9625SW Series
Mini Master Control Switchers

Instruction Manual

EVERTZ MICROSYSTEMS LTD.
5288 John Lucas Drive,
Burlington, Ontario, Canada
L7L 5Z9
Phone: 905-335-3700
Sales Fax: 905-335-3573
Support Fax: 905-335-0909

Internet: Sales: sales@evertz.com
Tech Support: service@evertz.com
Web Page: http://www.evertz.com

Version 0.3 December 2003

INFORMATION TO USERS IN EUROPE

NOTE

CISPR 22 CLASS A DIGITAL DEVICE OR PERIPHERAL

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to the European Union EMC directive. 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.

INFORMATION TO USERS IN THE U.S.A.

NOTE

FCC CLASS A DIGITAL DEVICE OR PERIPHERAL

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.

WARNING

Changes or Modifications not expressly approved by Evertz Microsystems Ltd. could void the user's authority to operate the equipment.

Use of unshielded plugs or cables may cause radiation interference. Properly shielded interface cables with the shield connected to the chassis ground of the device must be used.

REVISION HISTORY

REVISION	DESCRIPTION	DATE
0.1	Preliminary Version HD9625SW only	Mar 03
0.2	Added 9625SW	Oct 03
0.3	Typographical errors fixed, Configuration drawings and serial port pinouts corrected	Dec 03

This page left intentionally blank

TABLE OF CONTENTS

Figures

Tables

This page left intentionally blank

CHAPTER 1
TABLE OF CONTENTS

This page left intentionally blank

1. OVERVIEW

1.1. OVERVIEW

The Evertz 9625SW Series Mini Master Control Switchers are an excellent addition to your high definition or standard definition control room. These dual unit solutions incorporate the best switching technology with the proven transition and channel branding techniques that has brought Evertz to the forefront of High Definition Television. Add to these, Emergency Alert Services and SoftSwitch™ audio processing, and you have the most advanced media switcher available today.

The 9625SW Series Switchers are available in versions to support both standard definition and high definition video. Throughout this manual the term *9625SW* will be used to describe the common features of the switchers. When necessary, the specific model numbers will be used to distinguish features only available on one model.

Model	Standard Definition SDI Inputs	High Definition SDI Inputs	AES Audio Inputs	Bypass Relays
PKG9625SW	12	---	12 x 4	Standard
PKGHD9625SW	---	12	12 x 4	Optional

The 9625SW series units include all the functionality found in our X Series Routers seamlessly integrated with our advanced Logo Inserter and Downstream keyer hardware. These complete systems allow you to fully control up to 12 input video signals and up to 48 AES audio inputs. You can perform voice-overs, wipes, fades, fade to black and a host of other features, all from the convenience of the single remote control panel.

Features

HD9625SW:

- 12 Input High Definition Video Switcher with quad 12 input AES switcher for discrete 5.1 Dolby
- Optional video and audio input bypass relay for power failure bypass protection

9625SW:

- 12 Input Standard Definition Video Switcher with quad 12 input AES switcher for discrete 5.1 Dolby
- Standard video and audio input bypass relay for power failure bypass protection

All Models:

- Program/Preview Transition Mixer for HD video and up to 4 audio pairs
- Downstream keyer with mix and additive modes
- Variety of smooth Transitions including Cut, Fade, Fade to-from Black and 8 angles of Wipes
- Multiple logo inserter with Animation
- LTC input for Breakfast Clocks
- Built-in Black Generator
- 12 Bit Video Processing
- Control of key gain & offset are provided

- System comprised of two 1RU rack frames and 1RU remote control panel for router/keyer/logo functions
- Multiple control interface options including GPI, RS232 automation control, rackmount control panel, third party control panels
- Built-in +/- 1/2 line autotimers for video
- "Pop" free AES audio switch with Evertz patented SoftSwitch™ Technology
- Audio bypass mode for Dolby E

EAS Option:

- Emergency alert crawls
- Interfaces to TFT and Sage EAS decoders.

