n/c			
8	n/c			
9	Chassis			

Communications Setup

Setting up the Switcher

In order to have the Synergy Q/MD switcher communicate with an Audio Server, the remote port on the control panel that the Audio Server is connected to must be set up to communicate with the particular Audio Server you have connected.

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

1. Navigate to the **Communications Menu 1-2** as follows:

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

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

```
Communications (1-2)
                                          Com Port:  REMOTE 1 (R1)
This  menu  lets  you set                           ↓REMOTE 2 (R2)
up  what  each of the com
ports are used for.                                  ↑Monitor Wall
                                          Device:    Audio Server
                                                     Expander


               Select                     Custom       Extra
     Type      Device    Com Settings  Com Type  Devices     Options
```

Communications — Type Menu

3. Assign a Remote Com port to the Audio Server as follows:

   • Use the **Com Port** knob to select the remote port on the Synergy Switcher that is connected to the Audio Server.

✎ **Note**   You must use **Remote 5** with a **RJ-12 to DB9 Male Adaptor** to connect a remote Aux Panel to the **Synergy 1** control panel. If you intend to connect a Remote Aux Panel to the switcher, you will have to leave the Remote 5 port open.

   • Use the **Device** knob to select **Audio Server**.

4. Press **Select Device** to display the **Select Device Menu**.

```
Communications (1-2)
                                          Com Port:  REMOTE 1 (R1)
This  menu  lets  you set
up   which  devices  are
controlled    by    which
ports.                                    Device:       DigiCart
                                                      ↓MiniDisc


               Select                     Custom       Extra
     Type      Device    Com Settings  Com Type  Devices     Options
```

Communications — Select Device Menu

5. Select the device you want to assign to the Remote Com port as follows:

   • Use the **Com Port** knob to select the communications port you want to assign a specific Audio Server to.

- Use the **Device** knob to select the device. You can select between the following:

  ~ **DigiCart** — Select this option to assign an 360 Systems DigiCart to the communications port.

  ~ **MiniDisc** — Select this option to assign a Sony MiniDisc to the communications port (using the Sony MiniDisc ASCII protocol)

  ~ **EncoDAD** — Select this option to assign an Enco Digital Audio Delivery System to the communications port..

6. Press **Com Settings** to display the **Com Settings Menu**.

```
┌─────────────────────────────┐
│Communications (1-2)         │                    Com Port: │DigiCart (R1)│
│                             │
│This  menu  lets  you set    │
│up    your   com    port     │                              ↑19200
│parameters.                  │                    Baud:     │38400│
│                             │                              ↓57600
│                             │
│                             │                              ↑ODD
│                             │                    Parity:   │EVEN│
│                             │
├─────────────────────────────┤
│          Select             │              Custom    Extra│
│  Type    Device   Com Settings  Com Type   Devices   Options│
└─────────────────────────────┘
```

Communications — Com Settings Menu

7. Set the communications protocols for the Audio Server as follows:

- Use the **Com Port** knob to select the Audio Server you want to set the communications settings for.

- Use the **Baud** knob to select the baud rate for the Audio Server. Refer to the section "**Setting up the Audio Server**" on page 15–9 for the specific settings for your Audio Server.

- Use the **Parity** knob to select the parity, **NONE**, **ODD** or **EVEN** for the specific Audio Server. Refer to the section "**Setting up the Audio Server**" on page 15–9 for the specific settings for your Audio Server.

8. Press **Com Type** to display the **Com Type Menu**.

```
┌─────────────────────────────┐
│Communications (1-2)         │                    Com Port: │DigiCart (R1)│
│                             │
│This  menu  lets  you set    │
│up your com port types.      │                              RS-232
│                             │                    Type:     │RS-422│
│                             │
│                             │
│                             │
│                             │
├─────────────────────────────┤
│          Select             │              Custom    Extra│
│  Type    Device   Com Settings  Com Type   Devices   Options│
└─────────────────────────────┘
```

Communications — Com Type Menu

9. Select the type of serial communications that will be used to communicate with the Audio Server as follows:

- Use the **Com Port** knob to select the Audio Server you want to set the communications type for.

- Use the **Type** knob to select the type of serial communications (**RS-232** or **RS-422**) for the selected port. Refer to the section "**Setting up the Audio Server**" on page 15–9 for the specific settings for your Audio Server.

	Note	Network UDP and Network TCP are not supported for this device type.

	Note	The Synergy 1 allows you to select RS-232 Null and RS-422 Null, as well as the standard RS-232 and RS-422. Refer to the section "Setting up the Audio Server" on page 15–9 for information on when to use these settings.

10. Press **HOME** to display the **Installation Change Confirmation Screen**.

11. Accept or reject the changes you have made as follows:

   • Press **Confirm** to accept the changes.

   • Press **Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure for setting up the communications with the Audio Server, next you will finish setting up the Audio Server to communicate with the Synergy Q/MD switcher.

Setting up the Audio Server

In order to have the Synergy Q/MD switcher communicate with an Audio Server, the Audio Server you are connecting must be set up to communicate and accept commands from the switcher.

360 Systems DigiCart

This section describes the proper installation configuration required for a Synergy Q/MD switcher to interface with a 360 Systems DigiCart.

Use the following information to connect a DigiCart Audio Server to your Synergy Q/MD switcher:

   • Use the following communications settings when connecting the DigiCart Audio Server to the Synergy Q/MD switcher:

Synergy Q/MD -to- DigiCart Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	Odd
Data Bits	8
Stop Bits	1

	Important	During operation (from the Synergy panel), the DigiCart must be enabled for remote control as per its manual.

This completes the set up of the 360 Systems DigiCart Audio Recorder.

360 Systems DigiCart/E Communication

This section describes the proper installation configuration required for a Synergy Q/MD switcher to interface with a 360 Systems DigiCart/E.

Use the following information to connect a DigiCart/E Audio Recorder to your Synergy Q/MD switcher:

- Use the following communications settings when connecting the DigiCart/E Audio Recorder to the Synergy Q/MD switcher:

Synergy Q/MD -to- DigiCart/E Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	Even
Data Bits	8
Stop Bits	1

On the 360 Systems DigiCart/E Audio Recorder, you must set up the communications parameters to allow it to properly connect to the Synergy Q/MD switcher. Refer to your 360 Systems documentation for further communication set up instructions.

Important | During operation (from the Synergy control panel), the DigiCart/E must be enabled for remote control as per its manual. Ensure the REMOTE CONTROL ADDRESS is set to **02** on the DigiCart/E.

Use the following procedure to set up the 360 Systems DigiCart/E:

1. On the **SETUP MENU**, select **SET AUX PROTOCOL**.
2. Select **E-BUS** to set the Aux Bus Protocol.
3. Press **ENTER**.

This completes the set up of the 360 Systems DigiCart/E Audio Recorder.

Sony MiniDisc MDS-B4P

This section describes the proper installation configuration required for a Synergy switcher to interface with a Sony MiniDisc using the ASCII protocol.

Use the following information to connect a Sony MiniDisc MD Player to your Synergy switcher:

- Use the following communications settings when connecting the Sony MiniDisc MD Player to the Synergy switcher:

Synergy Q/MD -to- Sony MiniDisc Communication Settings

Setting	Value
Transmission Standard	RS-232
Baud Rate	9600
Parity	None
Data Bits	8
Stop Bits	1

Synergy 1 Q/MD -to- Sony MiniDisc Communication Settings

Setting	Value
Transmission Standard	RS-232 NULL
Baud Rate	9600
Parity	None
Data Bits	8
Stop Bits	1

Enco Digital Audio Delivery System

This section describes the proper installation configuration required for a Synergy switcher to interface with an Enco Digital Audio Delivery System.

Use the following information to connect an Enco Digital Audio Delivery System to your Synergy switcher:

- Use the following communications settings when connecting the Enco Digital Audio Delivery System to the Synergy switcher:

Synergy Q/MD -to-Enco DAD Communication Settings

Setting	Value
Transmission Standard	RS-232
Baud Rate	38400
Parity	None
Data Bits	8
Stop Bits	1

Synergy 1 Q/MD -to-Enco DAD Communication Settings

Setting	Value
Transmission Standard	RS-232 NULL
Baud Rate	38400
Parity	None
Data Bits	8
Stop Bits	1

- You must configure a remote port on the Enco Digital Audio Delivery System for external automation using the DAD Command Language (DCL). Refer to your Enco documentation for setup and configuration information.

- You must create a blank Playlist on the Enco Digital Audio Delivery System, and name the Playlist "**SYNERGY**". This Playlist enables the Synergy switcher to communicate with the Enco Digital Audio Delivery System.

Roll VTR Setup

The **Roll VTR Mode** determines how the **ROLL VTR** button behaves when an Audio Server is selected. When you set the **Roll VTR Mode**, the setting affects all **ROLL VTR** buttons in all MLEs.

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

1. Navigate to the **Personality Menu** as follows:

   • Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Personality**.

2. Use the **Option** knob to select **Roll VTR Mode**.

```
Personality                                                    ↑Pnl SleepTime
                                                     Option:   Roll VTR Mode
↑FTB Display      FTB        Sets ROLL VTR button              ↓S&T Mode
 GlblStoreMem     Off        action.
 Isolate DSKs     Off        Play: Immediately plays           Play
 KeypadClipIDs    MLE        clip.                   Value:    Arm
 Matte Limit      Off        Arm: Button can be                Armed Always
 MemBank Cycle    9          turned on or off.
 Pnl SleepTime    30         Armed Always: Button
↓Roll VTR Mode    Arm        cannot be turned off.

    3D Pattern      Standard      Assign
    Button Assign   Mnemonics     Bus Maps
```

Personality — Roll VTR Mode Menu

3. Use the **Value** knob to select a mode for the **ROLL VTR** button. You can select between the following:.

⚝ **Important**
| When an OverDrive Production Control System is connected to the switcher, activating the **Editor** button turns on all the **Roll VTR** buttons and sets the Roll VTR Mode to *Arm*, disabling the Roll VTR Mode selection in the **Personality Menu**.

   • **Play** — This mode allows you to play an Audio Server clip directly by pressing the **ROLL VTR** button. Once pressed, the clip will start to play and will have to be taken on-air manually with the **Fader**, a **Cut** or **Auto Transition**.

   • **Arm** — This mode allows you to have an Audio Server clip play with the next transition that takes the MLE on-air by pressing the **ROLL VTR** button. This can be used to roll multiple Audio Servers if they are re-entered. Once pressed, the clip will only start to play when it is taken on-air with a **Cut**, **Auto Transition**, or if you double-press the assigned crosspoint button.

   • **Armed Always** — Selecting this mode allows you to have an Audio Server clip play with the next transition that takes the MLE on-air when you press the assigned crosspoint button.

✎ **Note**
| If an Auto Transition is performed with the **ROLL VTR** active, and in **Arm Mode**, the switcher will apply the **Pre-Roll** time for the Audio Server before it takes the Audio Server on-air.

This completes the procedure for configuring the **Roll VTR Mode**.

Previewing Audio Server Clips

The **Audio Server Clip Menu** allows you to preview your audio clips. You can verify any changes made on the device before creating Custom Controls or Clip Registers on the Synergy Q/MD switcher. Note that this is a preview function only, and you must create Custom Controls or Clip Registers in order to recall Audio Server clips for use during on-air production. Refer to the section "**Audio Server Custom Controls**" on page 15–16 for information on Custom Controls for your Audio Server.

The **Audio Server Clip Menu** identifies the Audio Server clip and the specific Audio Server you are controlling by the Remote Port that it is connected to. Below the title are three rows: **Cut ID**, **Cut Name**, and **Cut Time**.

	Note	If you have a Sony MiniDisc, the rows will be labeled as **Track ID**, **Track Name**, and **Track Time**.

- **Cut ID** — This row displays the current Drive, Directory, and Cut that has been selected. These fields are as follows **00**(**Drive**).**00**(**Directory**)**00**(**Cut**)

- **Cut Name** — This row displays the name of the cut on the Audio Server.

- **Cut Time** — This row displays the time, or length, of the cut on the Audio Server. If you are using an Enco Digital Audio Delivery System, this row displays the current playout time on the Enco DAD for the selected clip.

Previewing Audio Server Clips

Use the following procedure to preview an Audio Server clip:

1. Navigate to the **Clips Menu** as follows:

   - Press **HOME** ⇨ **MORE** ⇨ **Clips** ⇨ **Installation** ⇨ **Communications**.

2. Press **Audio Clips** to display the **Audio Server Clip Menu**.

3. Select the device you want to preview as follows:

   - Press **Device** to display the **Device Menu**.

```
Audio Server
                                              Device  DigiCart (R1)

Device: DigiCart (R1)

Cut ID: 0.0000
Cut Name:
Cut Time: 00:00:00



   Device        Cut ID              Play        Pause        Stop
```

Audio Server — Device Menu

   - Use the **Device** knob to select the Audio Server you want to preview the clip information for.

4. Select the clip you want to preview as follows:

   - Press **Cut ID** to display the **Cut ID Menu**.

	Operating Tip	The **Audio Server Clip Menu** displays the last selected clip/track until a new one is selected.

```
┌──────────────────────────────────────────────────────────┐
│ Audio Server                                        (0)    │
│                                                    Drive   │
│                                                            │
│ Device: DigiCart (R8)                                      │
│                                                     (0)    │
│ Cut ID: 0.0000                                   Directory │
│ Cut Name:                                                  │
│ Cut Time: 00:00:00                                 ( 0)    │
│                                                      Cut   │
│                                                            │
│                                          │                 │
│   Device       Cut ID              Play      Pause    Stop │
└──────────────────────────────────────────────────────────┘
```

Audio Server — Cut ID Menu

- Use the **Drive** knob to select the drive location on the Audio Server. Note that this knob is labeled as **Disc** when using a Sony MiniDisc.

- Use the **Directory** knob to select the directory.

- Use the **Cut** knob to select the clip number you want to preview. Note that this knob is labeled as **Track** when using a Sony MiniDisc.

5. Preview the selected audio clip as follows:

- Press **Play** to play the Audio Server clip from the selected device.

- Press **Pause** to pause the clip.

- Press **Stop** to stop the clip playout.

This completes the procedure to preview an Audio Server clip. Next you can program custom controls to play clips from your Audio Server, or setup Clip Registers for your Audio Server on the Synergy switcher.

Audio Server Custom Controls

A custom control button can be programmed with the transport functions that are located on the **Audio Server Clips Menu** and the **Remote Control Menu**. This allows for quick access to these functions, or you can string a number of these functions together in a single custom control.

Use the following procedure to program custom control buttons that include special transport functions for Audio Servers:

	Note	You must have the Audio Server Control option installed in order to control a Audio Server to the Synergy Switcher. Refer to the section "**Setting up the Switcher**" on page 15–7 for information on setting up a Audio Server.

1. Navigate to the **Custom Controls Menu 1-2** as follows:

    •   Press **HOME** ➪ **Custom Controls**.

```
┌─────────────────────────────────────────────────────────────┐
│ Custom Controls (1-2)                                        │
│                                            Bank:  █ Bank 1  (1)│
│ Custom Control buffers .53% full                             │
│                                                   ↑ Custom08 # 8│
│ Selected: Bank 1 Button 9 [Custom09]             █ Custom09 # 9│
│                                          Button:  ↓ Custom10 #10│
│ Custom Control Legend:                                       │
│       # = normal custom control button                       │
│                                                              │
│    Start       Modify          Start Relative  Default       │
│  Recording      Name             Recording    All Names  Delete Macro│
└─────────────────────────────────────────────────────────────┘
```

Custom Controls Menu 1-2

2. Select the custom control button you want to record to as follows:

    •   Use the **Bank** knob to select the custom control bank you want to record the custom control to.

    •   Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*****) or the "at sign" (**@**) in the list have already been programmed.

	Operating Tip	As a recommendation, keep transport control functions for similar devices grouped together on your *physical* custom control buttons.

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

```
┌─────────────────────────────────────────────────────────────┐
│ Custom Controls (1-2)                                        │
│                                            Bank:  █ Bank 1  (1)│
│ Recording...                                                 │
│                                                   ↑ Custom08 # 8│
│ Selected: Bank 1 Button 9 [Custom09]             █ Custom09 # 9│
│                                          Button:  ↓ Custom10 #10│
│ Custom Control Legend:                                       │
│       # = normal custom control button                       │
│                                                              │
│              Finish       Cancel       Insert                │
│            Recording     Recording     Special               │
└─────────────────────────────────────────────────────────────┘
```

Custom Controls — Recording Menu

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

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

```
Insert Special (2-2)




      Audio
     Server
```

Insert Special Menu

6. Press **Audio Server** to display the **Insert Audio Server Menu**. This menu allows you to choose specific transport control functions to assign to the button.

✎   **Note**   If an error message is displayed stating that there are no communications ports assigned to Audio Servers, ensure that the Audio Server you are trying to control has been properly set up.

7. Select a drive on the Audio Server as follows:

   • Press **Drive** to display the **Drive Menu**. Note that this button is labeled as **Disc** when using a Sony MiniDisc, and as **Machine** when using the Enco DAD.

   • Use the **Device** knob to select the Audio Server that the cut is stored on.

   • Use the **Drive** knob to select the drive on the Audio Server that the cut is stored on. Note that this knob is labeled as **Disc** when using a Sony MiniDisc, and as **Machine** when using the Enco DAD and is used to select the machine or player that the cut is stored on.

8. Select a directory on the Audio Server as follows:

   • Press **Directory** to display the **Directory Menu**.

```
Insert Audio Server
                                              Device  DigiCart (R1)

Device: DigiCart (R1)

Cut ID: 0.0000                               Command  Go To Cut
Cut Name:                                             ↓Play
Cut Time: 00:00:00                                            (0)
                                                      Directory


    Insert       Cancel       Drive     Directory     Cut
```
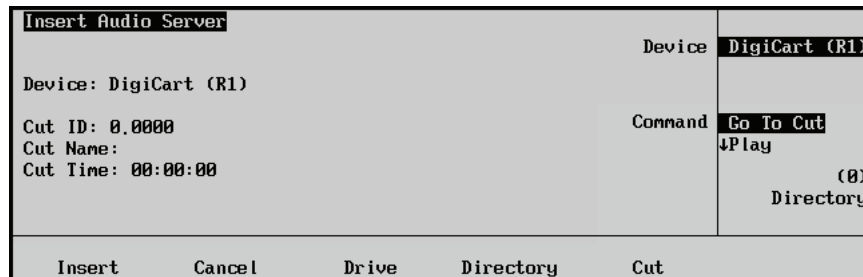
Audio Servers — Directory Menu

   • Use the **Directory** knob to select the directory on the Audio Server that the cut is stored on.

9. Select a cut on the Audio Server as follows:

   • Press **Cut** to display the **Cut Menu**. Note that this button is labeled as **Track** when using a Sony MiniDisc.
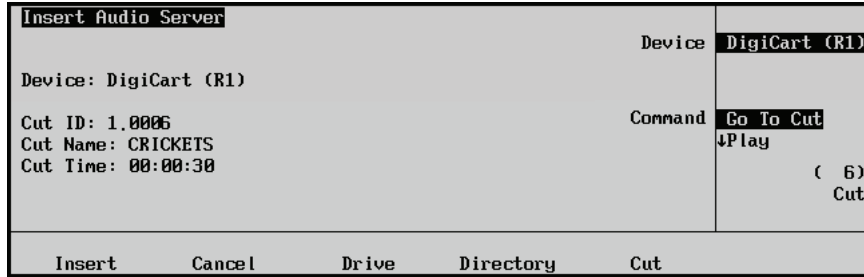
```
┌─────────────────────────────────────────────────────────┐
│ █Insert Audio Server                                      │
│                                        Device █DigiCart (R1)│
│                                                           │
│ Device: DigiCart (R1)                                     │
│                                                           │
│ Cut ID: 1.0006                        Command █Go To Cut  │
│ Cut Name: CRICKETS                             ↓Play      │
│ Cut Time: 00:00:30                                  (  6) │
│                                                      Cut  │
│                                                           │
│                                                           │
│   Insert      Cancel      Drive    Directory    Cut       │
└─────────────────────────────────────────────────────────┘
```
Audio Servers — Cut Menu

- Use the **Cut** knob to select the specific cut on the Audio Server that you want to recall using the Custom Control button. Note that this knob is labeled as **Track** when using a Sony MiniDisc.

10. Select an Audio Server function to insert as follows:

    - Ensure the Audio Server and the clip are selected.

    - Use the **Command** knob to select the transport control function that you want to assign to the selected Audio Server. You can chose between the following:

        ~ **Go to Cut** — Select this command to have the Audio Server cue to a selected cut or track.

        ~ **Play** — Select this command to have the Audio Server go into play mode, or 1× forward.

        ~ **Pause** — Select this command to have the Audio Server go into pause mode.

        ~ **Stop** — Select this command to have the Audio Server stop.

11. Press **Insert** to insert the selected command into the custom control and display the **Insert Special Menu 1-2**.

✓ **Operating Tip**

> Transport control functions can be strung together (while in programming mode), allowing one custom control button to perform *multiple functions* when it is pressed. For example, you can have the **Go To Cut** function followed by the **Play** function, allowing a single custom control macro to go to a cut or track and then run it.

12. Insert additional commands if needed. When you have finished inserting commands, proceed to the next step to complete the procedure.

13. Press **UP ONE** to display the **Recording Menu**.
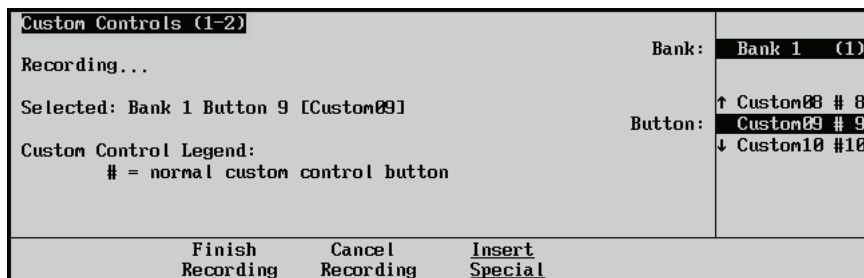
```
┌─────────────────────────────────────────────────────────┐
│ █Custom Controls (1-2)                                    │
│                                           Bank: █Bank 1  (1)│
│ Recording...                                              │
│                                                           │
│ Selected: Bank 1 Button 9 [Custom09]      ↑ Custom08 # 8  │
│                                         Button: █Custom09 # 9│
│ Custom Control Legend:                    ↓ Custom10 #10  │
│        # = normal custom control button                   │
│                                                           │
│                                                           │
│            Finish        Cancel      Insert               │
│            Recording     Recording   Special              │
└─────────────────────────────────────────────────────────┘
```
Custom Controls — Recording Menu

14. Press **Finish Recording** or the flashing custom control button, to finish recording to the selected custom control. The custom control button will stop flashing.

	Note	Any recorded custom control can be edited. Refer to Chapter 10, "**Custom Controls**", for more information.

This completes the procedure for programming custom control buttons that include special transport functions for Audio Servers.

Once your custom control buttons have been programmed, be sure to properly name them. Refer to Chapter 10, "**Custom Controls**", for more information on naming custom control buttons.

Audio Server Clip Setup

In order to easily recall clips on the Audio Server from the Synergy Switcher, you will have to store the clips you want to use to **Clip Registers** on the switcher. These Clip Registers store the location, or cut, on the Audio Server for the clip, and the name of the clip.

The **VTR Clips Menu** allows you to perform the following functions:

- Select an Audio Server and a clip number.

- Grab or enter a timecode (and other device-specific data), name the clip, and store it in a clip register. Up to **100** clips can be stored (using registers **00** to **99**).

- Cue each clip.

Programming Audio Server Clips

Use the following procedure to program an Audio Server clip:

1. Navigate to the **VTR Clips Menu 1-2** as follows:

    - Press **HOME** ⇨ **MORE** ⇨ **Clips** ⇨ **VTR Clips**.

2. Press **Clip Type** to display the **Clip Type Menu**.

```
VTR Clips (1-2)
                                              Clip   VTR Clip (00)
Clip: 00       Clip Name: "VTR Clip"                ↓VTR Clip (01)
Device: DigiCart (R1)
                                                     BNC C02   (02)
Cut Id: 1.0000                               Device  DigiCart (R1)
Cut Name: Unknown
Cut Time: 00:00:00
                                                     Clip Enabled
                                                     Clip Disabled

   Clip Type    Name Clip    Cut Index           Stop        Play
```

VTR Clips Menu — Clip Type Menu

3. Select the Clip Register you want to store an Audio Server Clip to as follows:

    - Use the **Clip** knob to select the Clip Register that you want to program (**00**-**99**).
    - Use the **Device** knob to select the remote port for the Audio Server you want to store the clip information for.
    - Use the **Enable/Disable** knob to select if you want the clip to be displayed in the **Remote Control Menu** (for on-air use), or to be disabled for use later.

✎ **Note** | If a clip is set to **Clip Disabled**, it will not be displayed on the **Remote Control Menu**, but you can still enter all required clip parameters. This can also be used to enable a clip that is already programmed.

4. Press **Name Clip** to display the **Clip Name Menu**.

✎ **Note** | The **Audio Server Clip** name is the one that will be displayed for the Clip Register on the display in the **Global Memory System Group**. This name will also be shown on the **Remote Control Menu**.

```
 Clip Name

  a b c d e f g h i j k l m n o p q r s t u v w x y z      Horizontal

  A B C D E F G H I J K L M N O P Q R S T U J W X Y Z

  0 1 2 3 4 5 6 7 8 9 ! @ # - _ & * ( ) / , . ? ' "        Vertical


 Current Name:[VTR Clip]                    New Name:[JTR Clip]

              Prev        Next                            Accept
   Space      Letter      Letter            Default       New Name
```

Clip Name Menu .

- Use the **Horizontal** and **Vertical** knobs (in conjunction with the editing softkeys) to enter the desired clip name. A Standard PS/2 keyboard can be used to perform the same actions as pressing or rotating the **System Control** buttons and knobs.

⚠ **Important**

Do not enter a space as the first or last character of a clip name.

- Press **Accept New Name** to complete the naming procedure and return to **VTR Clips Menu 1-2**.

```
 VTR Clips (1-2)
                                              Clip  VTR Clip (00)
 Clip: 00      Clip Name: "VTR Clip"              JVTR Clip (01)
 Device: DigiCart (R1)
                                                    BNC C02  (02)
 Cut Id: 1.0000                            Device  DigiCart (R1)
 Cut Name: Unknown
 Cut Time: 00:00:00
                                                    Clip Enabled
                                                    Clip Disabled

   Clip Type    Name Clip    Cut Index         Stop        Play
```

VTR Clips Menu 1-2

✎ **Note**

The new name is now shown in the status area and as one of the options for the **Clip** knob.

5. Press **Cut Index** to display the **Cut Index Menu**.

```
 VTR Clips (1-2)
                                                          (1)
                                                         Drive
 Clip: 00      Clip Name: "VTR Clip"
 Device: DigiCart (R1)
                                                          (0)
 Cut Id: 1.0000                                        Directory
 Cut Name: Unknown
 Cut Time: 00:00:00                                    (  0)
                                                         Cut

   Clip Type    Name Clip    Cut Index         Stop        Play
```

VTR Clips — Cut Index Menu

The **Audio Server VTR Clips Menu** identifies the Audio Server Clip Register you are using, the name of the clip register the specific Audio Server you are controlling by the the BNC that it is connected to, and the communication port that is being used to control the Audio Server. Below the title are three rows, **Cut Id**, **Cut Name**, and **Cut Time**.

- **Cut Id** — This show indicated the current Drive, Directory, and Cut that has been selected. This information is displayed as; **0(Drive).0(Directory)000(Cut)**.

- **Cut Name** — This is the name of the cut on the Audio Server.

- **Cut Time** — This is the time, or length, of the cut on the Audio Server. If you are using an Enco Digital Audio Delivery System, this row displays the current playout time on the Enco DAD for the selected clip.

6. Select a cut on the Audio Server as follows:

   - Use the **Drive** knob to select the drive (**0**-**6**) on the Audio Server that the cut is stored on.

   - Use the **Directory** knob to select the directory (**0**-**9**, **S**) on the Audio Server that the cut is stored on.

   - Use the **Cut** knob to select the specific cut (**0**-**999**) on the Audio Server that you want to store in the Clip Register.

7. Press **HOME** to store your settings.

This completes the procedure for programming and Audio Server clip.

Audio Server Operation

Audio Server clips can be cued and played by selecting the Clip Register by using the keypad in the **Global Memory System Group**.

Clip Control Overview

Audio Server Clips are recalled by using the keypad in the **Global Memory System Group** of the Synergy Switcher to enter the **VTR Clip Number**, or **Clip Register**, of the Audio Server Clip you want to recall. The **VTR Clip Number** is a **2** digit number that corresponds to the **Audio Server Clip Register**. Refer to the section "**Programming Audio Server Clips**" on page 15–20 for more information. When selecting a crosspoint associated with any VTR device, the keypad in the **Global Memory System Group** will be set to **VTR Clip Number** mode.

```
Clip 00  VTR Clip
M:015  D:008  F:20
```
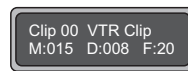
VTR Clip Number

Cueing a Clip Using the Keypad

Use the following procedure to cue a **VTR Clip** from a Audio Server using the keypad in the **Global Memory System Group**:

```
VTR
CLIP
```

1. Toggle the **VTR CLIP** button in the **Global Memory System** to display the VTR Clip Number screen.

```
Clip 00  VTR Clip
M:015  D:008  F:20
```
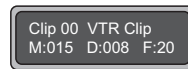
VTR Clip Number

2. Enter the VTR Clip Number using the keypad in the **Global Memory System Group**.

3. Press **Enter**.

This completes the procedure for cueing a clip using the keypad.

Video Servers (VDCP)

In This Chapter

This chapter provides instructions for connecting, setting up and operating a **VTR**, **DDR**, or **Video Server** using the **VDCP** protocol, with your Synergy Q/MD switcher. Before you begin, ensure that the **Video Server Control** option is installed. If not, please contact **Ross Video** for details. Refer to Chapter 6, "**Software Upgrades and Options**" for instructions on verifying the status of installed options.

Note — The **Video Server Control** option is required for any VTR, DDR, or Video Server that uses the VDCP Protocol. This group of devices will be referred to as Video Servers for this chapter.

The following topics are discussed:

- Supported Video Servers
- Communications Connections
- Communications Setup
- Setting up Video Server BNCs
- Roll VTR Setup
- Video Server Custom Controls
- Video Server Clip Setup
- Video Server Operation

Supported Video Servers

The Synergy Series Switcher has been tested with a number of Video Servers (DDRs and Video Servers), using the VDCP Protocol, to ensure the highest standard for compatibility and reliability. The following devices are currently supported by your Synergy Q/MD switcher:

Note   The Synergy Q/MD switcher will support any Video Server that uses the **Generic VDCP Protocol**. Refer to the section "**Generic Video Server Cabling**" on page 16–14 for more information.

- **360 Systems Image Server 2000** (using the VDCP protocol)
- **Abekas 6000 MultiFlex DTV Production Server** (using the VDCP protocol)
- **Avid AirSpace Video Server** (using the Generic VDCP protocol)
- **Avid AirSpeed Video Server** (using the Generic VDCP protocol)
- **EVS Broadcasting Equipment maXS Video Server** (using the VDCP protocol)
- **Gee Broadcast Systems Geevs Video Server** (using the VDCP protocol)
- **GVG M-Series iVDR Video Server** (using the VDCP protocol)
- **GVG Profile Video File Server** (using the VDCP protocol)
- **GVG Turbo iDDR** (using the VDCP protocol)
- **Leitch ASC VR300 Video Server** (using either version 2 or 2.7 Leitch software and the VDCP protocol)
- **Leitch Nexio Video Server** (using the VDCP protocol)
- **Leitch VR440 Video Server** (using the VDCP protocol)
- **Omneon Video Server** (using the VDCP protocol)
- **Pinnacle Systems Thunder Video Servers** (using the VDCP protocol)
- **Pinnacle Systems ThunderLT Video Server** (using the VDCP protocol)
- **Pinnacle Systems ThunderMX Video Server** (using the VDCP protocol)
- **Ross Video SoftMetal Video Server** (using the VDCP protocol)
- **Spencer Technologies Video Server** (using the VDCP protocol)

Communications Connections

You can connect a number of Video Servers to your Synergy Q/MD switcher. The procedure for connecting the Video Server will depend on the type of Video Server you have. This section will provide general instructions for connecting the Video Server to one of the Remote Ports on the back of the Synergy Control Panel.

Note   These instructions are provided as a guide, for specific information on the Video Server you are connecting to the Synergy Q/MD switcher, refer to the documentation provided with the Video Server.

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

* **Video Server Control** — This is the software option from Ross Video that allows your Synergy Q/MD switcher to control a Video Server.

* **Interface Cable** — This is a 9-Pin cable with a 9-Pin, D-Type (DB9) male connector on one end, to connect to the remote port on the control panel, and a connector on the other end to connect to your Video Server. Refer to the section "**Video Server Interface Cable Pinouts**" on page 16–5 for information on the pin-outs and connector required for your Video Server. Ross Video does not supply this cable.

Use the following procedure to connect a Video Server to your Synergy Q/MD switcher:

1. Connect and secure the **9-Pin**, **Male**, end of the **Interface Cable** to one of the **Remote Ports** on the back of the Synergy control panel.

Note   You must use **Remote 5** with a **RJ-12 to DB9 Male Adaptor** to connect a remote Aux Panel to the **Synergy 1** control panel. If you intend to connect a Remote Aux Panel to the switcher, you will have to leave the Remote 5 port open.

Synergy 2 Q/MD — Control Panel

Synergy 1 Q/MD — Control Panel

2. Connect and secure the other end of the cable to the appropriate port on the Video Server. The suggested port for each supported Video Server is listed below:

• **Avid AirSpace Video Server** — Connect the Interface cable to the com port on the AirSpace chassis. Refer to the section "**Avid AirSpace Cabling**" on page 16–5 for more information on the cabling for this Video Server.

• **Leitch ASC VR300 Video Server** — Connect the Interface cable to the com port on the ASC VR300 chassis. Refer to the section "**Leitch Video Server Cabling**" on page 16–6 for more information on the cabling for this Video Server.

• **Leitch VR440 Video Server** — Connect the Interface cable to the com port on the VR440 chassis. Refer to the section "**Leitch Video Server Cabling**" on page 16–6 for more information on the cabling for this Video Server.

• **Pinnacle Systems Thunder** — Connect the Interface cable to the com port on the Thunder, ThunderLT, or ThunderMX chassis. Refer to the section "**Pinnacle Systems Thunder Video Server Cabling**" on page 16–6 for more information on the cabling for these Video Servers.

• **Spencer Technologies Video Server** — Connect the Interface cable to the com port on the Video Server. Refer to the section "**Spencer Technologies Video Server Cabling**" on page 16–7 for more information on the cabling for this Video Server.

• **Gee Broadcast Systems Geevs Video Server** — Connect the Interface cable to the com port on the Geevs chassis. Refer to the section "**Gee Broadcast Systems Geevs Video Server Cabling**" on page 16–8 for more information on the cabling for this Video Server.

• **360 Systems Image Server 2000** — Connect the Interface cable to the com port on the Image Server 2000 chassis. Refer to the section "**360 Systems Image Server 2000 Cabling**" on page 16–8 for more information on the cabling for this Video Server.

• **EVS Broadcasting Equipment maXS Video Server** — Connect the Interface cable to the RS422 Ports (Remote), Port 1 on the maXS. Refer to the section "**EVS Broadcasting Equipment maXS Video Server Cabling**" on page 16–9 for more information on the cabling for this Video Server.

• **Avid AirSpeed Video Server** — Connect the Interface cable to the com port on the AirSpeed chassis. Refer to the section "**Avid AirSpeed Video Server Cabling**" on page 16–9 for more information on the cabling for this Video Server.

• **Omneon Video Server** — Connect the Interface cable to the com port on the Omneon chassis. Refer to the section "**Omneon Video Server Cabling**" on page 16–10 for more information on the cabling for this Video Server.

• **Ross Video SoftMetal Video Server** — Connect the Interface cable to the com port on the SoftMetal chassis. Refer to the section "**Ross Video SoftMetal Video Server Cabling**" on page 16–10 for more information on the cabling for this Video Server.

• **GVG M-Series iVDR Video Server** — Connect the Interface cable to the com port on the M-Series chassis. Refer to the section "**GVG M-Series iVDR Video Server Cabling**" on page 16–11 for more information on the cabling for this Video Server.

• **GVG Profile Video File Server** — Connect the Interface cable to a RS-422 Communications Port on the GVG RS-422 Connector Panel. Refer to the section "**GVG Profile Video File Server Cabling**" on page 16–11 for more information on the cabling for this Video Server.

• **GVG Turbo iDDR** — Connect the Interface cable to an RS422 com port on the Turbo chassis. Refer to the section "**GVG Turbo iDDR Cabling**" on page 16–12 for more information on the cabling for this Video Server.

- **Abekas6000 MultiFlex DTV Production Server** — Connect the Interface cable to the RS422 Serial Control Port on the Abekas chassis. Refer to the section "**Abekas6000 MultiFlex DTV Production Server Cabling**" on page 16–12for more information on the cabling for this Video Server.

- **Leitch Nexio Video Server** — Connect the Interface cable to the rear panel port on the Nexio chassis for the channel you want to control. Refer to the section "**Leitch Nexio Video Server Cabling**" on page 16–13 for more information on the cabling for this Video Server.

- **Generic** — Connect the Interface cable to the communications port on the chassis of the Video Server. Refer to the section "**Generic Video Server Cabling**" on page 16–14 for more information on general Video Server cabling.

This completes the procedure for connecting a Video Server to the Synergy Q/MD switcher. Refer to the section "**Communications Setup**" on page 16–15 for instructions on how to set up communications protocols on the Switcher, as well as on the Video Server.

Video Server Interface Cable Pinouts

Use the information in this section to connect the Interface Cable from the Synergy Q/MD switcher to the Video Server.

Avid AirSpace Cabling

The Synergy control panel connects to the AirSpace Video Server via the remote ports on the Synergy Q/MD switcher, and the com port on the AirSpace.

Cable connections in the following table refer only to those between the Synergy control panel and the AirSpace Video Server. Other cable connections present on the AirSpace can be found in the Avid AirSpace documentation.

Synergy Q/MD -to- Avid AirSpace Wiring Chart

Synergy Control Panel			Avid AirSpace	
Remote Port	Signal		RS-422 Com Port	Signal
1	Chassis			
2	RxA (Rx-)	→	2	TxA (Tx-)
3	TxB (Tx+)	→	3	RxB (Rx+)
4	n/c			
5	Ground			
6	Ground	→	6	Ground
7	RxB (Rx+)	→	7	TxB (Tx+)
8	TxA (Tx-)	→	8	RxA (Rx-)
9	Chassis			

n/c = Not Connected

Leitch Video Server Cabling

The Synergy control panel connects to the Leitch ASC VR300 and VR440 Video Servers via the remote ports on the Synergy Q/MD switcher.

Synergy Q/MD RS-422 Wiring Chart

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

Refer to the documentation that came with your Video Server for port and pinout information for your specific Video Server.

Pinnacle Systems Thunder Video Server Cabling

The Synergy control panel connects to the Pinnacle Systems Thunder, ThunderLT, and ThunderMX Video Servers via the remote ports on the Synergy Q/MD switcher, and the RS-422 com ports (5-12) on the Thunder.

Cable connections in the following table refer only to those between the Synergy control panel and the RS-422 com ports (5-12) on the Thunder Video Server. This table is for use only with devices that have com ports labelled 5-12. Other cable connections present on the Thunder can be found in the Pinnacle Thunder documentation.

Synergy Q/MD -to- Pinnacle Thunder V5.5 Wiring Chart

Synergy Control Panel			Pinnacle Thunder V5.5	
Remote Port	**Signal**		**RS-422 Com Ports (5-12)**	**Signal**
1	Chassis			
2	RxA (Rx-)	→	8	TxA (Tx-)
3	TxB (Tx+)	→	7	RxB (Rx+)
4	n/c			
5	Ground			
6	Ground	→	4	Power Ground
7	RxB (Rx+)	→	3	TxB (Tx+)
8	TxA (Tx-)	→	2	RxA (Rx-)
9	Chassis			

n/c = Not Connected

Cable connections in the following table refer only to those between the Synergy control panel and the RS-422 com ports (3-8) on the Thunder Video Server. This table is for use only with newer devices that have com ports labelled 3-8. Other cable connections present on the Thunder can be found in the Pinnacle Thunder documentation.

Synergy Q/MD -to- Pinnacle Thunder V6.1 Wiring Chart

Synergy Control Panel			Pinnacle Thunder v6.1	
Remote Port	Signal		RS-422 Com Ports (3-8)	Signal
1	Chassis			
2	RxA (Rx-)	→	2	TxA (Tx-)
3	TxB (Tx+)	→	3	RxB (Rx+)
4	n/c			
5	Ground			
6	Ground	→	6	Ground
7	RxB (Rx+)	→	7	TxB (Tx+)
8	TxA (Tx-)	→	8	RxA (Rx-)
9	Chassis			

n/c = Not Connected

Spencer Technologies Video Server Cabling

The Synergy control panel connects to the Spencer Technologies Video Server via the remote ports on the Synergy Q/MD switcher.

Synergy Q/MD RS-422 Wiring Chart

Synergy Control Panel	
Remote Port	Signal
1	Chassis
2	RxA (Rx-)
3	TxB (Tx+)
4	n/c
5	Ground
6	Ground
7	RxB (Rx+)
8	TxA (Tx-)
9	Chassis

Refer to the documentation that came with your Video Server for port and pinout information for your specific Video Server.

Gee Broadcast Systems Geevs Video Server Cabling

The Synergy control panel connects to the Gee Broadcast Systems Geevs Video Server via the remote ports on the Synergy Q/MD switcher.

Synergy Q/MD RS-422 Wiring Chart

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

Refer to the documentation that came with your Video Server for port and pinout information for your specific Video Server.

360 Systems Image Server 2000 Cabling

The Synergy control panel connects to the Image Server 2000 via the remote ports on the Synergy Q/MD switcher, and the RS-422 serial control ports (Channel 1-3) on the Image Server 2000.

Cable connections in the following table refer only to those between the Synergy control panel and the Image Server 2000. Other cable connections present on the Image Server 2000 can be found in the 360 Systems Image Server 2000 documentation.

Synergy Q/MD -to- Image Server 2000 Wiring Chart

Synergy Control Panel			Image Server 2000	
Remote Port	**Signal**		**RS-422 Serial Control Port**	**Signal**
1	Chassis			
2	RxA (Rx-)	→	2	TxA (Tx-)
3	TxB (Tx+)	→	3	RxB (Rx+)
4	n/c			
5	Ground			
6	Ground	→	6	Power Ground
7	RxB (Rx+)	→	7	TxB (Tx+)
8	TxA (Tx-)	→	8	RxA (Rx-)
9	Chassis			

n/c = Not Connected

EVS Broadcasting Equipment maXS Video Server Cabling

The Synergy control panel connects to the EVS maXS Video Server via the remote ports on the Synergy Q/MD switcher, and the RS422 Ports (Remote), Port 1 on the maXS.

| ⚹ | **Important** | You can only use **RS-422 Port 1** on the maXS to connect to the Synergy Q/MD switcher. |

Cable connections in the following table refer only to those between the Synergy control panel and the maXS. Other cable connections present on the maXS can be found in the EVS maXS documentation.

Synergy Q/MD -to- EVS maXS Wiring Chart

Synergy Control Panel			EVS maXS	
Remote Port	**Signal**		**RS422 Remote (1) port**	**Signal**
1	Chassis			
2	RxA (Rx-)	→	2	TxA (Tx-)
3	TxB (Tx+)	→	3	RxB (Rx+)
4	n/c			
5	Ground			
6	Ground	→	6	Ground
7	RxB (Rx+)	→	7	TxB (Tx+)
8	TxA (Tx-)	→	8	RxA (Rx-)
9	Chassis			

n/c = Not Connected

Avid AirSpeed Video Server Cabling

The Synergy control panel connects to the AirSpeed Video Server via the remote ports on the Synergy Q/MD switcher, and the com port on the AirSpeed.

Cable connections in the following table refer only to those between the Synergy control panel and the AirSpeed Video Server. Other cable connections present on the AirSpeed can be found in the Avid AirSpeed documentation.

Synergy Q/MD -to- Avid AirSpeed Wiring Chart

Synergy Control Panel			Avid AirSpeed	
Remote Port	Signal		RS-422 Com Ports	Signal
1	Chassis			
2	RxA (Rx-)	→	2	TxA (Tx-)
3	TxB (Tx+)	→	3	RxB (Rx+)
4	n/c			
5	Ground			
6	Ground	→	6	Ground
7	RxB (Rx+)	→	7	TxB (Tx+)
8	TxA (Tx-)	→	8	RxA (Rx-)
9	Chassis			

Omneon Video Server Cabling

The Synergy control panel connects to the Omneon Video Server via the remote ports on the Synergy Switcher.

Cable connections in the following table refer only to those between the Synergy control panel and the Omneon Video Server. Other cable connections present on the Omneon Video Server can be found in the Omneon documentation.

Synergy Q/MD -to- Omneon Wiring Chart

Synergy Control Panel			Omneon Video Server	
Remote Port	Signal		RS-422 Com Port	Signal
1	Chassis			
2	RxA (Rx-)	→	2	TxA (Tx-)
3	TxB (Tx+)	→	3	RxB (Rx+)
4	n/c			
5	Ground			
6	Ground	→	6	Ground
7	RxB (Rx+)	→	7	TxB (Tx+)
8	TxA (Tx-)	→	8	RxA (Rx-)
9	Chassis			

Ross Video SoftMetal Video Server Cabling

The Synergy control panel connects to the SoftMetal Video Server via the remote ports on the Synergy Q/MD switcher, and the com port on the SoftMetal Video Server.

Cable connections in the following table refer only to those between the Synergy control panel and the SoftMetal Video Server. Other cable connections can be found in the Ross Video SoftMetal Video Server documentation.

Synergy Q/MD -to- Ross Video SoftMetal Wiring Chart

Synergy Control Panel			SoftMetal Video Server	
Remote Port	Signal		RS-422 Com Port	Signal
1	Chassis			
2	RxA (Rx-)	→	2	TxA (Tx-)
3	TxB (Tx+)	→	3	RxB (Rx+)
4	n/c			
5	Ground	→	5	Ground
6	Ground			
7	RxB (Rx+)	→	7	TxB (Tx+)
8	TxA (Tx-)	→	8	RxA (Rx-)
9	Chassis			

GVG M-Series iVDR Video Server Cabling

The Synergy control panel connects to the M-Series Video Server via the remote ports on the Synergy Q/MD switcher, and the com port on the M-Series Video Server.

Cable connections in the following table refer only to those between the Synergy control panel and the M-Series Video Server. Other cable connections can be found in the M-Series Video Server documentation.

Synergy Q/MD -to- GVG M-Series Wiring Chart

Synergy Control Panel			GVG M-Series iVDR	
Remote Port	Signal		RS-422 Com Ports	Signal
1	Chassis			
2	RxA (Rx-)	→	2	TxA (Tx-)
3	TxB (Tx+)	→	3	RxB (Rx+)
4	n/c			
5	Ground			
6	Ground	→	6	Ground
7	RxB (Rx+)	→	7	TxB (Tx+)
8	TxA (Tx-)	→	8	RxA (Rx-)
9	Chassis			

GVG Profile Video File Server Cabling

The Synergy control panel connects to the GVG Profile via the remote ports on the Synergy Q/MD switcher, and a RS-422 Communications Port on the GVG RS-422 Connector Panel.

Cable connections in the following table refer only to those between the Synergy control panel and the GVG Profile. Other cable connections can be found in the GVG documentation.

Synergy Q/MD -to- GVG Profile Wiring Chart

Synergy Control Panel			GVG RS-422 Connector Panel	
Remote Port	Signal		RS-422 Com Ports	Signal
1	Chassis			
2	RxA (Rx-)	→	2	TxA (Tx-)
3	TxB (Tx+)	→	3	RxB (Rx+)
4	n/c			
5	Ground	→	5	Ground
6	Ground			
7	RxB (Rx+)	→	7	TxB (Tx+)
8	TxA (Tx-)	→	8	RxA (Rx-)
9	Chassis			

GVG Turbo iDDR Cabling

The Synergy control panel connects to the GVG Turbo via the remote ports on the Synergy Q/MD switcher, and a RS422 Communications Port on the GVG Turbo.

Cable connections in the following table refer only to those between the Synergy control panel and the GVG Turbo. Other cable connections can be found in the GVG documentation.

Synergy Q/MD -to- GVG Turbo Wiring Chart

Synergy Control Panel			GVG Turbo iDDR	
Remote Port	Signal		RS422 Com Ports	Signal
1	Chassis			
2	RxA (Rx-)	→	2	TxA (Tx-)
3	TxB (Tx+)	→	3	RxB (Rx+)
4	n/c			
5	Ground	→	4	Ground
6	Ground			
7	RxB (Rx+)	→	7	TxB (Tx+)
8	TxA (Tx-)	→	8	RxA (Rx-)
9	Chassis			

Abekas6000 MultiFlex DTV Production Server Cabling

The Synergy control panel connects to the Abekas6000 MultiFlex DTV Production Server via the remote ports on the Synergy Q/MD switcher, and the com port on the Abekas6000.

Cable connections in the following table refer only to those between the Synergy control panel and the Abekas6000. Other cable connections can be found in the Abekas6000 documentation.

Synergy Q/MD -to- Abekas6000 Wiring Chart

Synergy Control Panel			Abekas6000	
Remote Port	**Signal**		**RS422 Com Ports**	**Signal**
1	Chassis			
2	RxA (Rx-)	→	2	TxA (Tx-)
3	TxB (Tx+)	→	3	RxB (Rx+)
4	n/c			
5	Ground	→	5	Ground
6	Ground			
7	RxB (Rx+)	→	7	TxB (Tx+)
8	TxA (Tx-)	→	8	RxA (Rx-)
9	Chassis			

Leitch Nexio Video Server Cabling

The Synergy control panel connects to the Leitch Nexio Video Server via the remote ports on the Synergy Q/MD switcher, and the rear panel ports on the Leitch Nexio Video Server.

Cable connections in the following table refer only to those between the Synergy control panel and the Leitch Nexio Video Server. Other cable connections can be found in the Leitch documentation.

Synergy Q/MD -to- Leitch Nexio Wiring Chart

Synergy Control Panel			Leitch Nexio	
Remote Port	**Signal**		**RS422 Com Ports**	**Signal**
1	Chassis			
2	RxA (Rx-)	→	2	TxA (Tx-)
3	TxB (Tx+)	→	3	RxB (Rx+)
4	n/c			
5	Ground	→	5	Ground
6	Ground			
7	RxB (Rx+)	→	7	TxB (Tx+)
8	TxA (Tx-)	→	8	RxA (Rx-)
9	Chassis			

Generic Video Server Cabling

The Synergy control panel connects to a Video Server via the remote ports on the Synergy Q/MD switcher.

Synergy Q/MD RS-422 Wiring Chart

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

Refer to the documentation that came with your Video Server for port and pinout information for your specific Video Server.

Communications Setup

Setting up the Switcher

In order to have the Synergy Q/MD switcher communicate with a Video Server, the remote port on the control panel that the Video Server is connected to must be set up to communicate with the particular Video Server you have connected.

Use the following procedure to configure a Remote port on the control panel to connect with a Video Server:

1. Navigate to the **Communications Menu 1-2** as follows:

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

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

```
Communications (1-2)
                                          Com Port:  REMOTE 1 (R1)
This  menu  lets  you set                           ↓REMOTE 2 (R2)
up  what  each of the com
ports are used for.                                     OFF
                                          Device:    VTR (CLIP)
                                                     ↓Router



              Select                      Custom       Extra
   Type       Device    Com Settings  Com Type  Devices     Options
```

Communications — Type Menu

3. Assign a Remote Com Port to the Video Server as follows:

   • Use the **Com Port** knob to select the remote port on the Synergy Q/MD switcher that is connected to the Video Server.

✎ **Note** You must use **Remote 5** with a **RJ-12 to DB9 Male Adaptor** to connect a remote Aux Panel to the **Synergy 1** control panel. If you intend to connect a Remote Aux Panel to the switcher, you will have to leave the Remote 5 port open.

   • Use the **Device** knob to select **VTR (CLIP)**.

4. Press **Select Device** to display the **Select Device Menu**.

```
Communications (1-2)
                                          Com Port:  REMOTE 1 (R1)
This  menu lets you setup
which      devices     are                           ↑DigiCart
controlled    by    which
ports.                                    Device:     VDCP
                                                     ↓CUSTOM0

                                                       (  0)
                                          VTR Preroll:  Frames
              Select                      Custom       Extra
   Type       Device    Com Settings  Com Type  Devices     Options
```

Communications — Select Device Menu

5. Select the device you want to assign to the VTR communications port as follows:

   • Use the **Com Port** knob to select the communications port you want to assign a specific Video Server to.

- Use the **Device** knob to select **VDCP**.

✎ **Note** | You can setup a custom device using the **CUSTOM 1** and **CUSTOM 2** options. Use these options, in conjunction with the **Custom Devices** button, to manually configure the communications protocol for your particular device. Refer to Appendix F, "**Custom Device Serial Protocol"** for more information.

- Use the **VTR Preroll** knob to select the preroll interval (in frames).

✎ **Note** | Preroll is applied when the **ROLL VTR** button is "armed" and the device is taken to air with a cut or auto-transition. When the transition is performed, the system will *wait* the selected preroll interval, and then roll the Video Server. Refer to the section "**Roll VTR Setup**" on page 16–36 for more information.

6. Press **Com Settings** to display the **Com Settings Menu**.

```
Communications (1-2)
                                              Com Port: VDCP      (R1)
This  menu lets you setup
your        com       port
parameters.                                             ↑19200
                                              Baud:      38400
                                                        ↓57600

                                                          NONE
                                              Parity:    ODD
                                                          EVEN

          Select                             Custom      Extra
   Type   Device    Com Settings  Com Type    Devices    Options
```

Communications — Com Settings Menu

7. Set the communications protocols for the Video Server as follows:

- Use the **Com Port** knob to select the Video Server you want to set the communications settings for.
- Use the **Baud** knob to select the baud rate for the Video Server. Refer to the section "**Setting up the Video Server**" on page 16–21 for the specific settings for your Video Server.
- Use the **Parity** knob to select the parity, **NONE**, **ODD** or **EVEN** for the specific Video Server. Refer to the section "**Setting up the Video Server**" on page 16–21 for the specific settings for your Video Server.

8. Press **Com Type** to display the **Com Type Menu**.

```
Communications (1-2)
                                              Com Port: VDCP      (R1)
This  menu lets you setup
your  com port types.
                                                        RS-232
                                              Type:     RS-422
                                                        ↓Network UDP

          Select                             Custom      Extra
   Type   Device    Com Settings  Com Type    Devices    Options
```

Communications — Com Type Menu

9. Select the type of serial communications that will be used to communicate with the Video Server as follows:

- Use the **Com Port** knob to select the Video Server you want to set the communications type for.

- Use the **Type** knob to select the type of serial communications (**RS-232** or **RS-422**) for the selected port. Refer to the section "**Setting up the Video Server**" on page 16–21 for the specific settings for your Video Server.

✎	**Note**	**Network UDP** and **Network TCP** are not supported for this device type.

✎	**Note**	The **Synergy 1** allows you to select **RS-232 Null** and **RS-422 Null**, as well as the standard **RS-232** and **RS-422**. Refer to the section "**Setting up the Video Server**" on page 16–21 for information on when to use these settings.

10. Press **Extra Options** to display the **Extra Options Menu**.

```
Communications (1-2)
                                                Com Port:  VDCP      (R1)
Protocol: VDCP


Audio/Video Sub Address to control              Option:   TargetMachine
                                                          ↓MediaIDLength


                                                Value:    Generic
                                                          ↓ASCVR300 V2

               Select                                     Custom        Extra
     Type      Device      Com Settings   Com Type        Devices       Options
```

Communications — Extra Options Menu

11. Assign a Target Machine to the Video Server port as follows:

- Use the **Com Port** knob to select the Video Server you want to set the Target Machine for.

- Use the **Option** knob to select **TargetMachine**.

- Use the **Value** knob to select the target machine that you are using.

⚹	**Important**	For the Video Servers listed in the table "**Target Machine Default Values**" on page 16–17, once the TargetMachine has been set, the remaining settings will automatically be adjusted to those shown in the table. You should not have to adjust these settings.

Target Machine Default Values

TargetMachine Option	Option Value Settings				
	Media ID Length	Timeout (fields)	Send Tries	Cmd Queueing	Port Cmds
Generic	LongIDs	28	10	Strict	No
VR300 V2	ShortIDs	25	2	Relaxed	No
VR300 V2.7	LongIDs	25	2	Relaxed	No
PinnacleThund	LongIDs	28	10	Strict	No
Spencer	ShortIDs	50	2	Relaxed	No
GeeVS	LongIDs	15	15	Relaxed	No

Target Machine Default Values

TargetMachine Option	Option Value Settings				
	Media ID Length	Timeout (fields)	Send Tries	Cmd Queueing	Port Cmds
360Sys IS2000	LongIDs	28	10	Strict	Yes
EVS MaxS	ShortIDs	6	3	Strict	No
AirSpeed	LongIDs	28	10	Strict	Yes
GVG M-Series	LongIDs	28	10	Strict	Yes
Ross SMS	LongIDs	28	10	Strict	Yes
ThunderMXe	LongIDs	28	10	Strict	Yes
VR440	ShortIDs	25	2	Relaxed	Yes
ThunderLT	LongIDs	28	10	Strict	Yes
GVGProfile	LongIDs	28	10	Strict	Yes
GVGTurbo	LongIDs	28	10	Strict	Yes
Abekas6000	LongIDs	28	10	Strict	Yes
AirSpace	LongIDs	28	10	Strict	Yes
Nexio	LongIDs	28	10	Strict	Yes
Omneon	LongIDs	28	10	Strict	Yes

12. Assign a Media ID Length for the selected device as follows:

Note The Media ID Length sets the maximum character length of the Clip IDs displayed on the **VTR Clips**, **Inpoint/Outpoint**, and **Remote Control Menus**.

- Use the **Com Port** knob to select the Video Server you want to set the Media ID Length for.
- Use the **Option** knob to select **MediaIDLength**.
- Use the **Value** knob to select either **Short IDs** or **Long IDs**.
  - ~ **Short IDs** — Select this option for devices that use ID lengths of up to **8** characters.
  - ~ **Long IDs** — Select this option for devices that use ID lengths of up to **32** characters.

13. Assign a Timeout value to the selected device as follows:

Note The Timeout value specifies the time, in fields, that the Synergy Q/MD switcher will wait for a reply from the Video Server before trying to send a command again.

- Use the **Com Port** knob to select the Video Server you want to set the Timeout value for.
- Use the **Option** knob to select **Timeout**.
- Use the **Value** knob to select the timeout value that you are using.

14. Assign a Send Tries value to the selected device as follows:

Note   The Send Tries value specifies the number of times that the Synergy Q/MD switcher will try to send the same command to the Video Server if the switcher has not received a confirmation response.

- Use the **Com Port** knob to select the Video Server you want to set the Send Tries value for.
- Use the **Option** knob to select **Send Tries**.
- Use the **Value** knob to select the send tries value that you are using.

15. Assign a Command Queuing value to the selected device as follows:

Note   The CMD Queueing value indicates whether the Synergy Q/MD switcher must receive replies for every command sent to the Video Server (**Strict**), or not (**Relaxed**).

- Use the **Com Port** knob to select the Video Server you want to set the Command Queuing for.
- Use the **Option** knob to select **Cmd Queuing**.
- Use the **Value** knob to select either **Strict** or **Relaxed** command queuing:
  ~ **Strict** — When Command Queuing is set to Strict, the Synergy Q/MD switcher will keep re-sending a command, as set by the Send Tries value, until it receives a confirmation message from the Video Server.
  ~ **Relaxed** — When Command Queuing is set to Relaxed, the Synergy Q/MD switcher does not need to receive a confirmation from the Video Server for every command.

16. Assign a Record Time to the selected device as follows:

Note   The Record Time value sets the maximum number of minutes that the Video Server will record for when it receives the Record transport command from a custom control. Refer to the section "**Video Server Custom Controls**" on page 16–37 for more information on programming custom control buttons for Video Servers.

- Use the **Com Port** knob to select the Video Server you want to set the Record Time for.
- Use the **Option** knob to select **Record Time**.
- Use the **Value** knob to select the maximum amount of time (in minutes) that a Video Server will record when it receives the Record command.
  ~ The default time is set to **60** minutes, but you can assign any duration between **1** and **720** minutes.

17. Assign a Playback Mode to the selected device as follows:

Note   The Playback mode for most serial devices should already be correctly set. Use these controls only if required.

Refer to the documentation for your device to verify what mode is required.

- Use the **Com Port** knob to select the Video Server you want to set the Playback Mode for.

- Use the **Option** knob to select **Playback Mode**.

- Use the **Value** knob to select a Playback mode. You can chose between the following:

    ~ **PB** — Use this option if your device does not go to Electronics-to-Electronics (EE) mode.

    ~ **PB/EE** — Use this option if your device does go to EE mode. By selecting this option, you enable the serial device to automatically go into PB/EE mode. If a Stop command is issued, the device will enter EE mode. If a pause command is issued, the device will stay in Playback mode.

18. Assign a Port Commands mode to the selected device as follows:

- Use the **Com Port** knob to select the Video Server you want to set the Playback Mode for.

- Use the **Option** knob to select **Port Cmds**.

- Use the **Value** knob to select a Port Commands mode. You can chose between the following:

    ~ **No** — "Open", "Select", and "Close" port commands are **not** used.

    ~ **Yes** — "Open", "Select", and "Close" port commands are used when entering and exiting VDCP menus.

19. Select whether the switcher uses the extended character set for ClipIDs as follows:

- Use the **Com Port** knob to select the Video Server you want to set the Playback Mode for.

- Use the **Option** knob to select **ExtendedChar**.

- Use the **Value** knob to select whether the switcher allows non-printing characters or not.

    ~ **No** — Use this option to have the switcher replace non-printing characters with spaces.

    ~ **Yes** — Use this option to have the switcher use the extended character set and not replace non-printing characters with spaces.

20. For looping playback, select the amount of time before the end of the clip that the switcher sends a play command as follows:

- Use the **Com Port** knob to select the Video Server you want to set the Playback Mode for.

- Use the **Option** knob to select **LoopReCueTime**.

- Use the **Value** knob to select the amount of time, in frames, before the end of the clip that the switcher sends a loop command to the selected device.

✓ **Operating Tip**
> You may need to adjust this value to ensure smooth looping playback depending on the time it takes your Video Server to re-cue a clip.

21. Press **HOME** to display the **Installation Change Confirmation Screen**.

22. Accept or reject the changes you have made as follows:

- Press **Confirm** to accept the changes.

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

This completes the procedure for setting up the communications with the Video Server, next you will have finish setting up the Video Server to communicate with the Synergy Q/MD switcher.

Setting up the Video Server

In order to have the Synergy Q/MD switcher communicate with a Video Server, the Video Server you are connecting to the switcher must be set up to communicate and accept commands from the switcher.

Avid AirSpace Communication

This section describes the proper installation configuration required for a Synergy Q/MD switcher to interface with an Avid AirSpace Video Server.

Use the following information to connect an Avid AirSpace Video Server to your Synergy Q/MD switcher:

- Use the following communications settings when connecting the AirSpace Video Server to the Synergy Q/MD switcher:

Synergy Q/MD -to- Thunder Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	Odd
Data Bits	8
Stop Bits	1
Target Machine	Generic
Media ID Length	LongIDs
Timeout	28
Send Tries	10
Cmd Queuing	Strict

On the Avid AirSpace you will have to set the **Mode** to **VDCP** for each individual channel you have connected to the Synergy Q/MD switcher. Refer to your Avid AirSpace documentation for more information.

Leitch ASC VR300 Video Server

This section describes the proper installation configuration required for a Synergy Q/MD switcher to interface with a Leitch ASC VR300 using version **2** or **2.7** of the Leitch software, and the Video Disk Communications Protocol (VDCP).

Use the following information to connect a Leitch ASC VR300 Video Server to your Synergy Q/MD switcher:

- Use the following communications settings when connecting the Leitch ASC VR300 Video Server to the Synergy Q/MD switcher:

Synergy Q/MD -to- Leitch ASC VR300 Communication Settings

Setting	V2 Value	V2.7 Value
Transmission Standard	RS-422	RS-422
Baud Rate	38400	38400
Parity	Odd	Odd
Data Bits	8	8
Stop Bits	1	1
Target Machine	VR300 V2	VR300 V2.7
Media ID Length	ShortIDs	LongIDs
Timeout	25	25
Send Tries	2	2
Cmd Queuing	Relaxed	Relaxed

Leitch VR440 Video Server

This section describes the proper installation configuration required for a Synergy Q/MD switcher to interface with a Leitch VR440 using the Video Disk Communications Protocol (VDCP).

Use the following information to connect a Leitch VR440 Video Server to your switcher:

- Use the following communications settings when connecting the Leitch VR440 Video Server to the Synergy Q/MD switcher:

Synergy Q/MD -to- Leitch VR440 Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	Odd
Data Bits	8
Stop Bits	1
Target Machine	VR440
Media ID Length	ShortIDs
Timeout	25
Send Tries	2
Cmd Queuing	Relaxed

Pinnacle Thunder

This section describes the proper installation configuration required for a Synergy Q/MD switcher to interface with a Pinnacle Thunder server using the Video Disk Communications Protocol (VDCP). This information is current for Synergy software version **9.1 MD**, or higher, used in conjunction with **Thunder software** version **5.5** and **Louth Serial Protocol uVer 5.4.19**.

Use the following information to connect a Pinnacle Thunder Video Server to your switcher:

- Use the following communications settings when connecting the Thunder Video Server to the Synergy Q/MD switcher:

Synergy Q/MD -to- Thunder Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	Odd
Data Bits	8
Stop Bits	1
Target Machine	PinnacleThund
Media ID Length	LongIDs
Timeout	28
Send Tries	10
Cmd Queuing	Strict

On the Pinnacle Thunder you will have to set up the communications parameters to allow it to properly connect to the Synergy Q/MD switcher.

Use the following procedure to set up the Pinnacle Thunder:

1. On the **File Menu**, select **Preferences** and click **Protocol Setup** to display the **Protocol Setup Menu**.

2. For each channel, select **LouthSerial** as the protocol.

3. Ensure that both the **Preset/Cue** and **Stop Current Clip Before Preset** boxes are checked.

4. Click on the associated **Restart** button(s), and close the dialogue box.

This completes the set up of the Pinnacle Thunder Video Server.

If you are setting up a Pinnacle Thunder with six RS-422 ports labeled as Com 3 to 8, and software version 6.1 or higher, there are additional communications parameters to setup.

Use the following procedure to setup additional communication parameters for your Pinnacle Thunder:

1. Navigate to the **Device Manager** as follows:

   - Right click on the **My Computer** icon and select **Properties**.
   - Select **Hardware**.
   - Select **Device Manager**.

2. For each channel, set the com settings as follows:

   - Select **Com Ports**.
   - Select **Com**.
   - Select **Settings**.
   - Set the **Baud Rate** to **38,400**.
   - Set the **Parity** to **Odd**.

- • Close the dialog boxes.

3. Set the Channel Configuration as follows:

- • From the **File Menu**, select **Preferences** and click **Channel Configuration** to display the **Channel Configuration Menu**.
- • Set the com ports to control the associated channel.
- • Deselect all other channels.
- • Close the dialog boxes.

This completes the procedure to setup additional communication parameters for your Pinnacle Thunder.

Pinnacle ThunderMX

Use the following communications settings when connecting the Pinnacle ThunderMX Video Server to the Synergy Q/MD switcher:

Synergy Q/MD -to- ThunderMX Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	Odd
Data Bits	8
Stop Bits	1
Target Machine	ThunderMXe
Media ID Length	LongIDs
Timeout	28
Send Tries	10
Cmd Queuing	Strict

Pinnacle ThunderLT

Use the following communications settings when connecting the Pinnacle ThunderLT Video Server to the Synergy Q/MD switcher:

Synergy Q/MD -to- ThunderLT Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	Odd
Data Bits	8
Stop Bits	1
Target Machine	ThunderLT
Media ID Length	LongIDs

Setting	Value
Timeout	28
Send Tries	10
Cmd Queuing	Strict

Spencer Technologies Video Server

This section describes the proper installation configuration required for a Synergy Q/MD switcher to interface with a Spencer Technologies Video Server.

Use the following information to connect a Spencer Technologies Video Server to your Synergy Q/MD switcher:

- • Use the following communications settings when connecting the Spencer Technologies Video Server to the Synergy Q/MD switcher:

Synergy Q/MD -to- Spencer Technologies Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	Odd
Data Bits	8
Stop Bits	1
Target Machine	Spencer
Media ID Length	ShortIDs
Timeout	50
Send Tries	2
Cmd Queuing	Relaxed

Gee Broadcast Systems Geevs

This section describes the proper installation configuration required for a Synergy Q/MD switcher to interface with a Gee Broadcast Geevs Video Server.

Use the following information to connect a Gee Geevs Video Server to your Synergy Q/MD switcher:

- • Use the following communications settings when connecting the Gee Geevs Video Server to the Synergy Q/MD switcher:

Synergy Q/MD -to- Geevs Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	Odd
Data Bits	8
Stop Bits	1
Target Machine	GeeVS

Synergy Q/MD -to- Geevs Communication Settings

Setting	Value
Media ID Length	LongIDs
Timeout	15
Send Tries	15
Cmd Queuing	Relaxed

360 Systems Image Server 2000 Communication

This section describes the proper installation configuration required for a Synergy Q/MD switcher to interface with a 360 Systems Image Server 2000.

Use the following information to connect a 360 Systems Image Server 2000 to your Synergy Q/MD switcher:

- Use the following communications settings when connecting the Image Server 2000 to the Synergy Q/MD switcher:

Synergy Q/MD -to- Image Server 2000 Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	Odd
Data Bits	8
Stop Bits	1
Target Machine	360Sys IS2000
Media ID Length	LongIDs
Timeout	28
Send Tries	10
Cmd Queuing	Strict

On the Image Server 2000 you will have to set up the communications parameters to allow it to properly connect to the Synergy Q/MD switcher.

Use the following procedure to set up the Image Server 2000:

1. On the **Configuration Menu** click **System...** to open the **Configuration System Window**.

2. Select the **Control** tab.

3. In the **Serial Protocol Area**, select **VDCP** for the Channel you have connected to the Synergy Q/MD switcher.

4. In the **VDCP Option Area**, configure the options as follows:

   - **Cue shows 1st frame** — selected (check mark)
   - **Cue w/offset (vs timestamp)** — selected (check mark)
   - **Vari-play 1x equals play** — deselected (no check mark)
   - **Var-play 0 equals pause** — deselected (no check mark)
   - **Report Play (vs still) at end** — deselected (no check mark)

- **Ignore preroll commands** — deselected (no check mark)
- **Auto E-E** — deselected (no check mark)

This completes the set up of the 360 Systems Image Server 2000.

EVS Broadcast Equipment maXS Universal Production Server

This section describes the proper installation and configuration required for a Synergy Q/MD switcher to interface with an EVS maXS video server.

Use the following information to connect an EVS maXS video server to your Synergy Q/MD switcher:

- Use the following communications settings when connecting the EVS maXS video server to the Synergy Q/MD switcher:

Synergy Q/MD -to- EVS maXS Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	Odd
Data Bits	8
Stop Bits	1
Target Machine	EVS MaxS
Media ID Length	ShortIDs
Timeout	6
Send Tries	3
Cmd Queuing	Strict

You must configure the maXS communications parameters to allow a proper connection to the Synergy Q/MD switcher. Ross Video recommends the following settings:

- Configure the EVS maXS to record clips using the **VDCP 2R+2P** application.
- Set the configuration for VDCP 2R+2P to **Louth slave**.
- Set the communication parameter to channel 1 when using the Synergy Q/MD switcher.

The **Remote Reset Jumper 1** on the **PC&CTRL Board** must *not* have a jumper cap on it. Ensure that the jumper cap is on a port other than 1. Refer to your EVS maXS documentation for more information on locating and setting this jumper.

This completes the set up of the EVS maXS.

Avid AirSpeed Communication

This section describes the proper installation configuration required for a Synergy Q/MD switcher to interface with an Avid AirSpeed Video Server.

Use the following information to connect an Avid AirSpeed Video Server to your Synergy Q/MD switcher:

- Use the following communications settings when connecting the AirSpeed Video Server to the Synergy Q/MD switcher:

Synergy Q/MD -to- AirSpeed Communication Settings

Setting	Value
Transmission Standard	**RS-422**
Baud Rate	**38400**
Parity	**Odd**
Data Bits	**8**
Stop Bits	**1**
Target Machine	**AirSpeed**
Media ID Length	**LongIDs**
Timeout	**28**
Send Tries	**10**
Cmd Queuing	**Strict**

- On the Avid AirSpeed, set the **Mode** to **VDCP** for each individual channel you have connected to the Synergy Q/MD switcher. Refer to your Avid AirSpeed documentation for more information.

- It is recommended that you use Channels 2 or 3 on the Avid AirSpeed.

- Ensure that the **Playback Mode** you select on the Synergy **Communications Menu** is the same mode set on the Avid AirSpeed.

This completes the set up of the Avid AirSpeed Video Server.

Ross Video SoftMetal Video Server Communication

This section describes the proper installation configuration required for a Synergy Q/MD switcher to interface with a Ross Video SoftMetal Video Server.

Use the following information to connect a Ross Video SoftMetal Video Server to your Synergy Q/MD switcher:

- Use the following communications settings when connecting the SoftMetal Video Server to the Synergy Q/MD switcher:

Synergy Q/MD -to- SoftMetal Communication Settings

Setting	Value
Transmission Standard	**RS-422**
Baud Rate	**38400**
Parity	**Odd**
Data Bits	**8**
Stop Bits	**1**
Target Machine	**Ross SMS**
Media ID Length	**LongIDs**
Timeout	**28**
Send Tries	**10**
Cmd Queuing	**Strict**

You must configure the SoftMetal Remote Client settings to enable communication between the SoftMetal Video Server and Synergy Q/MD switcher.

Use the following procedure to set the Remote Client configuration:

1. Open the SoftMetal Configuration Client as follows:

    • On the taskbar, click the **Start** button.

    • Click **All Programs ⇨ Ross Video ⇨ SoftMetal ⇨ Configure SoftMetal**.

2. Click the **Remote Control** tab.

3. In the **Peripheral Port** drop-down list, select the port which you have connected to the Synergy Q/MD switcher.

4. In the **Protocol** drop-down list, select **VDCP**.

5. Click **OK** to save your settings.

| **Note** | If you have a non-standard SoftMetal installation, refer to your SoftMetal documentation for more detailed configuration instructions. |

This completes the procedure for setting the Remote Client configuration.

GVG M-Series iVDR Video Server Communication

This section describes the proper installation configuration required for a Synergy Q/MD switcher to interface with a GVG M-Series Video Server.

Use the following information to connect a GVG M-Series Video Server to your Synergy Q/MD switcher:

• Use the following communications settings when connecting the M-Series Video Server to the Synergy Q/MD switcher:

Synergy Q/MD -to- GVG M-Series Communication Settings

Setting	Value
Transmission Standard	**RS-422**
Baud Rate	**38400**
Parity	**Odd**
Data Bits	**8**
Stop Bits	**1**
Target Machine	**GVG M-Series**
Media ID Length	**LongIDs**
Timeout	**28**
Send Tries	**10**
Cmd Queuing	**Strict**

On the GVG M-Series iVDR, connection is made between the remote ports 1-8 on the Synergy control panel and the serial ports (PORT 1 through PORT 4) on the M-Series frame. Please refer to the the GVG M-Series documentation for information on starting a remote control protocol application and setting the control port and control mode for the video players (P1 and P2).

On the Synergy Q/MD switcher, the channel and sub-address must be set as follows:

- **P1: Player** — channel 2, sub-address 0
- **P2: Player** — channel 4, sub-address 0

GVG Profile Video File Server

This section describes the proper installation configuration required for a Synergy Q/MD switcher to interface with a GVG Profile Video File Server.

- Refer to the GVG Turbo documentation for information on setting up serial control on your device.

- Use the following communications settings when connecting the GVG Profile Video File Server to the Synergy Q/MD switcher:

Synergy Q/MD -to- GVG Profile Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	Odd
Data Bits	8
Stop Bits	1
Target Machine	GVGProfile
Media ID Length	LongIDs
Timeout	28
Send Tries	10
Cmd Queuing	Strict

GVG Turbo iDDR

This section describes the proper installation configuration required for a Synergy Q/MD switcher to interface with a GVG Turbo iDDR.

- Refer to the GVG Turbo documentation for information on setting up serial control on your device.

- Use the following communications settings when connecting the GVG Turbo iDDR to the Synergy Q/MD switcher:

Synergy Q/MD -to- GVG Turbo Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	Odd
Data Bits	8
Stop Bits	1
Target Machine	GVGTurbo
Media ID Length	LongIDs
Timeout	28
Send Tries	10
Cmd Queuing	Strict

Abekas6000 MultiFlex DTV Production Server

This section describes the proper installation configuration required for a Synergy Q/MD switcher to interface with an Abekas6000 MultiFlex DTV Production Server.

- Refer to the Abekas documentation for information on setting up serial control on your device.

- Use the following communications settings when connecting the Abekas6000 MultiFlex DTV Production Server to the Synergy Q/MD switcher:

Synergy Q/MD -to- Abekas6000 Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	Odd
Data Bits	8
Stop Bits	1
Target Machine	Abekas6000
Media ID Length	LongIDs
Timeout	28
Send Tries	10
Cmd Queuing	Strict

Leitch Nexio Video Server

This section describes the proper installation configuration required for a Synergy Q/MD switcher to interface with a Leitch Nexio Video Server.

- Refer to the Leitch documentation for information on configuring the VDCP protocol on your Video Server.

- Use the following communications settings when connecting the Leitch Nexio Video Server to the Synergy Q/MD switcher:

Synergy Q/MD -to- Leitch Nexio Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	Odd
Data Bits	8
Stop Bits	1
Target Machine	Nexio
Media ID Length	LongIDs
Timeout	28
Send Tries	10
Cmd Queuing	Strict

Omneon Video Server

Use the following communications settings when connecting the Omneon Video Server to the Synergy Q/MD switcher:

Synergy Q/MD -to- Omneon Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	Odd
Data Bits	8
Stop Bits	1
Target Machine	Omneon
Media ID Length	LongIDs
Timeout	28
Send Tries	10
Cmd Queuing	Strict

Setting up Video Server BNCs

The **Video Server Setup Menu** allows you to associate a Video Server BNC input with a particular Video Server communication port.

Use the following procedure to assign the Video Server to a specific BNC input:

1. Navigate to the **BNC Menu 1-3** as follows:

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

2. Press **BNC Type** to display the **BNC Type Menu**.

```
BNC (1-3)                                                    BNC: BNC C01 (C01)
                        BNC:      BNC C01  (C01)                 ↓BNC C02 (C02)
Use  this   menu  to    Type:     VTR
associate  a  function or Tally:   1                             ↑DVE
a  device type with a BNC  Auto Key: Black                 Type: VTR
input.                  Video Mode:1080i 59.94                   ↓Alpha

                                                                 ↑1080i 60
                                                         Video   1080i 59.94
                                                         Format: ↓1080i 50

                                                      Auto Key      Router
   BNC Names     BNC Type      Tally       Alpha      Setup         Setup
```

BNC — Type Menu

3. Assign a BNC to Video Server as follows:

   • Use the **BNC** knob to select the BNC that the Video Server is connected to.

   • Use the **Type** knob to select **VTR**.

   • Use the **Video Format** knob to select the native video format of the VTR output.

✎ **Note** | Assigning a **Video Format** to an **Input BNC**, that is different than the native video format that the switcher is operating in, can only be used for passing non-native video formats out an **Aux Bus**. Video formats may be converted to the operating video format using **Smart Conversion**. Refer to Chapter 13 "**SmartConversion™**" for more information.

4. Press **MORE** to display the **BNC Menu 2-3**.

5. Assign a BNC Input to your Video Server as follows:

   • Press **VTR/VDCP Xpts** to display the **VTR/VDCP Xpts Menu**.

```
BNC (2-3)                                                    BNC: BNC C01 (C01)
                        BNC:      BNC C01  (C01)
                        Type:     VTR
                        Tally:    1
                        Auto Key:  Black                Controller: NONE
                        Video Mode:1080i 59.94                      VDCP    (R1)




   Router        N/S                  Still/CG    Camera        VTR/VDCP
   Other         Disable    Audio     Setup       Setup         Xpts
```

BNC — VTR/VDCP Xpts Menu

- Use the **BNC** knob to select the BNC to assign to your Video Server.
- Use the **Controller** knob to select the remote port that the Video Server is connected to. The Remote ports assigned to the Video Server will be listed.

✎ **Note** | If you select **NONE**, the BNC will not be assigned to a Video Server nor will it be displayed in other Synergy menus associated with VTR/VDCP control.

6. Press **MORE** to display the **BNC Menu 3-3**.

7. Select the channel and subaddress for the Video Server as follows:

- Press **VDCP Setup** to display the **VDCP Setup Menu**.

```
BNC (3-3)
                        BNC:       BNC C01  (R1)      BNC:  BNC C01  (R1)
                        Type:      UTR
                        Tally:     1
                        Auto Key:  Black              Channel:       ( 2)
                        Video Mode:1080i 59.94

                                                      SubAddress     ( 2)

   VDCP
   Setup
```

BNC — VDCP Setup Menu

- Use the **BNC** knob to assign a BNC to your Video Server. BNCs that have been assigned to a Video Server are displayed in the list.

- Use the **Channel** knob to select the channel on the Video Server you wish to control. For most Video Servers, you can select a channel between **0** and **8**. Refer to the documentation for your device to verify its available channels.

  ~ If you are using a **360 Systems Image Server 2000**, you must select a channel between **1** and **3**.

  ~ If you are using a **Pinnacle Thunder v6.1**, the channel must be set to **1**.

  ~ If you are using a **Gee Broadcast Systems Geevs Video Server**, the channel must be set to **1**.

  ~ If you are using an **Avid AirSpeed**, you must select channel **2** or **3**.

  ~ If you are using an **Omneon Video Server**, the channel must be set to the same value as the configured VDCP Signal Port of the Omneon.

  ~ If you are using a **Ross Video SoftMetal Video Server**, you must select a channel between **1** and **4**. The SubAddress will be set to the same value automatically.

  ~ If you are using a **GVG M-Series iVDR Video Server**, you must select channel **2** for player 1 or channel **4** for player 2.

  ~ If you are using a **Leitch Nexio Video Server**, you must select the channel that is controlled by the Leitch rear panel port connected to the Synergy Q/MD switcher.

- Use the **SubAddress** knob to select the subaddress, or port number, of the Video Server. For most Video Servers, you can select a SubAddress between **0** and **15**. Refer to the documentation for your device for more information:

  ~ If you are using a **360 Systems Image Server 2000**, the SubAddress must be set to the same value as the Channel.

~ If you are using a **Pinnacle Thunder v6.1**, the SubAddress must be set to **0**.

~ If you are using a **Gee Broadcast Systems Geevs Video Server**, the SubAddress must be set to **0**.

~ If you are using an **Avid AirSpeed**, the SubAddress for the selected channel must match the physical Remote Port it is associated with on the Avid AirSpeed. For example, if Channel 2 is associated with Remote Port 1, you must set the SubAddress to 1.

~ If you are using an **Omneon Video Server**, the SubAddress must be set to **1**.

~ If you are using a **Ross Video SoftMetal Video Server**, the SubAddress automatically follows the channel number that you set above.

~ If you are using a **GVG M-Series iVDR Video Server**, the SubAddress must be set to **0**.

8. Press **HOME** to display the **Installation Change Confirmation Screen**.

9. Accept or reject the changes you have made as follows:

   • Press **Confirm** to accept the changes.

   • Press **Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure for setting up a Video Server to a BNC on the Synergy Q/MD switcher.

Roll VTR Setup

The **Roll VTR Mode** determines how the **ROLL VTR** button behaves when a Video Server is selected. When you set the **Roll VTR Mode**, the setting affects all **ROLL VTR** buttons in all MLEs.

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

1. Navigate to the **Personality Menu** as follows:

   • Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Personality**.

2. Use the **Option** knob to select **Roll VTR Mode**.

```
┌─────────────────────────────────────────────────────────────────────┐
│ Personality                                             ↑Pnl SleepTime│
│                                              Option:    Roll VTR Mode  │
│ ↑FTB Display     FTB      Sets ROLL VTR button          ↓S&T Mode      │
│ GlblStoreMem     Off      action.                                     │
│ Isolate DSKs     Off      Play: Immediately plays       Play          │
│ KeypadClipIDs    MLE      clip.                Value:   Arm           │
│ Matte Limit      Off      Arm: Button can be            Armed Always   │
│ MemBank Cycle    9        turned on or off.                           │
│ Pnl SleepTime    30       Armed Always: Button                        │
│ ↓Roll VTR Mode   Arm      cannot be turned off.                       │
│                                                                       │
│  3D Pattern      Standard      Assign                                 │
│  Button Assign   Mnemonics     Bus Maps                               │
└─────────────────────────────────────────────────────────────────────┘
```

Personality — Roll VTR Mode Menu

3. Use the **Value** knob to select a mode for the **ROLL VTR** button. You can select between the following:

> ⊛ **Important**
>
> When an OverDrive Production Control System production controller is connected to the switcher, activating the **Editor** button turns on all the **Roll VTR** buttons and sets the Roll VTR Mode to *Arm*, disabling the Roll VTR Mode selection in the **Personality Menu**.

   • **Play** — Selecting this mode allows you to play a Video Server clip directly by pressing the **ROLL VTR** button. Once pressed, the clip will start to play and will have to be taken on-air manually with the **Fader**, a **Cut** or **Auto Transition**.

   • **Arm** — Selecting this mode allows you to have a Video Server clip play with the next transition that takes the MLE on-air by pressing the **ROLL VTR** button. This can be used to roll multiple Video Servers if they are re-entered. Once pressed, the clip will only start to play when it is taken on-air with a **Cut**, **Auto Transition**, or if you double-press the assigned crosspoint button.

   • **Armed Always** — Selecting this mode allows you to have a Video Server clip play with the next transition that takes the MLE on-air when you press the assigned crosspoint button.

> ✎ **Note**
>
> If an Auto Transition is performed with the **ROLL VTR** active, and in **Arm Mode**, the switcher will apply the **Pre-Roll** time for the Video Server before it takes the Video Server on-air.

This completes the procedure for configuring the **Roll VTR Mode**.

Video Server Custom Controls

A custom control button can be programmed with the transport functions that are located on the **Video Server Clips Menu** and the **Remote Control Menu**. This allows for quick access to these functions, or you can string a number of these functions together in a single custom control.

Use the following procedure to program custom control buttons that include special transport functions for Video Servers:

✎	Note	You must have the Video Server Control option installed in order to control a Video Server to the Synergy Q/MD switcher. Refer to the section "**Setting up the Switcher**" on page 16–15 for information on setting up a Video Server.

1. Navigate to the **Custom Controls Menu 1-2** as follows:

   • Press **HOME ⇨ Custom Controls**.

   ```
   Custom Controls (1-2)
                                                    Bank:    Bank 1   (1)
   Custom Control buffers .53% full
                                                          ↑ Custom08 # 8
   Selected: Bank 1 Button 9 [Custom09]                    Custom09 # 9
                                                  Button:  ↓ Custom10 #10
   Custom Control Legend:
           # = normal custom control button


     Start        Modify              Start Relative  Default
    Recording      Name                  Recording    All Names   Delete Macro
   ```
   Custom Controls Menu

2. Select the custom control button you want to record to as follows:

   • Use the **Bank** knob to select the custom control bank you want to record the custom control to.

   • Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*) or the "at sign" (@) in the list have already been programmed.

✓	Operating Tip	As a recommendation, keep transport control functions for similar devices grouped together on your *physical* custom control buttons.

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

   ```
   Custom Controls (1-2)
                                                    Bank:    Bank 1   (1)
   Recording...
                                                          ↑ Custom08 # 8
   Selected: Bank 1 Button 9 [Custom09]                    Custom09 # 9
                                                  Button:  ↓ Custom10 #10
   Custom Control Legend:
           # = normal custom control button



                  Finish       Cancel      Insert
                 Recording    Recording    Special
   ```
   Custom Controls — Recording Menu

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

5. Press **VTR** to display the **Insert VTR Menu**. This menu allows you to choose specific transport control functions to assign to the button.

✎ **Note**

> If an error message is displayed stating that there are no communications ports assigned to VTRs, ensure that the Video Server you are trying to control has been properly set up.

```
┌──────────────────────────────────────────────────────────┐
│ Insert VTR                                                 │
│                                          BNC C01  (R1)     │
│                                                            │
│                                                            │
│                                          Fast Forward      │
│                                          ↓Frame Advance    │
│                                                            │
│                                                            │
│                                                            │
│    Insert       Cancel                                     │
└──────────────────────────────────────────────────────────┘
```

Insert VTR Menu

6. Select a Video Server function to insert as follows:

   • Use the **Device** knob to select the Video Server that you want to assign the custom control to.

   • Use the **Function** knob to select the transport control function that you want to assign to the selected Video Server. You can chose between the following:

      ~ **Fast Forward** — Select this command to have the Video Server go into full fast forward mode.

      ~ **Frame Advance** — Select this command to have the Video Server move (jog) the video one frame forward.

      ~ **Frame Reverse** — Select this command to have the Video Server move (jog) the video one frame reverse.

      ~ **Go to Clip** — Select this command to have the Video Server cue to a selected clip.

✎ **Note**

> When you select **Go To Clip**, the **Go To Clip** knob appears, allowing you to select the number (**00**-**99**) for the clip you want to cue up.
>
> Most Video Servers allow you to enter a VTR Clip ID by toggling the **VTR Clip** button and using the keypad in the **Global Memory System**.

      ~ **Rewind** — Select this command to have the Video Server go into full fast rewind mode.

      ~ **Stop** — Select this command to have the Video Server stop.

      ~ **Record** — Select this command to have the Video Server go into record mode.

✓ **Operating Tip**

> If you are programming a **Record** custom control for a Video Server, the length of time that the Video Server will record will depend on the the value assign by the Record Time. Refer to the **Record Time Extra Option** in the section "**Setting up the Switcher**" on page 16–15 for more information.

~ **Play** — Select this command to have the Video Server go into play mode, or 1× forward.

~ **Play w/Alpha** — Select this command to have the Video Server play two video clips at once (a video and an alpha). The video input BNC must have an associated alpha input BNC and the correct clip must be cued on both.

~ **Pause** — Select this command to have the Video Server to into pause mode.

~ **Play Loop On** — Select this command to have the currently cued and playing clip loop back to the beginning when it finishes playing.

~ **Play Loop Off** — Select this command to have a currently looping clip stop playing the next time it reaches the clip end or outpoint.
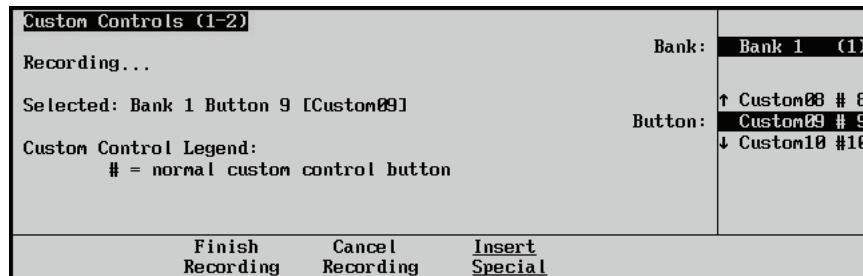
7. Press **Insert** to insert the selected command into the custom control and display the **Insert Special Menu 1-2**.

✓ **Operating Tip**

> Transport control functions can be strung together (while in programming mode), allowing one custom control button to perform *multiple functions* when it is pressed. For example, you can have the **Go To Clip** function followed by the **Play** function, allowing a single custom control macro to go to a clip and then run it.

8. Insert additional commands if needed. When you have finished inserting commands, proceed to the next step to complete the procedure.

9. Press **UP ONE** to display the **Recording Menu**.

```
Custom Controls (1-2)
                                              Bank:  Bank 1   (1)
Recording...

Selected: Bank 1 Button 9 [Custom09]                ↑ Custom08 # 8
                                              Button: Custom09 # 9
Custom Control Legend:                              ↓ Custom10 #10
        # = normal custom control button



          Finish        Cancel      Insert
          Recording     Recording   Special
```

Custom Controls — Recording Menu

10. Press **Finish Recording** to finish recording to the selected custom control.

This completes the procedure for programming custom control buttons that include special transport functions for Video Servers.

Refer to chapter 10, "**Custom Controls**", for more information on custom controls.

Video Server Clip Setup

In order to easily recall clips on the Video Server from the Synergy Q/MD switcher, you will have to store the clips you want to use to **Clip Registers** on the switcher. These Clip Registers store the location, inpoint and outpoint overrides, and the name of the clip.

The **VTR Clips Menu** allows you to perform the following functions:

- Select a Video Server and a clip number.

- Grab or enter a timecode (and other device-specific data), name the clip, and store it in a clip register. Up to **100** clips can be stored (using registers **00** to **99**).

- Cue and preview each clip.

- Trim the inpoint and outpoint.

Programming Video Server Clips

Use the following procedure to program a Video Server clip:

1. Navigate to the **VTR Clips Menu** as follows:

    - Press **HOME** ⇨ **MORE** ⇨ **Clips** ⇨ **VTR Clips**.

2. Press **Clip Type** to display the **Clip Type Menu**.

```
┌─────────────────────────────────────────────────────┬──────────────────┐
│ VTR Clips (1-2)                                      │↑VTR Clip (06)    │
│                                                 Clip │ VTR Clip (07)    │
│ Clip: 07      Clip Name: "VTR Clip"                  │↓VTR Clip (08)    │
│ Device: BNC C01  (R1)                                │                  │
│                                                      ├──────────────────┤
│ ID: "A-Show Kids You Care"                   Device │ BNC C01   (R1)   │
│ Duration: 00:00:16:25                                │                  │
│                      Start              End          │                  │
│                      [_____]         │                  │
│                                                      │                  │
├───────────────────────────────┬─────────┬───────────┴──────────────────┤
│                       Refresh &│ Inpoint │                              │
│ Clip Type    Name Clip  Enter ID  Choose ID│ Outpoint        Cue        │
└─────────────────────────────────────────────────────────────────────────┘
```

VTR Clips Menu — Clip Type Menu

3. Select the Clip Register you want to store a Video Server Clip to as follows:

    - Use the **Clip** knob to select the Clip Register that you want to program (**00**-**99**).

    - Use the **Device** knob to select the remote port for the Video Server you want to store the clip information for.

4. Press **Name Clip** to display the **Clip Name Menu**.

> **Note** The **Video Server Clip** name is the one that will be displayed for the Clip Register on the display in the **Global Memory System Group**. This name will also be shown on the **Remote Control Menu**.

```
Clip Name

   a b c d e f g h i j k l m n o p q r s t u v w x y z          Horizontal

   A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

   0 1 2 3 4 5 6 7 8 9 ! @ # - _ & * ( ) / , . ? ' "              Vertical


Current Name:[VTR Clip]                    New Name:[VTR Clip]

                  Prev          Next                             Accept
      Space       Letter        Letter              Default      New Name
```

Clip Name Menu

- Use the **Horizontal** and **Vertical** knobs (in conjunction with the editing softkeys) to enter the desired clip name. A Standard PS/2 keyboard can be used to perform the same actions as pressing or rotating the **System Control** buttons and knobs.

⚛ **Important**

> Do not enter a space as the first or last character of a clip name.

- Press **Accept New Name** to complete the naming procedure and return to **VTR Clips Menu 1-2**.

5. Select a clip on the Video Server as follows:

   - Press **Choose ID** to display the **Choose ID Menu**.

✓ **Operating Tip**

> If you know the name of the clip, press **Enter ID** and you can enter the name of the clip directly from the **Enter Clip ID Menu**.

```
VTR Clips (1-2)
                                            Showing     ×1      A-Sports
Clip: 07      Clip Name: "VTR Clip"         72 of               A-Tonigh
Device: BNC C01  (R1)                       72 Clips            A-Weathe
                                                               BG-Blue
                                                        ×10     BG-Blue
ID: "A-Show Kids You Care"                                     BG-Count
Duration: 00:00:16:25                                          BG-Effec
                          Start      00:00:00:00    End         BG-Enter
                          _____      BG-Falli
                                                        ×100
                                         Refresh &   Inpoint
    Clip Type    Name Clip    Enter ID    Choose ID   Outpoint       Cue
```

VTR Clips — Choose ID Menu

✎ **Note**

> If you want to refresh the list of clips returned by the Video Server, press **Refresh & Choose ID** to poll the Video Server for a current list of clips. The total number of clips returned is indicated under the **Showing**.

- Use the **×1**, **×10** or **×100** knobs to select the clip on the Video Server that you want to use.

✓ **Operating Tip**

> In the status area, the **ID** and **Duration** fields automatically update as you scroll, and each clip head frame will be visible if you have the Server selected on Preset.
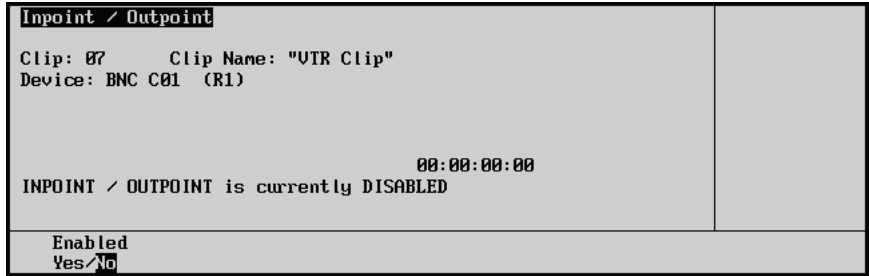
6. Modify the Inpoint and Output of the Clip as follows:

• Press **Inpoint/Outpoint** to display the **Inpoint/Outpoint Menu**.
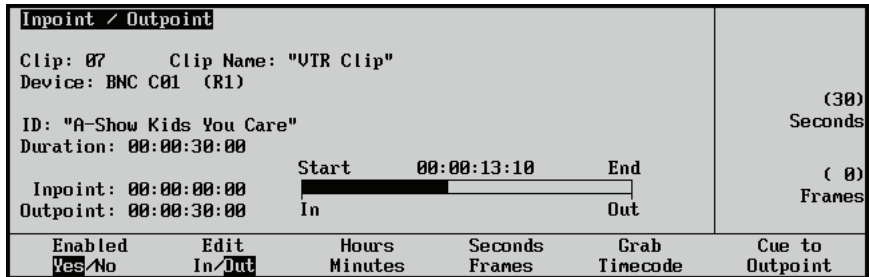
✎ **Note**
> If you select different start and end frames to use on air, the original inpoint and outpoint for the clip remain unchanged on the Video Server. This allows you to can create sub-clips from a long master Video Server clip directly on the switcher.

```
Inpoint / Outpoint

Clip: 07      Clip Name: "VTR Clip"
Device: BNC C01  (R1)



                              00:00:00:00
INPOINT / OUTPOINT is currently DISABLED


   Enabled
   Yes/No
```

Inpoint/Outpoint Menu — Disabled

• Toggle the **Enable** softkey to enable Inpoint/Outpoint Overrides:

~ **No** — Select this option to use the default inpoint and outpoint of the clip on the Video Server. If you have made changes to the inpoint of outpoint of the clip, these values will be saved, but not applied to clip until you select **Yes**.

~ **Yes** — Select this option to override the inpoint and outpoint of the clip on the Video Server. When you select **Yes**, the **Inpoint/Outpoint Menu** changes to allows you to modify the start and stop positions of the clip.

```
Inpoint / Outpoint

Clip: 07      Clip Name: "VTR Clip"
Device: BNC C01  (R1)
                                                        (30)
                                                      Seconds
ID: "A-Show Kids You Care"
Duration: 00:00:30:00
                         Start      00:00:13:10    End    ( 0)
 Inpoint: 00:00:00:00    █████████████░░░░░░░░░░          Frames
Outpoint: 00:00:30:00    In                       Out
   Enabled      Edit       Hours       Seconds      Grab      Cue to
   Yes/No       In/Out     Minutes     Frames     Timecode   Outpoint
```

Inpoint/Outpoint Menu — Enabled

• Toggle the **Edit** softkey to **In** or **Out** to select either the Inpoint or Outpoint for editing.

~ **In** — Select this option to modify the inpoint, or start position, of the clip.

~ **Out** — Select this option to modify the outpoint, or stop position, of the clip.

✎ **Note**
> If you do not know the timecode for the Inpoint or Outpoint you want to store to the Clip Register, you can manually preview the Video Server video using the command on the **Video Server Clips Menu 2-2** and grab the timecode. Refer to the section "**Grabbing a Timecode**" on page 16–43 for information on grabbing a timecode.

• Press **Hours Minutes** to display the **Hours Minutes Menu**.

```
┌─────────────────────────────────────────────────────┬──────────┐
│ Inpoint / Outpoint                                    │          │
│                                                       │          │
│ Clip: 07      Clip Name: "VTR Clip"                   │          │
│ Device: BNC C01  (R1)                                 │          │
│                                                       │   ( 0)   │
│                                                       │   Hours  │
│ ID: "A-Show Kids You Care"                            │          │
│ Duration: 00:00:30:00                                 │          │
│                        Start      00:00:13:10   End   │   ( 0)   │
│  Inpoint: 00:00:00:00  ███████████░░░░░░░░░░░░░░░░░    │  Minutes │
│ Outpoint: 00:00:30:00  In                       Out   │          │
├──────────┬──────────┬──────────┬──────────┬──────────┴──────────┤
│  Enabled │   Edit   │  Hours   │ Seconds  │   Grab   │  Cue to   │
│  Yes/No  │  In/Out  │ Minutes  │  Frames  │ Timecode │  Outpoint │
└──────────┴──────────┴──────────┴──────────┴──────────┴───────────┘
```

Inpoint/Outpoint Menu — Hours Minutes Menu

✓ **Operating Tip**

> As you adjust the Hours, Minutes, Seconds and Frames values, the corresponding fields of the Inpoint or Outpoint are updated. These timecode fields are as follows:
> **(hours):(minutes):(seconds):(frames)**.

- Use the **Hours** knob to adjust the value in the hours field of the **Inpoint** or **Outpoint**.

- Use the **Minutes** knob to adjust the value in the minutes field of the **Inpoint** or **Outpoint**.

- Press **Seconds Frames** to display the **Seconds Frames Menu**.

```
┌─────────────────────────────────────────────────────┬──────────┐
│ Inpoint / Outpoint                                    │          │
│                                                       │          │
│ Clip: 07      Clip Name: "VTR Clip"                   │          │
│ Device: BNC C01  (R1)                                 │          │
│                                                       │   (30)   │
│                                                       │  Seconds │
│ ID: "A-Show Kids You Care"                            │          │
│ Duration: 00:00:30:00                                 │          │
│                        Start      00:00:13:10   End   │   ( 0)   │
│  Inpoint: 00:00:00:00  ███████████░░░░░░░░░░░░░░░░░    │  Frames  │
│ Outpoint: 00:00:30:00  In                       Out   │          │
├──────────┬──────────┬──────────┬──────────┬──────────┴──────────┤
│  Enabled │   Edit   │  Hours   │ Seconds  │   Grab   │  Cue to   │
│  Yes/No  │  In/Out  │ Minutes  │  Frames  │ Timecode │  Outpoint │
└──────────┴──────────┴──────────┴──────────┴──────────┴───────────┘
```

Inpoint/Outpoint Menu — Seconds Frames Menu

- Use the **Seconds** knob to adjust the seconds field of the **Inpoint** or **Outpoint**.

- Use the **Frames** knob to adjust the frames field of the **Inpoint** or **Outpoint**.

✓ **Operating Tip**

> You can preview the Timecode location by selecting the Video Server on the PST Bus and pressing **Cue to Timecode**.

- Press **Grab Timecode** to use the new timecode value for the **Inpoint** or **Outpoint**.

7. Press **HOME** to store your settings.

This completes the procedure for programming Video Server clips.

Grabbing a Timecode

If you do not know the timecode for the inpoint or outpoint, you can manually scan the Video Server video using the commands on the **Video Server Clips Menu 2-2** and grab the timecode.

Use the following procedure to grab a timecode:

1. Navigate to the **VTR Clips Menu 1-2** as follows:

- Press **HOME** ⇨ **MORE** ⇨ **Clips** ⇨ **VTR Clips**.

2. Select the Clip Register and Video Server that you want to store. Refer to the section "**Programming Video Server Clips**" on page 16–40 for more information on programming Video Server Clips.

3. Grab a timecode as follows:

- Press **MORE** to display **VTR Clips Menu 2-2**.

```
VTR Clips (2-2)

Clip: 07      Clip Name: "VTR Clip"
Device: BNC C01  (R1)

Inpoint: 00:00:00:00




              back                          Ahead        Fast
    Rewind    Frame        Pause     Play    Frame      Forward
```
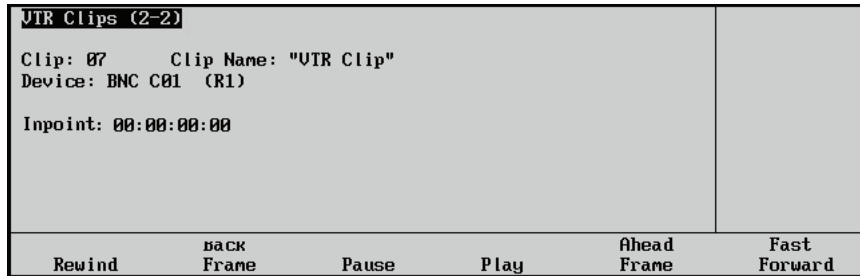
VTR Clips Menu — VTR Transport Controls

- Cue the Video Server to the desired clip location using the transport controls: **Rewind**, **Back Frame**, **Pause**, **Play**, **Ahead Frame** and **Fast Forward**.

- Press **Pause** to hold the Video Server at the desired timecode.

- Press **MORE** ⇨ **MORE** to display the **VTR Clips Menu 1-2**.

- Press **Grab Timecode** to grab the current timecode and display it in the **Timecode** field.

4. Press **HOME** to store your settings.

This completes the procedure for grabbing a Video Server timecode.

Video Server Operation

Video Server clips can be cued and played by selecting the Clip Register on the **Remote Control Menu** or by using the keypad in the **Global Memory System Group**, or by using the Clip ID from the Video Server.

Clip Control Overview

There are two methods to recall Video Server Clips using the keypad in the **Global Memory System Group** of the Synergy Q/MD switcher.

- • **VTR Clip Number** — The **VTR Clip Number** is a **2** digit number that corresponds to the **Video Server Clip Register**. Refer to the section "**Programming Video Server Clips**" on page 16–40 for more information. When selecting a crosspoint associated with any VTR device, the keypad in the **Global Memory System Group** will be set to **VTR Clip Number** mode.

> Clip 00 VTR Clip
> M:015 D:008 F:20

VTR Clip Number

- • **VTR Clip ID** — The **VTR Clip ID** is a **6** digit number that is established on the Video Server. Leading zeros cannot be specified when entering **VTR Clip ID**. For example, entering **12** on the **Global Memory System** keypad will load **Clip 12** from the device and not **Clip 000012**.

> Clip ID: 000000
> M:015 D:008 F:20
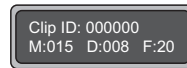
VTR Clip ID

- ~ All Video Servers, *except* the EVS maXS, support the VTR Clip ID mode and can toggle back to the VTR Clip Number mode by pressing the **VTR Clip** button.
- ~ Clip IDs must be numeric to be able to recall them using the keypad.

Cueing a Clip Using the Keypad

Use the following procedure to cue a **VTR Clip** from a Video Server using the keypad in the **Global Memory System Group**:

✓ **Operating Tip**

> The same procedure can be used to cue a clip using the **Clip Number**. Toggle the **VTR CLIP** button until **Clip ## VTR Clip** appears in the display.

VTR CLIP

1. Toggle the **VTR CLIP** button in the **Global Memory System** to display the VTR Clip ID screen.

> Clip ID: 000000
> M:015 D:008 F:20

VTR Clip ID

2. Enter the VTR Clip ID using the keypad in the **Global Memory System Group**.

```
Clip ID: 000012
M:015  D:008  F:20
```
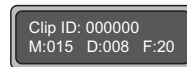
VTR Clip ID

3. Press **Enter**.

This completes the procedure for cueing a clip using the keypad.

Video Server Remote Control Menu

The **Video Server Remote Control Menu** allows you to cue different clips using the Clip Registers or by using the transport controls to move to different timecodes. You can then play the clip directly, or use the **ROLL VTR** button in the **MLE Transition Group** to play the clip on the next transition.

Use the following procedure to display the **Video Server Remote Control Menu**:

1. Navigate to the **Remote Control Select Menu** as follows:

   • Press **HOME ⇨ Effects ⇨ MORE ⇨ Remote Control Select**.

```
Remote Control Select


Select a port to control via
the Remote Menu, then press GO.
                                              Port:  BNC C01   (R1)



     VTR          Router        Robotic              Character
   Control       Control        Camera               Generator      GO!!
```
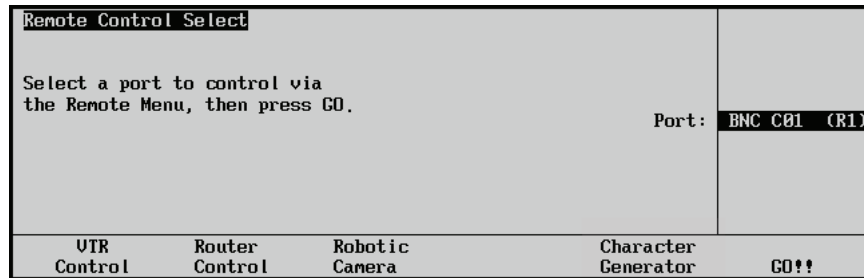
Router Control Select Menu

2. Press **VTR Control** to show a list of BNCs assigned to a VTR, Video Server or Audio Server.

3. Use the **BNC** knob to select the BNC you want to control.

4. Press **GO!!** to display the **Video Server Remote Control Menu 1-2**.

✎ **Note**   If a "COMMUNICATIONS LOST" message appears on the menu, the Synergy Q/MD switcher has been unsuccessful at receiving a response from the Video Server. Check the cable connections and the configuration on the switcher and the Video Server.

```
Remote Control (1-2)        Good          RemTime: 01:38:58:16
Device: AirSpeed (R5)    Type: VDCP       Channel: 2
            Current Clip              Clip to Cue            VTR Clip(89)
    Clip: "Dry_Peop"                  "Dry_Peop"            VTR Clip(91)
          Dry_People_Autocus          Dry_People_Autocus    Dry_Peop(98)
Duration: 01:39:01:06                 01:39:01:06           03_Kayak(99)
In / Out: None Set                    None Set

            00:00:02:15

                                      Fast         Play
   Rewind        Pause        Play    Forward      Speed      Cue Clip
```
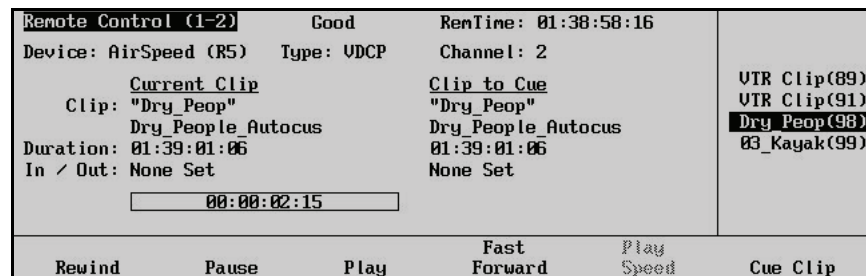
Remote Control — Video Server Remote Control Menu

The **Video Server Remote Control Menu 1-2** identifies the specific Video Server you are controlling by the BNC that it is connected to, and the communication protocol, or

Type, that is being used to control the Video Server. Below the title are two columns, **Current Clip** and **Clip to Cue**.

- • **Current Clip** — This column identifies the name of the clip (**Clip**), the length of time the clip will play (**Duration**), and the Inpoint and Outpoint overrides that have been set (**In / Out**). At the bottom of the column is a progress bar indicating the current progress or time into the clip as it is being played.

- • **Clip to Cue** — This column identifies the name of the clip (**Clip**), the length of time the clip will play (**Duration**), and the Inpoint and Outpoint overrides that have been set (**In / Out**).

5. Use the **Clip** knob to select the enabled **Clip Register** you would like to Cue.

| Note | The last clip cued or recalled using the keypad is shown at the bottom of the list with the **(ID)** label. |

| Operating Tip | To play or preview the clip manually from the menu, use the available transport control commands: **Rewind**, **Play**, **Pause,** and **Fast Forward**. |

6. Press **Cue Clip** to have the clip listed in the **Clip to Cue** column. This clip will be the next clip taken on-air with the **ROLL VTR**. Refer to the section "**Roll VTR Setup**" on page 16–36 for more information on Roll VTR.

This completes the procedure for displaying the **Video Server Remote Control Menu**.

Routers

In This Chapter

This chapter provides instructions for connecting, setting up and operating a Router with your Synergy Q/MD switcher. Before you begin, ensure that the **Routing Switcher Interface** option is installed. If not, please contact **Ross Video** for details. Refer to Chapter 6, "**Software Upgrades and Options**" for instructions on verifying the status of installed options.

The following topics are discussed:

- Supported Routing Switchers
- Communications Connections
- Communications Setup
- Setting up Router BNCs
- Router Custom Controls
- Router Operation

Supported Routing Switchers

The Synergy Series Switcher has been tested with a number of Routers to ensure the highest standard for compatibility and reliability. The following Routers are currently supported by your Synergy Q/MD switcher:

• **Philips Jupiter Router** (using the ESswitch protocol)

• **PESA Cougar Router** (using the CPU-Link protocol)

• **Pro-Bel Freeway Router** (using the General Remote Control protocol)

• **Pro-Bel Halo Router** (using the General Remote Communication protocol)

• **Codan Kondor EOS-2000 Router** (using the Geneos protocol)

• **GVG SMS 7000 Router** (using the GVG Native protocol)

• **GVG Encore Control System** (using the GVG Native protocol)

• **Codan Kondor** (using the Codan ASCII protocol)

• **Codan NK Router** (using the Codan ASCII protocol)

• **Sierra Yosemite Router** (using the Native protocol)

• **Utah Scientific Router** (using the Utah RCP-1 Protocol)

Communications Connections

You can connect a number of Routers to your Synergy Q/MD switcher. The procedure for connecting the Router will depend on the type of Router you have. This section will provide general instructions for connecting the Router to one of the Remote Ports on the back of the Synergy Control Panel.

Note These instructions are provided as a guide, for specific information on the Router you are connecting to the Synergy Q/MD switcher, refer to the documentation provided with the Router.

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

- **Routing Switcher Interface** — This is the software option from Ross Video that allows your Synergy Q/MD switcher to control a Router.

- **Interface Cable** — This is a 9-Pin cable with a 9-Pin, D-Type (DB9) male connector on one end, to connect to the remote port on the control panel, and a connector on the other end to connect to your Router. Refer to the section "**Router Interface Cable Pinouts**" on page 17–5 for information on the pin-outs and connector required for your Router. Ross Video does not supply this cable.

Note If you are connecting a **Codan NK Router** to your Synergy Q/MDswitcher, a DB9 to RJ45 adapter must be used on the Remote Port of the control panel to connect to the CAT5 cable from the NK Router.

Note If you are connecting a **GVG Encore Control System** to your Synergy Q/MD switcher, a DB9 to RJ45 adapter must be used on the Remote Port of the control panel to connect to the CAT5 cable from the Router. Refer to the section "**GVG Encore Control System Cabling**" on page 17–10, for more information.

Use the following procedure to connect a Router to your Synergy Q/MD switcher:

1. Connect and secure the **9-Pin**, **Male**, end of the **Interface Cable** to one of the **Remote Ports** on the back of the Synergy control panel.

Note You must use **Remote 5** with a **RJ-12 to DB9 Male Adaptor** to connect a remote Aux Panel to the **Synergy 1** control panel. If you intend to connect a Remote Aux Panel to the switcher, you will have to leave the Remote 5 port open.
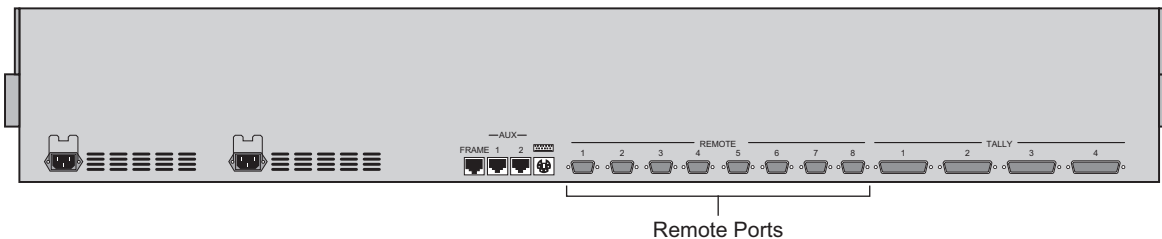
Remote Ports

Synergy 2 — Control Panel

Remote Ports

Synergy 1 — Control Panel

2. Connect and secure the other end of the cable to the appropriate port on the Router. The suggested port for each supported Router is listed below:

    •   **Philips Jupiter Router** — Connect the Interface cable to an odd numbered (1, 3, 5, 7) serial port on the rear of the Jupiter chassis. Refer to the section "**Philips Jupiter Router Cabling**" on page 17–5 for more information on the cabling for this Router.

    •   **PESA Cougar Router** — Connect the Interface cable to the PESA port on the External Controller for the PESA Cougar Router. Refer to the section "**PESA Cougar Router Cabling**" on page 17–5 for more information on the cabling for this Router.

    •   **Pro-Bel Freeway Router** — Connect the Interface cable to the RS-485-2 port on the rear of the Chyron Freeway chassis. Refer to the section "**Pro-Bel Freeway Router Cabling**" on page 17–6 for more information on the cabling for this Router.

    •   **Pro-Bel Halo Router** — Connect the Interface cable to the CTRL 2 port on the rear of the Pro-Bel Halo chassis. Refer to the section "**Pro-Bel Halo Router Cabling**" on page 17–7 for more information on the cabling for this Router.

    •   **Codan Kondor EOS-2000 Router** — Connect the Interface cable to the PC Port on the Codan Kondor chassis, or the Device port on the CPU Port Expander. Refer to the section "**Codan Kondor EOS-2000 Router Cabling**" on page 17–7 for more information on the cabling for this Router.

    •   **Grass Valley SMS 7000 Router** — Connect the Interface cable to the ASYNC RS-232 port or the ASYNC RS-422-3 port on the rear of the SMS 7000 chassis. Refer to the section "**GVG SMS 7000 Router Cabling**" on page 17–9 for more information on the cabling for this Router.

    •   **GVG Encore Control System** — Connect the Interface cable to the one of the RS-422/RS-485 SIO ports (5-8) on the rear of the GVG Encore Control System chassis. Refer to the section "**GVG Encore Control System Cabling**" on page 17–10 for more information on the cabling for this device.

    •   **Codan Kondor Router** — Connect the Interface cable to the AUX com port on the Kondor chassis. Refer to the section "**Codan Kondor Cabling**" on page 17–11 for more information on the cabling for this Router.

    •   **Codan NK Router** — Connect the Interface cable to T-Bus port on the Codan NK Router. Refer to the section "**Codan NK Router Cabling**" on page 17–12 for more information on the cabling for this Router.

    •   **Sierra Yosemite Router** — Connect the Interface cable to Host Port (RS232/422 Port 2) on the Sierra Yosemite chassis. Refer to the section "**Sierra Yosemite Router Cabling**" on page 17–13 for more information on the cabling for this Router.

    •   **Utah Scientific Router** — Connect the Interface cable to RS-232 connector port 1, 3, or 5 on the Utah Scientific Router chassis. Refer to the section "**Utah Scientific Router Cabling**" on page 17–14 for more information on cabling for this Router.

This completes the procedure for connecting a Router to the Synergy Q/MD switcher. Refer to the section "**Communications Setup**" on page 17–16 for instructions on how to set up communications protocols on the Switcher, as well as on the Router.

Router Interface Cable Pinouts

Use the information in this section to connect the Interface Cable from the Synergy Q/MD switcher to the Router.

Philips Jupiter Router Cabling

The Synergy control panel connects to the Jupiter Router via the remote ports on the Synergy control panel, and an odd numbered (1, 3, 5, 7) serial port on the rear of the Jupiter chassis.

Cable connections in the following table refer only to those between the Synergy control panel and the Philips Jupiter Router. Other cable connections present on the Jupiter Router can be found in the Philips Jupiter documentation.

Synergy Q/MD -to- Philips Jupiter Wiring Chart

Synergy Control Panel			Philips Jupiter	
Remote Port	Signal		Serial Port (1, 3, 5 or 7)	Signal
1	Chassis			n/c
2	RxA (Rx-)	→	8	Tx-
3	TxB (Tx+)	→	7	Rx+
4	n/c			n/c
5	Ground			n/c
6	Ground			n/c
7	RxB (Rx+)	→	3	Tx+
8	TxA (Tx-)	→	2	Rx-
9	Chassis			n/c

n/c = Not Connected

PESA Cougar Router Cabling

The Synergy control panel connects to the PESA Cougar Router via the remote ports on the Synergy control panel, and the External Controller for the Cougar chassis.

Note	In order to use the RS-422 communications protocol, you may have to use an External Controller to interface between the Cougar and the Synergy Q/MD switcher. Refer to your PESA Cougar documentation for more information on controlling your Router remotely.

Cable connections in the following table refer only to those between the Synergy control panel and the Pesa Cougar Router. Other cable connections present on the Cougar chassis can be found in the Pesa Cougar documentation.

Synergy Q/MD -to- PESA Cougar Wiring Chart

Synergy Control Panel				Pesa Cougar	
Remote Port	Signal			PESA Port	Signal
1	Chassis				Ground
2	RxA (Rx-)	→		3	Tx-
3	TxB (Tx+)	→		2	Rx+
4	n/c				Ground
5	Ground				n/c
6	Ground	→		6	Ground
7	RxB (Rx+)	→		8	Tx+
8	TxA (Tx-)	→		7	Rx-
9	Chassis				Ground

n/c = Not Connected

Pro-Bel Freeway Router Cabling

The Synergy control panel connects to the Chyron Freeway Router via the remote ports on the Synergy control panel and the RS-485-2 port on the rear of the Chyron Freeway chassis.

⚹ **Important** | The Freeway must be configured to allow it to be controlled using the RS-485-2 port. For information concerning this set up, refer to your Chyron (Pro-Bel) Freeway documentation or contact your sales representative at Chyron (Pro-Bel).

Cable connections in the following table refer only to those between the Synergy control panel and the Chyron Freeway Router. Other cable connections present on the Freeway Router can be found in the Chyron Freeway documentation.

Synergy Q/MD -to- Pro-Bel Freeway Wiring Chart

Synergy Control Panel				Pro-Bel Freeway	
Remote Port	Signal			RS-485-2 Port	Signal
1	Chassis				n/c
2	RxA (Rx-)	→		2	Tx-
3	TxB (Tx+)	→		3	Rx+
4	n/c				n/c
5	Ground				n/c
6	Ground				n/c
7	RxB (Rx+)	→		7	Tx+
8	TxA (Tx-)	→		8	Rx-
9	Chassis				n/c

n/c = Not Connected

Pro-Bel Halo Router Cabling

The Synergy control panel connects to the Pro-Bel Halo Router via the remote ports on the Synergy control panel and the CTRL 2 port on the rear of the Pro-Bel Halo chassis.

Important

The Pro-Bel Halo must be configured to allow it to be controlled using the CTRL 2 port. For information concerning this setup, refer to your Pro-Bel documentation.

Cable connections in the following table refer only to those between the Synergy control panel and the Pro-Bel Halo Router. Other cable connections present on the Router can be found in the Pro-Bel documentation.

Synergy Q/MD -to- Pro-Bel Halo Wiring Chart

Synergy Control Panel			Pro-Bel Halo	
Remote Port	**Signal**		**CTRL 2 Port**	**Signal**
1	Chassis			n/c
2	RxA (Rx-)	→	2	Tx-
3	TxB (Tx+)	→	3	Rx+
4	n/c			n/c
5	Ground			n/c
6	Ground			n/c
7	RxB (Rx+)	→	7	Tx+
8	TxA (Tx-)	→	8	Rx-
9	Chassis			n/c

Codan Kondor EOS-2000 Router Cabling

The Codan Kondor Router can be interface with the Synergy Q/MD switcher directly, or through a CPU Port Expander. The pinouts are provided for both options.

With CPU Port Expander

The Synergy control panel connects to the Codan Router via the remote ports on the Synergy control panel, and the device ports on the CPU Port Expander of the Codan Kondor Router.

Cable connections in the following table refer only to those between the Synergy control panel and the Codan Kondor (Geneos) Router. Other cable connections present on the Kondor rack frame can be found in the Kondor documentation.

Synergy Q/MD -to- Codan (Geneos) Wiring Chart for RS-232

Synergy Control Panel			Codan Geneos Rack Frame	
Remote Port	**Signal**		**CPU Port Expander Port**	**Signal**
1	Chassis			
2	Tx	→	2	Rx
3	Rx	→	3	Tx
4	n/c			
5	Ground	→	5	Ground
6	Ground			
7	n/c			
8	n/c			
9	Chassis			

n/c = Not Connected

Synergy Q/MD -to- Codan (Geneos) Wiring Chart for RS-422-485

Synergy Control Panel			Codan Geneos Rack Frame	
Remote Port	**Signal**		**CPU Port Expander Port**	**Signal**
1	Chassis			Ground*
2	RxA (Rx-)	→	2	Tx-
3	TxB (Tx+)	→	3	Rx+
4	n/c			n/c
5	Ground	→	5	Ground*
6	Ground			n/c
7	RxB (Rx+)	→	7	Tx+
8	TxA (Tx-)	→	8	Rx-
9	Chassis			Ground Detect*

n/c = Not Connected
*Pins 1, 5, and 9 are tied.

Direct Connection

The Synergy control panel connects to the Codan Router via the remote ports on the Synergy Q/MD control panel, and the PC Port of the Codan Kondor Router.

Cable connections in the following table refer only to those between the Synergy control panel and the Codan Router. Other cable connections present on the Kondor rack frame can be found in the Router documentation.

Synergy Q/MD -to- Codan (Geneos) Wiring Chart for RS-232

Synergy Control Panel			Codan Geneos Rack Frame	
Remote Port	**Signal**		**PC Port**	**Signal**
1	Chassis			
2	Tx	→	2	Rx
3	Rx	→	3	Tx
4	n/c			
5	Ground	→	5	Ground
6	Ground			
7	n/c			
8	n/c			
9	Chassis			

n/c = Not Connected

GVG SMS 7000 Router Cabling

The Synergy control panel connects to the GVG SMS 7000 Router via the remote ports on the Synergy control panel and either the ASYNC RS-232 port or the ASYNC RS-422-3 port on the rear of the SMS 7000 chassis.

Cable connections in the following table refer only to those between the Synergy control panel and the GVG SMS 7000 Router. Other cable connections present on the SMS 7000 Router can be found in the Grass Valley documentation.

⚠ **Important** | The port on the SMS 7000 is labelled RS-232, however it must be set to run in RS-422 mode.

Synergy Q/MD -to- GVG SMS 7000 ASYNC RS–232 Wiring Chart

Synergy Control Panel			GVG SMS 7000	
Remote Port	**Signal**		**ASYNC RS-232 Port**	**Signal**
1	Chassis			n/c
2	RxA (Rx-)	→	5	Tx-
3	TxB (Tx+)	→	2	Rx+
4	n/c			n/c
5	Ground			n/c
6	Ground			n/c
7	RxB (Rx+)	→	3	Tx+
8	TxA (Tx-)	→	4	Rx-
9	Chassis			n/c

n/c = Not Connected

Synergy Q/MD -to- GVG 7000 ASYNC RS–422 Wiring Chart

Synergy Control Panel				GVG SMS 7000	
Remote Port	Signal			ASYNC 422-3 Port	Signal
1	Chassis				n/c
2	RxA (Rx-)	→		2	Tx-
3	TxB (Tx+)	→		3	Rx+
4	n/c				n/c
5	Ground				n/c
6	Ground				n/c
7	RxB (Rx+)	→		7	Tx+
8	TxA (Tx-)	→		8	Rx-
9	Chassis				n/c

n/c = Not Connected

GVG Encore Control System Cabling

The Synergy control panel connects to the GVG Encore Control System via the remote ports on the Synergy control panel and one of the RS-422/RS-485 SIO ports (5-8) on the rear of the GVG Encore Control System chassis.

Note | While you can use one of the RS-232 SIO ports (1-4) on the GVG Encore Control System, Ross Video recommends using the RS-422/RS-485 ports.

To construct the cabling between the Synergy control panel and the GVG Encore Control System, Ross Video recommends the following:

- Use an RJ-45 Female to DB-9 male adaptor to connect directly to the Synergy control panel; and

- Use a CAT 5e Ethernet patch (pin-to-pin) type cable to connect the GVG Encore Control System chassis to the RJ-45 to DB-9 adaptor.

Note that there are two different models of the GVG Encore Control System: 6101000xx and 6100884xx. Cabling for both models are provided in the sections below.

Note | If you have a Redundant System setup, refer to your GVG documentation for cabling information.

GVG Encore Control System (6101000xx)

Cable connections in the following table refer only to those between the Synergy control panel and the GVG Encore Control System model 6101000xx. Other cable connections present on the GVG Encore Control System can be found in the GVG documentation.

Synergy Q/MD -to- GVG Encore Control System (6101000xx) Wiring Chart

Synergy Control Panel			GVG Encore Control System (6101000xx)	
Remote Port	Signal		COM Port	Signal
1	Chassis			n/c
2	RxA (Rx-)	→	2	Tx-
3	TxB (Tx+)	→	8	Rx+
4	n/c			n/c
5	Ground			n/c
6	Ground			n/c
7	RxB (Rx+)	→	1	Tx+
8	TxA (Tx-)	→	7	Rx-
9	Chassis			n/c

GVG Encore Control System (6100884xx)

Cable connections in the following table refer only to those between the Synergy control panel and the GVG Encore Control System model 6100884xx. Other cable connections present on the GVG Encore Control System can be found in the GVG documentation.

Synergy Q/MD -to- GVG Encore Control System (6100884xx) Wiring Chart

Synergy Control Panel			GVG Encore Control System (6100884xx)	
Remote Port	Signal		COM Port	Signal
1	Chassis			n/c
2	RxA (Rx-)	→	8	Tx-
3	TxB (Tx+)	→	1	Rx+
4	n/c			n/c
5	Ground			n/c
6	Ground			n/c
7	RxB (Rx+)	→	3	Tx+
8	TxA (Tx-)	→	6	Rx-
9	Chassis			n/c

Codan Kondor Cabling

The Synergy control panel connects to the Codan Kondor Router via the remote ports on the Synergy control panel and the 25-Pin, D-Type, AUX com port on the Codan Kondor chassis.

Note A DB9 to DB25 adapter may be required to connect the Interface Cable to the Codan Kondor Router.

Cable connections in the following table refer only to those between the Synergy control panel and the **Codan Kondor** Router. Other cable connections present on the Kondor Router can be found in the Router documentation.

Synergy Q/MD -to- Codan Kondor (ASCII) RS–422 Wiring Chart

Synergy Control Panel			Codan Kondor (ASCII)	
Remote Port	Signal		AUX Comm Port	Signal
1	Chassis			n/c
2	RxA (Rx-)	→	17	Ta (Tx-)
3	TxB (Tx+)	→	18	Rb (Rx+)
4	n/c			n/c
5	Ground			n/c
6	Ground	→	7	Ground
7	RxB (Rx+)	→	4	Tx+
8	TxA (Tx-)	→	6	Rx-
9	Chassis			n/c

n/c = Not Connected

Codan NK Router Cabling

The Synergy control panel connects to the Codan NK Router via the remote ports on the Synergy control panel and the T-Bus port on the Codan NK Router.

Use the following procedure to connect a Codan NK Router to your Synergy Q/MD switcher:

1. Connect and secure the **9-Pin**, **Male**, end of the **DB9 to RJ-45 Adapter (Codan NK-SCP/A)** to one of the **Remote Ports** on the back of the Synergy control panel.

2. Connect and secure one end of the **CAT5** cable to the **DB9 to RJ-45 Adapter**.

3. Connect and secure the other end of the cable to the **T-Bus Port** on the **NK Router**.

This completes the procedure for connecting a Router to the Synergy Q/MD switcher. Refer to the section "**Communications Setup**" on page 17–16 for instructions on how to set up communications protocols on the Switcher, as well as on the Router.

Cable connections in the following table refer only to those between the Synergy control panel and the Codan NK Router. Other cable connections present on the NK Router can be found in the Router documentation.

Synergy Q/MD -to- Codan NK (ASCII) RS–232 Wiring Chart

Synergy Control Panel			Codan NK (ASCII)	
Remote Port	Signal		T-Bus Port	Signal
1	Chassis			
2	Tx	→	3	Rx
3	Rx	→	2	Tx
4	n/c			
5	Ground	→	5	Ground
6	Ground			
7	n/c			
8	n/c			
9	Chassis			

n/c = Not Connected

Sierra Yosemite Router Cabling

The Synergy control panel connects to the Sierra Yosemite Router via the remote ports on the Synergy control panel, and the Host Port (RS232/422 Port 2) on the rear of the Sierra Router.

⊛ **Important** | The default settings for the **Sierra Yosemite** Router is **RS-232** and **9600** Baud; however, Ross Video recommends that you use **RS-422** and **38400** Baud. Refer to your Sierra Video Systems Yosemite Router documentation for information on changing the configuration.

Cable connections in the following table refer only to those between the Synergy control panel and the Sierra Yosemite Router. Other cable connections present on the Yosemite chassis can be found in the Sierra Yosemite documentation.

Synergy Q/MD -to- Sierra Yosemite RS-232 Wiring Chart

Synergy Control Panel			Sierra Yosemite	
Remote Port	Signal		Host Port	Signal
1	Chassis			
2	Tx	→	2	Rx
3	Rx	→	3	Tx
4	n/c			
5	Ground	→	5	Ground
6	Ground			
7	n/c			
8	n/c			
9	Chassis			

n/c = Not Connected

Synergy Q/MD -to- Sierra Yosemite RS-422 Wiring Chart

Synergy Control Panel				Sierra Yosemite	
Remote Port	**Signal**			**Host Port**	**Signal**
1	Chassis				
2	RxA (Rx-)	→		2	TxA (Tx-)
3	TxB (Tx+)	→		3	RxB (Rx+)
4	n/c				
5	Ground				
6	Ground				
7	RxB (Rx+)	→		7	TxB (Tx+)
8	TxA (Tx-)	→		8	RxA (Rx-)
9	Chassis				

n/c = Not Connected

Utah Scientific Router Cabling

The Synergy control panel connects to a Utah Scientific Router via the remote ports on the Synergy control panel, and the RS-232 connector port on the rear of the Utah Scientific Router.

Cable connections in the following table refer only to those between the Synergy control panel and the Utah Scientific Router. Other cable connections present on the Router can be found in the Utah Scientific documentation.

Synergy 1 Q/MD -to-Utah Scientific RS–232 Wiring Chart

Synergy Control Panel				Utah Scientific	
Remote Port	**Signal**			**RS-232 Com Port (1,3, or 5)**	**Signal**
1	Chassis				
2	Tx	→		3	Rx
3	Rx	→		2	Tx
4	n/c				
5	Ground	→		5	Ground
6	Ground				
7	n/c				
8	n/c				
9	Chassis				

n/c = Not Connected

Synergy Q/MD -to-Utah Scientific RS–232 Wiring Chart

Synergy Control Panel			Utah Scientific	
Remote Port	**Signal**		**RS-232 Com Port (1, 3, or 5)**	**Signal**
1	Chassis			
2	Tx	→	3	Rx
3	Rx	→	2	Tx
4	n/c			
5	Ground	→	5	Ground
6	Ground			
7	n/c			
8	n/c			
9	Chassis			

n/c = Not Connected

Communications Setup

Setting up the Switcher

In order to have the Synergy Q/MD switcher communicate with a Router, the remote port on the control panel that the Router is connected to must be set up to communicate with the particular Router you have connected.

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

1. Navigate to the **Communications Menu 1-2** as follows:

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

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

```
Communications (1-2)
                                              Com Port: REMOTE 1 (R1)
This  menu  lets  you set                              ↓REMOTE 2 (R2)
up   what  each of the com
ports are used for.                                     ↑VTR (CLIP)
                                              Device:  Router
                                                       ↓Still Store



          Select                        Custom         Extra
   Type   Device   Com Settings  Com Type  Devices     Options
```
Communications — Type Menu

3. Assign a Remote Com Port to Router as follows:

   • Use the **Com Port** knob to select the remote port on the Synergy Q/MD switcher that is connected to the Router.

✎   **Note**   You must use **Remote 5** with a **RJ-12 to DB9 Male Adaptor** to connect a remote Aux Panel to the **Synergy 1** control panel. If you intend to connect a Remote Aux Panel to the switcher, you will have to leave the Remote 5 port open.

   • Use the **Device** knob to select **Router**.

4. Press **Select Device** to display the **Select Device Menu**.

```
Communications (1-2)
                                              Com Port: REMOTE 1 (R1)
This  menu  lets  you set
up   which  devices  are
controlled   by   which
ports.                                        Device:  Jupiter
                                                       ↓Pesa



          Select                        Custom         Extra
   Type   Device   Com Settings  Com Type  Devices     Options
```
Communications — Select Device Menu

5. Assign a specific Router to the Remote Com Port as follows:

   • Use the **Com Port** knob to select the Remote Com Port that the desired Router is connected to.

- Use the **Device** knob to select the type of Routing Switcher that is connected to the port. You can select between the following:

  ~ **Jupiter** — Use this option to assign a **Philips Jupiter Router** to the selected com port using the ESswitch protocol. Refer to the section "**Philips Jupiter**" on page 17–20 for details.

  ~ **Pesa** — Use this option to assign a **PESA Cougar Router** to the selected com port using the CPU-Link protocol. Refer to the section "**PESA Cougar**" on page 17–21 for details.

  ~ **Pro-Bel** — Use this option to assign a **Pro-Bel Freeway Router** or a **Pro-Bel Halo Router** to the selected com port using the General Remote Communication (SW-P-08) protocol. Refer to the section "**Pro-Bel Freeway**" on page 17–21 for details on setting up a Chyron Freeway Router. For setup information on the **Pro-Bel Halo Router**, refer to the section "**Pro-Bel Halo**" on page 17–22.

  ~ **CodanEOS** — Use this option to assign a **Codan Kondor EOS-2000 Router** to the selected com port using the Geneos protocol. Refer to the section "**Codan Kondor (Geneos)**" on page 17–22 for details.

Note | If the Codan Router does not have a port expander, and a PC is required to be connected to the Router at all times, the Codan ASCII protocol will have to be used to allow the Synergy switcher to control the Router.

  ~ **GVG NP** — Use this option to assign a **Grass Valley SMS 7000 Router** or the **GVG Encore Control System** to the selected com port using the Native protocol. Refer to the section "**GVG SMS 7000**" on page 17–24 for details. For information on the GVG Encore Control System, refer to the section "**GVG Encore Control System**" on page 17–25.

  ~ **CodanASC** — Use this option to assign a **Codan Kondor** or **Codan NK Router** to the selected com port using the Codan ASCII protocol. Refer to the section "**Codan (ASCII)**" on page 17–25 for details.

Note | The Codan ASCII protocol does not support Mnemonics.

  ~ **Yosemite** — Use this option to assign a **Sierra Yosemite Router** to the selected com port using the Native protocol. Refer to the section "**Sierra Yosemite**" on page 17–26 for details.

  ~ **Utah** — Use this option to assign a **Utah Scientific Router** to the selected com port using the Utah RCP-1 protocol. Refer to the section "**Utah Scientific Router**" on page 17–27 for details.

Note | The Utah RCP-1 protocol does not support Mnemonics.

6. Press **Com Settings** to display the **Com Settings Menu**.

```
Communications (1-2)
                                                    Com Port:  Jupiter   (R1)
This  menu  lets  you set
up    your    com    port                                     ↑19200
parameters.                                           Baud:    38400
                                                              ↓57600

                                                               NONE
                                                    Parity:    ODD
                                                               EVEN
              Select                          Custom         Extra
      Type     Device   Com Settings  Com Type Devices       Options
```

Communications — Com Settings Menu

7. Set the communications protocols for the Router as follows:

   • Use the **Com Port** knob to select the Router you are setting the communications settings for.

   • Use the **Baud** knob to select the baud rate for the Router. Refer to the section "**Setting up the Router**" on page 17–20 for router specific settings.

   • Use the **Parity** knob to select the parity, **NONE**, **ODD** or **EVEN** for the specific Router. Refer to the section "**Setting up the Router**" on page 17–20 for the specific settings for your Router.

✎	**Note**	Some of the communications settings are **Fixed**, or locked. These settings have been preset for the selected Router and do not need to be changed.

8. Press **Com Type** to display the **Com Type Menu**.

```
Communications (1-2)
                                                    Com Port:  Jupiter   (R1)
This  menu  lets  you set
up your com port types.
                                                               RS-232
                                                    Type:      RS-422
                                                              ↓Network UDP



              Select                          Custom         Extra
      Type     Device   Com Settings  Com Type Devices       Options
```

Communications — Com Type Menu

9. Select the type of serial communication that will be used to communicate with the Router as follows:

   • Use the **Com Port** knob to select the Router you want to set the communication type for.

   • Use the **Type** knob to select the type of serial communications (**RS-232** or **RS-422**) for the selected port. Refer to the section "**Setting up the Router**" on page 17–20 for the specific settings for your Router.

✎	**Note**	**Network UDP** and **Network TCP** are not supported for this device type.

> **Note** | The **Synergy 1** allows you to select **RS-232 Null** and **RS-422 Null**, as well as the standard **RS-232** and **RS-422**. Refer to the section "**Setting up the Router**" on page 17–20 for information on when to use these settings.

10. Press **Extra Options** to display the **Extra Options Menu**. Refer to the section "**Extra Options Setup**" on page 17–19 for information on the Extra Options settings for Routers.

11. Press **HOME** to display the **Installation Change Confirmation Screen**.

12. Accept or reject the changes you have made as follows:

    • Press **Confirm** to accept the changes.

    • Press **Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure for setting up the communications with the Routing Switcher, next you will have finish setting up the Router to communicate with the Synergy Q/MD switcher, and then set up the BNC inputs that you have connected to the Router.

Extra Options Setup

The **Extra Options Menu** for a Router allows you to complete the communications setup for some of the Routers on the Synergy Q/MD switcher. This Extra Option allows you to change the number of sources that will appear in the Synergy Router Menus.

The following Routers support this Extra Option:

    • Philips Jupiter Router (using the ESswitch protocol)

    • PESA Cougar Router (using the CPU-Link protocol)

    • Chyron (Pro-Bel) Freeway Router (using the General Remote Control protocol)

    • Codan Kondor (using the Codan ASCII protocol)

    • Codan NK Router (using the Codan ASCII protocol)

    • Sierra Yosemite Router (using the Native protocol)

    • Utah Scientific Router (using the Utah RCP-1 protocol)

Use the following procedure to set up the Extra Options for a Router:

1. Set up communications between the Router, stopping after step 9, using the procedure in the section "**Setting up the Switcher**" on page 17–16.

2. Press **Extra Options** to display the **Extra Options Menu**.

3. Select the number of sources for your Router as follows:

Communications — Router Extra Options Menu

- Use the **Com Port** knob to select the remote port that the Router is connected to.
- Use the **Option** knob to select **Xpts**.
- Use the **Value** knob to select the number of crosspoints on the Router.

This completes the procedure to set up the Extra Options for a Router.

Setting up the Router

In order to have the Synergy Q/MD switcher communicate with a Router, the Router you are connecting to the switcher must be set up to communicate and accept commands from the switcher.

Philips Jupiter

Use the following information to configure and connect your **Philips Jupiter** Router, using the **ESswitch** protocol, to your Synergy Q/MD switcher:

- Use the following communications setting when connecting the Philips Jupiter to the Synergy Q/MD switcher:

Synergy Q/MD -to- Philips Jupiter Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	Odd
Data Bits	8
Stop Bits	1

- The **Configuration Set** must be configured with the following (using Philips Configuration Editor Software — valid as of version **5.1.0**):

~ In the **Configure\Serial Protocol Menu**, configure the ports to use ESswitch (ESW) protocol and the appropriate Baud rate setting. Repeat for all port(s) connected to Synergy.

~ In the **Configure\MPK Devices Menu**, set up a device with the "type" as **Serial** and set to use the port connected to the Synergy.

~ The **Input Set**, **Output Set** and **Level Set** must be set to the appropriate "sets" configured in the **Configure\Control Panel Sets Sub-menu**. Each Synergy to be attached must be configured as a separate MPK Device on the appropriate port.

~ For more information concerning the configuration of a Set and downloading the Set to the controller, refer to the Jupiter documentation.

If you are having trouble controlling a Jupiter router from your Synergy Q/MD switcher, you may need to change the **Base Extra Option** to **0** on the Synergy control panel.

Use the following procedure to change the **Base Extra Option** for the Jupiter router on the Synergy control panel:

1. Navigate to the **Extra Options Menu** as follows:

- Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **Communications** ⇨ **Extra Options**.

2. Use the **Com Port** knob to select the remote port on the Synergy Q/MD switcher that is connected to the Jupiter Router.

3. Use the **Option** knob to select **Base**.

4. Use the **Value** knob to select **0**.

This completes the procedure to set up the Extra Options for a Router.

PESA Cougar

Use the following information to configure and connect your **PESA Cougar** Router, using the **CPU-Link** protocol, to your Synergy Q/MD switcher:

- Use the following communications setting when connecting the PESA Cougar to the Synergy Q/MD switcher:

Synergy Q/MD -to- PESA Cougar Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	9600
Parity	NONE
Data Bits	8
Stop Bits	2

- The **Cougar Configuration** must be configured to allow **CPU-Link Protocol** control on the port connected to Synergy. To accomplish this, follow the directions below using the Win3500Plus Control Software (valid as of version **1.2**):

  ~ Open the configuration to be used on the Pesa (File\Open Configuration…).

  ~ Open the Configuration\CPU Link… menu.

  ~ Select an **RS-422** port.

  ~ Configure this RS-422 port for the CPU Link Protocol using the following:

    - **Baud** — **9600**

    - **Parity** — **NONE**

    - **Data Bits** — **8**

    - **Stop Bits** — **2**

  ~ Exit this dialog box and save the configuration (File\Save Configuration…).

  ~ Download the configuration to the controller by selecting System\Download Configuration to Controller.

  ~ For more information concerning the set up and downloading of a Configuration, refer to the Pesa documentation for the Controller.

Pro-Bel Freeway

Use the following information to configure and connect your **Chyron Freeway** Router, using the **General Remote Control** protocol, to your Synergy Q/MD switcher:

- Use the following communications setting when connecting the Chyron Freeway to the Synergy Q/MD switcher:

Synergy Q/MD -to- Pro-Bel Freeway Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	NONE
Data Bits	8
Stop Bits	1

Pro-Bel Halo

Use the following information to setup your **Pro-Bel Halo** Router, using the **General Remote Communications** protocol (**SW-P-08**), to your Synergy Q/MD switcher:

Note	The Synergy switcher does not support the Pro-Bel General Switcher Protocol (SW-P-88).

- Use the following communications settings when connecting the **Pro-Bel Halo** Router to your Synergy Q/MD switcher:

Synergy Q/MD -to- Pro-Bel Halo Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	NONE
Data Bits	8
Stop Bits	1

Ensure the **DIP Switch** on the Pro-Bel Halo is set to **CTRL2** to enable serial control from the Synergy Q/MD switcher.

Codan Kondor (Geneos)

Use the following information to configure and connect your **Codan Kondor EOS-2000** Router, using the **Geneos (EOS)** protocol, to your Synergy Q/MD switcher. The Codan Kondor can be connected to your Synergy Q/MD switcher either using the CPU Port Expander on the Codan Kondor Router or not. Both methods are listed below.

Note	If you are connecting a **Codan Kondor Router** to the **Synergy 1 Switcher** using an **RS-232 cable**, you must select **RS-232 Null** as the Communication Type.

With CPU Port Expander

- Use the following communications setting when connecting the Codan Kondor to your Synergy Q/MD switcher using the CPU Port Expander on the Codan Kondor:

Note   The Codan Kondor can support both RS-232 and RS-422/485 with the CPU Port Expander. Settings for both are described here.

Synergy Q/MD -to- Codan Kondor (Geneos) Communication Settings

Setting	Value 1	Value 2
Transmission Standard	RS-232	RS-422/485
Baud Rate	57600	57600
Parity	NONE	NONE
Data Bits	8	8
Stop Bits	1	1

Synergy 1 Q/MD -to- Codan Kondor (Geneos) Communication Settings

Setting	Value 1	Value 2
Transmission Standard	RS-232 Null	RS-422/485
Baud Rate	57600	57600
Parity	NONE	NONE
Data Bits	8	8
Stop Bits	1	1

- The Codan CPU Port Expander device port must be configured as RS-422 and allow "Specified Dst Stat" to pass through. The Port Expander "CPU" port connects to the Geneos Rack Frame "PC" port.

- Codan Routing Systems Routers do not output source or destination names to the Synergy Q/MD switcher. Therefore, Synergy menus display:

  ~ "**Src #**"values (0-255) which represent the *virtual* input number of Level 1 on the Codan Router.

  ~ "**Output #**" values (1-256) which represent the *virtual* output number of Level 1 on the Codan Router.

Important   Ross Video recommends that you keep the virtual input#/output# selections consistent with the physical input#/output# selections of the router physical map. Refer to the Router documentation for further details.

- The Synergy Q/MD switcher controls the Codan Router vi the virtual input to virtual output and breakaway function on the router. The breakaway number corresponds to the selected level in the **BNC Menu 2-2 — Router Other Menu**. Synergy supports levels 1-8.

Without CPU Port Expander

- Use the following communications setting when connecting the Codan Kondor to your Synergy Q/MD switcher:

Synergy Q/MD -to- Codan Kondor (Geneos) Communication Settings

Setting	Value
Transmission Standard	RS-232
Baud Rate	57600
Parity	NONE
Data Bits	8
Stop Bits	1

Synergy 1 Q/MD -to- Codan Kondor (Geneos) Communication Settings

Setting	Value
Transmission Standard	RS-232 Null
Baud Rate	57600
Parity	NONE
Data Bits	8
Stop Bits	1

- Codan Routing Systems do not output source or destination names to the Synergy Q/MD switcher. Therefore, Synergy menus display:

  ~ "**Src #**" values (0-255) which represent the *virtual* input number of Level 1 on the Codan Routing Systems.

  ~ "**Output #**" values (1-256) which represent the *virtual* output number of Level 1 on the Codan Routing Systems.

Important

> Ross Video recommends that you keep the virtual input#/output# selections consistent with the physical input#/output# selections in the Physical Map of the Codan Routing System. Refer to the Router documentation for further details.

- The Synergy Q/MD switcher controls the Codan Router using the virtual input to virtual output and breakaway function. The breakaway number corresponds to the selected level in the **BNC Menu 2-2 — Router Other Menu**. The Synergy Switcher supports levels 1-8.

For information concerning Codan Router cable assembly, AUX port, virtual input/output, and breakaway setup, please refer to your Codan Routing Systems manuals.

GVG SMS 7000

Use the following information to configure and connect your **Grass Valley Group (GVG) Signal Management System (SMS) 7000** Router, using the **Native** protocol, to your Synergy Q/MD switcher:

- Use the following communications setting when connecting the GVG SMS 7000 to the Synergy Q/MD switcher:

✎ **Note** | Use the SMS 7000 configuration tool to set the port (port number depends on the socket that the AMEZI is installed) as required.

Synergy Q/MD -to- GVG SMS 7000 Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	NONE
Data Bits	8
Stop Bits	1

GVG Encore Control System

Use the following information to configure and connect your **GVG Encore Control System**, using the **GVG Native Protocol**, to your Synergy Q/MD switcher:

- Use the following communications setting when connecting the GVG Encore Control System to the Synergy Q/MD switcher:

Synergy Q/MD -to- GVG Encore Control System Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	NONE
Data Bits	8
Stop Bits	1

- Ensure that your GVG Encore Control System is configured to use the **GVG Native Protocol** on the desired chassis port. Refer to your GVG documentation for details on setting up your device.

Codan (ASCII)

Use the following information to configure and connect your **Codan Kondor** or **Codan NK** Router, using the **ASCII** protocol, to your Synergy Q/MD switcher:

✎ **Note** | The Codan ASCII protocol does not support mnemonics.

- Use the following communications setting when connecting the Codan Kondor Router to the Synergy Q/MD switcher:

- Set up the communications on the Router as follows:

  ~ For the **Codan Kondor Router**, you must use the **Geneos** software on your PC, to set the **AUX Comm Port Baud Rate**, on the **CPU** tab, to **38.4k**.

  ~ For the **Codan NK Router**, you must use the **Codan IPS** interface on your PC to set the **Baud** rate to **38400**.

Synergy Q/MD -to- Codan (ASCII) Communication Settings

Setting	Kondor	NK
Transmission Standard	RS-422	RS-232
Baud Rate	38400	38400
Parity	NONE	NONE
Data Bits	8	8
Stop Bits	1	1

Sierra Yosemite

Use the following information to configure and connect your **Sierra Yosemite** Router to your Synergy Q/MD switcher:

Important | The default settings for the **Sierra Yosemite** Router is **RS-232** and **9600** Baud; however, Ross Video recommends that you use **RS-422** and **38400** Baud. Refer to your Sierra Video Systems Yosemite Router documentation for information on changing the configuration.

Note | If you are connecting a **Sierra Yosemite** to the **Synergy 1 Switcher**, you must select **RS-232 Null** as the Communication Type.

- Use the following communications setting when connecting the Sierra Yosemite to the Synergy Q/MD switcher:

Synergy Q/MD -to- Sierra Yosemite Communication Settings

Setting	Default Value	Recommended Value
Transmission Standard	RS-232	RS-422
Baud Rate	9600	38400
Parity	NONE	NONE
Data Bits	8	8
Stop Bits	1	1

Synergy 1 Q/MD -to- Sierra Yosemite Communication Settings

Setting	Default Value	Recommended Value
Transmission Standard	RS-232 Null	RS-422
Baud Rate	9600	38400
Parity	NONE	NONE
Data Bits	8	8
Stop Bits	1	1

Utah Scientific Router

Use the following information to configure and connect your **Utah Scientific Router** to your Synergy Q/MD switcher using the **Utah RCP-1 Protocol**:

	Note	If you are connecting a **Utah Scientific Router** to the **Synergy 1 Switcher** using an **RS-232 cable**, you must select **RS-232 Null** as the Communication Type.

Use the following communications setting when connecting a Utah Scientific Router to the Synergy Q/MD switcher:

Synergy Q/MD -to- Utah Scientific Communication Settings

Setting	Value
Transmission Standard	**RS-232**
Baud Rate	**38400**
Parity	**NONE**
Data Bits	**8**
Stop Bits	**1**

Setting up Router BNCs

The **Router Setup Menu** allows you to associate a Router BNC input with a particular Router communication port. In addition, you can select which one of the outputs of the Router is feeding the input BNC on the Synergy Q/MD frame.

⊛ **Important**

> You must have a Router set up on the Synergy Q/MD switcher before you can assign a BNC to that device. Refer to the section "**Setting up the Switcher**" on page 17–16 for more information on setting up router communications.

Use the following procedure to assign the Routing Switcher to a specific BNC input:

✎ **Note**

> On the **Codan Routers** the matrix is controlled by breakaways that have the different levels assigned to them. Refer to your Router documentation for information on assigning different levels to a breakaway.

1. Navigate to the **BNC Menu 1-3** as follows:

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

2. Press **BNC Type** to display the **BNC Type Menu**.

```
┌─────────────────────────────────────────────────────────────────┐
│ BNC (1-3)                                            BNC: ┌──────────────┐│
│                                                           │BNC C01  (C01)││
│ Use   this   menu   to  │BNC:        BNC C01   (C01)│     └──────────────┘│
│ associate  a  function or│Type:       Router         │   ↓BNC C02  (C02)  │
│ a  device type with a BNC│Tally:      1              │   ↑Alpha           │
│ input.                   │Auto Key:   Black          │ Type: ┌──────────┐ │
│                          │Video Mode: 1080i 59.94    │       │Router    │ │
│                          │                           │       └──────────┘ │
│                          └───────────────────────────┘   ↓Extern Still   │
│                                                          ↑1080i 60        │
│                                                   Video ┌──────────────┐  │
│                                                  Format:│1080i 59.94   │  │
│                                                         └──────────────┘  │
│                                                          ↓1080i 50        │
│                                              Auto Key        Router       │
│   BNC Names    BNC Type     Tally     Alpha   Setup         Setup         │
└─────────────────────────────────────────────────────────────────┘
```

BNC — Type Menu

3. Assign a BNC to a Router as follows:

   • Use the **BNC** knob to select the BNC that the Router is connected to.

   • Use the **Type** knob to select **Router**.

   • Use the **Video Format** knob to select the native video format of the VTR output.

✎ **Note**

> Assigning a **Video Format** to an **Input BNC**, that is different than the native video format that the switcher is operating in, can only be used for passing non-native video formats out an **Aux Bus**. Video formats may be converted to the operating video format using **Smart Conversion**. Refer to Chapter 13 "**SmartConversion™**" for more information.

4. Press **Router Setup** to display the **Router Setup Menu**.

```
BNC (1-3)
                             BNC:   BNC C01  (C01)
Use    this    menu    to  BNC:       BNC C01  (C01)
associate a Router input   Type:      Router
with  a  Router Com Port,  Tally:     1
and a Router output with   Auto Key:  Black
a BNC.                     Video Mode: 1080i 59.94
                                     Router:   Jupiter  (R1)


                                     BNC Out:    Output 001
                                              ↓Output 002
                             Auto Key    Router
  BNC Names   BNC Type   Tally   Alpha   Setup      Setup
```
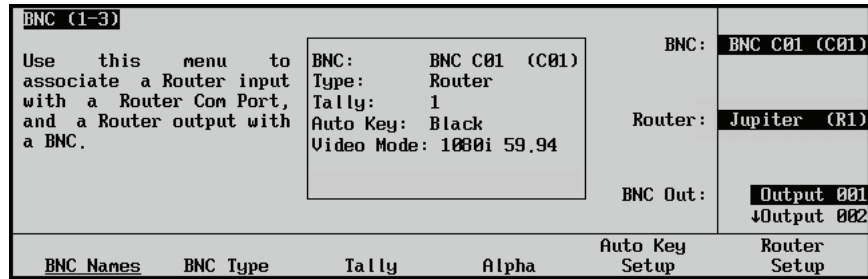
BNC — Router Setup Menu

5. Assign a specific Routing Switcher to the Router BNC as follows:

   • Use the **BNC** knob to select the BNC you want to assign the specific Router to.

✎ **Note**
> When you assign a remote device to a BNC crosspoint, pressing that crosspoint button will display the corresponding device control menus. If it is on a Key bus, pressing the button will cycle through the device control menus and the **Key Type Menu**.

   • Use the **Router** knob to select the Router you want to assign to the BNC.
   • Use the **BNC Out** knob to select the Output BNC (**001**-**256**) on the Router that is feeding the BNC on the Synergy Q/MD switcher.

6. Press **Router Other** to display the **Router Other Menu**.

✓ **Operating Tip**
> The **Router Other Setup Menu** allows you to set the levels, or breakaways, on the Router that will be switched when a new input source is selected. Refer to your Router documentation for more information on setting up the level matrix.

```
BNC (2-3)
                             BNC:   BNC C01  (C01)
Use    this    menu    to set  BNC:       BNC C01  (C01)
secondary  variables   for  Type:      Router
the Router BNCs.            Tally:     1
                           Auto Key:  Black       Levels:       1
                           Video Mode: 1080i 59.94            ↓2


  Router      N/S            Still/CG   Camera    VTR/VDCP
  Other     Disable   Audio   Setup     Setup      Xpts
```
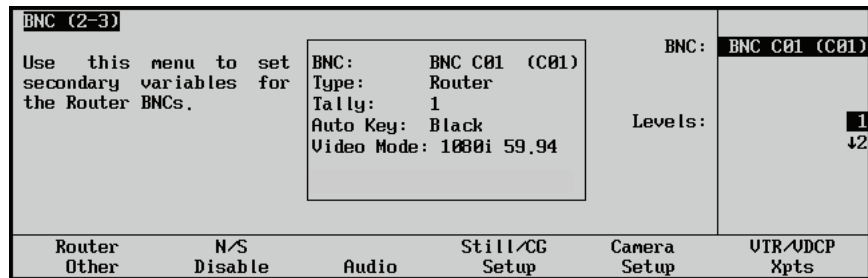
BNC — Router Other Menu

7. Select the Router levels that will be switched for the Router connected to the specific BNC as follows:

✎ **Note**
> On the **Codan Routing Systems** this is the **Breakaway** knob and you can only select from **1** through **8**.

   • Use the **BNC** knob to select the Router you want to set the levels for.

- Use the **Level** knob to configure the Router level(s), or breakaways, that will be switched on the Router when a new input is selected. Choices are dependent upon the type of Router connected, and include:

  ~ **All** — Select this option when you want to switch all levels when you select a new input source.

  ~ **0-127** — Any one level (numbered from **0** to **127**).

Note Zero (**0**) corresponds to the first level on the Router, possibly numbered as 1 on the Router.

8. Press **HOME** to display the **Installation Change Confirmation Screen**.

9. Accept or reject the changes you have made as follows:

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

This completes the procedure for setting up a Routing switcher to a BNC on the Synergy Q/MD switcher. Refer to the section "**Router Operation**" on page 17–34 for information on selecting input sources on the Router.

Router Custom Controls

A custom control button can be programmed to set a specific source/BNC crosspoint pair or fire a salvo (run a pre-programmed macro) on a Router.

✎ **Note** | You must have the Router Control option installed in order to control a Router to the Synergy Q/MDswitcher. Refer to the section "**Setting up the Switcher**" on page 17–16 for information on setting up a Router.

The following Custom Controls are covered in this section:

- Source/BNC Crosspoint Pair

- Fire a Router Salvo

Source/BNC Crosspoint Pair

The Source/BNC Crosspoint Pair custom control macro allows you to change the source on the Router that is assigned to the BNC input on the switcher.

Use the following procedure to add a Source/Destination pair to a custom control:

1. Navigate to the **Custom Controls Menu** as follows:

   - Press **HOME** ⇨ **Custom Controls**.

   ```
   Custom Controls
                                                    Bank:    Bank 1   (1)
   Custom Control buffers .53% full

   Selected: Bank 1 Button 9 [Custom09]                   ↑ Custom08 # 8
                                                 Button:    Custom09 # 9
   Custom Control Legend:                                 ↓ Custom10 #10
           # = normal custom control button


      Start        Modify               Start Relative  Default
    Recording        Name                 Recording     All Names   Delete Macro
   ```

   Custom Controls Menu

2. Select the custom control button you want to record to as follows:

   - Use the **Bank** knob to select the custom control bank you want to record the custom control to.

   - Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*) or the "at sign" (@) in the list have already been programmed.

✓ **Operating Tip** | As a recommendation, keep special functions grouped together on your *physical* custom control buttons.

3. Navigate to the **Insert Router Control Menu** as follows:

   - Press **Start Recording** ⇨ **Insert Special** ⇨ **MORE** ⇨ **Router**.

4. Use the **Router** knob to select the remote port that the Router is connected to.

5. Use the **Function** knob to select **Take XPT**.

6. Select the destination on the Router you want to select as follows:

- Press **Destination**.

- Use the bottom knob to select the desired destination.

7. Select the source you want to assign to the destination as follows:

- Press **Source**.

- Use the bottom knob to select the source you wish to assign.

8. Select the router level you wish to assign as follows:

- Press **Level**.

- Use the bottom knob to select the level you wish to assign.

9. Press **Insert** to add this macro into the custom control and display the **Insert Special Menu 1-2**.

10. Press **UP ONE** to display the **Recording Menu**.

11. Press **Finish Recording** to finish recording to the selected custom control.

This completes the procedure for inserting a Source/Destination pair into a custom control.

Fire a Router Salvo

The Fire Router Salvo custom control macro allows you to fire a salvo on the Router. You must program salvos on the Router itself in order to fire them. Refer to your Router documentation for information on storing a salvo on your Router.

The following Routers support salvos:

- Ross Kondor EOS-2000

- Sierra Yosemite

- Leitch VIA32

- Grass Valley SMS 7000

- Chyron (Pro-Bel) Freeway

- PESA Cougar

Use the following procedure to fire a Router Salvo from the selected Router:

1. Navigate to the **Custom Controls Menu** as follows:

- Press **HOME** ⇨ **Custom Controls**.

Custom Controls Menu

2. Select the custom control button you want to record to as follows:

- Use the **Bank** knob to select the custom control bank you want to record the custom control to.

- Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*) or the "at sign" (@) in the list have already been programmed.

✓ **Operating Tip**
> As a recommendation, keep special functions grouped together on your *physical* custom control buttons.

3. Navigate to the **Insert Router Control Menu** as follows:

    - Press **Start Recording** ⇨ **Insert Special** ⇨ **MORE** ⇨ **Router**.

4. Use the **Router** knob to select the remote port that the Router is connected to.

    - Use the **Function** knob to select **Fire Salvo**.

5. Select the salvo on the selected Router you want to fire as follows:

    - Use the **Salvo #** knob to select the salvo you want to fire.

✓ **Operating Tip**
> You can also use the keypad in the **Global Memory System Group** to enter the number of the salvo.

6. Press **Insert** to add this macro into the custom control.

7. Press **Finish Recording** to finish recording to the selected custom control.

This completes the procedure for inserting a fire Router salvo into a custom control.

Refer to chapter 10, "**Custom Controls**", for more information on custom controls.

Router Operation

The **Router Matrix Control Menu** allows you to assign different Router sources to a BNC that is assigned to the Router.

✓ **Operating Tip**

> You can access the Router input that is assigned to a BNC by pressing the corresponding crosspoint button. The **Router Matrix Control Menu** will be displayed.

Use the following procedure to change the source on a Router:

1. Navigate to the **Remote Control Select Menu** as follows:

   • Press **HOME ⇨ Effects ⇨ MORE ⇨ Remote Control Select**.
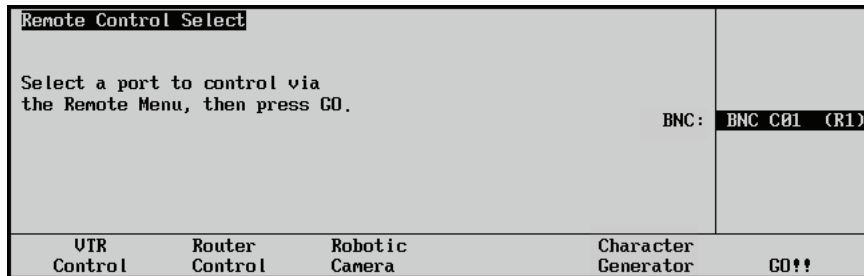
   ```
   Remote Control Select

   Select a port to control via
   the Remote Menu, then press GO.
                                                      BNC:  BNC C01  (R1)


       VTR          Router       Robotic            Character
       Control      Control      Camera             Generator       GO!!
   ```
   Router Control Select Menu

2. Press **Router Control** to show a list of BNCs assigned to a Router.

3. Use the **BNC** knob to select the BNC you want to change the source for.

4. Press **GO!!** to display the **Router Matrix Control Menu**.

✎ **Note**

> If a "COMMUNICATIONS LOST" message appears on the menu, the Synergy Q/MD switcher has been unsuccessful at receiving a response from the Router. Check the cable connections and the configuration on the switcher and the Router.
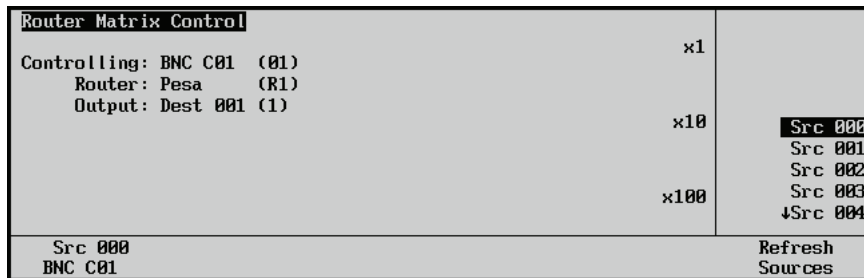
```
Router Matrix Control
                                                            x1
Controlling: BNC C01  (01)
    Router: Pesa     (R1)
    Output: Dest 001 (1)
                                                            x10        Src 000
                                                                       Src 001
                                                                       Src 002
                                                            x100       Src 003
                                                                      ↓Src 004
    Src 000                                                          Refresh
    BNC C01                                                          Sources
```
Router Matrix Control Menu

✓ **Operating Tip**

> You can select a different BNC at this point by pressing the corresponding softkey.

5. Press **Refresh Sources** to update the list of available sources on the Router.

6. Use the **x1** knob to select the source on the Router you want to assign to the selected BNC. When the source is selected, the Router automatically assigns it to the BNC.

✓ **Operating Tip** Use the **x10** or **x100** knobs to move through the source list at 10 or 100 at a time.

When you first enter the **Router Matrix Control Menu**, messages are sent to all connected Routers to determine the current Source-to-Destination (Router output to Synergy) mappings. Another message is sent to retrieve the names or numbers of all sources connected to the Router.

If either of these messages is not supported (in particular, the messages concerning mnemonics) then default values are created (i.e. "**Src ###**", "**Dest ###**").

Router Communications Notes

When properly configured, there is consistent communication from the Synergy to the Router.

- If the Synergy Q/MD switcher has not received a response of any sort from the Router for one full second, a message is sent to generate a response.

- If the Synergy Q/MD switcher has not received a response for two seconds, it is assumed that there is a communications problem. The message "COMMUNICATIONS LOST" will be displayed in the **Router Matrix Control Menu**.

External Still Stores

In This Chapter

This chapter provides instructions for connecting, setting up and operating a Still Store with your Synergy Q/MD switcher. Before you begin, ensure that the **Still Store (Chyron Aprisa) Interface** option is installed. If not, please contact **Ross Video** for details. Refer to Chapter 6, "**Software Upgrades and Options**" for instructions on verifying the status of installed options.

The following topics are discussed:

- Supported Still Store
- Communications Connections
- Communications Setup
- Setting up Still Store BNCs
- Still Store Operation

Supported Still Store

The Synergy Q/MD switcher has been tested with the following Still Store:

- **Chyron Aprisa 100 Still Store**

Communications Connections

You can connect a number of external Still Stores to your Synergy Q/MD switcher. The procedure for connecting the Still Store will depend on the type of Still Store you have. This section will provide general instructions for connecting the Still Store to one of the Remote Ports on the back of the Synergy Control Panel.

✎ **Note**
> These instruction are provided as a guide, for specific information on the Still Store you are connecting to the Synergy Q/MD switcher, refer to the documentation provided with your Still Store.

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

- **Still Store (Aprisa) Interface** — This is the software option from Ross Video that allows your Synergy Q/MD switcher to control an external Still Store.

- **Interface Cable** — This is a 9-Pin cable with a 9-Pin, D-Type (DB9) male connector on one end, to connect to the remote port on the control panel, and a connector on the other end to connect to your Still Store. Refer to the section "**Still Store Interface Cable Pinouts**" on page 18–4 for information on the pin-outs and connector required for your Still Store. Ross Video does not supply this cable.

Use the following procedure to connect a Still Store to your Synergy Q/MD switcher:

1. Connect and secure the **9-Pin**, **Male**, end of the **Interface Cable** to one of the **Remote Ports** on the back of the Synergy control panel.

✎ **Note**
> You must use **Remote 5** with a **RJ-12 to DB9 Male Adaptor** to connect a remote Aux Panel to the **Synergy 1** control panel. If you intend to connect a Remote Aux Panel to the switcher, you will have to leave the Remote 5 port open.

Synergy 2 — Control Panel

Synergy 1 — Control Panel

2. Connect and secure the other end of the cable to the appropriate port on the Still Store. The suggested port for each supported Still Store is listed below:

   • **Chyron Aprisa 100 Stillstore** — Connect the Interface cable to the RS-422 port or the RS-232 port on the rear of the Aprisa 100 Still Store. Refer to the section "**Chyron Aprisa 100 Still Store Cabling**" on page 18–4 for more information on the cabling for this Still Store.

This completes the procedure for connecting a Still Store to the Synergy Q/MD switcher. Refer to the section "**Communications Setup**" on page 18–6 for instructions on how to set up communications protocols on the Switcher, as well as on the Still Store.

Still Store Interface Cable Pinouts

Use the information in this section to connect the Interface Cable from the Synergy Q/MD switcher to the Still Store.

Chyron Aprisa 100 Still Store Cabling

The Synergy control panel connects to an Aprisa 100 Still Store via the remote ports on the Synergy control panel, and the RS-422 port or the RS-232 port on the rear of the Aprisa 100 Still Store.

Cable connections in the following table refer only to those between the Synergy control panel and the Aprisa 100 router. Other cable connections present on the Aprisa 100 chassis can be found in the Chyron Aprisa 100 documentation.

Synergy Q/MD -to- Chyron Aprisa 100 RS-422 Wiring Chart

Synergy Control Panel			Chyron Aprisa 100	
Remote Port	**Signal**		**RS-422 Port**	**Signal**
1	Chassis			
2	RxA (Rx-)	→	9	TxA (Tx-)
3	TxB (Tx+)	→	6	RxB (Rx+)
4	n/c			
5	Ground			
6	Ground			
7	RxB (Rx+)	→	8	TxB (Tx+)
8	TxA (Tx-)	→	7	RxA (Rx-)
9	Chassis			

n/c = Not Connected

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

Synergy Q/MD -to-Chyron Aprisa 100 RS-232 Wiring Chart

Synergy Control Panel			Chyron Aprisa 100	
Remote Port	**Signal**		**RS-232 Port**	**Signal**
1	Chassis			
2	Tx	→	2	Rx
3	Rx	→	3	Tx
4	n/c			
5	Ground	→	5	Ground
6	n/c			
7	n/c			
8	n/c			
9	Chassis			

n/c = Not Connected

Communications Setup

Setting up the Switcher

In order to have the Synergy Q/MD switcher communicate with a Still Store, the remote port on the control panel that the Still Store is connected to must be set up to communicate with the particular Still Store you have connected.

Use the following procedure to configure a Remote port on the control panel to connect with a Still Store:

1. Navigate to the **Communications Menu 1-2** as follows:

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

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

Communications — Type Menu

3. Assign a Remote Com Port to the Still Store as follows:

    •   Use the **Com Port** knob to select the remote port on the Synergy Q/MD switcher that is connected to the Still Store.

> **Note** You must use **Remote 5** with a **RJ-12 to DB9 Male Adaptor** to connect a remote Aux Panel to the **Synergy 1** control panel. If you intend to connect a Remote Aux Panel to the switcher, you will have to leave the Remote 5 port open.

    •   Use the **Device** knob to select **Still Store**.

4. Press **Select Device** to display the **Select Device Menu**.

Communications — Select Device Menu

5. Assign a specific Still Store to the Remote Com Port as follows:

- Use the **Com Port** knob to select the Remote Com Port that the desired Still Store is connected to.

- Use the **Device** knob to select the type of Still Store that is connected to the port. You can select between the following:

  ~ **Aprisa100** — Use this option to assign a **Chyron Aprisa 100 Stillstore** to the selected com port. Refer to the section "**Chyron Aprisa 100**" on page 18–8 for details.

6. Press **Com Settings** to display the **Com Settings Menu**.

```
┌─────────────────────────────────────────────────────────────────┐
│Communications (1-2)                                               │
│                                          Com Port: │Jupiter  (R1)││
│This  menu  lets  you set                           │REMOTE 2 (R2)││
│up    your    com    port                                         │
│parameters.                                              ↑19200   ││
│                                              Baud:     │38400│   ││
│                                                         ↓57600   ││
│                                                                  ││
│                                            Parity:       │NONE│  ││
│                                                          ↓ODD    ││
├─────────────────────────────────────────────────────────────────┤
│              Select                       Custom      Extra      │
│    Type      Device    Com Settings   Com Type  Devices   Options│
└─────────────────────────────────────────────────────────────────┘
```

Communications — Com Settings Menu

7. Select the type of serial communication that will be used to communicate with the Still Store as follows:

- Use the **Com Port** knob to select the Still Store you are setting the communications settings for.

- Use the **Baud** knob to select the baud rate for the Still Store. Refer to the section "**Setting up the Still Store**" on page 18–8 for the specific settings for your Still Store.

- Use the **Parity** knob to select the parity, **NONE**, **ODD**, or **EVEN** for the specific Still Store. Refer to the section "**Setting up the Still Store**" on page 18–8 for the specific settings for your Still Store.

8. Press **Com Type** to display the **Com Type Menu**.

```
┌─────────────────────────────────────────────────────────────────┐
│Communications (1-2)                                               │
│                                          Com Port: │Aprisa100(R1)││
│This  menu  lets  you set                                         │
│up your com port types.                                           │
│                                              Type:     │RS-232│  ││
│                                                        ↓RS-422   ││
│                                                                  ││
│                                                                  ││
├─────────────────────────────────────────────────────────────────┤
│              Select                       Custom      Extra      │
│    Type      Device    Com Settings   Com Type  Devices   Options│
└─────────────────────────────────────────────────────────────────┘
```

Communications — Com Type Menu

9. Select the type of serial communication that will be used to communicate with the Still Store as follows:

    • Use the **Com Port** knob to select the Still Store you want to set the communication type for.

    • Use the **Type** knob to select the type of serial communications (**RS-232**, **RS-422**) for the selected port. Refer to the section "**Setting up the Still Store**" on page 18–8 for details.

✎ **Note** | **Network UDP** and **Network TCP** are not supported for this device type.

✎ **Note** | The **Synergy 1** allows you to select **RS-232 Null** and **RS-422 Null**, as well as the standard **RS-232** and **RS-422**. Refer to the section "**Setting up the Still Store**" on page 18–8 for information on when to use these settings.

10. Press **HOME** to display the **Installation Change Confirmation Screen**.

11. Accept or reject the changes you have made as follows:

    • Press **Confirm** to accept the changes.

    • Press **Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure for setting up the communications with the Still Store, next you will have finish setting up the Still Store to communicate with the Synergy Q/MD switcher, and then set up the BNC inputs that you have connected to the Still Store.

Setting up the Still Store

In order to have the Synergy Q/MD switcher communicate with a Still Store, the Still Store you are connecting to the switcher must be set up to communicate and accept commands from the switcher.

Chyron Aprisa 100

Use the following information to configure and connect your Chyron Aprisa 100 Still Store to your Synergy Q/MD switcher:

✎ **Note** | If you are connecting a **Chyron Aprisa 100 Still Store** to the **Synergy 1 Switcher** using an **RS-232 cable**, you must select **RS-232 Null** as the Communication Type.

    • Use the following communications setting when connecting a Chyron Aprisa 100 Still Store to the Synergy Q/MD switcher:

Synergy Q/MD -to- Aprisa 100 Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	NONE
Data Bits	8
Stop Bits	1

Setting up Still Store BNCs

The **Still Setup Menu** allows you to associate a Still Store BNC input with a particular Still Store communication port. In addition, you can select which channel on the Still Store is feeding the input BNC on the Synergy Q/MD frame.

⚠	**Important**	You must have a Still Store set up on the Synergy Q/MD switcher before you can assign a BNC to that device. Refer to the section "**Setting up the Switcher**" on page 18–6 for more information on setting up Still Store communications.

Use the following procedure to assign the Still Store to a specific BNC input:

1. Navigate to the **BNC Menu 1-3** as follows:

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

2. Press **BNC Type** to display the **BNC Type Menu**.

```
BNC (1-3)
                                              BNC:  BNC C01 (C01)
Use     this    menu    to   BNC:        BNC C01  (C01)    ↓BNC C02 (C02)
associate  a   function or   Type:       Extern Still
a  device type with a BNC    Tally:      1                ↑Router
input.                       Auto Key:   Black    Type:   Extern Still
                             Video Mode: 1080i 59.94      ↓Robotic Cam

                                                          ↑1080i 60
                                              Video       1080i 59.94
                                              Format:     ↓1080i 50

                                              Auto Key    Router
   BNC Names     BNC Type       Tally       Alpha    Setup       Setup
```

BNC — BNC Type Menu

3. Assign a BNC to a Still Store as follows:

    •   Use the **BNC** knob to select the BNC that is connected to the Still Store.

    •   Use the **Type** knob to select **Still**.

    •   Use the **Video Format** knob to select the native video format of the VTR output.

✎	**Note**	Assigning a **Video Format** to an **Input BNC**, that is different than the native video format that the switcher is operating in, can only be used for passing non-native video formats out an **Aux Bus**. Video formats may be converted to the operating video format using **Smart Conversion**. Refer to Chapter 13 "**SmartConversion™**" for more information.

4. Press **MORE** to display the **BNC Menu 2-3**.

5. Press **Still Setup** to display the **Still Setup Menu**.

```
BNC (2-3)
                               BNC:  BNC C01 (C01)
Use   this   menu   to  BNC:       BNC C01  (C01)
associate  a  still store  Type:      Extern Still
input  with  a  com port,  Tally:     1
and    a    still   store  Auto Key:  Black         Still: Aprisa100(R1)
channel with a BNC.        Video Mode: 1080i 59.94

                                                     Channel:    Channel A
                                                                ↓Channel B
   Router       N/S                    Still/CG   Camera    VTR/VDCP
   Other      Disable        Audio       Setup     Setup     Xpts
```

BNC — Still Setup Menu

6. Assign a specific Still Store to the Still BNC as follows:

   • Use the **BNC** knob to select the BNC you want to assign the specific Still Store to.

   ✓ **Operating Tip**

   > Pressing the associated BNC crosspoint button lights the **VTR CLIP** button in the **Global Memory System**, and allows you to recall a specific still using the numeric keypad.

   • Use the **Still** knob to select the Still Store port for the specific Still Store you want to assign to the BNC.

   • Use the **Channel** knob to select the Channel (**A**-**H**) on the Still Store that is feeding the BNC on the Synergy Q/MD switcher.

7. Press **HOME** to display the **Installation Change Confirmation Screen**.

8. Accept or reject the changes you have made as follows:

   • Press **Confirm** to accept the changes.

   • Press **Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure for assigning a Still Store to a BNC on the Synergy Q/MD switcher. Refer to the section "**Still Store Operation**" on page 18–12 for details on accessing specific stills.

Still Store Operation

When you select a crosspoint button assigned to Still Store, the **VTR CLIP** button in the **Global Memory System Group** lights, indicating that the keypad has been assigned to the selected Still Store. The currently loaded still and channel for the Still Store are shown in the display.

Use the following procedure to load a still:

1. Select the crosspoint button for the Still Store you want to load a still on. The **VTR CLIP** button will light, and the current still number and channel will be shown in the display.

2. Enter the number for the still you want to load in the keypad.

3. Press **ENTER** to load the still.

This completes the procedure for loading a still.

Audio Mixers

In This Chapter

This chapter provides instructions for connecting, setting up and operating an Audio Mixer with your Synergy Q/MD switcher. Before you begin, ensure that the **Small Audio Mixer Interface** (16 or fewer inputs) or **Large Audio Mixer Interface** (more than 16 inputs) software option is installed. If not, please contact **Ross Video** for details.

The following topics are discussed:

- Supported Audio Mixers
- Serial Communication Connections
- Ethernet Communication Connections
- Setting Up the Switcher
- Setting Up the Audio Mixer
- Setting Up Audio Channels and Groups
- Audio Channel Assignment
- Setting Up Audio Overrides
- Audio Modes
- Operation Overview

Supported Audio Mixers

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

- **Yamaha 01V96** — Requires a MIDIator and the Small Audio Mixer Interface option.
- **Yamaha 02R96** — Requires an RS-422 serial connection and the Large Audio Mixer Interface option.
- **Yamaha DM2000** — Requires an RS-422 serial connection and the Large Audio Mixer Interface option.
- **Yamaha PM5D** — Requires a MIDIator and the Large Audio Mixer Interface option.
- **Yamaha M7CL-48** — Requires a MIDIator and the Large Audio Mixer Interface option.
- **Wheatstone D-9 Digital Television Audio Control Surface** — Requires an Ethernet connection for the Synergy Q/MD frame, and the Large Audio Mixer Interface option.
- **Calrec Sigma Digital Audio Mixing System** — Requires an RS-422 serial connection and the Large Audio Mixer Interface option.
- **Studer Audio Mixer** — Requires an RS-232 serial connection and the Large Audio Mixer Interface option.

Serial Communication Connections

You can connect up to two Audio Mixers to your Synergy Q/MD switcher. The procedure for connecting the Audio Mixers will depend on the type of Audio Mixer you have and whether a MIDIator (MS-124W) is required to communicate with the Synergy Q/MD switcher. Refer to the section "**Supported Audio Mixers**" on page 19-2 for details about which Audio Mixer Interface option and connection is required for your particular Audio Mixer. For information on connecting a a single Audio Mixer to a Synergy Q/MD switcher over an ethernet network, refer to the section "**Ethernet Communication Connections**" on page 19-12.

This section identifies how to make the serial communication connections between Audio Mixers and the Synergy Q/MD switcher. The following topics are discussed:

- Connecting an Audio Mixer without a MIDIator

- Connecting an Audio Mixer with a MIDIator

- Connecting Multiple Audio Mixers

Note These instructions are provided as a guide. For specific information on the Audio Mixer you are connecting to the Synergy Q/MD switcher, refer to the documentation provided with your device.

Connecting an Audio Mixer without a MIDIator

This section includes information to connect a single Audio Mixer without using a MIDIator. In order to properly complete this procedure, you will need the following software options, cables, and equipment:

- **Software Interface —** This is the software option from Ross Video that allows your Synergy Q/MD switcher to control the Audio Mixer. You must have one of the following software options:

  ~ **Small Audio Mixer Interface** — This is the software option that allows your Synergy Q/MD switcher to control up to 16 audio channels on an audio mixer.