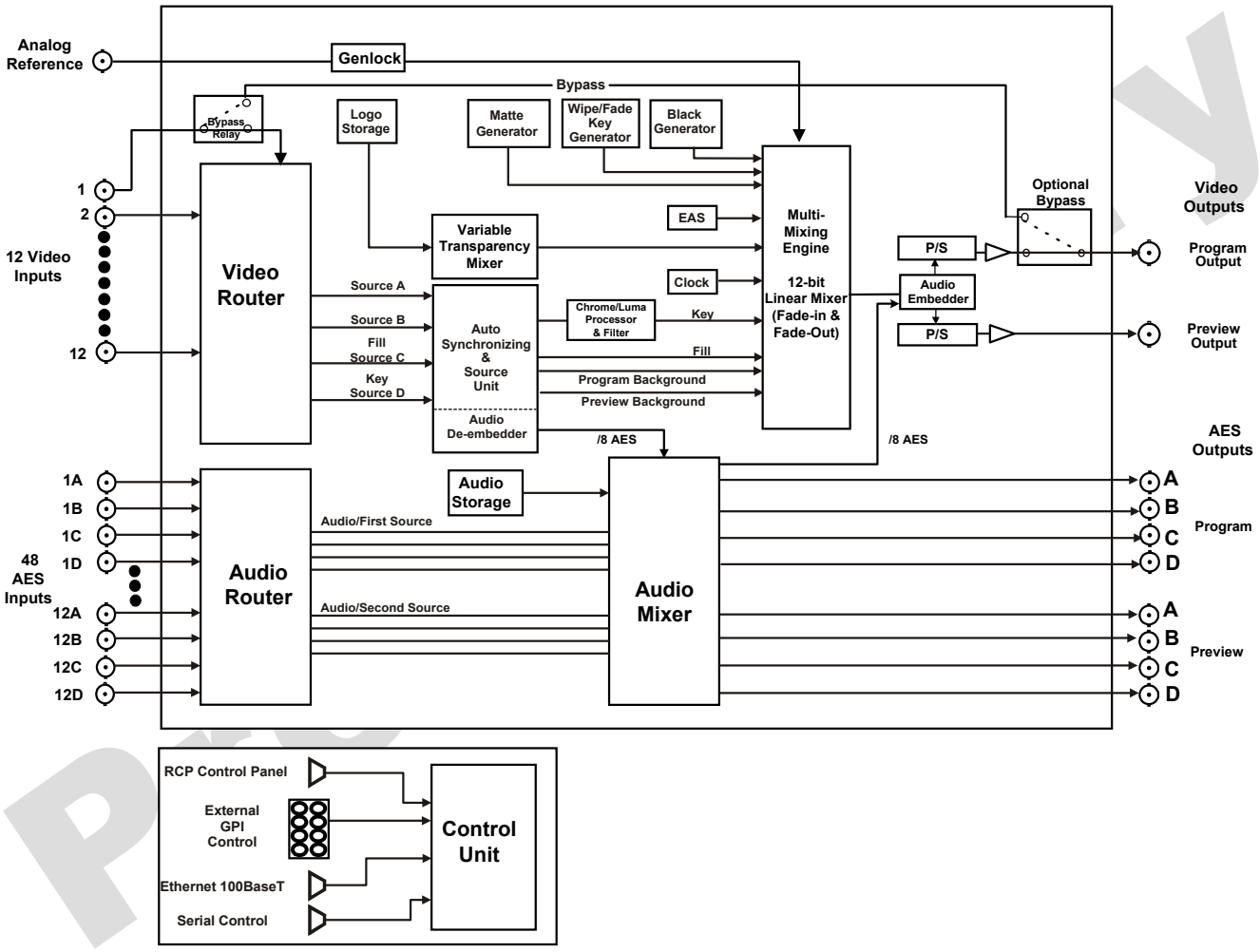


Figure 1-1: 9625SW Mini Master Control Switcher Block Diagram

1.2. HOW TO USE THIS MANUAL

This manual is organised into 5 chapters: Overview, Installation, Operation, Optional EAS Features, and Technical Description. The overview section contains a brief overview of the 9625SW operation and features and a glossary to define concepts and terms used throughout the remainder of the

manual. We highly recommend taking the time to become familiar with the terms and concepts described here before proceeding into the rest of the manual.

Chapter 2 gives a detailed description of the rear panel connectors, and how the 9625SW should be connected into your system.

Chapter 3 shows how to operate the 9625SW using the Front panel controls and Menu system

Chapter 4 shows how to control the 9625SW using third party control panels

Chapter 5 gives technical information such as the specifications and how to update the firmware in the 9625SW.

Items of special note are indicated with a double box like this.

1.3. DEFINITIONS

4:2:2 The sampling ratio used in the HDTV digital video signal. For every 4 samples of luminance there are 2 samples each of R-Y (Red minus Luminance) and B-Y (Blue minus luminance).

16x9 A wide screen television format such as HDTV in which the aspect ratio of the screen is 16 units wide by 9 high as opposed to the 4x3 of normal TV.

AES/EBU: (Sometimes abbreviated as AES) Refers to the digital audio standard (AES3-1992) set by the Audio Engineering Society and European Broadcast Union and used by most forms of digital audio from CDs to professional digital video.

Aspect Ratio: The ratio of width to height in a picture. Theatre screens generally have an aspect ratio of 1.85 to 1, widescreen TV (16x9) is 1.77 to 1, and normal TV (4x3) is 1.33 to 1.

CCIR (International Radio Consultative Committee) An international standards committee. (This organisation is now known as ITU.)