  ~ **Large Audio Mixer Interface** — This is the software option that allows your Synergy Q/MD switcher to control up to 240 audio channels on an audio mixer.

Note A single Audio Mixer may not be able to support **240** audio channels. Multiple Audio Mixers can be ganged together to increase the number of audio channels your Audio Mixers can support. Refer to the section "**Connecting Multiple Audio Mixers**" on page 19-7 for information on ganging Audio Mixers.

- **Interface Cable** — This is a serial cable that connects the Synergy Q/MD control panel to Audio Mixer. You must have one of the following cables depending on the type of Audio Mixer you are connecting to:

  ~ **Yamaha Audio Mixers** — This is a 15 foot serial cable that connects the 9-Pin, D-Type port on the Synergy Q/MD control panel to the 8-Pin, mini DIN port on the Audio Mixer.

  ~ **Calrec Sigma Digital Audio Mixing System** — This is a 9-Pin cable with a 9-Pin, D-Type (DB9) male connector on one end to connect to the Synergy control panel, and a connector on the other end to connect to your Calrec Sigma System.

~ **Studer Audio Mixer** — This is a 9-Pin cable with a 9-Pin, D-Type (DB9) male connector on each end to connect the Synergy control panel to your Studer Audio Mixer.

Connecting without a MIDIator

The following diagram and procedure describe the basic physical connection of an Audio Mixer to your Synergy Q/MD switcher. The locations or names of ports may vary with your Audio Mixer.

Use the following procedure to connect a single Audio Mixer without a MIDIator to your Synergy Q/MD switcher:

1. If you are connecting a **Yamaha Audio Mixer**:

    • Connect and secure the **9-Pin D-Type** end of the **Interface Cable** to one of the **Remote Ports** on the back of the Synergy Q/MD control panel.

    • Connect and secure the **8-Pin mini DIN** end of the **Interface Cable** to the appropriate port on the Remote Audio Mixer. The suggested ports for each supported Audio Mixer are as follows:

        ~ **Yamaha 02R96** — Connect the **Interface Cable** to the **TO HOST SERIAL** port on the Yamaha 02R96 panel. Refer to the section "**Yamaha 02R96 Interface Cable Specifications**" on page 19-10 for more information on cabling for this Audio Mixer.

        ~ **Yamaha DM2000** — Connect the **Interface Cable** to the **TO HOST SERIAL** port on the Yamaha DM2000 panel. Refer to the section "**Yamaha DM2000 Interface Cable Specifications**" on page 19-10 for more information on cabling for this Audio Mixer.

        ~ **Studer Audio Mixer** — Connect the **Interface Cable** to the serial port on the Studer Audio Mixer panel. Refer to the section "**Studer Audio Mixer Interface Cable Specifications**" on page 19-11 for more information on cabling for this Audio Mixer.
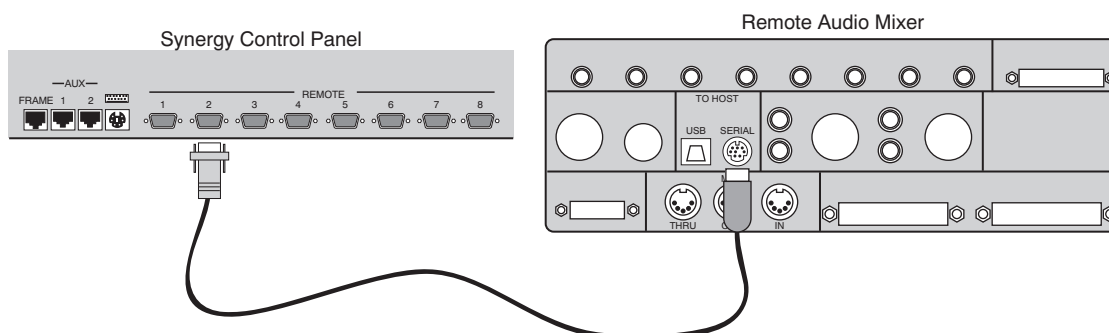
Connecting a Yamaha Audio Mixer to a Synergy Q/MD Switcher without a MIDIator

2. If you are connecting a **Calrec Sigma Digital Audio Mixing System** to the Synergy Q/MD switcher:

    • Connect and secure the **Interface Cable** to the one of the **Remote Ports** on the back of the Synergy Q/MD control panel.

    • Ensure the **RS422** port on the Calrec Sigma panel is configured for RS422 communications.

- Connect and secure the **Interface Cable** to the **RS422** port on the Calrec Sigma panel. Refer to the section "**Calrec Sigma Interface Cable Specifications**" on page 19-11 for cabling information for this Audio Mixer.

This completes the procedure for connecting a single Audio Mixer to a Synergy Q/MD switcher without a MIDIator. Refer to the section "**Setting Up the Switcher**" on page 19-13 for instructions on how to set up the communications protocols on the Synergy Q/MD switcher, as well as the Audio Mixer.

Connecting an Audio Mixer with a MIDIator

This section provides basic instructions for connecting a single Audio Mixer using a MIDIator (MS-124W). In order to properly complete the procedure, you will need the following software options, cables, and equipment:

- **Software Interface** — This is the software option from Ross Video that allows your Synergy Q/MD switcher to control the Audio Mixer. You must have one of the following software options:

  ~ **Small Audio Mixer Interface** — This is the software option that allows your Synergy Q/MD switcher to control up to 16 audio channels on an audio mixer.

  ~ **Large Audio Mixer Interface** — This is the software option that allows your Synergy Q/MD switcher to control up to 240 audio channels on an audio mixer.

Note

A single Audio Mixer may not be able to support **240** audio channels. Multiple Audio Mixer can be ganged together to increase the number of audio channels your Audio Mixers can support. Refer to the section "**Connecting Multiple Audio Mixers**" on page 19-7 for more information on connecting multiple Audio Mixers together.

- **MIDIator** (MS-124W) — This device converts the serial interface from the Synergy Q/MD control panel to a MIDI format.

- **MIDIator Interface Cable** — This is a null modem cable with a DB9 to DB25 converter at one end. This cable connects the 9-Pin, D-Type port on the Synergy Q/MD control panel to the 25-Pin, D-Type port on the MIDIator. Refer to the section "**MIDIator Interface Cable Specifications**" on page 19-9 for information on this cable.

- **MIDI Cable** — This is a MIDI cable that connects the 5-Pin, DIN port on the MIDIator to the 5-Pin, DIN port on the Audio Mixer. You will need two of these cables.

Connecting with a MIDIator

The following diagram and procedure describe the basic physical connection of an Audio Mixer to your Synergy Q/MD switcher. The locations or names of ports may vary with your Audio Mixer.

Use the following procedure to connect a single Audio Mixer to your Synergy Q/MD switcher via a MIDIator:

1. Connect and secure the **9-Pin** end of the **MIDIator Interface Cable** to one of the **Remote Ports** on the back of the Synergy Q/MD control panel.

2. Connect and secure the **25-Pin** end of the **MIDIator Interface Cable** to the **Serial** port on the MIDIator.

3. Install the first **MIDI Cable** connecting the **MIDIator** to the Audio Mixer as follows:

- Connect on end of a **MIDI Cable** to the **OUT 1** port on the **MIDIator**.

- Connect the other end of the **MIDI Cable** to the appropriate port on the Audio Mixer. The suggested ports for each supported Audio Mixer are as follows:

  ~ **Yamaha 01V96** — Connect the first **MIDI Cable** to the **MIDI IN** port on the Yamaha 01V96 panel.

  ~ **Yamaha PM5D** — Connect the first **MIDI Cable** to the **MIDI IN** port on the Yamaha PM5D panel.

  ~ **Yamaha M7CL-48** — Connect the first **MIDI Cable** to the **MIDI IN** port on the Yamaha M7CL-48 panel.

4. Install the second **MIDI Cable** connecting the **MIDIator** to the 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 appropriate port on the Audio Mixer. The suggested ports for each supported Audio Mixer are as follows:

  ~ **Yamaha 01V96** — Connect the second **MIDI Cable** to the **MIDI OUT** port on the Yamaha 01V96 panel.

  ~ **Yamaha PM5D** — Connect the second **MIDI Cable** to the **MIDI OUT** port on the Yamaha PM5D panel.

  ~ **Yamaha M7CL-48** — Connect the second **MIDI Cable** to the **MIDI OUT** port on the Yamaha M7CL-48 panel.

5. Set up the MIDIator to **Multiple Burst** as follows:

- Set the **B–A** switch to **B**.

- Set the **S–M** switch to **M**.
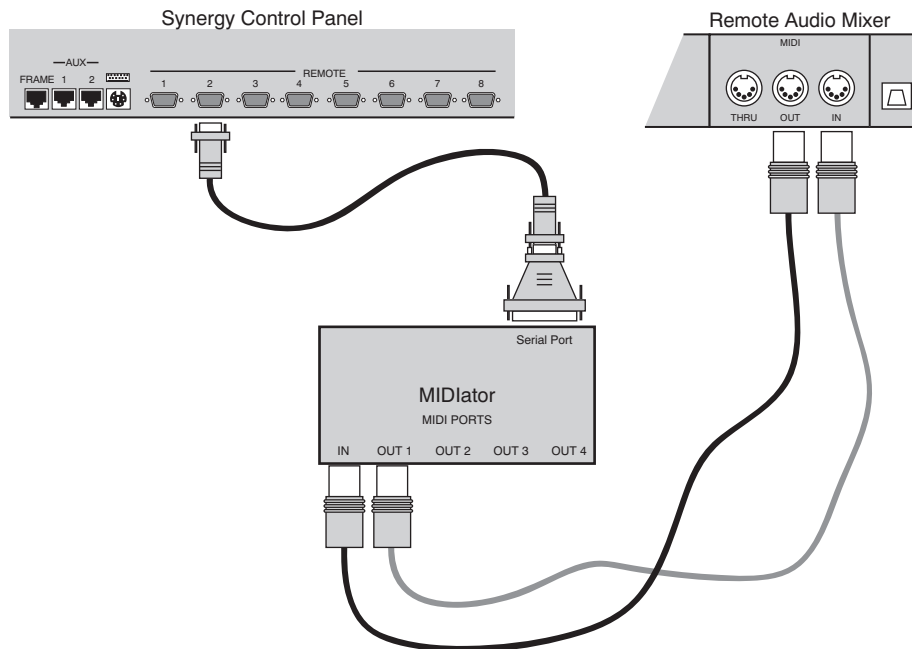
Connecting a Single Audio Mixer to a Synergy Q/MD Switcher via a MIDIator

This completes the procedure for connecting a single Audio Mixer to a Synergy switcher with a MIDIator. Refer to the section "**Setting Up the Switcher**" on page 19-13 for instructions on how to set up the communications protocols on the Synergy Q/MD switcher, as well as the Audio Mixer.

Connecting Multiple Audio Mixers

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

Note

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

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

*   **Audio Mixer Interface** — This is the software option, either the Large Audio Mixer Interface or Small Audio Mixer Interface, from Ross Video that allows your Synergy Q/MD switcher to control audio mixers.

*   **Audio Mixer Ganging** — This is the hardware option from Ross Video that supplies a **MIDIator** and a **MIDI Solutions Merger**.

*   **MIDIator** (MS-124W) — This device converts the serial interface from the Synergy Q/MD control panel to a MIDI format.

*   **MIDIator Interface Cable** — This is a null modem cable with a DB9 to DB25 converter at one end. This cable connects the 9-Pin, D-Type port on the Synergy Q/MD control panel to the 25-Pin, D-Type port on the MIDIator. Refer to the section "**MIDIator Interface Cable Specifications**" on page 19-9 for information on this cable.

*   **MIDI Solutions Merger** — This device allows you to connect two Audio Mixers and control them from the Synergy Q/MD control panel. The **Merger** is MIDI-powered from the **Out** MIDI cable. When the Merger is powered and operating normally, the red **MIDI** LED will illuminate. This **MIDI** LED will flash when the Merger is passing information.

Note

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

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

Connecting Multiple Audio Mixers

The diagram and procedure included in this section describe the physical connection of two Audio Mixers to your Synergy Q/MD switcher. The locations or names of ports may vary with your Audio Mixer.

	Note	When connecting multiple Audio Mixers together, you must set the first Audio Mixer to **Channel 1** and the second to **Channel 2** on the Audio Mixers themselves. Refer to the section "**Setting Up the Audio Mixer**" on page 19-19 for more information.

Use the following procedure to connect multiple Audio Mixers to your Synergy Q/MD switcher:

1. Connect and secure the **9-Pin** end of the **MIDIator Interface Cable** to one of the **Remote Ports** on the back of the Synergy Q/MD control panel.

2. Connect and secure the **25-Pin** end of the **MIDIator Interface Cable** to the **Serial Port** on the MIDIator.

3. Connect the **MIDI Solutions Merger** to the **MIDIator** as follows:

   • Connect one end of a **MIDI Cable** to the **IN** port on the **MIDIator**.

   • Connect the other end of the **MIDI Cable** to the **Out** port of the **Merger**.

4. Install the first **MIDI Cable** connecting the **MIDIator** to **Audio Mixer 1** as follows:

   • Connect one end of a **MIDI Cable** to the **OUT 1** port on the **MIDIator**.

   • Connect the other end of the **MIDI Cable** to the **MIDI IN** port on **Audio Mixer 1**.
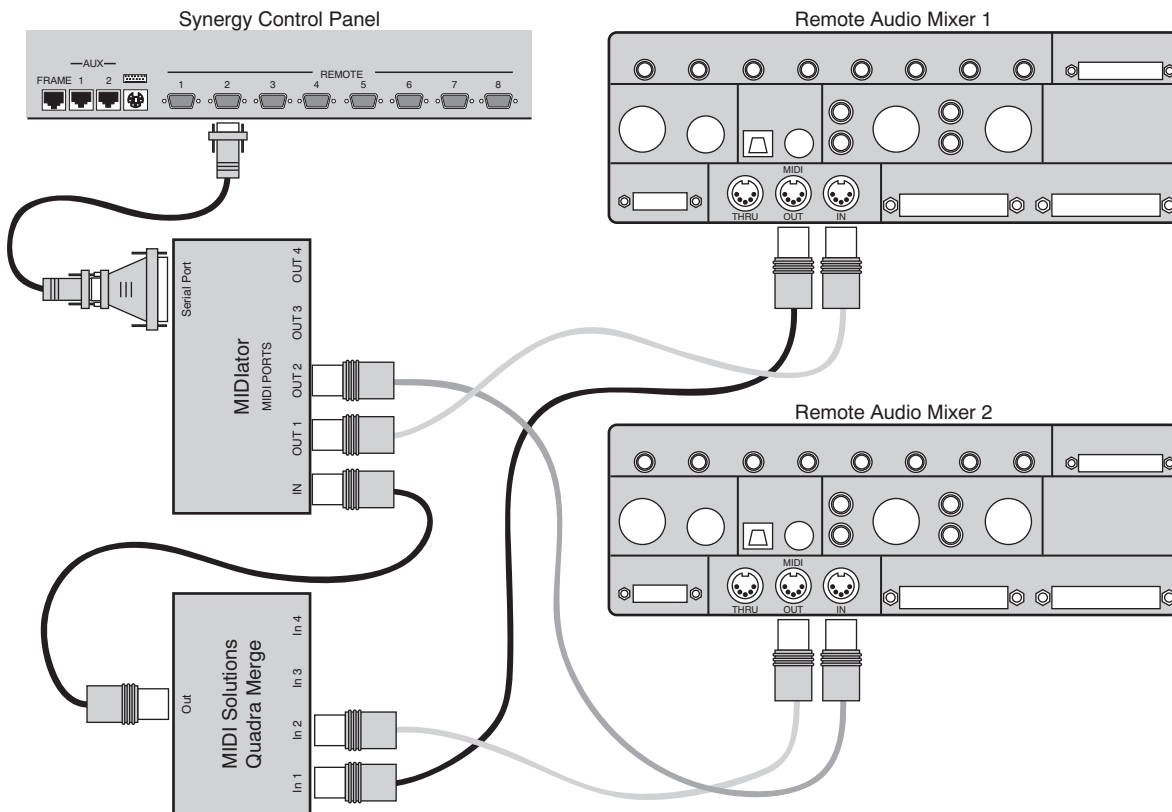
Connecting Two Audio Mixers to a Synergy Q/MD Switcher

5. Install the second **MIDI Cable** connecting the **MIDIator** to **Audio Mixer 2** as follows:

   • Connect one end of a **MIDI Cable** to the **OUT 2** port on the **MIDIator**.

   • Connect the other end of the **MIDI Cable** to the **MIDI IN** port on **Audio Mixer 2**.

6. Install the first cable connecting the **MIDI Solutions Merger** to **Audio Mixer 1** as follows:

   • Connect one end of a **MIDI Cable** to the **In 1** port on the **Merger**.

   • Connect the other end of the **MIDI Cable** to **MIDI OUT** port on **Audio Mixer 1**.

7. Install the second cable connecting the **MIDI Solutions Merger** to **Audio Mixer 2** as follows:

   • Connect one end of a **MIDI Cable** to the **IN 2** port on the **Merger**.

   • Connect the other end of the **MIDI Cable** to **MIDI OUT** port on **Audio Mixer 2**.

8. Set up the **MIDIator** to **Multiple Burst** as follows:

   • Set the **B–A** switch to **B**.

   • Set the **S–M** switch to **M**.

This completes the procedure for connecting multiple Audio Mixers to a Synergy Q/MD switcher. You must now set up the communications protocols on the Synergy Q/MD switcher, as well as the Audio Mixers. Refer to the section "**Setting Up the Switcher**" on page 19-13 for instructions.

| Note | You must configure the Audio Mixers such that the first Audio Mixer controls the first set of channels and the second Audio Mixer controls the second set of channels. Refer to the section "**Setting Up the Audio Mixer**" on page 19-19 for more information on setting up multiple Audio mixers. |

Audio Mixer Interface Cable Pinouts

Use the information in this section to connect the Synergy Q/MD switcher to the Audio Mixer.

MIDIator Interface Cable Specifications

The serial cable that connects the MIDIator to the Remote Port on the Synergy Q/MD switcher has the following pinouts.

Synergy-to-MIDIator MS-124 Wiring Chart

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

Yamaha 02R96 Interface Cable Specifications

The serial cable that connects the Yamaha 02R96 Audio Mixer to the Remote Port on the Synergy Q/MD switcher has the following pinouts.

Synergy Q/MD -to- Yamaha 02R96 Audio Mixer Wiring Chart

Synergy Control Panel			Yamaha 02R96 Audio Mixer	
Remote Port	**Signal**		**Serial Port**	**Signal**
1	Chassis			
2	RxA (Rx-)	→	3	TxA (Tx-)
3	TxB (Tx+)	→	8	RxB (Rx+)
4	n/c			
5	Ground	→	4	Ground
6	Ground			
7	RxB (Rx+)	→	6	TxB (Tx+)
8	TxA (Tx-)	→	5	RxA (Rx-)
9	Chassis			

Yamaha DM2000 Interface Cable Specifications

The serial cable that connects the Yamaha DM2000 Audio Mixer to the Remote Port on the Synergy Q/MD switcher has the following pinouts.

Synergy Q/MD -to- Yamaha DM2000 Audio Mixer Wiring Chart

Synergy Control Panel			Yamaha DM2000 Audio Mixer	
Remote Port	**Signal**		**Serial Port**	**Signal**
1	Chassis			
2	RxA (Rx-)	→	3	TxA (Tx-)
3	TxB (Tx+)	→	8	RxB (Rx+)
4	n/c			
5	Ground	→	4	Ground
6	Ground			
7	RxB (Rx+)	→	6	TxB (Tx+)
8	TxA (Tx-)	→	5	RxA (Rx-)
9	Chassis			

Calrec Sigma Interface Cable Specifications

The serial cable that connects the Calrec Sigma Digital Audio Mixing System to the Remote Port on the Synergy Q/MD switcher has the following pinouts.

Synergy Q/MD -to- Calrec Sigma Audio System Wiring Chart

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

Studer Audio Mixer Interface Cable Specifications

The serial cable that connects the Studer Audio Mixer to the Remote Port on the Synergy Q/MD switcher has the following pinouts.

Synergy Q/MD -to- Studer Audio Mixer Wiring Chart

Synergy Control Panel				Studer Audio Mixer	
Remote Port	**Signal**			**Serial Port**	**Signal**
1	Chassis				
2	Tx	→		2	Rx
3	Rx	→		3	Tx
4	n/c				
5	Ground	→		5	Ground
6	Ground				
7	n/c				
8	n/c				
9	Chassis				

Ethernet Communication Connections

This section includes information to connect a single Audio Mixer to a Synergy Q/MD switcher over an ethernet network.

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

- **Software Interface —** This is the software option from Ross Video that allows your Synergy Q/MD switcher to control the Audio Mixer. You must have one of the following software options:

    ~ **Small Audio Mixer Interface** — This is the software option that allows your Synergy Q/MD switcher to control up to 16 audio channels on an audio mixer.

    ~ **Large Audio Mixer Interface** — This is the software option that allows your Synergy Q/MD switcher to control up to 240 audio channels on an audio mixer.

- **Ethernet Cable** — A standard network cable to connect the Audio Mixer to your network.

Connecting to an Ethernet Network

The following section presents a *brief* overview of the ethernet connection process. The exact steps taken in connecting your Audio Mixer and Synergy Q/MD switcher via an ethernet network depends on the network topology of your facility.

Use the following method to connect an Audio Mixer and Synergy Q/MD switcher via an ethernet network:

1. Connect the Synergy Q/MD switcher to your network. Refer to the section "**Network Setup**" on page 6-2 for information on network setup for your Synergy Q/MD switcher.

2. Connect the Audio Mixer to the same subnet as your Synergy Q/MD switcher or to a network that has a route to the network your switcher is on. Make a note of the IP Address and Port Number of your Audio Mixer as this information is required when configuring the communication settings on your Synergy Q/MD switcher.

    - Network topologies vary greatly between facilities. Contact your IT department for assistance in connecting your Audio Mixer to the appropriate network at your location.

    - Refer to the documentation that came with your Audio Mixer for instructions on connecting it to your network.

3. Configure the ethernet settings on your Synergy Q/MD switcher to communicate with the Audio Mixer. Refer to the section "**Setting Up the Switcher**" on page 19-13 for instructions.

This completes the procedure for connecting an Audio Mixer and Synergy Q/MD switcher via an ethernet network.

Setting Up the Switcher

✎ **Note** | The **Synergy 1** has five Remote Ports on the rear of the control panel.

In order to have the Synergy Q/MD switcher communicate with an Audio Mixer, the communications port on the Synergy Q/MD switcher that the audio mixer is assigned to must be setup to communicate with the particular Audio Mixer you have connected. Refer to the section "**Supported Audio Mixers**" on page 19-2 for a list of supported Audio Mixers.

When configured, an 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.

✎ **Note** | If the ethernet connection is lost between the **Wheatstone D-9** and the Synergy Q/MD switcher, you may need to uninstall the device to regain control. Refer to the section "**Wheatstone D-9 Digital Television Audio Control Surface**" on page 19-23 for more information.

Use the following procedure to configure the communications port on the Synergy Q/MD switcher to communicate with an Audio Mixer:

1. Navigate to the **Communications Menu 1-2** as follows:

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

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

```
Communications (1-2)                                    ↑REMOTE 3 (R3)
                                            Com Port:  REMOTE 4 (R4)
This   menu lets you setup                              ↓REMOTE 5 (R5)
what   each  of  the  com
ports are used for.                                     ↑Still Store
                                            Device:    Audio Mixer
                                                        ↓Robotic Cam



              Select                         Custom         Extra
    Type      Device    Com Settings  Com Type  Devices      Options
```

Communications — Type Menu

3. Assign a communications port to the Audio Mixer as follows:

   • Use the **Com Port** knob to select the Synergy Q/MD communications port that is connected to the Audio Mixer.

     ~ If your Audio Mixer requires a serial connection, you must select the remote port on the Synergy control panel that the Audio Mixer is connected to.

     ~ If your Audio Mixer requires an ethernet connection, you must assign a peripheral port to the Audio Mixer.

✎ **Note** | Remote ports and peripheral ports can only have one device assigned to them at one time. You cannot assign an ethernet and serial device to the same remote or peripheral port.

   • Use the **Device** knob to select **Audio Mixers**.

4. Press **Select Device** to display the **Select Device Menu**.

```
┌─────────────────────────────────────────────────────────┐
│ Communications (1-2)                                      │
│                                      Com Port: REMOTE 4 (R4)│
│ This  menu lets you setup                                 │
│ which     devices    are                          ↑Ya 01V96│
│ controlled   by    which             Device:      Ya 02R96│
│ ports.                                            ↓Ya DM2000│
│                                                           │
│                                                           │
│           Select                          Custom   Extra  │
│   Type    Device   Com Settings  Com Type Devices  Options│
└─────────────────────────────────────────────────────────┘
```

Communications — Select Device Menu

5. Assign a specific Audio Mixer to the communications port as follows:

   • Use the **Com Port** knob to select the communications port that the desired Audio Mixer is assigned to.

   • Use the **Device** knob to select the specific Audio Mixer that is connected to the selected communications port. The following Audio Mixers are currently supported:

     ~ **Ya 01V96** — Use this option to assign a **Yamaha 01V96 Audio Mixer** to the selected communications port.

     ~ **Ya 02R96** —Use this option to assign a **Yamaha 02R96 Audio Mixer** to the selected communications port.

     ~ **Ya DM2000** — Use this option to assign a **Yamaha DM2000 Audio Mixer** to the selected communications port.

     ~ **Ya PM5D** — Use this option to assign a **Yamaha PM5D Audio Mixer** to the selected communications port.

     ~ **Wheatston** — Use this option to assign a **Wheatstone D-9 Digital Television Audio Control Surface** to the selected Peripheral Port.

     ~ **Ya M7CL** — Use this option to assign a **Yamaha M7CL-48 Audio Mixer** to the selected communications port.

     ~ **RAP** — Use this option to assign a **Calrec Sigma Digital Audio Mixing System** to the selected communications port.

     ~ **Studer** — Use this option to assign a **Studer Audio Mixer** to the selected communications port.

6. Press **Com Type** to display the **Com Type Menu**.

```
┌─────────────────────────────────────────────────────────┐
│ Communications (1-2)                                      │
│                                      Com Port: Ya 02R96 (R4)│
│ This  menu  lets  you set                                 │
│ up your com port types.                                   │
│                                      Type:        RS-232  │
│                                                   RS-422  │
│                                                           │
│                                                           │
│           Select                          Custom   Extra  │
│   Type    Device   Com Settings  Com Type Devices  Options│
└─────────────────────────────────────────────────────────┘
```

Communications — Com Type Menu

7. Select the communications protocol for the communications port as follows:

   • Use the **Com Port** knob to select the communications port that the desired Audio Mixer is assigned to.

   • Use the **Type** knob to select the serial communications protocol. You can choose from the following:

      ~ **RS-232** — Select this option when you are using the MIDIator to connect an Audio Mixer or multiple Audio Mixers to the Synergy Q/MD switcher.

      ~ **RS-422** — Select this option when you are using an RS-422 Interface Cable to connect an Audio Mixer to the Synergy Q/MD switcher.

✎ **Note** | If you are connecting the Audio Mixer to the switcher through a network, you must use either the Network UDP or Network TCP transmission standards. Once selected, proceed to **Step 14** to complete the communications setup. The network transmitting standards do not require selections on the **Com Settings Menu**.

      ~ **Network UDP** — Select this option if your Audio Mixer is connected to the switcher through a network and uses the UDP/IP transmission standard.

      ~ **Network TCP** — Select this option if your Audio Mixer is connected to the switcher through a network and uses the TCP/IP transmission standard. Select this option if you are connecting a **Wheatstone D-9 Digital Television Audio Control Surface**.

8. Press **Com Settings** to display the **Com Settings Menu**.

```
Communications (1-2)
                                                  Com Port:  Ya 02R96 (R4)
This  menu  lets  you set
up    your   com    port                                      ↑19200
parameters.                                         Baud:      38400
                                                              ↓57600

                                                   Parity:      NONE
                                                              ↓ODD
          Select                           Custom       Extra
   Type   Device   Com Settings  Com Type  Devices      Options
```

Communications — Com Settings Menu

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

9. Set up the communications parameters for the specific Audio Mixer as follows:

   • Use the **Com Port** knob to select the communications port that the desired Audio Mixer is assigned to.

   • Use the **Baud** knob to select **38400**.

   • Use the **Parity** knob to select **NONE**.

10. Press **Extra Options** to display the **Extra Options Menu**.

11. Set the Converter used to connect the Audio Mixer to your Synergy Q/MD switcher as follows:

   • Use the **Com Port** knob to select the communications port that the desired Audio Mixer is assigned to.

   • Use the **Option** knob to select **Converter**.

```
Communications (1-2)
Protocol: Ya02R96                                         Com Port:  Ya 02R96 (R4)

                    Select your MIDI converter            Option:    Converter
                                                                     Mixers

                                                                     ↑None
                                                          Value:     MIDIator

              Select                              Custom            Extra
      Type    Device      Com Settings   Com Type  Devices          Options
```

Communications – Extra Options Menu (Converter)

- Use the **Value** knob to select the Converter. You can select between the following:

    ~ **None** — Select this option when you are using an RS-422 Interface Cable to connect a large Audio Mixer to the Synergy Q/MD switcher.

    ~ **MIDIator** — Select this option when you are using a MIDIator to connect an Audio Mixer or Multiple Audio Mixers to the Synergy Q/MD switcher.

12. Set the number of Audio Mixers you want to connect to your Synergy Q/MD switcher as follows:

⊛ **Important** | You will need to use a **MIDI Solutions Merger** to combine the inputs from the multiple Audio Mixers to a single input for the **MIDIator** that connects to your Synergy Q/MD switcher. Refer to the section "**Connecting Multiple Audio Mixers**" on page 19-7 for information on connecting multiple Audio Mixers.

- Use the **Com Port** knob to select the communications port that the desired Audio Mixers are assigned to.

- Use the **Option** knob to select **Mixers**.

```
Communications (1-2)
Protocol: Ya02R96                                         Com Port:  Ya 02R96 (R4)

                                                                     ↑Converter
                    Number of mixers connected.           Option:    Mixers

                                                          Value:       (  2)
                                                                     Decimal
              Select                              Custom            Extra
      Type    Device      Com Settings   Com Type  Devices          Options
```

Communications – Extra Options Menu (Mixers)

- Use the **Value** knob to select the number of Audio Mixers (to a maximum of two) you have connected.

✎ **Note** | When connecting multiple Audio Mixers, *both* must be of the type specified in the **Select Device Menu**. You cannot gang multiple Yamaha 01V Audio Mixers.

13. If you are not setting up an Audio Mixer that requires ethernet connections, proceed to **Step 16** to complete the communications setup.

14. If your Audio Mixer requires an ethernet connection, specify the IP Address for the Audio Mixer as follows:

⚠ **Important** | Ensure the **Wheatstone D-9 Digital Television Audio Control Surface** is powered up and connected to the subnet or network before proceeding.

- Press **MORE** to display the **Communications Menu 2-2**.
- Press **Device Network** to display the **Device Network Setup Menu**.
- Use the **Com Port** knob to select the communications port the Audio Mixer is assigned to.
- Use the **IP Settings** knob to select **IP Address**.

```
Device Network Setup
                                            Com Port:   Wheatston(P2)


                                            IP Settings:   IP Address
        IP Address:                                       Port Number
        [ 10.  0.  2.180]
        Port Number:
        [ 55777]

                                                           Revert
                                            Save           To Current
```

IP Address — Device Network Setup Menu

- Use the keypad in the **Global Memory System Group** to enter the IP Address of the specific Audio Mixer you want to control.
- Press **ENTER** in the **Global Memory System Group**.
- Press **Save** in the **Device Network Menu** to save the address, or press **Revert To Current** to reject the new address and return to the previously saved address.

15. If your Audio Mixer requires an ethernet connection, specify the Port Number for the Audio Mixer as follows:

- Use the **Com Port** knob to select the communications port the Audio Mixer is assigned to.
- Use the **IP Settings** knob to select **Port Number**.

✎ **Note** | The **Port Number** is set to **55777** by default. Refer to the documentation for your specific Audio Mixer to determine the correct Port Number for your device.

```
Device Network Setup
                                            Com Port:   Wheatston(P2)

                                                          IP Address
                                            IP Settings:  Port Number
        IP Address:
        [ 10.  0.  2.180]
        Port Number:
        [ 55777]

                                                           Revert
                                            Save           To Current
```

Port Number — Device Network Setup Menu

- Use the keypad in the **Global Memory System Group** to enter the Port Number of the specific Audio Mixer you want to control.

- Press **ENTER** in the **Global Memory System Group**.

- Press **Save** in the **Device Network Menu** to save the changes, or press **Revert To Current** to reject the new Port Number and return to the previously saved Port Number.

16. Press **HOME** to display the **Installation Change Confirmation Screen**.

17. Accept or reject the changes you have made as follows:

- Press **Confirm** to accept the changes.

- Press **Cancel** to exit the menus safely, without making any changes. The switcher returns to the previously stored settings.

This completes the procedure for basic communication setup of the Synergy Q/MD switcher. Next you must finish setting up the Audio Mixer to communicate with the switcher.

Setting Up the Audio Mixer

In order to complete the communications setup you must configure the Audio Mixer to accept commands and communicate with the Synergy Q/MD switcher.

Yamaha 01V96

In order to allow the Synergy Q/MD switcher to communicate with this Audio Mixer, you must configure it as described in this section. For information on the Function Buttons and navigating the menu system on your Audio Mixer, refer to the documentation that came with your device.

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

1. Press the **DIO/SETUP** function button in the **Display Access Group** to display the **DIO/SETUP Menu**.

2. Press the **MIDI/HOST** tab to display the **MIDI I/O HOST SETUP Menu**.

3. Use the **Cursor** buttons to navigate to the following (you will have to press **ENTER** after each selection):

   • **Tx PORT** — Use the Parameter Dial to set this to **MIDI**.

   • **Rx PORT** — Use the Parameter Dial to set this to **MIDI**.

4. Press the **MIDI** function button in the **Display Access Group** to display the **MIDI Menu**.

5. Press the **SETUP** tab to display the **MIDI SETUP Menu**.

6. Use the **Cursor** buttons to navigate to the following (you will have to press **ENTER** after each selection):

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

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

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

   • Use the following table to set the indicated parameters.

Yamaha 01V96 Setup

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

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

This completes the procedure for setting up the Yamaha 01V96 Audio Mixer to communicate with the Synergy Q/MD switcher.

Yamaha 02R96

In order to allow the Synergy Q/MD switcher to communicate with this Audio Mixer, you must configure it as described in this section. For information on the Function Buttons and navigating the menu system on your Audio Mixer, refer to the documentation that came with your device.

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

1. Press the **SETUP** function button in the **Display Access Group** to display the **SETUP Menu**.

2. Press the **MIDI/HOST** tab to display the **MIDI/HOST SETUP Menu**.

3. Use the **Cursor** buttons to navigate to the following (you will have to press **ENTER** after each selection):

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

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

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

4. Press the **MIDI** function button in the **Display Access Group** to display the **MIDI Menu**.

5. Press the **SETUP** tab to display the **MIDI SETUP Menu**.

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

    *   **Channel 1**
    *   **PROGRAM CHANGE**
    *   **PARAMETER CHG**

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

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

    *   **Channel 1**
    *   **PROGRAM CHANGE**
    *   **PARAMETER CHG**

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

8. Deselect all items in the **OMNI Section**.

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

10. Deselect all items in the **ECHO Section**.

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

This completes the procedure for setting up the Yamaha 02R96 Audio Mixer to communicate with the Synergy Q/MD switcher.

Yamaha DM2000

In order to allow the Synergy Q/MD switcher to communicate with this Audio Mixer, you must configure it as described in this section.For information on the Function Buttons and navigating the menu system on your Audio Mixer, refer to the documentation that came with your device.

Use the following procedure to set up your Yamaha DM2000 Audio Mixer:

1. Press the **SETUP** function button in the **Display Access Group** to display the **SETUP Menu**.

2. Press the **MIDI/HOST** tab to display the **MIDI/HOST SETUP Menu**.

3. Use the **Cursor** buttons to navigate to the following (you will have to press **ENTER** after each selection):

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

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

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

4. Press the **MIDI** function button in the **Display Access Group** to display the **MIDI Menu**.

5. Press the **SETUP** tab to display the **MIDI SETUP Menu**.

> **Note** | If you are ganging multiple Audio Mixers, set the second Audio Mixer to **Channel 2** in the next two steps.

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

   • **Channel 1**
   • **PROGRAM CHANGE**
   • **PARAMETER CHG**

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

   • **Channel 1**
   • **PROGRAM CHANGE**
   • **PARAMETER CHG**

8. Deselect all items in the **OMNI Section**.

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

10. Deselect all items in the **ECHO Section**.

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

This completes the procedure for setting up the Yamaha DM2000 Audio Mixer to communicate with the Synergy Q/MD switcher.

Yamaha PM5D

In order to allow the Synergy Q/MD switcher to communicate with this Audio Mixer, you must configure it as described in this section. For information on the Function Buttons and navigating the menu system on your Audio Mixer, refer to the documentation that came with your device.

Use the following procedure to set up your Yamaha PM5D Audio Mixer:

1. Press the **MIDI/Remote** function button in the **Display Access Group** to display the **MIDI/Remote Menu**.

2. Press the **MIDI/Remote** function button to display the **MIDI SETUP Screen**.

3. In the **MIDI Port** row of the **MIDI SETUP Screen**, select the following values, pressing **ENTER** after each selection:

   • In the **Tx column** — Use the **Track Pad** buttons to set this field to **MIDI**.

   • In the **Rx column** — Use the **Track Pad** buttons to set this field to **MIDI**.

4. In the **Single Mode MIDI CH** row of the **MIDI SETUP Screen**, select the following values, pressing **ENTER** after each selection:

   • In the **Tx column** — Use the **Track Pad** buttons to set this to **1**.

   • In the **Rx column** — Use the **Track Pad** buttons to set this to **1**.

> **Note** If you are ganging multiple Audio Mixers, you will have to set the second Audio Mixer to **Tx CH 2** and **Rx CH 2**. You will also need to set the **MIDI Thru** value to **MIDI** in the **Rx Column** for all the Audio Mixers you are connecting.

   • Use the following table to set the indicated parameters

Yamaha PM5D Setup

	Tx	Rx	ECHO
Program Change	ON	ON	OFF
Control Change	OFF	OFF	OFF
Parameter Change	ON	ON	OFF
Other Commands	--	--	OFF

This completes the procedure for setting up the Yamaha PM5D Audio Mixer to communicate with the Synergy Q/MD switcher.

Yamaha M7CL-48

In order to allow the Synergy Q/MD switcher to communicate with this Audio Mixer, you must configure it as described in this section. For information on the Function Buttons and navigating the menu system on your Audio Mixer, refer to the documentation that came with your device.

Use the following procedure to set up your Yamaha M7CL-48 Audio Mixer:

1. Press the **MIDI/Remote** function button in the **Display Access Group** to display the **MIDI/Remote Menu**.

2. Press the **MIDI/Remote** function button to display the **MIDI SETUP Screen**.

3. In the **MIDI Port** row of the **MIDI SETUP Screen**, select the following values, pressing **ENTER** after each selection:

- In the **Tx column** — Use the **Track Pad** buttons to set this field to **MIDI**.

- In the **Rx column** — Use the **Track Pad** buttons to set this field to **MIDI**.

4. In the **Single Mode MIDI CH** row of the **MIDI SETUP Screen**, select the following values, pressing **ENTER** after each selection:

- In the **Tx column** — Use the **Track Pad** buttons to set this to **1**.

- In the **Rx column** — Use the **Track Pad** buttons to set this to **1**.

Note | If you are ganging multiple Audio Mixers, you will have to set the second Audio Mixer to **Tx CH 2** and **Rx CH 2**. You will also need to set the **MIDI Thru** value to **MIDI** in the **Rx Column** for all the Audio Mixers you are connecting.

Yamaha M7CL-48 Setup

	Tx	**Rx**	**ECHO**
Program Change	ON	ON	OFF
Control Change	OFF	OFF	OFF
Parameter Change	ON	ON	OFF
Other Commands	--	--	OFF

This completes the procedure for setting up the Yamaha M7CL-48 Audio Mixer to communicate with the Synergy switcher.

Wheatstone D-9 Digital Television Audio Control Surface

Use the following information when setting up and operating your Wheatstone D-9 Digital Television Audio Control Surface with the Synergy Q/MD switcher.

Ethernet Connections

If the ethernet connection is lost for longer than 2 minutes between the Wheatstone D-9 Digital Television Audio Control Surface and the Synergy Q/MD switcher, the switcher will no longer communicate with the Wheatstone D-9. Should this occur, you must uninstall and re-install the Wheatstone D-9 on the Synergy Q/MD switcher.

Use the following procedure to uninstall the Wheatstone D-9 on the Synergy Q/MD switcher:

1. Ensure the Wheatstone D-9 Digital Television Audio Control Surface is powered up and connected to the network.

2. Navigate to the **Communications Menu 1-2** as follows:

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

3. Press **Select Device** to display the **Communications Device Menu**.

4. Use the **Com Port** knob to select the Peripheral Port that the Wheatstone D-9 is assigned to on the Synergy Q/MD switcher.

5. Use the **Device** knob to select **NONE**.

6. Press **HOME** to display the **Installation Change Confirmation Screen**.

7. Accept or reject the changes you have made as follows:

- Press **Confirm** to accept the changes.

- Press **Cancel** to exit the menus safely, without making any changes. The switcher returns to the previously stored settings.

This completes the procedure for uninstalling the Wheatstone D-9 on the Synergy Q/MD switcher. Next you must reinstall the Wheatstone D-9 on the switcher. Refer to the section "**Setting Up the Switcher**" on page 19-13 for instructions.

Calrec Sigma Digital Audio Mixing System

Use the following information when setting up your **Calrec Sigma Digital Audio Mixing System** with the Synergy Q/MD switcher.

- Ensure the port on the Calrec Sigma panel, that is connected to the Synergy Q/MD switcher, is configured for RS422 communications.

- Use the following communications settings when connecting a Calrec Sigma Digital Audio Mixing System to the Synergy Q/MD switcher:

Synergy Q/MD -to- Calrec Sigma Communications Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	115200
Parity	Odd
Data Bits	8
Stop Bits	1

Studer Audio Mixer

Use the following information when setting up your **Studer Audio Mixer** with the Synergy Q/MD switcher.

The Studer Audio Mixer can have a variable number of input channels and has two program output channels. You must specify the number of input channels on your audio mixer as well as which output channel you wish to control with your Synergy Q/MD switcher.

Use the following procedure to configure your Synergy Q/MD switcher to control the Studer Audio Mixer:

1. Navigate to the **Communications Menu 1-2** as follows:

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

2. Press **Extra Options** to display the **Extra Options Menu**.

3. Set the number of input channels on the Studer Audio Mixer as follows:

   - Use the **Com Port** knob to select the communications port that the desired Audio Mixer is assigned to.

   - Use the **Option** knob to select **Max Channels**.

```
Communications (1-2)
                                                      Com Port:   Studer   (R4)

                                                        Option:   Max Channels
                                                                  PGM Output

                                                         Value:            (6)

              Select                                   Custom          Extra
      Type    Device    Com Settings   Com Type       Devices         Options
```

Communications – Extra Options Menu (Max Channels)

- Use the **Value** knob to set the number of input channels on your Studer Audio Mixer. Values increase and decrease in multiples of 3.

4. Set the program output channel you wish to control as follows:

- Use the **Option** knob to select **PGM Output**.
- Use the **Value** knob to select which program output you wish to control. You can select between the following:
  ~ **PGM A** — Select this option to control program output A.
  ~ **PGM B** — Select this option to control program output B.

5. Press **HOME** to display the **Installation Change Confirmation Screen**.

6. Accept or reject the changes you have made as follows:

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

This completes the procedure for configuring your Synergy Q/MD switcher to control the Studer Audio Mixer.

Assigning Sources to Audio Channels

You need to assign audio sources to the audio channels that you control with your Synergy Q/MD switcher. This allows you to select specific sources to control when there are more sources than input channels on your audio mixer.

✎ **Note**

> This feature is currently supported on the Studer Audio Mixer only.

Use the following procedure to assign audio sources to input audio channels:

1. Navigate to the **Assign Menu** as follows:

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

2. Press **Assign Source** ⇨ **Select Source** to display the **Assign Audio Source Menu**.

```
Assign Audio Source
                                          Audio Channel: Channel 1
Use this menu to                                        ↓Channel 2
associate audio source
to audio channel, and to                                 No Src
assign the association    Audio Source: Src   1
to audio mixer.                                         ↓Src   2


     Name       Select       Assign       Assign
   Channel      Source       Source        All
```

Assign Audio Source Menu

3. Use the **Audio Channel** knob to select the input audio channel you wish to assign a source to. The number of channels listed is the number of channels you specified when setting the **Max Channels** extra option for your audio mixer.

4. Use the **Audio Source** knob to select the audio source that you wish to assign to the selected input audio channel.

5. Press **Name Channel** to display the **Audio Source Names Menu** (if you do not wish to change the channel name, skip to step 8).

```
Audio Source Names
                                                         Horizontal
   a b c d e f g h i j k l m n o p q r s t u v w x y z

   A B C D E F G H I J K L M N O P Q R S T U V W X Y Z   Vertical

   0 1 2 3 4 5 6 7 8 9 ! @ # - _ & * ( ) / , . ? ' "
                                                          Src   1
   Current Name:[Src   1 ]         New Name:[Src   1 ]  (Audio Src)

              Prev         Next                          Accept
   Space      Letter       Letter           Default      New Name
```

Audio Source Names Menu

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

✓ **Operating Tip**

> A Standard PS/2 keyboard can be used to perform the same actions as pressing or rotating the **System Control** buttons and knobs.

   • Use the **Horizontal** knob to move the cursor horizontally.

- Use the **Vertical** knob to move the cursor vertically.
- Use the **Space** button to insert a space in the **New Name** field.
- Use the **Prev Letter** button to select the previous letter in the **New Name** field.
- Use the **Next Letter** button to select the next letter in the **New Name** field.

7. Press **Accept New Name** when you are done naming the channel.

8. Press **Assign All** to complete the assignment of audio sources to input audio channels.

Note   If you do not press **Assign All**, an error message will be displayed when you attempt to control your audio mixer from the Synergy Q/MD control panel.

This completes the procedure for assigning audio sources to input audio channels.

Setting Up Audio Channels and Groups

Audio, from a remote Audio Mixer, can be configured as individual channels or grouped together, with up to three channels per group. When you set up the audio channels, you also set the **Default Levels** for the individual channels. These default levels are the ones that the switcher will set the channels to when you perform an audio reset custom control. Refer to the section "**Setting Up Audio Overrides**" on page 19-32 for more information on audio custom controls.

Setting Up Audio Channels

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

1. Navigate to the **Audio Menu** as follows:

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

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

```
Audio                                      Audio Channel:  Channel 1
                                                          ↓Channel 2
Use   this   menu   to   set
volume   levels   for   audio                             ( 75.0%)
channels   and   groups,   and                               Level
to   assign   channels   to
groups.



      Audio           Audio          Assign
      Level           Groups         Source
```
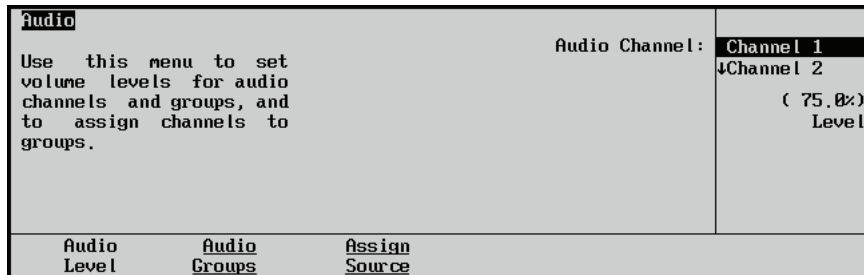
Audio Level Menu

3. Set the level for each audio channel as follows:

   • Use the **Audio Channel** knob to select the audio channel that you want to set the default audio level for.

✏ **Note** | If you have programmed **Audio Assign Custom Controls**, the top **Audio Channel** knob will display the **Custom##** for the custom control that you assigned the channel to.

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

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

Setting Up Audio Groups

Use the following procedure to assign audio channels to groups:

1. Navigate to the **Audio Menu** as follows:

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

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

```
Audio
                                        Audio Channel 1:  NONE
Use  this  menu to assign                                 ↓Channel 1
audio       channels    to
groups.
                                        Audio Channel 2:  NONE
                                                          ↓Channel 1


                                        Audio Channel 3:  NONE
                                                          ↓Channel 1

   Group 1      Group 2      Group 3      Group 4      Group 5      Group 6
```

Audio Group Menu

3. Press **Group 1** to assign audio channels to that group. There are a total of six audio groups you can assign audio channels to.

4. Assign up to three audio channels to the selected group as follows:

✎ **Note**   If you have programmed **Audio Assign Custom Controls**, the top **Audio Channel** knob will display the **Custom##** for the custom control that you assigned the channel to.

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

This completes the procedure for assigning audio channels to groups.

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

Audio Channel Assignment

You can assign up to two audio sources to each BNC. Each source can be a channel or a group of channels. Channels and groups that are assigned to BNC inputs follow the BNC inputs to air on a transition. This Audio-Follow-Video (AFV) is the normal interaction of an Audio Mixer and the Synergy Q/MD switcher. You can alter this normal AFV operation at any time by applying an Audio Override. Refer to the section "**Setting Up Audio Overrides**" on page 19-32 for more information on applying an audio override.

✎ **Note**   When the OverDrive Editor is active (the **EDITOR** button in the **Remote Section** of the **Global Memory System Group** is lit) the audio channel overrides cannot be set from the Synergy Q/MD panel.

Assigning Audio Channels to a BNC

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

1. Navigate to the **BNC Menu 2-3** as follows:

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

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

```
BNC (2-3)                                         ↑BNC C02 (C02)
                                            BNC:   BNC C03 (C03)
Use    this    menu    to  BNC:     BNC C03  (C03) ↓BNC C04 (C04)
associate  audio channels  Type:    Other
with BNC inputs.           Tally:   3              NONE
                           Auto Key: Black  Audio 1: Channel 1
                           Asp Ratio: 16:9          Channel 2

                                                    Channel 3
                                             Audio 2: Channel 4
                                                    Channel 5

   Router       N/S              Still/CG   Camera   VTR/VDCP
   Other       Disable   Audio    Setup     Setup      Xpts
```
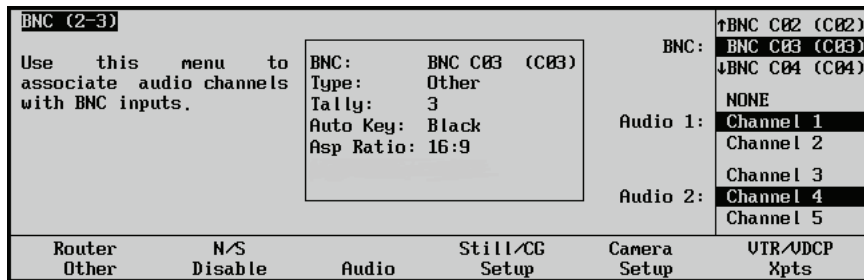
BNC – Audio Setup Menu

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

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

•   Use the **BNC** knob to select the BNC, or video, that the audio mixer will follow for normal AFV operation.
•   Use the **Audio 1** knob to select a channel or group you want to assign to the selected BNC.
•   Use the **Audio 2** knob to select another channel or group you want to assign to the selected BNC.

✎ **Note**   If you have programmed **Audio Assign Custom Controls**, the audio channels may display **Custom##** rather than **Channel ##**.

Your configured audio mixer channels will now follow crosspoint transitions for normal AFV operation.

Audio Transition MLE Assignment

Depending on how you want audio transitions to be performed, you can set up the switcher so that it will either perform an audio transition when a transition is performed in *any* MLE, or only when a transition is performed in the **PGM/PST** MLE.

✎   **Note** | This option is not available for the **Synergy 1**. |

Use the following procedure to set up when your audio transitions are performed:

1. Navigate to the **Personality Menu** as follows:

    •   Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Personality**.

2. Use the **Option** knob to select **AudioTrans**.

```
Personality
                                                    Option: AudioTrans
AudioTrans     All        Allows you to set which         ↓Auto Recall
Auto Recall    Off        MLEs trigger audio
Bank 0 Lit     Off        transitions.
DblPress Rate  12         All: Any MLE transition   Value: All
DSK1 Auto Cut  Off        triggers an audio                Pgm
DSK2 Auto Cut  Off        transition.
DSK3 Auto Cut  Off        Pgm: Only a PGM MLE
↓DSK4 Auto Cut Off        transition triggers an
                          audio transition.

 3D Pattern      Standard      Assign
Button Assign   Mnemonics     Bus Maps
```

Personality — Audio Trans Menu

3. Use the **Value** knob to select when an audio transition is performed. You can select between the following:

    •   **All** — This option tells the switcher to perform an audio transition when *any* **MLE** is transitioned.

    •   **Pgm** — This option tells the switcher to perform an audio transition *only* when a **Program MLE** is transitioned.

This completes the procedure for setting when audio transitions are performed.

Setting Up Audio Overrides

✎ **Note** | If you are using the OverDrive Editor, you do not need to setup the Synergy Q/MD switcher for AFV Overrides. However, setting up the same functionality on your Synergy Q/MD switcher gives you an extra layer of redundancy, should your OverDrive Editor fail.

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

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

Audio Custom Control Bank Setup

Audio banks are used to store audio custom controls, like normal custom control banks, as well as put the **PGM/PST** MLE into Audio Mixer Mode. When *held*, the **Audio Bank** button will allow you to perform overrides on the AFV settings, as well as perform audio only transitions. Refer to the section "**Audio Only Transitions**" on page 19-48 for more information.

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

1. Navigate to the **Installation Menu 2-2** as follows:

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

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

```
┌─────────────────────────────────────────────────────────────────────┐
│ Custom Controls                                                       │
│                          Bank 1 button:01      Bank:  Bank 1    (1)   │
│ Use  this  menu to assign Bank 2 button:NONE         ↓ Bank 2   (2)   │
│ custom   control  buttons Bank 3 button:NONE                          │
│ to  banks,  and  set bank Bank 4 button:NONE          NONE            │
│ types.  Buttons  with '*' Bank 5 button:NONE  Button: Button # 1      │
│ or    'Q'   have  macros  Bank 6 button:NONE         ↓ Button # 2     │
│ assigned.                 Bank 7 button:NONE                          │
│                           Bank 8 button:NONE          Normal          │
│                                                Type:  Audio           │
│                                                                       │
│     Setup      Modify                                                 │
│     Banks      Bank Name                                              │
└─────────────────────────────────────────────────────────────────────┘
```

Custom Controls — Setup Banks Menu

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

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

In this example does not apply to the **Synergy 1** control panel because the custom controls are not physically arranged in the same manner as the video crosspoints. Select any button you like.

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

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

```
Custom Control Bank Names (1-2)
                                                          Horizontal
   a b c d e f g h i j k l m n o p q r s t u v w x y z

   A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
                                                          Vertical
   0 1 2 3 4 5 6 7 8 9 ! @ # - _ & * ( ) / , . ? ' "

                            Mnemonic                         ( 1)
                            Audi                          Bank number
   Current Name:[Audio   ]  o        New Name:[Audio   ]
─────────────────────────────────────────────────────────────────
                Prev        Next                            Accept
   Space        Letter      Letter              Default     New Name
```

Custom Control Bank Names Menu 1-2

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

✓ **Operating Tip** | A Standard PS/2 keyboard can be used to perform the same actions as pressing or rotating the **System Control** buttons and knobs.

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

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

6. Press **Accept New Name** when you are done naming the Audio bank.

✎ **Note** | If the Mnemonic Display option is purchased and installed, the **Mnemonic** field displays the bank name as it will appear in the associated mnemonic display. The Mnemonic Display option is unavailable for the **Synergy 1** switcher.

7. Press **HOME** and **Confirm** to save the new settings.

This completes the procedure for setting up an Audio Custom Control Bank.

Audio Custom Controls

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

The following Custom Controls are covered in this section:

- Assign Audio

- Reset Audio

- Audio All Off

- Audio Memory

- Audio CH On

- Audio CH Off

- PGM Audio Level

- PST Audio Level

Assign Audio

The **Assign Audio** custom control has two roles when working with audio. In normal mode, it allows you to access the levels for the audio channel or group you have assigned to that button. When the **Audio Bank Custom Control** button is pressed and held, the audio channel or group that is assigned to that custom control will be mapped onto the **PGM** and **PST** buses of the bottom MLE (the **BKGD** and **PST** buses on the **Synergy 1**). This allows you to change the audio channels that are on-air, by selecting them on the **PGM** bus (the **BKGD** bus on the **Synergy 1**), or they will be taken to air during the next transition, by selecting them on the **PST** bus. Refer to the section "**Audio Modes**" on page 19-46 for more information.

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

1. Navigate to the **Custom Controls Menu 1-2** as follows:

    - Press **HOME ⇨ Custom Controls**.

    ```
    Custom Controls (1-2)
                                                          Bank:   Audio     (1)
    Custom Control buffers 1.53% full

    Selected: Bank 1 Button 2 [Custom02]                          *Custom01 + 1
                                                        Button:   *Custom02 # 2
    Custom Control Legend:                                       ↓*Custom03 # 3
            * = custom control contains macro
            # = normal custom control button


       Start          Modify                 Start Relative   Default
     Recording         Name         Edit        Recording    All Names   Delete Macro
    ```

    Custom Controls Menu

2. Select the custom control button you want to record as follows:

    - Use the **Bank** knob to select the Audio bank you created.

    - Use the **Button** knob to select the custom control button that you want to program.

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

3. Navigate to the **Special Menu** as follows:

    - Press **Start Recording ⇨ Insert Special ⇨ Special**.

```
Special                                              ↑Trigger GPI
                                                      Assign Audio
                                                     ↓Audio All Off


                                                      Channel 1
                                                     ↓Channel 2




    Insert        Cancel
```

Insert Special — Special Menu

4. Select the audio channel you want to assign to the selected custom control as follows:

    •   Use the **Function** knob to select **Assign Audio**.

    •   Use the **Channel** knob to select the channel or group you wish to assign to the custom control.

> ✓   **Operating Tip**
>
> The Audio Channel that you assign to this custom control will be the channel that is mapped down to the **PGM** (the **BKGD** on the **Synergy 1**) and **PST** buses when you are in Audio Mixer mode. You should assign the same audio channel that is assigned to the BNC crosspoint to the corresponding custom control. For example, if you have **Channel 01** assigned to **BNC crosspoint 4**, you should assign **Channel 01** to **Custom04**. This way, as you go back and forth to Audio Mixer Mode, the audio channels that are assigned to the video channels for AFV will be the same crosspoint buttons.

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

> ✎   **Note**
>
> Note that the name of the selected channel or group changes to **Custom##** when you press **Insert**.

```
Audio                                        Master     Custom02
       Custom02                                         ↓Custom03

                                                          (  0.0%)
                   ☼                                      Level
                 L   R
                                                         (CENTER)
                                                          Pan
        0.0%                                  76.4%
                                                        Master
   Custom02                                             Level
```

Audio Level Menu

When you press this custom control this **Audio Level Menu** will be displayed. Each menu allows you to adjust the level for the channel, as well as the Master Audio Level. Refer to the section "**Audio Levels and Pan Settings**" on page 19-48 for more information.

6. Press **HOME** to display the **Main Menu 1-2**.

7. Press **Custom Controls** to return to the **Custom Controls Menu 1-2**.

8. Press **Finish Recording**, or the flashing custom control button.

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

Reset Audio

The **Reset Audio** custom control allows you to return to the normal AVF mode and remove all currently selected overrides. This can be performed for either the PGM bus (the **BKGD** bus on the **Synergy 1**), or the PST. You will have to set up two custom controls if you want to be able to perform both.

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

1. Navigate to the **Custom Controls Menu 1-2** as follows:

   • Press **HOME** ➪ **Custom Controls**.

```
Custom Controls (1-2)
                                              Bank:   Audio     (1)
Custom Control buffers 1.68% full

Selected: Bank 1 Button 32 [Custom32]                ↑*Custom31 #31
                                            Button:   *Custom32 #32
Custom Control Legend:
       * = custom control contains macro
       # = normal custom control button


   Start        Modify              Start Relative   Default
 Recording       Name       Edit       Recording    All Names   Delete Macro
```
Custom Controls Menu

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

2. Select the custom control button you want to assign the **Audio All Off** to as follows:

   • Use the **Bank** knob to select the Audio Bank you created.

   • Use the **Button** knob to select the custom control button that you wish to program.

3. Navigate to the **Special Menu** as follows:

   • Press **Start Recording** ➪ **Insert Special** ➪ **Special**.

```
Special                                          ↑PST Audio Lvl
                                                  Reset Audio
                                                 ↓Automation

                                     Audio Bus   Program
                                                  Preset




   Insert        Cancel
```
Insert Special — Special Menu

4. Assign **Reset Audio** to the selected custom control button as follows:

   • Use the **Function** knob to select **Reset Audio**.

   • Use the **Audio Bus** knob to select the bus that you want to assign the **Reset Audio** to. You can choose between the following:

      ~ **Program** — This function will restore all AFV for the *on-air* audio. All audio channels that are associated with a BNC that is on-air will be turned on at the level they were last on at, and all other audio channels will be turned off.

~ **Preset** — This function will restore all Audio-Follow-Video and levels for the *next* transition. At the next audio transition, all audio channels and levels associated with a BNC on the PST bus will be turned on at their default levels during the transition.

✎ **Note**

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

5. Press **Insert** to enter the command in your custom control macro.

6. Press **HOME** to display the **Main Menu 1-2**.

7. Press **Custom Controls** to return to the **Custom Controls Menu 1-2**.

8. Press **Finish Recording**, or the flashing custom control button.

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

Audio All Off

The **Audio All Off** custom control will fade *all* audio channels on either the **PGM** bus (the **BKGD** bus on the **Synergy 1**) or the **PST** bus off. This can be useful for quickly removing all audio from either bus or taking all audio channels off-air after you have performed an Audio Memory Recall. Refer to the section "**Audio Memory** " on page 19-38 for more details.

✎ **Note**

This custom control functions as an override and will take all audio channels, including AFV off. In order to reinstate AFV you will have to run a **Reset Audio** custom control. Refer to the section "**Reset Audio**" on page 19-36 for more details.

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

1. Navigate to the **Custom Controls Menu 1-2** as follows:

   • Press **HOME** ⇨ **Custom Controls**.

```
┌Custom Controls (1-2)────────────────────────────────────────────┐
│                                              Bank:  Audio    (1) │
│ Custom Control buffers 1.68% full                                │
│                                                                  │
│ Selected: Bank 1 Button 32 [Custom32]               ↑*Custom31 #31│
│                                              Button: *Custom32 #32│
│ Custom Control Legend:                                           │
│        * = custom control contains macro                         │
│        # = normal custom control button                          │
│                                                                  │
│  Start        Modify                Start Relative   Default     │
│  Recording     Name       Edit       Recording      All Names  Delete Macro │
└──────────────────────────────────────────────────────────────────┘
```

Custom Controls Menu

✎ **Note**

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

2. Select the custom control button you want to assign the **Audio All Off** to as follows:

   • Use the **Bank** knob to select the Audio Bank you created.

- Use the **Button** knob to select the custom control button that you wish to program.

3. Navigate to the **Special Menu** as follows:

   - Press **Start Recording** ⇨ **Insert Special** ⇨ **Special**.

```
Special                                          ↑Assign Audio
                                                  Audio All Off
                                                 ↓Audio Memory

                                    Audio Bus    Program
                                                 Preset




    Insert      Cancel
```

Insert Special — Special Menu

4. Assign **Audio All Off** to the selected custom control button as follows:

   - Use the **Function** knob to select **Audio All Off**.

   - Use the **Audio Bus** knob to select the bus that you want to assign the **Audio All Off** to. You can choose from the following:

     ~ **Program** — This option will fade off all audio channels on the Program bus (the Background bus on the **Synergy 1**).

     ~ **Preset** — This option will fade off all audio channels on the Preset bus.

5. Press **Insert** to enter the command in your custom control macro.

6. Press **HOME** to display the **Main Menu 1-2**.

7. Press **Custom Controls** to return to the **Custom Controls Menu 1-2**.

8. Press **Finish Recording**, or the flashing custom control button.

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

Audio Memory

⊛ **Important**
> The switcher sends a MIDI Program Change Event command for audio memory recalls. Please ensure that the Audio Mixer is setup to recall the proper scene when the Program Change Event command is executed. Refer to the documentation for your device for setup details.

The **Audio Memory** custom control will recall a memory that has been stored on the Audio Mixer. This can be useful to take a number of channels to air at different levels all at once. The **Memory** numbers on the **Insert Special Menu** correspond to the memories that are stored on the Audio Mixer. For example, memory 02 on the Yamaha 02R96 Audio Mixer will be accessed by selecting **2** with the **Memory** knob. Refer to the documentation that came with your audio mixer for information on storing audio memories.

⊛ **Important**
> When an **Audio Memory** is recalled, the only way to take the audio channels off-air is to run an **Audio All Off PGM/Reset PGM sequence**, refer to the section "**Audio All Off**" on page 19-37 for more details. The on-air channels will not appear on the **PGM/PST** buses (the **BKGD/PST** buses on the **Synergy 1**).

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

1. Navigate to the **Custom Controls Menu 1-2** as follows:

    • Press **HOME ⇨ Custom Controls**.

```
Custom Controls (1-2)
                                              Bank:   Audio    (1)
Custom Control buffers 1.68% full
                                                    ↑*Custom31 #31
Selected: Bank 1 Button 32 [Custom32]         Button:  *Custom32 #32

Custom Control Legend:
      * = custom control contains macro
      # = normal custom control button


   Start        Modify                  Start Relative  Default
 Recording       Name         Edit        Recording    All Names   Delete Macro
```

Custom Controls Menu

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

2. Select the custom control button you want to assign the **Audio Memory** to as follows:

    • Use the **Bank** knob to select the Audio Bank you created.

    • Use the **Button** knob to select the custom control button that you wish to program.

3. Navigate to the **Special Menu** as follows:

    • Press **Start Recording ⇨ Insert Special ⇨ Special**.

```
Special                                           ↑Audio All Off
                                                   Audio Memory
                                                  ↓Audio CH On

                                                       ( 1)
                                                      Memory




   Insert       Cancel
```

Insert Special — Special Menu

4. Assign a particular **Audio Memory** to the selected custom control button as follows:

    • Use the **Function** knob to select **Audio Memory**.

    • Use the **Memory** knob to select the memory, or event, that you want to recall from the Audio Mixer.

        ~ If you are using a Wheatstone D-9 Digital Television Audio Control Surface, the Synergy switcher can recall audio events numbered **0** to **99** inclusive. Ensure your audio events are named using the default convention of **PROG#0xx** where **xx** is a number between 0 and 99.

5. Press **Insert** to enter the command in your custom control macro.

6. Press **HOME** to display the **Main Menu 1-2**.

7. Press **Custom Controls** to return to the **Custom Controls Menu 1-2**.

8. Press **Finish Recording**, or the flashing custom control button.

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

Audio CH On

The **Audio CH On** custom control will turn a channel, or group, on at the level it was last on at, or leave it unchanged if the channel is already on. This can be useful if you want to take a channel, or group, to air at once. You can use the **Audio CH On** for either the **PGM** bus (the **BKGD** bus on the **Synergy 1**) or **PST** bus.

✎	**Note**	You can assign multiple **Audio CH On** macros to the same custom control, allowing you to turn a number of channels, or groups, on for either the **PGM** bus (the **BKGD** bus on the **Synergy 1**) or **PST** bus. Unlike the Audio Memory function, **Reset Audio** will return the switcher to AFV mode.

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

1. Navigate to the **Custom Controls Menu 1-2** as follows:

   • Press **HOME** ⇨ **Custom Controls**.

```
Custom Controls (1-2)
                                           Bank:   Audio    (1)
Custom Control buffers 1.68% full

                                                 ↑*Custom31 #31
Selected: Bank 1 Button 32 [Custom32]    Button:  *Custom32 #32

Custom Control Legend:
       * = custom control contains macro
       # = normal custom control button

    Start       Modify              Start Relative  Default
  Recording      Name       Edit      Recording    All Names  Delete Macro
```

Custom Controls Menu

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

2. Select the custom control button you want to assign the **Audio CH On** to as follows:

   • Use the **Bank** knob to select the Audio Bank you created.

   • Use the **Button** knob to select the custom control button that you wish to program.

3. Navigate to the **Special Menu** as follows:

   • Press **Start Recording** ⇨ **Insert Special** ⇨ **Special**.

```
Special                                          ↑Audio Memory
                                                  Audio CH On
                                                 ↓Audio CH Off

                                         Channel  Channel 1
                                                 ↓Channel 2

                                       Audio Bus  Program
                                                  Preset

    Insert        Cancel
```

Insert Special — Special Menu

4. Assign **Audio CH On** to the selected custom control button as follows:

   • Use the **Function** knob to select **Audio CH On**.

   • Use the **Channel** knob to select the audio channel you want to turn on.

- Use the **Audio Bus** knob to select the which bus, **PGM** (**BKGD** on the **Synergy 1**) or **PST**, the audio channels will be turned on for.

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

5. Press **Insert** to enter the command in your custom control macro.

6. Press **HOME** to display the **Main Menu 1-2**.

7. Press **Custom Controls** to return to the **Custom Controls Menu 1-2**.

8. Press **Finish Recording**, or the flashing custom control button.

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

Audio CH Off

The **Audio CH Off** custom control will turn a channel or group off. This can be useful if you want to turn a specific channel, or group, off while not affecting the other channels. You can use the **Audio CH Off** for either the **PGM** bus (the **BKGD** bus on the **Synergy 1**) or **PST** bus.

Use the **Audio CH Off** feature to create a custom control that will fade out any audio channel or group. Any combination of channels (numbered **1** - **64**) or groups (numbered **1** - **6**) can be faded out at the touch of a single custom control button.

> ✎ **Note** | You can assign multiple **Audio CH Off** macros to the same custom control, allowing you to turn a number of channels or groups off on either the **PGM** bus (the **BKGD** bus on the **Synergy 1**) or **PST** bus.

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

1. Navigate to the **Custom Controls Menu 1-2** as follows:

   - Press **HOME** ⇨ **Custom Controls**.

```
Custom Controls (1-2)
                                              Bank:  Audio    (1)
Custom Control buffers 1.68% full

Selected: Bank 1 Button 32 [Custom32]                ↑*Custom31 #31
                                            Button:   *Custom32 #32
Custom Control Legend:
        * = custom control contains macro
        # = normal custom control button


   Start        Modify              Start Relative   Default
  Recording      Name       Edit        Recording   All Names   Delete Macro
```

Custom Controls Menu

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

2. Select the custom control button you want to assign the **Audio CH Off** to as follows:

   - Use the **Bank** knob to select the Audio Bank you created.

   - Use the **Button** knob to select the custom control button that you wish to program.

3. Navigate to the **Special Menu** as follows:

   - Press **Start Recording** ⇨ **Insert Special** ⇨ **Special**.

```
Special                                         ↑Audio CH On
                                                 Audio CH Off
                                                ↓PGM Audio Lvl

                                    Channel      Channel 1
                                                ↓Channel 2

                                   Audio Bus     Program
                                                 Preset


      Insert        Cancel
```

Insert Special — Special Menu

4. Assign **Audio CH Off** to the selected custom control button as follows:

   • Use the **Function** knob to select **Audio CH Off**.

   • Use the **Channel** knob to select the audio channel you want to turn off.

   • Use the **Audio Bus** knob to select the which bus, **PGM** (the **BKGD** bus on the **Synergy 1**) or **PST**, the audio channels will be turned off for.

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

5. Press **Insert** to enter the command in your custom control macro.

6. Press **HOME** to display the **Main Menu 1-2**.

7. Press **Custom Controls** to return to the **Custom Controls Menu 1-2**.

8. Press **Finish Recording**, or the flashing custom control button.

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

PGM Audio Level

Use the **PGM Audio Level** feature to create a custom control that will that will override the audio levels on the program bus. Any combination of channels (numbered **1** - **64**) or groups (numbered **1** - **6**) can be set at the touch of a single custom control button.

The **PGM Audio Level** custom control will set the **PGM** bus (the **BKGD** bus on the **Synergy 1**) level for an audio channel or group. If the Channel is *on-air*, this will alter the level for the channel. If the Channel is *not on air*, this will take it to air as an override. **PGM Audio Level** differs from **Audio CH On** in that you select the level that you want the channel to be set to. When run, the custom control will alter the level of the channel, even if it is on. **Audio CH On** will only turn the channel on if it is off and will not change the level. This could be useful when you want to alter the levels of a number of channels, or groups, at the same time.

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

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

1. Navigate to the **Custom Controls Menu 1-2** as follows:

   • Press **HOME** ⇨ **Custom Controls**.

```
Custom Controls (1-2)
                                                          Bank:   Audio    (1)
Custom Control buffers 1.68% full

Selected: Bank 1 Button 32 [Custom32]                          ↑*Custom31 #31
                                                          Button:  *Custom32 #32
Custom Control Legend:
       * = custom control contains macro
       # = normal custom control button


    Start        Modify                  Start Relative   Default
  Recording        Name         Edit       Recording     All Names    Delete Macro
```

Custom Controls Menu

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

2. Select the custom control button you want to assign the **PGM Audio Level** to as follows:

   • Use the **Bank** knob to select the Audio Bank you created.

   • Use the **Button** knob to select the custom control button that you wish to program.

3. Navigate to the **Special Menu** as follows:

   • Press **Start Recording** ⇨ **Insert Special** ⇨ **Special**.

```
Special                                                    ↑Audio CH Off
                                                            PGM Audio Lvl
                                                           ↓PST Audio Lvl

                                                  Channel   Channel 1
                                                           ↓Channel 2

                                                            (  0.0%)
                                                            Level


    Insert        Cancel
```

Insert Special — Special Menu

4. Assign **PGM Audio Level** to the selected custom control button as follows:

   • Use the **Function** knob to select **PGM Audio Lvl**.

   • Use the **Channel** knob to select the audio channel you want change the level for.

   • Use the **Level** knob to select the level you want to set the channel to.

5. Press **Insert** to enter the command in your custom control macro.

6. Press **HOME** to display the **Main Menu 1-2**.

7. Press **Custom Controls** to return to the **Custom Controls Menu 1-2**.

8. Press **Finish Recording**, or the flashing custom control button.

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

PST Audio Level

Use the **PST Audio Level** feature to create a custom control that will override the audio levels on the PST bus. The audio level for any combination of channels (numbered **1** - **64**) or groups (numbered **1** - **6**) can be set at the touch of a single custom control button.

The **PST Audio Level** custom control will set the **PST** bus level for an audio channel or group. If the channel is *on-air*, this will create an override that will take the channel to the new level during the next

transition. If the channel is *off-air*, this will create an override that will take the channel to air at the new level on the next transition. This could be useful if you want to prepare a number of channels or groups at a set level to be taken to air on the next transition.

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

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

1. Navigate to the **Custom Controls Menu 1-2** as follows:

    •   Press **HOME** ⇨ **Custom Controls**.

```
Custom Controls (1-2)
                                              Bank:   Audio    (1)
Custom Control buffers 1.68% full

Selected: Bank 1 Button 32 [Custom32]              ↑*Custom31 #31
                                            Button: *Custom32 #32
Custom Control Legend:
        * = custom control contains macro
        # = normal custom control button


   Start        Modify              Start Relative  Default
  Recording      Name       Edit      Recording    All Names   Delete Macro
```

Custom Controls Menu

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

2. Select the custom control button you want to assign the **PST Audio Level** to as follows:

    •   Use the **Bank** knob to select the Audio Bank you created.

    •   Use the **Button** knob to select the custom control button that you wish to program.

3. Navigate to the **Special Menu** as follows:

    •   Press **Start Recording** ⇨ **Insert Special** ⇨ **Special**.

```
Special                                      ↑PGM Audio Lvl
                                              PST Audio Lvl
                                             ↓Reset Audio

                                    Channel   Channel 1
                                             ↓Channel 2

                                              (   0.0%)
                                                  Level


   Insert        Cancel
```

Insert Special — Special Menu

4. Assign **PST Audio Level** to the selected custom control button as follows:

    •   Use the **Function** knob to select **PST Audio Lvl**.

    •   Use the **Channel** knob to select the audio channel you want change the level for.

    •   Use the **Level** knob to select the level you want to set the channel to.

5. Press **Insert** to enter the command in your custom control macro.

6. Press **HOME** to display the **Main Menu 1-2**.

7. Press **Custom Controls** to return to the **Custom Controls Menu 1-2**.

8. Press **Finish Recording**, or the flashing custom control button.

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

Audio Modes

When an Audio Mixer is connected to the Synergy Q/MD switcher, it can be operated in one of two ways: normal Audio-Follow-Video (AFV) mode, and Override mode.

Audio-Follow-Video Mode

The AFV mode is where an audio channel is taken to air when the video BNC it is assigned to is taken to air. The audio will follow the video on and off air like this for all transitions on the **PGM/PST** MLE (the **BKGD/PST** MLE on the **Synergy 1**), unless the **Audio Transitions Personality** has been set to **All**, refer to the section "**Audio Transitions**" on page 19-47 for more information.

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

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

Override Mode

The Override mode is when the normal AFV mode has been altered, either by changing the levels, taking more or less channels to air, or altering the channels that will be taken to air on the next transition. Overrides are applied by using one of the custom controls discussed in the section "**Setting Up Audio Overrides**" on page 19-32. For example, if you have an over the shoulder shot, the audio channels for both the talent and the Key would be on-air as per normal AFV. If you transition to a shot with only the VTR clip, then the audio from the talent would be taken off. If you wanted both audio channels to remain, you would have to set up an override by turning on the audio crosspoint for the talent on the PST bus. When you make the transition, the switcher will take the video off air, but will keep the audio on.

Editor Mode

The Editor mode is when the switcher is being remotely operated by the OverDrive Editor. OverDrive will perform both AFV and overrides without having to setup any override custom controls. For more information on OverDrive contact Ross Video.

Operation Overview

This section provides a brief overview of the operation of the Synergy Q/MD switcher when performing audio transitions.

✎ **Note** | In the unlikely case that the ethernet connection is lost between the Wheatstone D-9 and the Synergy Q/MD switcher, you may need to uninstall and re-install the device on the switcher. Refer to the section "**Wheatstone D-9 Digital Television Audio Control Surface**" on page 19-23 for details.

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

- **Current** — The Current level is the level of the channel, or group, that is currently on-air. This level can be adjusted using the **PGM Audio Lvl** custom control that is assigned to that channel, or group.

- **Preset** — The Preset level is the level of the channel, or group, that will take effect during the *next* transition of the audio. This level can be adjusted using the **PST Audio Lvl** custom control that is assigned to that channel, or group. **Preset Levels** *only* take effect when an audio channel, or group, is transitioned to air, and do *not* take affect during cuts or crosspoint changes.

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

✎ **Note** | The Synergy Q/MD switcher keeps track of all three of these audio levels for each channel, or group, and will use them when that channel, or group, is transitioned.

Audio Transitions

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

1. The switcher applies the normal Audio-Follow-Video rules to select which channels, or groups, will be taken to air.

2. The switcher checks for preset *overrides* that will turn channels, or groups, off or on, depending on how they are set in the **Audio PST Bus**.

3. The switcher performs the audio transition by fading the **PST** channels to their **Preset** audio levels. These levels then become the **Current** levels for those channels, or groups.

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

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

Audio Specific Functions

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

Audio Only Transitions

With the audio override custom controls properly set up, it is possible to perform an audio only transition. This transition will not alter the video signals on the **PGM** bus (the **BKGD** bus on the **Synergy 1**) or **PST** bus, but will transition the audio crosspoints on those buses.

Use the following procedure to perform an Audio Only Transition:

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

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

> **Note**   The crosspoints on the **PGM** and **PST** buses (the BKGD and PST buses on the **Synergy 1**) are now audio crosspoints and represent the audio channels that are on-air and will be taken to air in the next transition, just like video is represented on the MLE. Each crosspoint represents an audio channel that was assigned to the corresponding custom control button. For example, the audio channel that was assigned to custom control button 03 will be mapped onto the 03 audio crosspoint.

2.   Select the audio crosspoints that you want to take to air on the **PST** bus.

3.   Press **Auto Trans** in the **PGM/PST MLE Transition Group** (the **Program/Preset Transition Group** on the **Synergy 1**) to perform the audio only transition.

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

This completes the procedure for performing an Audio Only Transition.

Audio Levels and Pan Settings

You can adjust the Audio Level for a particular channel, or the Master level, and the Pan Settings using the Assign Audio custom control. Refer to the section "**Assign Audio**" on page 19-34 for more information.

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

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

Audio Level Menu — Audio Group

2.   Adjust the audio level for the selected channel as follows:

   •   Press the **F1** softkey. In this example it is **Custom02**, but changes depending on what you have named your audio channels.

   •   Use the **Channel** knob to select the audio channel you want to adjust.

   •   Use the **Level** knob to adjust the level of the channel. (0.0% is off).

   •   Use the **Pan** knob to adjust the pan setting left or right. Turning the knob to the right will pan right and turning it left will pan left.

3.   Adjust the Master Level as follows:

   •   Press **Master Level**.
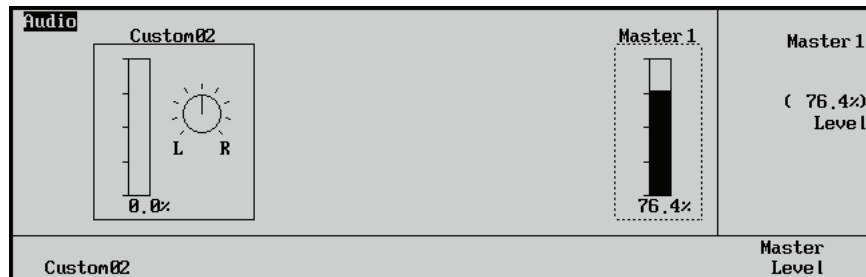
Audio Level Menu — Master Level

   •   If your Audio Mixer has multiple Master Levels, use the **Master** knob to select the Master Level to adjust.

   •   Use the **Level** knob to adjust the master level.

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

Robotic Cameras

In This Chapter

This chapter provides instructions for connecting, setting up, and operating a Robotic Camera with your Synergy Q/MD switcher. Before you begin, ensure that the **Robotic Camera System Interface** option is installed. If not, please contact **Ross Video** for details. Refer to Chapter 6, "**Software Upgrades and Options**" for instructions on verifying the status of installed options.

The following topics are discussed:

- Supported Robotic Cameras
- Serial Communications Connections
- Ethernet Communication Connections
- Setting up the Switcher
- Setting up Robotic Camera BNCs
- Robotic Camera Custom Controls

Supported Robotic Cameras

The Synergy Series Switcher has been tested with a number of Robotic Cameras to ensure the highest standard for compatibility and reliability. The following Robotic Cameras are currently supported by your Synergy Q/MD switcher:

- **Telemetrics PT-CP-S2 Robotic Camera Controller** — Requires a RS-422 serial connection.

- **Telemetrics PT-HP-S2 Robotic Camera Controller** — Requires a RS-422 serial connection.

- **Telemetrics PT-LP-S2 Robotic Camera Controller** — Requires a RS-422 serial connection.

- **Telemetrics STS-12 Serial Control Transfer Switch** — Requires a RS-422 or RS-232 serial connection.

- **Telemetrics DS-4 Device Server** — Requires a RS-422 or RS-232 serial connection.

- **Sony BRC-300/300P Robotic Camera** — Requires a RS-422 serial connection.

- **Eagle PT-101 Pan Tilt System Robotic Camera Controller** — Requires a RS-232 serial connection.

- **Panasonic AW-PH500p Pan/Tilt Head Robotic Camera Controller** — Requires a RS-232 serial connection.

- **Vinten AutoCam 200 Controller** — Requires an Ethernet connection for the Synergy Q/MD frame.

- **Grass Valley CameraMan 3e 3-CCD Robotic Camera** — Requires a RS-232 serial connection.

Serial Communications Connections

You can connect a number of Robotic Cameras to your Synergy Q/MD switcher. The procedure for connecting the Robotic Camera will depend on the type of Robotic Camera you have. This section will provide general instructions for connecting the Robotic Camera to one of the Remote Ports on the back of the Synergy Control Panel.

Note | These instructions are provided as a guide, for specific information on the Robotic Camera you are connecting to the Synergy Q/MD switcher, refer to the documentation provided with the Robotic Camera.

This section identifies how to make the serial communication connections between the Robotic Cameras and the Synergy Q/MD switcher. The following topics are discussed:

- Connecting a Robotic Camera to the Synergy Q/MD Switcher
- Robotic Camera Interface Cable Pinouts

Connecting a Robotic Camera to the Synergy Q/MD Switcher

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

- **Robotic Camera System Interface** — This is the software option from Ross Video that allows your Synergy Q/MD switcher to control a Robotic Camera.

- **Interface Cable** — This is a 9-Pin cable with a 9-Pin, D-Type (DB9) male connector on one end, to connect to the remote port on the control panel, and a connector on the other end to connect to your Robotic Camera. Refer to the section "**Robotic Camera Interface Cable Pinouts**" on page 20–5 for information on the pin-outs and connector required for your Robotic Camera. Ross Video does not supply this cable.

Use the following procedure to connect a Robotic Camera to your Synergy Q/MD switcher:

1. Connect and secure the **9-Pin**, **Male**, end of the **Interface Cable** to one of the **Remote Ports** on the back of the Synergy control panel.

Note | You must use **Remote 5** with a **RJ-12 to DB9 Male Adaptor** to connect a remote Aux Panel to the **Synergy 1** control panel. If you intend to connect a Remote Aux Panel to the switcher, you will have to leave the Remote 5 port open.

Remote Ports

Synergy 2 Control Panel

Remote Ports

Synergy 1 Control Panel

2. Connect and secure the other end of the cable to the appropriate port on the Robotic Camera. The suggested port for each supported Robotic Camera is listed below:

    • **Telemetrics Robotic Camera Controller** — Connect the Interface cable to the Serial port on the Telemetrics PT-CP-S2, PT-HP-S2 or PT-LP-S2 Robotic Camera Controller. Refer to the section "**Telemetrics Robotic Camera Controller Cabling**" on page 20–5 for more information on the cabling for this Robotic Camera.

    • **Telemetrics STS-12 Serial Control Transfer Switch** — Connect the Interface cable to the Controller (DCE) Port on the Telemetrics STS-12 Serial Control Transfer Switch. Refer to the section "**Telemetrics STS-12 Serial Control Transfer Switch**" on page 20–5 for more information.

    • **Telemetrics DS-4 Device Server** — Connect the Interface cable to a serial communication port on the back of the first Telemetrics DS-4. Refer to the section "**Telemetrics DS-4 Device Server**" on page 20–6 for more information.

    • **Sony BRC-300/300P Robotic Camera** — Connect the Interface cable to the Video Connector port on the rear of the Sony BRC-300/300P Robotic Camera Controller. Refer to the section "**Sony BRC-300/300P Robotic Camera Cabling**" on page 20–7 for more information on the cabling for this Robotic Camera.

    • **Eagle PT-101 Pan Tilt System Robotic Camera Controller** — Connect the Interface cable to the Phoenix Connection Block on the Eagle Pan Tilt System Robotic Camera Controller. Refer to the section "**Eagle PT-101 Pan Tilt System Robotic Camera Controller Cabling**" on page 20–8 for more information on the cabling for this Robotic Camera.

    • **Panasonic AW-PH500p Pan/Tilt Head** — Connect the Interface cable to the Remote port on the rear of the Panasonic Control Panel Main Unit. Refer to the section "**Panasonic AW-PH500p Pan/Tilt Head**" on page 20–9 for more information on the cabling for this Robotic Camera.

    • **Grass Valley CameraMan 3e 3-CCD Robotic Camera —** Connect the Interface cable to the RS-232 port on the rear panel of the Grass Valley Mini Docking Station. Refer to the section "**Grass Valley CameraMan 3e 3-CCD Robotic Camera**" on page 20–9 for more information.

This completes the procedure for connecting a Robotic Camera to the Synergy Q/MD switcher. Refer to the section "**Setting up the Switcher**" on page 20–11 for instructions on how to set up communications protocols on the Switcher, as well as on the Robotic Camera.

Robotic Camera Interface Cable Pinouts

Use the information in this section to connect the Interface Cable from the Synergy Q/MD switcher to the Robotic Camera.

Telemetrics Robotic Camera Controller Cabling

Note | This information applies to the Telemetrics PT-CP-S2, PT-HP-S2 and PT-LP-S2 Robotic Camera Controllers.

The Synergy control panel connects to the Telemetrics Robotic Camera Controller via the remote ports on the Synergy control panel, and the Serial port on the rear of the Telemetrics Robotic Camera Controller.

Cable connections in the following table refer only to those between the Synergy control panel and the Telemetrics Robotic Camera Controller. Other cable connections present on the Telemetrics Robotic Camera Controller can be found in the Telemetrics documentation.

Synergy Q/MD -to- Telemetrics Wiring Chart

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

Telemetrics STS-12 Serial Control Transfer Switch

The Synergy switcher can be connected to any of the Controller (DCE) Ports of the Telemetrics STS-12 Serial Control Transfer Switch.

- The DCE Ports are always female, the same as the ports on the PT Head.

- The Telemetrics PT Head connects to a DTE Port on the Telemetrics STS-12 Serial Control Transfer Switch using a straight through DB-9, pin to pin, male to female cable.

- Ports 1 and 2 are always DCE Ports.

- The Telemetrics STS-12 may have more than two DCE Ports. Refer to your Telemetrics documentation for information on the Port configuration for your device.

Note | The ports on the Telemetrics STS-12 Serial Control Transfer Switch are always paired, with each port in the pair configured the same.

- If the Telemetrics STS-12 DCE Port is configured as RS-232, the cable is a DB-9 male to male Null modem as follows:

Synergy Q/MD -to- Telemetrics STS-12 RS-232 Wiring Chart

Synergy Control Panel				Telemetrics STS-12	
Remote Port	Signal			DCE Port	Signal
1	Chassis				n/c
2	Tx	→		3	Rx
3	Rx	→		2	Tx
4	n/c				n/c
5	Ground	→		5	Ground
6	Ground				n/c
7	n/c				n/c
8	n/c				n/c
9	Chassis				n/c

• If the Telemetrics STS-12 DCE Port is configured as RS-422, the cable is a DB-9 custom male to male cable as follows:

Synergy Q/MD -to- Telemetrics STS-12 RS-422 Wiring Chart

Synergy Control Panel				Telemetrics STS-12	
Remote Port	Signal			DCE Port	Signal
1	Chassis				n/c
2	RxA (Rx-)	→		2	Tx-
3	TxB (Tx+)	→		4	Rx+
4	n/c				n/c
5	Ground	→		5	Ground
6	Ground				n/c
7	RxB (Rx+)	→		1	Tx+
8	TxA (Tx-)	→		3	Rx-
9	Chassis				n/c

Telemetrics DS-4 Device Server

When you are connecting a pair of DS-4s across a network, you must connect the Synergy switcher to a serial port on the first Telemetrics DS-4 Device Server. The cameras are connected to the network via a second DS-4. Refer to your Telemetrics documentation for information on network setups.

Serial cable connections in the following table refer only to those between the Synergy control panel and the first Telemetrics DS-4 Device Server. Other cable connections present on the Telemetrics DS-4 Device Servers can be found in the Telemetrics documentation.

If the Telemetrics DS-4 port is configured as RS-232, the following pinouts are required:

Synergy Q/MD -to- Telemetrics DS-4 RS-232 Wiring Chart

Synergy Control Panel				Telemetrics DS-4	
Remote Port	**Signal**			**Serial Port**	**Signal**
1	Chassis				n/c
2	Tx	→		2	Rx
3	Rx	→		3	Tx
4	n/c				n/c
5	Ground	→		5	Ground
6	Ground				n/c
7	n/c				n/c
8	n/c				n/c
9	Chassis				n/c

If the Telemetrics DS-4 port is configured as RS-422, the following pinouts are required:

Synergy Q/MD -to- Telemetrics DS-4 RS-422 Wiring Chart

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

Sony BRC-300/300P Robotic Camera Cabling

The Synergy control panel connects to the Sony BRC-300/300P Robotic Camera Controller via the remote ports on the Synergy control panel, and the Video Connector port on the rear of the Sony BRC-300/300P Robotic Camera Controller, using the Sony VISCA protocol.

Cable connections in the following table refer only to those between the Synergy control panel and the Sony Robotic Camera. Other cable connections present on the Sony Robotic Camera can be found in the Sony documentation.

Synergy Q/MD -to- Sony Wiring Chart

Synergy Control Panel			Sony Robotic Camera	
Remote Port	Signal		Video Connector Port	Signal
1	Chassis			n/c
2	RxA (Rx-)	→	9	Tx-
3	TxB (Tx+)	→	6	Rx+
4	n/c			n/c
5	Ground	→	5	Ground
6	Ground			n/c
7	RxB (Rx+)	→	8	Tx+
8	TxA (Tx-)	→	7	Rx-
9	Chassis			n/c

Eagle PT-101 Pan Tilt System Robotic Camera Controller Cabling

The Synergy control panel connects to the Eagle PT-101 Pan Tilt System Robotic Camera Controller via the remote ports on the Synergy control panel, and the Phoenix Connection Block on the Eagle Pan Tilt System Robotic Camera Controller.

✎	**Note**	The **Phoenix Connection Block** is provided with your Eagle Pan Tilt System. Refer to your Eagle documentation to configure your device for RS-232 serial operation.

Cable connections in the following table refer only to those between the Synergy control panel and the Eagle Pan Tilt System. Other cable connections present on the Eagle Pan Tilt System can be found in the Eagle documentation.

Synergy Q/MD -to- Eagle Wiring Chart

Synergy Control Panel			Eagle Pan Tilt System	
Remote Port	Signal		Phoenix Connection Block	Signal
1	Chassis			n/c
2	Tx	→	2	Rx
3	Rx	→	3	Tx
4	n/c			n/c
5	Ground	→	5	Ground
6	Ground			n/c
7	n/c			n/c
8	n/c			n/c
9	Chassis			n/c

Panasonic AW-PH500p Pan/Tilt Head

The Synergy control panel connects to the Panasonic AW-PH500p Pan/Tilt Head via the remote ports on the Synergy control panel, and the Remote port on the rear of the Panasonic Control Panel Main Unit.

Cable connections in the following table refer only to those between the Synergy control panel and the Panasonic Control Panel Main Unit. Other cable connections present on the Panasonic Pan/Tilt Head can be found in the Panasonic documentation.

Synergy Q/MD -to- Panasonic Wiring Chart

Synergy Control Panel			Panasonic Pan/Tilt Head	
Remote Port	Signal		Panasonic Control Panel Main Unit	Signal
1	Chassis			n/c
2	Tx	→	2	Rx
3	Rx	→	3	Tx
4	n/c			n/c
5	Ground	→	5	Ground
6	Ground			n/c
7	n/c			n/c
8	n/c			n/c
9	Chassis			n/c

Grass Valley CameraMan 3e 3-CCD Robotic Camera

The Synergy control panel connects to the Grass Valley CameraMan 3e 3-CCD robotic camera via the remote ports on the Synergy control panel, and the RS-232 port on the rear of the Grass Valley Mini Docking Station.

Cable connections in the following table refer only to those between the Synergy control panel and the Grass Valley Mini Docking Station. Other cable connections present on the Grass Valley CameraMan can be found in the Grass Valley documentation.

Synergy Q/MD -to-Grass Valley Wiring Chart

Synergy Control Panel			Grass Valley Mini Docking Station	
Remote Port	Signal		RS-232 Port	Signal
1	Chassis			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

Ethernet Communication Connections

This section includes information to connect a single Robotic Camera to a Synergy Q/MD switcher over an ethernet network.

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

- **Robotic Camera System Interface** — This is the software option from Ross Video that allows your Synergy Q/MD switcher to control a Robotic Camera.

- **Ethernet Cable** — A standard network cable to connect the Robotic Camera to your network.

Connecting to an Ethernet Network

The following section presents a *brief* overview of the ethernet connection process. The exact steps taken in connecting your Robotic Camera and Synergy Q/MD switcher via an ethernet network depends on the network topology of your facility.

Use the following method to connect a Robotic Camera and Synergy Q/MD switcher via an ethernet network:

1. Connect the Synergy Q/MD switcher to your network. Refer to the section "**Network Setup**" in Chapter 6 for information on network setup for your Synergy Q/MD switcher.

2. Connect the Robotic Camera to the same subnet as your Synergy Q/MD switcher or to a network that has a route to the network your switcher is on. Make a note of the IP Address and Port Number of your Robotic Camera as this information is required when configuring the communication settings on your Synergy Q/MD switcher.

   - Network topologies vary greatly between facilities. Contact your IT department for assistance in connecting your Robotic Camera to the appropriate network at your location.

   - Refer to the documentation that came with your Robotic Camera for instructions on connecting it to your network.

3. Configure the ethernet settings on your Synergy Q/MD switcher to communicate with the Robotic Camera. Refer to the section "**Setting up the Switcher**" on page 20–11 for instructions.

This completes the procedure for connecting a Robotic Camera and Synergy Q/MD switcher via an ethernet network.

Setting up the Switcher

In order to have the Synergy Q/MD switcher communicate with a Robotic Camera, the Communications Port on the Synergy Q/MD switcher that the Robotic Camera is assigned to must be set up to communicate with the particular Robotic Camera you have connected.

Use the following procedure to configure a Communications Port on the Synergy Q/MD switcher to connect with a Robotic Camera:

1. Navigate to the **Communications Menu 1-2** as follows:

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

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

Communications — Type Menu

3. Assign a Communications Port to the Robotic Camera as follows:

    •   Use the **Com Port** knob to select the Synergy Q/MD Communications Port that is connected to the Robotic Camera.

        ~   If you are using a Robotic Camera that requires a serial connection, you must select the Remote Port on the Synergy control panel that the Audio Mixer is connected to.

        ~   If you are using a Robotic Camera that requires an ethernet connection, you must assign a Peripheral port on the Synergy frame to the Robotic Camera.

> **Note** Remote ports and Peripheral ports can only have one device assigned to them at one time. You cannot assign an ethernet and serial device to the same Remote or Peripheral port.

    •   Use the **Device** knob to select **Robotic Cam**.

4. Press **Select Device** to display the **Select Device Menu**.

Communications — Select Device Menu

5. Select the device you want to assign to the Robotic Camera Communications Port as follows:

- Use the **Com Port** knob to select the Communications Port you want to assign a specific Robotic Camera to.

- Use the **Device** knob to select the type of Robotic Camera that is connected to the port. You can select between the following:

  ~ **Tmetrics** — Use this option to assign a **Telemetrics PT-CP-S2**, **PT-HP-S2** or **PT-LP-S2 Robotic Camera Controller** to the selected com port. Refer to the section "**Telemetrics Robotic Camera Controller**" on page 20–18 for details.

      - Use this option to assign a **Telemetrics STS-12 Serial Control Switch** to the selected com port. Refer to the section "**Telemetrics STS-12 Serial Control Transfer Switch**" on page 20–18 for details.

      - Use this option to assign a **Telemetrics DS-4 Device Server** to the selected com port. Refer to the section "**Telemetrics DS-4 Device Server**" on page 20–19 for details.

  ~ **Sony** — Use this option to assign a **Sony BRC-300/300P Robotic Camera** to the selected com port. Refer to the section "**Sony BRC-300/300P Robotic Camera**" on page 20–19 for details.

  ~ **Eagle** — Use this option to assign an **Eagle PT-101 Pan Tilt System** to the selected com port. Refer to the section "**Eagle Pan Tilt System Robotic Camera Controller**" on page 20–20 for details.

  ~ **Panasonic** — Use this option to assign a **Panasonic AW-PH500p Pan/Tilt Head** to the selected com port. Refer to the section "**Panasonic AW-PH500p Pan/Tilt Head**" on page 20–21 for details.

  ~ **Vinten** — Use this option to assign a **Vinten AutoCam 200 Controller** to the selected Peripheral Port.

  ~ **CameraMan** — Use this option to assign a **Grass Valley CameraMan 3e 3-CCD Robotic Camera** to the selected com port. Refer to the section "**Grass Valley CameraMan 3e 3-CCD Robotic Camera**" on page 20–22 for details.

6. Press **Com Type** to display the **Com Type Menu**.
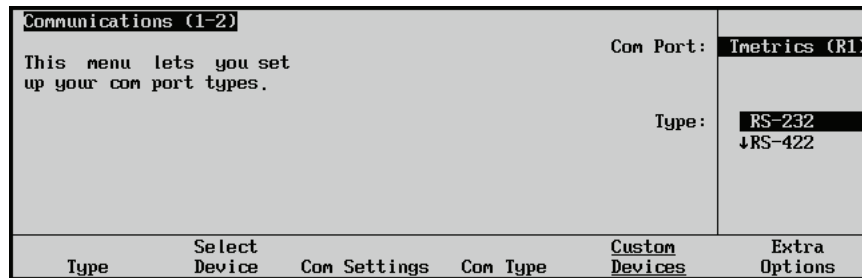
Communications — Com Type Menu

7. Select the communications protocol for the Communications Port as follows:

    *   Use the **Com Port** knob to select the Communications Port that the desired Robotic Camera is assigned to.

    *   Use the **Type** knob to select the communications for the selected port. Refer to the section "**Setting up the Robotic Camera**" on page 20–18 for the specific settings for your Robotic Camera. You can choose from the following:

✎ **Note** | The **Synergy 1** allows you to select **RS-232 Null** and **RS-422 Null**, as well as the standard **RS-232** and **RS-422**. Refer to the section "**Setting up the Robotic Camera**" on page 20–18 for information on when to use these settings.

    ~   **RS-232** — Select this option when you are using an RS-232 serial connection.

    ~   **RS-422** — Select this option when you are using an RS-422 serial connection.

    ~   **Network UDP** — Select this option if your Robotic Camera is connected to the switcher through a network and uses the UDP/IP transmission standard.

    ~   **Network TCP** — Select this option if your Robotic Camera is connected to the switcher through a network and uses the TCP/IP transmission standard.

✎ **Note** | If you are connecting the Robotic Camera to the switcher through a network, you must select either the Network UDP or Network TCP transmission standards, then proceed to step 10. to complete the communications setup.

8. Press **Com Settings** to display the **Com Settings Menu**.
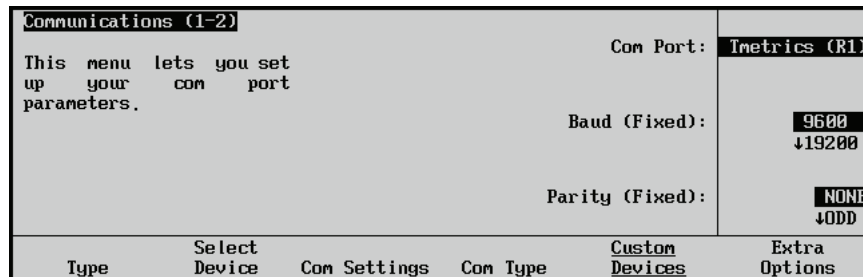
Communications — Com Settings Menu

9. Set the communications protocols for the Robotic Camera as follows:

    *   Use the **Com Port** knob to select the Robotic Camera you are setting the communications settings for.

    *   Use the **Baud** knob to select the baud rate for the Robotic Camera. Refer to the section "**Setting up the Robotic Camera**" on page 20–18 for the specific settings for your Robotic Camera.

    *   Use the **Parity** knob to select the parity for the specific Robotic Camera. Refer to the section "**Setting up the Robotic Camera**" on page 20–18 for the specific settings for your Robotic Camera.

✎ **Note** | If you are not setting up a Robotic Camera that requires ethernet connections, proceed to step 12.

---

10. Specify the IP Address for the Robotic Camera as follows:

⚠	**Important**	Ensure the Robotic Camera is powered up and connected to the subnet or network before proceeding.

- Press **MORE** to display the **Communications Menu 2-2**.
- Press **Device Network** to display the **Device Network Setup Menu**.
- Use the **Com Port** knob to select the Communications Port the Robotic Camera is assigned to.
- Use the **IP Settings** knob to select **IP Address**.

```
Device Network Setup
                                              Com Port:  Vinten    (P2)


    IP Address:                               IP Settings:   IP Address
    [ 0.  0.  0.  0]                                         Port Number
    Port Number:
    [     0]


                                                               Revert
                                              Save           To Current
```

IP Address — Device Network Setup Menu

- Use the keypad in the **Global Memory System Group** to enter the IP Address of the specific Robotic Camera you want to control.
- Press **ENTER** in the **Global Memory System Group**.
- Press **Save** in the **Device Network Menu** to save the address, or press **Revert To Current** to reject the new address and return to the previously saved address.

11. Specify the Port Number for the Robotic Camera as follows:

✎	**Note**	The Port Number for the second Telemetrics DS-4 is selected using the **BNC Setup Menus**. If you are setting up a pair of Telemetrics DS-4s, proceed to step 12.

- Use the **Com Port** knob to select the Communications Port the Robotic Camera is assigned to.
- Use the **IP Settings** knob to select **Port Number**.

```
Device Network Setup
                                              Com Port:  Vinten    (P2)

                                                           IP Address
    IP Address:                               IP Settings:  Port Number
    [ 10.  0.  2.120]
    Port Number:
    [      0]


                                                               Revert
                                              Save           To Current
```
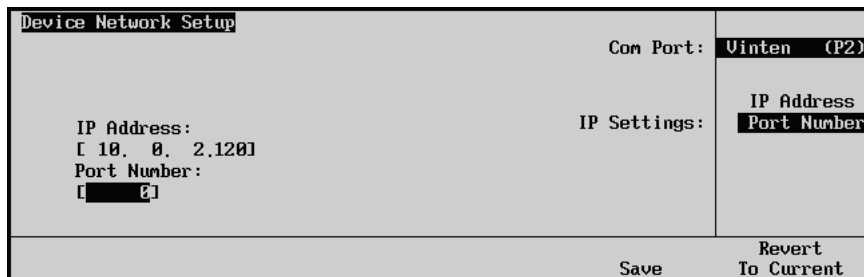
Port Number — Device Network Setup Menu

- Use the keypad in the **Global Memory System Group** to enter the Port Number of the specific Remote Robotic Camera you want to control.
- Press **ENTER** in the **Global Memory System Group**.

- Press **Save** in the **Device Network Menu** to save the changes, or press **Revert To Current** to reject the new Port Number and return to the previously saved Port Number.

<table>
<tr><td>✎</td><td>**Note**</td><td>The **Telemetrics** and **Eagle** Robotic Cameras have Extra Options that may need to be set, depending on the configuration you have. If you are not setting up one of these Robotic Cameras, proceed to step 13.</td></tr>
</table>

12. Press **Extra Options** to display the **Extra Options Menu**.

- **Telemetrics Robotic Camera Controller** — Refer to the section "**Telemetrics Extra Options**" on page 20–15 for information on the Extra Options settings for a Telemetrics PT-CP-S2, PT-HP-S2 or PT-LP-S2 Robotic Camera Controller.

- **Eagle PT-101 Pan Tilt System Robotic Camera Controller** — Refer to the section "**Eagle Extra Options**" on page 20–17 for information on the Extra Options settings for an Eagle PT-101 Pan Tile Robotic Camera Controller.

13. Press **HOME** to display the **Installation Change Confirmation Screen**.

14. Accept or reject the changes you have made as follows:

- Press **Confirm** to accept the changes.

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

This completes the procedure for setting up the communications with the Robotic Camera, next you will have finish setting up the Robotic Camera to communicate with the Synergy Q/MD switcher, and then set up the BNC inputs that you have connected to the Robotic Camera. Refer to the section "**Setting up the Robotic Camera**" on page 20–18 for information on how to set up the Robotic Camera you are connecting to the Synergy Q/MD switcher.

Extra Options Setup

The **Extra Options Menu** for a Robotic Camera allows you to complete the communications setup for some of the Robotic Cameras on the Synergy Q/MD switcher. These extra options allow you to set up multiple Robotic Camera on the same Remote Port, the amount of time the Synergy Q/MD switcher allows for a Robotic Camera to recall a shot, and the type of lens you have installed on the Robotic Camera Head.

Telemetrics Extra Options

The **Extra Options Menu** for the Telemetrics Robotic Camera Controller allows you to:

- specify the amount of time the Synergy Q/MD switcher should wait before sending commands to the Robotic Camera after a Recall shot command

- specify that you are connecting to multiple cameras via a **Telemetrics STS-12 Serial Control Transfer Switch**, a **Telemetrics CP-RMR-S Serial Receiver**, or a **Telemetrics DS-4 Device Server**.

- specify an Offset value for displaying the Shot Box number on the Synergy switcher. For example, with the Offset value set to 1, Shot 2 on the Telemetrics Shot Box displays as Shot 2 on the Synergy menu system.

Use the following procedure to set up the Extra Options for a Telemetrics Robotic Camera Controller:

1. Assign the STS-12 or CP-RMR-S to the Telemetrics Robotic Camera as follows:

```
Communications (1-2)

Protocol: Tmetrics                                      Com Port:   Tmetrics (R4)


          Attached serial control switch.               Option:    SerialSwitch
                                                                    ↓RclTime

                                                                       None
                                                         Value:       STS-12
                                                                    ↓CP-RMR-S

                    Select                              Custom        Extra
          Type      Device      Com Settings  Com Type  Devices       Options
```

Communications — Telemetrics (Serial Switch) Extra Options Menu

- Use the **Com Port** knob to select the remote port that the serial switch is connected to.

- Use the **Option** knob to select **SerialSwitch**.

- Use the **Value** knob to select the type of serial switch that you are using. You can select between the following:

  ~ **None** — Use this option to not assign a serial switch to the selected com port.

  ~ **STS-12** — Use this option to assign an STS-12 Serial Control Transfer Switch to the selected com port.

  ~ **CP-RMR-S** — Use this option to assign a CP-RMR-S Serial Receiver to the selected com port.

  ~ **DS4** — Use this option to assign a DS-4 Device Server to the selected com port.

2. Set the amount of time that the switcher allows for the Robotic Camera to recall a shot as follows:

```
Communications (1-2)

Protocol: Tmetrics                                      Com Port:   Tmetrics (R4)


                                                                    SerialSwitch
          Time required for a 'recall shot' (s).         Option:    RclTime
                                                                    ShotOffset

                                                         Value:        (  4)
                                                                      Decimal
                    Select                              Custom        Extra
          Type      Device      Com Settings  Com Type  Devices       Options
```

Communications — Telemetrics (RclTime) Extra Options Menu

- Use the **Com Port** knob to select the Robotic Camera that you want to set the Recall Time for.

- Use the **Option** knob to select **RclTime**.

- Use the **Value** knob to select the amount of time, in seconds, you want to Switcher to wait after sending a recall shot command.

3. Enable the ShotOffset feature as follows:

- Use the **Com Port** knob to select the Robotic Camera that you want to enable the ShotOffset feature for.

- Use the **Option** knob to select **ShotOffset**.

- Use the **Value** knob to select the offset value for the Synergy control panel. You can select between the following:

  ~ **0** — Select this option to disable the feature. The Telemetrics Shot Box number will not match the Synergy menu system. This is the default setting.

~ **1** — Select this option to offset the Shot number by 1 on the Synergy control panel. The Synergy menu system matches the Telemetrics Shot Box number. For example, Shot 2 on the Telemetrics Shot Box is now displayed as Shot 2 on the Synergy menu system.

This completes the procedure to set up the Extra Options for the Telemetrics Robotic Camera.

Eagle Extra Options

The Extra Options Menu for the Eagle PT-101 Pan Tilt System Robotic Camera allows you to specify that you are using a Rainbow-CCTV lens or a Fujinon/Canon telecon lens.

Use the following procedure to set up the Extra Options for an Eagle PT-101 Pan Tilt Robotic Camera Controller with a Rainbow or Fujinon Lens:

Communications Extra — Eagle Options Menu

1. Assign a lens type to your Eagle Pan Tilt System as follows:

   • Use the **Com Port** knob to select the to select the remote port that the Eagle Pan Tilt System is connected to.

   • Use the **Option** knob to select **Lens Type**.

   • Use the **Value** knob to select the type of lens that you are using. You can select between the following:

     ~ **Rainbow** — Use this option if you are using a Rainbow-CCTV lens.

     ~ **Fujinon** — Use this option if you are using a Fujinon/Canon telecon lens.

This completes the procedure to assign a lens type to your Eagle Pan Tilt System.

Setting up the Robotic Camera

In order to have the Synergy Q/MD switcher communicate with a Robotic Camera, the Robotic Camera you are connecting to the switcher must be set up to communicate and accept commands from the Synergy Q/MD switcher.

Telemetrics Robotic Camera Controller

Use the following information to configure and connect your Telemetrics Robotic Camera Controller to your Synergy Q/MD switcher:

• Use the following communications settings when connecting a Telemetrics Robotic Camera Controller to the Synergy Q/MD switcher:

Synergy Q/MD -to- Telemetrics Communications Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	9600
Parity	NONE
Data Bits	8
Stop Bits	1

Telemetrics STS-12 Serial Control Transfer Switch

Use the following information to configure and connect your Telemetrics STS-12 Serial Control Transfer Switch to your Synergy Q/MD switcher:

• Use the following communications settings when connecting a Telemetrics STS-12 Serial Control Transfer Switch to the Synergy Q/MD switcher:

Synergy Q/MD -to- Telemetrics STS-12 Communications Settings

Setting	Value	Value
Transmission Standard	RS-422	RS-232
Baud Rate	9600	9600
Parity	NONE	NONE
Data Bits	8	8
Stop Bits	1	1

Synergy 1 Q/MD -to- Telemetrics STS-12 Communication Settings

Setting	Value	Value
Transmission Standard	RS-422	RS-232 Null
Baud Rate	9600	9600
Parity	NONE	NONE
Data Bits	8	8
Stop Bits	1	1

Telemetrics DS-4 Device Server

Use the following communications settings when connecting a Telemetrics DS-4 Device Server to the Synergy Q/MD switcher:

- When connecting the Synergy Q/MD switcher to a pair of Telemetrics DS-4s, one DS-4 connects directly to the Synergy control panel, while the second connects the cameras to the first DS-4 over a network. This second Telemetrics DS-4 has an IP Address you assign on the Synergy Communications Menu, and a Port Number that is assigned on the BNC Setup Menus.

- Ensure that the corresponding Telemetrics DS-4 jumper switch, for the serial port the Synergy control panel is connected to, is set for the communications standard you select on the Synergy menus.

- Use the following serial communications settings when connecting a Telemetrics DS-4 Device Server to the Synergy Q/MD switcher:

Synergy Q/MD -to- Telemetrics DS-4 Communications Settings

Setting	Value	Value
Transmission Standard	RS-422	RS-232
Baud Rate	9600	9600
Parity	NONE	NONE
Data Bits	8	8
Stop Bits	1	1

Synergy 1 Q/MD -to- Telemetrics DS-4 Communication Settings

Setting	Value	Value
Transmission Standard	RS-422	RS-232 Null
Baud Rate	9600	9600
Parity	NONE	NONE
Data Bits	8	8
Stop Bits	1	1

Sony BRC-300/300P Robotic Camera

The Synergy Q/MD switcher can control up to **8** Sony Robotic Camera. The address for each camera is set through the jumpers on its bottom panel. Refer to the Sony documentation for more information on setting the address for your particular Robotic Camera.

Use the following information to configure and connect a *single* Sony Robotic Camera to your Synergy Q/MD switcher:

- Use the following communications settings when connecting a Sony Robotic Camera to the Synergy Q/MD switcher:

:

Synergy Q/MD -to- Sony Communications Settings

Setting	Value
Transmission Standard	**RS-422**
Baud Rate	**9600**
Parity	**NONE**
Data Bits	**8**
Stop Bits	**1**

• Use the following information to set the jumpers located on the bottom of the Sony Robotic Camera:

Sony Robotic Camera Jumper Settings

Jumper	Setting
1	No connection
2	Set to **ON** for RS-422 communication
3	Set to **OFF** for 9600 baud rate
4	Infra-red signal control (**OFF** disables the control)
5	Used for camera address
6	Used for camera address
7	Used for camera address
8	No connection

Refer to the Sony documentation for details on connecting additional cameras to the switcher.

Eagle Pan Tilt System Robotic Camera Controller

Use the following information to configure and connect an Eagle Pan Tilt System to your Synergy Q/MD switcher:

Note   If you are connecting an **Eagle Pan Tilt Robotic Camera** to the **Synergy 1 Switcher** using an **RS-232 cable**, you must select **RS-232 Null** as the Communication Type.

• Use the following communications settings when connecting an Eagle Pan Tilt System to a Synergy Q/MD switcher:

Synergy Q/MD -to- Eagle Communication Settings

Setting	Value
Transmission Standard	**RS-232**
Baud Rate	**9600**
Parity	**NONE**
Data Bits	**8**
Stop Bits	**1**

Synergy 1 Q/MD -to- Eagle Communication Settings

Setting	Value
Transmission Standard	RS-232 Null
Baud Rate	9600
Parity	NONE
Data Bits	8
Stop Bits	1

Panasonic AW-PH500p Pan/Tilt Head

Use the following information to configure and connect a Panasonic AW-PH500p Pan/Tilt Head to your Synergy Q/MD switcher:

Note — If you are connecting a **Panasonic AW-PH500p Pan/Tilt Head** to the **Synergy 1 Switcher** using an **RS-232 cable**, you must select **RS-232 Null** as the Communication Type.

- Use the following communications settings when connecting a Panasonic AW-PH500p Pan/Tilt Head to a Synergy Q/MD switcher:

Synergy Q/MD -to- Panasonic Communication Settings

Setting	Value
Transmission Standard	RS-232
Baud Rate	9600
Parity	NONE
Data Bits	8
Stop Bits	1

Synergy 1 Q/MD -to- Panasonic Communication Settings

Setting	Value
Transmission Standard	RS-232 Null
Baud Rate	9600
Parity	NONE
Data Bits	8
Stop Bits	1

Vinten AutoCam 200 Controller

Use the following information when connecting a Vinten AutoCam 200 Controller to a Synergy Q/MD switcher:

- Ensure the Transmission Standard (Com Type) is set to **Network TCP** on the **Synergy Communications Menu**.

- When assigning a BNC to the Vinten AutoCam 200 Controller, ensure that the BNC Name on the Synergy control panel matches the Device Name of the camera you are connecting to. If they are not named the same, you cannot communicate properly with your camera.

- The Synergy Q/MD switcher can only connect and control one Vinten AutoCam 200 Controller at a time.

- The Synergy Synergy Q/MD switcher can access a maximum of 64 shows, and 1024 shots per show, on 32 devices.

Grass Valley CameraMan 3e 3-CCD Robotic Camera

The Base Address for each Grass Valley CameraMan 3e 3-CCD camera is set through the **Base Unit Address** rotary switch on the Grass Valley Configuration Panel. Refer to the Grass Valley documentation for more information on configuring the switches on your device. Use the following information to configure and connect a Grass Valley CameraMan 3e 3-CCD camera to your Synergy switcher:

- Use the following communication settings to configure and connect a Grass Valley CameraMan 3e 3-CCD Robotic Camera to your Synergy Q/MD switcher:

Note	If you are connecting a **Grass Valley CameraMan 3e 3-CCD Robotic Camera** to the **Synergy 1 Switcher** using an **RS-232 cable**, you must select **RS-232 Null** as the Communication Type.

Synergy Q/MD -to- Grass Valley Communication Settings

Setting	Value
Transmission Standard	**RS-232**
Baud Rate	**19200**
Parity	**NONE**
Data Bits	**8**
Stop Bits	**1**

Synergy 1 Q/MD -to- Grass Valley Communication Settings

Setting	Value
Transmission Standard	**RS-232 Null**
Baud Rate	**19200**
Parity	**NONE**
Data Bits	**8**
Stop Bits	**1**

- Ensure that DIP switch 1 on Switch Bank B is set to the DOWN position (Basic Protocol) on the Grass Valley CameraMan Configuration Panel.

- Ensure that DIP switch 7 on Switch Bank A is set to the UP position (Baud Rate of 19200) on the Grass Valley CameraMan Configuration Panel.

Setting up Robotic Camera BNCs

The **Robotic Camera Setup Menu** allows you to associate a Robotic Camera BNC input with a particular Robotic Camera communication port. In addition, you can select which one of the outputs of the Robotic Camera is feeding the input BNC on the Synergy Q/MD frame.

⚹	**Important**	You must have a Robotic Camera set up on the Synergy Q/MD switcher before you can assign a BNC to that device. Refer to the section "**Setting up the Switcher**" on page 20–11 for more information on setting up robotic camera communications.

Use the following procedure to assign the Robotic Camera to a specific BNC input:

1. Navigate to the **BNC Menu 1-3** as follows:

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

2. Press **BNC Type** to display the **BNC Type Menu**.

BNC Type Menu

3. Assign a BNC to a Robotic Camera as follows:

⚹	**Important**	If you are assigning a BNC to a Vinten AutoCam 200 Controller, ensure that the BNC Name on the Synergy control panel matches the Device Name of the camera you are connecting to. If they are not named the same, you cannot communicate properly with your camera.

   • Use the **BNC** knob to select the BNC that the Robotic Camera is connected to.

   • Use the **Type** knob to select **Robotic Cam**.

   • Use the **Video Format** knob to select the native video format of the VTR output.

✎	**Note**	Assigning a **Video Format** to an **Input BNC**, that is different than the native video format that the switcher is operating in, can only be used for passing non-native video formats out an **Aux Bus**. Video formats may be converted to the operating video format using **Smart Conversion**. Refer to Chapter 13 "**SmartConversion™**" for more information.

4. Press **MORE** ⇨ **Camera Setup** to display the **Camera Setup Menu**.

```
┌─────────────────────────────────────────────────────────────────────────┐
│ BNC (2-3)                                                                 │
│                         ┌──────────────────────┐          BNC: ┌─────────┐│
│ Use  this  menu  to set │BNC:      BNC C01 (C01)│               │BNC C01 (C01)││
│ which  camera controllers│Type:     Robotic Cam  │               └─────────┘│
│ and   which  cameras  are│Tally:    1           │  Controller: ┌─────────┐│
│ associated     with which│Auto Key: Black        │               │Tmetrics (R1)││
│ BNCs.                    │Video Mode: 1080i 59.94│               └─────────┘│
│                         └──────────────────────┘                          │
│                                                            Port: ┌─────────┐│
│                                                                   │ Port 1  ││
│                                                                   │↓Port 2  ││
├──────────────┬──────────────┬──────────┬──────────┬──────────┬───────────┤
│   Router     │    N/S       │          │ Still/CG │  Camera  │  VTR/VDCP │
│   Other      │  Disable     │  Audio   │  Setup   │  Setup   │   Xpts    │
└──────────────┴──────────────┴──────────┴──────────┴──────────┴───────────┘
```

BNC — Telemetrics Camera Setup Menu

5. Assign a specific ganged Robotic Camera to the BNC as follows:

   • Use the **BNC** knob to select the BNC you want to assign the specific Robotic Camera to.

   • Use the **Controller** knob to select the remote port that the specific Robotic Camera you assigned to the BNC is connected to.

   • Use the **Port** knob to set the port or the specific camera you want to assign to the BNC. This is the port that you set the specific camera to when you set up your camera hardware.

     ~ For the **Telemetrics STS-12 Serial Control Transfer Switch**, select the STS-12 Controller (DTE) Port that the PT Head is connected to.

     ~ For the **Telemetrics DS-4 Device Server**, select the Telemetrics DS-4 port that the specific camera is connected to.

     ~ For the **Grass Valley CameraMan 3e 3-CCD**, select the Base Unit Address of the camera. Note that Positions O to F on the Grass Valley Configuration Plate corresponds to Ports 1 to 16, respectively, on the Synergy menu.

6. Press **HOME** to display the **Installation Change Confirmation Screen**.

7. Accept or reject the changes you have made as follows:

   • Press **Confirm** to accept the changes.

   • Press **Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure for assigning a Robotic Camera to a BNC on the Synergy Q/MD switcher.

Robotic Camera Custom Controls

You can program custom control macros to recall Robotic Camera controllers from the Synergy Q/MD switcher and specific shots on any Robotic Camera.

✎   **Note** | You must have the Robotic Camera System Interface option installed in order to control a Robotic Camera from the Synergy Q/MD switcher. Refer to the section "**Setting up the Switcher**" on page 20–11 for information on setting up a Robotic Camera.

The following custom controls are discussed in this section:

- Recall Camera
- Recall a Shot

Recall Camera

The Recall Camera custom control allows you to recall a shot on the last selected robotic camera. If you recall a shot using this type of custom control, you must first select the camera crosspoint on the switcher, and then play the custom control.

Use the following procedure to recall a camera with a custom control button:

1. Navigate to the **Custom Controls Menu** as follows:

    - Press **HOME** ⇨ **Custom Controls**.

    ```
    Custom Controls
                                                        Bank:  │ Bank 1   (1)│
    Custom Control buffers .53% full
                                                               ↑ Custom08 # 8
    Selected: Bank 1 Button 9 [Custom09]                       │ Custom09 # 9│
                                                        Button:
    Custom Control Legend:                                     ↓ Custom10 #10
            # = normal custom control button


       Start        Modify              Start Relative  Default
       Recording    Name                Recording      All Names  Delete Macro
    ```
    Custom Controls Menu

2. Select the custom control button you want to record to as follows:

    - Use the **Bank** knob to select the custom control bank you want to record the custom control to.
    - Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*) or the "at sign" (@) in the list have already been programmed.

✓   **Operating Tip** | As a recommendation, keep transport control functions for similar devices grouped together on your *physical* custom control buttons.

3. Navigate to the **Insert Robotic Camera Control Menu** as follows:

    - Press **Start Recording** ⇨ **Insert Special** ⇨ **MORE** ⇨ **Robotic Camera**.

4. Assign a shot to be recalled on a camera as follows:

- Use the **Macro** knob to select **Recall Camera**.
- Use the **Camera** knob to select the communications port for the camera that you want to recall the shot on.
- Use the **Shot #** knob to select the number of the shot that you want to recall.

5. Press **Insert** to enter the recalled camera into your custom control macro.

6. Press **UP ONE** to return to the **Custom Controls Recording Menu**.

7. Press **Finish Recording** to finish recording to the selected custom control.

This completes the procedure for recalling a camera with a custom control button.

Refer to chapter 10, "**Custom Controls**", for more information on custom controls.

Recall a Shot

The Recall Shot custom control allows you to recall a shot on a particular robotic camera. When programming this custom control, you are recalling a specific camera on a remote port by selecting its BNC.

For example, you want to recall camera 4 on Remote Port 1. To do so, you program a **Recall Shot** custom control macro to recall the specified shot with camera 4 on BNC 4. When played, the custom control will always recall camera 4 on BNC 4 connected to Remote Port 1.

✎ **Note** You cannot edit a **Recall Shot** macro. Instead, you must delete and re-program the macro to the selected custom control button.

Use the following procedure to recall a camera shot with a custom control button:

1. Navigate to the **Custom Controls Menu** as follows:

- Press **HOME** ⇨ **Custom Controls**.

```
Custom Controls
                                              Bank:  Bank 1   (1)
Custom Control buffers .53% full

Selected: Bank 1 Button 9 [Custom09]                ↑ Custom08 # 8
                                             Button:  Custom09 # 9
Custom Control Legend:                              ↓ Custom10 #10
        # = normal custom control button



   Start        Modify              Start Relative  Default
  Recording      Name                Recording     All Names  Delete Macro
```

Custom Controls Menu

2. Select the custom control button you want to record to as follows:

- Use the **Bank** knob to select the custom control bank you want to record the custom control to.
- Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*) or the "at sign" (@) in the list have already been programmed.

✓ **Operating Tip** As a recommendation, keep transport control functions for similar devices grouped together on your *physical* custom control buttons.

3. Navigate to the **Insert Robotic Camera Control Menu** as follows:

   • Press **Start Recording** ⇨ **Insert Special** ⇨ **MORE** ⇨ **Robotic Camera**.

4. Assign a shot to be recalled on the specified camera as follows:

   • Use the **Macro** knob to select **Recall Shot**.

   • Use the **Camera** knob to select the camera that you want to recall the shot on. Note that each camera is listed with its remote port and its corresponding BNC.

   • Press **Select Show** to display the list of available Shows for the selected Camera.

```
┌─────────────────────────────────────────────────────────────────────┐
│Insert Robotic Camera Control                                         │
│                                            Camera (Remote/BNC): Uinten(P4/B1)│
│                                                                      │
│                                                             Recall Camera│
│                      Device: Robo                   Macro: Recall Shot│
│                      Show:   Show-11pm                                │
│                      Shot:   Shot084                                  │
│                      Duration: 0                                      │
│                                                      Show:   Show-11pm│
│                                                              Show-12am│
│                                 Select    Select    Set              │
│              Insert    Cancel   Show      Shot      Duration         │
└─────────────────────────────────────────────────────────────────────┘
```
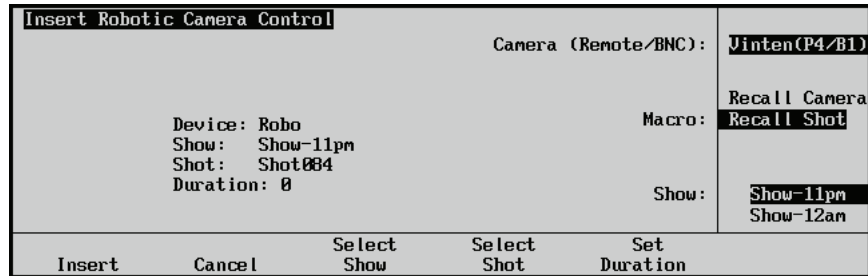
Insert Robotic Camera Control — Select Show

   • Use the **Show** knob to select the Show you wish to recall the shot position from.

   • Press **Select Shot** to display the list of shots available in the selected Show.

```
┌─────────────────────────────────────────────────────────────────────┐
│Insert Robotic Camera Control                                         │
│                                            Camera (Remote/BNC): Uinten(P4/B1)│
│                                                                      │
│                                                             Recall Camera│
│                      Device: Robo                   Macro: Recall Shot│
│                      Show:   Show-11pm                                │
│                      Shot:   Shot084                                  │
│                      Duration: 0                                      │
│                                                      Shot:    Shot084 │
│                                                              Shot030  │
│                                 Select    Select    Set              │
│              Insert    Cancel   Show      Shot      Duration         │
└─────────────────────────────────────────────────────────────────────┘
```
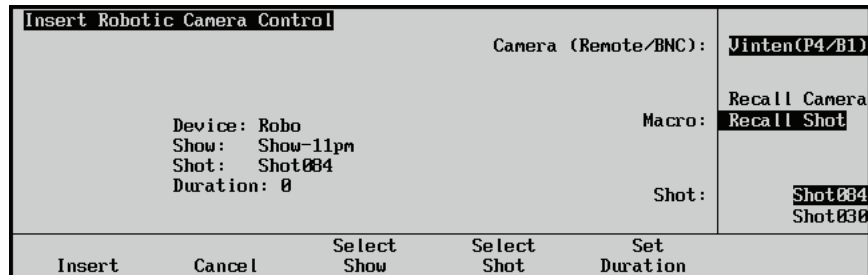
Insert Robotic Camera Control — Select Shot

   • Use the **Shot** knob to select the shot that you want to recall.

✎ **Note** | If the Telemetrics **ShotOffset** feature is set to **0** on the Synergy **Extra Options Menu**, the shot number displayed on the Synergy **Recall Shot Menu** will not match the Shot Box number on the Telemeterics camera.

5. Press **Insert** to enter the shot recall into your custom control macro.

6. Press **UP ONE** to return to the **Custom Controls Recording Menu**.

7. Press **Finish Recording** to finish recording to the selected custom control.

This completes the procedure for recalling a camera shot with a custom control button.

Refer to chapter 10, "**Custom Controls**", for more information on custom controls.

Camera All Stop

Use the **Camera All Stop** command to quickly stop all robotic camera operations. Use this command to stop all motion of a robotic camera with a single command.

> ✎ **Note** | The Camera All Stop command is only avalaible on Vinten cameras.

Use the following procedure to insert a Camera All Stop command into a custom control:

1. Navigate to the **Custom Controls Menu** as follows:

   • Press **HOME** ⇨ **Custom Controls**.

   ```
   Custom Controls
                                                      Bank:    Bank 1   (1)
   Custom Control buffers .53% full

   Selected: Bank 1 Button 9 [Custom09]                      ↑ Custom08 # 8
                                                    Button:    Custom09 # 9
   Custom Control Legend:                                     ↓ Custom10 #10
        # = normal custom control button


       Start        Modify              Start Relative   Default
     Recording       Name                 Recording     All Names    Delete Macro
   ```
   Custom Controls Menu

2. Select the custom control button you want to record to as follows:

   • Use the **Bank** knob to select the custom control bank you want to record the custom control to.

   • Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*) or the "at sign" (@) in the list have already been programmed.

> ✓ **Operating Tip** | As a recommendation, keep transport control functions for similar devices grouped together on your *physical* custom control buttons.

3. Navigate to the **Insert Robotic Camera Control Menu** as follows:

   • Press **Start Recording** ⇨ **Insert Special** ⇨ **MORE** ⇨ **Robotic Camera**.

4. Assign a shot to be recalled on a camera as follows:

   • Use the **Camera** knob to select the communications port for the camera that you want to recall the shot on.

   • Use the **Macro** knob to select **Cam AllStop**.

5. Press **Insert** to enter the recalled camera into your custom control macro.

6. Press **UP ONE** to return to the **Custom Controls Recording Menu**.

7. Press **Finish Recording** to finish recording to the selected custom control.

This completes the procedure for inserting a Camera All Stop command into a custom control.

Refer to chapter 10, "**Custom Controls**", for more information on custom controls.

Character Generators

In This Chapter

This chapter provides instructions for connecting and setting up a Character Generator with your Synergy Q/MD switcher. Before you begin, ensure that the **Character Generator Interface** option is installed. If not, please contact **Ross Video** for details. Refer to Chapter 6, "**Software Upgrades and Options**" for instructions on verifying the status of installed options.

The following topics are discussed:

- • Supported Character Generators
- • Communications Connections
- • Communications Setup
- • Setting up Character Generator BNCs
- • Character Generator Custom Controls

Supported Character Generators

The Synergy Series Switcher has been tested with a number of Character Generators to ensure the highest standard for compatibility and reliability. The following Character Generators are currently supported by your Synergy Q/MD switcher:

- **Leitch (Inscriber) Inca Character Generator**
- **Chyron Duet LEX Character Generator** (using Lyric software version 5.23)
- **Chyron HyperX Character Generator** (using Lyric software version 5.22)
- **Avid (Pinnacle) FXDeko II Character Generator**
- **Vizrt Viz|Trio Character Generator** (Trio client version 2.5)

Communications Connections

You can connect a number of Character Generators to your Synergy Q/MD switcher. The procedure for connecting the Character Generator will depend on the type of Character Generator you have. This section will provide general instructions for connecting the Character Generator to one of the Remote Ports on the back of the Synergy Control Panel.

✎ **Note** | These instruction are provided as a guide, for specific information on the Character Generator you are connecting to the Synergy Q/MD switcher, refer to the documentation provided with your Character Generator.

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

- **Character Generator Interface** — This is the software option from Ross Video that allows your Synergy Q/MD switcher to control a Character Generator.

- **Interface Cable** — This is a 9-Pin cable with a 9-Pin, D-Type (DB9) male connector on one end, to connect to the remote port on the control panel, and a connector on the other end to connect to your Character Generator. Refer to the section "**Character Generator Interface Cable Pinouts**" on page 21–4 for information on the pin-outs and connector required for your Character Generator. Ross Video does not supply this cable.

Use the following procedure to connect a Character Generator to your Synergy Q/MD switcher:

1. Connect and secure the **9-Pin**, **Male**, end of the **Interface Cable** to one of the **Remote Ports** on the back of the Synergy control panel.

✎ **Note** | You must use **Remote 5** with a **RJ-12 to DB9 Male Adaptor** to connect a remote Aux Panel to the **Synergy 1** control panel. If you intend to connect a Remote Aux Panel to the switcher, you will have to leave the Remote 5 port open.

Synergy 2 Control Panel

Synergy 1 Control Panel

2. Connect and secure the other end of the cable to the appropriate port on the Character Generator. The suggested port for each supported Character Generator is listed below:

- **Leitch (Inscriber) Inca CG** — Connect the Interface cable to the COM port on the rear of the Inca Character Generator chassis. Refer to the section "**Leitch (Inscriber) Inca Character Generator**" on page 21–4 for more information on the cabling for this device.

- **Chyron Duet LEX CG** — Connect the Interface cable to the COM 1 port on the rear of the Duet LEX Character Generator chassis. Refer to the section "**Chyron Duet LEX and HyperX Character Generators**" on page 21–5 for more information on the cabling for this device.

- **Chyron HyperX CG** — Connect the Interface cable to the COM 1 port on the rear of the Chyron HyperX Character Generator chassis. Refer to the section "**Chyron Duet LEX and HyperX Character Generators**" on page 21–5 for more information on the cabling for this device.

- **Avid (Pinnacle) FXDeko II CG** — Connect the Interface cable to the COM port on the rear of the FXDeko II Character Generator chassis. Refer to the section "**Avid (Pinnacle) FXDeko II Character Generator**" on page 21–6 for more information on the cabling for this device.

- **Vizrt Viz|Trio Character Generator** — Connect the Interface cable to the COM port on the rear of the Trio client system. Refer to the section "**Vizrt Viz|Trio Character Generator**" on page 21–6 for more information on the cabling for this device.

This completes the procedure for connecting a Character Generator to the Synergy Q/MD switcher. Refer to the section "**Communications Setup**" on page 21–7 for instructions on how to set up communications protocols on the Switcher, as well as on the Character Generator.

Character Generator Interface Cable Pinouts

Use the information in this section to connect the Interface Cable from the Synergy Q/MD switcher to the Character Generator.

Leitch (Inscriber) Inca Character Generator

The Synergy control panel connects to the Inca Character Generator via the remote port on the Synergy control panel, and the COM port on the rear of the Leitch Inca Character Generator chassis.

Cable connections in the following table refer only to those between the Synergy control panel and the Leitch (Inscriber) Inca Character Generator. Other cable connections present on the Inca Character Generator can be found in the Leitch (Inscriber) documentation.

Synergy Q/MD -to- Inscriber Inca CG Wiring Chart

Synergy Control Panel			Leitch (Inscriber) Inca CG	
Remote Port	**Signal**		**COM Port**	**Signal**
1	Chassis			
2	Tx	→	2	Rx
3	Rx	→	3	Tx
4	n/c			
5	Ground	→	5	Ground
6	Ground			
7	n/c			
8	n/c			
9	Chassis			

n/c = Not Connected

Chyron Duet LEX and HyperX Character Generators

The Synergy control panel connects to the Chyron CG via the remote port on the Synergy control panel, and the COM 1 port on the rear of the Chyron CG chassis.

Cable connections in the following table refer only to those between the Synergy control panel and the Chyron CG. Other cable connections present on the Chyron CG can be found in the Chyron documentation.

Synergy Q/MD -to- Chyron Duet LEX and HyperX CG Wiring Chart

Synergy Control Panel			Chyron CG	
Remote Port	**Signal**		**COM Port 1**	**Signal**
1	Chassis			
2	Tx	→	2	Rx
3	Rx	→	3	Tx
4	n/c			
5	Ground	→	5	Ground
6	Ground			
7	n/c			
8	n/c			
9	Chassis			

n/c = Not Connected

Avid (Pinnacle) FXDeko II Character Generator

The Synergy control panel connects to the FXDeko II CG via the remote port on the Synergy control panel, and the COM port on the rear of the FXDeko II CG chassis.

Cable connections in the following table refer only to those between the Synergy control panel and the FXDeko II CG. Other cable connections present on the FXDeko II CG can be found in the Avid (Pinnacle) documentation.

Synergy Q/MD-to- Avid (Pinnacle) FXDeko II CG Wiring Chart

Synergy Control Panel			FXDeko II CG		
Remote Port	Signal			COM Port	Signal
1	Chassis				
2	Tx	→		2	Rx
3	Rx	→		3	Tx
4	n/c				
5	Ground	→		5	Ground
6	Ground				
7	n/c				
8	n/c				
9	Chassis				

n/c = Not Connected

Vizrt Viz|Trio Character Generator

The Synergy control panel connects to the Vizrt Viz|Trio Character Generator via the remote port on the Synergy control panel, and the COM port on the rear of the Viz|Trio Client system.

Cable connections in the following table refer only to those between the Synergy control panel and the Viz|Trio Client system. Other cable connections present on the Vizrt Viz|Trio Character Generator or the Viz|Trio Client system can be found in the Vizrt documentation.

Synergy Q/MD-to- Vizrt Viz|Trio Trio Client Wiring Chart

Synergy Control Panel			Vizrt Viz|Trio Client		
Remote Port	Signal			COM Port	Signal
1	Chassis				
2	Tx	→		2	Rx
3	Rx	→		3	Tx
4	n/c				
5	Ground	→		5	Ground
6	Ground				
7	n/c				
8	n/c				
9	Chassis				

Communications Setup

This section will provide instructions for setting up the Character Generator to communicate with the Synergy switcher.

The following topics are discussed in this section:

- Setting up the Switcher
- Setting up the Character Generator

Setting up the Switcher

In order to have the Synergy Q/MD switcher communicate with a Character Generator, the remote port on the control panel that the Character Generator is connected to must be set up to communicate with the particular Character Generator you have connected.

Use the following procedure to configure a Remote port on the control panel to connect with a Character Generator:

1. Navigate to the **Communications Menu 1-2** as follows:

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

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

```
┌─────────────────────────────────────────────────────────────┐
│ Communications (1-2)                                          │
│                                          Com Port: ▐REMOTE 1 (R1)│
│ This  menu  lets  you set                          ↓REMOTE 2 (R2)│
│ up  what  each of the com                                     │
│ ports are used for.                                ↑Monitor Wall│
│                                           Device:  ▐CharGen    │
│                                                               │
│                                                               │
│                                                               │
│                                                               │
├─────────────┬─────────────┬─────────────┬──────────┬─────────┤
│             │   Select    │             │  Custom  │  Extra  │
│    Type     │   Device    │Com Settings │ Com Type │ Devices │ Options │
└─────────────┴─────────────┴─────────────┴──────────┴─────────┘
```

Communications — Type Menu

3. Assign a Remote Com Port to the Character Generator as follows:

    - Use the **Com Port** knob to select the remote port on the Synergy Q/MD switcher that is connected to the Character Generator.

✎   **Note**   You must use **Remote 5** with a **RJ-12 to DB9 Male Adaptor** to connect a remote Aux Panel to the **Synergy 1** control panel. If you intend to connect a Remote Aux Panel to the switcher, you will have to leave the Remote 5 port open.

    - Use the **Device** knob to select **CharGen**.

4. Press **Select Device** to display the **Select Device Menu**.


```
┌─────────────────────────────────────────────────────────────────┐
│ Communications (1-2)                          Com Port: REMOTE 1 (R1) │
│                                                                    │
│ This  menu  lets  you set                                          │
│ up    which  devices  are                                          │
│ controlled   by    which              Device:         Chyron       │
│ ports.                                               ↓Inscriber     │
│                                                                    │
│                                                                    │
│          Select                              Custom      Extra     │
│  Type    Device    Com Settings  Com Type    Devices     Options   │
└─────────────────────────────────────────────────────────────────┘
```
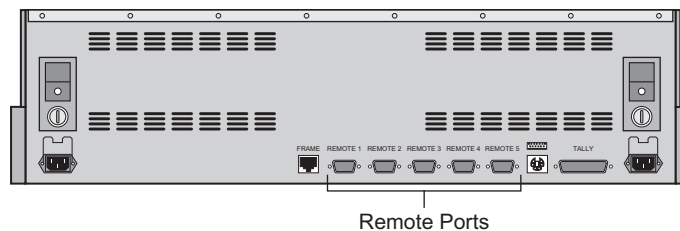
Communications — Select Device Menu

5. Assign a specific Character Generator to the Remote Com Port as follows:

   • Use the **Com Port** knob to select the Remote Com Port that the desired Character Generator is connected to.

   • Use the **Device** knob to select the type of Character Generator that is connected to the port. You can select between the following:

     ~ **Inscriber** — Use this option to assign a **Leitch (Inscriber) Inca Character Generator** to the selected com port. Refer to the section "**Leitch (Inscriber) Inca Character Generator**" on page 21–4 for details.

     ~ **Chyron** — Use this option to assign a **Chyron Duet LEX** or **HyperX Character Generator** to the selected com port. Refer to the section "**Chyron Duet LEX and HyperX Character Generators**" on page 21–11 for details.

     ~ **Deko** — Use this option to assign an **Avid (Pinnacle) FXDeko II Character Generator** to the selected com port. Refer to the section "**Avid (Pinnacle) FXDeko II Character Generator**" on page 21–13 for details.

     ~ **Vizrt** — Use this option to assign a **Vizrt Viz|Trio Character Generator** to the selected com port. Refer to the section "**Vizrt Viz|Trio Character Generator**" on page 21–14 for details.

6. Press **Com Settings** to display the **Com Settings Menu**.


```
┌─────────────────────────────────────────────────────────────────┐
│ Communications (1-2)                          Com Port: Chyron  (R1) │
│                                                                    │
│ This  menu  lets  you set                                          │
│ up    your   com    port                                           │
│ parameters.                              Baud:         9600        │
│                                                      ↓19200         │
│                                                                    │
│                                          Parity:       NONE        │
│                                                      ↓ODD           │
│          Select                              Custom      Extra     │
│  Type    Device    Com Settings  Com Type    Devices     Options   │
└─────────────────────────────────────────────────────────────────┘
```

Communications — Com Settings Menu

7. Set the communications protocols for the Character Generator as follows:

   • Use the **Com Port** knob to select the Character Generator you are setting the communications settings for.

   • Use the **Baud** knob to select the baud rate for the Character Generator. Refer to the section "**Setting up the Character Generator**" on page 21–10 for the specific settings for your Character Generator.

   • Use the **Parity** knob to select the parity, **NONE**, **ODD**, or **EVEN** for the specific Character Generator. Refer to the section "**Setting up the Character Generator**" on page 21–10 for the specific settings for your Character Generator.

8. Press **Com Type** to display the **Com Type Menu**.

```
Communications (1-2)
                                            Com Port: Chyron   (R1)
This  menu  lets  you set
up your com port types.

                                               Type:  RS-232
                                                     ↓RS-422




           Select                           Custom       Extra
   Type    Device    Com Settings   Com Type  Devices    Options
```

Communications — Com Type Menu

9. Select the type of serial communication that will be used to communicate with the Character Generator as follows:

   • Use the **Com Port** knob to select the Character Generator you want to set the communication type for.

   • Use the **Type** knob to select the type of serial communications (RS-232 or RS-422) for the selected port. Refer to the section "**Setting up the Character Generator**" on page 21−10 for the specific settings for your Character Generator.

✎	**Note**	**Network UDP** and **Network TCP** are not supported for this device type.

✎	**Note**	If you are setting up a **Chyron Duet LEX** or **HyperX Character Generator**, there are extra options that you will have to set up. Refer to the section "**Chyron Duet LEX and HyperX Extra Options**" on page 21−12 for more information.

✎	**Note**	The **Synergy 1** allows you to select **RS-232 Null** and **RS-422 Null**, as well as the standard **RS-232** and **RS-422**. Refer to the section "**Setting up the Character Generator**" on page 21−10 for information on when to use these settings.

10. Press **HOME** to display the **Installation Change Confirmation Screen**.

11. Accept or reject the changes you have made as follows:

   • Press **Confirm** to accept the changes.

   • Press **Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure for setting up the communications with the Character Generator, next you will have finish setting up the Character Generator to communicate with the Synergy Q/MD switcher, and then set up the BNC inputs that you have connected to the Character Generator.

Setting up the Character Generator

In order to have the Synergy Q/MD switcher communicate with a Character Generator, the Character Generator you are connecting to the switcher must be set up to communicate and accept commands from the switcher.

Leitch (Inscriber) Inca Character Generator

Use the following information to configure and connect your Leitch (Inscriber) Inca Character Generator to your Synergy Q/MD switcher:

	Note	If you are connecting a **Leitch Inca Character Generator** to the **Synergy 1 Switcher** using an **RS-232 cable**, you must select **RS-232 Null** as the Communication Type.

- Use the following communications settings when connecting the Leitch (Inscriber) Inca Character Generator to the Synergy Q/MD switcher:

Synergy Q/MD -to- Inscriber Inca CG Communication Settings

Setting	Value
Transmission Standard	**RS-232**
Baud Rate	**38400**
Parity	**Odd**
Data Bits	**8**
Stop Bits	**1**

Synergy 1 Q/MD -to- Inscriber Inca CG Communication Settings

Setting	Value
Transmission Standard	**RS-232 Null**
Baud Rate	**38400**
Parity	**Odd**
Data Bits	**8**
Stop Bits	**1**

- Use the following procedure to configure the **Inscriber AutoCG** software:

	Note	Refer to your Leitch (Inscriber) documentation for additional information.

1. Click the **Preference** button in the AutoCG window to display the **Preferences Window**.

2. Click on the **General Tab**.

3. Select the **Serial Port** option in the **Receive Command From Area**.

4. Configure the serial port as follows:

   - **Com Port** — This must be set to the COM port that is connected to the Synergy Q/MD switcher.

   - **Baud Rate** — This must be set to **38400**.

- **Data Bits** — This must be set to **8**.
- **Parity** — This must be set to **None**.
- **Stop Bits** — This must be set to **1**.

⚠ **Important** | You can have only one INS template file per folder on your Inscriber computer. If you have more than one, the system will ignore the newest INS file(s).

5. Configure the **Strata Layers** as follows:

- Layer 1: Quartz
- Layer 2: IncaCG
- Layer 3: Automation CG Max (AutoCG)
- Layer 4: Automation CG Max (AutoCG)

Chyron Duet LEX and HyperX Character Generators

Use the following information to configure and connect your Chyron Duet LEX or HyperX Character Generator to your Synergy Q/MD switcher:

📝 **Note** | If you are connecting a **Chyron Duet LEX** or **HyperX Character Generator** to the **Synergy 1 Switcher** using an **RS-232 cable**, you must select **RS-232 Null** as the Communication Type.

- Use the following communications settings when connecting the Chyron Duet LEX or HyperX CG to the Synergy Q/MD switcher:

Synergy Q/MD -to- Chyron CG Communication Settings

Setting	Value
Transmission Standard	RS-232
Baud Rate	9600
Parity	None
Data Bits	8
Stop Bits	1

Synergy 1 Q/MD -to- Chyron Communication Settings

Setting	Value
Transmission Standard	RS-232 Null
Baud Rate	9600
Parity	None
Data Bits	8
Stop Bits	1

Chyron Duet LEX and HyperX Extra Options

The **Playtime Extra Option** enables you to set a duration for animation playout for the Chyron Duet LEX and HyperX devices. This will prevent the Synergy Q/MD switcher from timing-out while an animation is playing.

Use the following procedure to set up the **Extra Options** for the Chyron Duet LEX or HyperX:

1. Navigate to the **Communications Menu 1-2** as follows:

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

2. Press **Extra Options** to display the **Extra Options Menu**.

3. Assign a **Playtime Duration** as follows:

    • Use the **Com Port** knob to select the remote port that the Chyron Duet LEX is connected to.

    • Use the middle knob to select **Playtime**.

    • Use the **Value** knob to set a maximum duration for playing an animation in seconds.

Note | You can set a playtime between **10** and **120** seconds.

This concludes the procedure to set up the **Extra Options** for the Chyron Duet LEX or HyperX.

Chyron Software Setup

The Synergy Q/MD switcher communicates with the Chyron Character Generator using Chyron Lyric™ software and the Ross Video-II Translator plug-in. The plug-in intercepts all commands from the serial port and passes the data to the Lyric software for processing.

This information is current for Synergy Q/MD software version **9.1 MD**, or higher, used in conjunction with the Chyron Duet LEX and Lyric software version 5.23 and the Chyron HyperX with Lyric software version 5.22.

Note | Refer to your Chyron documentation for additional setup information.

Use the following procedure to set up the **Chyron** software for the Ross Video - II Translator plug-in:

1. Ensure that the Ross Video - II Translator plug-in file **II Translator.ocx** is copied to the Plug-ins folder located in the Lyric main directory.

2. Ross Video recommends selecting **Air Channel** for each video processing board installed:

    • Click **Config** from the Lyric menu bar.

    • Select the **Duet Configuration** option.

    • Select the **Configure Board Use** tab.

    • Select **Air Channel** for each video processing board.

    • Click **OK**.

3. Ensure the Telnet option is enabled for the Ross Video II translator plug-in to communicate with the Lyric software and the Synergy Q/MD switcher:

    • Select **Config** from the Lyric menu bar.

    • Select the **Intelligent Interface Setup** option.

- Select **Enable Telnet** from the **Intelligent Interface Setup** dialog.
- Click **OK**.

4. Enable the Ross Video II translator plug-in as follows:

- Select **File** from the Lyric menu bar.
- Select **Ross Video - II translator** from the file list.
- Click **Run**.

This concludes the procedure to set up the **Chyron** software for the Ross Video - II Translator plug-in.

Avid (Pinnacle) FXDeko II Character Generator

Use the following information to configure and connect your FXDeko II Character Generator to your Synergy Switcher:

Note	If you are connecting an **FXDeko II Character Generator** to the **Synergy 1 Switcher** using an **RS-232 cable**, you must select **RS-232 Null** as the Communication Type.

- Ensure that the **Unicode** check box is cleared (unchecked) on the FXDeko II Character Generator. This check box may be automatically selected (checked) when a Newsroom automation system is used with the FXDeko II Character Generator.

- Use the following communications settings when connecting the FXDeko II CG to the Synergy Q/MD switcher:

Synergy Q/MD-to- Avid (Pinnacle) FXDeko II CG Communication Settings

Setting	Value
Transmission Standard	RS-232
Baud Rate	9600
Parity	None
Data Bits	8
Stop Bits	1

Synergy 1 Q/MD -to- Avid (Pinnacle) FXDeko II CG Communication Settings

Setting	Value
Transmission Standard	RS-232 Null
Baud Rate	9600
Parity	None
Data Bits	8
Stop Bits	1

Note	Ensure that the Automation feature is set up for your FXDeko II to enable communication with the Synergy switcher. Refer to your Avid documentation for details on enabling this feature.

Vizrt Viz|Trio Character Generator

Use the following communications settings to configure and connect the Viz|Trio Client system to the Synergy Q/MD switcher:

Synergy Q/MD-to- Vizrt Viz|Trio CG Communication Settings

Setting	Value
Transmission Standard	RS-232
Baud Rate	9600
Parity	None
Data Bits	8
Stop Bits	1

Synergy 1 Q/MD -to- Vizrt Viz|Trio CG Communication Settings

Setting	Value
Transmission Standard	RS-232 null
Baud Rate	9600
Parity	None
Data Bits	8
Stop Bits	1

The Synergy Q/MD switcher communicates with the Vizrt Viz|Trio Character Generator using the Viz|Trio Client system and the **Intelligent Interface**.

This information is current for Synergy Q/MD software version **6**, or higher, used in conjunction with the Viz|Trio Client system software version 2.5. Refer to your Vizrt Viz|Trio documentation for additional setup information.

Use the following procedure to set up the **Intelligent Interface** for the Viz|Trio Client system to communicate with the Synergy Q/MD switcher:

1. Ensure the Vizrt Viz|Trio Character Generator is set up.

2. In the Vizrt Viz|Trio software, navigate to the **Configuration Menu**.

3. From the **Configuration Menu**, select **External Interfaces** to display the **External Interfaces** dialog.

4. Select the **Intelligent Interface** tab.

5. Set the communication settings as follows:

   • **Com Port** — Select the Com Port on the Viz|Trio Client system that is connected to the Synergy control panel.

   • **Baud Rate** — Select **9600** for the baud rate.

   • **Show Path** — Select the folder the Synergy Q/MD switcher will load from the **Remote Control Menu**.

6. Save your changes.

This concludes the procedure to set up the **Intelligent Interface** for the Viz|Trio Client system to communicate with the Synergy Q/MD switcher.

Setting up Character Generator BNCs

The **CG Setup Menu** allows you to associate a Character Generator input with a particular Character Generator communication port.

⚠	**Important**	You must have a Character Generator set up on the Synergy Q/MD switcher before you can assign a BNC to that device. Refer to the section "**Setting up the Switcher**" on page 21–7 for more information on setting up Character Generator communications.

Use the following procedure to assign the Character Generator to a specific BNC input:

1. Navigate to the **BNC Menu 1-3** as follows:

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

2. Press **BNC Type** to display the **BNC Type Menu**.

```
BNC (1-3)
                                                        BNC:  BNC C01 (C01)
Use    this    menu   to   BNC:        BNC C01   (C01)        ↓BNC C02 (C02)
associate a  function or   Type:       CharGen
a  device type with a BNC  Tally:      1                            ↑Robotic Cam
input.                     Auto Key:   Black          Type:          CharGen
                           Video Mode: 1080i 59.94                   Video
                                                                ↑1080i 60
                                                       Video    1080i 59.94
                                                       Format:  ↓1080i 50

     BNC Names     BNC Type        Tally         Alpha      Auto Key    Router
                                                             Setup      Setup
```

BNC — Type Menu

3. Assign a BNC to the Character Generator Video, or Fill, signal as follows:

    •   Use the **BNC** knob to select the BNC that the Video, or Fill, from the Character Generator is connected to.

    •   Use the **Type** knob to select **CharGen**.

    •   Use the **Video Format** knob to select the native video format of the Character Generator output.

✎	**Note**	Assigning a **Video Format** to an **Input BNC**, that is different than the native video format that the switcher is operating in, can only be used for passing non-native video formats out an **Aux Bus**. Video formats may be converted to the operating video format using **Smart Conversion**. Refer to Chapter 13 "**SmartConversion™**" for more information.

4. Navigate to the **CG Setup Menu** as follows:

    •   Press **MORE** ⇨ **Still/CG Setup**.

BNC — CG Setup Menu

5. Assign a specific Character Generator to the CharGen BNC as follows:

✏️ **Note**   For the Leitch Inca, Video and Alpha signals are fed from the **SDI** and **SDI Key** BNCs in the **Video Outputs** area on the Inca CG to the BNC inputs on the Synergy frame.

- Use the **BNC** knob to select the BNC you want to assign the specific Character Generator to.

- Use the **CharGen** knob to select the Character Generator you want to assign to the BNC.

- Use the **Frame Buf** knob to select the channel output of the Character Generator.

  ~ For the **Chyron Duet LEX** and **HyperX**, you must ensure the frame buffer matches the video processing board (VPB) for the Chyron CG connected to the selected BNC. Refer to your Chyron documentation for more information.

  ~ For the **Avid (Pinnacle) FXDeko II**, this knob is labeled as **Channel** and only channels defined as Program channels on the Character Generator should be selected.

  ~ For the **Vizrt Viz|Trio**, this knob is labeled as **Channel** and is fixed to Channel 1.

✏️ **Note**   The **Frame Buf** option is not available for the Leitch Inca Character Generator.

6. Navigate to the **BNC Type Menu** as follows:

- Press **MORE** ⇨ **MORE** ⇨ **BNC Type**.

BNC — Type Menu

7. Assign a BNC to the Character Generator Alpha signal as follows:

    •   Use the **BNC** knob to select the BNC that the Alpha from the Character Generator is connected to.

    •   Use the **Type** knob to select **Alpha**.

    •   Use the **Video Format** knob to select the native video format of the Character Generator output.

8. Press **Alpha** to display the **Alpha Menu**.

```
BNC (1-3)                                            BNC C01 (C01)
                                              Alpha: BNC C02 (C02)
Use  this  menu to set up  BNC:     BNC C02  (C02)  ↓BNC C03 (C03)
the alpha modes.           Type:    Alpha
                           Tally:   2
                           Alpha:   Unshaped          Mode:   Unshaped
                           Video Mode: 1080i 59.94             Shaped



                                              Auto Key      Router
   BNC Names     BNC Type     Tally     Alpha   Setup        Setup
```
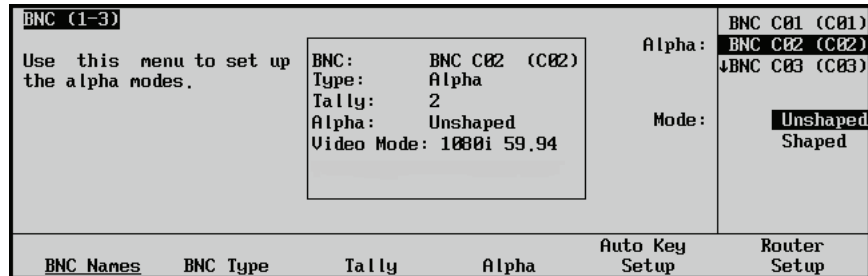
BNC — Alpha Menu

9. Define the Character Generator Alpha as shaped or unshaped as follows:

    •   Use the **Alpha** knob to select the BNC that the Alpha from the Character Generator is connected to.

    •   Use the **Mode** knob to select the desired Alpha mode. You can choose between the following:

Operating Tip

> **Shaped Alphas** are used with Character Generator to cut very precise holes for the Video to fill.

    ~   **Unshaped** — Select **Unshaped** to have the switcher perform a *multiplicative Key*. With an unshaped Alpha, the hole is cut based on the gradient values of the Alpha. Shades of gray are translated into transparency levels, giving the Character Generator video a soft edge. Unshaped Alphas can also be considered true Linear Alphas.

    ~   **Shaped** — Select **Shaped** to have the switcher perform an *additive Key*. With a shaped Alpha, the hole is cut based on the monochrome value of the Alpha. Shades of gray are translated into either white or black, giving the Character Generator video a hard edge.

10. Press **Auto Key Setup** to display the **Auto Key Setup Menu**.

```
BNC (1-3)                                           ↑GlobalStore 3
                                              BNC:   BNC C01 (C01)
Use    this    menu    to  BNC:     BNC C01  (C01) ↓BNC C02 (C02)
associate  an  alpha  key  Type:    Alpha
input   with  a  primary   Tally:   2              ↑BNC C01 (C01)
(fill) video input.        Alpha:   Unshaped Alpha: BNC C02 (C02)
                           Video Mode: 1080i 59.94 ↓BNC C03 (C03)



                                              Auto Key      Router
   BNC Names     BNC Type     Tally     Alpha   Setup        Setup
```
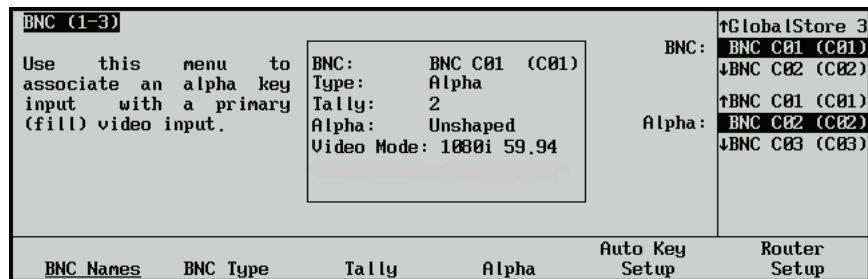
BNC — Auto Key Setup Menu

11. Associate the Character Generator Video with the Alpha as follows:

- Use the **BNC** knob to select the BNC that is assigned to the **Video** of the Character Generator.

- Use the **Alpha** knob to select the BNC that is assigned to the **Alpha** of the Character Generator.

12. Press **HOME** to display the **Installation Change Confirmation Screen**.

13. Accept or reject the changes you have made as follows:

- Press **Confirm** to accept the changes.

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

This completes the procedure for assigning a Character Generator to a BNC on the Synergy Q/MD switcher.

Character Generator Custom Controls

A custom control button can be programmed with a macro that:

- changes a folder, tag or field

- recalls a Character Generator (CG) page

- selects a Character Generator (CG) effect file

- runs an effect

- changes the assignment tag in the Character Generator page

You must have the Character Generator Control option installed in order to control a Character Generator from the Synergy Q/MD switcher. Refer to the section "**Setting up the Switcher**" on page 21–7 for information on setting up a Character Generator.

Use the following procedure to create a custom control macro with CG commands:

1. Navigate to the **Custom Controls Menu** as follows:

   - Press **HOME** ⇨ **Custom Controls**.

```
┌─────────────────────────────────────────────────────────────┐
│ Custom Controls                                               │
│                                              Bank:  Bank 1 (1)│
│ Custom Control buffers .53% full                              │
│                                                   ↑ Custom08 # 8│
│ Selected: Bank 1 Button 9 [Custom09]         Button: Custom09 # 9│
│                                                   ↓ Custom10 #10│
│ Custom Control Legend:                                        │
│         # = normal custom control button                      │
│                                                               │
│                                                               │
│   Start        Modify           Start Relative  Default       │
│ Recording       Name              Recording    All Names  Delete Macro│
└─────────────────────────────────────────────────────────────┘
```

Custom Controls Menu

2. Select the custom control button you want to record to as follows:

   - Use the **Bank** knob to select the custom control bank you want to record the custom control to.

   - Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*) or the "at sign" (@) in the list have already been programmed.

✓ **Operating Tip**

> As a recommendation, keep special functions grouped together on your *physical* custom control buttons.

3. Navigate to the Insert CharGen Menu as follows:

   - Press **Start Recording** ⇨ **Insert Special** ⇨ **CharGen**.

4. Add a Character Generator command to the custom control as follows:

   - Use the top knob to select the Character Generator on the Synergy control panel remote port that you want to create a custom control for.

   - Use the middle knob to select the command you want sent to the Character Generator. You can select between the following:

✎ **Note**

> Some commands may not be available for all Character Generators.

~ **Change Folder** — Select this option to assign a new directory path or folder to the Character Generator.

	Note	You must use the keyboard to enter the new path in the **Path**/**Folder** line. A standard keyboard can be attached to the PS/2 port at the back on the Synergy control panel.

- Use the keyboard the enter the new path or folder.

~ **Recall CG** — Select this option to recall a CG template.

	Important	You will only be able to recall Character Generator pages that have been stored with numerical names using the keypad.

- Use the keypad in the **Global Memory System Group** to select which template you want to recall.

~ **Run Effect** — Select this option to have the next Character Generator template listed in the **PV** taken to the **PGM** of the Character Generator.

- This option will be labeled as **Play Animatn** if you are using a Chyron Duet LEX Character Generator.

- This option is labeled as **Swap** if you are using a Pinnacle FXDeko II Character Generator.

~ **Change Tag** — Select this option to allow you to change the current text of a tag. The **Event** option will allow you select whether the tag you are changing is on the **PGM** or **PV** output of the Character Generator.

- Use the bottom knob to select the tag you want to change (**Tag #1** to **Tag #6**).

- Use the keyboard the enter the new tag text.

~ **Load Playlist** — Select this option to load a specific playlist on your Character Generator.

- Use the keyboard the enter the playlist path.

~ **Playlist Next** — Select this option to select the next playlist on your Character Generator.

~ **Playlist Prev** — Select this option to select the previous playlist on your Character Generator.

5. Press **Insert** to enter the Character Generator command into your custom control macro.

6. Press **UP ONE** to return to the **Custom Controls Recording Menu**.

7. Press **Finish Recording** to finish recording to the selected custom control.

This completes the procedure for creating a custom control macro with Character Generator commands.

Refer to chapter 10, "**Custom Controls**", for more information on custom controls.

Monitor Walls

In This Chapter

This chapter provides instructions for connecting, setting up and operating a Monitor Wall with your Synergy Q/MD switcher. Before you begin, ensure that the **Monitor Wall Interface** option is installed. If not, please contact **Ross Video** for details. Refer to Chapter 6, "**Software Upgrades and Options**" for instructions on verifying the status of installed options.

The following topics are discussed:

- Supported Monitor Walls
- Communications Connections
- Communications Setup
- Monitor Wall Under Monitor Display
- Monitor Wall Custom Controls
- Monitor Wall Operation

Supported Monitor Walls

The Synergy Series Switcher has been tested with a number of Monitor Walls to ensure the highest standard for compatibility and reliability. The following Monitor Walls are currently supported by your Synergy Q/MD switcher:

- **Miranda Kaleido-K2**
- **Miranda Kaleido-X**

Communications Connections

You can connect a number of Monitor Walls to your Synergy Q/MD switcher. The procedure for connecting the Monitor Wall will depend on the type of Monitor Wall you have. This section will provide general instructions for connecting up to **5** Monitor Walls to one of the Remote Ports on the back of the Synergy Q/MD control panel.

✎ **Note** | These instructions are provided as a guide, for specific information on the Monitor Wall you are connecting to the Synergy Q/MD switcher, refer to the documentation provided with the Monitor Wall.

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

- **Monitor Wall Interface** — This is the software option from Ross Video that allows your Synergy Q/MD switcher to control a Monitor Wall.

- **Interface Cable** — This is a 9-Pin cable with a 9-Pin, D-Type (DB9) male connector on one end, to connect to the remote port on the control panel, and a connector on the other end to connect to your Monitor Wall. Refer to the section "**Monitor Wall Interface Cable Pinouts**" on page 22–4 for information on the pin-outs and connector required for your Monitor Wall. Ross Video does not supply this cable.

Use the following procedure to connect a Monitor Wall to your Synergy Q/MD switcher:

1. Connect and secure the **9-Pin**, **Male**, end of the **Interface Cable** to one of the **Remote Ports** on the back of the Synergy control panel.

✎ **Note** | You must use **Remote 5** with a **RJ-12 to DB9 Male Adaptor** to connect a remote Aux Panel to the **Synergy 1** control panel. If you intend to connect a Remote Aux Panel to the switcher, you will have to leave the Remote 5 port open.

Synergy 2 Control Panel

Synergy 1 Control Panel

---

2. Connect and secure the other end of the cable to the appropriate port on the Monitor Wall. The suggested port for each supported Monitor Wall is listed below:

• **Miranda Kaleido-K2 and Kaleido-X Monitor Walls** — Connect the Interface cable to the COM port (1 or 2) on the computer with the Dispatcher™ software installed. Refer to the section "**Miranda Kaleido-K2 and Kaleido-X Cabling**" on page 22–4 for more information on cabling.

✎ **Note** | You must use RS-422 communication when connecting to a Synergy 1 Q/MD switcher. Therefore, you need an RS-232 - RS-422 converter between the COM port on the computer with the Dispatcher™ software and your Synergy 1 Q/MD switcher.

This completes the procedure for connecting a Monitor Wall to the Synergy Q/MD switcher. Refer to the section "**Communications Setup**" on page 22–6 for instructions on how to set up communications protocols on the Switcher, as well as on the Monitor Wall.

Monitor Wall Interface Cable Pinouts

Use the information in this section to connect the Interface Cable from the Synergy Q/MD switcher to the Monitor Wall.

Miranda Kaleido-K2 and Kaleido-X Cabling

The Synergy Q/MD switcher connects to the Miranda Kaleido-K2, and Kaleido-X, via the serial communications ports on the Synergy Q/MD switcher, and the COM 1 or COM 2 port on the Kaleido.

✎ **Note** | The Miranda Kaleido-K2 and Kaleido-X support both RS-422 or RS-232 communication depending on the COM port connected to your Synergy Q/MD switcher.

Cable connections in the following table refer only to those between the Synergy Q/MD switcher and the COM 1 port on the Kaleido. Other cable connections present on the Miranda Kaleido can be found in the Kaleido documentation.

Synergy Q/MD -to- Kaleido RS-232 Wiring Chart

Synergy Control Panel			Computer with Dispatcher	
Remote Port	**Signal**		**Com Port**	**Signal**
1	Chassis			
2	Tx	→	3	Rx
3	Rx	→	2	Tx
4	n/c			
5	Ground	→	5	Ground
6	Ground			
7	n/c			
8	n/c			
9	Chassis			

Cable connections in the following table refer only to those between the Synergy Q/MD switcher and the COM 2 port on the Kaleido. Other cable connections present on the Miranda Kaleido can be found in the Kaleido documentation.

Synergy Q/MD -to- Kaleido RS-422 Wiring Chart

Synergy Control Panel				Computer with Dispatcher	
Remote Port	Signal			Com Port	Signal
1	Chassis				
2	RxA (RX-)	→		8	TxA (Tx-)
3	TxB (Tx+)	→		7	RxB (Rx+)
4	n/c				
5	Ground	→		1	Ground
6	Chassis				
7	RxB (Rx+)	→		3	TxB (Tx+)
8	TxA (Tx-)	→		2	RxA (Rx-)
9	Chassis				

The Synergy control panel connects to the computer with the Dispatcher software via the remote ports on the Synergy control panel, and the COM ports (1 or 2) on the computer with the Dispatcher software installed.

The Miranda Kaleido-K2 Port Number must be set to **13000** in the Synergy **Communications Menu**. Refer to the section "**Setting up the Monitor Wall**" on page 22–9 for the procedure to setup communications for a Monitor Wall device.

Communications Setup

Setting up the Switcher

In order to have the Synergy Q/MD switcher communicate with a Monitor Wall, the remote port on the control panel that the Monitor Wall is connected to must be set up to communicate with the particular Monitor Wall you have connected.

Use the following procedure to configure a Remote port on the control panel to connect with a Monitor Wall:

1. Navigate to the **Communications Type Menu** as follows:

    • Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **Communications** ⇨ **Type**.

    ```
    Communications (1-2)                          Com Port:  REMOTE 1 (R1)
                                                            ↓REMOTE 2 (R2)
    This  menu  lets  you set
    up  what  each of the com                               ↑Serial Tally
    ports are used for.                            Device:   Monitor Wall



                     Select                         Custom      Extra
         Type        Device    Com Settings  Com Type  Devices   Options
    ```

    Communications — Type Menu

2. Assign a com port to the Monitor Wall as follows:

    • Use the **Com Port** knob to select the remote port on the Synergy Q/MD switcher that is connected to the Monitor Wall.

> ✎ **Note** You must use **Remote 5** with a **RJ-12 to DB9 Male Adaptor** to connect a remote Aux Panel to the **Synergy 1** control panel. If you intend to connect a Remote Aux Panel to the switcher, you will have to leave the Remote 5 port open.

    • Use the **Device** knob to select **Monitor Wall**.

3. Press **Select Device** to display the **Select Device Menu**.

    ```
    Communications (1-2)                          Com Port:  REMOTE 1 (R1)
    This  menu  lets  you set
    up  which  devices  are
    controlled  by  which                          Device:         Kaleido
    ports.



                     Select                         Custom      Extra
         Type        Device    Com Settings  Com Type  Devices   Options
    ```

    Communications — Select Device Menu

4. Assign a specific Monitor Wall to the Remote Com Port as follows:

- Use the **Com Port** knob to select the Remote Com Port that the desired Monitor Wall is connected to.

- Use the **Device** knob to select the type of Monitor Wall that is connected to the port. You can select between the following:

  ~ **Kaleido** — Use this option to assign a **Miranda Kaleido-K2 or Kaleido-X Monitor Wall** to the selected com port. Refer to the section "**Miranda Kaleido-K2**" on page 22–9 or the section "**Miranda Kaleido-X**" on page 22–11 for interface specifics.

5. Press **Com Settings** to display the **Com Settings Menu**.

```
Communications (1-2)
                                        Com Port:  Kaleido  (R1)
This   menu   lets  you set
up    your    com    port                          ↑19200
parameters.                                 Baud:   38400
                                                   ↓57600

                                          Parity:    NONE
                                                   ↓ODD

              Select                     Custom     Extra
     Type     Device   Com Settings  Com Type  Devices    Options
```

Communications — Com Settings Menu

6. Set the communications protocols for the Monitor Wall as follows:

- Use the **Com Port** knob to select the Monitor Wall port you are setting the communications settings for.

- Use the **Baud** knob to select the baud rate for the Monitor Wall.

- Use the **Parity** knob to select the parity, **NONE**, **ODD**, or **EVEN** for the Monitor Wall.

7. Press **Com Type** to display the **Com Type Menu**.

```
Communications (1-2)
                                        Com Port:  Kaleido  (R1)
This   menu   lets  you set
up your com port types.
                                            Type:   RS-232
                                                   ↓RS-422




              Select                     Custom     Extra
     Type     Device   Com Settings  Com Type  Devices    Options
```

Communications — Com Type Menu

8. Select the type of serial communications that will be used to communicate with the Monitor Wall as follows:

- Use the **Com Port** knob to select the Monitor Wall you want to set the communications type for.

- Use the **Type** knob to select the type of serial communications (**RS-232**, or **RS-422**) for the selected port.

✎ **Note**   You must select RS-422 when connecting to a **Synergy 1**. Refer to the section "**Setting up the Monitor Wall**" on page 22–9 for information on these settings.

📝	**Note**	**Network UDP** and **Network TCP** are not supported for this device type.

9. Press **MORE** to display the **Communications Menu 2-2**.

10. Press **Mon Wall Setting** to display the **Mon Wall Setting Menu**.

```
Communications (2-2)
                                              Com Port: Kaleido  (R1)

                                          Monitor Wall:    Device 1
        IP Address:                                       ↓Device 2
        [█  .   .   .      ]
        Port Number(Fixed):
        [13000 ]                                          IP Address
                                                          Port Number
     Mon Wall     Device
      Setting     Network
```

Communications — Mon Wall Setting (IP Address) Menu

11. Assign the **IP Address** as follows:

📝	**Note**	For the Miranda Kaleido-K2 Monitor Wall, you must enter the **IP Address** of the Monitor Wall. Ensure that the Miranda Kaleido-K2 Monitor Wall is connected to the same network as the computer with the Dispatcher software.

• Use the **Device** knob to select the com port the Dispatcher Computer is connected to.

• Use the **Monitor Wall** knob to select the specific Monitor Wall connected to the Dispatcher Computer that you want to control.

• Use the knob to select **IP Address**.

• Enter the IP Address of the specific Monitor Wall you want to control from the selected Com Port. Use the keypad in the **Global Memory System** group or a PS/2 keyboard, to enter the IP Address. If you use the keypad, you must press **ENTER** after entering each portion of the address as there is no decimal (.) key.

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

```
Communications (1-2)
                                              Com Port: Kaleido  (R1)

                                          Monitor Wall:    Device 1
        IP Address:                                       ↓Device 2
        [  .   .   .      ]
        Port Number(Fixed):                               IP Address
        [█3000 ]                                          Port Number

                Select                        Custom      Extra
      Type      Device    Com Settings  Com Type  Devices  Options
```

Communications — Mon Wall Setting (Port Number) Menu

12. Assign the Port Number of the Monitor Wall connected to the Synergy Q/MD switcher as follows:

- Use the **Device** knob to select the com port the Dispatcher Computer is connected to.

- Use the **Monitor Wall** knob to select the specific Monitor Wall connected to the Dispatcher Computer that you want to control.

- Use the knob to select **Port Number**.

✎	Note	The **Port Number** is set to **13000** by default. Refer to the documentation for your specific Monitor Wall to determine the correct Port Number for your device.

- Enter the Port Number of the specific Monitor Wall you want to control from the selected Com Port. You can enter the Port Number using the keypad in the **Global Memory System** group, or a PS/2 keyboard.

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

13. Press **HOME** to display the **Installation Change Confirmation Screen**.

14. Accept or reject the changes you have made as follows:

- Press **Confirm** to accept the changes.

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

This completes the procedure to configure a Monitor Wall communication port for a Monitor Wall, next you will have finish setting up the Monitor Wall to communicate with the Synergy Q/MD switcher, and then set up the BNC inputs that you have connected to the Monitor Wall.

Setting up the Monitor Wall

In order to have the Synergy Q/MD switcher communicate with a Monitor Wall, the Monitor Wall you are connecting to the switcher must be set up to communicate and accept commands from the switcher.

Miranda Kaleido-K2

Use the following information to configure and connect a Miranda Kaleido-K2 Monitor Wall to your Synergy Q/MD switcher:

⚹	Important	You must have a computer with the Dispatcher™ software properly installed in order for the Synergy Q/MD switcher to communicate with the Miranda Kaleido-K2 Monitor Wall. The Dispatcher software is the gateway program that enables the serial-TCP/IP communication between the Synergy Q/MD switcher and the Miranda Kaleido-K2. Refer to your Miranda documentation for more information.

The Miranda Kaleido-K2 Monitor Wall and the computer with Dispatcher software must be connected to the same network. Refer to your Miranda documentation for more information on connecting your devices to a network.

Use the following communications settings when connecting a Miranda Kaleido-K2 monitor wall to the Synergy Q/MD switcher. Ensure that the communication settings in the **SerialProperties.txt** file in the Dispatcher software match those you set on the Synergy Q/MD switcher.

Synergy Q/MD -to- Kaleido-K2 Communication Settings

Setting	Value
Transmission Standard	RS-232
Baud Rate	38400
Parity	NONE
Data Bits	8
Stop Bits	1

Synergy 1 Q/MD -to- Kaleido-K2 Communication Settings

Setting	Value
Transmission Standard	RS-422
Baud Rate	38400
Parity	NONE
Data Bits	8
Stop Bits	1

Use the following procedure to connect the Miranda Kaleido-K2 Monitor Wall to the Synergy Q/MD switcher:

1. Ensure that the Dispatcher software is properly installed on your computer. The computer must be connected to your network.

2. Ensure the serial port parameters in the Dispatcher **SerialPort.properties** file match those of the Synergy Q/MD switcher.

3. Ensure the Kaleido-K2 Layouts accept text modified using the Synergy Q/MD switcher as follows:

    •   Each text label you wish to modify for a Kaleido-K2 **Layout** must be set to **Dynamic** on the Kaleido-K2.

    •   Each text label you wish to modify for a Kaleido-K2 **Layout** must also have its controlling source set as **Gateway** in order to accept the modified text from the Synergy Q/MD switcher. Refer to the Miranda documentation for more information.

    •   Set the **Text Label Address** on the Kaleido-K2 and make a note of it. This address will be required when programming Synergy Q/MD switcher custom controls macros to modify text.

        For information on changing text using the Synergy Q/MD switcher, refer to the section "**Monitor Wall Operation**" on page 22–23.

This completes the procedure to connect the Miranda Kaleido-K2 Monitor Wall to the Synergy Q/MD switcher.

Miranda Kaleido-X

Use the following information when configuring a Miranda Kaleido-X Monitor Wall to communicate with the Synergy Q/MD switcher:

* To send a command to Load a Layout into a Kaleido-X, ensure that the argument in the Ross command includes the Room name. Room names are displayed in the Layouts section of the Miranda **XEdit** window.

  For example, **MCR/Layout3.kg2** where **MCR** represents the Room name, **Layout3** represents the Layout name, and **.kg2** is the file extension.

* Refer to the Miranda documentation for more information on configuring layouts and sending commands on your Kaleido-X Monitor Wall.

Configuring the Miranda Kaleido-X

Use the following procedure to configure the Miranda Kaleido-X to receive Load Layout commands from the Synergy Q/MD switcher:

1. From the Miranda **XEdit** window, select the **Systems** tab.

2. Drag the **Serial to TCP/IP Dispatcher** icon from the **Equipment List** to the **System List** located in the **System-Description** tab.

   This creates a new icon that represents the connection between the Miranda Kaleido-X and the Synergy Q/MD switcher.

3. When prompted, enter a name for the new icon. For example, **Load Layout from Ross**.

4. From the **Systems** area, select the **Interconnects** tab.

5. Drag a connection from the Miranda Kaleido-X icon to the **Load Layout from Ross** icon.

6. Configure the communication settings for the Miranda Kaleido-X com port connect to the Synergy Q/MD switcher as follows:

   * Click the edit link located between the Miranda Kaleido-X icon and the **Load Layout from Ross** icon.

   * Select the com port on the Miranda Kaleido-X that is connected to the Synergy Q/MD switcher.

   * Click the **Load Layout from Ross** icon.

   * In the **Properties** tag of the selected com port, set up the communication settings.

   * Ensure the settings on the Miranda Kaleido-X match those of the Synergy Q/MD switcher. Refer to the section "**Setting up the Switcher**" on page 22–6 for details.

7. Ensure the physical cabling between the Miranda Kaleido-X and the Synergy Q/MD switcher is correct.

This completes the procedure for configuring the Miranda Kaleido-X to receive Load Layout commands from the Synergy Q/MD switcher.

Monitor Wall Under Monitor Display

The Monitor Wall Under Monitor Display (UMD) allows the Synergy Q/MD switcher to send source names to the Monitor Wall via a serial tally interface.

✎ **Note** | The Kaleido software must be version 5.30 or higher to support the serial tally interface. All version of the Kalypso service are supported.

Ensure that the Serial Tally option is installed. If not, contact Ross Video for details.

Monitor Wall UMD Communications Connections

In order to properly connect the Monitor Wall UMD to the switcher, you will need the following:

- **UMD Interface Cable** — This is a 9-Pin cable with a 9-Pin, D-Type (DB9) male connector on one end, to connect to the **Serial Communications** port on the Synergy Q/MD switcher, and a connector on the other end to connect to your Monitor Wall. section "**Communications Connections**" on page 22–3 for information on the pinouts and connector required for your Monitor Wall. Ross Video does not supply this cable.

Monitor Wall UMD Interface Cable Pinouts

Use the information in this section to connect the UMD Interface Cable from the Synergy Q/MD switcher to the Monitor Wall.

Miranda Kaleido Cabling

The Synergy Q/MD switcher connects to the Miranda Kaleido-K2, and Kaleido-X, via the serial communications ports on the Synergy Q/MD switcher, and the COM 1 or COM 2 port on the Kaleido.

✎ **Note** | The Miranda Kaleido-K2 and Kaleido-X support both RS-422 or RS-232 communication depending on the COM port connected to your Synergy Q/MD switcher. Ross Video recommends that you use the RS-232 connection on the COM 1 port to connect to your switcher.

Cable connections in the following table refer only to those between the Synergy Q/MD switcher and the COM 1 port on the Kaleido. Other cable connections present on the Miranda Kaleido can be found in the Kaleido documentation.

Synergy Q/MD -to- Kaleido RS-232 Wiring Chart

Synergy Control Panel			Computer with Dispatcher	
Remote Port	Signal		Com Port	Signal
1	Chassis			
2	Tx	→	3	Rx
3	Rx	→	2	Tx
4	n/c			
5	Ground	→	5	Ground
6	Ground			
7	n/c			
8	n/c			
9	Chassis			

Cable connections in the following table refer only to those between the Synergy Q/MD switcher and the COM 2 port on the Kaleido. Other cable connections present on the Miranda Kaleido can be found in the Kaleido documentation.

Synergy Q/MD -to- Kaleido RS-422 Wiring Chart

Synergy Control Panel			Computer with Dispatcher	
Remote Port	Signal		Com Port	Signal
1	Chassis			
2	RxA (RX-)	→	8	TxA (Tx-)
3	TxB (Tx+)	→	7	RxB (Rx+)
4	n/c			
5	Ground	→	1	Ground
6	Chassis			
7	RxB (Rx+)	→	3	TxB (Tx+)
8	TxA (Tx-)	→	2	RxA (Rx-)
9	Chassis			

Monitor Wall UMD Communications Setup

Use the following procedure to configure a Synergy Q/MD switcher communications port to send UMD information to a Monitor Wall:

1. Navigate to the **Communications Menus** as follows:

   • Press **HOME** ⇨ **More** ⇨ **Setup** ⇨ **Installation** ⇨ **Communications**.

2. Press **Type** to display the **Device Type Menu**.

```
┌────────────────────────────────────────────────────────────────┐
│ Communications (1-2)                              Inscriber(R1)  │
│                                      Com Port: │ Contrib  (R2) │ │
│ This menu lets you set                         ↓REMOTE 3 (R3)    │
│ up what each of the com                                          │
│ ports are used for.                               ↑PIP-II        │
│                                        Device: │ Serial Tally │  │
│                                                ↓CharGen          │
│                                                                  │
│                                                                  │
│         Select                         Custom        Extra       │
│  Type   Device    Com Settings  Com Type Devices    Options      │
└────────────────────────────────────────────────────────────────┘
```

Device Type — Communications Menu 1-2

3. Assign a communications port to the Monitor Wall as follows:

    - Use the **Com Port** knob to select the communications port on the Synergy Q/MD switcher that is connected, or assigned, to the Monitor Wall.

    - Use the **Device** knob to select **Serial Tally**.

4. Press **Select Device** to display the **Device Selection Menu**.

```
┌────────────────────────────────────────────────────────────────┐
│ Communications (1-2)                              Inscriber(R1)  │
│                                      Com Port: │ Contrib  (R2) │ │
│ This menu lets you set                         ↓RemAux   (A1)    │
│ up which devices are                                             │
│ controlled by which                                              │
│ ports.                                 Device: │     Contrib │   │
│                                                                  │
│                                                                  │
│                                                                  │
│         Select                         Custom        Extra       │
│  Type   Device    Com Settings  Com Type Devices    Options      │
└────────────────────────────────────────────────────────────────┘
```

Device Selection — Communications Menu 1-2

5. Use the **Device** knob to select **Contrib**.

6. Press **Com Type** to display the **Com Type Menu**.

```
┌────────────────────────────────────────────────────────────────┐
│ Communications (1-2)                              Inscriber(R1)  │
│                                      Com Port: │ Contrib  (R2) │ │
│ This menu lets you set                         ↓RemAux   (A1)    │
│ up your com port types.                                          │
│                                                                  │
│                                           Type: │   RS-232 │     │
│                                                ↓RS-422          │
│                                                                  │
│                                                                  │
│         Select                         Custom        Extra       │
│  Type   Device    Com Settings  Com Type Devices    Options      │
└────────────────────────────────────────────────────────────────┘
```

Com Type — Communications Menu 1-2

7. Use the **Type** knob to select type of serial communications that is used to communicate with the Monitor Wall. You can choose between the following:

    - **RS-232** — Select this option if you are connecting to the COM 1 port on the Kaleido.

    - **RS-422** — Select this option if you are connecting to the COM 2 port on the Kaleido.

8. Press **Com Settings** to display the **Com Settings Menu**.

```
┌─────────────────────────────────────────────────────────┬─────────────────┐
│ Communications (1-2)                                      │ Inscriber(R1)   │
│                                              Com Port:    │ Contrib  (R2)   │
│ This menu lets you set                                    │ ↓RemAux   (A1)  │
│ up your com port                                          │                 │
│ parameters.                                               │ ↑19200          │
│                                              Baud:        │ 38400           │
│                                                           │ ↓57600          │
│                                                           │                 │
│                                              Parity:      │ NONE            │
│                                                           │ ↓ODD            │
├──────────────┬──────────────────────────────┬────────────┼─────────────────┤
│              │ Select                         │ Custom     │ Extra           │
│    Type      │ Device     Com Settings  Com Type │ Devices  │ Options         │
└──────────────┴──────────────────────────────┴────────────┴─────────────────┘
```

Com Settings — Communications Menu 1-2

9. Set the communications protocols for the Monitor Wall as follows:

    •   Use the **Baud** knob to select **38400**.

    •   Use the **Parity** knob to select **NONE**.

10. Press **Extra Options** to display they **Extra Options Menu.**

```
┌─────────────────────────────────────────────────────────┬─────────────────┐
│ Communications (1-2)                                      │ Inscriber(R1)   │
│                                              Com Port:    │ Contrib  (R2)   │
│ Protocol: Contrib                                         │ ↓RemAux   (A1)  │
│                                                           │                 │
│          Periodic Update Rate in Fields      Option:     │ Rate            │
│                                                           │ ↓Data Txfr      │
│                                                           │                 │
│                                              Value:       │ ( 26)           │
│                                                           │ Decimal         │
├──────────────┬──────────────────────────────┬────────────┼─────────────────┤
│              │ Select                         │ Custom     │ Extra           │
│    Type      │ Device     Com Settings  Com Type │ Devices  │ Options         │
└──────────────┴──────────────────────────────┴────────────┴─────────────────┘
```

Extra Options — Communications Menu 1-2

11. Set the data rate for the Monitor Wall as follows:

    •   Use the **Option** knob to select **Rate**.

    •   Use the **Value** knob to select **26**.

12. Set the data transfer for the Monitor Wall as follows:

    •   Use the **Option** knob to select **Data Txtr**.

    •   Use the **Value** knob to select **Complete**.

13. Set whether the switcher includes the initialization message as follows:

    •   Use the **Option** knob to select **Start**.

    •   Use the **Value** knob to select **None**.

14. Set how the switcher reports being at black as follows:

    •   Use the **Option** knob to select **At Black**.

    •   Use the **Value** knob to select **All Off**.

15. Press **HOME** to display the **Installation Change Confirmation Screen**.

16. Accept or reject the changes you have made as follows:

    •   Press **Confirm** to accept the changes.

    •   Press **Cancel** to exit the menus safely, without making any changes. The system
        returns to the previously stored settings.

This completes the procedure for configuring a Synergy Q/MD switcher communications port to send
UMD information to a Monitor Wall.

Monitor Wall Custom Controls

A custom control button can be programmed to load layouts, change input channels or dynamic text on a selected Monitor Wall.

✎ **Note** | Ensure that the **Monitor Wall Interface** option is installed and that the monitor wall you want to control is properly connected and configured with the Synergy Q/MD switcher.

The following custom controls are discussed in this section:

- Loading a Monitor Wall Layout
- Assigning Input Channels
- Modifying Dynamic Monitor Wall Text

Loading a Monitor Wall Layout

A Monitor Wall can have several different Layouts created, each with a variety of monitors and inputs. You can create a custom control macro that enables the Synergy Q/MD switcher to load a particular layout onto a selected Monitor Wall.

Use the following procedure to add a **Load Layout** macro to a Monitor Wall custom control:

1. Navigate to the **Custom Controls Menu** as follows:

   - Press **HOME** ⇨ **Custom Controls**.

```
Custom Controls (1-2)
                                              Bank:   Bank 1   (1)
Custom Control buffers .53% full

Selected: Bank 1 Button 9 [Custom09]                ↑ Custom08 # 8
                                             Button:  Custom09 # 9
Custom Control Legend:                              ↓ Custom10 #10
        # = normal custom control button



   Start         Modify            Start Relative   Default
 Recording        Name               Recording     All Names   Delete Macro
```

Custom Controls Menu

2. Select the custom control button you want to record to as follows:

   - Use the **Bank** knob to select the custom control bank you want to record the custom control to.

   - Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*****) or the "at sign" (@) in the list have already been programmed.

✓ **Operating Tip** | As a recommendation, keep special functions grouped together on your *physical* custom control buttons.

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

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

5. Press **Monitor Wall** to display the **Insert Monitor Wall Control Menu**.

Insert Monitor Wall Control Menu

6. Select the Monitor Wall you want to apply the **Load Layout** custom control to as follows:

    •   Use the **Monitor Wall** knob to select the Monitor Wall.

    •   Use the knob to select **Load Layout**.

7. Use a standard PS/2 keyboard to enter the Layout Name, including the file extension, in the **Layout** field of the **Insert Monitor Wall Control Menu**. If you do not specify a file extension, the Synergy switcher will automatically include the file extension ".kg2".

	Note	If you are using a Miranda Kaleido-X, the layout name must conform to the convention *Room Name*/*Layout Name*.kg2.

8. Press **Insert** to add this macro into the custom control.

9. Press **UP ONE** to return to the **Custom Controls Recording Menu**.

Custom Controls — Recording Menu

10. Press **Finish Recording** to finish recording to the selected custom control. The custom control button will stop flashing.

	Operating Tip	You can also press the flashing custom control button, rather than the **Finish Recording** button, to finish recording.

	Note	Any recorded custom control can be edited. Refer to Chapter 10, "**Custom Controls**" for more information.

This concludes the procedure to add a **Load Layout** macro to a Monitor Wall custom control.

Once your custom control buttons have been programmed, be sure to properly name them. Refer to Chapter 10, "**Custom Controls**" for more information on naming custom control buttons.

To play back your macro, press the custom control button on the control panel that you recorded the custom control macro to.

Assigning Input Channels

Each monitor in a Layout requires an input channel. The Synergy Q/MD switcher allows you to assign input channels to any monitor by adding an **Assign Channel** macro to a Monitor Wall custom control.

Use the following procedure to add an **Assign Channel** macro to a Monitor Wall custom control:

1. Navigate to the **Custom Controls Menu 1-2** as follows:

    •   Press **HOME** ⇨ **Custom Controls**.

```
Custom Controls (1-2)
                                              Bank:    Bank 1   (1)
Custom Control buffers .53% full
                                                     ↑ Custom08 #  8
Selected: Bank 1 Button 9 [Custom09]          Button:  Custom09 #  9
                                                     ↓ Custom10 #10
Custom Control Legend:
        # = normal custom control button


   Start        Modify              Start Relative  Default
   Recording     Name                Recording     All Names   Delete Macro
```

Custom Controls Menu

2. Select the custom control button you want to record to as follows:

    •   Use the **Bank** knob to select the custom control bank you want to record the custom control to.

    •   Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*) or the "at sign" (@) in the list have already been programmed.

✔ **Operating Tip** | As a recommendation, keep special functions grouped together on your *physical* custom control buttons.

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

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

5. Press **Monitor Wall** to display the **Insert Monitor Wall Control Menu**.

```
Insert Monitor Wall Control
                                           Monitor Wall:    Kaleido 1

                                                           Load Layout
                                                           Assign Chan
          Channel Name:                                    Modify Text
          [INPUT 07▮              ]
          Monitor Number:                                  Chan Name
          [12                     ]                        Mon Number

     Insert       Cancel
```

Insert Monitor Wall Control Menu

6. Select the Monitor Wall you want to apply the **Assign Channel** custom control to as follows:

    •   Use the **Monitor Wall** knob to select the Monitor Wall.

    •   Use the middle knob to select **Assign Chan**.

7. Select the Monitor you want to assign the input channel to as follows:

    •   Use the **Monitor Wall** knob to select the Monitor Wall.

    •   Use the bottom knob to select **Mon Number**.

    •   Use a standard PS/2 keyboard to enter the Monitor Number in the **Monitor Number Field** of the **Insert Monitor Wall Control Menu**.

	Note	On the Miranda Kaleido-K2, this is the number assigned to a particular monitor in the currently loaded Layout. Refer to the Miranda documentation for more information.

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

8. Assign the input channel for the selected Monitor as follows:

    •   Use the **Monitor Wall** knob to select the Monitor Wall.

    •   Use the bottom knob to select **Chan Name**.

    •   Ensure the **Monitor Number** is correct.

    •   Use a standard PS/2 keyboard to enter the Input Channel Name in the **Name Field** of the **Insert Monitor Wall Control Menu**.

9. Press **Insert** to add this macro into the custom control.

10. Press **UP ONE** to return to the **Custom Controls Recording Menu**.

```
Custom Controls (1-2)
                                                    Bank:   Bank 1    (1)
Recording...

Selected: Bank 1 Button 9 [Custom09]                       ↑ Custom08 # 8
                                                  Button:    Custom09 # 9
Custom Control Legend:                                     ↓ Custom10 #10
        # = normal custom control button



            Finish        Cancel        Insert
          Recording      Recording      Special
```

Custom Controls — Recording Menu

11. Press **Finish Recording** to finish recording to the selected custom control. The custom control button will stop flashing.

	Operating Tip	You can also press the flashing custom control button, rather than the **Finish Recording** button, to finish recording.

	Note	Any recorded custom control can be edited. Refer to Chapter 10, "**Custom Controls**" for more information.

This concludes the procedure to add an **Assign Channel** macro to a Monitor Wall custom control.

Once your custom control buttons have been programmed, be sure to properly name them. Refer to Chapter 10, "**Custom Controls**" for more information on naming custom control buttons.

To play back your macro, press the custom control button on the control panel that you recorded the custom control macro to.

Modifying Dynamic Monitor Wall Text

There are two types of Monitor Wall Text Labels: Static and Dynamic. The Static Text Label is set during the creation of the Monitor Wall Layout on the device and can only be modified using the editware supplied with your device. The Dynamic Text Label is modified by the Synergy Q/MD switcher using a custom control macro.

✎ **Note** | Ensure the parameters on your Monitor Wall are configured to accept Dynamic Text set by the Synergy Q/MD switcher. Refer to your device documentation for more information.

Use the following procedure to add a **Modify Text** macro to a Monitor Wall custom control:

1. Navigate to the **Custom Controls Menu** as follows:

    •   Press **HOME ⇨ Custom Controls**.

    ```
    Custom Controls (1-2)
                                                      Bank:    Bank 1   (1)
    Custom Control buffers .53% full

    Selected: Bank 1 Button 9 [Custom09]                      ↑ Custom08 # 8
                                                    Button:    Custom09 # 9
    Custom Control Legend:                                    ↓ Custom10 #10
            # = normal custom control button


         Start        Modify              Start Relative  Default
       Recording       Name                 Recording    All Names   Delete Macro
    ```

    Custom Controls Menu

2. Select the custom control button you want to record to as follows:

    •   Use the **Bank** knob to select the custom control bank you want to record the custom control to.

    •   Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*) or the "at sign" (@) in the list have already been programmed.

✔ **Operating Tip** | As a recommendation, keep special functions grouped together on your *physical* custom control buttons.

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

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

5. Press **Monitor Wall** to display the **Insert Monitor Wall Control Menu**.

    ```
    Insert Monitor Wall Control
                                                Monitor Wall:    Kaleido 1

                                                                ↑Assign Chan
                                                                 Modify Text
           Text Address:
           [12█              ]
           New Text:                                            Text Address
           [Text12           ]                                   Text Entry

         Insert        Cancel
    ```

    Insert Monitor Wall Control Menu

6. Select the Monitor Wall you want to apply the **Modify Text** macro to as follows:

    • Use the **Monitor Wall** knob to select the Monitor Wall.

    • Use the middle knob to select **Modify Text**.

7. Select the text address on the specified Monitor Wall as follows:

    • Use the **Monitor Wall** knob to select the Monitor Wall.

    • Use the bottom knob to select **Text Address**.

    • Use a standard PS/2 keyboard to enter the Text Address in the **Text Address Field** of the **Insert Monitor Wall Control Menu**.

Note	The **Text Address** is assigned to a Text Label when creating a Monitor Wall Layout. Refer to the documentation for your Monitor Wall for information on adding Text Labels to your specific Layout.

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

8. Modify the Dynamic Text Label on the selected Monitor Wall as follows:

    • Use the bottom knob to select **Text Entry**.

    • Use a standard PS/2 keyboard to enter the new text you wish to have displayed in the selected Text Label.

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

9. Press **Insert** to add this macro into the custom control.

10. Press **UP ONE** to return to the **Custom Controls Recording Menu**.

```
Custom Controls (1-2)
                                                   Bank:   Bank 1   (1)
Recording...
                                                         ↑ Custom08 # 8
Selected: Bank 1 Button 9 [Custom09]               Button:  Custom09 # 9
                                                         ↓ Custom10 #10
Custom Control Legend:
        # = normal custom control button



                    Finish      Cancel      Insert
                    Recording   Recording   Special
```

Custom Controls — Recording Menu

11. Press **Finish Recording** to finish recording to the selected custom control. The custom control button will stop flashing.

Operating Tip	You can also press the flashing custom control button, rather than the **Finish Recording** button, to finish recording.

Note	Any recorded custom control can be edited. Refer to Chapter 10, "**Custom Controls**" for more information.

This concludes the procedure to create a custom control macro to modify dynamic Monitor Wall text.

Once your custom control buttons have been programmed, be sure to properly name them. Refer to Chapter 10, "**Custom Controls**" for more information on naming custom control buttons.

To play back your macro, press the custom control button on the control panel that you recorded the custom control macro to.

Monitor Wall Operation

The Monitor Wall custom controls allow you control various aspects of the Monitor Wall from the Synergy Q/MD switcher. Refer to the section "**Monitor Wall Custom Controls**" on page 22–16 for more information on programming a Monitor Wall custom control. The basic function of these custom controls is outlined below:

Layouts

The Layout Custom Control allows you to program a custom control to load a specific layout on the Monitor Wall. A different Custom Control will have to created for each layout you want to load on the Monitor Wall using the Synergy Q/MD switcher.

Input Channels

The Assign Channels Custom Control allows you to program a custom control to assign a specific input channel to a particular monitor on the Monitor Wall. A different Custom Control will have to be created for each channel you want to assign to a different monitor using the Synergy Q/MD switcher.

Dynamic Text

The Modify Text Custom Control allows you to program a custom control to assign specific, pre-defined text to a particular text address. The text address will have to assigned to a template for the custom control to be able to change the text. A different Custom Control will have to be created for each text change you want to make using the Synergy Q/MD switcher.

Editors/OverDrive

In This Chapter

This chapter provides instructions for connecting, setting up and operating an Editor, or the OverDrive Production Control System with your Synergy Q/MD switcher. Before you begin, ensure that the **Editor and Automation Interface** option is installed. If not, please contact **Ross Video** for details. Refer to Chapter 6, "**Software Upgrades and Options**" for instructions on verifying the status of installed options.

The following topics are discussed:

- Supported Editors
- Editor Communications Connections
- OverDrive Communications Connections
- Editor Communications Setup
- OverDrive Communications Setup
- OverDrive Custom Controls
- Editor and OverDrive Operation

Supported Editors

The Synergy Series Switcher has been tested with a number of Editor Protocols to ensure the highest standard for compatibility and reliability. The following Editor Protocols are currently supported by your Synergy Q/MD switcher:

- **Thomson Grass Valley GVG100 Protocol**
- **Thomson Grass Valley GVG200 Protocol**
- **Thomson Grass Valley GVG4000 Protocol**

Editor Communications Connections

You can connect a number of Editors to your Synergy Q/MD switcher. These instructions are provided as a guide, for specific information on the Editor you are connecting to the Synergy Q/MD switcher, refer to the documentation provided with the Editor.

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

* **Editor and Automation Interface** — This is the software option from Ross Video that allows your Synergy Q/MD switcher to control an Editor.

* **Interface Cable** — This is a 9-Pin cable with a 9-Pin, D-Type (DB9) male connector on one end, to connect to the peripheral port on the frame, and a connector on the other end to connect to your Editor. Refer to the documentation that came with your Editor for information on using it with the Synergy Q/MD switcher. Ross Video does not supply this cable.

Use the following procedure to connect an Editor to your Synergy Q/MD switcher:

1. Connect and secure the **9-Pin**, **Male**, end of the **Interface Cable** to the **Peripheral Port** on the back of the Synergy Q/MD frame.
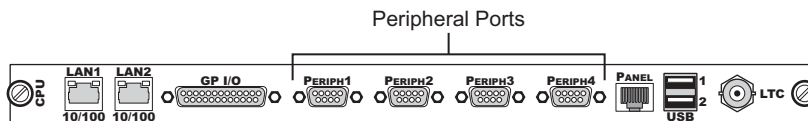
Synergy Q/MD Frame CPU Board — Peripheral Ports

2. Connect and secure the other end of the cable to the appropriate port on the Editor. Refer to the documentation that came with your Editor for information on the proper port and cable pinouts for connecting to the Synergy Q/MD switcher.

The **Peripheral Port** on the Synergy Q/MD switcher Frame has the following pinouts:

Synergy RS-422 Wiring Chart

Synergy Control Panel	
Peripheral Port	**Signal**
1	n/c
2	TxA (Tx–)
3	RxB (Rx+)
4	Ground
5	Ground
6	n/c
7	TxB (Tx+)
8	RxA (Rx–)
9	n/c

This completes the procedure for connecting an Editor to the Synergy Q/MD switcher. Refer to the section "**Editor Communications Setup**" on page 23–6 for instructions on how to set up communications protocols on the Switcher, as well as on the Editor.

OverDrive Communications Connections

You can connect the OverDrive Production Control System to your Synergy Q/MD switcher. For the most up-to-date information on connecting your OverDrive Production Control System to the Synergy Q/MD switcher, refer to your OverDrive documentation. This section provides general instructions for connecting the OverDrive Production Control System to your Synergy Q/MD switcher.

	Important	The **Synergy 1, 1.5, and 2.5** Q/MD **Switchers** do not support the OverDrive Production Control System at this time.

	Note	These instructions are provided as a guide, for specific information on the Editor you are connecting to the Synergy Q/MD switcher, refer to the documentation provided with the Editor.

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

- **Editor and Automation Interface** — This is the software option from Ross Video that allows your Synergy Q/MD switcher to control an Editor.

- **Control Panel Interface Cable** — This is a 6-Pin cable with an RJ-12 male connector on one end, to connect to the RJ-12 to DB9 adapter in the Aux 1 port on the control panel, and a 9-Pin, D-Type (DB9) male connector on the other end to connect to the OverDrive Production Control System. Refer to the documentation that came with your OverDrive Production Control System for information on using it with the Synergy Q/MD switcher. Ross Video does supply a 33 foot Control Panel Interface Cable (#4000C-301).

Use the following procedure to connect an OverDrive Production Control System to your Synergy Q/MD switcher:

	Note	Refer to your OverDrive documentation for information on how to initially set up the OverDrive Production Control System.
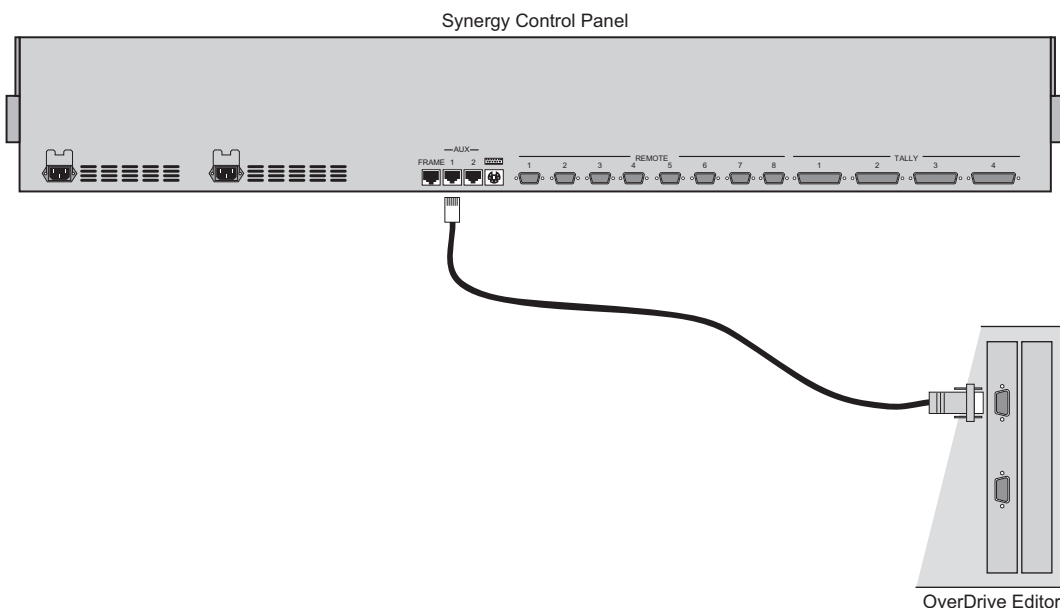
Connecting the OverDrive Production Control System to the Synergy Q/MD Switcher

1. Connect and secure the **RJ-12** end of the **Control Panel Interface Cable** to the **AUX 1** port on the back of the Synergy control panel.

2. Connect and secure the **DB9** end of the **Control Panel Interface Cable** to one of the two com ports on the RS-422 card of the OverDrive computer. Refer to your OverDrive documentation for more information.

3. Ensure that your Synergy Q/MD frame is connected to the same network as the OverDrive computer. Refer to your OverDrive documentation for more information. Also, see the section "**Network Setup**" on page 6–2 for information on configuring Synergy network settings.

This completes the procedure for connecting an OverDrive Production Control System to the Synergy Q/MD switcher. Refer to the section "**OverDrive Communications Setup**" on page 23–12 for instructions on how to set up communications protocols on the switcher, as well as on OverDrive.

OverDrive Interface Cable Pinouts

Use the information in this section to connect the Control Panel Interface Cable from the Synergy Q/MD switcher to the OverDrive Production Control System.

Control Panel Interface Cabling

The Synergy Q/MD control panel connects to the OverDrive Production Control System via the **AUX 1** port on the Synergy control panel, and the RS-422 Card serial port on the rear of the OverDrive computer.

Cable connections in the following table refer only to those between the Synergy control panel and the OverDrive Production Control System. Other cable connections present on the OverDrive Production Control System can be found in the OverDrive documentation.

Synergy Q/MD -to- OverDrive Control Panel Wiring Chart

Synergy Control Panel			OverDrive	
AUX Port	**Signal**		**RS-422 Card Port**	**Signal**
1	Rx–	→	7	TxD–
2	Rx+	→	2	TxD+
3	Tx–	→	8	RxD–
4	Tx+	→	4	RxD+
5	n/c			
6	Ground	→	3	Ground

n/c = Not Connected

Editor Communications Setup

Setting up the Switcher

In order to have the Synergy Q/MD switcher communicate with an Editor, the editor port on the frame that the Editor is connected to must be set up to communicate with the particular Editor you have connected.

Use the following procedure to configure the Editor port on the control panel to connect with an Editor:

1. Navigate to the **Communications Type Menu** as follows:

   • Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **Communications** ⇨ **Type**.

```
Communications (1-2)                              ↑REMOTE 8 (R8)
                                    Com Port:      PERIP 1  (P1)
This  menu  lets  you set                         ↓PERIP 2  (P2)
up  what  each of the com
ports are used for.                                  OFF
                                     Device:        Editor
                                                  ↓DVE



          Editor                               Custom       Extra
  Type    Protocol    Com Settings  Com Type   Devices      Options
```
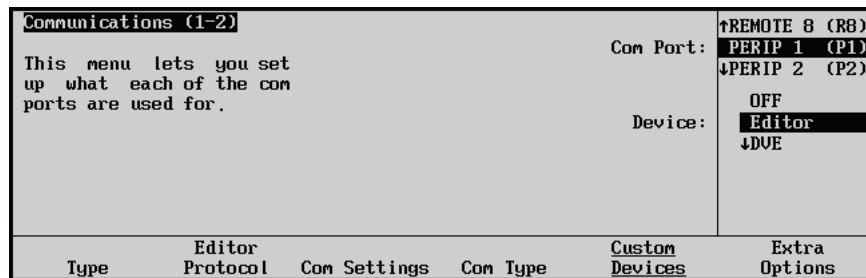
Communications — Type Menu

2. Activate the Editor Port as follows:

   • Use the **Com Port** knob to select the Peripheral port (**Periph**) that the Editor is connected to.

   • Use the **Device** knob to select **Editor**.

3. Press **Editor Protocol** to display the **Editor Protocol Menu**.

```
Communications (1-2)
                                    Com Port:     PERIP 1  (P1)
This  menu  lets  you set
up  which  devices  are
controlled  by  which
ports.                               Device:          GVG4000
                                                  ↓GVG100



          Editor                               Custom       Extra
  Type    Protocol    Com Settings  Com Type   Devices      Options
```
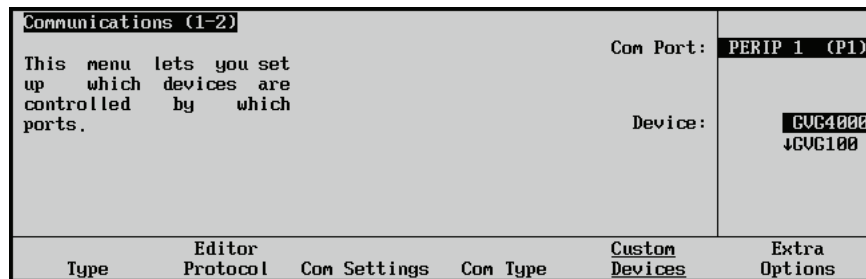
Communications — Editor Protocol Menu

4. Select the Editor Protocol as follows:

   • Use the **Com Port** knob to select the Editor.

   • Use the **Device** knob to select the Editor Protocol used by the selected device. You can select from the following:

      ~ **GVG4000** — Select this option when you are connecting an Editor using the Thomson Grass Valley GVG4000 Editor protocol.

      ~ **GVG100** — Select this option when you are connecting an Editor using the Thomson Grass Valley GVG100 Editor protocol.

~   **GVG200** — Select this option when you are connecting an Editor using the Thomson Grass Valley GVG200 Editor protocol.

5. Press **Com Settings** to display the **Com Settings Menu**.

```
┌─────────────────────────────────────────────────────────────┐
│ Communications (1-2)                                          │
│                                          Com Port: GVG4000 (P1)│
│ This  menu  lets  you set                                     │
│ up   your   com   port                            ↑19200      │
│ parameters.                              Baud:    38400       │
│                                                   ↓57600      │
│                                                   NONE        │
│                                          Parity: ODD          │
│                                                   EVEN        │
│              Editor                      Custom    Extra      │
│     Type    Protocol   Com Settings  Com Type  Devices  Options│
└─────────────────────────────────────────────────────────────┘
```
Communications — Com Settings Menu

6. Select the communications protocols for the Editor as follows:

    •   Use the **Com Port** knob to select the Editor you are setting the communications settings for.

    •   Use the **Baud** knob to select the baud rate for the Editor. Refer to your Editor documentation for information on the communications settings required.

    •   Use the **Parity** knob to select the parity for the Editor. Refer to your Editor documentation for information on the communications settings required.

7. Press **Com Type** to display the **Com Type Menu**.

```
┌─────────────────────────────────────────────────────────────┐
│ Communications (1-2)                                          │
│                                          Com Port: GVG4000 (P1)│
│ This  menu  lets  you set                                     │
│ up your com port types.                           RS-232      │
│                                          Type:    RS-422      │
│                                                   ↓Network UDP │
│                                                               │
│              Editor                      Custom    Extra      │
│     Type    Protocol   Com Settings  Com Type  Devices  Options│
└─────────────────────────────────────────────────────────────┘
```
Communications — Com Type Menu

8. Select the type of serial communication that will be used to communicate with the Editor as follows:

    •   Use the **Com Port** knob to select Editor you want to set the communication type for.

    •   Use the **Type** knob to select the type of serial communications (**RS-232**, or **RS-422**) for the selected port. Refer to your Editor documentation for information on the communications settings required.

✎ **Note**   **Network UDP** and **Network TCP** are not supported for editors other than the OverDrive Production Control System.

✎ **Note**   The **GVG100** Editor Protocol has Extra Options that may need to be set, depending on the configuration you have. If you are not setting up an Editor using this protocol, skip to step 10.

9. Press **Extra Options** to display the **Extra Options Menu**.

   • **GVG100 Editor Protocol** — Refer to the section "**GVG100 Editor Protocol Extra Options**" on page 23–8 for information on the Extra Options settings for the Thomson Grass Valley GVG100 Editor Protocol.

10. Press **HOME** to display the **Installation Change Confirmation Screen**.

11. Accept or reject the changes you have made as follows:

   • Press **Confirm** to accept the changes.

   • Press **Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

This completes the procedure for setting up the communications with the Editor, next you will have finish setting up the Editor to communicate with the Synergy Q/MD switcher.

Extra Options Setup

The **Extra Options Menu** for an Editor allows you to complete the communications setup for some of the Editors on the Synergy Q/MD switcher.

GVG100 Editor Protocol Extra Options

The **Extra Options Menu** for the GVG100 Editor Protocol allows you to specify the type of Editor that is connected to the Synergy Q/MD switcher, and the way you want to access the wipe patterns from the Editor.

Use the following procedure to set up the Extra Options for the GVG100 Editor Protocol:

1. Press **Extra Options** to display the **Extra Options Menu**.

```
Communications (1-2)

Protocol: GVG100                                    Com Port:  GVG100   (P1)


What type of editor is being used?                    Option:   Editor Type
                                                                ↓Pattern


                                                       Value:    Editware
                                                                ↓Sony
              Editor                        Custom              Extra
    Type     Protocol   Com Settings   Com Type  Devices       Options
```
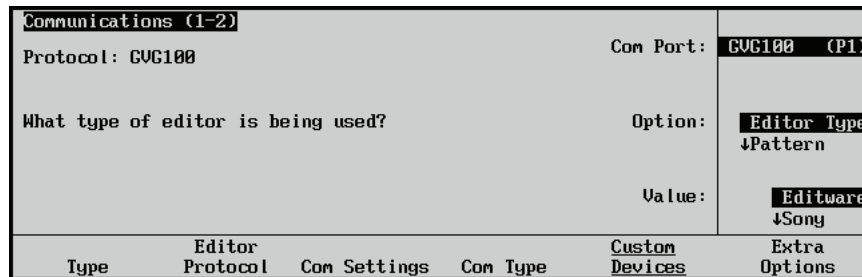
Communications — GVG 100 (Editor Type) Extra Options Menu

2. Assign a specific type of the Editor to the Editor Port as follows:

   • Use the **Com Port** knob to select the Editor port that the Editor using the GVG100 Editor Protocol is connected to.

   • Use the **Option** knob to select **Editor Type**.

   • Use the **Value** knob to select the type of Editor you have connected to the Editor port. You can select from the following:

      ~ **Editware** — Select this option if you are connecting an Editware Editor to the selected port.

      ~ **Sony** — Select this option if you are connecting a Sony Editor to the selected port.

      ~ **Generic** — Select this option if you are connecting any other Editor to the selected port.

3.   Select the way you access the wipe patterns as follows:

```
Communications (1-2)
                                              Com Port: GVG100   (P1)
Protocol: GVG100

                                                       Editor Type
Select Pattern # or Wipe Button for wipe      Option:  Pattern
                                                       Use Break

                                              Value:   Pattern #
                                                       Wipe Bttn
             Editor                          Custom    Extra
   Type      Protocol   Com Settings  Com Type  Devices  Options
```
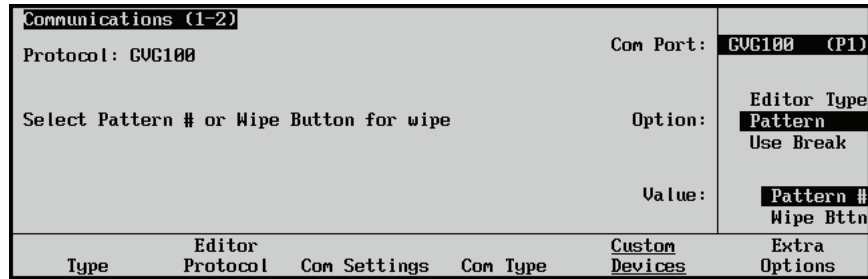
Communications — GVG 100 (Pattern) Extra Options Menu

•   Use the **Com Port** knob to select the Editor port that the Editor using the GVG100 Editor Protocol is connected to.

•   Use the **Option** knob to select **Pattern**.

•   Use the **Value** knob to select the way you access the wipe patterns. You can select from the following:

    ~   **Pattern #** — Select this option to use the wipe pattern numbers to enter the wipe into the editor.

    ~   **Wipe Bttn** — Select this option to use the wipe button numbers to enter the wipe into the editor.

4.   Configure the **Use Break** feature as follows:

•   Use the **Com Port** knob to select the Editor you want to set the communication type for.

•   Use the **Option** knob to select **Use Break**.

```
Communications (1-2)
                                              Com Port: GVG100   (P1)
Protocol: GVG100

                                                       ↑Pattern
    Use 'Break' character to connect?          Option:  Use Break

                                              Value:      Yes
                                                          No
             Editor                          Custom    Extra
   Type      Protocol   Com Settings  Com Type  Devices  Options
```
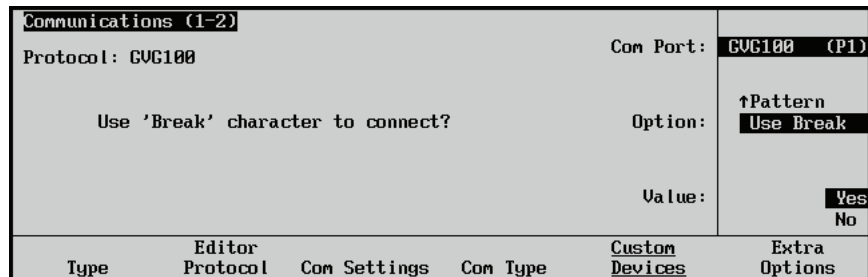
Communications — GVG 100 (Use Break) Extra Options Menu

•   Use the **Value** knob to toggle between **Yes** and **No** as follows:

    ~   **Yes** — Use this option to enable the Synergy Q/MD switcher to go into Active mode once a Break and an address has been received. This is the default setting.

    ~   **No** — Use this option to enable the Synergy Q/MD switcher to go into Active mode and the Editor does not have to send Breaks to the switcher. The Editor will send commands and messages without Breaks to the Synergy switcher.

This completes the procedure to set up the Extra Options for the GVG100 Editor.

GVG4000 Editor Protocol Extra Options

The **Extra Options Menu** for the GVG4000 Editor Protocol allows you to specify that memory recalls to a particular MLE should run a custom control rather than recalling the specified memory register.

You specify a number from 0-99 when performing a memory recall from the GVG4000. These numbers correspond directly to the 100 memory registers in each MLE of the Synergy Q/MD switcher. When calling custom controls, the numbers are mapped to custom controls as shown in the table below.

GVG4000 Memory -to- Synergy Q/MD Custom Control Mapping

GVG4000 Memory Number	Synergy Custom Control Number
0 - 19	Bank 1 Custom Control 1 - 20
20 - 39	Bank 2 Custom Control 1 - 20
40 - 59	Bank 3 Custom Control 1 - 20
60 - 79	Bank 4 Custom Control 1 - 20
80 - 99	Bank 5 Custom Control 1 - 20

Use the following procedure to set up the Extra Options for the GVG4000 Editor Protocol:

1. Press **Extra Options** to display the **Extra Options Menu**.

Communications — GVG 4000 (Editor Type) Extra Options Menu

2. Select how memory recalls from the editor are handled by your Synergy Q/MD switcher as follows:

   • Use the **Com Port** knob to select the Editor port that the Editor using the GVG4000 Editor Protocol is connected to.

   • Use the **Option** knob to select the option you wish to configure. Currently, the only available option is **CC MLE**.

   • Use the **Value** knob to select how memory recalls from the editor are handled. You can select from the following:

> **Note** — The MLE labels below match the standard GVG labelling that most editors are configured with.

   ~ **None** — Select this option if you do **not** wish to run a custom control when a recall is performed from the editor. A standard memory register recall will be performed. This is the default setting

   ~ **Any** — Select this option if you want memory recalls to any MLE to run a custom control rather than performing a memory register recall.

~ **Pgm-Pst** — Select this option if you want memory recalls to the PGM-PST (bottom) MLE to run a custom control. Memory recalls to other MLEs will perform a memory register recall.

~ **MLE1** — Select this option if you want memory recalls to MLE 1 to run a custom control. Memory recalls to other MLEs will perform a memory register recall.

~ **MLE2** — Select this option if you want memory recalls to MLE 2 to run a custom control. Memory recalls to other MLEs will perform a memory register recall.

~ **MLE3** — Select this option if you want memory recalls to MLE 3 to run a custom control. Memory recalls to other MLEs will perform a memory register recall.

This completes the procedure to set up the Extra Options for the GVG4000 Editor.

OverDrive Communications Setup

The OverDrive Production Control System is a highly flexible production control system that enables touch screen control over your Synergy Q/MD switcher. For detailed instructions on connecting the OverDrive Production Control System to your Synergy Q/MD switcher, refer to the OverDrive documentation.

Important	The **OverDrive Editor** operates in an unusual manner when connected to a **Synergy 2 switcher**. Be sure to consult your *OverDrive User Guide* for more information on the operation of **OverDrive** with a **Synergy 2 switcher**. Refer to the section "**Synergy 2 Limitations with OverDrive**" on page 23–18 for more information on the Synergy 2 limitation when in OverDrive Editor mode.

Setting up the Peripheral Port for OverDrive

Use the following procedure to configure the Synergy frame to communicate with the OverDrive Editor:

Important	The OverDrive Production Control System requires that all buses on your switcher are assigned the same Bus Map. OverDrive does not support different Bus Maps on different buses.

1. Navigate to the **Communications Type Menu** as follows:

    •   Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **Communications** ⇨ **Type**.

    ```
    Communications (1-2)                            ↑REMOTE 8 (R8)
                                       Com Port:     PERIP 1  (P1)
    This  menu  lets  you set                       ↓PERIP 2  (P2)
    up  what  each of the com
    ports are used for.                                 OFF
                                        Device:       Editor
                                                    ↓DVE



                   Editor                     Custom        Extra
        Type      Protocol   Com Settings  Com Type  Devices      Options
    ```
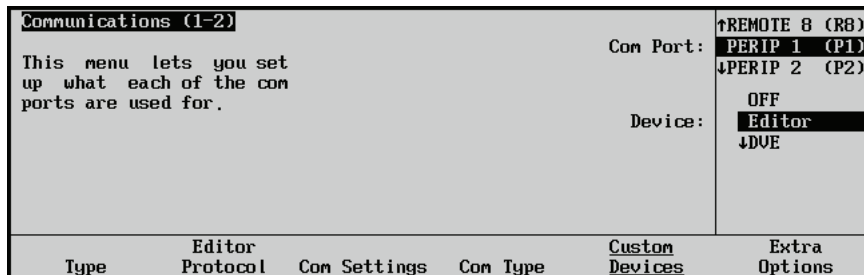
    Communications — Type Menu

2. Activate the Editor port as follows:

    •   Use the **Com Port** knob to select a Peripheral port (**Periph**) that you wish to assign to the OverDrive Production Control System.

The peripheral port you choose will correspond to a specific network port as follows:

Peripheral Port	Corresponding Network Port
1	9001
2	9002
3	9003
4	9004

You will need the network port number when configuring your OverDrive Production Control System. Refer to your OverDrive documentation for more details.

• Use the **Device** knob to select **EDITOR**.

3. Press **Editor Protocol** to display the **Editor Protocol Menu**.

```
Communications (1-2)
                                          Com Port:  PERIP 1  (P1)
This  menu lets you setup
which     devices    are
controlled   by    which                             ↑GVG100
ports.                             Device:            OverDrive
                                                      GVG200



              Editor                         Custom        Extra
    Type      Protocol   Com Settings  Com Type  Devices   Options
```
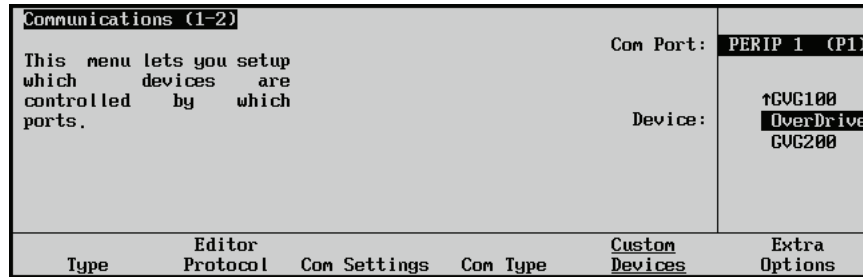
Communications — Editor Protocol Menu

4. Assign the OverDrive Editor to the Peripheral port as follows:

⊛ **Important**

Even though the Synergy Q/MD frame communicates with the OverDrive computer via ethernet, the peripheral port assigned to OverDrive communications must not be used for any other purposes.

• Use the **Com Port** knob to select the Peripheral port you designated for OverDrive.
• Use the **Device** knob to select **OverDrive**.

5. Press **Com Type** to display the **Com Type Menu**.

```
Communications (1-2)
                                          Com Port:  OverDrive(P1)
This  menu lets you setup
your com port types.
                                                      ↑RS-422
                                   Type:              Network UDP
                                                      Network TCP



              Editor                         Custom        Extra
    Type      Protocol   Com Settings  Com Type  Devices   Options
```
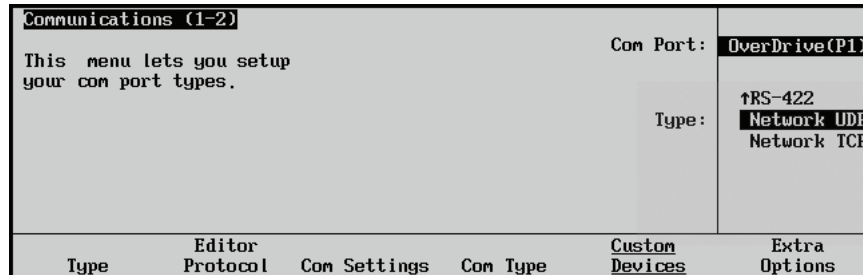
Communications — Com Type Menu

6. Select the communications protocol for the OverDrive Editor as follows:

• Use the **Com Port** knob to select the Peripheral port that OverDrive is connected to.

- Use the **Type** knob to select the network protocol you are using to communicate with the OverDrive computer. You can select from the following:

    ~ **Network TCP —** Use this option to select the Transmission Control Protocol (TCP). This is the recommended setting.

    ~ **Network UDP —** Use this option to select the Universal Datagram Protocol (UDP).

This completes the procedure for configuring your Synergy frame to communicate with OverDrive. Refer to your OverDrive documentation for information on how to set up the communications protocols on the OverDrive Production Control System.)

Now that your Peripheral port is configured for OverDrive, you must configure your **Aux 1** port.

Setting up the Aux 1 Port for OverDrive

Use the following procedure to configure the Synergy control panel to communicate with an OverDrive Production Control System:

✎	**Note**	Refer to your OverDrive documentation for information on how to set up the communications protocols on the OverDrive Production Control System.

1. Navigate to the **Communications Type Menu** as follows:

    - Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **Communications** ⇨ **Type**.

Communications — Type Menu

2. Assign the Remote Aux 1 port to the OverDrive Production Control System as follows:

    - Use the **Com Port** knob to select **RemAux (A1)**.

    - Use the **Device** knob to select **Automation**.

3. Press **Select Device** to display the **Select Device Menu**.

Communications — Select Device Menu

4. Assign OverDrive Automation to the Remote Aux 1 port as follows:

   • Use the **Com Port** knob to select **RemAux (A1)**.

   • Use the **Device** knob to select **Automatn**.

5. Press **Com Settings** to display the **Com Settings Menu**.

```
Communications (1-2)
                                            Com Port:  RemAux   (A1)
This  menu lets you setup                             ↓OverDrive(P1)
your       com      port
parameters.                                              ↑19200
                                               Baud:     38400
                                                        ↓57600

                                                         NONE
                                        Parity (Fixed):  ODD
                                                         EVEN
          Select                           Custom       Extra
    Type  Device    Com Settings  Com Type Devices      Options
```

Communications — Com Settings Menu

6. Set the communications parameters for the Remote Aux 1 port as follows:

   • Use the **Com Port** knob to select **Automatn (A1)**.

   • Use the **Baud** knob to select **38400**.

   • Use the **Parity** knob to select **ODD**.

7. Press **Com Type** to display the **Com Type Menu**.

```
Communications (1-2)
                                            Com Port:  RemAux   (A1)
This  menu lets you setup                             ↓OverDrive(P1)
your  com port types.
                                                         RS-232
                                          Type (Fixed):  RS-422


          Select                           Custom       Extra
    Type  Device    Com Settings  Com Type Devices      Options
```

Communications — Com Type Menu

8. Select the serial communications protocol for the Remote Aux 1 port as follows:

   • Use the **Com Port** knob to select **Automatn (A1)**.

   • Use the **Type** knob to select **RS-422**.

⚛	**Important**	You must toggle the **EDITOR** button in the **Remote** area of the **Global Memory System Group** to **On** to allow the OverDrive Production Control System to control the Synergy Q/MD switcher.

✐	**Note**	When active, **EDITOR** mode turns on all the Roll VTR buttons and sets the Roll VTR Mode to *Arm*, disabling the Roll VTR Mode selection in the **Personality Menu**.

This completes the procedure for setting up the Synergy Q/MD switcher to be controlled by the OverDrive Production Control System.

OverDrive Custom Controls

The OverDrive Production Control System can use certain custom controls, or types of custom controls, to perform operations on the Synergy Q/MD switcher. Using these custom controls, the OverDrive Production Control System can have the Synergy Q/MD switcher perform a transition of all on-air MLEs, or transition all Keys off-air. These custom controls, or any other, can also be recorded as a relative custom control, allowing OverDrive to be more flexible in using the custom control.

Automation Custom Controls

Use the **Automation** function to create custom controls that accept commands from an external automation system.

Use the following procedure to create an Automation custom control macro:

1. Navigate to the **Custom Controls Menu** as follows:

    •   Press **HOME** ⇨ **Custom Controls**.

```
Custom Controls (1-2)
                                                  Bank:    Bank 1    (1)
Custom Control buffers .53% full

                                                         ↑Custom08 # 8
Selected: Bank 1 Button 9 [Custom09]                     ▐Custom09 # 9
                                                  Button: ↓Custom10 #10
Custom Control Legend:
       # = normal custom control button


    Start         Modify              Start Relative   Default
  Recording        Name                 Recording     All Names   Delete Macro
```

Custom Controls Menu

2. Select the custom control button you want to record to as follows:

    •   Use the **Bank** knob to select the custom control bank you want to record the custom control to.

    •   Use the **Button** knob to select the custom control button that you want to record a custom control macro to. You can also press the desired button *directly* on the control panel. Remember that buttons marked with an asterisk (*) or the "at sign" (@) in the list have already been programmed.

✓ **Operating Tip**

> As a recommendation, keep special functions for similar devices grouped together on your *physical* custom control buttons.

3. Press **Start Recording** ⇨ **Insert Special** ⇨ **Special**.

```
Special                                              ↑Reset Audio
                                                      ▐Automation
                                                     ↓Go To Menu


                                            Command: Keys Off Air
                                                      Act MLE Trans




    Insert        Cancel
```

Insert Special — Special Menu

4. Assign an automation function to the selected custom control macro as follows:

- Use the top knob to select **Automation**.

- Use the **Command** knob to select the command you want the macro to perform. You can select between the follow:

  ~ **Keys Off Air** — Select this option when you want all on-air **Keys**, on all **MLEs**, to be dissolved off-air when the custom control is run.

  ~ **Act MLE Trans** — Select this option when you want all **MLEs** that are contributing the **PGM** output, except for the **PGM/PST MLE**, to be transitioned according to the settings in the **MLE Transition Group**. For example, if **MLE 1,** of a **Synergy 3 Switcher**, is re-entered onto **MLE 2** and **MLE 2** is re-entered onto **MLE 3**, the **Active MLE Trans** custom control will perform a transition on *both* **MLE 1** and **MLE 2**.

⚠ **Important**

> If you have more than one re-entry set up for a shot, the **Active MLE Trans** custom control will transition all on-air **MLEs**. If you have an **MLE** re-entered onto the **BKGD** bus of another **MLE**, the **Active MLE Trans** custom control will transition the **MLE** re-entry with whatever you have selected on the **PST** bus of that **MLE**.

5. Press **Insert** to insert the selected command into the custom control and display the **Insert Special Menu**.

6. Insert additional commands if needed. When you have finished inserting commands, proceed to the next step to complete the procedure.

7. Press **UP ONE** to display the **Recording Menu**.

```
Custom Controls (1-2)
                                          Bank:   Bank 1   (1)
Recording...
                                                ↑ Custom08 # 8
Selected: Bank 1 Button 9 [Custom09]     Button:  Custom09 # 9
                                                ↓ Custom10 #10
Custom Control Legend:
      # = normal custom control button



          Finish      Cancel     Insert
        Recording   Recording   Special
```
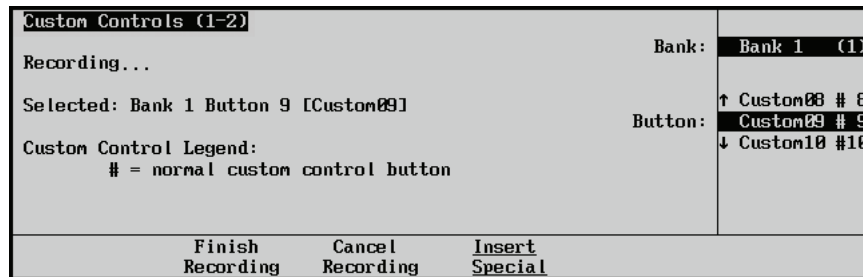
Custom Controls — Recording Menu

8. Press **Finish Recording**, or the flashing custom control button, to finish recording to the selected custom control. The custom control button will stop flashing.

Once your custom control buttons have been programmed, be sure to properly name them. Refer to Chapter 10, "**Custom Controls**" for more information on naming custom control buttons. Any recorded custom control can be edited. Refer to Chapter 10, "**Custom Controls**" for more information.

To play back your macro, press the custom control button on the control panel that you recorded the custom control macro to.

Editor and OverDrive Operation

The **Editor Interface** button in the **Global Memory System Group** allows the Synergy Q/MD switcher to be controlled by a remote editing system, using a GVG Editor Protocol, or the OverDrive Production Control System.

EDITOR

Toggle the **EDITOR** button **ON**, lit, to enable control of the Synergy Q/MD switcher from the editor or OverDrive system. In Editor mode, you can still perform most switcher functions.

OverDrive Operation Notes

When the OverDrive Production Control System is connected to the switcher, activating the **EDITOR** button will cause the following to occur:

- The **ROLL VTR** buttons turn on, and **Roll VTR Mode** is set to **Arm**, disabling the **Roll VTR Mode** selection in the **Personality Menu**.

- MLE copying to the bottom (PGM) MLE is disabled. If you try to copy an MLE to the PGM MLE, a message is displayed indicating you must turn the **EDITOR** button **OFF** before copying.

- The Synergy switcher cannot control a Robotic Camera that has been disabled in the OverDrive menus. You must toggle the **EDITOR** button **OFF** to enable control of the camera from the Synergy switcher. Refer to the OverDrive documentation for details.

Using OverDrive with a Synergy 2 Switcher

The OverDrive Production Control System requires at least two Effects MLEs in order to operate. With a **Synergy 2** Switcher, there is only one Effects MLE and the PGM MLE. OverDrive will compensate for this lack of a second Effects MLE by using the PGM MLE as an Effects MLE. This requires OverDrive to configure the switcher in a manner that will alter the way the PGM MLE operates. This configuration involves how OverDrive recalls a shot and performs a transition and how you will be able to use the control panel when it is in Editor mode.

Synergy 2 Limitations with OverDrive

⊛ **Important**

These operational limitation will only apply if the **EDITOR** button in the **Global Memory System Group** is **ON** and an **OverDrive Production Control System** has been set up in the **Communications Menus**.

Because OverDrive must use **MLE 2** of the switcher as both a **BKGD/PST MLE** and a **PGM/PST MLE**, there are a number of special limitations that result. These limitations are as follows:

- The two internal **DSKs** are turned into Keyers for **MLE 2**; therefore, they cannot be used as Downstream Keyers. If you attempt to transition a DSK on-air when MLE 2 is off-air, a warning message will pop up. If **DSKs** are required, the Additional Downstream Keyer option will be required.

- If a Key is included in the shot set up on **MLE 2**, a transition of both the Background and any Keys will be required. In this case you cannot perform an S&T Wipe transition because the Key is included. This limitation only applies if there are Keys on-air in the memory recall.

- If a Key is flown in the memory recall on **MLE 2**, an S&T Wipe cannot be used to transition the memory on-air. This limitation applies whether the Key is on-air or not.

- You will not be able to preview a transition on **MLE 2** as you can on **MLE 1**.

- Because OverDrive has to recall memories on **MLE 2**, you will have to duplicate your memories on **MLE 1** and **MLE 2**.

✓ **Operating Tip**

> It will be easier to create your memories in **MLE 1** and copy them down onto **MLE 2**, than trying to recreate them on **MLE 2**.

These limitations apply to both the **Synergy 2** Switcher and the **OverDrive Production Control System**. If full functionality of your **Synergy 2** Switcher is required, you can toggle the **EDITOR** button **Off**, to return to normal switcher operation.

23–20 • Editors/OverDrive   **Synergy Q/MD Engineering Manual (v9.1 MD)**

Calibration and Diagnostics

In This Chapter

This appendix provides information on switcher calibration and the Synergy Q/MD diagnostic tools. The following topics are discussed:

- Switcher Calibration
- Panel Diagnostic Tools
- Displaying Panel Information
- Potentiometer Test
- Fader Test
- Joystick Test
- Button Test
- Lamp Test
- Memory Test
- Display Test
- TX/RX Test
- Tally Test
- DIP/Jump Test
- Panel Monitoring
- Frame Diagnostic Tools
- TX/RX Test
- GPI Test
- LEDs Test
- DIP Test
- GfxBuffDDR Test

Switcher Calibration

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

⚠️ **Notice** | Use this mode with caution. Perform the calibration only when you suspect that there has been "drift" in the knobs or the joystick, or that there is a "limit" problem with a fader.

Use the following procedure to calibrate the analog controls of the Synergy Q/MD switcher:

1. Navigate to the **Calibration Menu** as follows:

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

```
Calibration
FADERS            KNOBS                Right:Not moved
 1:Not moved          Aspect:Not moved    Bottom:Not moved
 2:Not moved          Border:Not moved      Glow:Not moved
 3:Not moved            Soft:Not moved     Width:Not moved
                    Rotation:Not moved   Density:Not moved
                         Hue:Not moved      Clip:Not moved
POSITIONER               Sat:Not moved      Gain:Not moved
 X:Not moved             Lum:Not moved       Hue:Not moved
 Y:Not moved             Top:Not moved    Reject:Not moved
 Z:Not moved            Left:Not moved   Supress:Not moved

                                                    Accept
```

Calibration Menu

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

✎ **Note** | The screen shot shown above is for a **Synergy 3**. The number of **Faders** (as shown in the **FADERS** column) differs on the **Calibration Menu** for the different Synergy control panels.

• The **Scroll Area** is blank.
• The **Label Area** provides only one function, **Accept**.

⊛ **Important** | You must calibrate *all analog controls* on your switcher. Failure to do so will map a false limit into switcher memory [for the control(s) that you did not calibrate], thus preventing proper switcher operation.

2. To calibrate the faders, move *each fader* to its full upper and lower limit. Repeat this procedure two or three times for *each fader*. As you move the faders, you will see a series of numbers appear in the **Main Area**, under the **FADERS** heading. The numbers for each fader *may not match* — this is normal.

3. To calibrate the positioner, move *each axis* as follows:

   • Calibrate the X-Axis by moving the joystick fully left and right. Repeat this procedure two or three times.

   • Calibrate the Y-Axis by moving the joystick fully up and down. Repeat this procedure two or three times.

   • Calibrate the Z-Axis by twisting the joystick knob fully clockwise, then counterclockwise. Repeat this procedure two or three times.

As you move the joystick, you will see a series of numbers appear in the **Main Area**, under the **POSITIONER** heading. The numbers for each axis *may not match* — this is normal.

4. To calibrate the knobs, move *each knob* fully left and right. Repeat this procedure two or three times for *each knob*. As you move the knobs, you will see a series of numbers appear in the **Main Area**, under the **KNOBS** heading. The numbers for each knob *may not match* — this is normal.

5. Ensure that the label **Not Moved** does *not appear* in the **Main Area**. This guarantees that you moved each control.

6. At this point, you can complete the calibration or exit the menu safely:

   • To exit the menu safely, without accepting the newly calibrated controls, press **HOME**.

   • To complete the calibration, press **Accept**.

⚠ **Notice**

| When you press **Accept**, *do not* hold the positioner off center. This will program a false "center" for the joystick, and you will have to re-calibrate the switcher again to clear it. |

This completes the procedure for to calibrating the analog controls of the Synergy Q/MD switcher

Panel Diagnostic Tools

All Synergy Q/MD switchers provide a full array of panel diagnostic tools.

Displaying Panel Information

Use the following procedure to display panel information:

1. Navigate to the **Panel Diagnostics Menu 1-3** as follows:

   • Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Panel Diagnostics**.

2. Press **Information** to display the **Panel Information Menu**. Software version information is provided for both the panel and the frame.

```
Information

Panel Info              Frame Info
Synergy X.X  MD         Synergy X.X  MD
Build XXXX              Build XXXX
Mar  1 2007 13:14:20    Feb 27 2007 11:12:05
                        Global Store size: 256 MB



    System       Errors      Reset Count
```

Panel Information Menu

3. Press **Errors** to display a list of **Errors**. Information is provided for both the panel and frame.

```
Information - Communication Com Port Stats
Total Panel Errors       Total Frame Errors      Panel  Total Errors
Bad byte counts:0        Update not available          ↓PAN2FRM  (PF)
Bad checksums  :4
Parity errors  :0                                Frame  Total Errors
Framing errors :0                                     ↓FRM2PAN  (FP)
Over runs      :0
Forced restarts:99
NACKs received :0
Other errors   :0

    System       Errors      Reset Count
```

Panel Information Menu, Errors Display

   • Use the **Panel** knob to scroll through a list of individual panel ports, with the communication errors for the selected port being displayed in the main area of the display. If **Total Errors** is selected, the displayed information will include *all* communication errors for the entire panel.

   • Use the **Frame** knob to scroll through a list of individual frame ports, with the communication errors for the selected port being displayed in the main area of the display. If **Total Errors** is selected, the displayed information will include *all* communication errors for the entire frame.

4. Press **Reset Count** to manually reset the error counts. Please note, however, that all counts are automatically reset on power up.

All of the above menus are for reference only. No action can be taken.

This completes the procedure for displaying panel information.

Potentiometer Test

The **Pots Test Menu** allows you to test the response of all potentiometers on the panel.

Use the following procedure to test the pots:

1. Navigate to the **Panel Diagnostics Menu 1-3** as follows:

    • Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Panel Diagnostics**.

2. Press **Pots Test** to display the **Pots Test Menu**.
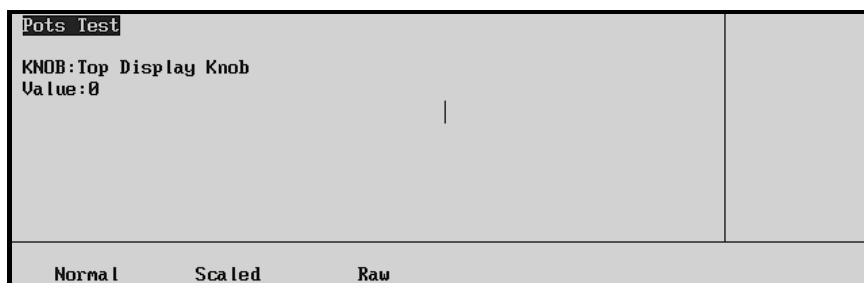
Pots Test Menu

3. Select **Normal**, **Scaled** or **Raw** values for the menu display, and test each panel potentiometer as required.

✎	**Note**	Contact **Technical Support** for details on each display value.

This completes the procedure for testing the pots.

Fader Test

The **Fader Test Menu** allows you to test all the MLE faders on the panel.

Use the following procedure to test the faders:

1. Navigate to **Panel Diagnostics Menu 1-3** as follows:

    • Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Panel Diagnostics**.

2. Press **Fader Test** to display the **Fader Test Menu**.
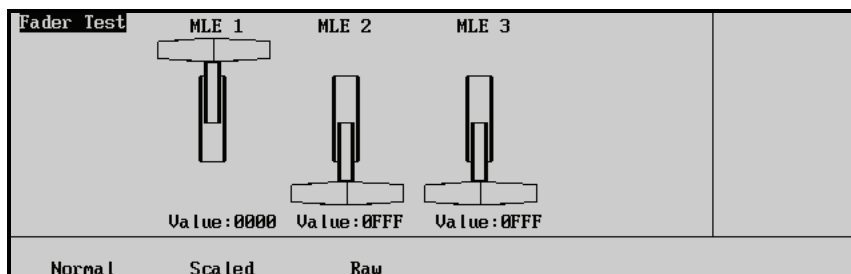
Fader Test Menu

3. Select **Normal**, **Scaled** or **Raw** values for the menu display, and test each panel fader as required.

✎	**Note**	Contact **Ross Video Technical Support** for details on each display value.

This completes the procedure for testing the faders.

Synergy Slots

The Synergy Q/MD control panel incorporates a special mode in which pseudo-random information is statistically measured on a cumulative basis.

Use the following procedure to play the Synergy Slots:

1. Navigate to the **Fader Test Menu** as follows:

    •   Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Panel Diagnostics** ⇨ **Fader Test**.

2. Press the **F6** softkey to display the **Synergy Slots Menu**.
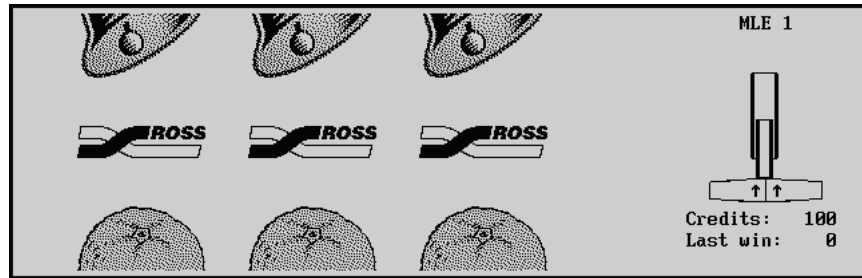
Synergy Slots Menu

This action causes all button LEDs to turn off, with only the **F1** and **MORE** softkeys, and the **Fader** in the **Transition Area** of MLE 1 remaining active. The Fader serves as a "slot machine arm".

3. Move the fader in the Transition Area of MLE 1 first to the upper limit and then to the lower limit.

    •   This will cause the Synergy Slots to cycle for several seconds, and then settle on various pay line symbols.
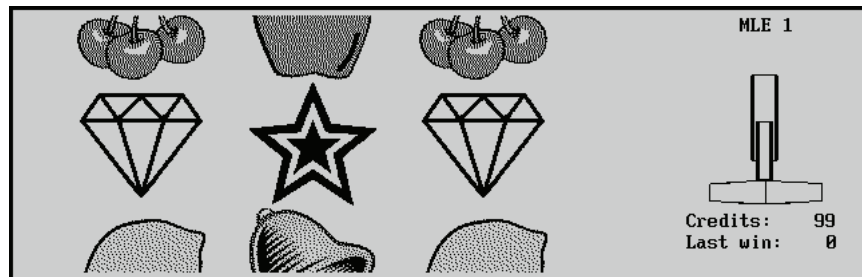
Synergy Slots Menu — Pay line Symbols

    •   When a winning combination of pay line symbols occurs, the panel reacts as follows:

        ~   the button LEDs on the lower area of the control panel flash randomly

        ~   the number of credits won flashes with the new total number of credits on the **Synergy Slots Menu**

    •   Winning pay line symbol combinations award credits as per the payout table "**Pay Line Payout Table**" on page 24-7. The average payoff rate is approximately 239.4 percent.

✓	**Operating Tip**	You can also press **MORE** to display the **Pay Line Payout Table**.

Pay Line Payout Table

Pay Line Symbols	Credit Payout
3 Ross Logos	1000
3 Lucky 7s	250
3 Oranges	30
3 Lemons	25
3 Apples	20
3 Cherries	20
3 Bells	15
3 Bars	15
3 Stars	10
3 Diamonds	10
2 Ross Logos	10
1 Ross Logo	3

- The amount of credits won on any one pull of the arm will determine the number of flashing buttons on the panel. There are three "levels" of a "win". Refer to the table "**LED Illumination Levels Table**" on page 24-7 for detailed information.

- The highest number of credits you can accumulate is 9999, and the lowest is 0.

LED Illumination Levels Table

Level	% of LEDs Illuminated	Credits Won
1	6.25%	< 10
2	12.5%	10 to 100
3	25%	> 100

4. Exit the Synergy Slots as follows:

- Press **HOME** to display the **Main Menu 1-2**.

OR

- Press **UP ONE** to display the **Fader Test Menu**.

This completes the procedure for playing Synergy Slots.

Joystick Test

The **Joystick Test Menu** allows you to test all three axes of the joystick.

Use the following procedure to test the joystick:

1. Navigate to the **Panel Diagnostics Menu 1-3** as follows:

- Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Panel Diagnostics**.

2. Press **Joystick Test** to display the **Joystick Test Menu**.

```
┌─────────────────────────────────────────────────────────────────────┐
│ Joystick Test                                                    │    │
│                                                                  │    │
│ X:0                                                              │    │
│ Y:0                                                              │    │
│ Z:0                                         ╭─────────╮          │    │
│                                            ╱  ╭────╮   ╲         │    │
│                                           │  │  .   │   │        │    │
│                                            ╲  ╰────╯   ╱         │    │
│                                             ╰─────────╯          │    │
│                                                                  │    │
│                                                                  │    │
├─────────────────────────────────────────────────────────────────────┤
│    Normal         Scaled          Raw                                 │
└─────────────────────────────────────────────────────────────────────┘
```
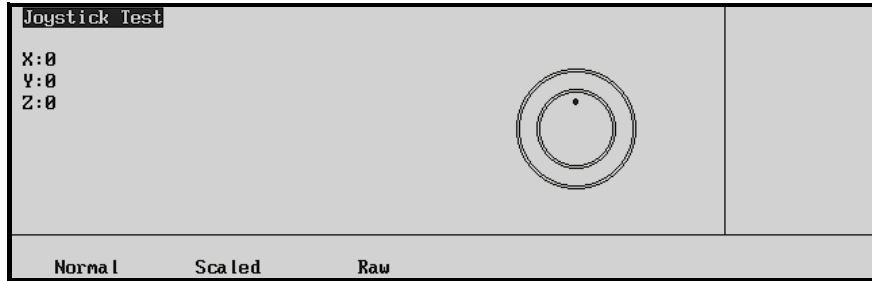
Joystick Test Menu

3.   Select **Normal**, **Scaled** or **Raw** values for the menu display, and test each joystick axis as required.

✎ **Note**

> Contact **Ross Video Technical Support** for details on each display value.

This completes the procedure for testing the joystick.

Button Test

The **Button Test Menu** allows you to test all pushbuttons on the switcher panel.

Use the following procedure to test the buttons:

1.   Navigate to the **Panel Diagnostics Menu 1-3** as follows:

   •   Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Panel Diagnostics**.

2.   Press **Button Test** to display the **Button Test Menu**.

```
┌─────────────────────────────────────────────────────────────────────┐
│ Button Test                                                      │    │
│                                                                  │    │
│ BUTTON      #07              Hold down F5 and F6, then release    │    │
│ AREA        #08              them to exit button test mode        │    │
│ MLE         #01                                                  │    │
│ Last action:Button Up                                            │    │
│                                                                  │    │
│                                                                  │    │
│                                                                  │    │
├─────────────────────────────────────────────────────────────────────┤
│                                                  Exit         Exit    │
└─────────────────────────────────────────────────────────────────────┘
```
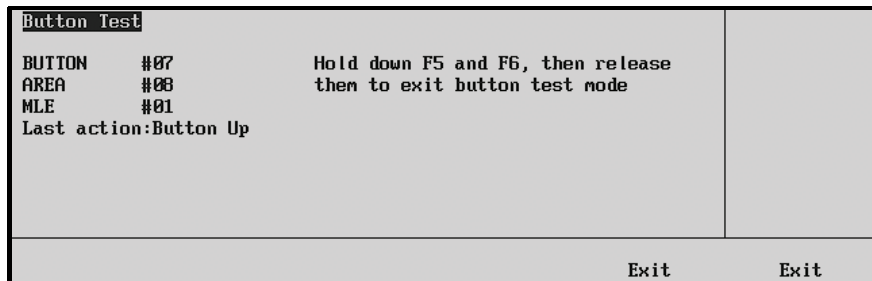
Button Test Menu

3.   Press each button as required.

4.   To exit the menu, press *both* **Exit** buttons beneath the display.

This completes the procedure for testing the buttons.

Lamp Test

The **Lamp Test Menu** allows you to test large groups of buttons on the panel.

Use the following procedure to test the lamps:

1.   Navigate to **Panel Diagnostics Menu 1-3** as follows:

   •   Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Panel Diagnostics**.

2. Press **Lamp Test** to display the **Lamp Test Menu**.

```
Lamps Test
                    Hold down F5 and F6, then release
                    them to exit lamp test mode




                                        Exit        Exit
```
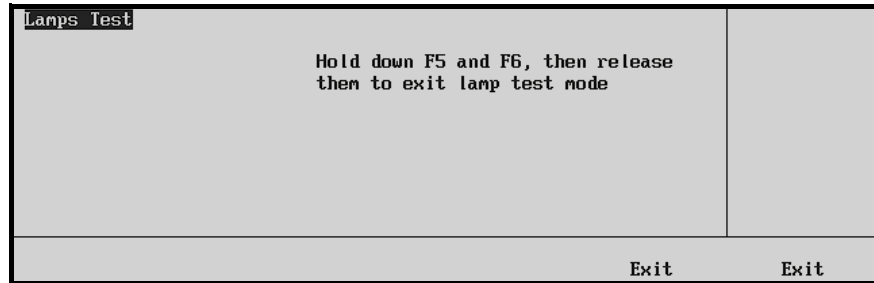
Lamp Test Menu

3. Press buttons in selected panel regions, to test *all lamps* in those regions as required.

4. To exit the menu, press *both* **Exit** buttons beneath the display.

This completes the procedure for testing the lamps.

Memory Test

The **Memory Test Menu** allows you to test various system EPROMs.

Use the following procedure to test the memory:

1. Navigate to **Panel Diagnostics Menu 2-3** as follows:

   • Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Panel Diagnostics** ⇨ **MORE**.

2. Press **Memory Test** to display the **Memory Test Menu**.

```
Memory Test





    Test
```
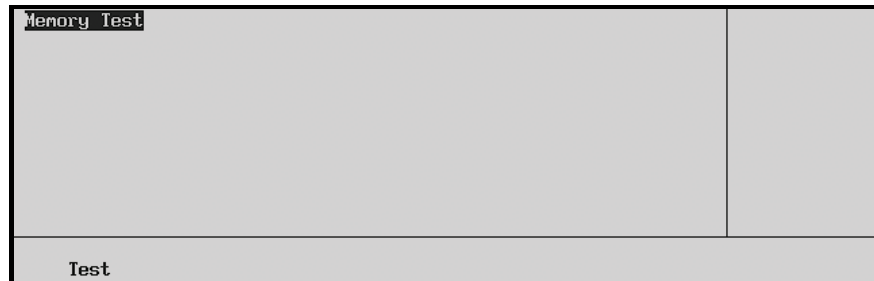
Memory Test Menu

3. Press **Test** to initiate the test of the first EPROM. Press **Test** again to continue testing each EPROM in succession. The menu will report **Pass** or **Fail** per the results of each test.

This completes the procedure for testing the memory.

Display Test

The **Display Test Menu** allows you to test the main menu display of the Synergy Q/MD System.

Use the following procedure to test the display:

1. Navigate to **Panel Diagnostics Menu 2-3** as follows:

   • Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Panel Diagnostics** ⇨ **MORE**.

2. Press **Display Test** to display the **Display Test Menu**.

Display Test Menu

The menu and mnemonics displays are exercised.

3. Press *any button* below the display to advance to the next in the series of display tests. A variety of tests are available.

This completes the procedure for testing the display.

TX/RX Test

The **TX/RX Test Menu** allows you to test communications with various remote control and communications ports.

Use the following procedure to test TX/RX functions:

1. Navigate to **Panel Diagnostics Menu 2-3** as follows:

   • Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Panel Diagnostics** ⇨ **MORE**.

2. Press **TX/RX Test** to display the **Panel TX/RX Test Menu**.
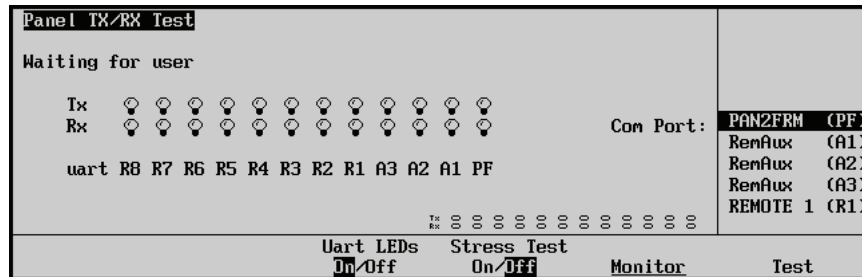
Panel TX/RX Test Menu

The main area of the screen shows the state of each of the control-panel UART transmit and receive LEDs.

3. Toggle the persistent display of UART LEDs by pressing **Uart LEDs**. You can choose between the following:

   • **On** — A small persistent display of the UART LEDs is shown on most Synergy Q/MD menus. This is useful for monitoring the UART LEDs from other menus.

   • **Off** — The persistent display is not shown.

```
S&T MD Position / Crop (1-2)      Channels Used: 1 / 8       (0.000) ↔
MLE 1 Key 1   Press UP ONE button to access other S&T features   X Location

Position                    Rotation
                                                            (0.000) ↕
                                                              Y Location

                              R
                                                            (0.000) ⟳
                                    Tx ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗   Z Location
                                    Rx ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗

                      Pivot       Pivot      Aspect       Channel
  Position  Rotation  Presets     Position   On/Off       1
```
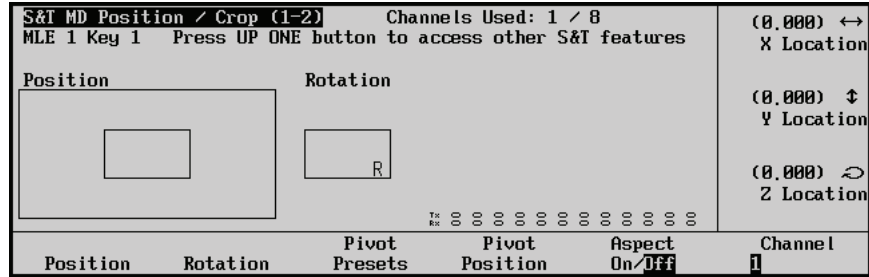
S&T MD Position/Crop Menu with Persistent UART LEDs Displayed

4. Use the **Com Port** knob to select the port that you wish to test.

5. Press **Test** to begin the TX/RX test. The menu will report **Pass** or **Fail** per the results of the test.

6. Repeat steps 3 – 5 for additional ports that you wish to test.

7. Press **Monitor** to display the **Com Port Monitor Menu**. This menu monitors the traffic on the port selected in step 4.

✎ **Note** This option is used primarily for troubleshooting and diagnostic purposes. Therefore, the user should not need to use this menu.


```
Com Port Monitor




  Format     View      Freeze    Streaming
  Hex/ASCII  Tx/Rx     Yes/No    Yes/No      Save        Clear
```
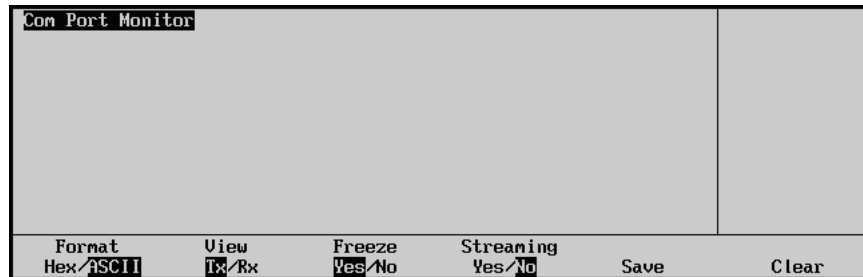
Com Port Monitor Menu

8. Press **Format** to toggle between **Hex** and **ASCII**. This will change the way the information is displayed. In **Hex** mode, the raw data is displayed as Hexadecimal numbers. In **ASCII** mode, the data is displayed as printed characters.

9. Press **View** to toggle between **Tx** and **Rx**. **Tx** displays the traffic being transmitted from the panel, while **Rx** shows the traffic being received by the panel.

10. Press **Freeze** to toggle between **Yes** and **No**. If **Yes** is selected, the current data is frozen on the display and new traffic data is not recorded. If **No** is selected, the old traffic data is continuously cycled out to allow space for the newest traffic data to be displayed.

✎ **Note** Streaming (see below) is not available if **Freeze** is set to **Yes**.

11. Press **Streaming** to toggle streaming of data to a file on the switcher hard drive. Toggling this option to **Yes** starts the streaming. Data is added to the file until you toggle the option to **No** or one hour elapses. The data file may be retrieved from the

switcher via the Synergy Q/MD/X Web Interface. Refer to the section "**Synergy MD/X Web Interface**" on page 6-4 for more information.

![Note icon] **Note**
> You can not stream data from the panel frame port or any port set to a communication rate of 115 kb/s or greater.

12. Press **Save** to save currently collected data that has not been streamed. The data is stored to a file on the switcher hard drive and may be retrieved via the Synergy Q/MD/X Web Interface. Refer to the section "**Synergy MD/X Web Interface**" on page 6-4 for more information.

13. Press **Clear** to clear all recorded data for the selected **Tx** or **Rx** traffic.

This completes the procedure for testing TX/RX functions.

Tally Test

The **Tally Test Menu** allows you to test all tally relays.

Use the following procedure to test tally relays:

1. Navigate to **Panel Diagnostics Menu 2-3** as follows:

   • Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Panel Diagnostics** ⇨ **MORE**.

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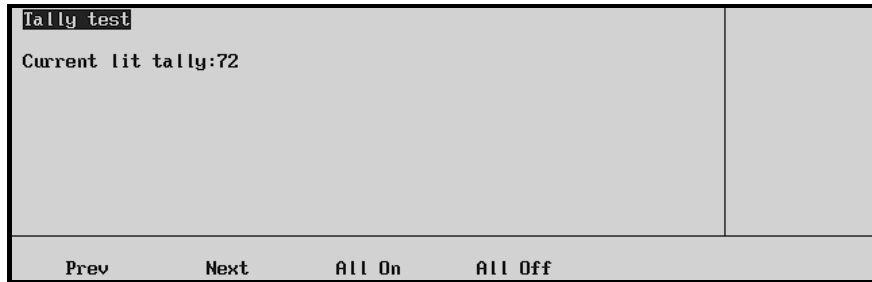
Tally Test Menu

3. Select the desired tally function:

   • Press **Prev** to test the previous relay (as indicated on the menu).

   • Press **Next** to test the next relay (as indicated on the menu).

   • Press **All On** to turn all tally relays on.

   • Press **All Off** to turn all tally relays off.

This completes the procedure for testing the tally relays.

DIP/Jump Test

The **DIP/Jump Test** allows you to test the DIP and jumper switches in the panel with the aid of a graphical representation on the display.

Use the following procedure to test the panel DIP and jumper switches:

1. Navigate to **Panel Diagnostics Menu 2-3** as follows:

   • Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Panel Diagnostics** ⇨ **MORE**.

2. Press **DIP/Jump Test** to display the **DIP/Jump Test Menu**.
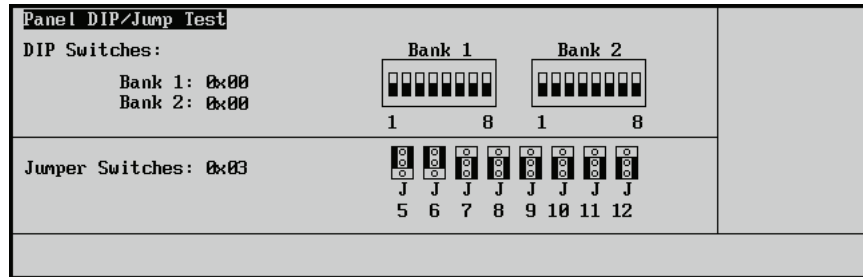
DIP /Jumper Switch Test Menu

The graphical representation runs in real time, meaning any changes made to the physical state of the panel DIP or jumper switches will be displayed instantly. However, as the switches are located within the electronics bay inside the control panel and covered with a protective plate, we do not advise accessing these switches without first contacting Technical Support for assistance.

This completes the procedure for testing the panel DIP and jumper switches.

Panel Monitoring

Panel monitoring allows you to keep a log of all user interactions with your switcher control panel (button presses, knob rotations, fader movements). Panel monitoring generates a significant amount of data and typically is used for diagnostic purposes. Panel monitoring should only be enabled as directed by Ross Video Technical Support.

There are two methods for capturing panel monitoring data: via a log file on the frame or via a computer attached to a control panel remote port.

Logging Panel Monitoring Data to a Log File

Panel monitoring data can be stored on your Synergy Q/MD frame. Use this method when you wish to retrieve the data with a computer attached to the same network as your switcher.

Use the following procedure to enable panel monitor logging to a file on your switcher frame:

1. Navigate to the **Panel Diagnostics Menu 3-3** as follows:

   • Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Panel Diagnostics** ⇨ **MORE** ⇨ **MORE**.

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

Panel Monitor Menu

3. If not already set, toggle the log file destination to **Frame** by pressing **Dest**. Do not toggle the destination to **Log**.

4. Toggle panel monitoring by pressing **Monitor**. You can select from the following:

- **Start** — Panel monitoring is started and data is written to the log file on the switcher frame.

- **Stop** — Panel monitoring is stopped.

✎	**Note**	You can only modify panel monitoring settings when the monitor is stopped.

This completes the procedure for enabling panel monitor logging to a file on your switcher frame.

The panel monitoring log file is located in the **/mnt/hda1/log** directory on your switcher frame. Contact Ross Video Technical Support for instructions on retrieving this file.

Logging Panel Monitoring Data to a Remote Port

Panel monitoring data can be streamed to a remote port on your Synergy control panel.

⚠	**Important**	Do not use this mode unless instructed to by Ross Video Technical Support.

Use the following procedure to enable panel monitor logging to a remote port on your control panel:

1. Navigate to the **Communications Menu 1-2** as follows:

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

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

Communications — Type Menu

3. Assign a Communications Port to Panel Monitoring as follows:

   - Use the **Com Port** knob to select the Synergy Q/MD Communications Port that is connected to the Robotic Camera.

   - Use the **Device** knob to select **Diagnostic**.

4. Press **Select Device** to display the **Select Device Menu**.

Communications — Select Device Menu

5. Use the **Device** knob to select **Log Port**.

6. Press **Com Type** to display the **Com Type Menu**.

```
┌─────────────────────────────────────────────────────────────┐
│ Communications (1-2)                                          │
│                                          Com Port: │LOG Port (R1)│
│ This  menu  lets  you set                                     │
│ up your com port types.                                       │
│                                              Type: │ RS-232  │ │
│                                                    │↓RS-422  │ │
│                                                               │
│                                                               │
├──────────┬──────────┬─────────────┬──────────┬────────┬───────┤
│          │ Select   │             │          │ Custom │ Extra │
│   Type   │ Device   │ Com Settings│ Com Type │ Devices│Options│
└──────────┴──────────┴─────────────┴──────────┴────────┴───────┘
```
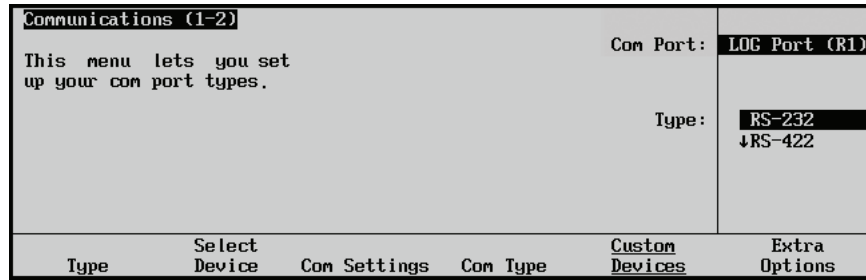
Communications — Com Type Menu

7. Use the **Type** knob to select **RS-232**.

8. Press **Com Settings** to display the **Com Settings Menu**.

```
┌─────────────────────────────────────────────────────────────┐
│ Communications (1-2)                                          │
│                                          Com Port: │LOG Port (R1)│
│ This  menu  lets  you set                                     │
│ up    your   com    port                                      │
│ parameters.                                                   │
│                                        Baud (Fixed): │  9600  │ │
│                                                      │↓19200  │ │
│                                                               │
│                                      Parity (Fixed): │  NONE  │ │
│                                                      │↓ODD    │ │
├──────────┬──────────┬─────────────┬──────────┬────────┬───────┤
│          │ Select   │             │          │ Custom │ Extra │
│   Type   │ Device   │ Com Settings│ Com Type │ Devices│Options│
└──────────┴──────────┴─────────────┴──────────┴────────┴───────┘
```
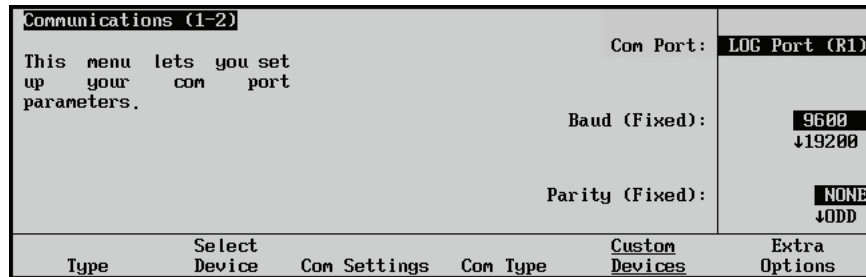
Communications — Com Settings Menu

9. Set the communications protocols as follows:

   • Use the **Baud** knob the baud rate for the log port. Make sure that this is set to the same value as the serial port on the computer connected to the switcher.

   • Use the **Parity** knob to select the parity for the log port. Ensure that this is set to the same value as the serial port on the computer connected to the switcher.

10. Press **HOME** to display the **Installation Change Confirmation Screen**.

11. Accept or reject the changes you have made as follows:

   • Press **Confirm** to accept the changes.

   • Press **Cancel** to exit the menus safely, without making any changes. The system returns to the previously stored settings.

12. Navigate to the **Panel Diagnostics Menu 3-3** as follows:

   • Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Panel Diagnostics** ⇨ **MORE**⇨ **MORE**.

13. Press **Panel Monitor** to display the **Panel Monitor Menu**.

```
Panel Monitor


     Monitor        Dest       Format
    Start/Stop     Log/Frame
```

Panel Monitor Menu

14. If not already set, toggle the log file destination to **Log** by pressing **Dest**. Do not toggle the destination to **Frame**.

15. Toggle panel monitoring by pressing **Monitor**. You can select from the following:

   • **Start** — Panel monitoring is started and data is written to the control panel remote port.

   • **Stop** — Panel monitoring is stopped.

Note   You can only modify panel monitoring settings when the monitor is stopped.

This completes the procedure for enabling panel monitor logging to a remote port on your control panel.

Ensure that the computer is connected to the switcher remote port with an RS-232 crossover cable and that you set the baud and parity to the same values as above. Refer to the section "**Remote Ports**" on page 30-15 for information on the Synergy switcher remote port pinouts.

Frame Diagnostic Tools

All Synergy Q/MD switchers provide several frame diagnostic tools.

Use the following procedure to reach the frame diagnostics menu:

1. Navigate to the **Frame Diagnostics Menu** as follows:

   • Press **HOME** ➩ **MORE** ➩ **Setup** ➩ **Frame Diagnostics**.

```
Frame Diagnostics

Frame fans: OK; speed 100.0%, inlet temperature 30'C
Frame power supplies: OK
Frame graphics buffer FPGA temperature: 48'C
Vid card temp - MLE 1: Front end 69'C, FPGA 65'C
Vid card temp - MLE 2: Front end 71'C, FPGA 65'C
Vid card temp - MLE 3: Front end 68'C, FPGA 67'C
Vid card temp - MLE 4: Front end 69'C, FPGA 67'C

                                                  GfxBuffDDR
   TX/RX Test      GPI Test      Leds Test    DIP Test    Test
```
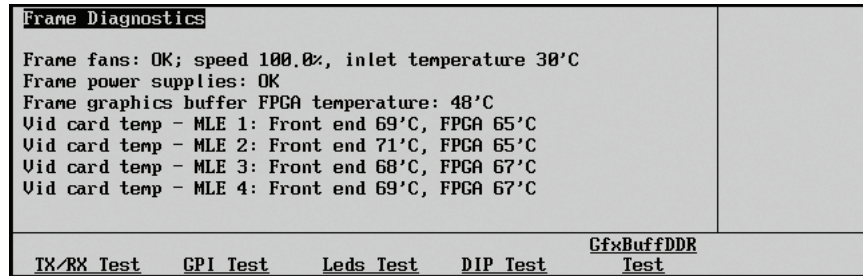
Frame Diagnostics Test Menu

This completes the procedure to reach the frame diagnostics menu.

The **Frame Diagnostics Menu** displays information on frame and card temperatures as well as power supply and fan status.

TX/RX Test

The **TX/RX Test Menu** allows you to test frame communications with various remote control and communications ports.

Use the following procedure to test frame TX/RX functions:

1. Navigate to the **Frame Diagnostics Menu** as follows:

   • Press **HOME** ➩ **MORE** ➩ **Setup** ➩ **Frame Diagnostics**.

2. Press **TX/RX Test** to display the **Frame TX/RX Test Menu**.

```
Frame TX/RX Test

Press Test button to test...




                                        Com Port:  FRM2PAN  (FP)
                                                   PERIPH 1 (P1)
                                                   PERIPH 2 (P2)
                                                   PERIPH 3 (P3)
                                                   PERIPH 4 (P4)

                                          Loop
                                         Yes/No         Test
```
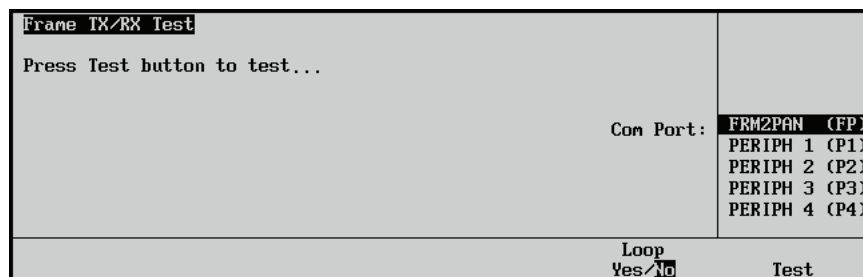
Frame TX/RX Test Menu

3. Use the **Com Port** knob to select the port that you wish to test.

4. If you wish to have the test repeat continuously, press the **Loop** button to toggle it to Yes. The test will repeat until you press **Loop** again or turn the **Com Port** knob.

5. Press **Test** to begin the Frame TX/RX test. The menu will report **Pass** or **Fail** per the results of the test.

6. Repeat steps 2 – 5 for additional ports that you wish to test.

This concludes the procedure for testing frame TX/RX functions.

GPI Test

The **GPI Test** uses a graphical display of light bulbs to indicate to the user which GPI inputs and outputs are **On** or **Off**.

Use the following procedure to test the GPI inputs and outputs:

1. Navigate to the **Frame Diagnostics Menu** as follows:

   • Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Frame Diagnostics**.

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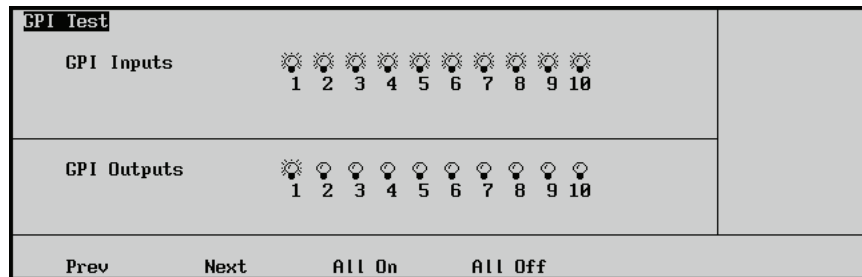
GPI Test Menu

3. Select the desired GPI function as follows:

   • Press **Prev** to test the previous input or output (as indicated on the menu).
   • Press **Next** to test the next input or output (as indicated on the menu).
   • Press **All On** to turn all GPI inputs and outputs on.
   • Press **All Off** to turn all GPI inputs and outputs off.

This concludes the procedure for testing the GPI inputs and outputs.

LEDs Test

The **LEDs Test** allows you to test the CPU board LEDs in the Synergy Q/MD frame. To perform this test, you will need access to the actual frame so that you can verify the operation of the LEDs.

The LEDs are visible with the frame door removed. The LEDs are on the CPU board.

Use the following procedure to test the LEDs operation:

1. Navigate to the **Frame Diagnostics Menu** as follows:

   • Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Frame Diagnostics**.

2. Press **LEDs Test** to display the **LEDs Test Menu**.

```
Frame Leds Test


Please check the frame and ensure all LEDs
on the CPU board are on.

When you are finished, press Up One button to return.
```
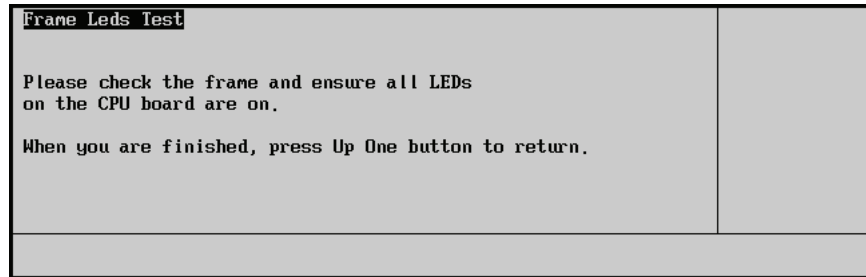
LEDs Test Menu

3. Check the Q/MD-X frame and ensure that all CPU board LEDs are lit.

4. When you are finished, press **UP ONE** to conclude the test and return to the **Frame Diagnostics Menu**.

This concludes the procedure for testing the LEDs operation.

DIP Test

The **DIP Test** allows you to test the DIP switch operation on the Synergy Q/MD frame. To perform this test, you will need access to the actual frame so that you can verify the position of the DIP switches.

The DIP switches are located on the Frame CPU board.

⚠ **Important**   Do not unseat the Frame CPU board to verify DIP switch position while the switcher is running.

Use the following procedure to test the DIP switch operation:

1. Navigate to the **Frame Diagnostics Menu** as follows:

    • Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Frame Diagnostics**.

2. Press **DIP Test** to display the **DIP Test Menu**.

```
Frame DIP Test
DIP Switch on Frame:




                          ########
                          1      8
```
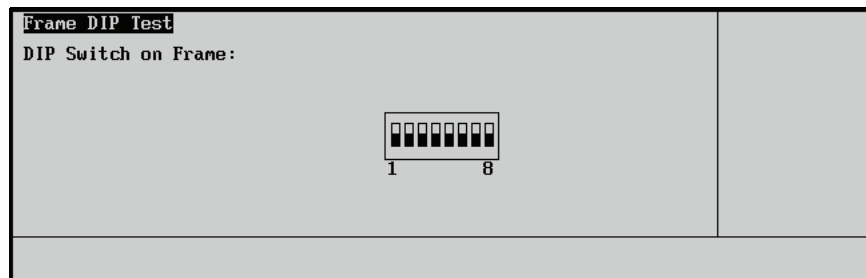
DIP Test Menu

3. The screen shows a representation of the Q/MD frame DIP switches. Ensure the following:

    ~ The actual DIP switches on the frame correspond to what is shown on the **DIP Test Menu**.

    ~ Toggle the DIP switches on the frame and check that the **DIP Test Menu** updates to reflect the changes.

4. When you are finished, press **UP ONE** to conclude the test and return to the **Frame Diagnostics Menu**.

This concludes the procedure for testing the DIP switch operation.

GfxBuffDDR Test

The **GfxBuffDDR Test** allows you to test the Graphics Buffer memory. The test verifies both read and write operations to and from the memory.

Use the following procedure to test the Graphics Buffer memory:

1. Navigate to the **Frame Diagnostics Menu** as follows:

   • Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Frame Diagnostics**.

2. Press **GfxBuffDDR Test** to display the **GfxBuffDDR Test Menu**.

3. Press **Bus test**. The Frame Bus test will be performed. When it is complete, you should see the following:

```
Frame GfxBufDDR Test

Test graphics buffer ddr memory on Frame passed.




  Bus test    Device test
```
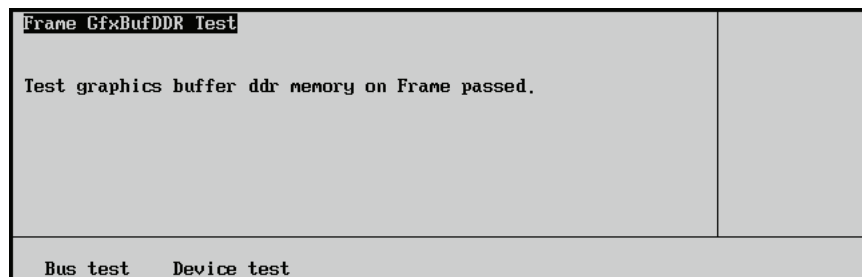
Successful Completion of Bus Test

4. Press **Device test**. During the test, the following screen will display and update to reflect progress:

✎ **Note** | The Device test takes a significant amount of time to complete. |
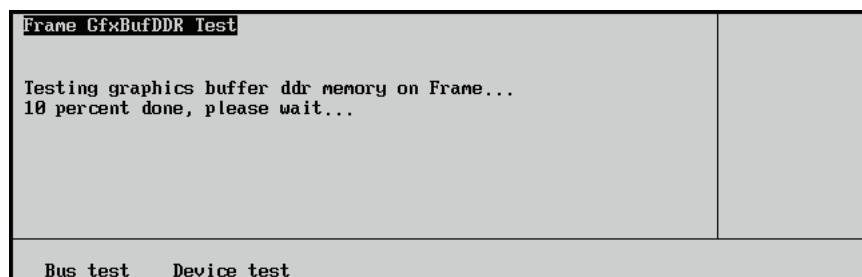
```
Frame GfxBufDDR Test

Testing graphics buffer ddr memory on Frame...
10 percent done, please wait...




  Bus test    Device test
```

5. When you are finished, press **UP ONE** to conclude the test and return to the **Frame Diagnostics Menu**.

This concludes the procedure for testing the Graphics Buffer memory.

Power Supplies and Fans

In This Chapter

The following topics are discussed in this chapter:

- A Note About Redundant Power
- Replacing a Control Panel Power Supply
- Calibrating the Control Panel Power Supply
- Frame Power Supply
- Power Supply Functional Components
- Diagnosing a Power Supply
- Replacing a Power Supply
- Cooling Fans
- Fan Carrier Functional Components
- Cleaning the Air Filter

A Note About Redundant Power

The **Redundant Power Supply** option provides protection against power supply failure — in both the frame and control panel. With the option installed, complete failure of one power supply will not affect switcher operation.

The procedures for replacing power supplies outlined in this chapter can also be applied to the installation of the **Redundant Power Supply** option. For more information on upgrading your Synergy Q/MD System with redundant power, please contact Ross Video Technical Support.

Replacing a Control Panel Power Supply

This section provides detailed instructions for replacing a failed power supply in the Synergy Q/MD control panel. Note that a supply failure will be indicated by the **PANEL** LED on the control panel.

POWER FAIL

PANEL   FRAME
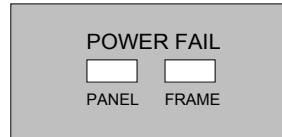
Control Panel — Power Fail LED

When the **PANEL** LED is lit, it indicates that there is either a fault with the control panel primary or redundant power supply, or a loss of A/C power. Ensure you verify your power cord connection, the A/C source, the power supply fuses, and the position of the power switch. If you suspect that a power supply has failed, use the following procedure to change a control panel power supply.

Warning

> Hazardous voltages are present inside the control panel tub. This procedure should be performed by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing unless you are qualified to do so.
>
> Parts of the equipment still present a safety hazard with the power switch in the **OFF** position. To avoid electrical shock, disconnect all A/C line cords from the rear appliance connectors before servicing.

1. Turn off the control panel power switches. If a redundant power supply is installed, ensure that *both* switches are turned off.

2. Check the fuses. Each switch has an associated fuse holder that corresponds to the proper power supply. The fuse rating is printed on the panel surface. If the fuse is blown, spare fuses are available in the spare parts kit, or from Ross Video Technical Support. If the fuse is intact, replace it in the holder and continue with the next step.

3. Check that the main breaker for your AC supply has not tripped. If the breaker has tripped, reset it to restore power. If the breaker is intact, please continue with the next step.

4. Unplug all AC power cords from the AC outlets.

5. Lift the top of the control panel to reveal the electronics bay inside.

6. Remove the protective cover from the electronics bay, and set the screws in a safe place for later re-installation.

7. Locate the power supply that you wish to replace.

   • On the **Synergy 3** control panel, the "**main**" power supply is located on the right (as you face the control panel); the "**redundant**" supply is on the left.

   • On the **Synergy 2** control panel, the "**main**" power supply is located to the right of the circuit board (as you face the control panel); the "**redundant**" supply is located in front of the circuit board.

   • On the **Synergy 1** control panel, the "**main**" power supply is located on the right, at the back of the panel base (as you face the control panel); the "**redundant**" supply is on the left.

8. In the **Synergy 1.5**, **2** and **2.5** control panels, there are ten connections to the power supply, plus four bolts that secure the power supply mounting plate to the control panel bay. In the **Synergy 1** control panel, there are ten connections to the power supply, plus five bolts that secure the power supply to the control panel base.
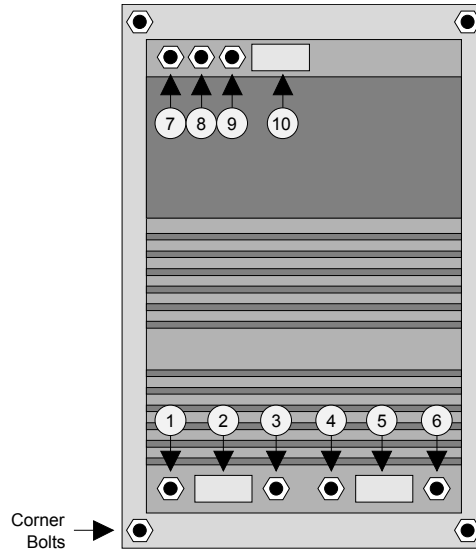
Synergy 1.5, 2 and 2.5 Control Panel Power Supply Connections

Prior to removing the supply and its connections, use masking tape to label *all ten cables* that are connected to the supply. Use the numbering scheme as illustrated above:

- **1** to **6** for the front six connections (left six connections on the **Synergy 1** control panel).
- **7** to **10** for the rear four connections (right four connections on the **Synergy 1** control panel).

This step ensures that all cables are replaced in the same location.

9. Remove cables **1** through **6** from the power supply. Set the nuts aside in a safe place for later re-installation. For cables **1**, **3**, **4** and **6**, note the orientation of components as shown in the side view below.
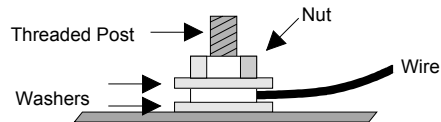
10. (For **Synergy 1.5**, **2** and **2.5** control panels only) Remove the four corner nuts and washers, and set them aside in a safe place. Lift the power supply from the captive bolts, and slide it forward to facilitate easy removal of the rear connections.

Remove cables **7** through **10** from the supply. Set the nuts aside in a safe place for later re-installation. Then remove the old power supply assembly from the control panel bay and set it aside.

11. (For **Synergy 1** control panel only) Remove cables **7** through **10** from the supply. Set the nuts aside in a safe place for later re-installation.

Remove the five bolts and washers that secure the supply to the panel, and set them aside in a safe place. Then detach the old power supply assembly from the captive bolts, remove it from the control panel bay, and set it aside.

12. Unpack the new power supply, and install it onto the captive bolts inside the control panel bay.

13. Re-pack the old power supply in the empty shipping container, and return it to **Ross Video Technical Support**. The supply will be inspected to determine the cause of the failure.

14. Re-attach cables **7** through **10** to the rear of the new supply. Use the diagram on the previous page for reference.

15. Replace the washers and nuts on the securing bolts.

16. Re-attach cables **1** through **6** to the front of the new supply. Use the diagram on the previous page for reference.

17. Verify all connections. It is not necessary to remove the labels from the ten power supply cables.

18. Re-connect all AC power cords and turn on control panel power.

Note | Do not replace the protective cover over the electronics bay until you have completed the calibration procedure.

This completes the procedure for replacing a control panel power supply. Please continue with the procedure for calibrating the power supply voltages.

Calibrating the Control Panel Power Supply

Warning | Hazardous voltages are present during this calibration procedure. Keep clear of all A/C wiring areas when performing this calibration.

Although each control panel power supply is calibrated at the factory, it is highly recommended that you check the voltages and re-calibrate the supply only if required — once it has been installed in the control panel.

Use the following procedure to check and calibrate the control panel power supply.

1. Ensure that the power supply switch is in the **OFF** position.

2. Ensure that you have access to a digital voltmeter.

3. Turn on only the *newly installed* power supply (or the one that you want to test). If both power supplies are on, turn the old one (or the one that you do not want to test) off. This step ensures that correct voltages will be measured.

4. If the top of the control panel is up, lower it momentarily in order to place the panel in the "**Lamp Test**" mode. This diagnostic mode ensures that a suitable load is placed on the power supply.

5. Place the panel in the "**Lamp Test**" mode as follows:

   • Navigate to the **Panel Diagnostics Menu 1-2**:

     ~ Press **HOME** (to display the **Main Menu 1-2**).

     ~ **MORE** (to display the **Main Menu 2-2**).

     ~ **Setup** (to display the **Setup Menu 1-2**).

~ **Panel Diagnostics** (to display the **Panel Diagnostics Menu 1-2**).

- Press **Lamp Test** to display the **Lamp Test Menu**.

```
Lamps Test
                        Hold down F5 and F6, then release
                        them to exit lamp test mode




                                              Exit          Exit
```
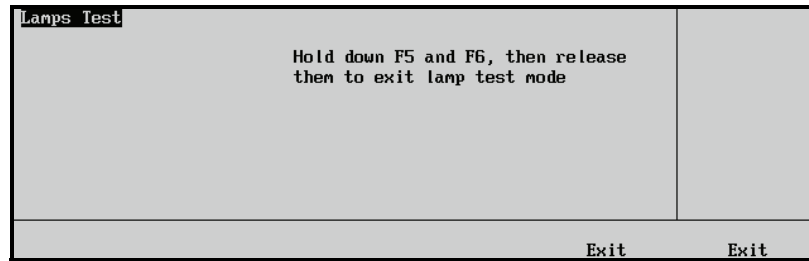
Lamp Test Menu

- Press any button in the **Pattern Control Group** to light all of the buttons in the group.
- Leave the system in "**Lamp Test**" mode for now.

6. Raise the top of the control panel to access the circuit board below.

7. *(For the Synergy 2 and 3 Control Panels only. If you have a Synergy 1 control panel, please proceed to step 12.)* Locate the calibration controls at the front edge of the circuit board. Use the figure below for reference.
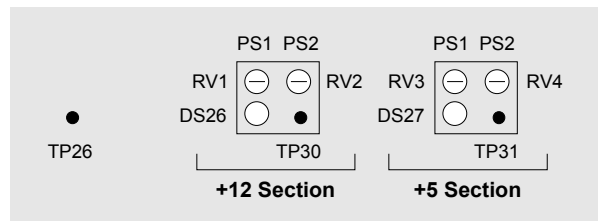
Synergy 2 and 3 Power Supply Calibration Controls

The following controls are provided:

For the main supply (PS1):

- **RV1** adjusts the +12 volt supply.
- **RV3** adjusts the +5 volt supply.

For the redundant supply (PS2):

- **RV2** adjusts the +12 volt supply.
- **RV4** adjusts the +5 volt supply.

For both supplies:

- **DS26** (green) indicates that +12 volt power is on.
- **DS27** (green) indicates that +5 volt power is on.
- **TP30** is the +12V test point.
- **TP31** is the +5V test point.
- **TP26** is the ground test point.

8. Ensure that the green LEDs **DS26** and **DS27** are both on.

9. To test the +5V supply, connect the voltmeter probes between **TP26** (ground) and **TP31**. Measure the voltage. The proper reading should be +5V, ± 50 millivolts. If not, adjust as follows:

- Adjust trim pot **RV3** (for power supply 1)
- Adjust trim pot **RV4** (for power supply 2)

10. To test the +12V supply, connect the voltmeter probes between **TP26** (ground) and **TP30**. Measure the voltage. The proper reading should be +12V, ± 50 millivolts. If the voltage does not fall into the correct range, adjust as follows:

    - Adjust trim pot **RV1** (for power supply 1)
    - Adjust trim pot **RV2** (for power supply 2)

11. Once the new supply has been calibrated, lower the top of the control panel momentarily in order to exit the "**Lamp Test**" mode. Exit the mode by pressing *both* **Exit** buttons beneath the display (**F5** and **F6**).

12. Turn off the control panel power.

13. Raise the top of the panel, and replace the protective cover over the electronics bay. Secure all screws around the edges of the top cover. Lower the top of the control panel to complete the procedure.

14. (*For the Synergy 1 Control Panel only. If you have a Synergy 2 or 3 control panel, please return to step 6.)* Locate the calibration controls at the left edge of the circuit board. The following controls are provided:

    For the main supply (PS1):

    - **RV1** adjusts the +5 volt supply.
    - **RV2** adjusts the +12 volt supply.

    For the redundant supply (PS2):

    - **RV3** adjusts the +5 volt supply.
    - **RV4** adjusts the +12 volt supply.

    For both supplies:

    - **DS1** (green) indicates that +5 volt power is on.
    - **DS2** (green) indicates that +12 volt power is on.
    - **TP1** is the +5V test point.
    - **TP2** is the +12V test point.
    - **TP12**, located near the front center of the panel CPU board, is the ground test point.

15. Ensure that the green LEDs **DS1** and **DS2** are both on.

16. To test the +5V supply, connect the voltmeter probes between **TP12** (ground) and **TP1**. Measure the voltage. The proper reading should be +5V, ± 50 millivolts. If not, adjust as follows:

    - Adjust trim pot **RV1** (for power supply 1)
    - Adjust trim pot **RV3** (for power supply 2)

17. To test the +12V supply, connect the voltmeter probes between **TP12** (ground) and **TP2**. Measure the voltage. The proper reading should be +12V, ± 50 millivolts. If the voltage does not fall into the correct range, adjust as follows:

    - Adjust trim pot **RV2** (for power supply 1)
    - Adjust trim pot **RV4** (for power supply 2)

18. Once the new supply has been calibrated, lower the cover of the control panel and exit the "**Lamp Test**" mode by pressing *both* **Exit** buttons beneath the display (**F5** and **F6**)

19. Flip the control panel back onto its side. Replace and tighten the screws to secure the cover.

20. Return the control panel to its normal operating position to complete the procedure.

This completes the procedure for checking and calibrating the control panel power supply

Frame Power Supply

The Synergy MD frame comes standard with a 12 Volt, 500 Watt power supply. In addition, if desired, an additional power supply can be added by purchasing the Redundant Power option. This upgrade allows the power supplies to operate in a load sharing mode, where, if one power supply fails, the remaining power supply is able to provide sufficient power to the system. This redundancy enables hot-swapping of a power supply without interruption of the system.

This section provides an overview of the power supply located in the Synergy MD chassis, and includes details of the functional components, as well as the procedures required to diagnose and replace a failed power supply.

Your frame may require additional power supplies depending on the hardware installed in the frame. If the control panel displays a message indicating there are not enough power supplies, you need to add a power supply to your frame.

⚠	**Notice**	Proper system ventilation requires the frame door to be closed. As removing the door while the system is operational can create potential overheating considerations, hot swapping a power supply should be done in a timely manner to reduce the risk of system over-heating.

Power Supply Functional Components

There are six key components located inside the power supply. These components include the power switch, status indicators, and the midplane connections.

⚡	**Warning**	Hazardous voltages will be present within the power supply module for a short period of time after removal from the system chassis. The power supply cover is intended to protect the user from access to these areas, and should not be removed. Ross Video power supplies are intended to be factory serviced by qualified Ross Video service personnel only. Service or any component replacement other than the AC input fuse is not advised.
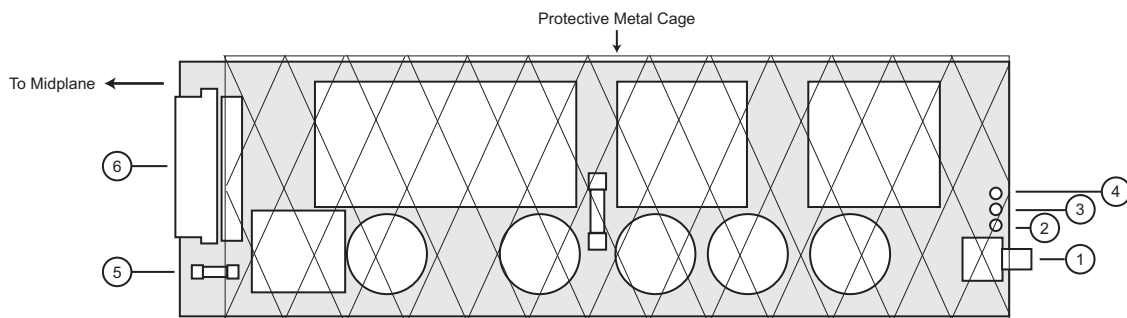
Power Supply — Functional Components

1) Power Switch	3) Yellow Standby Indicator	5) AC Input Fuse
2) Green Power Indicator	4) Red Fail Indicator	6) Midplane Connector

1. **Power Switch**

   The Power Switch is used to turn the individual power supplies on and off. The switch is in the off position when it is toggled down.

2. **Green Power Indicator**

   This green indicator illuminates to show that the power supply is functioning properly.

3. **Yellow Standby Indicator**

   This yellow indicator illuminates to show that the power supply is in standby mode. This is because the power switch on the power supply has been turned off.

4. **Red Fail Indicator**

   This red indicator illuminates to show that the power supply is not operating. This is because it has failed or is installed incorrectly.

5. **AC Input Fuse**

   This 250 VAC, 10 AMP fuse is accessible from the back of the power supply and can be replaced without removing the protective metal cage. If the fuse does need to be replaced, it is a 5x20 mm, time lag (slow blow) fuse that meets CSA, UL, and IEC standards.

6. **Midplane Connector**

   The power supply has a single connector that is used to pass power and command signals between the midplane, the power supply, and the AC power inlets on the back of the frame.

Diagnosing a Power Supply

When a power supply fails, or is in stand-by, the **FRAME** LED in the **Power Fail** area on the control panel will illuminate. When this happens, you will need to diagnose the problem to determine if the power supply needs to be replaced.

POWER FAIL

PANEL   FRAME
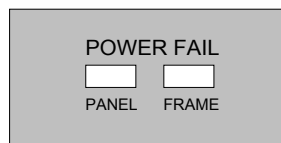
Control Panel — Power Fail Indicators

The **Frame Power Fail** indicator on the control panel and the indicators and switch on the power supply can help you diagnose the status of the power supply and what actions to take to correct the problem.

Power Supply Troubleshooting

Power Switch	Green Power Indicator	Yellow Standby Indicator	Red Fail Indicator	Status
ON	ON	OFF	OFF	**Normal Operation** • Check the RJ-45 cable connecting the control panel to the frame
OFF	OFF	ON	OFF	**Power supply is in stand-by mode** • Toggle the power switch to **ON** for normal operation
ON	OFF	OFF	ON	**Fail Mode** 1 Check AC cable and building circuit breakers 2 Replace power supply if needed
ON	OFF	OFF	OFF	**Fail Mode** 1 Check AC cable and building circuit breakers 2 Check AC input fuse and replace if needed 3 Replace power supply if needed
OFF	OFF	OFF	OFF	**Fail Mode** 1 Check AC cable and building circuit breakers 2 Check AC input fuse and replace if needed 3 Replace power supply if needed

Use the table above to help you identify the problem with the power supply. After taking corrective action, confirm that the failure has been corrected by checking the **Frame Power Fail** indicator on the control panel. If the failure has not been corrected, consult the table again. If needed, replace the power supply according to the procedures provided in "**Replacing a Power Supply**" section below.

✎	**Note**	For further assistance, contact Ross Video Technical Support.

Replacing a Power Supply

When a power supply needs to be removed, the power supply itself must be powered down. If you do not have the Redundant Power option installed, this will result in the Synergy MD system being off-line. Refer to the section "**Diagnosing a Power Supply**" on page 25-9 for information on when to replace a power supply.

✎	**Note**	If the Redundant Power option is installed in the frame, the power switch on the redundant power supply should not be toggled off. With this option installed, the frame can remain in operation while a power supply is removed and replaced.

⚠	**Caution**	Hazardous voltages are present on the pins of supply mating connectors within the chassis power supply housing area. To reduce the risk of electric shock, keep clear of mating connectors within the supply area when power supplies modules are not installed.

Use the following procedure to replace a power supply:

1. Remove the front cover of the frame.

2. Locate the power supply you wish to replace.
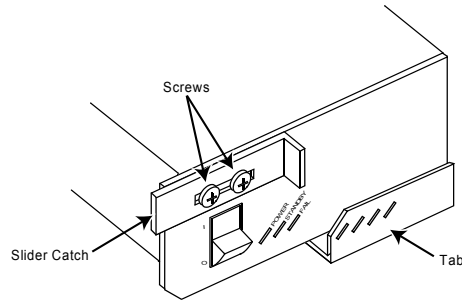
Power Supply — Protective Cage

3. Switch the power supply **OFF** by toggling the power switch down.
4. Loosen the two screws holding the slider catch in place until the catch moves freely.
5. Move the slider catch all the way to the right.

⚠ **Caution** | The metal cage surrounding the power supply may be hot after prolonged system operation.

6. Grasp the tab and gently pull the power supply out of the frame.
7. Switch the replacement power supply **OFF** by toggling the power switch down.
8. Install the new power supply by sliding it into the open slot and pushing it into place.
9. Move the slider catch to the left until it hooks the side of the slot.
10. Tighten the screws to secure the slider catch in place.
11. Switch the new power supply **ON** by toggling the power switch up.
12. Replace the front cover of the frame.

   The control panel will automatically detect the new power supply and the **Frame Power Fail** indicator on the control panel will turn off.

This completes the procedure for replacing a power supply.

Cooling Fans

The Synergy MD frame has a **Fan Carrier** (4400A-012) which is actually an assembly of two cards, the **Fan Controller Board** (4400A-011) and the **Fan Display Board** (4400A-016). This assembly supports four 60mm and three 120mm cooling fans.

In addition to the Fan Carrier, there is an air filter that prevents dust and airborne contaminants from getting inside the frame. There is also a **Fan Interface Board** (4400A-013) that provides the connection between the Fan Carrier and the midplane. The Fan Interface Board is permanently installed in the switcher chassis.

When a fan fails, the **FRAME** LED in the **Power Fail** area on the control panel will flash. This is an indication that a fan has failed, and not the power supply, as described in the section "**Diagnosing a Power Supply**" on page 25-9.
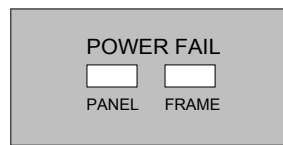
Control Panel — Power Fail Indicators

This section provides a description of the Fan Carrier Assembly that is located in the Synergy MD frame. This overview includes the functional components of the Fan Carrier, as well as the procedures required to remove and clean the air filter.

✎	**Notice**	Proper system ventilation requires the frame door to be closed. As removing the door while the system is operational can create potential overheating considerations, any online servicing should be done in a timely manner to reduce the risk of system over-heating.

Fan Carrier Functional Components

There are six key components on the Fan Carrier that provide communication and control for the card and the fans.
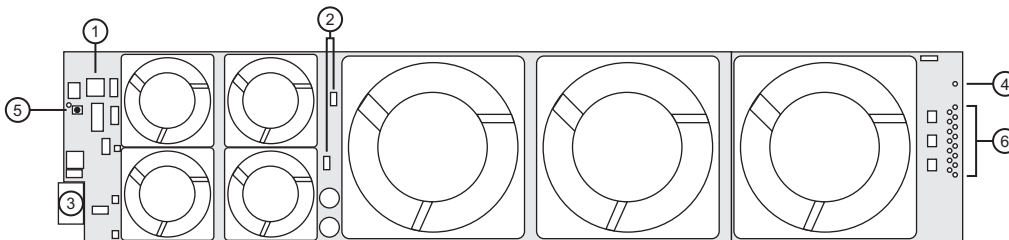
Fan Carrier — Functional Components

1) On-Board Controller	3) Fan Interface Board Connector	5) Reset Button
2) Fan Controllers	4) Fan Fail Indicators	

1. **On-Board Micro Controller**

    The On-Board micro controller governs the on-board communication and control, as well as the communication with the midplane through the Fan Interface Board.

2. **Fan Controllers**

    These controllers regulate the speed and operation of the fans as requested by the system for cooling of the frame. The controllers also monitor the fans for failures.

3. **Fan Interface Board Connector**

    The Fan Interface Board Connector plugs into the Fan Interface board that is located at the back of the frame. The Fan Interface board then routes power and interface signals from the midplane to the Fan Carrier.

Fan Interface Card — Overview
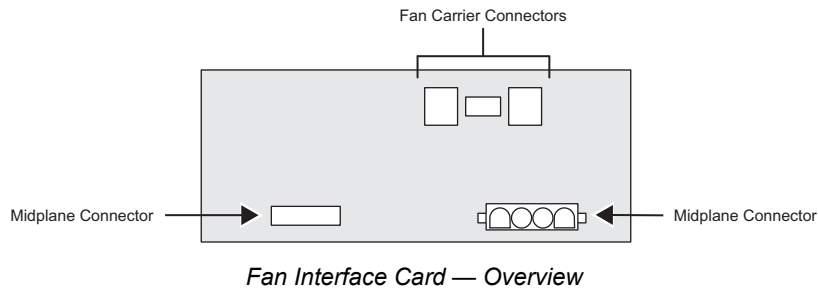
4. **Fan Fail Indicators**

    These 16 indicators (8 red and 8 green) display the status of the fans through the front cover of the frame. One pair, consisting of one red and one green LED, is associated with each fan. If all fans are functioning correctly, all of the green LEDs will be illuminated. A solid red LED indicates a fan failure.

    For a few seconds on system power up, the indicators will flash red. As groups of fans begin functioning, the red LEDs will turn off, and green LEDs will illuminate. On system shutdown (from the menu), the LEDs will flash alternately between all on and their state prior to shutdown. This acts as an indication that the switcher chassis has been shut down from the control panel.

5. **Reset Button**

    The Reset button provides a local, hard reset of the Fan Carrier, and should only be used for diagnostic purposes.

Cleaning the Air Filter

The Synergy MD frame has a single air filter that is used to prevent dust and airborne particulates from contaminating the frame. This filter should be cleaned every three months and may require more frequent cleaning in some environments.

Use the following procedure to clean the air filter:

1. Remove the front cover of the frame.
2. Locate the air filter on the far left side of the frame, next to the Fan Carrier assembly.
3. Grasp the end of the filter and gently pull it out of the frame.
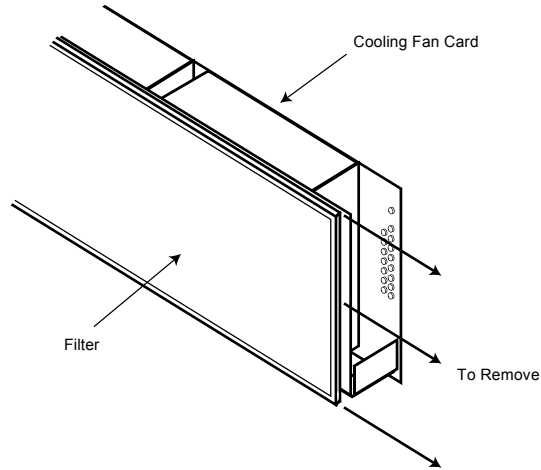
Fan Carrier and Filter — Overview

4. While servicing the air filter, replace the front cover of the frame.

5. Brush any loose dust off of the filter.

6. Place the filter under warm running water to remove any remaining dust.

Note   On one side of the filter is a "bug screen" mesh. When rinsing, water should flow *out* of this side.

7. Remove the filter from the water and pat dry with a towel to remove any moisture.

8. Remove the front cover of the frame.

9. Replace the clean, dry filter back into the air filter slot in the frame. Ensure that the side with the mesh is facing the outer wall of the chassis, and the edge *without* the foam is situated at the front of the chassis.

10. Replace the front cover of the frame.

With the air filter cleaned, it is a good idea to record how dirty it was and how long it has been since the last cleaning. If the filter was very dirty, you should shorten the interval between cleanings to compensate for your particular conditions.

Control Panel Boards

In This Chapter

This chapter provides details about each "switch" board in each of the control panels of the Synergy Q/MD switcher, plus the control panel CPU Board layout.

The following topics are discussed:

- Synergy 1 Control Panel Boards
- Synergy 1 Panel CPU Board Layout
- Synergy 2 Control Panel Boards
- Synergy 3 Control Panel Boards
- Synergy 2 and 3 Control Panel CPU Board Layout
- Basic Interconnections

Synergy 1 Control Panel Boards

The figure below illustrates the layout of the control panel boards within the **Synergy 1** control panel.
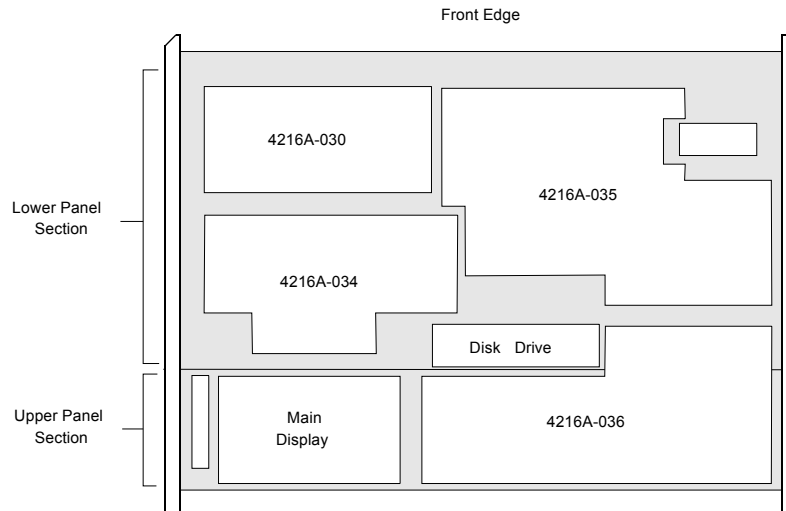
Layout of Panel Boards — Synergy 1 Control Panel

Following are board numbers and brief descriptions of each board shown above:

In the lower control panel section:

- **4216A-030** – all crosspoint bus and Aux bus switches.
- **4216A-034** – buttons, switches and potentiometers in the **Key 1**, **Key 2**, **Custom Control**, and **Global Memory System** areas. Also included are the function switches (**F1**, **F2**, etc.) that surround the large display, plus a power module (attached to the top side of the board) that provides power to the display's backlight.
- **4216A-035** – buttons, switches, and potentiometers in the **Mattes**, **Effects Control**, **Positioner**, **Transition**, **DSK**, and **Fade to Black** areas.

In the upper control panel section:

- **4216A-036** – buttons, switches and potentiometers in the **Pattern Control** group, A-D converters for all knobs, faders and joystick, plus the FPGA that decodes the optical potentiometers beside the large display.

Synergy 1 Panel CPU Board Layout

The figure below illustrates a top view of the **Synergy 1** Control Panel CPU Board (**4216A-033**).
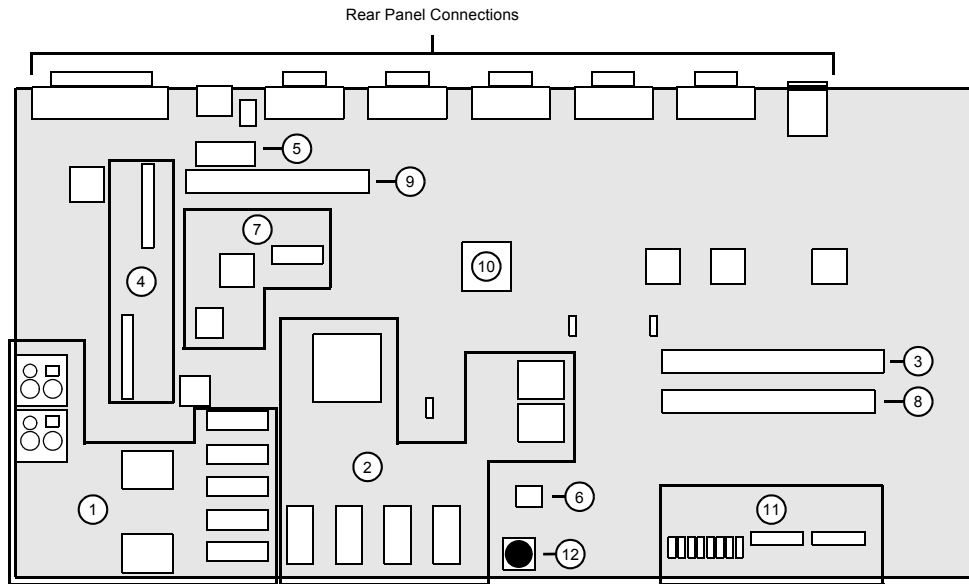
Synergy 1 Control Panel CPU Board — Functional Components

1) Power Distribution	5) Keyboard Controller	9) Display Connector
2) Micro Processor	6) Boot PROM	10) Control FPGA
3) USB Connector	7) Display Controller	11) Jumpers
4) Tally Card Connectors	8) Control Connector	12) Reset Button

The major functional blocks are described below:

1. Power Distribution

This area contains the power distribution connectors and adjustment controls for most of the boards in the Control Panel. Each board has a dedicated power supply connection.

2. Micro Processor

This area contains the micro processor and the system and flash memory that support it.

3. USB Connector

This connector accommodates the ribbon cable for the USB port.

4. Tally Card Connectors

These two 32-pin connectors accommodate the Tally Card, which provides 16 standard tallies.

5. Keyboard Controller

The Keyboard Controller provides the interface for the PS/2 connector located on the rear of the Control Panel. This port is provided for future expansion.

6. **Boot PROM**

The Boot PROM provides the initial hardware instructions for the CPU Board when the system is powered on.

7. **Display Controller**

The Display Controller provides the command interface for the LCD Display on the front of the Control Panel.

8. **Control Connector**

This 50-pin connector accommodates the main data cable for communication between the CPU Board and the other Control Panel boards.

9. **Display Connector**

This 26-pin connector accommodates the ribbon cable for the LCD Display on the front of the Control Panel.

10. **Control FPGA**

This FPGA provides command routing for the microprocessor.

11. **Jumpers**

The jumpers on the CPU Board are set from the factory for the various system loadouts and should not be altered unless advised to do so by Ross Video Technical Support.

12. **Reset Button**

The Reset button provides a hard reset for the CPU Board and should not be used unless advised to do so by Ross Video Technical Support.

CPU Board Rear Panel

The figure below illustrates the various connectors on the rear of the **Synergy 1** Control Panel. These connectors allow the Control Panel to communicate with the frame, serial peripheral devices, the tally device, as well as an optional keyboard. All connectors are always present, whether or not you have options installed. Refer to Appendix A, "**Specifications**" for details of all control panel connector pinouts.
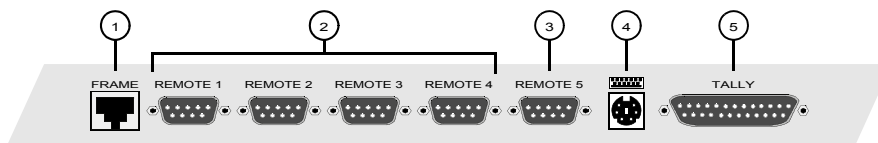
Synergy 1 Control Panel — Rear View, Connector Section

1) Frame Connector	3) Remote Device/Aux Panel Connector	5) Tally Connector
2) Remote Device Connectors	4) PS/2 Connector	

1. **Frame Connector**

The RJ-45 Frame Connector is used to connect the Control Panel to the frame.

2. **Remote Device Connectors**

   Four 9-pin "D" connectors (RS-422) are provided for communicating with remote peripheral devices, such as VTRs, disk recorders, video servers, or audio servers. The appropriate remote control software option (**VTR Remote Control**, **Video Server Remote Control**, **Audio Server Remote Control,** etc.) must be installed in order to activate these ports.

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

3. **Remote Device/Aux Panel Connector**

   This 9-pin RS-422 connector can be connected to either a remote peripheral device or, by using an interface connector, to an Aux Panel. To accomplish this, pin 9 has been set to +5V to act as a remote reset from the Aux Panel.

Note
> The interface connector (4216A-351) required to connect an Aux Panel to the Remote 5 connector is included in the Installation Kit.

4. **PS/2 Connector**

   This port is provided for future expansion.

5. **Tally Connector**

   This 25-pin connector is provided for the connection of the 16 standard panel tallies.

Synergy 2 Control Panel Boards

The figure below illustrates the layout of the control panel boards within the **Synergy 2** control panel. This panel is used with both the **Synergy 2** and the **Synergy 1.5** Switchers.
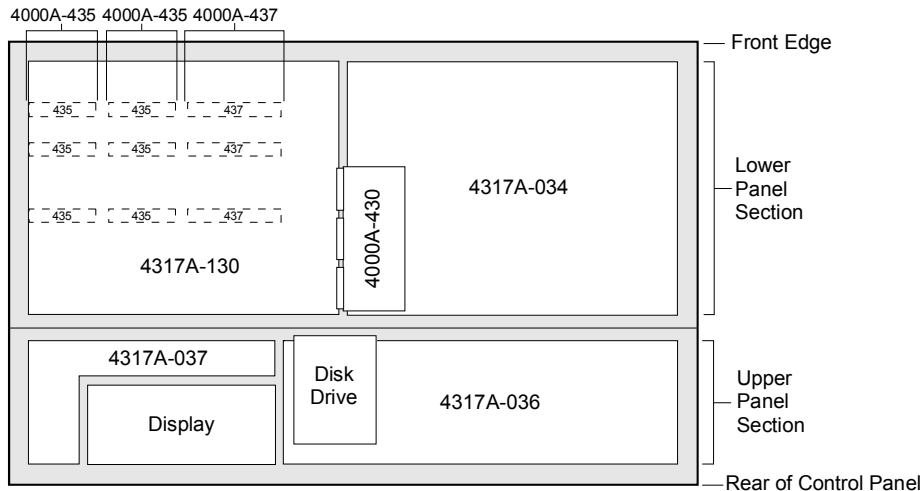
Layout of Panel Boards — Synergy 2 Control Panel

Following are board numbers and brief descriptions of each board shown above:

In the lower control panel section:

- **4317A-130** — all crosspoint bus, Aux bus and re-entry switches.

- **4317A-034** — buttons, switches and potentiometers in the entire effects area (**Key**, **Matte**, **Effects Control**, **Positioner**, **Transition**, **Fade to Black**, and **Downstream Keyers**).

- **4000A-430 —** contains the circuitry to control the Mnemonics displays.

- **4000A-435 (up to Qty. 6) —** 5-display mnemonics module.

- **4000A-437 (up to Qty. 3) —** 7-display mnemonics module.

In the upper control panel section:

- **4317A-036** — buttons, switches and pots in the **Pattern Control** group and **Global Memory System** group, A-D converters for all knobs, faders, and joystick, plus the FPGA that decodes the optical potentiometers beside the large display.

- **4317A-037** — function switches (**F1**, **F2**, etc.) that surround the large display, plus a power module (attached to the top side of the board) that provides power to the display backlight. A guard shield is included, because the power module generates over 1000 VAC.

Synergy 3 Control Panel Boards

The figure below illustrates the layout of the control panel boards within the **Synergy 3** control panel, which is used for the **Synergy 2.5** Switcher.

4000A-438   4000A-437   4000A-438   4000A-437

— Front Edge

438   437   438   437

4000A-430

438   437   438   437

4530A-131 - LOWER XPT

438   437   438   437

4530A-130 - UPPER XPT

438   437   438   437

4000A-430

4530A-138

4530A-038   4530A-035   4530A-034

Lower Panel Section

4530A-202

Disk Drive

4735A-032D

4735A-037

Display

4735A-036B

Upper Panel Section

— Rear of Control Panel
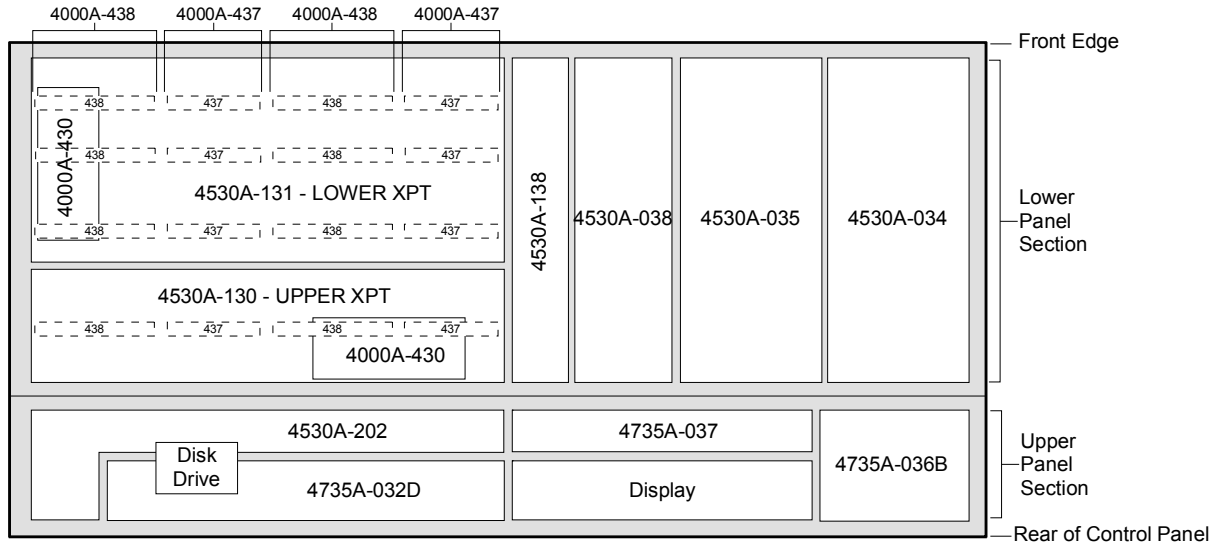
Layout of Panel Boards — Synergy 3 Control Panel

Following are board numbers and brief descriptions of each board shown above.

In the lower control panel section:

- **4530A-130** — upper crosspoint bus switches (MLE 1).

- **4530A-131** — lower crosspoint bus switches (MLE 2, MLE 3).

- **4530A-034** — buttons, switches and potentiometers on the right-hand side of effects area (**Key**, **Effects Control**, **Positioner**, **Fade to Black**, and **Downstream Keyer 2**).

- **4530A-035** — buttons, switches and potentiometers on the left-hand side of effects area (**Transition**, **Memory**, **Preview Overlay** and **Downstream Keyer 1**).

- **4530A-138** — crosspoint re-entry switches.

- **4000A-430 (QTY. 2)** — contains the circuitry to control the Mnemonics displays.

- **4000A-437 (up to Qty. 8)** — 7-display mnemonics module.

- **4000A-438 (up to Qty. 8)** — 8-display mnemonics module.

In the upper control panel section:

- **4735A-032B** — switches and display for the **Global Memory System**.

- **4735A-036B** — buttons, switches and potentiometers in the **Pattern Control** and **Matte** groups, A-D converters for all knobs, faders and joystick, plus the FPGA that decodes the optical potentiometers beside the large display.

- **4735A-037** — switches (**F1**, **F2**...) that surround the large display, plus a power module attached to the top side of the board, that provides power to the display backlight. A guard shield is included because the power module generates over 1000 VAC.

- **4530A-202** — crosspoint switches for the **Aux Bus** and **Aux Bus Assign** groups.

Synergy 2 and 3 Control Panel CPU Board Layout

The figure below illustrates a top view of the control panel CPU Board (**4000A-033A**), which is identical for the **Synergy 2** and **Synergy 3** control panels.

Rear Panel Connections
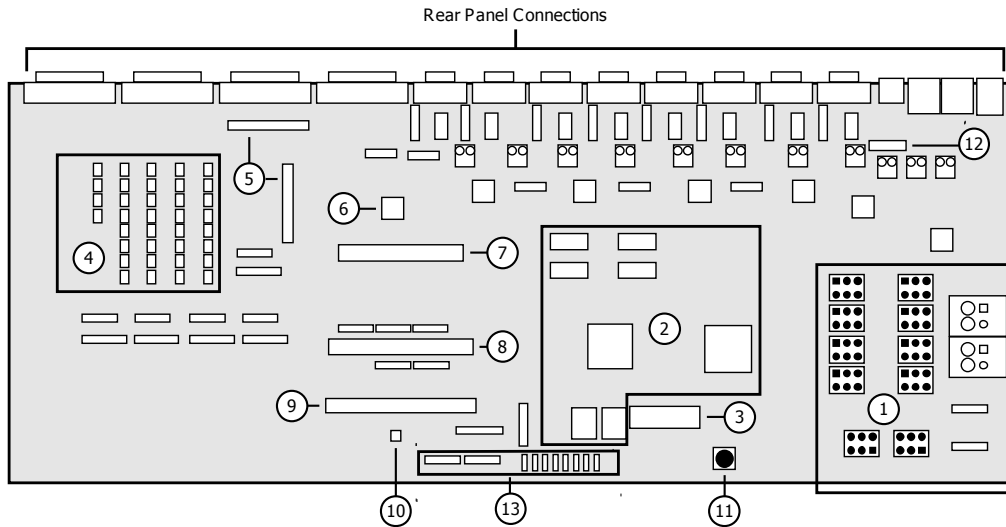
Synergy 2/3 Control Panel CPU Board — Functional Components

1) Power Distribution	6) Display Controller	11) Reset Button
2) Micro Processor	7) Display Connector	12) Keyboard Controller
3) Boot PROM	8) Control Connector	13) Jumpers and DIP Switches
4) Tallies	9) USB Connector	
5) Tally Card Connectors	10) USB Controller	

The major *functional blocks* are described below:

1. **Power Distribution**

    This area contains the power distribution connectors and adjustment controls for most of the boards in the Control Panel. Each board has a dedicated power supply connection.

2. **Micro Processor**

    This area contains the micro processor, control FPGA and the system and flash memory that support them.

3. **Boot PROM**

    The Boot PROM provides the initial hardware instructions for the CPU Board when the system is powered on.

4. **Tallies**

    This area provides the relays for the 36 standard tallies.

5. **Tally Card Connectors**

    These two 36-pin connectors accommodate the optional Extended Tally board (4000A-038) that provides an additional 36 tallies when installed.

6. **Display Controller**

   The Display Controller provides the command interface for the LCD Display on the front of the Control Panel.

7. **Display Connector**

   This 26-pin connector accommodates the ribbon cable for the LCD Display on the front of the Control Panel.

8. **Control Connector**

   This 50-pin connector accommodates the main data cable for communication between the CPU Board and the other Control Panel boards.

9. **USB Connector**

   This 34-pin connector accommodates the ribbon cable from the USB Port.

10. **USB Controller**

    The USB Controller provides the command interface for the USB Port on the front of the Control Panel.

11. **Reset Button**

    The Reset Button provides a hard, local, reset for the CPU Board and should only be used for diagnostic purposes.

12. **Keyboard Controller**

    The Keyboard Controller provides the interface for the PS/2 connector located on the rear of the control panel. This port is provided for future expansion.

13. **Jumpers and DIP Switches**

    The jumpers on the CPU Board are set from the factory for the various system loadouts and should not be altered unless advised to do so by Ross Video Technical Support.

Rear Panel Connectors

The figure below illustrates the various connectors on the rear of the **Synergy 2** and **3** Q/MD control panels. These connectors allow the Control Panel to communicate with the frame, serial peripheral devices, the tally device, as well as an optional keyboard. All connectors are always present, whether or not you have options installed. Refer to Appendix A, "**Specifications**" for details of all control panel connector pinouts.
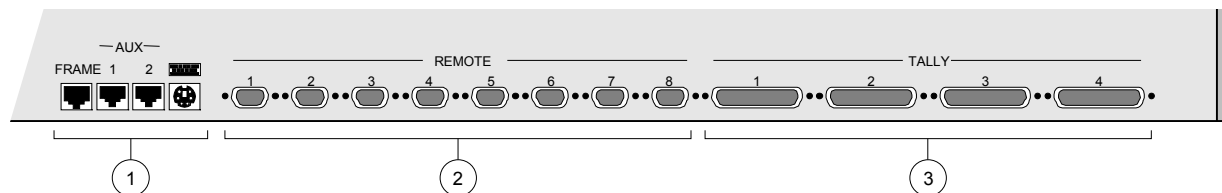
Synergy 2 and 3 Control Panels— Rear View, Connector Section

1) Panel and Keyboard Communications	2) Remote Device Control	3) Tally Connectors

1. Panel and Keyboard Communications

Four connectors are provided for panel communications.

- **FRAME** — One 8-pin shielded RJ-45 connector is provided for communications between the chassis (**PANEL** connector) and the control panel.

- **AUX 1** and **2** — Two 6-pin shielded RJ-12 connectors are provided for communications between the control panel and remote Aux panels.

- **PS/2** — This port is provided for future expansion.

2. Remote Device Control

Eight 9-pin "D" connectors (RS-422) are provided for communicating with remote peripheral devices, such as VTRs, disk recorders, video servers, or audio servers. The appropriate remote control software option (**VTR Remote Control**, **Video Server Remote Control**, **Audio Server Remote Control,** etc.) must be installed in order to activate these ports.

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

3. Tally Connectors

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

- The functionality of connectors **1** and **2** is standard, providing 36 tally relays.

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

Note | Refer to the section "**Extended Tallies Option**" on page 28-3 for instructions on installing the **Extended Tallies** option.

Basic Interconnections

This section describes the basic types of interconnections on the control panel boards. As a general rule, the panel CPU communicates with the upper boards through 50-pin ribbon cables — essentially, an extended CPU data bus.

- In the **Synergy 1** panel, a single 50-pin ribbon cable is used that runs from the CPU board (**4216A-033**) to the **4216A-036** board, up to the **4216A-035**, across to the **4216A-034** and then up to the **4216A-030**.

- In the **Synergy 1.5** panel, a single cable is used that runs from the CPU board (**4000A-033A**) to the **4317A-037** board, over to the **4317A-130**, across to the **4317A-034** and then down to the **4317A-036**.

- In the **Synergy 2** panel, a single cable is used that runs from the CPU board (**4000A-033A**) to the **4317A-037** board, over to the **4317A-130**, across to the **4317A-034** and then down to the **4317A-036**.

- In the **Synergy 2.5** panel, there are two cables. One runs along the back of the top section, and the other runs along the bottom.

All ribbon cable connectors are the same, but the orientation of each connector only allows them to be attached in one place.

Please note:

- Each upper control panel board has a 6-pin keyed power connector (white), that carries +5V, +12V and ground.

- All faders are the same, and all fader assemblies are interchangeable. Each is connected through a 16-pin dip-style socketed connector, with an indicator that shows the location of pin 1.

- Each blue display (for example, in the panel memory areas) also has a 16-pin connector, directly beside each display module.

- The positioner connects with a 16-pin ribbon cable.

- On the **Synergy 1** control panel, a 34-pin ribbon cable connects the **4216A-035** to the **4216A-036**. This cable carries fader analog signals, and connects the switches in the transition area to the A-D converter board.

- On the **Synergy 1** control panel, a 16-pin ribbon cable runs from the Panel CPU board (**4216A-033**) and connects to a mating connector on the **4216A-034**. The **4216A-034**, in turn, has a single 15-pin cable that runs to the display itself, plus another 2-pin connector that plugs into the Backlight Converter Module for purposes of power and control.

- On the Synergy 3 control panel, the **4530A-138** is not connected to the main ribbon cable. Instead, it is connected via a 34-pin cable to the **4530A-131** board. A dedicated power connector also connects the **4530A-138** to the **4530A-131**.

- On the Synergy 3 control panel, the **4735A-037** is also not connected to the main ribbon cable. Instead, it is connected via a 16-pin cable to the **4735A-036B** board.

- On the Synergy 3 control panel, a small 34-pin ribbon cable connects the **4530A-034** to the **4735A-036B**. This cable carries analog signals from the potentiometers to the A-D converter board.

- On the Synergy 3 control panel, a 16-pin ribbon cable connects the **4530A-035** to the **4735A-036B**. This cable carries fader analog signals, and connects the switches in the transition area to the A-D converter board.

- On all switchers, the USB Port has a dedicated data connector and power connector that each run from the Panel CPU Board.

Note the following important points regarding the optical encoders:

- The optical encoders (at the edge of the display) use 4-pin connectors that plug into the edge of the **036** board.

| ⚠ | **Notice** | If you need to remove these connectors in order to service an optical encoder, *do not* plug them in backwards. If the connection polarity is wrong, it will destroy the encoder. These connectors are keyed, so if you remove them, take note of the polarity. |

Note the following point regarding the LCD Display (for all Q/MD control panels):

- A flat ribbon cable runs from the panel CPU board and connects to a mating connector on the **037**. The **037**, in turn, has a single 15-pin cable that runs to the display itself, plus another 2-pin connector that plugs into the Backlight Converter Module for purposes of power and control.

Frame Boards

In This Chapter

This chapter provides an overview of the various system boards that comprise the Synergy Q/MD frame.

The following topics are discussed:

- Frame Board Overview
- Option Cards Overview
- Midplane
- Video Input Board
- Video Output Board
- CPU Board
- Video Processor Board
- Squeeze & Tease Carrier Board
- Squeeze & Tease DSP Card
- Squeeze & Tease MD Card
- Squeeze & Tease MD WARP Card
- XFX Extra Effects Card

Frame Board Overview

The following system boards are described in this chapter:

Midplane (4400A-010, 4400AR-019)

The **Midplane** is a non-removable board that provides the interconnects between the system chassis boards, the power supplies, and the fan assembly, as well as the routing through which all video signals, communication, and control commands pass. The board has no active components.

Input Board (4400A-060, 4400AR-062, 4800A-060)

The **Input Board** comes in three configurations, a 48 x 48 crosspoint with an analog reference loop (**4400A-060B**), a 72 x 72 crosspoint with an analog reference loop (**4400A-062**), and a straight video input with no reference input (**4800A-060B**). All versions of the boards have a total of 16 video inputs per board, but the **4400A** series boards contain 2 additional BNC inputs for the reference connections.

⚠ **Important** | The **4400AR-062** input board with 72 x 72 crosspoint is only compatible with the **4400AR-019** midplane.

The Synergy Q/MD chassis can support up to two Input boards, but only one Video Input Board with reference. Inputs are configured and assigned through the menu system.

Output Board (4800A-064)

The Synergy Q/MD chassis supports one **Video Output Board**, in **Slot B** on the rear of the frame. This board contains 16 fully configurable multi-definition video outputs that can be used as Aux Buses, MLE Program, MLE Preview, MLE Clean Feed, Preview Overlay, External DVE Send, MultiDSK, or AuxKeys.

Frame CPU Board (4800A-001)

The **CPU Board** resides in **Slot A** at the rear of the chassis, and is connected to the midplane. It contains the hard disk, the system memory, and the main system microprocessor, and is responsible for the high-level control functions and all Ethernet and remote serial communication for the frame, and between the frame and control panel.

Video Processor Board (4800A-040)

The **Video Processor Board** performs all of the basic video effects in the Synergy Q/MD switcher. Functions such as the interface to the Squeeze & Tease MD boards, Chroma Keying, patterns and wipes, and transitions are all generated on this card.

The Video Processor Board includes two slots to support future hardware options.

Squeeze & Tease Carrier Board (4800A-047)

The **Squeeze & Tease Carrier Board** provides four slots for the Squeeze & Tease MD Cards and two slots for the Squeeze & Tease WARP MD Cards. The board also provides local control as well as video routing and power to these cards.

Option Cards Overview

The following option cards are described in this chapter:

Squeeze & Tease DSP Card (4800A-046)

The **Squeeze & Tease DSP Card** provides all the control functions for the **Squeeze & Tease MD Cards** and **Squeeze & Tease WARP MD Cards**. This allows the cards to communicate with the other cards installed on the board, as well as with the rest of the system.

Squeeze & Tease MD Card (4800A-048)

The **Squeeze & Tease MD Card** performs all the Squeeze & Tease video manipulation for the system. This includes planar processing, pre-processing, lighting, 3D borders, and filtering.

Squeeze & Tease MD WARP Card (4800AR-049)

The **Squeeze & Tease MD WARP Card** performs all the 3D WARP effects.

XFX Extra Effects Card (4800AR-042)

The **XFX** Extra Effects card provides support for the MLE-Store and Dual Border Generator options.

Midplane

The Synergy Q/MD frame has a 3-RU (Rack Unit) Midplane (4400A-010 or 4400AR-019) to which all the frame boards are connected. The midplane also contains the routing through which all video signals pass, as well as all command and control communication, and power to the boards.

This section will identify and describe the various functional components of the front and rear of the Synergy Q/MD midplane.

The Midplane Functional Components

The midplane is a vertically mounted board that provides a series of connectors on both the rear and front to accept corresponding connectors found on each of the frame boards. Each of these slots is designed to accommodate one specific board.
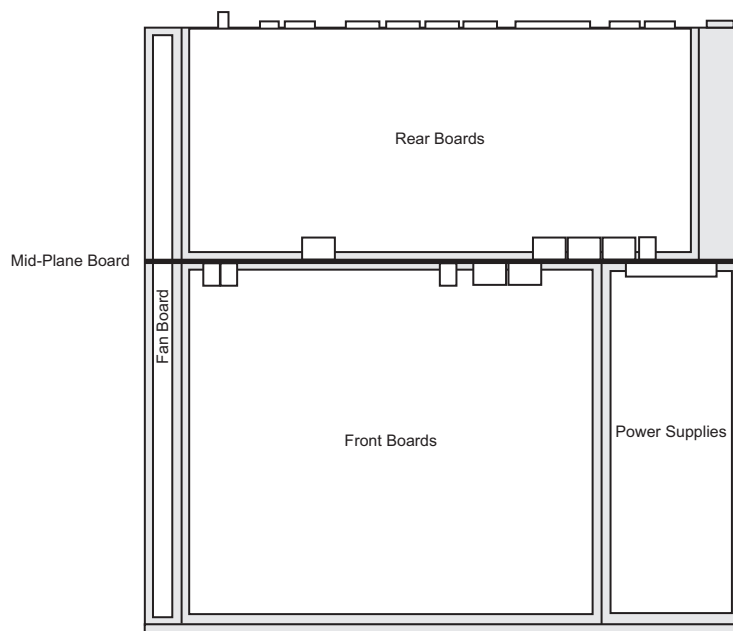
Synergy Q/MD *Frame — Overview*

Rear Connections

The rear connections on the midplane accommodate the following boards that are installed in the rear section of the switcher chassis:

- CPU Board
- Video Input Board
- Video Output Board
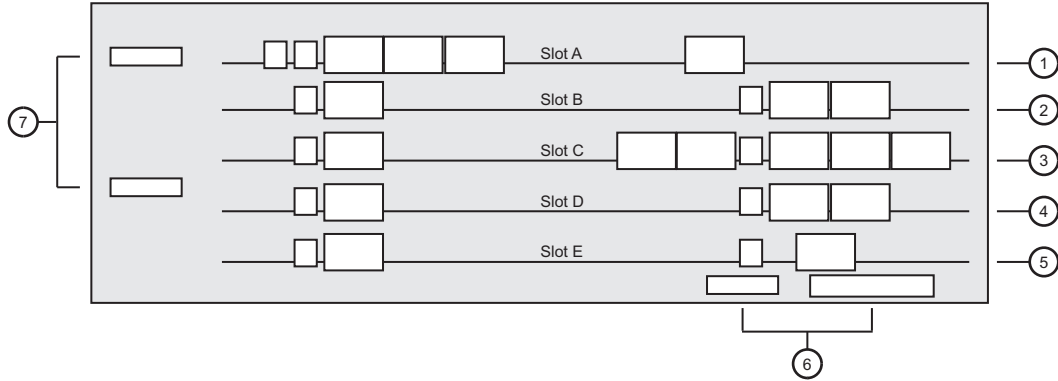
Midplane Rear View — Functional Components

1) CPU Board Slot	4) Optional Video Input Board Slot	6) Cooling Fan Board Connectors
2) Video Output Board Slot	5) Future Expansion Slot	7) Power Input Connectors
3) Video Input Board Slot		

1. CPU Board Slot

Only the CPU Board can be installed in Slot A.

2. Video Output Board Slot

Only the Video Output Board can be installed in Slot B.

3. Video Input Board Slot

Only a Video Input Board with reference looping (4400A-060B or 4400AR-062) can be installed in Slot C. These boards also provide the crosspoint switching for the Synergy Q/MD.

Important — The Video Input Board Slot must be populated with the 4400A-060B or 4400AR-062 in order for the system to function.

Important — The **4400AR-062** input board with 72 x 72 crosspoint is only compatible with the **4400AR-019** midplane.

4. Optional Video Input Board Slot

An additional Video Input Board can be installed in Slot D.

5. Future Expansion Slot

Slot E will be used for future expansion.

6. Cooling Fan Board Connectors

These connectors provide the interface for the Cooling Fan Board to the midplane.

Note — Removal of the Cooling Fan Board will cause the system to go into an immediate power down mode to protect the system hardware.

7. Power Input Connectors

These connectors take the input power from the AC power filters at the back of the frame and route it to the power supplies at the front of the midplane.

Front Connections

The connections on the front of the midplane accommodate the Video Processor Board, the Squeeze & Tease Carrier Board, and the power supplies. Refer to the following diagram.
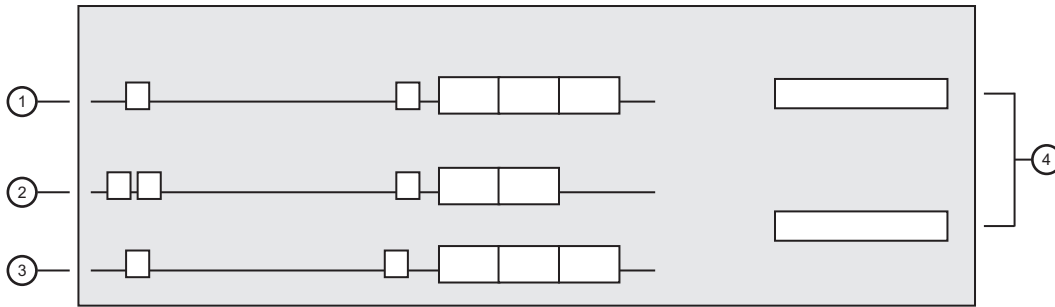
Midplane Front View — Functional Components

1) Video Processor Board Slot	3) Future Expansion Slot
2) Squeeze & Tease Carrier Board Slot	4) Power Supply Connectors

1. Video Processor Board Slot

Only the Video Processor Board can be installed in this slot.

2. Squeeze & Tease Carrier Board Slot

Only the Squeeze & Tease Carrier Board can be installed in this slot.

3. Future Expansion Slot

This slot will be used for future expansion.

4. Power Supply Connectors

The Synergy Q/MD frame supports two 12 Volt, 500 Watt power supplies. These power supplies are operated in a load sharing mode, where any one power supply can provide all the power for the system should the other fail. This redundancy allows the hot-swapping of a power supply without interruption of the system.

Video Input Board

The Video Input Board comes in four configurations; with a 48 x 48 crosspoint switch and reference input (4400A-060B), with a 72 x 72 crosspoint switch and reference input (4400AR-062), with no crosspoint switch or reference input (4800A-060B), or with no crosspoint switch or reference input and only inputs (4800A-060C). All of these boards can handle both Serial Digital Interface (SDI) or High Definition Serial Digital Interface (HD-SDI) video signals, but the Video Input Boards with reference looping have two additional connectors used for analog reference inputs.

This section will identify and describe the various functional components and rear panel connections of the Video Input Boards both with and without reference looping.

⚠	**Important**	There must be at least one Video Input Board with reference looping installed in the frame with an active analog reference signal to it.

✎	**Note**	The Synergy Q/MD frame can support up to two Video Input Boards, giving a maximum of 32 multi-definition video inputs.

Video Input Board with Reference Functional Components

The Video Input Boards with reference looping (4400A-060B and 4400AR-062) have 10 primary components that control and support the video signal inputs.
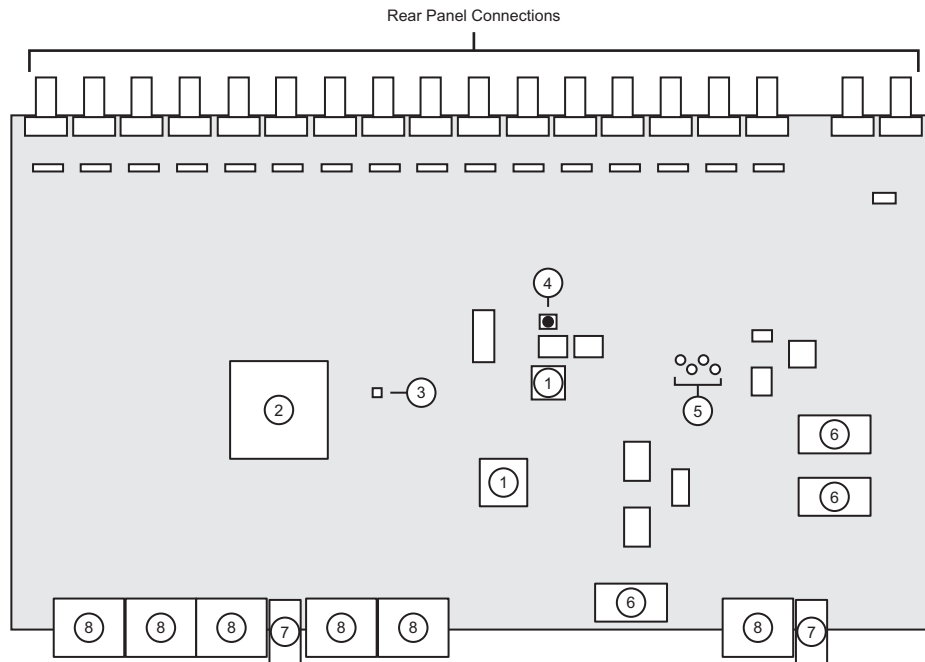
Video Input Board with Reference Looping — Functional Components

1) Reference Processors	4) Reset Button	7) Power Connectors
2) Crosspoint Switch	5) Diagnostic Indicators	8) Midplane Connectors
3) Temperature Sensor	6) Power Converters	

1. **Reference Processors**

   The reference processors act together to process the black burst or tri-level sync clock and timing signals from the reference connectors.

2. **Crosspoint Switch**

   The crosspoint switch routes video signals from the input port to the specified output port. Specifically, the 4400A-060B uses a 48 x 48 switch and the 4400AR-062 has a 72 x 72 switch but operates as a 48 x 48 switch.

3. **Temperature Sensor**

   A temperature sensor is used to ensure that the board is not operated beyond a set temperature threshold.

4. **Reset Button**

   The reset button provides a hard, local, reset for the Video Input Board, and should only be used for diagnostic purposes.

5. **Diagnostic Indicators**

   The four diagnostic indicators illuminate to show various board states and should only be used for diagnostic purposes.

6. **Power Converters**

   There are three non-isolated power converters that are used to generate the voltages that are needed by the various components on the board.

7. **Power Connectors**

   There are two power connectors that connect to the midplane when the board is installed.

8. **Midplane Connectors**

   There are six 20-pair connectors that connect to the midplane when the board is installed. These connectors use Ethernet and SMPTE protocols to communicate and pass video signals with other boards connected to the midplane.

Video Input Board with Reference Rear Panel

The rear panels of both of the Video Input Boards with reference looping have two different types of inputs. These inputs are an array of 16 video input connectors and the reference loop connectors, with a reference lock indicator.
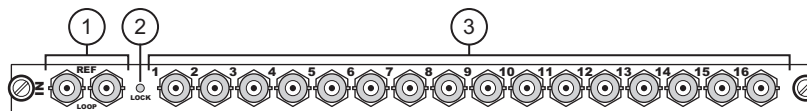
Video Input Board with Reference Looping — Rear Panel

1) Reference Connectors	2) Reference Lock Indicator	3) Video Input Connectors

1. **Reference Connectors**

   The two reference connectors provide a reference input with a looping output. These connectors allow the Video Input Board to extract reference information from either a

tri-level sync or analog black burst reference source. The Video Input Board can then use this reference information to drive the timing on the internal buses to provide timing for the system.

⚠	**Important**	The reference loop connector must be terminated if it is the last device in the series.

2. Reference Lock Indicator

The reference lock indicator will illuminate when the board has locked a reference signal.

3. Video Input Connectors

The 16 video input connections on the Video Input Board support both HD-SDI and SDI video signals.

Video Input Board without Reference Functional Components

The Video Input Boards without reference looping (4800A-060B and 4800A-060C) have five primary components that control and support the video signal inputs.
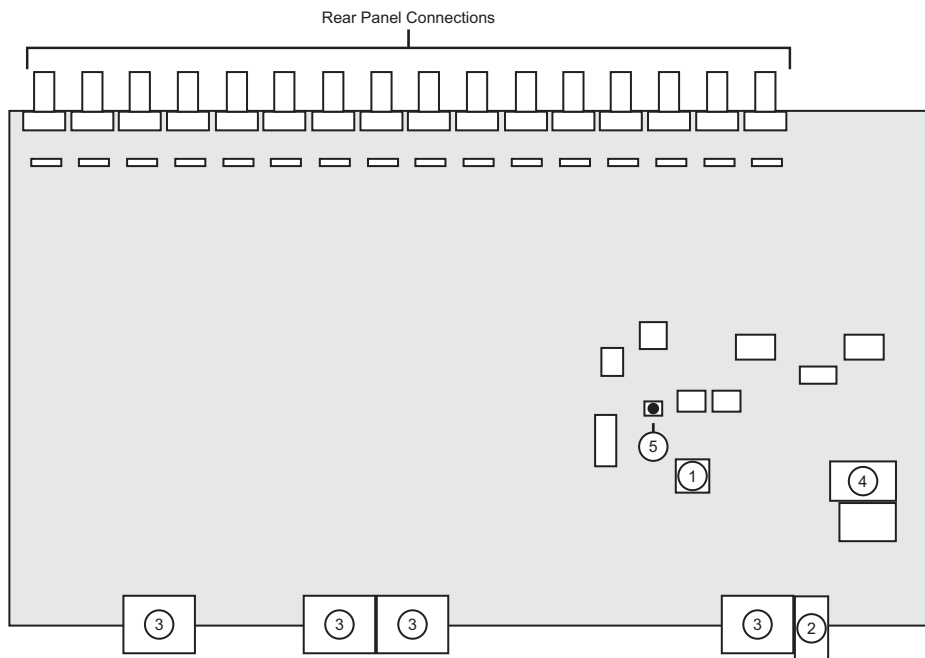
Video Input Board (4800A-060B) without Reference Looping — Functional Components

1) Micro Controller	3) Midplane Connectors	5) Reset Button
2) Power Connector	4) Power Converter	

1. Micro Controller

The micro controller is used for on-board control and monitoring.

2. Power Connector

The Video Input Board has a single power connector that connects to the midplane when the Video Input Board is installed.

3. **Midplane Connectors**

    The Video Input Board has four 20-pair connectors that connect to the midplane when the Video Input Board is installed. These connectors use Ethernet and SMPTE protocols to communicate and pass video signals with other boards connected to the midplane.

4. **Power Converter**

    The Video Input Board uses a non-isolated power converter to generate the voltage that is needed by the various components on the board.

5. **Reset Button**

    The reset button provides a hard, local, reset for the Video Input Board, and should only be used for diagnostic purposes.

Video Input Board without Reference Rear Panel

The rear panel of the Video Input Boards without reference looping (4800A-060B and 4800A-060C) has an array of video input connectors. On the 4800A-060B there are 16 video input connectors, and on the 4800A-060C there are 10 video input connectors.
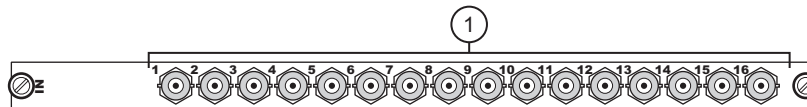
Video Input Board without Reference Looping — Rear Panel

1. **Video Input Connectors**

    The 16, 10 on the 4800A-060C, Video Input connections support both HD-SDI and SDI video signals.

Video Output Board

The Video Output Board (4800A-064) provides 16 SDI or HD-SDI video signal outputs. This section will identify and describe the various functional components and rear panel connections of the Video Output Board.

✎	**Note**	The Synergy Q/MD frame can only support one Video Output Board.

Video Output Board Functional Components

The Video Output Board has several primary components that control on-board operations and video signal routing from the midplane to the video output connectors.
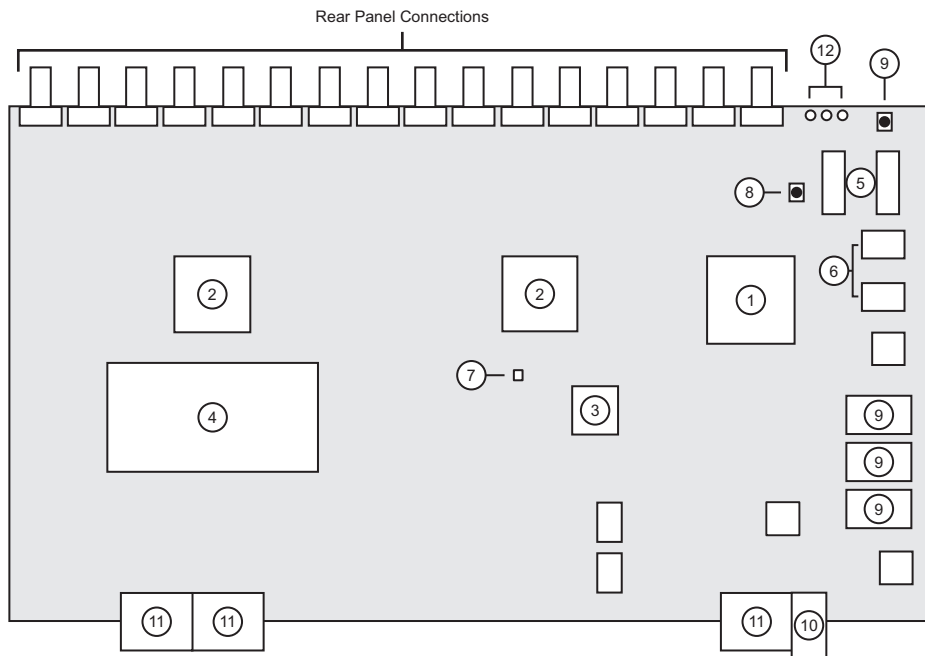
Video Output Board — Functional Components

1) On-Board Processor	5) On-Board System Memory	9) Power Converters
2) Routing FPGA	6) Flash Memory	10) Power Connector
3) Control and Video Features FPGA	7) Temperature Sensor	11) Midplane Connectors
4) Future Expansion Socket	8) Reset Buttons	12) Diagnostic Indicators

1. On-Board Processor

The on-board processor is used for internal ethernet access, and local control of the board.

2. FPGAs

The Video Output Board uses two FPGAs to re-time the video signals, as well as perform AuxKey™, Mix/DSK and MultiDSK™ functions.

3. **Control and Video Features FPGA**

   A single FPGA is used to provide an interface to the Preview Overlay when the Mix/DSK or MultiDSK™ is used.

4. **Future Expansion Socket**

   This socket is reserved for future expansion.

5. **On-Board System Memory**

   The Video Output Board uses four 256MB SDRAM chips for system memory.

6. **Flash Memory**

   The Video Output Board has 64MB of flash memory for code store, still store images, and FPGA loads.

7. **Temperature Sensor**

   A temperature sensor is used to ensure that the board is not operated beyond a set temperature threshold.

8. **Reset Buttons**

   The two reset buttons provide a local, hard reset of the on-board processor and the entire Video Output Board, and should only be used for diagnostic purposes.

9. **Power Converters**

   The frame Video Output Board uses three non-isolated power converters to generate the voltages that are needed by the various components on the board.

10. **Power Connector**

    The Synergy Q/MD Video Output Board has a single power connector that connects to the midplane when the Video Output Board is installed.

11. **Midplane Connectors**

    The Synergy Q/MD Video Output Board has three 20-pair connectors that connect to the midplane when the Video Output Board is installed. These connectors use Ethernet and SMPTE protocols to communicate and pass video signals with other boards connected to the midplane.

12. **Diagnostic Indicators**

    The three diagnostic indicators illuminate to show various board states and should only be used for diagnostic purposes.

Video Output Board Rear Panel

The rear panel of the Video Output Board has an array of 16 video output connections. Each of these output connections can support either an HD-SDI or SDI video signal, depending on the output signal that is being routed through them.
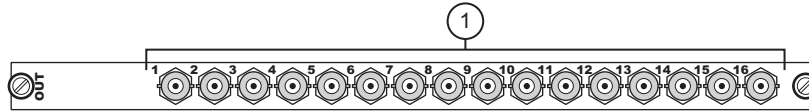
Video Output Board — Rear Panel

1. **Video Output Connectors**

   The 16 video output connections on the Video Output Board support both HD-SDI and SDI video signals.

CPU Board

Each Synergy Q/MD system has a single CPU Board (4800A-001) that controls the operation of the various boards that are installed in the frame. The CPU Board also controls the communication between the frame and the switcher, peripheral devices, and external networks.

This section will identify and describe the various functional components and rear panel connections found on the CPU Board.

CPU Board Functional Components

The CPU Board has several primary components that control various aspect of the operation of the CPU Board.
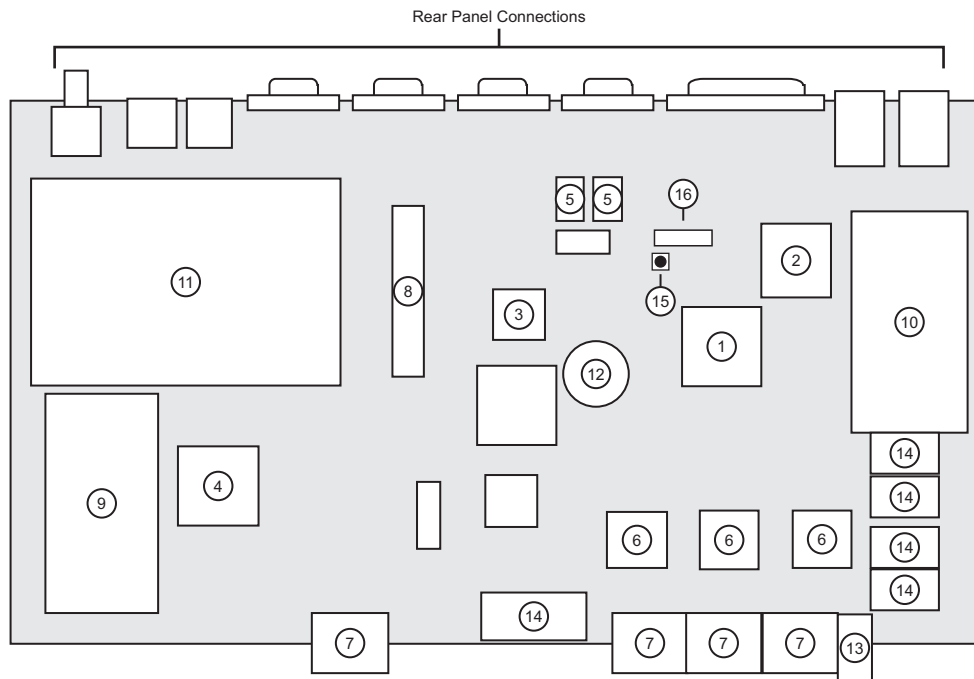
CPU Board — Functional Components

1) CPU	7) Midplane Connectors	13) Power Connector
2) Ethernet Transceiver	8) ATA Connector	14) Power Connector
3) UART	9) Global-Store and MediaCache Memory	15) Reset Button
4) Global Store and Preview Overlay FPGA	10) System Memory	16) DIP Switch
5) Flash Memory	11) Hard Disk	
6) Ethernet Switch	12) Battery	

1. CPU

The Central Processing Unit (CPU) on the CPU Board is a 32-bit 440GX PowerPC 533 Mhz processor. It controls the high-level communications for all the system peripherals on the frame.

2. **Ethernet Transceiver**

The 10/100 Ethernet transceiver controls the two external LAN ports found on the rear panel of the frame CPU Board. Refer to the section "**CPU Board Rear Panel**" on page 27-16 for a more detailed description of the external LAN ports.

3. **UART**

The Universal Asynchronous Receive and Transmit (UART) provides external serial communication through the four DB-9 connectors and through the RJ-45 control panel connector.

4. **Global-Store and Preview Overlay FPGA**

The CPU Board uses an FPGA to implement the Global-Store and Preview Overlay.

5. **Flash Memory**

The two flash memory chips provide 64MB of memory for CPU code storage.

6. **Ethernet Switch**

The 22-port 10/100 Ethernet switch controls the internal, ethernet based, communication that is used between the CPU Board and all the other boards connected to the midplane.

7. **Midplane Connectors**

The CPU Board has four 20-pair connectors that connect to the midplane when the CPU Board is installed. These connectors use Ethernet and SMPTE protocols to communicate and pass video signals with other boards connected to the midplane.

8. **ATA Connector**

The ATA connector provides the interface for the hard disk to the CPU Board.

9. **Global-Store and MediaCache Memory**

This 200-pin DDR SODIMM socket is populated with a 256 MB DDR SDRAM module that is dedicated as a graphic buffer. This module can be upgraded to 1 GB with the MediaCache™ upgrade.

10. **System Memory**

This 200-pin DDR SODIMM socket is populated with a 256MB DDR SDRAM module that is dedicated as system memory.

11. **Hard Drive**

The hard drive is a 2.5 inch, 160GB, Ultra ATA drive that is mounted directly onto the CPU Board. It provides storage for Still Stores and additional memory sets, as well as a backup of the software for all the cards in the system.

12. **Battery**

The battery is used to maintain the non-volatile memory when the CPU Board is powered down. If the battery needs to be replaced, use a 3V Lithium CR 2032 type battery.

13. **Power Connector**

The CPU Board has a single power connector that connects to the midplane when the CPU Board is installed.

14. Power Converter

The CPU Board uses five non-isolated power converters to generate the voltages that are needed by the various components on the board.

15. Reset Button

The reset button provides a local, hard reset of the board, and should only be used for diagnostic purposes.

16. DIP Switch

This 8 switch DIP sets various system configurations and operational modes for the entire Synergy Q/MD system. All DIP switches should be in the **OFF** position for normal operation of the Synergy Q/MD switcher.

DIP Switch 1 may be set to **ON** to override the network IP address and netmask of your switcher. You may wish to set this if you need to access your switcher via the web interface and do not have access to the control panel and do not know the current IP address.

Setting DIP Switch 1 to **ON** will set the switcher IP address to 192.168.1.1 and the netmask to 255.255.0.0 the next time the switcher is restarted. When you turn DIP Switch 1 **OFF**, the switcher reverts to the previously saved IP address and netmask the next time it is restarted.

If you attempt to change the switcher network settings while DIP Switch 1 is **ON**, a warning message will be displayed indicating that the IP address will revert to 192.168.1.1 and the netmask to 255.255.0.0 the next time the switcher is restarted unless you turn DIP Switch 1 **OFF**.

⚠	**Caution**	Incorrect DIP switch settings may make your switcher inoperable. If your switcher does not appear to boot and will not pass a video signal, check that all DIP switches are in the **OFF** position. Do not change the position of the DIP switches unless instructed to do so by **Ross Video Technical Support**.

CPU Board Rear Panel

The rear panel of the CPU Board has six different types of connections. These connections allow the frame to communicate with serial peripheral, USB and GPI devices, as well as connect to the control panel, and other ethernet networks.
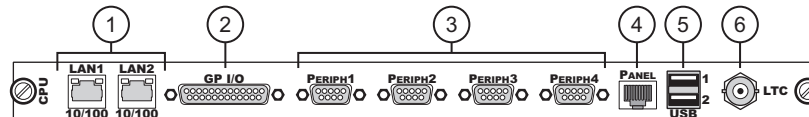
CPU Board — Rear Panel

1) LAN Connectors	3) Peripheral Ports	5) USB Ports
2) GPI I/O Port	4) Panel Connector	6) Time Code Input

1. LAN Connectors

The two 10/100 Base TX Ethernet connectors allows the connection of the frame to a network for upgrades, as well as support Automatic MDI Crossover (Auto-MDIX). The Auto-MDIX will detect the position of the transmit and receive cable pairs on the

connected device and swap them if needed. This means that there is no need for a crossover cable.

2. **GPI I/O Port**

   The General Purpose Interface (GPI) port allows the connection of an interface device that will typically control the auto transition functions.

3. **Peripheral Ports**

   The four 9-pin integrated serial ports support the RS-232 and RS-422 standards to allow the connection of various serial peripheral devices. The appropriate software may need to be installed in order to properly communicate with these devices.

4. **Panel Connector**

   The RJ-45 panel connector is used to connect the frame to the control panel. This connection is hard-wired on the CPU Board, so no software setup is required.

⚠ **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. **USB Ports**

   The two integrated USB ports allow the connection of USB peripheral devices.

6. **Time Code Input**

   The time code input allows the system to be synchronized to an external time reference.

Video Processor Board

The Video Processor Board (4800A-040) performs all the non-Squeeze & Tease video manipulation for the system. This manipulation includes all the keyers, transitions, washes, pattern rotation and manipulation, and wipes.

This section will identify and describe the various functional components found on the Video Processor Board.

Video Processor Board Functional Components

The Video Processor Board has slots for two daughter cards, plus the command and power infrastructure required to support these cards. This infrastructure includes the on-board processor, system memory, graphics buffers, video core, video interface and configuration FPGAs, as well as various power converters, a reset button, and system status or system communication indicators.
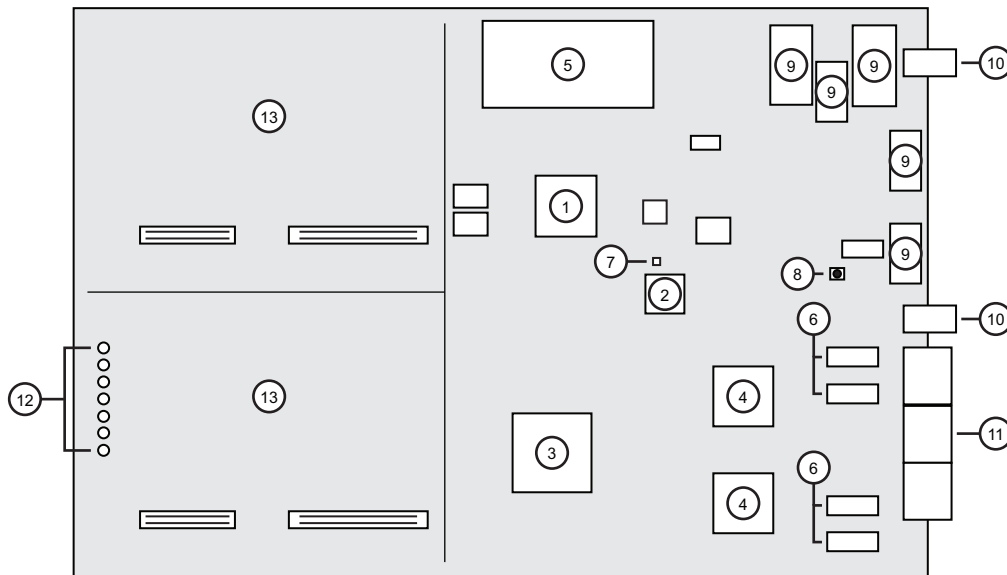
Video Processor Board — Functional Components

1) On-Board Processor	6) System Buffers	11) Midplane Connectors
2) Configuration FPGA	7) Temperature Sensor	12) System Indicators
3) Video Core FPGA	8) Reset Button	13) XFX Card Slots
4) Video Interface FPGA	9) Power Converters	
5) System Memory	10) Power Connectors	

1. On-Board Processor

The PowerPC on-board processor governs the on-board communication and control, as well as the communication with the midplane.

2. Configuration FPGA

The configuration FPGA routes the configuration communication between the on-board processor and the video core and interface FPGAs.

3. Video Core FPGA

The video core FPGA governs all the video signal manipulation on the board.

4. **Video Interface FPGA**

   Two video interface FPGAs are used to route all the video signals from the midplane to the video core FPGA.

5. **System Memory**

   This 200-pin DDR SODIMM socket is populated with a DDR SDRAM module that is dedicated to the on-board processor as system memory.

6. **System Buffers**

   Three SDRAM pairs are provided as buffers for the video core and video interface FPGAs.

7. **Temperature Sensor**

   A temperature sensor is used to ensure that the board is not operated beyond a set temperature threshold.

8. **Reset Button**

   The reset button provides a local, hard reset of the board, and should only be used for diagnostic purposes.

9. **Power Converters**

   There are five non-isolated power converters to generate the voltages that are needed by the various components on the board.

10. **Power Connectors**

    There are two power connectors that connect to the midplane when the Video Processor Board is installed.

11. **Midplane Connectors**

    The Video Processor Board has three 20-pair connectors that connect to the midplane when the board is installed. These connectors use Ethernet and SMPTE protocols to communicate and pass video signals with other boards connected to the midplane.

12. **System Indicators**

    There are seven system indicators on the board that show various system states or communications. The CAN and Ethernet indicators show the communication activity on the board. The heartbeat, reset, and power indicators show the software, reset and power status on the board.

13. **XFX Card Slots**

    These two slots accommodate XFX cards which provide various options including a dual-border generator and MLE-Store.

Squeeze & Tease Carrier Board

The Synergy Q/MD switcher uses the Squeeze & Tease Carrier Board (4800A-047) to support up to two Squeeze & Tease WARP MD Cards, four Squeeze & Tease MD Cards and the Squeeze & Tease DSP Card. These cards allow you to perform various planar and pixel manipulation on the video signal.

Squeeze & Tease Carrier Board Functional Components

The Squeeze & Tease Carrier Board has slots for seven daughter cards, plus the command and power infrastructure required to support these cards. This infrastructure includes the on-board CPU, system and video memory, various power converters, reset buttons and system status or system communication indicators.
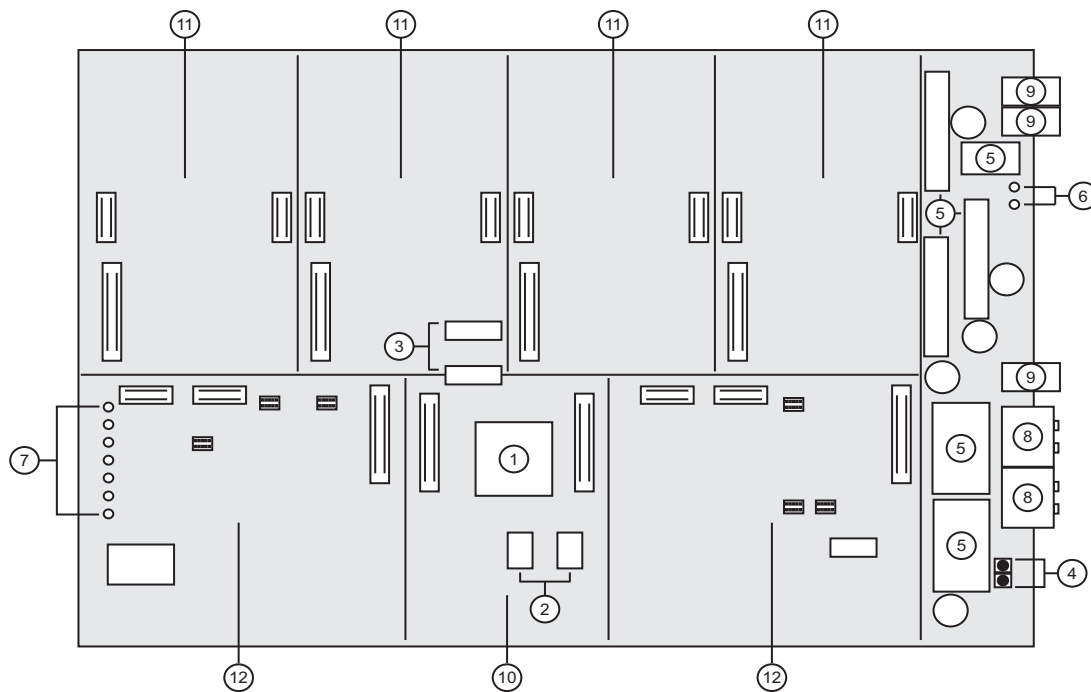
Squeeze & Tease Carrier Board — Functional Components

1) On-Board Processor	5) Power Converters	9) Power Connectors
2) Flash Memory	6) Power Indicators	10) Squeeze & Tease DSP Card Slot
3) On-Board System Memory	7) System indicators	11) Squeeze & Tease MD Card Slot
4) Reset Button	8) Midplane Connectors	12) Squeeze & Tease WARP MD Slot

1. On-Board Processor

The PowerPC On-Board Processor governs the on-board communication and control, as well as the communication with the Midplane and the daughter cards mounted on the board.

2. Flash Memory

The two Flash Memory chips provide 64MB of permanent storage for the On-Board Processor.

3. **On-Board System Memory**

   There are two SDRAM chips used for system memory.

4. **Reset Button**

   The two reset buttons provide a local, hard reset of the On-Board Processor and the entire Squeeze & Tease Carrier Board, and should only be used for diagnostic purposes.

5. **Power Converters**

   There are six Non-Isolated Power Converters to generate the voltages that are needed by the various components on the board.

6. **Power Indicators**

   There are two Power Indicators that illuminate to show power status. There are for diagnostic purposes only.

7. **System Indicators**

   There are seven System Indicators on the board that show various system states or communications. The CAN and Ethernet indicators show the communication activity on the board. The Heartbeat, Reset and Power indicators show the software, reset and power status on the board.

8. **Midplane Connectors**

   The Squeeze & Tease Carrier Board has two 20-pair connectors that connect to the Midplane when the board is installed. These connectors use Ethernet and SMPTE protocols to communicate and pass video signals with the other boards connected to the midplane.

9. **Power Connectors**

   There are four Power connectors that connect to the midplane when the Squeeze & Tease Carrier Board is installed.

10. **Squeeze & Tease DSP Card Slot**

    This single slot will only accommodate the Squeeze & Tease DSP Card.

11. **Squeeze & Tease MD Card Slot**

    These four slots will only accommodate the optional Squeeze & Tease MD Cards.

Note   The Squeeze & Tease DSP Card and at least one Squeeze & Tease MD Card must be installed in order for the system to operate properly.

12. **Squeeze & Tease WARP MD Card Slot**

    These two slots will only accommodate the optional Squeeze & Tease WARP MD Cards.

Squeeze & Tease DSP Card

The Squeeze & Tease DSP Card (4800A-046) provides the interface between the Squeeze & Tease Carrier Board and the other cards installed on the board. This allows these cards to communicate with the frame, and each other, as well as receive status and configuration control information from the Squeeze & Tease DSP Card.

This section will identify and describe the various functional components found on the Synergy MD frame Squeeze & Tease DSP Card.

	Note	The Squeeze & Tease DSP Card can only be installed in the Squeeze & Tease DSP Card Slot on the Squeeze & Tease Carrier Board.

Squeeze & Tease DSP Card Functional Components

The Squeeze & Tease DSP Card has seven primary components that are used for the operation and communications of the card. These are the DSP processor, Interface FPGA, Flash and DSP memory, as well as various diagnostic connectors and indicators.
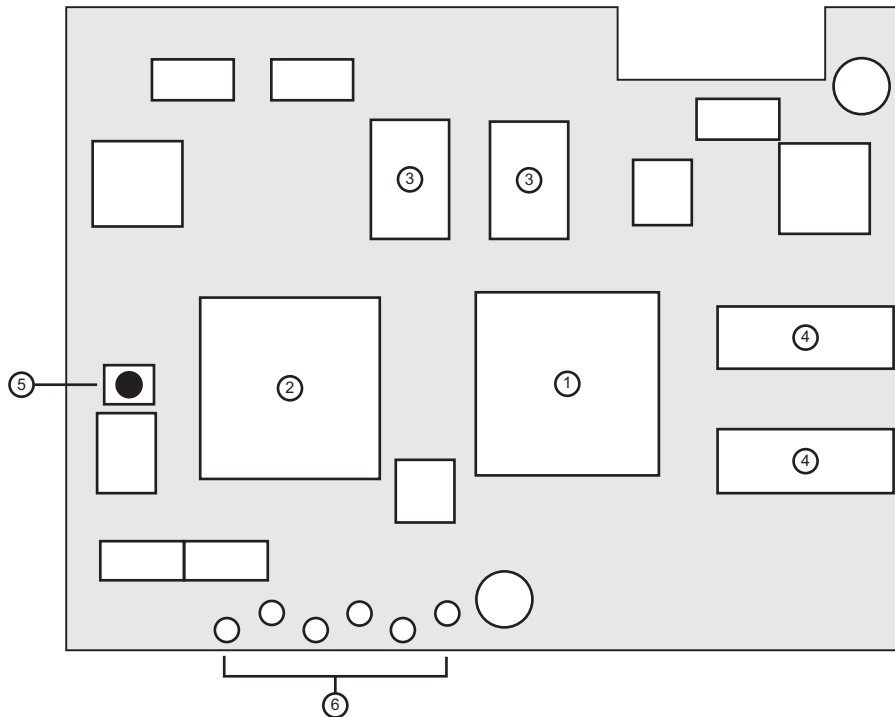
Squeeze & Tease DSP Card — Functional Components

1) DSP Processor	3) Flash Memory	5) Reset
2) Interface FPGA	4) DSP Memory	6) Diagnostic Indicators

1. DSP Processor

The Fixed Point Digital Signal Processor (DSP) performs all the calculations needed for each video field, including borders.

2. **Interface FPGA**

    The Interface FPGA provides the communication and configuration control for the interface between the Squeeze & Tease Carrier Board and the daughter cards installed on it.

3. **Flash Memory**

    The two Flash Memory chips provide 64MB of permanent storage for the DSP.

4. **DSP Memory**

    There are two SDRAM chips used for system memory for the DSP.

5. **Reset**

    The Reset button provides a hard, local, reset for the card and should only be used for diagnostic purposes.

6. **Diagnostic Indicators**

    The six indicators show the different operational states for diagnostic purposes.

Squeeze & Tease MD Card

The Squeeze & Tease MD Card (4800A-048) performs all the Squeeze & Tease video manipulation for the system. It provides all the planar processing, pre-processing, lighting, bordering and filtering. Each card supports up to ten high-speed digital channels for SDI or HD-SDI video signals. Two of these channels are routed to the rest of the frame, two are routed to the previous Squeeze & Tease MD Cards, two are routed to the next Squeeze & Tease MD Cards and another two are routed to the optional Squeeze & Tease MD WARP Cards. These channels are synchronized using a single-ended V-Sync signal.

This section will identify and describe the various functional components found on the Synergy MD frame Squeeze & Tease MD Card.

> **Note** The Squeeze & Tease MD Cards can only be installed in the four Squeeze & Tease MD Card Slots on the Squeeze & Tease Carrier Board.

Squeeze & Tease MD Card Functional Components

The Squeeze & Tease MD Card has five primary components used for the operation and communication of the card. These are the Channel Processor, Buffers, Power Regulators, Temperature Sensor and Diagnostic Indicators.
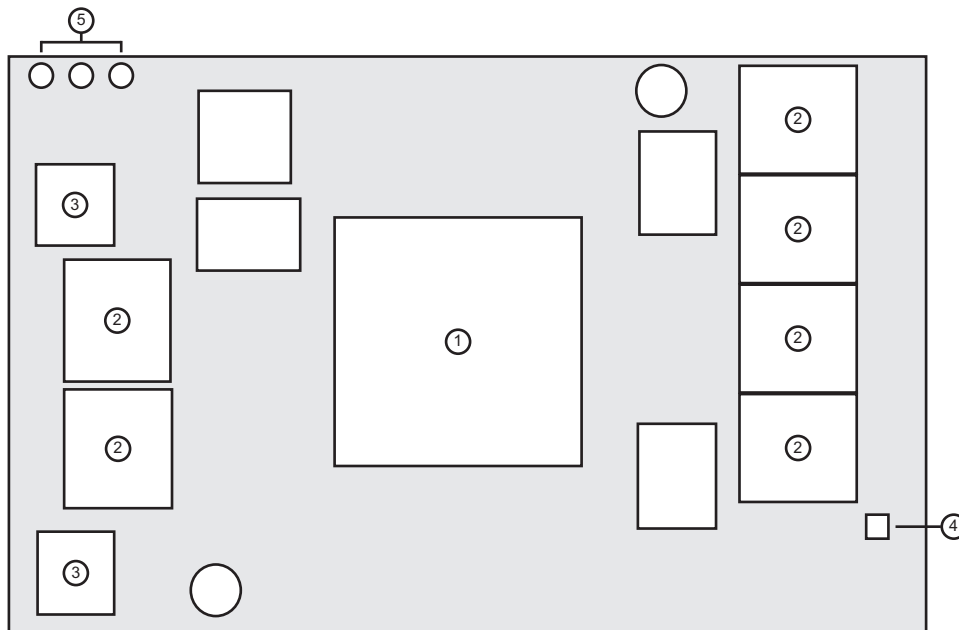
Squeeze & Tease MD Card — Functional Components

1) Channel Processor FPGA	3) Power Regulators	5) Diagnostic Indicators
2) Video Buffers	4) Temperature Sensor	

1. Channel Processor FPGA

The Channel Processor FPGA performs all the video manipulation and channel assignments for the card. Channels are routed to and from the Channel Processor FPGA using high-speed serial link that pass the video signals between the Video Processor Board and the Squeeze & Tease MD WARP Card.

2. **Video Buffers**

   There are eight Quad Data Rate (QDR) Static Random Access Memory (SRAM) buffers that are used by the Channel Processor FPGA. Two of the buffers are located on the underside of the card and are not visible when it is installed.

3. **Power Regulators**

   There are two power regulators installed on the card to regulate the voltages that are needed by the components on the card.

4. **Temperature Sensor**

   A one-wire temperature sensor is used to ensure that the card is not operated beyond a set temperature threshold.

5. **Diagnostic Indicators**

   Three diagnostic indicators are used to show operation of the card.

Squeeze & Tease MD WARP Card

The Squeeze & Tease MD WARP Card (4800AR-049) performs all the 3D WARP effects for the system. There are two high-speed digital channels for SDI or HD-SDI video between the WARP card and the Squeeze & Tease MD card.

This section will identify and describe the various functional components found on the Synergy MD frame Squeeze & Tease MD WARP Card.

✎	**Note**	The Squeeze & Tease MD WARP Cards can only be installed in the two Squeeze & Tease MD WARP Card Slots on the Squeeze & Tease Carrier Board.

Squeeze & Tease MD WARP Card Functional Components

The Squeeze & Tease MD WARP Card has five primary components used for the operation and communication of the card. These are the FPGA, DSPs, RAM, flash memory, and diagnostic indicators.
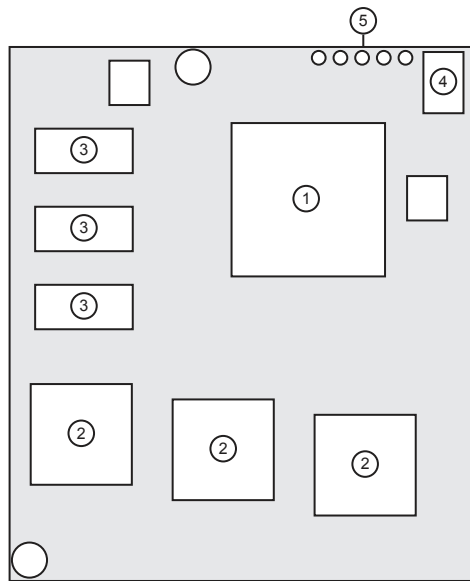
Squeeze & Tease MD WARP Card — Functional Components

1) Channel Processor FPGA	3) DDR SDRAM	5) LED Diagnostic Indicators
2) DSPs	4) Flash Memory	

1. Channel Processor FPGA

The FPGA (Field Programmable Gate Array) performs the glue-logic functions connecting the complex circuits of the WARP card together. It also provides a DDR memory interface and handles memory bus arbitration.

2. DSPs

There are three 1 GHz DSPs (Digital Signal Processors) on the WARP card that handle all the calculations necessary for providing the various 3D WARP effects.

3. **DDR SDRAM**

   There are six DDR SDRAM (Double Data Rate Synchronous DRAM) chips (three on each side of the WARP card) providing system memory for the three DSPs.

4. **FLASH Memory**

   The flash RAM (Random Access Memory) provides permanent shared storage space for the three DSPs.

5. **LED Diagnostic Indicators**

   The diagnostic indicators are used to show operation of the card.

XFX Extra Effects Card

The XFX Extra Effects Card (4800AR-042) performs different functions depending on the options you purchase. Current options include a dual-border generator and MLE-Store.

The dual-border generator option provides visually dynamic border, shadow, and outline effects to both linear MLE keyers, with either hard or soft edges. The option can also enhance Self Keys, Chroma Keys, and Preset Pattern Keys.

The MLE-Store option provides four channels of still images per MLE. Each MLE can have separate images loaded and images with embedded alpha channels are supported by dedicating one of the MLE-Store channels to the alpha channel.

This section will identify and describe the various functional components found on the Synergy MD frame XFX Extra Effects Card.

> **Note** The XFX Extra Effects Cards can only be installed in the two slots on the Video Processor.

XFX Extra Effects Card Functional Components

The XFX Extra Effects Card has six primary components used for the operation and communication of the card. These are the two FPGAs, DSP, memory, diagnostic indicators, and memory expansion slot.
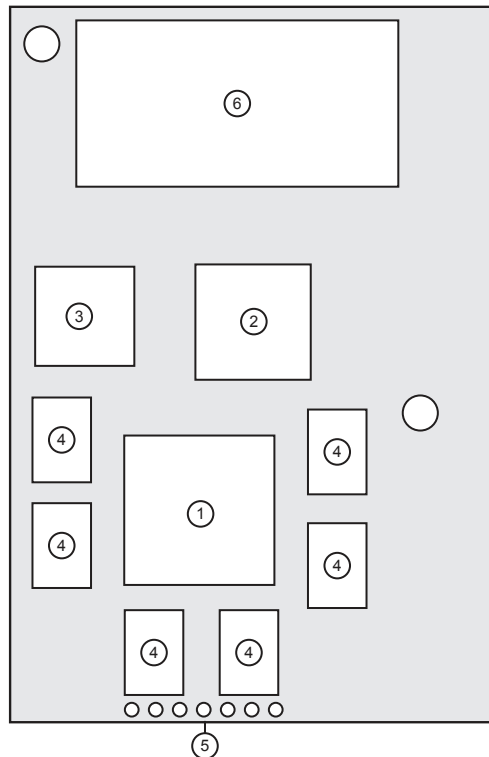
XFX Extra Effects Card — Functional Components

1) Border FPGA	3) DSP	5) Diagnostic Indicators
2) MLE-Store FPGA	4) SDRAM	6) RAM Expansion Slot

1. **Border FPGA**

   This is the same FPGA (Field Programmable Gate Array) used in the Squeeze & Tease MD WARP card. It also provides the dual-border generator functionality.

2. **MLE-Store FPGA**

   This FPGA provides the MLE-Store functionality. It also serves as a messaging interface to the DSP (see below) and LVDS (Low Voltage Differential Swing) video interface.

3. **DSP**

   The 600 MHz DSP (Digital Signal Processor) will be used in the future to provide calculations to handle various 3D effects.

4. **SDRAM**

   There are 6 SDRAM (Synchronous DRAM) chips providing system memory for the XFX card.

5. **Diagnostic Indicators**

   The diagnostic indicators are used to show operation of the card.

6. **RAM Expansion Slot**

   The RAM expansion slot is an SODIMM socket that can receive between 256 MB and 2 GB of DDR SDRAM. This memory is used to cache MLE-Store images and animations.

Hardware Options

In This Chapter

This chapter provides instruction for installing a variety of hardware options. The following topics are discussed:

- Hardware Option Overview
- Extended Tallies Option
- Mnemonics Display Option
- MediaCache™ Option
- Hard Drive Replacement
- Remote Port Expander Cabling (BSS4)
- Squeeze & Tease MD Option
- XFX Extra Effects Option

Note

If you wish to add any of these options to your Synergy Q/MD switcher, please contact **Ross Video Technical Support** for ordering information.

Important

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

Hardware Option Overview

The following option cards and modules may be installed in the switcher to provide additional functionality:

- The **Extended Tallies** option provides an additional 36 tallies, bringing the total number to 72. This option is not available on the **Synergy 1 Q/MD**.

    ~ Requires **1 Extended Tallies Board** (**4000A-038**)

- The **Mnemonics Display** options enable the source names to be displayed directly above the PGM bus, the Custom Control bus, and each MLE on the **Synergy 1.5**, **2** and **2.5 Q/MD Switcher** control panels.

    ~ **Synergy 2 Q/MD** requires 1 Mnemonic Controller board (**4000A-430A**), up to six Mnemonics Display Modules (**4000A-435**), and up to 3 Mnemonics Display Modules (**4000A-437**)

    ~ **Synergy 2.5 Q/MD** requires 1 set of Mnemonic Controller boards (4000A-430B), up to eight Mnemonics Display Modules (4000A-437), and up to eight Mnemonics Display Modules (4000A-438)

- The **MediaCache** option increases the Global-Store memory on the frame CPU Board, allowing animated logos, moving graphics, and short uncompressed clips to be played from the Global-Store.

    ~ Requires one **1 GB DDR SDRAM Module**.

- The **Squeeze & Tease MD** option allows you to Fly Keys, perform pre-processor, lighting, picture frame border and sequence effects.

    ~ Requires a **Squeeze & Tease Carrier Board** with at least one **Squeeze & Tease MD Card** installed per MLE.

- The **XFX** option provides the MLE-Store still-store functionality as well as a dual border generator for flying keys on each MLE it is installed for.

- The **MediaCache** for MLE-Store option increases the MLE-Store memory on the XFX card, allowing animated logos, moving graphics, and short uncompressed clips to be played from the MLE-Store.

    ~ Requires one **1 GB DDR SDRAM Module**.

Extended Tallies Option

	Note	This option is not available for the **Synergy 1 Q/MD**.

This section provides instructions for installing the **Extended Tallies** option, which offers an additional 36 tallies (bringing the total number to 72). The figure below illustrates the **Extended Tallies Board** (**4000A-038**).
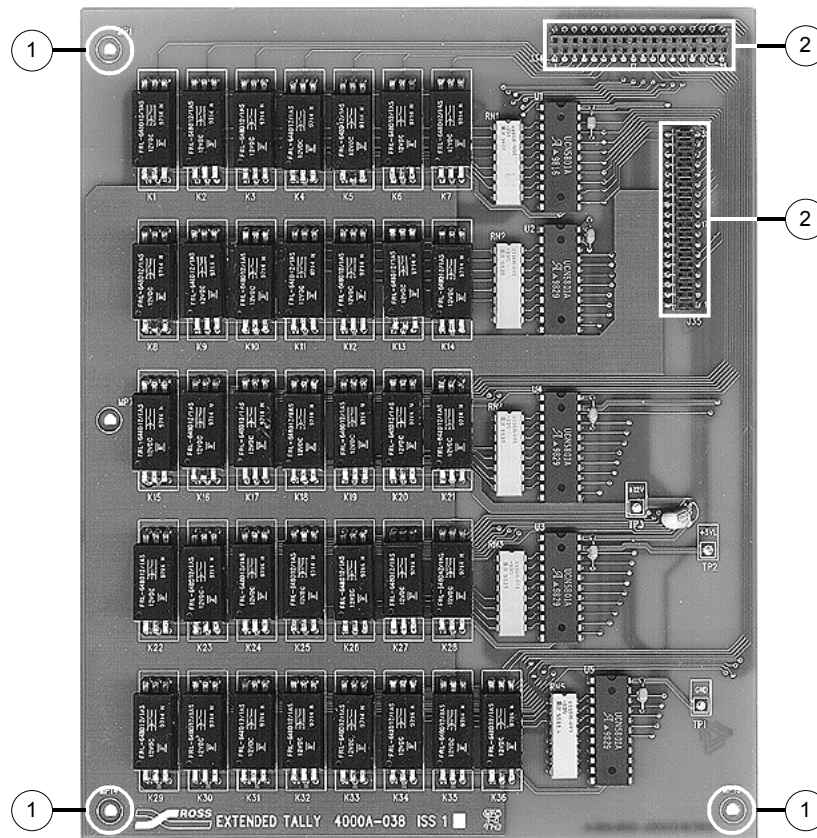
Extended Tallies Board

1) Mounting Holes	2) Connector Sockets

1. **Mounting Holes**

   Three holes are provided for mounting the Extended Tallies Board on the control panel **CPU Board**, where three permanent standoffs are provided.

2. **Connector Sockets**

   Two multi-pin female connector sockets are provided on the Extended Tallies Board. When the board is mounted on the connectors below (on the control panel CPU Board), the pins push up from underneath, through the board itself, and into the socket from below.

	Note	There are no DIP switches, jumpers, LEDs, or user serviceable areas on the Extended Tallies Board.

Use the following procedure to install the Extended Tallies option. The procedure is universal for both Synergy Q/MD switchers.

1. Observe all static discharge precautions throughout the procedure.

2. Lift the top of the control panel to reveal the electronics bay inside.

3. Turn the control panel power switch off.

4. Remove the protective cover from the electronics bay, and set the screws in a safe place for later re-installation.

5. In the upper left corner of the control panel CPU Board, locate the **Extended Tallies Section**, as shown below. You will find two headers and three standoffs in this region.
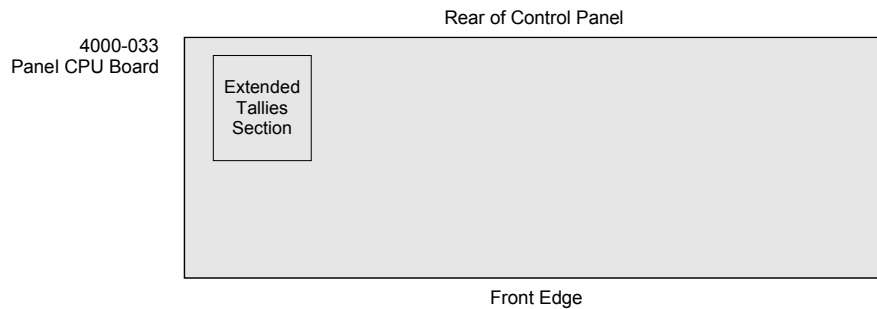
Control Panel CPU Board —Extended Tallies Section

6. Unpack the Extended Tallies kit.

7. Align the Extended Tallies board with the connectors on the control panel **CPU Board**.

8. Slowly press the board down onto the connectors (which will mate with holes on the bottom of the Extended Tallies board). Ensure that there are no bent or misaligned pins. Continue pressing down, until there is a positive snap — as the board seats fully.

9. Secure the board with screws, into the three mounting holes and standoffs.

10. Prior to replacing the cover on the electronics bay, turn on control panel power and perform the tally diagnostic test. Refer to the section "**Tally Test**" on page 24-12 for complete instructions.

11. With the test complete, turn off control panel power, and replace the protective cover over the electronics bay. Secure all screws around the edges of the top cover. Lower the top of the control panel to complete the procedure.

This completes the procedure for installing the Extended Tallies option.

With the Extended Tallies option properly installed, you now have 36 additional tallies to program and use, and tally connectors **3** and **4** on the rear of the control panel are now active.

•   Refer to the "**Tally Connections**" section in Chapter 3 for instructions on connecting tallies.

•   Refer to the "**Setting Up Tallies**" section in Chapter 7 for instructions on programming tallies through the menu system.

Mnemonics Display Option

	Note	This option is not available for the **Synergy 1 Q/MD**.

The **Mnemonics Display** option is available for field installation on the **Synergy 1.5**, **2** and **2.5 Q/MD** control panels. Mnemonics Display modules are available for the PGM bus, the Custom Control bus, and each MLE on your Switcher.

Installing the mnemonics display option is a three part process:

1. Removing Cover Plates

2. Installing Mnemonics Display Modules

3. Installing Mnemonic Controller Board(s)

Removing Cover Plates

Use the following procedure to remove cover plates from control panel.

	Caution	Observe all static discharge precautions throughout the procedure.

1. Open the control panel top as wide as possible.

2. Power down the switcher control panel.

3. Locate the Crosspoint (or XPT) Switch circuit board. This board is on the left side of the panel top as you view it from the inside.

4. On the Crosspoint (XPT) Switch circuit board, locate the bolt positions for the cover plates you are removing. The positions are marked with a bolt icon and an arrow head on the silk screening. See the figure and table below for bolt position icons and labels.
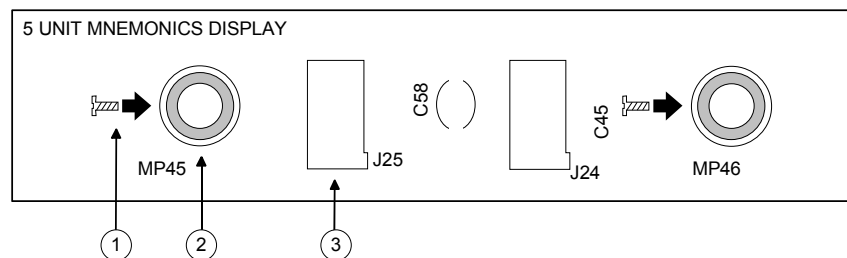
Typical Mnemonics Display Silk Screening on Crosspoint (XPT) Switch Board

1) Bolt Icon	2) Bolt Position	3) Display Module Pin Socket

Mnemonics Display Bolt Position Labels (from left to right)

Switcher	Mnemonic Display Bus Row				
	PGM	**Cust Ctrl**	**MLE 1**	**MLE 2**	**MLE 3**
Synergy 1.5 Q/MD	MP 38-44	MP 45-51	MP 52-58		
Synergy 2 Q/MD	MP 38-44	MP 45-51	MP 52-58		
Synergy 2.5 Q/MD	MP 55-68	MP 69-82	MP 43-51, 61, 52, 9, 60, 28	MP 83-96	

5. Using a Phillips #1 screwdriver, remove the slot cover plate screws and place them in a handy spot. You will need these screws to install the mnemonic display components.

6. On the top side of the panel, lift the unscrewed cover plate away, and store it in a safe place with your Synergy Q/MD hardware accessories.

7. Repeat steps 4 to 6 for each display row you wish to install.

8. Once all the required cover plates have been removed, close the panel top and proceed to "**Installing Mnemonic Display Modules**", below.

This completes the procedure for removing cover plates from control panel.

Installing Mnemonics Display Modules

Use the following procedure to install mnemonic display modules in your Synergy Q/MD control panel.

⚠ **Caution**
> Observe all static discharge precautions throughout the procedure.

1. Carefully remove the mnemonic display modules from their shipping packages.

Synergy 2 Q/MD -
> uses modules with 5, 5, and 7 displays each, per row, from left to right, to fill 17 row spaces.

Synergy 3 Q/MD -
> uses modules with 8, 7, 8, and 7 displays each, per row, from left to right, to fill 30 row spaces.

Depending on which switcher you have, and how many rows of mnemonics you are installing, you will have a corresponding amount of mnemonics display modules to install based on the configuration groupings listed above.

The Crosspoint (XPT) Switch boards are all silk-screened with outlines and text indicating which type of modules fit in each slot.

⊛ **Important**
> In the following steps, failure to reinstall a module with a precise 1:1 pin-to-socket orientation will damage the Crosspoint (XPT) Switch board, the selected module — or both! Double check your work!

2. Based on the configurations described in the previous step, select the leftmost display module and align it over the slot with the pin headers over the pin sockets. When properly aligned, the arrows above the standoff labels (**MP 1**, etc.) on the underside of the module will point upward.

3. Gently press the module pins onto the pin sockets on the Crosspoint (XPT) Switch circuit board.

4. Working from left to right, repeat steps 3 and 4 to align and insert each module into each row socket until all modules are installed on the panel.

5. Open the panel top as wide as possible.

6. Using a Phillips #1 screwdriver, fasten the bolts (from the cover plate removal procedure) to their corresponding positions as outlined in the following table.

Mnemonics Display Bolt Position Labels (from left to right)

Switcher	Mnemonic Display Bus Row				
	PGM	Cust Ctrl	MLE 1	MLE 2	MLE 3
Synergy 1.5 Q/MD	MP 38-44	MP 45-51	MP 52-58		
Synergy 2 Q/MD	MP 38-44	MP 45-51	MP 52-58		
Synergy 2.5 Q/MD	MP 55-68	MP 69-82	MP 43-51, 61, 52, 9, 60, 28	MP 83-96	

Note   Do not over tighten the bolts. Over tightening the bolts will damage the Crosspoint (XPT) Switch board, the selected module — or both.

7. When all bolts are inserted, proceed to "**Installing Mnemonic Controller Board(s)**", below.

This completes the procedure for install mnemonic display modules in your Synergy Q/MD control panel.

Installing Mnemonic Controller Board(s)

Use the following procedure to install Mnemonic Controller Board(s) in the Synergy Q/MD control panel.

1. Observe all static discharge precautions throughout the procedure.

2. Carefully remove the Mnemonic Controller board(s) from the shipping package.

Synergy 2 Q/MD	uses one Mnemonic Controller board, 4000A-430A.
Synergy 3 Q/MD	uses two Mnemonic Controller boards, 4000A-430B.

3. Depending on which switcher you have, you will have 1 or 2 Mnemonic Controller boards to install, as outlined in the configuration groupings listed above.

Important   In the following steps, failure to reinstall a Mnemonic Controller board with a precise 1:1 pin-to-socket orientation will damage the Crosspoint (XPT) Switch board, the Mnemonic Controller board — or both! Double check your work!

4. With the panel top still open, locate the three light gray socket rows on the Crosspoint (XPT) Switch circuit board(s).

Synergy 1.5 Q/MD	The input sockets are on the lower right edge of the Crosspoint Switch board. The Mnemonic Controller board installs edge to edge with the Crosspoint Switch board.
Synergy 2 Q/MD	The input sockets are on the lower right edge of the Crosspoint Switch board. The Mnemonic Controller board installs edge to edge with the Crosspoint Switch board.
Synergy 2.5 Q/MD	The input sockets for the two cards are on the left edge of the Lower XPT Switch board and the lower right edge of the Upper XPT Switch board. The Mnemonic Controller boards install piggy-back on top of the Crosspoint (XPT) Switch boards, resting fully over each XPT board in both cases.

5. On the Crosspoint (XPT) or, in the case of the **Synergy 2** panel, Key Switch circuit boards, locate the standoffs which correspond to the mounting holes labeled on the solder side of the Mnemonic Controller boards, and remove any bolts from the standoffs if there are any present.

6. Based on the configurations described in step 3, hold the Mnemonic Controller board with the component side away from you and align it over the slots with the pin groupings over the pin sockets.

7. Gently press the Mnemonic Controller board pins onto the pin sockets on the Crosspoint (XPT) Switch circuit board.

8. Using a Phillips #1 screwdriver and the supplied mounting bolts, fasten the Mnemonic Controller board(s) to the host Crosspoint (XPT) Switch board at the standoff positions.

Important | Do not over tighten the bolts. Over tightening the bolts will damage the Crosspoint (XPT) Switch board, the Mnemonic Controller board — or both! Double check your work!

This completes the procedure for installing Mnemonic Controller Board(s) in the Synergy Q/MD control panel.

This completes the installation of the Mnemonics Display option. For configuration information, refer to the section, "**Standard Mnemonics**" in Chapter 12. For information on BNC and Custom Control names in mnemonics displays, refer to Chapter 7, "**BNC Configuration and Check**", and Chapter 10, "**Custom Controls**", respectively.

MediaCache™ Option

The MediaCache upgrade for the Synergy Q/MD Systems increases the Global-Store and MediaCache memory on the CPU Board of the frame. This upgrade allows animated logos, moving graphics, and short uncompressed clips to be played from the Global-Store.

The MediaCache option consists of both a hardware upgrade and software that enables this feature. For the hardware component, the existing **256 MB DDR SDRAM** module is removed and replaced with a larger **1 GB DDR SDRAM** module. The new feature is then enabled using a software access code provided by **Ross Video Technical Support**.

Upgrading the MediaCache Memory

The MediaCache upgrade requires that you replace the existing Global-Store and MediaCache memory module with a new, larger memory module. This procedure requires you to power down the frame and remove the CPU Board.

In order to upgrade the MediaCache Memory you will have to power down your switcher, remove the CPU board from the frame, install the MediaCache Memory Module, re-install the CPU board into the frame, and power up the switcher.

Shutdown the Switcher

Use the following procedure to perform a shutdown of the switcher:

1. Navigate to the **System Shutdown Menu** as follows:

   • Press **HOME** ⇨ **MORE** ⇨ **System Shutdown**.

System Shutdown Menu

2. Press **Shut Down**.

This completes the procedure for shutting down the switcher. Next you will have to remove the CPU Board from the frame.

Removing the CPU Board

Use the following procedure to remove the CPU Board:

⚠	**Important**	Do not turn the switcher frame power off until you have completed the proper shutdown procedure or you may damage the hard disk. Refer to the section "**Shutting Down the Switcher**" on page 4-14 for this procedure.

1. Remove the front door of the frame.

---

2. Locate the power supplies on the right side of the frame.

3. Toggle each of the power supply switches to **OFF** to power down the frame.

4. Locate the **CPU Board** in **Slot A** at the back of the frame.

CPU Board — Rear Panel

| ✎ | **Note** | You may want to label the cables connected to the back of the frame so that they can be easily reconnected when you have completed this procedure. |

5. Remove all the cables connected to the CPU Board.

6. Unscrew the **Locking Screws** located at either end of the rear panel of the CPU Board.

| ⚠ | **Caution** | Always remember to ground yourself by touching the chassis or wearing a grounded wrist strap before handling any electronic components. |

7. Remove the **CPU Board** by sliding it out of slot in the frame.

Synergy Q/MD *— CPU Board Removal*

8. Place the **CPU Board** on a clean, static free surface.

With the CPU Board removed from the frame, you can now replace the existing Global-Store and MediaCache module with the new MediaCache module.

Installing the MediaCache Memory Module

Use the following procedure to install the **MediaCache Memory Module**:

1. Locate the **MediaCache** on the **CPU Board**.
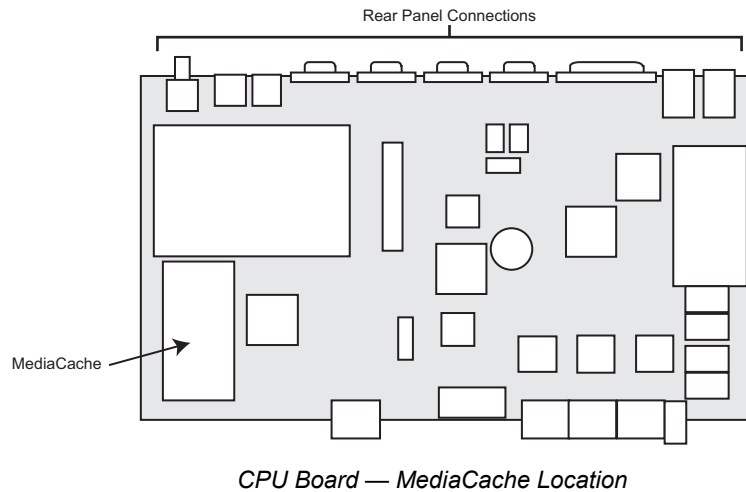
Rear Panel Connections

MediaCache

CPU Board — MediaCache Location

⚠ **Caution** | Always remember to ground yourself by touching the chassis or wearing a grounded wrist strap before handling any electronic components.

2. Using your thumbs, spread the **Retaining Clips** on either side of the **Memory Socket** outward until the **Memory Module** is released.
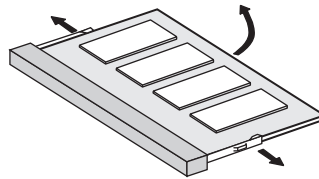
Removing the Memory Module

3. Grasping the **Memory Module** by the edge, remove it from the **Memory Socket** and place it on a clean, static free surface.

4. Gently slide the new **MediaCache Memory Module** down at an angle into the **Memory Socket** you just removed the memory module from.
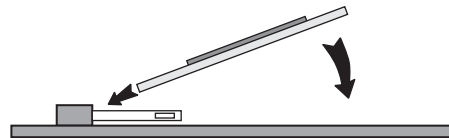
MediaCache Memory Module

5. Gently push the **MediaCache Memory Module** down into place until the two **Retaining Clips** click shut and secure the **MediaCache** in the **Memory Socket**.

With the new **MediaCache** module installed on the **CPU Board**, you will reinstall the **CPU Board** in the frame.

Reinstalling the CPU Board

Use the following procedure to reinstall the CPU Board:

1. Ensure that the frame is powered **OFF**.
2. Slide the CPU Board into **Slot A** at the back of the frame until it is fully seated.
3. Screw in the **Locking Screws** at either end of the rear panel of the **CPU Board** to secure the board in place.
4. Reconnect the cables to the rear panel of the **CPU Board**.
5. Locate the power supplies on the right side of the frame.
6. Toggle the power switch on each power supply to **ON** in order to power up the frame.
7. Replace the front door of the frame.

This completes the procedure for installing the hardware component of the MediaCache option. Refer to Chapter 6, "**Software Upgrades and Options**" for details on activating the software component.

Hard Drive Replacement

In the event that the hard drive installed in your Synergy Q/MD switcher needs to be replaced, a spare hard drive, with the current shipping version of the software on it, is provided in the spare parts kit.

Note
> The software provided on the spare hard drive should be the current shipping version at the time the hard drive was imaged. This may not be the newest version of software available. Refer to Chapter 6, "**Software Upgrades and Options**" for the procedure to upgrade your software. Once you have installed the spare hard drive you should contact **Ross Video** for the most current version of the software.

Replacing the Hard Drive

In order to replace your hard drive you will have to power down your switcher, remove the CPU board from the frame, replace the hard drive, re-install the CPU board into the frame, and power up the switcher.

Shutdown the Switcher

Use the following procedure to perform a shutdown of the switcher:

Important
> Ensure that you backup all the stills and setup that you have stored on the hard drive before you remove it, if it is possible to do so. Refer to Chapter 6, "**Software Upgrade and Options**" for more information.

1. Navigate to the **System Shutdown Menu** as follows:
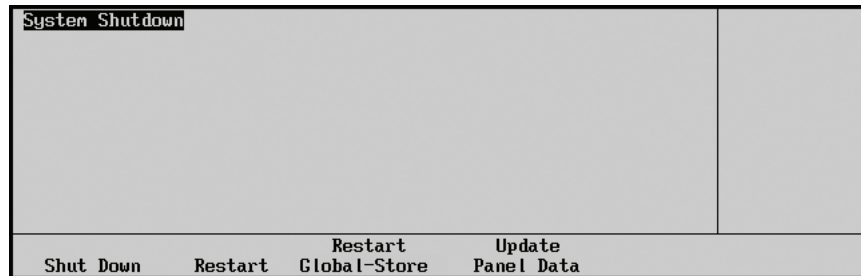
    •   Press **HOME ⇨ MORE ⇨ System Shutdown**.

```
System Shutdown




                                    Restart         Update
       Shut Down        Restart   Global-Store    Panel Data
```

System Shutdown Menu

2. Press **Shut Down**.

This completes the procedure for shutting down the switcher. Next you will to remove the CPU Board from the frame.

Removing the CPU Board

Use the following procedure to remove the CPU Board:

⁕	**Important**	Ensure that the switcher is in power-down mode before you proceed. Do not turn the switcher frame power off until you have completed the proper shutdown procedure or you may damage the hard disk. Refer to the section "**Shutting Down the Switcher**" on page 4-14 for this procedure.

1. Remove the front door of the frame.

2. Locate the power supplies on the right side of the frame.

3. Toggle each of the power supply switches to **OFF** to power down the frame.

4. Locate the CPU Board in **Slot A** at the back of the frame.

CPU Board — Rear Panel

✏	**Note**	You may want to label the cables connected to the back of the frame so that they can be easily reconnected when you have completed this procedure.

5. Remove all the cables connected to the CPU Board.

6. Unscrew the **Locking Screws** located at either end of the rear panel of the CPU Board.

⚠	**Caution**	Always remember to ground yourself by touching the chassis or wearing a grounded wrist strap before handling any electronic components.

7. Remove the **CPU Board** by sliding it out of slot in the frame.

Synergy Q/MD — CPU Board Removal

8. Place the **CPU Board** on a clean, static free surface.

With the **CPU Board** removed from the frame, you can now replace the existing Hard Drive with the replacement **Hard Drive**.

Replacing the Hard Drive

Use the following procedure to replace the **Hard Drive**:

1. Locate the **Hard Drive** on the **CPU Board**.
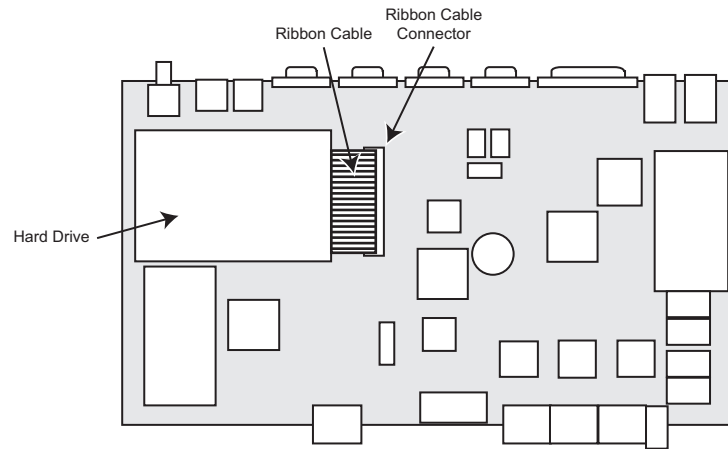
CPU Board — Hard Drive Location

⚠	**Notice**	Always remember to ground yourself by touching the chassis or wearing a grounded wrist strap before handling any electronic components.

2. Release the **Ribbon Cable** from the **Ribbon Cable Connector** by pressing down and out on the **Ejector Tabs** at either end of the **Ribbon Cable Connector**.
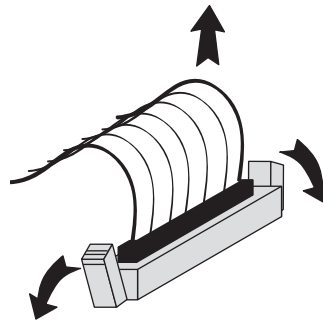
Releasing the Ribbon Cable

3. Flip the **CPU Board** over so that the Hard Drive is facing down.

Ribbon Cable
Connector
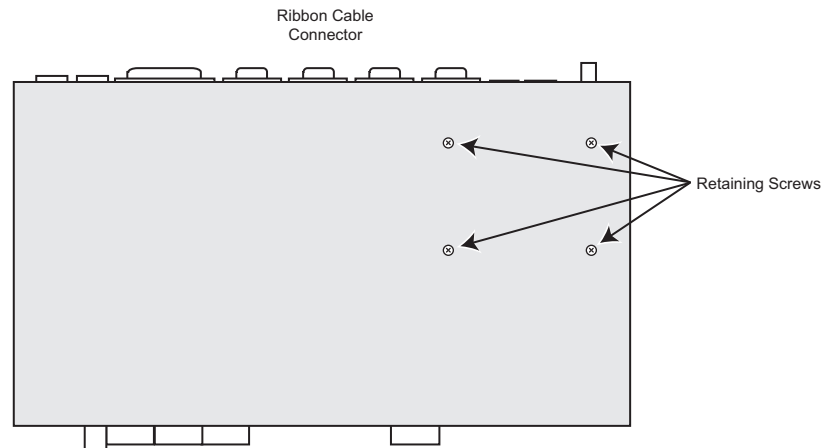
Retaining Screws

CPU Board — Retaining Screws Location

4. Locate the four **Retaining Screw** securing the **Hard Drive** in place.

5. Using a non-magnetic (electronics safe) screwdriver, remove the **4 Retaining Screws** securing the **Hard Drive**.

6. While holding the **Hard Drive** to the **CPU Board**, flip the **CPU Board** back over so that the **Hard Drive** is facing up again.

Note Ensure that you do not damage the rubber spacers located at each screw hole when you remove the **Hard Drive**.

7. Remove the **Hard Drive** from the **CPU Board** and place in a safe location.

8. Remove the **Ribbon Cable** from the **Hard Drive** you just removed and install it onto the replacement **Hard Drive** using the **44** pin **Hard Drive Ribbon Cable Pins**. Ensure that the stripe on the **Ribbon Cable** is aligned towards the four unused pins as illustrated.

Hard Drive Ribbon Cable Pins

Pin1

CPU Board

Ribbon Cable

Pin1
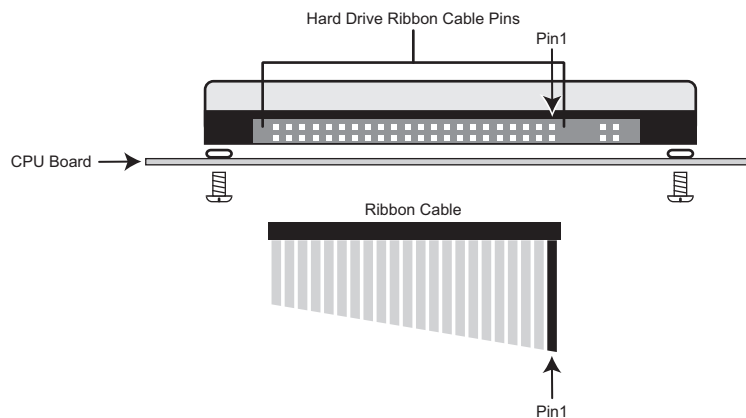
CPU Board — Ribbon Cable Alignment

Warning Ensure that you connect the **Ribbon Cable** to the pins illustrated. If the **Ribbon Cable** is not properly connected your **Hard Drive** could be damaged when the switcher is powered On.

9. Ensuring that the **Rubber Spacers** are in place, install the replacement **Hard Drive** using the **4 Retaining Screws** you removed.
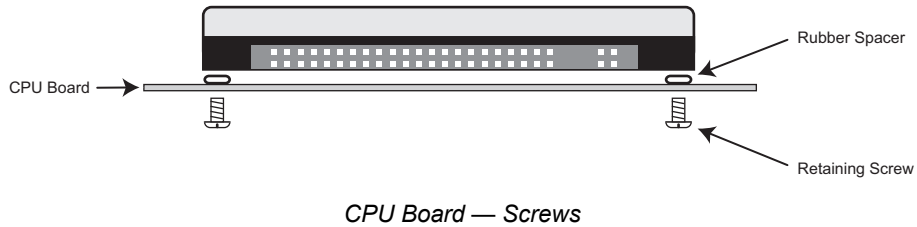
CPU Board — Screws

⚠	**Caution**	Do not overtighten the **Retaining Screws**. These screws only need to be snug in order to secure the **Hard Drive** in place.

10. Push the **Ribbon Cable** into the **Ribbon Cable Connector** until the **Ejector Tabs** at either end of the **Ribbon Cable Connector** close together, securing the **Ribbon Cable** in place.

With the replacement **Hard Drive** installed on the **CPU Board**, you will reinstall the **CPU Board** in the frame.

Reinstalling the CPU Board

Use the following procedure to reinstall the CPU Board:

1. Ensure that the frame is powered **OFF**.
2. Slide the CPU Board into **Slot A** at the back of the frame until it is fully seated.
3. Screw in the **Locking Screws** at either end of the rear panel of the **CPU Board** to secure the board in place.
4. Reconnect the cables to the rear panel of the **CPU Board**.
5. Locate the power supplies on the right of the frame.
6. Toggle the power switch on each power supply to **ON** in order to power up the frame.
7. Replace the front door of the frame.

This completes the procedure for installing a replacement Hard Drive. You may have to reset your network configurations or update your software version. Refer to Chapter 6 "**Software Upgrades and Options**" for more information.

Remote Port Expander Cabling (BSS4)

To connect the BSS4 Remote Port Expander to the Synergy Q/MD switcher, you will have to make a connection from one of the Remote Ports on the back of the control panel to the Master Port on the BSS4.

In order to properly complete this procedure you will need the following:

- **BSS4 Interface Cable** — An RS-422 cable with a male 9-pin, D-type connector on one end, and a female 9-pin, D-type connector on the other end. Refer to the table "**Synergy-to-BSS4 Wiring Chart**" on page 28-18 for wiring information.

Note | The BSS4 will only support RS-422 communication. Any device using RS-232 communication will require a RS-422 to RS-232 converter.

- **BSS4 Power Supply** — The 5 Volt, 100mA power supply that was supplied with your BSS4 switch.

The Synergy Q/MD switcher connects to the BSS4 Remote Port Expander via the remote ports on the back of the Synergy control panel, and the Master Port on the BSS4.

- The Synergy control panel remote port requires a 9-Pin, D-Type RS-422 connector.

- The BSS4 Master Port requires a 9-Pin, D-Type RS-422 connector.

Synergy-to-BSS4 Wiring Chart

Synergy Panel			BSS4 Remote Port Switch	
Remote Port (Female)	**Signal**		**Master Port (Male)**	**Signal**
1	Chassis			
2	RxA (Rx-)	→	2	TxA (Tx-)
3	TxB (Tx+)	→	3	RxB (Rx+)
4	n/c			
5	Ground	→	5	Ground
6	Ground			
7	RxB (Rx+)	→	7	TxB (Tx+)
8	TxA (Tx-)	→	8	RxA (Rx-)
9	Chassis			

Use the following procedure to connect a BSS4 Remote Port Switch to your Synergy Q/MD switcher:

1. Connect and secure the male end of the **BSS4 Interface Cable** to one of the **Remote Ports** on the back of the Synergy Q/MD control panel.

2. Connect and secure the female end of the **BSS4 Interface Cable** to the **Master Port** on the BSS4. Refer to the section "**Connecting the BSS4 Remote Port Expander to the Synergy Q/MD Control Panel**" on page 28-19 for an illustration.

Caution | Ensure that you have the correct power supply for your type of power *before* you attempt to plug the BSS4 Power Supply in a power socket.

3. Connect the **BSS4 Power Supply** to the **BSS4** and plug into an appropriate AC outlet.
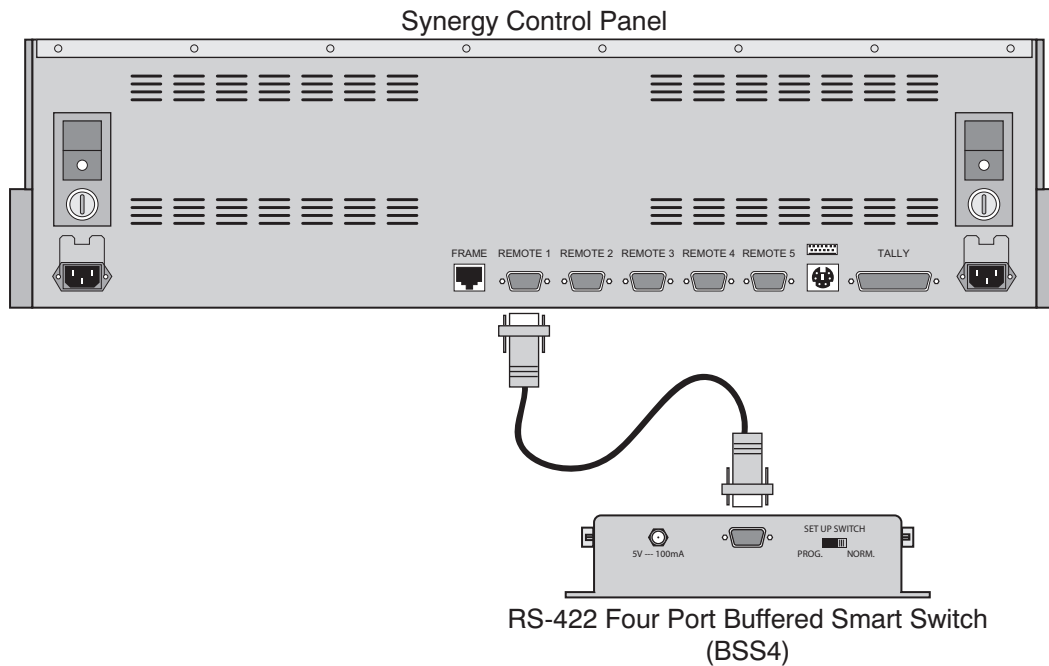
Synergy Control Panel

RS-422 Four Port Buffered Smart Switch
(BSS4)

Connecting the BSS4 Remote Port Expander to the Synergy Q/MD Control Panel

This completes the procedure for connecting the BSS4 Remote Port Switch to the Synergy Q/MD switcher. Next, you will have to set up the communications protocols in order to use the Extended Remote Ports on the BSS4. Refer to Chapter 9, "**Basic Communications Setup**" for information on setting up the communications protocols for the BSS4.

Squeeze & Tease MD Option

The Squeeze & Tease™ MD option consists of a carrier board and a number of daughter cards that are installed into the Synergy Q/MD frame.

In order to install the Squeeze & Tease MD option, you will have to upgrade the switcher software, install the daughter cards onto the Squeeze & Tease Carrier Board, and install the Squeeze & Tease Carrier Board into the frame.

The hardware for the Squeeze & Tease MD option consists of a Squeeze & Tease MD Carrier Board with slots for **4** Squeeze & Tease MD Cards, each providing **2** channels of DVE, a slot for **1** DSP Card, and slots for **2** Squeeze & Tease WARP MD Cards.

The total number of Squeeze & Tease MD cards you can install will depend on the Synergy Q/MD Switcher you have. Refer to the following table for information on the number of Squeeze & Tease MD options you can install.

> **Note**   The additional Keys of the MultiDSK option, or the additional half MLE of the Mix/DSK option cannot Fly a Key.

Squeeze & Tease MD options available for Synergy Q/MD Switchers

Switcher	Squeeze & Tease MD
Synergy 1 Q/MD	1 × Squeeze & Tease Carrier Board
	2 × Squeeze & Tease MD Cards
	1 × Squeeze & Tease WARP MD Card
Synergy 1.5 Q/MD	1 × Squeeze & Tease Carrier Board
	2 × Squeeze & Tease MD Cards
	1 × Squeeze & Tease WARP MD Card
Synergy 2 Q/MD	1 × Squeeze & Tease Carrier Board
	4 × Squeeze & Tease MD Cards
	2 × Squeeze & Tease WARP MD Cards
Synergy 2.5 Q/MD	1 × Squeeze & Tease Carrier Board
	4 × Squeeze & Tease MD Cards
	2 × Squeeze & Tease WARP MD Cards

Installing the Squeeze & Tease MD Option

In order to install the Squeeze & Tease MD option, you must update the switcher software, install the daughter cards onto the Squeeze & Tease Carrier Board, and install the carrier into the frame.

If you are adding Squeeze & Tease MD Cards or Squeeze & Tease WARP MD Cards to an existing Squeeze & Tease Carrier Board, you must remove the board from the frame, install the daughter cards and then reinstall the Squeeze & Tease Carrier Board into the frame. Refer to Chapter 3, "**Physical Installation**" for information on removing and installing frame circuit boards.

> **Important**   Although the **Squeeze & Tease Carrier Boards** are hot-swappable, any Squeeze & Tease resources on those cards that are being used, Flying Keys for example, will be lost when the board is removed.

Upgrading the Software

When a new board is installed, the switcher checks the current version of software on the board. If the software on the board is the same as the software on the switcher, there is no change. If the board has a software version that is different than the version on the switcher, the switcher will upgrade the board to the same version as the switcher. For this reason it is important that you upgrade your switcher to the latest version of Synergy Q/MD software prior to installing a new board into the frame.

Refer to Chapter 6, "**Software Upgrades and Options**" for information on upgrading your switcher.

Installing the Squeeze & Tease DSP Card

Use the following procedure to install the **Squeeze & Tease DSP Card** onto the **Squeeze & Tease Carrier Board**:

> ⚠️ **Caution** | Always remember to ground yourself by wearing a grounded wrist strap before handling any electronic components.

1. Place the **Squeeze & Tease Carrier Board** on a clean, static-free surface.
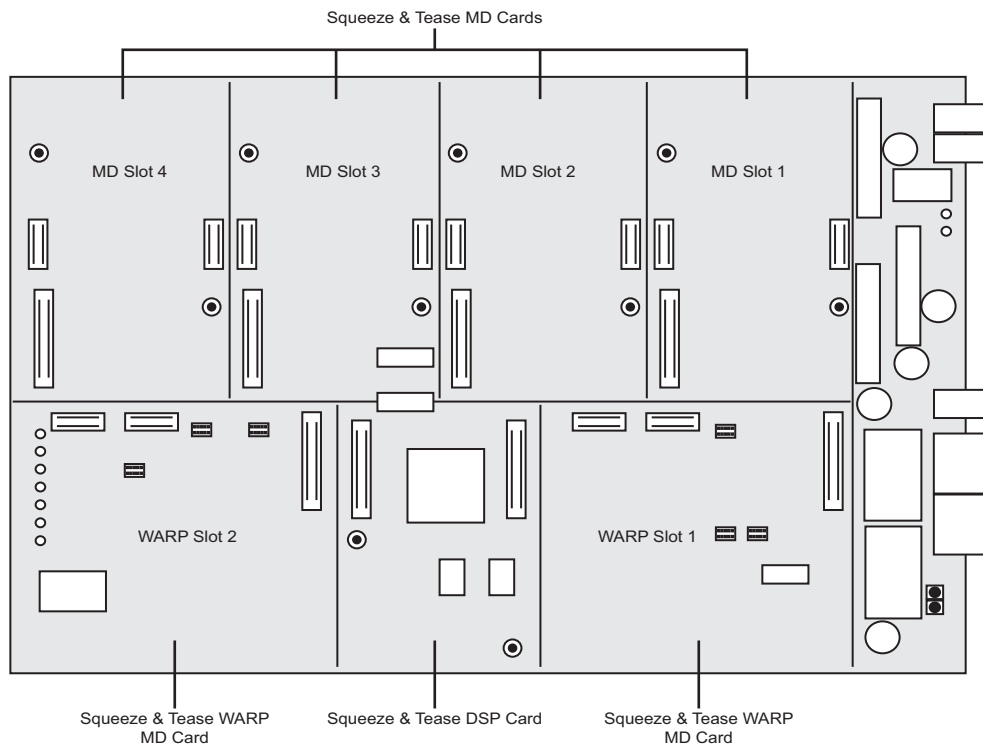
Squeeze & Tease Carrier Board — Daughter Card Slots

2. Locate the **Squeeze & Tease DSP Card Slot** on the **Squeeze & Tease Carrier Board**.

3. Orient the **Squeeze & Tease DSP Card** so that the **2** connectors on the bottom of the card line up with the connectors in the **Squeeze & Tease DSP Card Slot**.

> ✅ **Operating Tip** | The **Retaining Screw Holes** on either side of the card will line up with the mounts on the board.
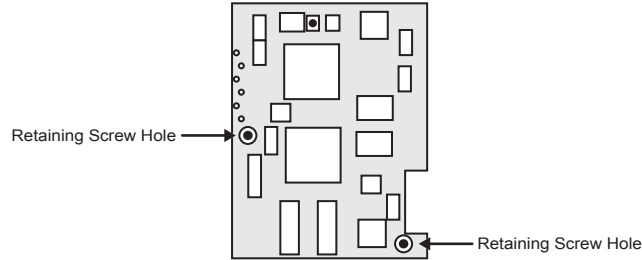
Squeeze & Tease DSP Card

⚠	**Caution**	Do not attempt to use the **Retaining Screws** to seat the card in the slot.

4. Apply firm, even, pressure to seat the card in the Slot.

⚠	**Caution**	Do not overtighten the **Retaining Screws**. These screws only need to be snug in order to secure the card in place.

5. Install the **2 Retaining Screws** into the **Retaining Screw Mounts** on the **Squeeze & Tease Carrier Board** to secure the card in position. The screws insert from the bottom of the Squeeze & Tease Carrier Board, into the daughter card.

This completes the procedure for installing the Squeeze & Tease DSP Card. Next, install any Squeeze & Tease MD Cards onto the Squeeze & Tease Carrier Board.

Installing a Squeeze & Tease MD Card

Use the following procedure to install a Squeeze & Tease MD Card onto the Squeeze & Tease Carrier Board:

⚠	**Notice**	Always remember to ground yourself by wearing a grounded wrist strap before handling any electronic components.

1. Place the **Squeeze & Tease Carrier Board** on a clean, static-free surface.

Squeeze & Tease MD Cards

MD Slot 4   MD Slot 3   MD Slot 2   MD Slot 1

WARP Slot 2   WARP Slot 1

Squeeze & Tease WARP   Squeeze & Tease DSP Card   Squeeze & Tease WARP
MD Card   MD Card
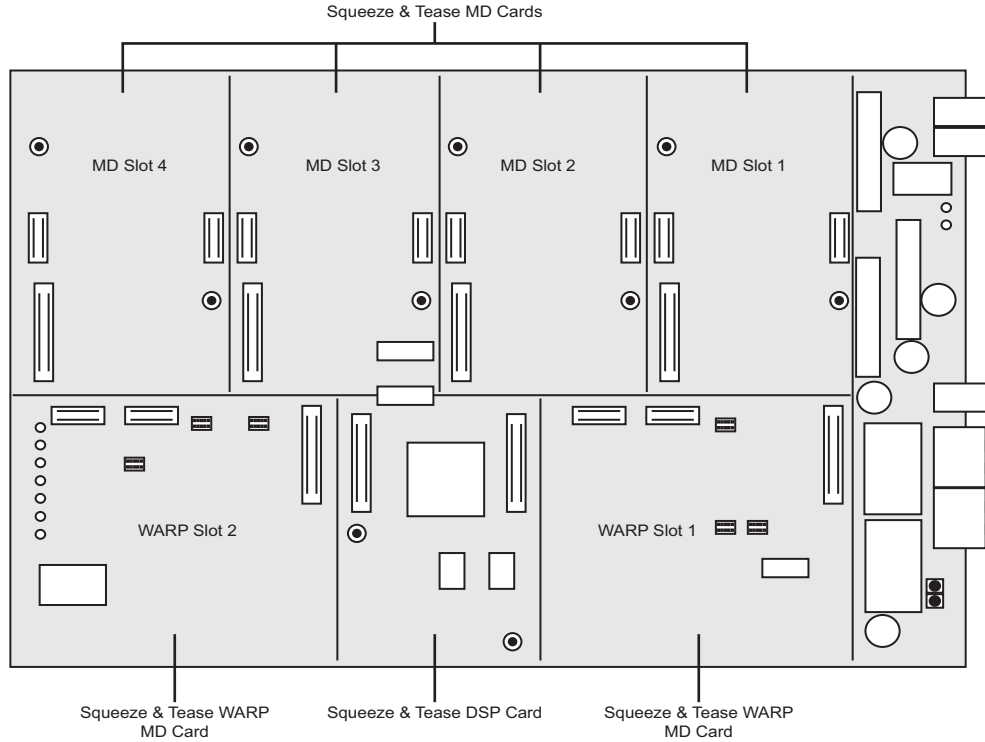
Squeeze & Tease Carrier Board — Daughter Card Slots

2. Locate the **Squeeze & Tease MD Card Slot** (MD Slots **1** through **4**) on the **Squeeze & Tease Carrier Board** that you want to install the Squeeze & Tease MD Card into.

Note

The **Squeeze & Tease MD Card Slots** should be populated from **Slot 1** through to **Slot 4**.

3. Orient the **Squeeze & Tease MD Card** so that the **3** connectors on the bottom of the card line up with the connectors in the **Squeeze & Tease MD Card Slot**.

Operating Tip

The **Retaining Screw Holes** on either side of the card will line up with the mounts on the board.

Retaining Screw Hole

Retaining Screw Hole
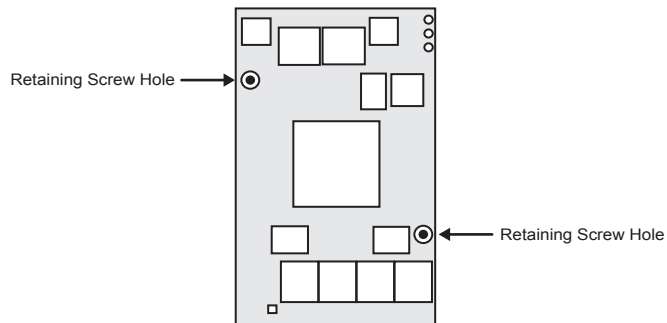
Squeeze & Tease MD Card

Caution

Do not attempt to use the **Retaining Screws** to seat the card in the slot.

4. Apply firm, even, pressure to seat the card in the Slot.

⚠ **Caution** Do not overtighten the **Retaining Screws**. These screws only need to be snug in order to secure the card in place.

5. Install the **2 Retaining Screws** into the **Retaining Screw Mounts** on the **Squeeze & Tease Carrier Board** to secure the card in position. The screws insert from the bottom of the Squeeze & Tease Carrier, into the daughter card.

This completes the procedure for installing the Squeeze & Tease MD Card. Use this same procedure to install any additional Squeeze & Tease MD Cards. Next, install any Squeeze & Tease WARP MD Cards or install the Squeeze & Tease Carrier Board into the frame.

Installing a Squeeze & Tease MD WARP Card

Use the following procedure to install a Squeeze & Tease MD WARP Card onto the Squeeze & Tease Carrier Board:

⚠ **Notice** Always remember to ground yourself by wearing a grounded wrist strap before handling any electronic components.

1. Place the **Squeeze & Tease Carrier Board** on a clean, static-free surface.
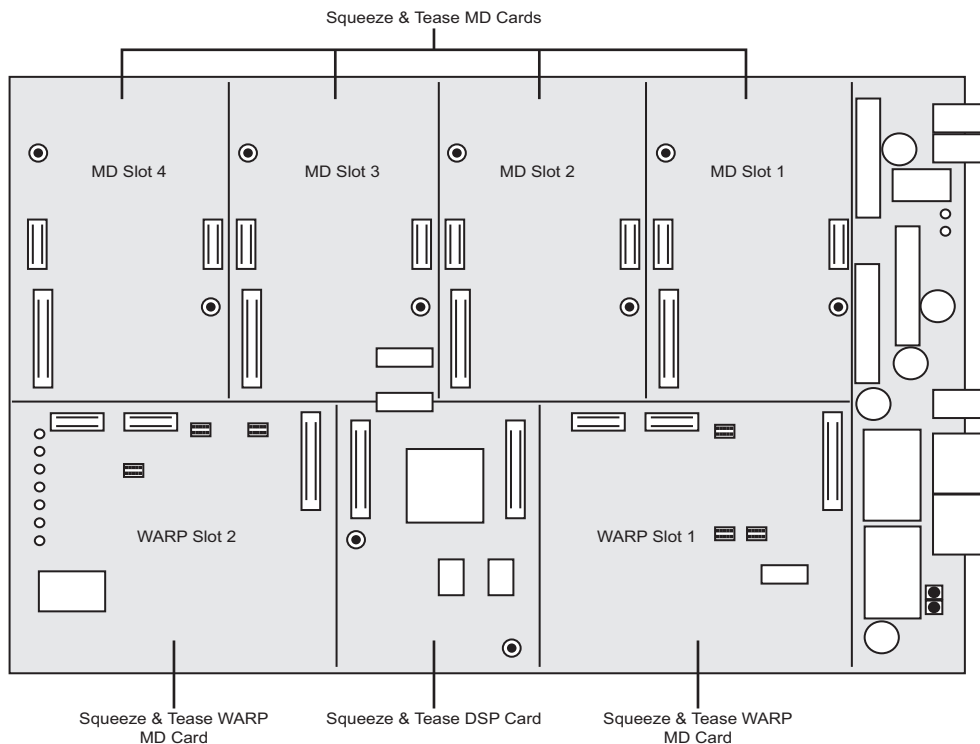
Squeeze & Tease Carrier Board — Daughter Card Slots

2. Locate the **Squeeze & Tease MD WARP Card Slot** (WARP Slots **1** and **2**) on the **Squeeze & Tease Carrier Board** that you want to install the Squeeze & Tease MD WARP Card into.

✎ **Note** WARP slot **1** should be populated first.

3. Orient the **Squeeze & Tease MD WARP Card** so that the **3** connectors on the bottom of the card line up with the connectors in the **Squeeze & Tease MD WARP Card Slot**.

✔ **Operating Tip**

The **Retaining Screw Holes** on either side of the card will line up with the mounts on the board.

Retaining Screw Hole

Retaining Screw Hole

Squeeze & Tease MD WARP Card

⚠ **Caution**

Do not attempt to use the **Retaining Screws** to seat the card in the slot.

4. Apply firm, even, pressure to seat the card in the Slot.

⚠ **Caution**

Do not overtighten the **Retaining Screws**. These screws only need to be snug in order to secure the card in place.

5. Install the **2 Retaining Screws** into the **Retaining Screw Mounts** on the **Squeeze & Tease Carrier Board** to secure the card in position. The screws insert from the bottom of the Squeeze & Tease Carrier, into the daughter card.

This completes the procedure for installing the Squeeze & Tease MD WARP Card. Use this same procedure to install any additional Squeeze & Tease MD WARP Cards.

Installing the Squeeze & Tease Carrier Board into the Frame

When you install the Squeeze & Tease Carrier Board into the frame, the switcher will detect the new board and attempt to upgrade it. Once the Squeeze & Tease Carrier Board has been upgraded, the DSP card on the Squeeze & Tease Carrier Board will be upgraded. The DSP Card will then upgrade the Squeeze & Tease MD and WARP Cards as needed. To check the progress of this upgrade you can use the Card Info page on Upgrade Manager. Refer to Chapter 6, "**Software Upgrades and Options**" for information on viewing the status of an upgrade and how to perform a hard restart of the switcher to initialize the new software.

✱ **Important**

Do not shutdown or restart the switcher, or remove the board from the switcher, while the Squeeze & Tease Carrier or DSP card is being upgraded. You should wait at least **10** minutes after installing the board before performing any of these actions.

Refer to Chapter 3, "**Physical Installation**" for information on installing the Squeeze & Tease MD Carrier Board into the frame.

XFX Extra Effects Option

The XFX Extra Effects option consists of a daughter card that is installed onto the Video Processor board. Two XFX Extra Effects cards can be installed into each video processor for a maximum of 2 XFX Extra Effects cards in your Synergy Q/MD switcher.

Installing the XFX Extra Effects Card

In order to install the XFX Extra Effects card, you must update the switcher software, remove the video processor, install the XFX Extra Effects cards onto the video processor, and then re-install the video processor into the frame.

If you are adding cards to an existing video processor board, you must remove the board from the frame, install the daughter cards and then reinstall the video processor into the frame. Refer to Chapter 3, "**Physical Installation**" for information on removing and installing frame circuit boards.

Upgrading the Software

When a new board is installed, the switcher checks the current version of software on the board. If the software on the board is the same as the software on the switcher, there is no change. If the board has a software version that is different than the version on the switcher, the switcher will upgrade the board to the same version as the switcher. For this reason it is important that you upgrade your switcher to the latest version of Synergy Q/MD software prior to installing a new board.

Refer to Chapter 6, "**Software Upgrades and Options**" for information on upgrading your switcher.

Installing the XFX Extra Effects Card

Use the following procedure to install the **XFX Extra Effects card** onto the **Video Processor** board:

⚠	**Caution**	Always remember to ground yourself by wearing a grounded wrist strap before handling any electronic components.

1. Remove the **Video Processor** board that you are going to install the XFX Extra Effects card into. Refer to Chapter 3, "**Physical Installation**" for information on removing and installing frame circuit boards.

2. Place the **Video Processor** board on a clean, static-free surface.
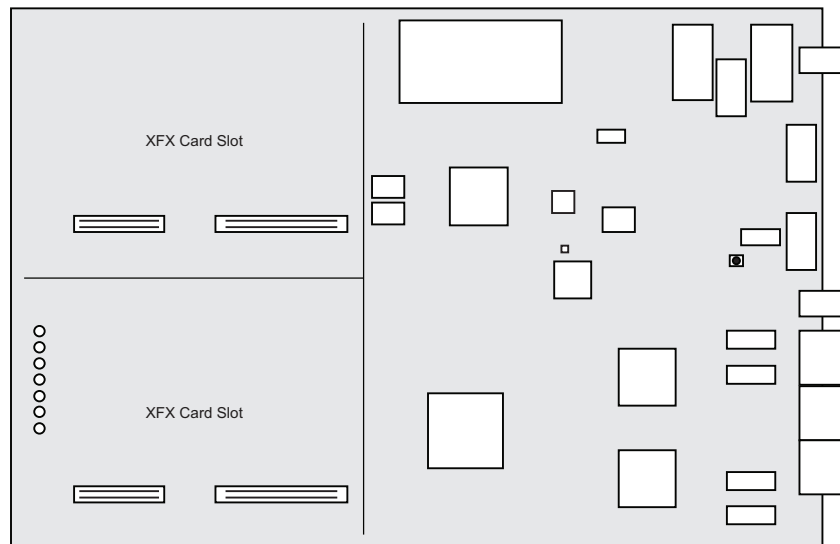
Video Processor Board — XFX Card Slots

3. Locate the **XFX** card slot on the **Video Processor** board.

4. Orient the **XFX Extra Effects** card so that the **2** connectors on the bottom of the card line up with the XFX slot connectors on the **Video Processor** board.

✓ **Operating Tip**

The **Retaining Screw Holes** on either side of the card will line up with the mounts on the board.

Retaining Screw Hole ⟶ ○

○ ⟵ Retaining Screw Hole

XFX Extra Effects Card
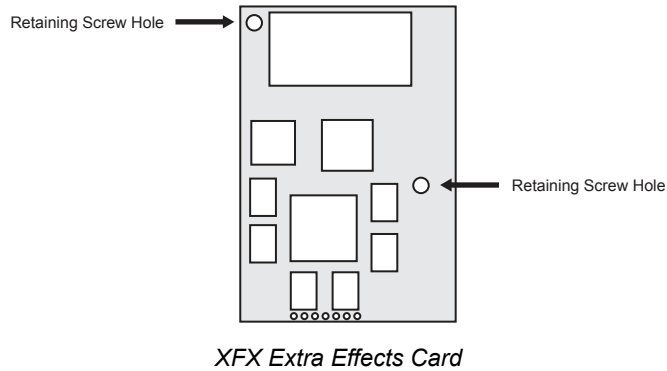
⚠ **Caution**

Do not attempt to use the **Retaining Screws** to seat the card in the slot.

5. Apply firm, even, pressure to seat the card in the Slot.

⚠ **Caution**

Do not overtighten the **Retaining Screws**. These screws only need to be snug in order to secure the card in place.

6. Install the **2 Retaining Screws** into the **Retaining Screw Mounts** on the **XFX Extra Effects** card to secure the card in position. The screws insert from the bottom of the **Video Processor** board, into the daughter card.

This completes the procedure for installing the XFX Extra Effects card.

MediaCache™ for MLE-Store Option

The MediaCache for MLE-Store upgrade for the Synergy Q/MD Systems increases the MLE-Store and MediaCache memory on the XFX card. This upgrade allows animated logos, moving graphics, and short uncompressed clips to be played from the MLE-Store.

The MediaCache for MLE-Store option consists of both a hardware upgrade and software that enables this feature. For the hardware component, the existing **256 MB DDR SDRAM** module is removed and replaced with a larger **1 GB DDR SDRAM** module. The new feature is then enabled using a software access code provided by **Ross Video Technical Support**.

Upgrading the MediaCache for MLE-Store Memory

The upgrade requires that you replace the existing MediaCache for MLE-Store memory module with a new, larger memory module. This procedure requires you to power down the frame and remove the Video Processor(s).

In order to upgrade the MediaCache memory module you will have to complete the following steps:

- Shutdown your switcher
- Remove the Video Processor board(s) with one or two installed XFX Extra Effects cards from the frame
- Install the MediaCache memory module(s) onto the XFX card(s).
- Re-install the Video Processor board(s) into the frame
- Power-up the switcher.

Shutdown the Switcher

Use the following procedure to perform a shutdown of the switcher:

1. Navigate to the **System Shutdown Menu** as follows:

   - Press **HOME** ⇨ **MORE** ⇨ **System Shutdown**.
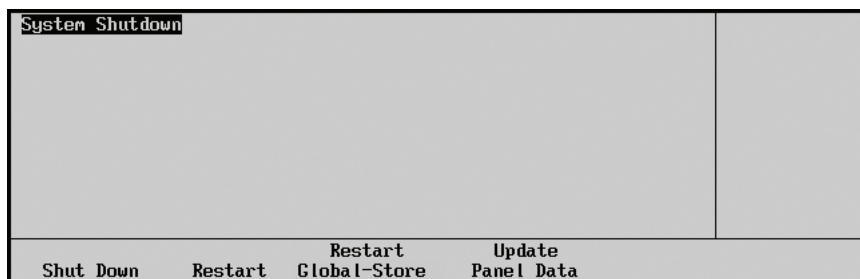
System Shutdown Menu

2. Press **Shut Down**.

This completes the procedure for shutting down the switcher. Next, you must remove the Video Processor board from the frame.

Removing the Video Processor Board

Each Video Processor board, carrying one or two XFX cards that you are upgrading the MediaCache for, must be removed from the switcher.

Use the following procedure to remove a Video Processor board:

Important
> Do not turn the switcher frame power off until you have completed the previous shutdown procedure or you may damage the switcher hard drive.

1. Remove the front door of the frame.
2. Turn the switcher frame power off as follows:
   - Locate the power supplies on the right side of the frame.
   - Toggle each of the power supply switches to **OFF** to power down the frame.
3. Locate the Video Processor board at the front of the frame.

Caution
> Always remember to ground yourself by touching the chassis or wearing a grounded wrist strap before handling any electronic components.

   - The Video Processor board is in **slot 1**

4. If a tie wrap has been used to secure the locking tabs on the sides of the board, remove the tie wrap.
5. Grasp both locking tabs and rotate them towards you and out towards the outer sides of the frame. This will unseat the board from the midplane.
6. Remove the Video Processor board by sliding it out of the slot in the frame.
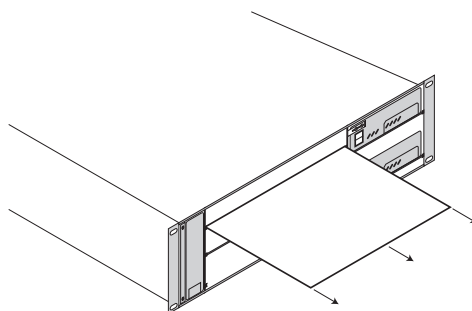
Synergy Q/MD — Video Processor Board Removal

7. Place the Video Processor board on a clean, static free surface.

This completes the procedure for removing the Video Processor board from the frame. Now you can replace the existing MediaCache for MLE-Store memory module with the new MediaCache memory module.

Installing the MediaCache for MLE-Store Memory Module

Use the following procedure to install the MediaCache memory module:

1. Locate the XFX card(s) on the Video Processor (your system may have one or two XFX cards on the Video Processor board).
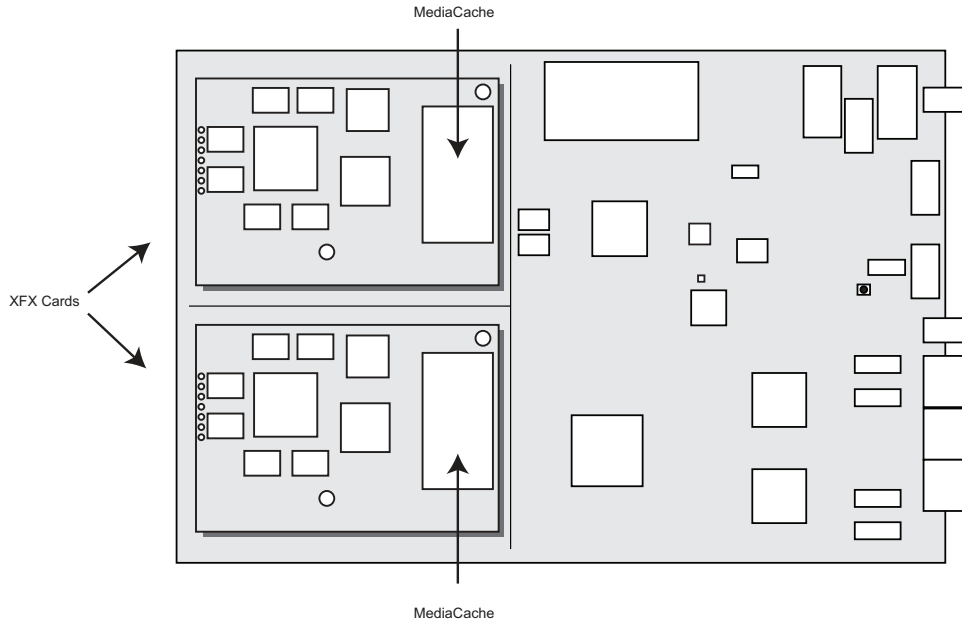
Video Processor — XFX Card and MediaCache Location

⚠️ **Caution** — Always remember to ground yourself by touching the chassis or wearing a grounded wrist strap before handling any electronic components.

2. Locate the MediaCache on the XFX card(s).

3. Using your thumbs, spread the retaining clips on either side of the memory socket outward until the memory module is released.
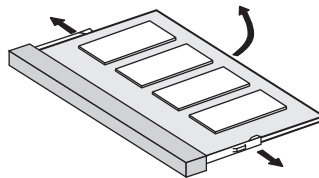
Removing the Memory Module

4. Grasping the memory module by the edge, remove it from the memory socket and place it on a clean, static free surface.

5. Gently slide the new MediaCache memory module down at an angle into the Memory socket you just removed the memory module from. The memory socket is keyed to fit the mating connectors on the memory module so ensure you correctly align the memory module with the memory socket.
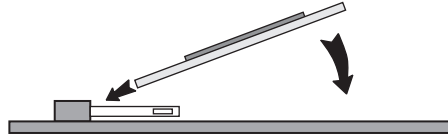
MLECache Memory Module

6. Gently push the MediaCache memory module down into place until the two retaining clips click shut and secure the memory module in the memory socket.

7. Repeat steps 3 to 6 for any additional MediaCache memory modules you are replacing.

This completes the procedure for installing the MediaCache for MLE-Store memory module. Next, you must reinstall the Video Processor board(s) in the frame.

Reinstalling a Video Processor Board

Use the following procedure to reinstall a Video Processor board:

1. Ensure that the frame is still powered **OFF**.

2. Slide the Video Processor board into the appropriate slot at the front of the frame until it is fully seated.

   • Video Processor board installs in **slot 1**.

3. Re-secure the locking tabs.

This completes the procedure for reinstalling the Video Processor board. The final step is to power-up the switcher.

Powering-Up the Switcher

Use the following procedure to power-up the switcher:

1. Power-on the switcher frame as follows:

   • Locate the power supplies on the right side of the frame.

   • Toggle the power switch on each power supply to **ON** to power up the frame.

2. Replace the front door of the frame.

This completes the procedure for installing the hardware component of the MediaCache for MLE-Store option. Refer to the section "**Installing Software Options**" on page 6-29 for details on activating the software component.

Control Panel Maintenance

In This Chapter

This chapter provides instructions for a variety of control panel maintenance procedures. The following topics are discussed:

- Replacing a Bulb
- Replacing a Button (**Synergy 1** Control Panel Only)
- Replacing a Button (**Synergy 2** and **3** Control Panels)
- Replacing a Fader (**Synergy 1** Control Panel Only)
- Replacing a Fader (**Synergy 2** and **3** Control Panels)
- Replacing a Knob (Potentiometer)
- Replacing the Display (**Synergy 1** Control Panel Only)
- Replacing the Display (**Synergy 2** and **3** Control Panels)

Replacing a Bulb

This section provides instructions for replacing a burned-out bulb in a control panel switch:

✎ **Note** Check the bulb before you proceed. The button may not be lighting simply because the bulb has become loose. Try pushing the bulb down to fully seat it. If this does not solve the problem, please continue with the replacement procedure.

Use the following procedure to replace a bulb in a control panel switch.

1. Verify that the target bulb is burned out as follows:

   • Navigate to the **Lamp Test Menu** as follows:

      ~ Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Panel Diagnostics** ⇨ **Lamp Test**.


```
Lamps Test

                        Hold down F5 and F6, then release
                        then to exit lamp test mode




                                            Exit          Exit
```
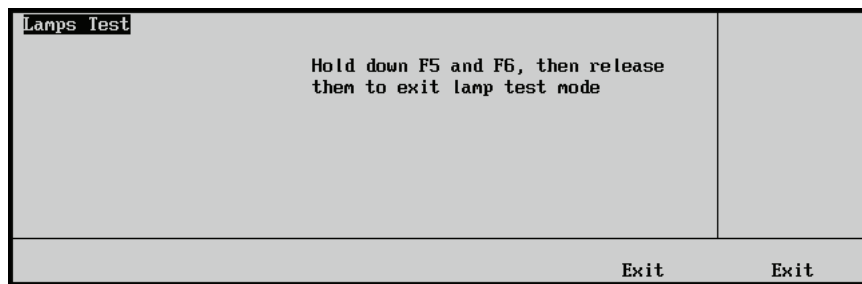
Lamp Test Menu

   • Press buttons in selected panel regions, to test *all lamps* in those regions as required.

   • To exit the menu, press *both* **Exit** buttons beneath the display.

2. Once you have located the burned-out bulb, turn the control panel power switch off.

3. Remove the keycap to reveal the sleeve and bulb within.
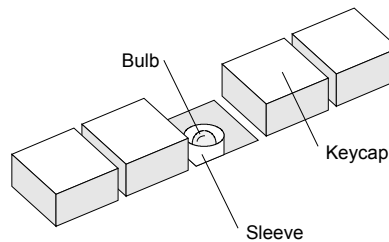
Control Panel Button — Sleeve and Keycap

✔ **Operating Tip** If you have trouble removing a control panel button, use a pair of wide-tipped pliers (1/2 inch) with masking tape wrapped around the ends. For best results, wiggle the button back and forth as you extract it. This helps to remove the button easily, and also avoids scratching the surface paint.

4. Carefully push down the sleeve with your fingers.

5. While holding down the sleeve, use needle-nose pliers to carefully grab the plastic body of the bulb and pull it out. Note that the bulb has a two-wire connection in which polarity is not important.

6. Replace the burned-out bulb with a new one from your spare-parts kit. You can easily use your fingers to replace it. Align the two pins of the replacement bulb with the two holes in the button — the orientation of the bulb does not matter.

7. Replace the keycap, and be careful to align the notch in the base of the keycap vertically to the panel, as shown below. If it is not aligned in this manner, it will not properly snap in place.

Align
Notch
Vertically

Control Panel Button — Keycap
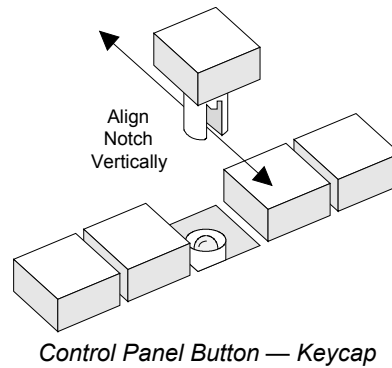
8. Turn on control panel power, and verify that the bulb is now working properly.

This completes the procedure for replacing a bulb in a control panel switch.

Replacing a Button (Synergy 1 Control Panel Only)

This section provides instructions for replacing a button in the **Synergy 1** control panel. This procedure may become necessary if a button contact fails, or if the button becomes sticky.

⚠	**Caution**	This procedure should be performed by qualified service personnel only — in particular, those *highly skilled* at de-soldering and soldering components. To reduce the risk of damage to the button solder pads, do not perform any servicing unless you are qualified to do so.

Use the following procedure to replace a bulb in a control panel switch.

1. Verify that the target button is sticky or has failed as follows:

   • Navigate to the **Button Test Menu** as follows:

      ~ Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Panel Diagnostics** ⇨ **Button Test**.

   ```
   Button Test -- Test all push buttons on the panel

   BUTTON      #07           Hold down F5 and F6, then release
   AREA        #08           them to exit button test mode
   MLE         #01
   Last action:Button Up




                                                     Exit        Exit
   ```

   Button Test Menu

   • Press the target panel button(s) as required.

   • To exit the menu, press *both* **Exit** buttons beneath the display.

2. Once you have located the failed button, turn control panel power off.

3. Remove the keycap to reveal the sleeve and bulb within.

Synergy 1 Control Panel Button — Sleeve and Keycap

✓	**Tip**	If you have trouble removing a control panel button, use a pair of wide-tipped pliers (1/2 inch) with masking tape wrapped around the ends. For best results, wiggle the button back and forth as you extract it. This helps to remove the button easily, and also avoids scratching the surface paint.

4. Carefully push down the sleeve with your fingers.

5. While holding down the sleeve, use needle-nose pliers to carefully grab the plastic body of the bulb and pull it out. Note that the bulb has a two-wire connection in which polarity is not important.

6. In order to gain access to the **Synergy 1** panel boards and locate the button that has failed, you must be able to lift the cover of the control panel off the base. To do this, gently flip the control panel onto its side on a clean, flat, static free surface. Locate the eleven screws on the underside of the tub, loosen and remove them, and set them aside in a safe place. Then gently place the panel back down on its base.

7. For this next step, ensure you have telephone books, or a similar thick, sturdy object available with which to support the control panel cover. Raise the cover and slide the telephone books under the rear area of the side panels to keep it raised and secure while you work. Ensure you have enough workspace to access the failed button. Position a work light in the control panel tub, if necessary.

8. There are two types of buttons used in the panel — a large tall button used for the crosspoint buses, and a smaller, short button used for all other functions.

   The figure below shows the underside of each button and the arrangement of solder pads. Each type of button has six solder pads.

Synergy 1 Control Panel Button — Solder Pads
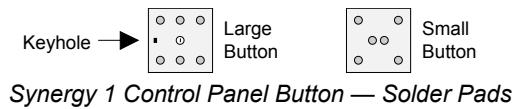
9. Carefully heat each solder pad, and use a solder-sucker to remove the solder.

⚠ **Caution** | A fair amount of heat is required to de-solder each pad, due to the large ground plane within the boards. However, using too much heat may damage the solder pads themselves. This procedure should be performed by qualified service personnel only — those highly skilled at soldering and de-soldering.

10. Once all solder has been removed, pull out the button from the top of the control panel.

11. Insert a new button in the same orientation as the removed one:

    • For large buttons, ensure that the peg on the base of the button is properly aligned with the keyhole in the switcher board itself.

    • For small buttons, ensure that the **+** indicator on the base of the button is properly aligned with the **+** sign (or square pad) on the switcher board itself.

12. Re-solder the button to secure it in position.

13. Close the top of the control panel and flip the control panel back onto its side. Replace and tighten the screws to secure the cover, and return the control panel to operating position.

14. Replace the bulb and keycap, and be careful to align the notch in the base of the keycap vertically to the panel, as shown below. If it is not aligned in this manner, it will not snap into place properly.
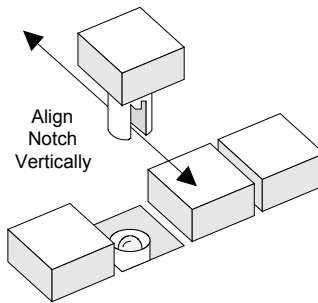
Synergy 1 Control Panel Button — Keycap

15. Turn on panel power and verify that the button works correctly.

This completes the procedure for replacing a bulb in a control panel switch.

Replacing a Button (Synergy 2 and 3 Control Panels)

This section provides instructions for replacing a button in the **Synergy 2** and **3** control panels. This procedure may become necessary if a button contact fails, or if the button becomes sticky.

⚠	**Notice**

> This procedure should be performed by qualified service personnel only — in particular, those *highly skilled* at de-soldering and soldering components. To reduce the risk of damage to the button solder pads, do not perform any servicing unless you are qualified to do so.

Use the following procedure to replace a control panel button.

1. Verify that the target button is sticky or has failed as follows:

    • Navigate to the **Button Test Menu** as follows:

    ~ Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Panel Diagnostics** ⇨ **Button Test**.

```
Button Test -- Test all push buttons on the panel

BUTTON      #07           Hold down F5 and F6, then release
AREA        #08           them to exit button test mode
MLE         #01
Last action:Button Up




                                           Exit          Exit
```

Button Test Menu

    • Press the target panel button(s) as required.

    • To exit the menu, press *both* **Exit** buttons beneath the display.

2. Once you have located the failed button, turn control panel power off.

3. Remove the keycap to reveal the sleeve and bulb within.

Control Panel Button — Sleeve and Keycap

✓	**Operating Tip**

> If you have trouble removing a control panel button, use a pair of wide-tipped pliers (1/2 inch) with masking tape wrapped around the ends. For best results, wiggle the button back and forth as you extract it. This helps to remove the button easily, and also avoids scratching the surface paint.

4. Carefully push down the sleeve with your fingers.

5. While holding down the sleeve, use needle-nose pliers to carefully grab the plastic body of the bulb and pull it out. Note that the bulb has a two-wire connection in which polarity is not important.

6. Lift up the top of the panel to reveal the circuit boards underneath, and locate the button that has failed. There are two types of buttons used in the panel — a large tall button used for the crosspoint buses, and a smaller, short button used for all other functions.

   The figure below shows the underside of each button and the arrangement of solder pads. Each type of button has six solder pads.

Control Panel Buttons — Solder Pads
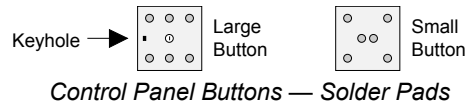
7. Carefully heat each solder pad, and use a solder-sucker to remove the solder.

Notice | A fair amount of heat is required to de-solder each pad, due to the large ground plane within the boards. However, using too much heat may damage the solder pads themselves. This procedure should be performed by qualified service personnel only — those highly skilled at soldering and de-soldering.

8. Once all solder has been removed, pull out the button from the top of the control panel.

9. Insert a new button in the same orientation as the removed one:

   • For large buttons, ensure that the peg on the base of the button is properly aligned with the keyhole in the switcher board itself.

   • For small buttons, ensure that the **+** indicator on the base of the button is properly aligned with the **+** sign (or square pad) on the switcher board itself.

10. Re-solder the button to secure it in position.

11. Close the top of the control panel.

12. Replace the bulb and keycap, and be careful to align the notch in the base of the keycap vertically to the panel, as shown below. If it is not aligned in this manner, it will not properly snap in place.

Control Panel Buttons — Keycap
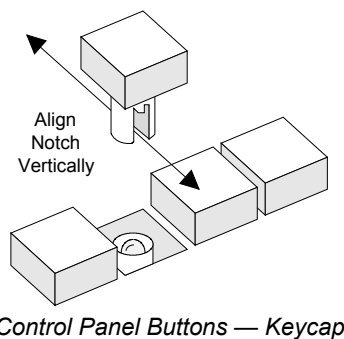
13. Turn on panel power, and verify that the button now works properly.

This completes the procedure for replacing a control panel button.

Replacing a Fader (Synergy 1 Control Panel Only)

This section provides instructions for replacing the fader in the **Synergy 1** control panel.

Use the following procedure to replace a fader on the Synergy 1 control panel.

1. Verify that the fader has failed as follows:

   • Navigate to the **Fader Test Menu** as follows:

      ~ Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Panel Diagnostics** ⇨ **Fader Test**.

Fader Test Menu

   • Select **Normal**. Move the fader up and down. The fader position is shown numerically (in hexadecimal) and graphically.

   The number should range from **000** (up) to **FFF** (down), and the number should be stable and jitter-free. If the number does not reach both limits, perform a switcher calibration and repeat the test.

   Refer to the section "**Switcher Calibration**" on page 24-2 for detailed instructions on performing switcher calibrations.

   If there is still a problem, you may have to change the fader.

2. Once you have determined that the fader has failed, turn the control panel power off.

3. Remove the screws on either side of the handle, as illustrated below. Once removed, the handle will separate, leaving the fader shaft. Set all parts aside for later reassembly.
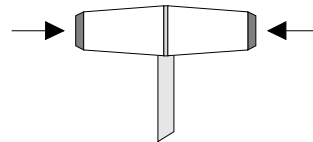
Fader Handle

4. In order to gain access to the failed fader, you must be able to lift the cover of the control panel off the base. To do this, gently flip the control panel onto its side on a clean, flat, static free surface. Locate the eleven screws on the underside of the tub, loosen and remove them, and set them aside in a safe place. Then gently place the panel back down on its base.

5. For this next step, ensure you have telephone books, or a similar thick, sturdy object available with which to support the control panel cover. Raise the cover and slide the telephone books under the rear area of the side panels to keep it raised and secure while you work. Ensure you have enough workspace to access the fader assembly. Position a work light in the control panel tub, if necessary.

The figure below illustrates a view of the fader assembly, as seen from below.
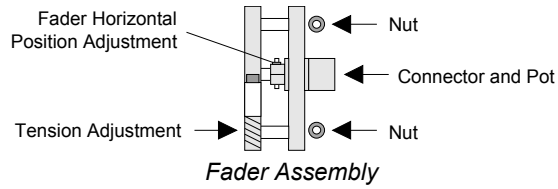
Fader Assembly

Disconnect the cable from the circuit board to the connector/pot assembly, and note its orientation.

6. Remove the two nuts that secure the entire fader assembly to the tub, and set them aside for later reassembly.

7. Remove the entire assembly and replace with a new fader assembly.

8. Secure the assembly to the tub using the two nuts, and then re-attach the connector from the circuit board to the fader.

9. Although the fader is factory-calibrated, ensure that the fader arm is positioned directly in the middle of the control panel slot. If not, loosen the **Horizontal Position Adjustment** screw, re-position the shaft, and secure once again.

10. If required, adjust the tension of the fader using the **Tension Adjustment** screw, a Hex nut driver, and a Phillips screwdriver.

Note   The tension of all faders should be adjusted to suit user preference, and to ensure that the tension on all switcher faders is similar. Do not overtighten the tension adjustment screw.

11. Close the control panel top and flip the control panel back onto its side. Replace and tighten the screws to secure the cover, and return the control panel to operating position.

12. Re-attach the two sides of the handle, and tighten them securely. If the handle does not seat tightly or if it rattles, insert a small piece of tissue paper inside the inner machine groove, as shown below.

Insert Tissue
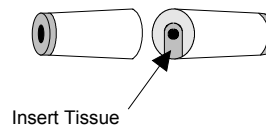
13. Turn on the control panel power and verify that the fader functions correctly.

This completes the procedure for replacing a fader on the Synergy 1 control panel.

Replacing a Fader (Synergy 2 and 3 Control Panels)

This section provides instructions for replacing a fader in the **Synergy 2** and **3** control panels.

Use the following procedure to replace a fader on the control panel.

1. Verify that the target fader has failed as follows:

   • Navigate to the **Fader Test Menu** as follows:

   ~ Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Panel Diagnostics** ⇨ **Fader Test**.
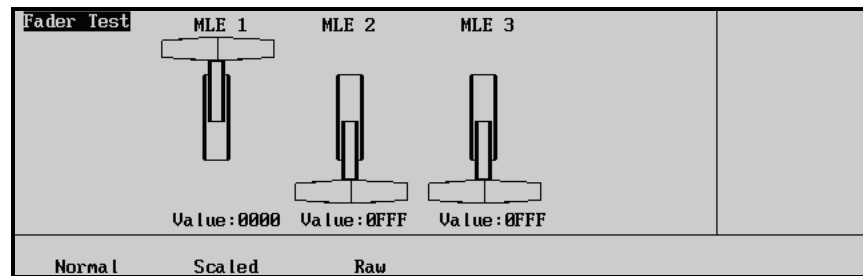
   Fader Test Menu

   • Select **Normal**. Move each fader up and down. The fader position is shown numerically (in hexadecimal) and graphically.

     The number should range from **000** (up) to **FFF** (down), and the number should be stable and jitter-free. If the number does not reach both limits, perform a switcher calibration and repeat the test. If there is still a problem, you may have to change the Fader.

2. Once you have located the failed fader, turn control panel power off.

3. Remove the screws on either side of the handle, as illustrated below. Once removed, the handle will separate, leaving the fader shaft. Set all parts aside for later reassembly.
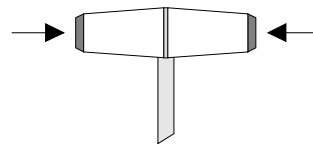
   Fader Handle

4. Open the control panel, and locate the failed fader. The figure below illustrates a view of the fader assembly, as seen from below.
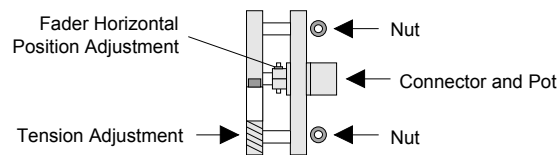
   Fader Assembly

   Disconnect the cable from the circuit board to the connector/pot assembly, and note its orientation.

5. Remove the two nuts that secure the entire fader assembly to the tub, and set them aside for later reassembly.

6. Remove the entire assembly, and replace with a new fader assembly.

7. Secure the assembly to the tub using the two nuts, then re-attach the connector from the circuit board to the fader.

8. Although the fader is factory-calibrated, ensure that the fader arm is positioned directly in the middle of the control panel slot. If not, loosen the **Horizontal Position Adjustment** screw, re-position the shaft, and secure once again.

9. If required, adjust the tension of the fader using the **Tension Adjustment** screw.

Note	The tension of all faders should be adjusted to suit user preference, and to ensure that the tension on all switcher faders is similar. Do not overtighten the tension adjustment screw.

10. Close the control panel top and re-attach the two sides of the handle. If the handle does not seat tightly or if it rattles, insert a small piece of tissue paper inside the inner machine groove, as shown below.

Insert Tissue
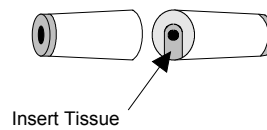
11. Re-attach the two sides of the handle, and tighten them securely.

12. Turn on control panel power, and verify that the fader now functions properly.

This completes the procedure for replacing a fader on the control panel.

Replacing a Knob (Potentiometer)

This section provides instructions for replacing a knob (potentiometer) in the **Pattern Control**, **Effects Control** and **Mattes** areas. The procedure does not cover changing the rotary encoders to the right of the display in the **System Control** area. Contact **Ross Video Technical Support** for instructions if one of the rotary encoders has failed.

Use the following procedure to replace a knob (potentiometer):

1. Verify that the target potentiometer has failed:

   • Navigate to **Pots Test Menu** as follows:

   ~ Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Panel Diagnostics** ⇨ **Pots Test**.
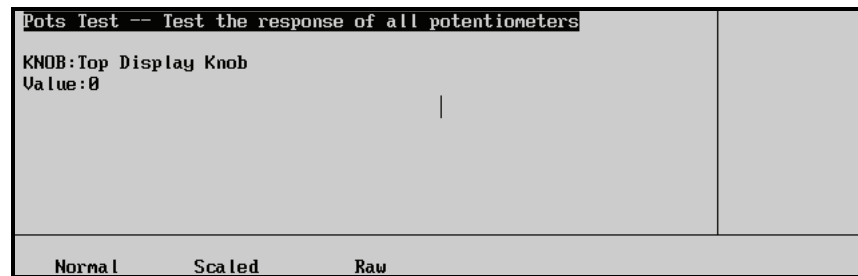
   ```
   Pots Test -- Test the response of all potentiometers

   KNOB:Top Display Knob
   Value:0
                                         |



    Normal        Scaled        Raw
   ```
   Pots Test Menu

   • For the three knobs to the right of the display (in the **System Control** area), select **Normal**. Turn each knob left and right. The display will indicate the rate at which you are turning the knob numerically, and graphically with a bar graph.

   • For all other knobs, select **Scaled**. Turning the knob will display the absolute position of the knob both numerically and graphically using a bar graph. The number (displayed in hexadecimal) should range from **0** (full counter-clockwise) to **FFF** (full clockwise). The number should be stable and jitter-free. If the number does not reach both limits, perform a calibration.

   • Repeat the pots test after the calibration. If the number does not reach both limits or if it does not respond, please continue with the replacement procedure.

   Note | If *all pots* appear to be bad, the problem is in the cable or in the A-D converter. In this situation, please contact Ross Technical Support, as a board swap may be required.

2. Once you have located the failed knob, turn the control panel power switch off.

3. Remove *all* the knob caps in the *entire section* that contains the failed knob (see below). Each knob has a small screw that secures the knob to the shaft. Loosen the screw ¼ turn and lift off the cap.

   Please note:

   • **Synergy 1** control panel boards and sections:

   ~ **Pattern Control** knobs are all in one section on the **4216A-036** board.

   ~ **Effects Control** and **Mattes** knobs are all in one section on the **4216A-035** board.

   • **Synergy 2** control panel boards and sections:

   ~ **Pattern Control** knobs are all in one section on the **4317A-036** board.

~ **Effects Control** and **Mattes** knobs are all in one section on the **4317A-034** board.

• **Synergy 3** control panel boards and sections:

~ **Pattern Control** and **Mattes** knobs are all in one section on the **4735A-036B** board

~ **Effects Control** knobs are all in one section on the **4530A-034** board.

(For Synergy 1 control panels only. For Synergy 2 and 3 control panels, refer to Step 21 below.)

4. In order to gain access to the failed knob, you must be able to lift the cover of the control panel off the base. To do this, gently flip the control panel onto its side on a clean, flat, static free surface. Locate the eleven screws on the underside of the tub, loosen and remove them, and set them aside in a safe place. Then gently place the panel back down on its base.

5. For this next step, ensure you have telephone books, or a similar thick, sturdy object available with which to support the control panel cover. Raise the cover and slide the telephone books under the rear area of the side panels to keep it raised and secure while you work. Ensure you have enough workspace to access the failed knob. Position a work light in the control panel tub, if necessary.

6. Locate the board that contains the failed pot.

7. Disconnect all power and data connectors from the board. Because the end of each connector rests in close proximity to the mating header (when disconnected), there is no need to label the connectors.

8. Remove *all screws* from the bottom of the board, and set them in a safe place for later reconnection.

9. Carefully drop the board out from underneath the control panel cover, and set it on a clean, flat, static-free surface. All pots are secured to the board by a metal plate. Note the position of the failed pot.

10. Using a socket driver, loosen and remove *all nuts and lock washers* that secure the pots to the metal plate. Remove the metal plate and set it aside in a safe place, along with all nuts and lock washers.

11. All pots are now supported only by their leads. On the bottom of the board, locate the failed pot and de-solder the three connecting leads. The figure below illustrates the silk-screened pot symbol on the board.

Pot Leads
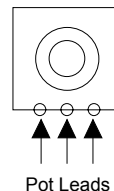
12. Replace the failed pot in the proper orientation, and carefully re-solder the three leads.

13. Prior to re-assembling all components, it is highly recommended you test out the replaced pot:

• Set the circuit board on a piece of cardboard to insulate it, and re-connect all power and data cables to the circuit board.

• Turn on control panel power.

- Perform the diagnostic test as outlined in step 1.
- Once you have verified that the pot has passed the test, turn off control panel power, disconnect all power and data cables from the board, and continue with the full re-assembly.

14. Reconnect the metal plate using the lock washers and nuts. Tighten all nuts securely.

15. Carefully replace the circuit board through the underside of the control panel.

⚠ **Important**

> Replacing the circuit board is a tricky procedure, due to the tight tolerances of the LEDs. It is highly recommended that you use two people to perform the re-installation procedure, with one person supporting the board from below, and the other guiding it from the top.
>
> - If required, remove button keycaps that are adjacent to the LEDs, to facilitate your ability to insert a screwdriver and gently *nudge* the LEDs into place.
> - If required, remove the LEDs themselves from the circuit board, and make a careful note of their position, color and orientation. Next, re-connect the circuit board using a minimum number of screws, and insert the LEDs through the top of the control panel, until they are firmly seated in their sockets. Use the lamp diagnostic test to verify that all LEDs are properly inserted in the board.

16. Secure the board to the panel with the mounting screws.

17. Reconnect all power and data cables to the board, and close the top of the control panel.

18. Flip the control panel back onto its side. Replace and tighten the screws to secure the cover and return the control panel to operating position.

19. Turn on the control panel power and verify once again that the knob functions properly.

20. Perform the switcher calibration procedure, to ensure that all pots are properly calibrated. In Chapter 16, refer to the "**Switcher Calibration**" section for instructions.

(For Synergy 2 and 3 Control Panels)

21. Lift up the top of the control panel to reveal the circuit boards underneath, and locate the board that contains the failed pot.

22. Disconnect all power and data connectors from the board. Because the end of each connector rests in close proximity to the mating header (when disconnected), there is no need to label the connectors.

23. Remove *all screws* from the bottom of the board, and set them in a safe place for later reconnection.

24. Carefully drop the board out from underneath the control panel, and set it on a clean, flat, static-free surface. All pots are secured to the board by a metal plate. Note the position of the failed pot.

25. Using a socket driver, loosen and remove *all nuts and lock washers* that secure the pots to the metal plate. Remove the metal plate and set it aside in a safe place, along with all nuts and lock washers.

26. All pots are now supported only by their leads. On the bottom of the board, locate the failed pot and de-solder the three connecting leads. The figure below illustrates the silk-screened pot symbol on the board.

Pot Leads
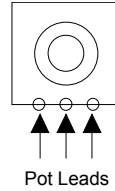
27. Replace the failed pot in the proper orientation, and carefully re-solder the three leads.

28. Prior to re-assembling all components, please test out the replaced pot:

    • Set the circuit board on a piece of cardboard so as to insulate it, and re-connect all power and data cables to the circuit board.

    • Turn on control panel power.

    • Perform the diagnostic test as outlined in step 1.

    • Once you have verified that the pot has passed the test, turn off control panel power, disconnect all power and data cables from the board, and continue with the full re-assembly.

29. Reconnect the metal plate using the lock washers and nuts. Tighten all nuts securely.

30. Carefully replace the circuit board through the underside of the control panel

Important

Replacing the circuit board is a tricky procedure, due to the tight tolerances of the LEDs. It is highly recommended that you use two people to perform the re-installation procedure, with one person supporting the board from below, and the other guiding it from the top.

• If required, remove button keycaps that are adjacent to the LEDs, to facilitate your ability to insert a screwdriver and gently *nudge* the LEDs into place.

• If required, remove the LEDs themselves from the circuit board, and make a careful note of their position, color and orientation. Next, re-connect the circuit board using a minimum number of screws, and insert the LEDs through the top of the control panel, until they are firmly seated in their sockets. Use the lamp diagnostic test to verify that all LEDs are properly inserted in the board.

31. Secure the board to the panel with the mounting screws.

32. Reconnect all power and data cables to the board, and close the top of the control panel.

33. Turn on control panel power, and verify once again that the knob now functions properly.

34. Perform the switcher calibration procedure, to ensure that all pots are properly calibrated. Refer to the section "**Switcher Calibration**" on page 24-2 for instructions.

This completes the procedure for replacing a knob (potentiometer).

Replacing the Display (Synergy 1 Only)

This section provides instructions for replacing the entire display on the **Synergy 1** control panel. This procedure may be required if the display fails, or more likely, if the backlight begins to fade (with age), and becomes too dim for your preference.

Note: Try adjusting the display contrast before you proceed. Press **HOME**, **MORE**, **Setup**, **Display**, **Large Display**, then use the middle knob to adjust contrast. If display readability does not improve, please continue with the replacement procedure.

Use the following procedure to replace the display on the Synergy 1 control panel:

1. Verify the condition of the display as follows:

   • Navigate to the **Display Test Menu** as follows:

      ~ Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Panel Diagnostics** ⇨ **Button Test** ⇨ **MORE** ⇨ **Display Test**.

Display Test Menu

   • Press *any button* below the display to advance to the next in the series of display tests. A variety of tests are available.

2. Once you have verified the condition of the display, turn the control panel power switch off.

Caution: Ensure that power is off. This step is extremely important, because high voltages are present in the display module area when it is running.

3. In order to gain access to the display, you must be able to lift the cover of the control panel off the base. To do this, gently flip the control panel onto its side on a clean, flat, static free surface. Locate the eleven screws on the underside of the tub, loosen and remove them, and set them aside in a safe place. Then gently place the panel back down on its base.

4. For this next step, ensure you have telephone books, or a similar thick, sturdy object available with which to support the control panel cover. Raise the cover and slide the telephone books under the rear area of the side panels to keep it raised and secure while you work. Ensure you have enough workspace to access the display. Position a work light in the control panel tub, if necessary.

5. Disconnect the data cable from the 15-pin display module header. This data cable originates from the Key Switch **(4216A-034)** board.

6. Use needle-nose pliers to disconnect the single small power connector that also originates from the adjacent **034** board.

7. Remove the screws from each corner or the display module, and set them aside for later reconnection.

8. Carefully drop the display module out from underneath the control panel.

9. Install the new display module in the control panel, and secure with the four corner screws.

10. Use needle-nose pliers to reconnect the single small power connector (that originates from the **034** board) to the display module.

11. Reconnect the data cables to the 15-pin display module header, and ensure that they are properly aligned.

12. Close the top of the control panel. Flip the control panel back onto its side. Replace and tighten the screws to secure the cover, and return the control panel to operating position.

13. Turn on control panel power and verify that the display functions properly.

14. Adjust the display contrast for optimum readability as follows:

    • Navigate to the **Large Display Menu** as follows:

        ~ Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Display** ⇨ **Large Display**.

    • Use the middle knob to adjust the contrast.

This completes the procedure for replacing the display on the Synergy 1 control panel.

Replacing the Display (Synergy 2 and 3)

This section provides instructions for replacing the entire display on the **Synergy 2** and **3** control panels. This procedure may be required if the display fails, or more likely, if the backlight begins to fade (with age), and becomes too dim for your preference.

Note

> Try adjusting the display contrast before you proceed. Press **HOME**, **MORE**, **Setup**, **Display**, **Large Display**, then use the middle knob to adjust contrast. If display readability does not improve, please continue with the replacement procedure.

Use the following procedure to replace the display on the **Synergy 2** and **3** control panels:

1. Verify the condition of the display as follows:

   • Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Panel Diagnostics** ⇨ **Button Test** ⇨ **MORE** ⇨ **Display Test**.

Display Test Menu

   • Press *any button* below the display to advance to the next in the series of display tests. A variety of tests are available.

2. Once you have verified the condition of the display, turn the control panel power switch off.

Caution

> Ensure that power is off. This step is extremely important, because high voltages are present in the display module area when it is running.

3. Lift up the top of the control panel to reveal the circuit boards underneath.

4. Unscrew the metal finger shield (an L-bracket) using the two screws in the bottom of the **037** board. Set the shield and screws aside for later reinstallation.

5. Disconnect the data cables from the 15-pin display module header. Depending upon the model of the **037** board, these data cables will originate from a single cable, or from a larger wiring harness.

6. Use needle-nose pliers to disconnect the single small power connector that also originates from the adjacent **037** board.

7. Remove the screws from each corner or the display module, and set them aside for later reconnection.

8. Carefully drop the display module out from underneath the control panel.

9. Install the new display module in the control panel, and secure with the four corner screws.

10. Use needle-nose pliers to reconnect the single small power connector (that originates from the **037** board) to the display module.

11. Reconnect the data cables to the 15-pin display module header, and ensure that they are properly aligned.

12. Reattach the metal finger shield to the bottom of the **037** board.

13. Close the top of the control panel.

14. Turn on control panel power, and verify that the display functions properly.

15. Adjust the display contrast for optimum readability as follows:

    • Navigate to the **Large Display Menu** as follows:

        ~ Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Display** ⇨ **Large Display**.

    • Use the middle knob to adjust the contrast.

This completes the procedure for replacing the display.

Appendix A. Specifications

In This Appendix

This appendix provides technical specifications and connector pinout diagrams. In addition, a comprehensive table is provided that lists all normal, GPI, and special diagnostic Aux panel programming modes.

The following sections are provided:

- Standard Components
- Physical Characteristics
- General Specifications
- Control Panel Specifications
- Rack Frame
- Rack Frame Connector Types
- Control Panel Connector Types
- Power Consumption - Control Panel
- Environmental
- Video Characteristics
- Video Processing
- System Timing
- Video Inputs
- Video Outputs
- Output Characteristics
- Frame Pinouts
- Control Panel Pinouts
- AUX Ports
- Aux Panel Programming Mode Summary

Note All specifications are subject to change without notice.

Standard Components

The following components are standard on all models:

- Complete Control Panel

- One Chroma key per full MLE

- 4 Pattern Generators per full MLE

- Wipes in full Program/Preset

- 32 Timed Aux Buses

- USB Port and System Control Area

- Custom Control Macro Buttons

- 100 Event Memory System

- 10 GPI Inputs and 10 GPI Outputs

- 36 Tally Outputs (16 on a **Synergy 1**)

- 10 Meter (33 feet) Control Cable

- System Manuals

- 1 Year Transferable Warranty

Physical Characteristics

General Specifications

Parameter	Synergy Q/MD Specification			
	Synergy 1	Synergy 1.5	Synergy 2	Synergy 2.5
MLE Systems	1	2	2	3
Serial Digital Inputs	16†	16†	16†	16†
Crosspoint Buttons	16	17	17	30
Serial Digital Outputs	16	16	16	16
Matte Generators	5	5	10	10

†   Expandable to 26 or 32

Control Panel Specifications

Parameter	Synergy Q/MD Specification			
	Synergy 1	Synergy 1.5	Synergy 2	Synergy 2.5
Width	28.75" (73.0 cm)	36.875" (93.8 cm)	36.875" (93.8 cm)	51.75" (131.4 cm)
Height	9.5" (24.1 cm)	11.25" (28.6 cm)	11.25" (28.6 cm)	11.625" (29.5 cm)
Depth	17.375" (44.1 cm)	22.375" (56.8 cm)	22.375" (56.8 cm)	24.125" (61.3 cm)
Height above desktop	7.0" (17.8 cm)	9.0" (22.9 cm)	9.0" (22.9 cm)	9.25" (23.5 cm)
Desk cutout width	28.0" (71.1 cm)	35.5" (90.2 cm)	35.5" (90.2 cm)	50.25" (127.6 cm)
Desk cutout depth	17.625" (44.8 cm)	21.25" (54.0 cm)	21.25" (54.0 cm)	23.0" (58.4 cm)

Rack Frame

Parameter	Specification
# Rack Units (RU)	3
Width	19.00" (48.3 cm)
Height	5.25" (13.34 cm)
Depth (rack ears to BNCs)	25.00" (63.5 cm)

Rack Frame Connector Types

Parameter	Specification
Video	BNC Type (Female)
Reference	BNC Type (Female)
Peripheral Ports	DB9 (Female)
GPI I/O	DB25 (Female)
Panel Port (to control panel)	RJ-45 (Female)
10/100 Ethernet Port	RJ-45 (Female)
USB Ports	USB 1.1 Compatible, Type A (host)
AC Power (primary, redundant)	3-Pin IEC

Control Panel Connector Types

Parameter	Specification
USB Port (USB Drive)	USB 2.0 Compatible, Type A
Remote Ports	DB9 (Female)
Tally Ports	DB25 (Female)
Frame Port (to rack frame)	RJ-45 (Female)
AUX Ports	RJ-12 (Female)
AC power 1 and 2	3-Pin IEC

⚠	**Important**	The cable for connecting the Synergy Control Panel to the Synergy Q/MD 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.

Power Consumption - Control Panel

Parameter	Specification
Input voltage	90V~250 VAC, 47~63 Hz
Synergy 1 Control Panel	100 VA
Synergy 1.5 Control Panel	350 VA
Synergy 2 Control Panel	350 VA
Synergy 2.5 Control Panel	350 VA

Power Consumption - Rack Frame

The QMD and MD frames use a 500 or 700 Watt Power Supply, depending on the frame you have. The following table provides the number of power supplies that are required for a fully populated frame.

Frame Power Supply Modules for Fully Populated Frame

	QMD	MD
Power Supply Watts	700W	500W
Number of Supplies (Min/Max)	1/2	1/2

The information provided in the following table lists power consumption for the QMD and MD frames.

Frame Power Consumption

Frame	Parameter	Power Consumption
QMD	Power Supply Rating	100-120V~ 220-240V~ 47-63 Hz 9A 650W (Canada 120V~ only)
	Base System	~150W
	Fully Loaded	~500W
MD	Power Supply Rating	100-120V~ 220-240V~ 47-63 Hz 9A 650W (Canada 120V~ only)
	Base System	~150W
	Fully Loaded	~500W

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

• The boards, cards and power supplies in the Q/MD frame are cooled by fans using a side-to-side airflow (left to right when looking at the front of the frame).

• The control panel is convection cooled (no fans) for silent operation.

⚠️ **Caution**   Ensure that you leave space around the frame for adequate ventilation. Both sides of the frame must be kept clear so that switcher airflow is not restricted in any way. Failure to provide adequate ventilation could result in overheating and damage to your switcher may occur.

Video Characteristics

Video Processing

- 10 bit 4:2:2 Component Digital Video and Key Processing.

- 4:3 and Anamorphic 16:9 switchable Aspect Ratio where applicable.

- The Synergy Q/MD switcher can operate in the following Video Formats:

• 480i	• 720p 25Hz	• 1080p 24Hz
• 480i 16:9	• 720p 24Hz	• 1080p 23.98Hz
• 576i	• 720p 23.98Hz	• 1080pSF 30Hz
• 576i 16:9	• 1080i 60Hz	• 1080pSF 29.97Hz
• 720p 60Hz	• 1080i 59.94Hz	• 1080pSF 25Hz
• 720p 59.94Hz	• 1080i 50Hz	• 1080pSF 24Hz
• 720p 50Hz	• 1080p 30Hz	• 1080pSF 23.98Hz
• 720p 30Hz	• 1080p 29.97Hz	
• 720p 29.97Hz	• 1080p 25Hz	

Video Formats

The Synergy Q/MD switcher can use the following Input Reference formats:

Input Reference	Usable Formats
480i	• 480i, 480i/16:9 • 1080i 59.94 Hz
576i	• 576i, 576i/16:9 • 720p 50 Hz • 1080i 50 Hz
720p 59.94 Hz	• 720p 59.94 Hz
720p 50 Hz	• 720p 50 Hz
1080i 59.94 Hz	• 480i, 480i/16:9 • 720p 59.94 Hz • 720p 60 Hz • 1080i 59.94 Hz • 1080i 60 Hz • 1080pSF 30 Hz • 1080pSF 29.97 Hz
1080i 50 Hz	• 576i, 576i/16:9 • 720p 50 Hz • 1080i 50 Hz • 1080pSF 25 Hz
1080p 24 Hz	• 1080p 24 H
1080pSF 24 Hz	• 1080pSF 24 Hz

Input Reference	Usable Formats
1080pSF 23.98 Hz	• 1080pSF 23.98 Hz

System Timing

- All video inputs are zero-time relative to reference input. Auto timing corrects for inputs out of sync by up to $\pm$ ¼ line (16us).

- Refer to Chapter 2, "**System Architecture**" for a complete technical overview of Synergy auto-timing.

LTC Timecode Input

Parameter	Specification
Signal Level	0.5 - 2.0 V (1.0 V nominal)
Termination	600 ohm, soft-selectable

Video Inputs

Parameter	Specification
Synergy 1 Q/MD Video Inputs	16
Synergy 1.5 Q/MD	16, 26 or 32
Synergy 2 Q/MD	16, 26, 32
Synergy 2.5 Q/MD	16, 26, 32
Equalization (using Belden 1694 cable)	>75m @ 1.5Gb/s >150m @ 270 Mb/s
Impedance	75 ohm, terminating
Return Loss	>20 dB @ 1.5GHz

- All Video Inputs are SMPTE 259M/292M serial digital, non-looping.

- Inputs can be used for either Key or Video.

- The Reference Input is a non-terminating, looping, input that is selectable as analog black for Standard Definition operation or tri-level sync for High Definition operation.

Video Outputs

Output Types	Quantity			
	Synergy 1	**Synergy 1.5**	**Synergy 2**	**Synergy 2.5**
Main Program (PGM)	1	1	1	1
Preview Matrix (no overlay)	1	1	1	1
Preview Matrix (overlay)	1	1	1	1
MLE 1 PGM (BKGD)	1	1	1	1
MLE 1 PV (PST)	1	1	1	1
MLE 1 Look Ahead Preview	1	1	1	1
MLE 1 Clean Feed	1	1	1	1
MLE 2 PGM (BKGD)		1	1	1
MLE 2 PV (PST)		2†	1	1
MLE 2 Look Ahead Preview		1	1	1
MLE 2 Clean Feed		3‡	1	1
MLE 3 PGM (BKGD)				1
MLE 3 PV (PST)				2†
MLE 3 Look Ahead Preview				1
MLE 3 Clean Feed				3‡
DVE Send	1	1	1	1
DVE Send Alpha	1	1	1	1
Aux Bus	32	32	32	32
Clean Feed	1	1	1	1
Maximum Output BNCs	16	16	16	16

† The Mix/DSK option adds 2 separate, dedicated, Clean Feeds.

‡ All video types can be assigned to any of the Output BNCs, with the exception of those outputs generated by the MultiDSK or Mix/DSK options.

Output Characteristics

Parameter	Specification
Return loss	>18 dB @ 1.5GHz
Output Jitter	<130 ps
Rise and fall time	800 ps +/- 10% (SD)
	240 ps +/- 10% (HD)
Signal level	800 mV +/- 10%
DC offset	0 volts
Overshoot	<8%

• All video outputs are 10-bit SMPTE 259M-C (SD Mode) or 10-bit SMPTE 292M (HD Mode) serial digital.

• EDH is inserted into all video outputs, and can be disabled. Aux Bus outputs do not have EDH insertion, but do pass previously inserted EDH.

Frame Pinouts

This section provides pinouts for the following frame connectors:

- **Peripheral Ports**
- **Panel Port (to frame)**
- **GPI I/O Port**
- **LAN Ports**
- **AC POWER Ports**

Peripheral Ports

The table below provides the pinouts for the **PERIPH1** through **PERIPH4** ports at the back of the **CPU Board** in the Synergy Q/MD frame.

- **Connector:** DB9, Female
- **Communications Format:** Software selectable for RS-232 or RS-422
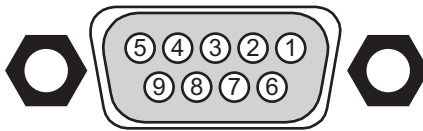
Peripheral Port on Frame

Pinout — Peripheral Ports

Pin #	RS-232	RS-422
1	n/c	Odd/Even Tx+
2	Rx	TxA (Tx-)
3	Tx	RxB (Rx+)
4	Ground	Ground
5	Ground	Ground
6	n/c	Odd/Even Tx–
7	n/c	TxB (Tx+)
8	n/c	RxA (Rx-)
9	n/c	5V 1K Pull-up

Note: n/c = not connected

Panel Port

The table below lists pinouts for the **PANEL** port.

- **Connector:** 8-pin RJ-45, Shielded
- **Communications Format:** RS-422 Data Link to Control Panel
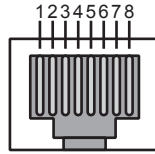
Panel Port on Frame

Pinout — Panel Port

Pin #	Signal
1	TxB (Tx+)
2	TxA (Tx-)
3	RxB (Rx+)
4	RxA (Rx-)
5	ODD/EVEN+ (Transmit)
6	ODD/EVEN- (Transmit)
7	Ground (AC coupled)
8	Ground (AC coupled)

GPI I/O Port

The table below lists pinouts for the **GPI I/O** connector.

Important

It is recommended that GPI Out signals be used to drive high impedance loads (2000 ohm and higher).

- **Connector:** DB25, Female
- **GPI Out 1-10:** Active Drive 3.3V TTL-compatible signals
- **GPI In 1-10:** 5V TTL-compatible edge or level trigger
- **System Fail:** 2 System Fail and 2 System Fail Return relays: 0 - 24 VDC, contact-closure FET, normally-closed relays.

Note

The System Fail relays are not yet implemented.
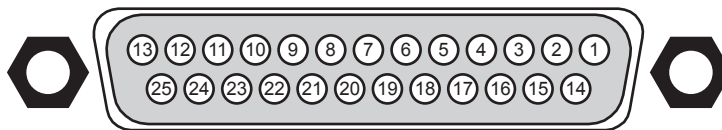
GPI I/O Port on Frame

Pinouts — GPI I/O Port

Pin #	Signal
1	Ground
2	System Fail 1
3	System Fail 0
4	GPI In 10
5	GPI In 9
6	GPI In 8
7	GPI In 7
8	GPI In 6
9	GPI In 5
10	GPI In 4
11	GPI In 3
12	GPI In 2
13	GPI In 1
14	System Fail Return 1
15	System Fail Return 0
16	GPI Out 10
17	GPI Out 9
18	GPI Out 8
19	GPI Out 7
20	GPI Out 6
21	GPI Out 5
22	GPI Out 4
23	GPI Out 3
24	GPI Out 2
25	GPI Out 1

LAN Ports

The table below lists pinouts for the **LAN 10/100** ports.

- • **Connector:** 8-pin RJ-45, Shielded

- • **Communications Format:** 10Base-T and 100Base-TX Ethernet
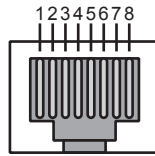
LAN Port on Frame

Pinout — LAN (Ethernet) Port

Pin #	Signal
1	Tx+
2	Tx-
3	Rx+
4	n/c
5	n/c
6	Rx-
7	n/c
8	n/c

AC POWER Ports

The table below lists pinouts for the **AC POWER** connectors.

- • **Connector:** 3-Pin IEC Male
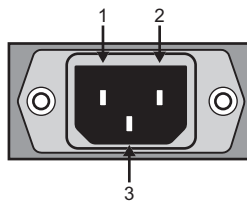
AC Power Port on Frame

Pinout — AC Power Port

Pin #	Signal
1	Neutral/Line 2
2	Line
3	Ground

Control Panel Pinouts

This section provides pinouts for the following control panel connectors:

- **Remote Ports**
- **Frame Port**
- **AUX Ports**
- **Tally Ports**
- **AC Power Ports**

Remote Ports

The table below lists pinouts for the **REMOTE** ports on the control panel.

- **Connector:** DB9, Female
- **Communications Format:** Software selectable for RS-232 or RS-422.
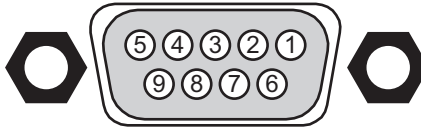
Remote Port on Control Panel

Pinout — Remote Ports

Pin #	RS-232	RS-422
1	Chassis	Chassis
2	Tx	RxA (Rx-)
3	Rx	TxB (Tx+)
4	n/c	n/c
5	Ground	Ground
6	Chassis	Chassis
7	n/c	RxB (Rx+)
8	n/c	TxA (Tx-)
9	Chassis	Chassis

Note: n/c = not connected

Frame Port

The table below lists pinouts for the **FRAME** port.

- **Connector:** 8-pin RJ-45, Shielded
- **Communications Format:** RS-422 Data Link to Frame
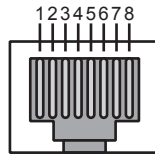
Frame Port on Control Panel

Pinout — Frame Port

Pin #	Signal
1	RxB (Rx+)
2	RxA (Rx-)
3	TxB (Tx+)
4	TxA (Tx-)
5	ODD/EVEN+ (Receive)
6	ODD/EVEN- (Receive)
7	Ground (AC coupled)
8	Ground (AC coupled)

AUX Ports

The table below lists pinouts for the **AUX** Ports.

- **Connector:** 6-pin RJ-12, Shielded

✎ **Note** The **Synergy 1** control panel requires an RJ-12 to DB9 adapter installed in **Remote Port 5** in order to connect a Remote Aux Panel.

- **Communications Format:** RS-422 Data Link to Remote Aux Panels
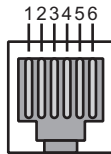
AUX Port on Control Panel

Pinout — AUX Port

Pin #	Signal
1	RxA (Rx-)
2	RxB (Rx+)
3	TxA (Tx-)
4	TxB (Tx+)
5	RESET (Transmit)
6	Ground

RJ-12 to DB9 Adapter for Synergy 1

The table below lists pinouts for the **RJ-12 to DB9** adapter that is used to connect a **Remote Aux Panel** to the **Remote 5** port on the **Synergy 1** control panel.

- • **Connector:** 6-pin RJ-12 (Female) to DB9 (Male)
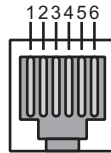
RJ-12 Port on Adapter
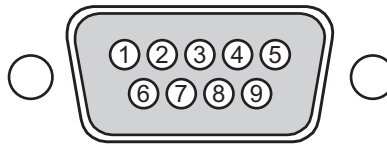
DB9 Port on Adapter

Pinout — RJ-12 to DB9 Adapter

RJ-12 Pin#	DB9 Pin#
1 (white)	8
2 (black)	3
3 (red)	2
4 (green)	7
5 (yellow)	9
6 (blue)	1

Tally Ports

The following table lists pinouts for the **Tally** ports.

✐	**Note**	The **Synergy 1** control panel has only 1 Tally port and supports up to **16** tallies on the single port. The other Synergy Q/MD control panels support up to **36** tallies across **2** ports (expandable to **72** tallies across **4** ports).

- • **Connector:** DB25, Female

- • **Communications Format:** Solid state relay contact closure to TALLY COMMON
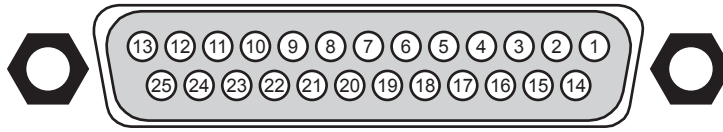
Tally Port on Control Panel

| ✎ | **Note** | Tally ports **3** and **4** provide an optional **36** additional Tallies, allowing a total of **72** Tally relays. |

Pinouts — Tally Port

Pin #	Tally 1 Port	Tally 2 Port	Tally 3 Port	Tally 4 Port
1	TALLY 1	TALLY 19	TALLY 37	TALLY 55
2	TALLY 3	TALLY 21	TALLY 39	TALLY 57
3	TALLY 5	TALLY 23	TALLY 41	TALLY 59
4	TALLY 7	TALLY 25	TALLY 43	TALLY 61
5	TALLY 9	TALLY 27	TALLY 45	TALLY 63
6	TALLY 11	TALLY 29	TALLY 47	TALLY 65
7	TALLY 13	TALLY 31	TALLY 49	TALLY 67
8	TALLY 15	TALLY 33	TALLY 51	TALLY 69
9	TALLY 17†	TALLY 35	TALLY 53	TALLY 71
10	TALLY COMMON	TALLY COMMON	TALLY COMMON	TALLY COMMON
11	TALLY COMMON	TALLY COMMON	TALLY COMMON	TALLY COMMON
12	TALLY COMMON	TALLY COMMON	TALLY COMMON	TALLY COMMON
13	TALLY COMMON	TALLY COMMON	TALLY COMMON	TALLY COMMON
14	TALLY 2	TALLY 20	TALLY 38	TALLY 56
15	TALLY 4	TALLY 22	TALLY 40	TALLY 58
16	TALLY 6	TALLY 24	TALLY 42	TALLY 60
17	TALLY 8	TALLY 26	TALLY 44	TALLY 62
18	TALLY 10	TALLY 27	TALLY 46	TALLY 64
19	TALLY 12	TALLY 30	TALLY 48	TALLY 66
20	TALLY 14	TALLY 32	TALLY 50	TALLY 68
21	TALLY 16	TALLY 34	TALLY 52	TALLY 70
22	TALLY 18†	TALLY 36	TALLY 54	TALLY 72
23	TALLY COMMON	TALLY COMMON	TALLY COMMON	TALLY COMMON
24	TALLY COMMON	TALLY COMMON	TALLY COMMON	TALLY COMMON
25	TALLY COMMON	TALLY COMMON	TALLY COMMON	TALLY COMMON

† These Pins are not connected on a **Synergy 1**.

AC Power Ports

The table below lists pinouts for the **AC POWER** connectors.

- **Connector:** 3-Pin IEC Male
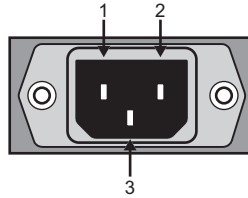
AC Power Port on Control Panel

Pinout — AC Power Port

Pin #	Signal
1	Neutral/Line 2
2	Line
3	Ground

Aux Panel Programming Mode Summary

The table below summarizes all normal, GPI, and special diagnostic Aux panel programming modes for new generation remote Aux panels.

Aux Panel Programming Mode Button Assignment

Button / LED	Normal Mode	Program Mode Bus Assignment (*1)	Program Mode GPI Offset	Power Up Diagnostic
1 (Black)	Select Xpt 1	Display/modify this panel's rights to Aux Bus 1	Set GPI to group 1 (offset 0) (*2)	Start Walking LED Test (*6)
2	Select Xpt 2	Display/modify this panel's rights to Aux Bus 2	Set GPI to group 2 (offset 1)	Start Pushbutton LED test
3	Select Xpt 3	Display/modify this panel's rights to Aux Bus 3	Set GPI to group 3 (offset 2)	Start DUART Test (*3)
4	Select Xpt 4	Display/modify this panel's rights to Aux Bus 4	Set GPI to group 4 (offset 3)	Start EEPROM Test
5	Select Xpt 5	Display/modify this panel's rights to Aux Bus 5	Set GPI to group 5 (offset 4)	
6	Select Xpt 6	Display/modify this panel's rights to Aux Bus 6	Set GPI to group 6 (offset 5)	
7	Select Xpt 7	Display/modify this panel's rights to Aux Bus 7	Set GPI to group 7 (offset 6)	
8	Select Xpt 8	Display/modify this panel's rights to Aux Bus 8	Set GPI to group 8 (offset 7)	
9	Select Xpt 9	Display/modify this panel's rights to Aux Bus 9	GPI 8 Status (ON = shorted to ground)	
10	Select Xpt 10	Display/modify this panel's rights to Aux Bus 10	GPI 7 Status (ON = shorted to ground)	
11	Select Xpt 11	Display/modify this panel's rights to Aux Bus 11	GPI 6 Status (ON = shorted to ground)	
12	Select Xpt 12	Display/modify this panel's rights to Aux Bus 12	GPI 5 Status (ON = shorted to ground)	
13	Select Xpt 13		GPI 4 Status (ON = shorted to ground)	
14	Select Xpt 13		GPI 3 Status (ON = shorted to ground)	
15	Select Xpt 15		GPI 2 Status (ON = shorted to ground)	
16	Select Xpt 16		GPI 1 Status (ON = shorted to ground)	LED used in EEPROM test
17 (Shift) (*5)	Select Xpt 17 or Shift	Toggle between allowing Shifted Xpts or allowing only simple Xpts (*4)		
Clean Feed		Switch to GPI program mode. LED flashes.	Switch to Assignment Program mode.	
Program		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)	Test Fail Status (*6)

Please note:

(*1) For the first 12 LEDs in this column, information applies to the Synergy 3 and 4 assignable panels only. On the **Synergy 2** assignable panels, use the 12 assignment buttons on the bottom row of the panel.

(*2) 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.

(*3) Requires special loop-back tester cables. Contact Customer Support for details.

(*4) Only used on older version main panel software. New main panel software sets this value automatically to be the same as the panel during normal operation. The LED displays the state of this option. The Panel does not support special modes of shifted crosspoints (such as Reverse Shift, etc.).

(*5) On the Synergy 3 panel, the LED is located at Shift/30, on Synergy 4, the LED is located at Shift/35.

(*6) 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.

Appendix B. Installation Worksheets

In This Appendix

This appendix provides worksheet tables to help plan and record switcher installation settings and wring connections. The following worksheets are included:

- Input Worksheet
- Bus Map Worksheet
- Output Worksheet
- Remote Control Worksheet
- Standard GPI Input Worksheet
- Standard GPI Output Worksheet
- Custom Control Worksheet

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 BNC Worksheet

BNC #	Actual Source	Remote Port	Device Address	Input Name	Input Type	Tally Number	Alpha Type	Auto Key	Audio Channel
Sample 1	VTR 1	Remote 1		VTR Blue	VTR	12	—	—	—
Sample 2	CG Alpha	Remote 2		CG Alpha	Alpha	—	Shaped	C10	—
C01									
C02									
C03									
C04									
C05									
C06									
C07									
C08									
C09									
C10									
C11									
C12									
C13									
C14									
C15									
C16									
D01									
D02									
D03									
D04									
D05									
D06									
D07									
D08									
D09									
D10									
D11									
D12									

Input BNC Worksheet

BNC #	Actual Source	Remote Port	Device Address	Input Name	Input Type	Tally Number	Alpha Type	Auto Key	Audio Channel
D13									
D14									
D15									
D16									

For further details, see the "**Input Connection**" section in Chapter 4, "**Preliminary Cabling and Video Installation**".

Bus Map Worksheet

Make copies of this blank worksheet for use as required. Complete the following worksheet for all of your button mappings.

Bus Map Name: _____

Bus Map Worksheet

Physical Button	Input Name	Physical Button	Input Name	Physical Button	Input Name
1	Black	*26*	CG 3	*51*	SHIFT
1		26		51	
2		27		52	
3		28		53	
4		29		54	
5		30		55	
6		31		56	
7		32		57	
8		33		58	
9		34		59	
10		35		60	
11		36		61	
12		37		62	
13		38		63	
14		39		64	
15		40		65	
16		41		66	
17		42		67	
18		43		68	
19		44		69	
20		45		70	
21		46			
22		47			
23		48			
24		49			
25		50			

For further details, see the "**Setting up Panel Buttons**" section in Chapter 7, "**BNC Configuration and Check**".

Output Worksheet

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

- Check whether the output is locked because of an option.
- Fill in the output type.
- Fill in the destination of the output.

✎	**Note**	If you have the **MultiDSK** or **Mix/DSK** options installed, certain Output BNCs will be locked to specific output types. The Aux Mixer, and Aux Mixer/Keyer options will also lock Output BNCs, but you can select which ones are locked.

BNC Output Worksheet

BNC Output Connector #	Locked Output (Mix/DSK or MultiDSK	Locked Output (Mix/DSK and MultiDSK	Output Type	Destination
e.g. 1 B01			Program	Master Control
e.g. 1 B13			AuxBus 1:3	Monitor 6
B01	Program	Program		
B02	Program	Program		
B03	Preview without Overlay	Preview without Overlay		
B04	Preview without Overlay	Preview without Overlay		
B05	Clean Feed 1	Clean Feed 1		
B06	Clean Feed 2	Clean Feed 2		
B07	Preview with Overlay (not locked)	Clean Feed 3		
B08		Clean Feed 4		
B09		Program		
B10		Program		
B11				
B12				
B13				
B14				
B15				
B16				

Remote Control Worksheet

Using the figure below for reference, complete the following remote control worksheet. Copy the worksheet as required. Fill in the serial controlled device and the remote control port (on the device) that is used for serial control.

If you have installed a Remote Port Expander (BSS4) to the Synergy switcher, there are four additional remote ports labelled **A**, **B**, **C** and **D**, corresponding to the **Slave Ports** on the BSS4 that will start with the number of the remote port that the BSS4 is connected to.

The figure below illustrates the location of the eight remote control connectors on the rear of the **Synergy 2** and **3** control panels.

Remote Control Connectors
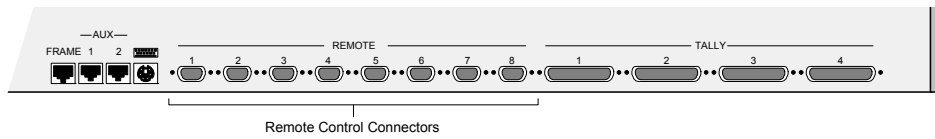
The figure below illustrates the location of the five remote control connectors on the rear of the **Synergy 1** control panel.

Remote Control Worksheet

Remote Connector	Serial Controlled Device	Device Serial Port
Remote 1		
Remote 1A		
Remote 1B		
Remote 1C		
Remote 1D		
Remote 2		
Remote 2A		
Remote 2B		
Remote 2C		
Remote 2D		
Remote 3		
Remote 3A		
Remote 3B		
Remote 3C		
Remote 3D		

Remote Control Worksheet

Remote Connector	Serial Controlled Device	Device Serial Port
Remote 4		
Remote 4A		
Remote 4B		
Remote 4C		
Remote 4D		
Remote 5		
Remote 5A		
Remote 5B		
Remote 5C		
Remote 5D		
Remote 6		
Remote 6A		
Remote 6B		
Remote 6C		
Remote 6D		
Remote 7		
Remote 7A		
Remote 7B		
Remote 7C		
Remote 7D		
Remote 8		
Remote 8A		
Remote 8B		
Remote 8C		
Remote 8D		

For further details, refer to Chapter 9, "**Basic Communications Setup**", in the *Synergy Q/MD Engineering Manual*.

Standard GPI Input Worksheet

Make copies of this blank worksheet for use as required. Complete the following Standard GPI Input worksheet.

Standard GPI Input Worksheet

Standard GPI Input #	Event Type	Event Area	Polarity
Sample GPI Input #1	Auto	MLE 1	Low
Sample GPI Input #2	Cut	Fade to black	High
Sample GPI Input #3	Cust Ctrl	Custom08 1#08	High
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

For further details, see the "**Standard GPI Setup**" section in Chapter 12, "**Additional Installation Setups**".

Standard GPI Output Worksheet

Make copies of this blank worksheet for use as required. Complete the following Standard GPI Output worksheet.

Standard GPI Output Worksheet

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

For further details, see the "**Standard GPI Setup**" section in Chapter 12, "**Additional Installation Setups**".

Custom Control Worksheet

Complete the following custom control worksheet. Make copies of this blank worksheet as required.

✓ **Operating Tip** | Keep custom control functions such as time clock and VTR *physically grouped* together on your custom control buttons.

Custom Control Worksheet

Custom Control Bank Name/ Number:_____	
Custom Control Button Name	**Custom Control Function(s)**
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	

Custom Control Worksheet

Custom Control Bank Name/ Number:_____	
Custom Control Button Name	**Custom Control Function(s)**
30	
31	
32	
33	
34	
35	

Appendix C. IP and Web Issues

In This Appendix

This appendix provides information on standard network security practices with consideration to ethernet connections.

The following topics are discussed:

- Standard Network Security
- Understanding IP Addresses
- Software Licenses

Standard Network Security

Upgrades can be uploaded to the Synergy Q/MD switcher from a PC using an **Ethernet** port on the back of the Synergy Q/MD frame. Images and animations can be copied from a PC to the internal hard drive on the switcher for use by the Global-Store and MediaCache. The Ethernet port can also be used to transfer images and animations from the hard drive on the switcher to a PC. This allows image captures on the switcher to be used elsewhere in the studio. Refer to Chapter 6 "**Software Upgrades and Options**" in the *Synergy Q/MD Engineering Manual, Volume I* for set up information. Contact your Network Administrator for information on your ethernet network.

	Note	The Ethernet port is required for upgrades and *not* for switcher operation.

Ethernet Connection Precautions

	Important	It is recommended that you unplug your ethernet cable when not in use; being connected on a network carries security risks that could impact the performance of the switcher. Contact your Network Administrator for more information.

If the Synergy Q/MD frame is to be left connected to the ethernet, the following precautions should be taken:

* **Do not connect directly to the Internet** — Anyone who can access your network will also gain access to sensitive data and equipment. Limit network access by using a firewall, or a separate network segment, to control who can access your switcher. Contact your Network Administrator for more information.

* **Change the default passwords** — The Synergy Q/MD frame is initially set with default passwords. To change your default passwords, contact **Ross Video Technical Support**.

* **Disable unused services** — The Synergy Q/MD frame provides access to three default services provided by Ross Video: web server, FTP server, and the Telnet server. Contact **Ross Video Technical Support** for information on how these services can be disabled individually or keep your network unplugged.

	Note	It is not recommended to install or enable services that are not provided by Ross Video.

Understanding IP Addresses

Internet Protocol (IP) Address parameters must be assigned to configure the Synergy Q/MD frame for network operations. The values must be chosen so as not to conflict with other devices on the network. Your Network Administrator should provide these values. Once configured, the Synergy Q/MD frame can be accessed using its IP Address.

IP Addresses

Internet Protocol (IP) Addresses are used to identify devices on a network. This address is used to route messages through the network, back and forth between devices. There are two types of addresses: IPv4 which can take on the form of 32 bits, 4 numbers separated by periods (for example, 192.168.1.1) or IPv6 with 128 bits. The Synergy Q/MD frame supports IPv4 Addresses.

There are two configuration methods for IP Addresses supported by the Synergy Q/MD frame:

- **Static** — Static IP Addresses require you to manually provide the IP Address, the netmask, the domain name server, and the gateway/router addresses.

- **DHCP** — Dynamic Host Configuration Protocol (DHCP) IP Addresses are obtained automatically from your network each time the Synergy Q/MD frame connects to the network.

Default Services

Note   The addresses provided in this section are examples only. Refer to Chapter 6 "**Software Upgrade and Options**" in the *Synergy Q/MD Engineering Manual, Volume I* or contact Ross Video Technical Support for more information.

Ross Video provides three default services for the Synergy Q/MD frame which can be accessed with the following addresses:

- **Web server** — The web server is used for upgrades and set up as well as WebDAV connections for drag and drop image transfer. The URL Address is **http://192.168.1.1**, using port 80.

- **Telnet server** — The Telnet server is used for diagnostic and maintenance purposes. You must first manually launch the Telnet application, and then connect at **telnet://192.168.1.1**.

Note   The Telnet server should be disabled when not in use.

Software Licenses

The Synergy Q/MD System includes software licensed under one or more of the following licenses:

- GNU General Public License
- Lesser GNU Public License (LPGL)
- BSD License
- Apache License
- Expat License

Important As per the GNU General Public License and the Lesser GNU Public License (LPGL), source code can be obtained for at least 3 years from Ross Video. Please contact **Ross Video Technical Support** for details; contact information is listed at the front of this manual.

GNU General Public License

GNU GENERAL PUBLIC LICENSE

Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc. 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributes of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

      a)   You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

      b)   You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

      c)   If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.) _

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Lesser GNU Public License (LPGL)

GNU LESSER GENERAL PUBLIC LICENSE

Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc. 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executable.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library. You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

   a) The modified work must itself be a software library.

   b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

   c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

   d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

   (For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy. This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

    a)   Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable

containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

    b)   Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

    c)   Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

    d)   If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

    e)   Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

    a)   Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

    b)   Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent

obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances. It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

BSD License

General

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

3. The name of the author may not be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Apache License

Apache License

Version 2.0, January 2004

http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (i) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor

for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

b) You must cause any modified files to carry prominent notices stating that You changed the files; and

c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

Expat License

Copyright (c) 1998, 1999, 2000 Thai Open Source Software Center Ltd and Clark Cooper

Copyright (c) 2001, 2002, 2003 Expat maintainers.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Appendix D. Custom Device Protocols

In This Appendix

This appendix provides information and procedures for setting up a custom device and programming a serial protocol to communicate with said device from a Synergy Q/MD peripheral or remote port.

The following sections are provided and discussed:

- Custom Devices – Uses and Limitations
- Custom Devices Modify Menu
- Programming Commands
- Programming Worksheets
- Advanced Topics and Tables

Custom Devices – Uses and Limitations

The **Custom Devices Setup Menu** allows the user to program serial command protocols for controlling external devices not otherwise supported by Synergy Q/MD Custom Devices are also useful in testing out currently unsupported commands to external devices, as well as other general communications testing.

There are two user-programmable custom device protocols available, these being **CUSTOM0** and **CUSTOM1**. Ports on both the panel and the frame can be used, with the following limitations and requirements.

- To use custom devices on the panel, you must have purchased and installed the **VTR Remote Control** option. Refer to the chapter, "**Software Upgrades and Options**" for details on installing this option.

- Any data received back from the external device is ignored. Therefore, queries for Current-time-sense (e.g. grab timecode), Inpoint, Outpoint and Clip-ID-names are not supported.

- If suitable commands are programmed (e.g., command tag PLAY, etc.), VTRs and VTR-like devices can be controlled via custom control buttons or by remote menus and ROLL VTR transitions.

- You can control other non-VTR devices (e.g., CCUs, CGs, etc.) by substituting their commands for those in the Command-tag list of the **Custom Device Menu**. Refer to the section "**Advanced Topics and Tables**" on page 33-8 for a list of available command tags. This list also appears (for applicable commands) in the **VTR Functions** area of the chapter, "**Custom Controls**".

  When substituting for other commands, record these substitutions on the worksheet provided in this appendix. As an aid, we recommend that the custom control used to perform the command be suitably named. As a rule, these devices will have no BNC association, and consequently will not be accessed by **ROLL VTR** or by any remote menus.

- Custom Devices can use any of the control panel remote ports and any of the frame peripheral ports. However, custom devices protocols cannot be used on the Aux ports.

- To use custom devices on the frame, you must have purchased the **DVE Send and Remote Control** option.

- Some protocol usage may exceed the maximum number of bytes (19) allocated per command. In cases where a custom control is used, 2 command slots (and 2 tags) can be used and a custom control programmed to invoke them in immediate succession. Each user-programmed device supports a maximum of 10 command slots. There may be other practical problems with the protocol you are trying to reproduce that may render custom devices unsuitable. Please do not hesitate to contact Ross Video technical support for assistance in using this feature.

Custom Devices Modify Menu

The **Custom Devices Modify** menu is divided into five main areas.

In the upper left hand corner (below the title), line numbers (or byte numbers) are displayed, followed by the Hexadecimal representation of the data byte at that location.

To the right of these line numbers and data values, under the heading Ascii/ Param., are the ACSII text characters equivalent to the data values. Refer to the section "**Decimal to Hexadecimal to ASCII Conversion Table**" on page 33-11 for converting decimal to hexadecimal to ASCII text. These two areas can also show special option values. Refer to the section "**Advanced Topics and Tables** " on page 33-8 for more information.

As with all other Synergy Q/MD menus, the far right of the LCD lists the options modified by the three optical knobs, and the bottom label area allows for menu selection using the F1 to F6 soft keys.

Just above the label area is a line of single characters from 0 to 9 and A to F. This line is the hexadecimal number line. This line is where the cursor (controlled by the **Set Nybble** knob) indicates the value of the currently selected nybble of the byte being edited. The top knob determines which line to edit and the **F2** soft key button determines which nybble to edit (upper most significant nybble or lower least significant nybble).
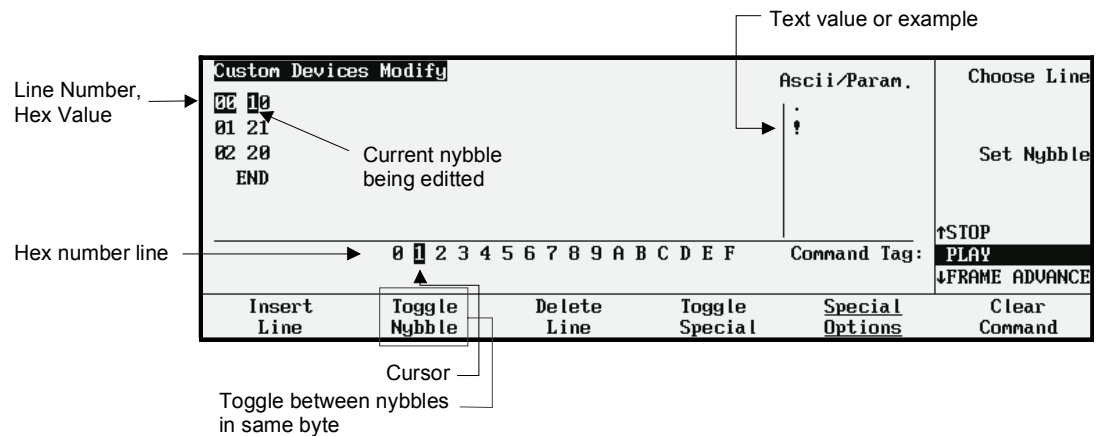
Custom Devices Modify Menu

The following section provides procedures for programming your custom devices.

Programming Commands

Use the following procedure to program your custom devices:

1. Navigate to the **Custom Device Menu** as follows:

   • Press **HOME** ⇨ **MORE** ⇨ **Setup** ⇨ **Installation** ⇨ **Communications** ⇨ **Custom Devices**.

2. Use the middle **Knob** to select the custom device that you wish to modify.

3. Press **Modify** to display the **Custom Devices Modify Menu**.

```
┌─────────────────────────────────────────────────────────┬──────────────┐
│ Custom Devices Modify                                    │  Choose Line │
│ Press Insert Line to create a new Command for the selected Tag          │
│                                                          │              │
│                                                          │              │
│                                                          │              │
│                                                          │              │
│                                                          │              │
│                                       Command Tag: │ SEEK TIMECODE│
│                                                          │ ↓REWIND      │
├──────────┬──────────┬──────────┬──────────┬─────────────┼──────────────┤
│  Insert  │  Toggle  │  Delete  │  Toggle  │   Special   │    Clear     │
│   Line   │  Nybble  │   Line   │  Special │   Options   │   Command    │
└──────────┴──────────┴──────────┴──────────┴─────────────┴──────────────┘
```
Custom Devices Modify Menu

4. Below are some examples of programming simple commands in a Custom Device Protocol. The first example demonstrates how to set the **PLAY** Command Tag to send the Sony Betacam play message, as shown here.

```
┌─────────────────────────────────────────────────────┬────────────┬──────────────┐
│ Custom Devices Modify                                │ Ascii/Param.│ Choose Line │
│ 00 20                                                │            │              │
│ 01 01                                                │            .           │
│ 02 21                                                │            !    Set Nybble│
│   END                                                │            │              │
│                                                      │            │              │
│                                                      │            │ ↑STOP        │
│           0 1 2 3 4 5 6 7 8 9 A B C D E F  Command Tag: │ PLAY         │
│                                                      │            │ ↓FRAME ADVANCE│
├──────────┬──────────┬──────────┬──────────┬─────────┼────────────┼──────────────┤
│  Insert  │  Toggle  │  Delete  │  Toggle  │ Special │  Options   │    Clear     │
│   Line   │  Nybble  │   Line   │  Special │         │            │   Command    │
└──────────┴──────────┴──────────┴──────────┴─────────┴────────────┴──────────────┘
```
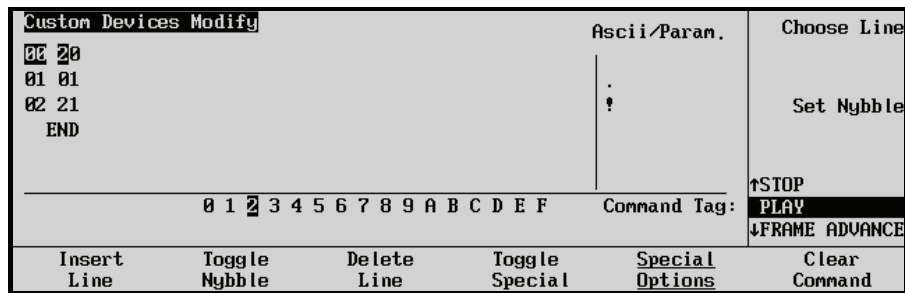
5. Start the first line by pressing **Insert Line,** and dialing the middle knob (**Set Nybble**) until the first nybble of the first line (00) indicates a 2. This will also be highlighted on the Hex digit number line to the left of the Command Tag.

```
┌─────────────────────────────────────────────────────┬────────────┬──────────────┐
│ Custom Devices Modify                                │ Ascii/Param.│ Choose Line │
│ 00 20                                                │            │              │
│   END                                                │            │              │
│                                                      │            │    Set Nybble│
│                                                      │            │              │
│                                                      │            │ ↑STOP        │
│           0 1 2 3 4 5 6 7 8 9 A B C D E F  Command Tag: │ PLAY         │
│                                                      │            │ ↓FRAME ADVANCE│
├──────────┬──────────┬──────────┬──────────┬─────────┼────────────┼──────────────┤
│  Insert  │  Toggle  │  Delete  │  Toggle  │ Special │  Options   │    Clear     │
│   Line   │  Nybble  │   Line   │  Special │         │            │   Command    │
└──────────┴──────────┴──────────┴──────────┴─────────┴────────────┴──────────────┘
```
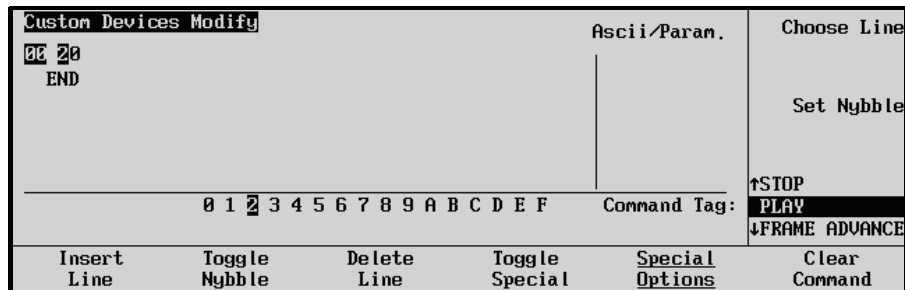
6. Use **Insert Line** again to add a second byte to the command as shown here.

```
Custom Devices Modify                    Ascii/Param.      Choose Line
00 20
01 00                                         .
   END
                                                            Set Nybble

                                                           ↑STOP
              0 1 2 3 4 5 6 7 8 9 A B C D E F  Command Tag: PLAY
                                                           ↓FRAME ADVANCE
   Insert         Toggle        Delete       Toggle       Special      Clear
   Line           Nybble        Line         Special      Options      Command
```
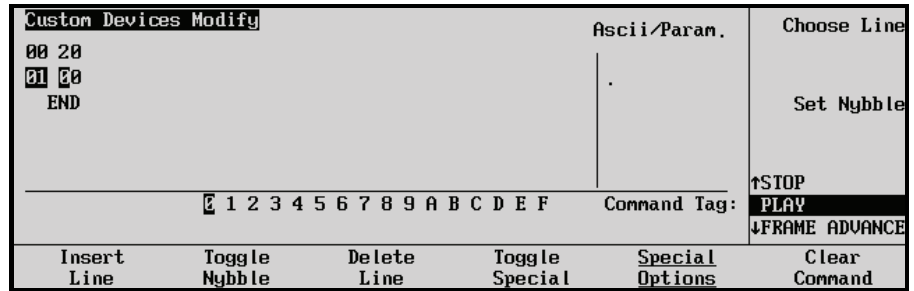
7. Use the **Toggle Nybble** soft key to move to the lower nybble of the byte, and dial the middle knob to set the second byte to 01.

8. Press **Insert Line** to add the final line.

```
Custom Devices Modify                    Ascii/Param.      Choose Line
00 20
01 01                                         .
02 20                                         !
   END
                                                            Set Nybble

                                                           ↑STOP
              0 1 2 3 4 5 6 7 8 9 A B C D E F  Command Tag: PLAY
                                                           ↓FRAME ADVANCE
   Insert         Toggle        Delete       Toggle       Special      Clear
   Line           Nybble        Line         Special      Options      Command
```
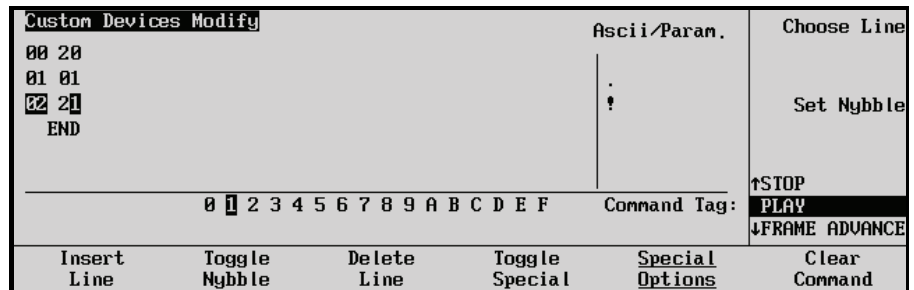
9. Use the **Set Nybble** knob to set the first nybble to 2.

10. Press **Toggle Nybble**, and set the lower nybble to 1.

11. In a similar fashion the Stop tag can be set to hex values of **20, 00 20** as shown here.

```
Custom Devices Modify                    Ascii/Param.      Choose Line
00 20
01 00                                         .
02 20
   END
                                                            Set Nybble

                                                           ↑PAUSE
              0 1 2 3 4 5 6 7 8 9 A B C D E F  Command Tag: STOP
                                                           ↓PLAY
   Insert         Toggle        Delete       Toggle       Special      Clear
   Line           Nybble        Line         Special      Options      Command
```
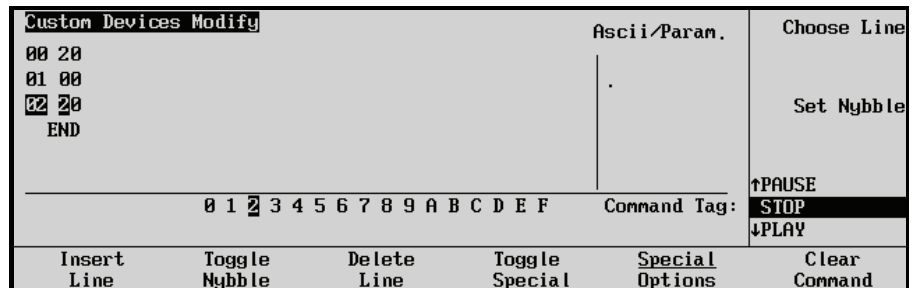
Program your custom devices in accordance with the information and tables attached.

Programming Worksheets

Use the following *Programming Worksheets* to record your substituted commands.

Programming Worksheets

First Custom Device Protocol CUSTOM0 – Programming sheet										
#1	Description:							Tag:		
Bytes										
#2	Description:							Tag:		
Bytes										
#3	Description:							Tag:		
Bytes										
#4	Description:							Tag:		
Bytes										
#5	Description:							Tag:		
Bytes										
#6	Description:							Tag:		
Bytes										
#7	Description:							Tag:		
Bytes										
#8	Description:							Tag:		
Bytes										
#9	Description:							Tag:		
Bytes										
#10	Description:							Tag:		
Bytes										

Suggested abbreviations for parameter flags notation: H – Hex, B- BCD, AH – ASCII Hex, AB – ASCII BCD / 1-8 (digits) or 4,8..32 (bits) / M – Mot, I – Int. / S – Sca, E – Ext, + – Sign.

Example: B4/ M/+ would be a signed 4 digit BCD with Motorola ordering

Programming Worksheets

Second Custom Device Protocol CUSTOM1 – Programming sheet										
#1	Description:								Tag:	
Bytes										
#2	Description:								Tag:	
Bytes										
#3	Description:								Tag:	
Bytes										
#4	Description:								Tag:	
Bytes										
#5	Description:								Tag:	
Bytes										
#6	Description:								Tag:	
Bytes										
#7	Description:								Tag:	
Bytes										
#8	Description:								Tag:	
Bytes										
#9	Description:								Tag:	
Bytes										
#10	Description:								Tag:	
Bytes										

Suggested abbreviations for parameter flags notation: H – Hex, B- BCD, AH – ASCII Hex, AB – ASCII BCD / 1-8 (digits) or 4,8..32 (bits) / M – Mot, I – Int. / S – Sca, E – Ext, + – Sign.

Example: B4/ M/+ would be a signed 4 digit BCD with Motorola ordering

Advanced Topics and Tables

Besides strings of constant Hex values (bytes), commands can be programmed with special characters and with converted parameter values. Examples of the special characters include the two special values to perform a communications break. The communications break is formed by a data zero event that extends beyond the normal data bit length permitted in the serial data word (e.g., serial word length of 8-Odd-1Stop bit is 1+8+1+1 = 11 bits long). The commonly used minimum length for break is 17 bits long or one and a half to two data-words. To implement a break in custom devices, there needs to be a [Break On], a [Break Off], and an optional delay in between.

Certain commands pass a parameter to the custom device driver that can be converted into a string of bytes using a special packed command in place of a single byte. Only one of these special command lines may appear in any given command slot (since only one parameter is ever passed). This command line is converted during runtime into the specified one to four bytes of parameter data, and included at that location in the command string. One command tag that gets a parameter is the Cue to Clip command. The value passed when a Cue to Clip command is triggered is the desired cue time as represented in a packed word timecode format. Typically, this value must then be converted into some representation of packed timecode bytes to be sent to the external device. The packed command flags are described in the following table. You may want to use the Panel Diagnostic\RX/TX\Monitor to view the results when using parameters in commands.

Packed Command Flags

Special Names	Function
[Break On]	Force the outputs to data low value (for RS232 data low is a positive voltage)
[Break Off]	Release the outputs from a forced data low
[Checksum]	Insert the checksum byte (currently supports only simple 8-bit additive checksum)
[Posn X]	Not currently supported
[Posn Y]	Not currently supported
[Posn Z]	Not currently supported
[Param…]	Parameter (see parameter formatting flags below)

Parameter Formatting Flags

Special Formats	Description
Hex	Parameter take as is and converted into string of bytes (1-4) **Note**: if the parameter is already in a packed BCD format then using Hex format will preserve the BCD format of the parameter
ASCII Hex	Text representation of above "Hex" format.
BCD	Binary Coded Decimal (each nybble represents 1 digit 0-9) Converts a parameter that is in non-BCD format to a BCD format
ASCII BCD	Text representation of above "BCD" format. Converts a parameter from a non-BCD format to a text representation of the equivalent BCD format.

Byte Format Ordering	
Mot	Motorola ordering. Most Significant Byte (MSB) first, LSB last.
Int	Intel ordering. Least Significant Byte (LSB) first, MSB last.

Special buttons	
Scaled (Sca)	Re-scales a 12-bit parameter to fit output range
ASCII Extended (Ext)	Extends up the output to an even number of digits/characters without changing the output range
Signed (Sign)	Internal use - sign conversion

BCDWidths	(examples in Motorola ordering)
1 Digit	1 byte of 1 digit, [00] to max [09]
2 Digits	1 bytes of 2 packed digits each, [00] to max [99]
3 Digits	1 bytes of 2 packed digits and 1 byte of 1 digit, [00][00] to max[09][99]
4 Digits	2 bytes of 2 packed digits each, [00][00] to max[99][99]
5 Digits	2 bytes of 2 packed digits and 1 byte of 1 digit, max [09][99][99]
6 Digits	3 bytes of 2 packed digits each, max [99][99][99]
7 Digits	3 bytes of 2 packed digits and 1 byte of 1 digit, max [09][99][99][99]
8 Digits	4 bytes of 2 packed digits each, max [99][99][99][99]

HexWidths	
4 Bits	[00] to [0F]
8 Bits	[00] to [FF]
12 Bits	[00][00] to [0F][FF] (or Intel [FF][0F])
14 Bits	[00][00] to [3F][FF] (or Intel [FF][3F])
15 Bits	[00][00] to [7F][FF] (or Intel [FF][7F])
16 Bits	[00][00] to [FF][FF]
24 Bits	[00][00][00] to [FF][FF][FF]
32 Bits	[00][00][00][00] to [FF][FF][FF][FF]

List of available Custom Device Commands for VTRs

Tag	Parameter	Comment
SEEK TIMECODE (use Goto Clip in Custom Controls)	VTRClip Time as a packed BCD HHMMSSFF	VTR remote menus, Custom controls, VTR Clips. Use Hex to output BCD
REWIND	None	VTR remote menus, Custom controls
FRAME REVERSE	None	VTR remote menus, Custom controls
PAUSE	None	VTR remote menus, Custom controls
STOP	None	VTR remote menus, Custom controls
PLAY	None	Needed for ROLL VTR, VTR remote menus. Also custom controls (VTR and DVE)
FRAME ADVANCE	None	VTR remote menus, Custom controls
FAST FORWARD	None	VTR remote menus, Custom controls
RECORD	None	Custom controls only.
DIAGNOSTIC 1	None	Custom controls only.
DIAGNOSTIC 2	None	Custom controls only.
DIAGNOSTIC 3	None	Custom controls only.

Decimal to Hexadecimal to ASCII Conversion Table

Decimal	Hex	ASCII	Decimal	Hex	ASCII	Decimal	Hex	ASCII	Decimal	Hex	Decimal	Hex	Decimal	Hex
0	00		43	2B	+	86	56	V	129	81	172	AC	215	D7
1	01		44	2C	,	87	57	W	130	82	173	AD	216	D8
2	02		45	2D	-	88	58	X	131	83	174	AE	217	D9
3	03		46	2E	.	89	59	Y	132	84	175	AF	218	DA
4	04		47	2F	/	90	5A	Z	133	85	176	B0	219	DB
5	05		48	30	0	91	5B	[	134	86	177	B1	220	DC
6	06		49	31	1	92	5C	\	135	87	178	B2	221	DD
7	07		50	32	2	93	5D	]	136	88	179	B3	222	DE
8	08		51	33	3	94	5E	^	137	89	180	B4	223	DF
9	09		52	34	4	95	5F	_	138	8A	181	B5	224	E0
10	0A		53	35	5	96	60	`	139	8B	182	B6	225	E1
11	0B		54	36	6	97	61	a	140	8C	183	B7	226	E2
12	0C		55	37	7	98	62	b	141	8D	184	B8	227	E3
13	0D		56	38	8	99	63	c	142	8E	185	B9	228	E4
14	0E		57	39	9	100	64	d	143	8F	186	BA	229	E5
15	0F		58	3A	:	101	65	e	144	90	187	BB	230	E6
16	10		59	3B	;	102	66	f	145	91	188	BC	231	E7
17	11		60	3C	<	103	67	g	146	92	189	BD	232	E8
18	12		61	3D	=	104	68	h	147	93	190	BE	233	E9
19	13		62	3E	>	105	69	i	148	94	191	BF	234	EA
20	14		63	3F	?	106	6A	j	149	95	192	C0	235	EB
21	15		64	40	@	107	6B	k	150	96	193	C1	236	EC
22	16		65	41	A	108	6C	l	151	97	194	C2	237	ED
23	17		66	42	B	109	6D	m	152	98	195	C3	238	EE
24	18		67	43	C	110	6E	n	153	99	196	C4	239	EF
25	19		68	44	D	111	6F	o	154	9A	197	C5	240	F0
26	1A		69	45	E	112	70	p	155	9B	198	C6	241	F1
27	1B		70	46	F	113	71	q	156	9C	199	C7	242	F2
28	1C		71	47	G	114	72	r	157	9D	200	C8	243	F3
29	1D		72	48	H	115	73	s	158	9E	201	C9	244	F4
30	1E		73	49	I	116	74	t	159	9F	202	CA	245	F5
31	1F		74	4A	J	117	75	u	160	A0	203	CB	246	F6
32	20	space	75	4B	K	118	76	v	161	A1	204	CC	247	F7
33	21	!	76	4C	L	119	77	w	162	A2	205	CD	248	F8
34	22	"	77	4D	M	120	78	x	163	A3	206	CE	249	F9
35	23	#	78	4E	N	121	79	y	164	A4	207	CF	250	FA
36	24	$	79	4F	O	122	7A	z	165	A5	208	D0	251	FB
37	25	%	80	50	P	123	7B	{	166	A6	209	D1	252	FC
38	26	&	81	51	Q	124	7C			167	A7	210	D2	253	FD
39	27	'	82	52	R	125	7D	}	168	A8	211	D3	254	FE
40	28	(	83	53	S	126	7E	~	169	A9	212	D4	255	FF
41	29	)	84	54	T	127	7F		170	AA	213	D5		
42	2A	*	85	55	U	128	80		171	AB	214	D6		

Note: 7-bit printable ASCII range from 32 to 126 decimal. The Custom device menus represent text values outside that range with a period '.'.

Glossary of Terms

Active Video Lines — All video lines not occurring in the vertical blanking interval. The portion of the video signal that contains picture information.

Aspect Ratio — The numerical ratio of picture width to height, for example, 4:3 or 16:9.

Auto Transition — An automatic transition in which the manual movement of the fader handle is simulated electronically. The transition starts when the AUTO TRANS button is pressed and takes place over a pre-selected time period, measured in frames.

Border — Effects created around the edges of a pattern or on a keyer. If an optional dual border generator card is installed, several border, shadow, and outline effects are available on that keyer as well.

Border Generator — Circuitry that 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 switcher automatic transition functions to be controlled remotely.

Hue — The characteristic of a color signal that determines whether the color is red, yellow, green, blue, purple, etc. (the three characteristics of a TV color signal are chrominance, luminance, and hue). White, black, and gray are not considered hues.

Internal Key — The use of a primary input to produce a key effect.

Key — An effect produced by "cutting a hole" in background video, then filling the hole with video or matte from another source. Key source video cuts the hole, key fill video fills the hole. The video signal used for cut and fill can come from the same or separate sources.

Key Fill — A video input which is timed to "fill the hole" provided by the key source video. An example of key fill is the video output of a character generator.

Key Invert — An effect that reverses the polarity of the key source so that the holes in the background are cut by dark areas of the key source instead of bright areas. The **KEY INV** push-button selects this effect.

Key Mask — A keying technique in which a pattern is combined with the key source to block out unwanted portions of the key source.

Key Source — The video signal which "cuts a hole" in the background video to make a key effect possible. Also called "Key Video". In practice, this signal controls when a video mixer circuit will switch from background to key fill video.

Key Video — See Key Source.

Linear Keys — Linear keys make it possible to fully specify the transparency of a key from opaque, through transparent, to fully off. The transparency is specified by the key signal (also known as the "hole cutter" or "alpha channel") that is associated with the key fill. A keyer capable of a linear key converts the key signal voltage directly to the transparency effect on the screen. The **KEY MEM** button allows the user to store the CLIP and GAIN settings required to match the incoming key signal to your requirements.

Line Frequency — The number of horizontal scans per second. For 525 line 60 Hz systems, this is approximately 15734 scans per second.

Luminance Key — An effect in which video from one source is replaced by video that exceeds a set level in a second video source.

Mask — See Key Mask.

Matte — A solid color signal that is generated by the switcher and can be adjusted for hue, saturation, and luminance levels.

Matte Key — A key effect in which the fill video is a matte, provided by one of the internal matte generators.

Memory — The memory feature provides storage and recall of complete switcher setups.

MIX — See Dissolve.

MLE — An abbreviation for multi-level effects.

PGM Output — The on-air video output of the system.

Primary Input — Video sources selected by the control panel push-buttons for the crosspoint buses. These buses are normally labeled "KEY", "PGM", and "PST".

PV Output — A switcher output that shows the scene that will go on-air when the next automatic or manual transition takes place.

Self Key — A key effect in which the same video signal serves as both the key signal and key fill.

Soft Edge — A pattern edge effect produced by mixing key source and key fill signals in such a way that the edge of the pattern is not sharp.

Split Screen — An effect in which a wipe pattern provides the key source signal. This is known as a "preset pattern" key.

Tally — An indicator which illuminates when the associated push-button or control is selected or is on-air.

Termination — A means of closing a circuit by connecting a resistive load to it. In video systems, a termination is typically a 75 ohm resistive load.

Transition — A controlled change from one video input to another video input or black. The change can occur through a wipe, cut, dissolve or "DVE Send" effect.

Transition Preview — A transition seen only on the preview monitor. It may be observed and adjusted without disturbing the program or "on-air" output.

Video — The electrical signal produced by a television camera, character generator or other image source. The signal amplitude varies in relation to the tonal scale from black to white presented at the source. White produces the highest amplitude; black produces the lowest signal amplitude.

Wipe — A transition from one video signal to another, in which the change proceeds according to the shape of a specific pattern. A moving transition line separates the two picture signals.

Index

S