CCIR-601: See ITU-R601.

Cliff effect: (also referred to as the 'digital cliff') This is a phenomenon found in digital video systems that describes the sudden deterioration of picture quality when due to excessive bit errors, often caused by excessive cable lengths. The digital signal will be perfect even though one of its signal parameters is approaching or passing the specified limits. At a given moment however, the parameter will reach a point where the data can no longer be interpreted correctly, and the picture will be totally unrecognisable.

Component analog: The non-encoded output of a camera, video tape recorder, etc., consisting of the three primary colour signals: red, green, and blue (RGB) that together convey all necessary picture information. In some component video formats these three components have been translated into a luminance signal and two colour difference signals, for example Y, B-Y, R-Y.

Component digital: A digital representation of a component analog signal set, most often Y, B-Y, R-Y. The encoding parameters are specified by ITU-R709 for HDTV signals. SMPTE 274M and SMPTE 296M specify the parallel interface.

Composite analog: An encoded video signal such as NTSC or PAL video that includes horizontal and vertical synchronising information.

Composite digital: A digitally encoded video signal, such as NTSC or PAL video that includes horizontal and vertical synchronising information.

D1: A component digital video recording format that uses data conforming to the ITU-R601 standard. Records on 19 mm magnetic tape. (Often used incorrectly to refer to component digital video.)

D2: A composite digital video recording format that uses data conforming to SMPTE 244M. Records on 19 mm magnetic tape. (Often used incorrectly to refer to composite digital video.)

D3: A composite digital video recording format that uses data conforming to SMPTE 244M. Records on 1/2" magnetic tape.

D5: A component digital video recording format that uses data conforming to the ITU-R601 standard. Records on 1/2" magnetic tape.

HD-D5: A component digital video recording format that uses data conforming to the ITU-R709 standard. Records on 1/2" magnetic tape.

Drop frame: In NTSC systems, where the frame rate is 29.97002618 frames per second, the drop frame mode permits time of day indexing of the frame numbers by dropping certain frame numbers. Specifically, frames 0, and 1 at the beginning of each minute except minutes 0,10,20,30,40, & 50, are omitted, to compensate for an approximate timing error of 108 frames (3 seconds 18 frames) per hour. A flag bit is set in the time code to signal when the drop frame mode is in effect.

EBU (European Broadcasting Union): An organisation of European broadcasters that among other activities provides technical recommendations for the 625/50 line television systems.

Embedded audio: Digital audio is multiplexed onto a serial digital video data stream.

ITU: The United Nations regulatory body governing all forms of communications. ITU-R (previously CCIR) regulates the radio frequency spectrum, while ITU-T (previously CCITT) deals with the telecommunications standards.

ITU-R601: An international standard for standard definition component digital television from which was derived SMPTE 125M and EBU 3246-E standards. ITU-R601 defines the sampling systems, matrix values and filter characteristics for both Y, B-Y, R-Y and RGB component digital television signals.

ITU-R709: An international standard for High definition component digital television from which was derived SMPTE 274M and SMPTE 296M standards. ITU-R709 defines the sampling

systems, matrix values and filter characteristics for both Y, B-Y, R-Y and RGB component digital television signals.

Letterbox: Placing a wide screen image on a conventional TV by placing black bands at the top and bottom of the screen.

Linear time code: (Also known as Longitudinal Time Code) A digital code used for timing and control purposes on videotape and associated audio tape machines. It is recorded on a linear track with audio characteristics and is referred to as LTC. Each 80 bit code word is associated with one television frame, and consists of 26 time bits, 6 flag bits, 32 user bits and 16 sync bits. This time code may run at 24, 25 or 30 frames per second depending on the video format. See also SMPTE 12M

LTC: See Linear Time Code

NTSC: National Television Standards Committee established the television and video standard in use in the United States, Canada, Japan and several other countries. NTSC video consists of 525 horizontal lines at a field rate of approximately 60 fields per second. (Two fields equals one complete Frame). Only 487 of these lines are used for picture. The rest are used for sync or extra information such as VITC and Closed Captioning.

PAL: Phase Alternating Line. The television and video standard in use in most of Europe. Consists of 625 horizontal lines at a field rate of 50 fields per second. (Two fields equals one complete Frame). Only 576 of these lines are used for picture. The rest are used for sync or extra information such as VITC and Teletext.

Pixel: The smallest distinguishable and resolvable area in a video image. A single point on the screen. In digital video, a single sample of the picture. Derived from the words *picture element*.

Serial digital: Digital information that is transmitted in serial form. Often used informally to refer to serial digital television signals.

SMPTE (Society of Motion Picture and Television Engineers): A professional organisation that recommends standards for the film and television industries.

SMPTE 12M: The SMPTE standard for Time and address code. SMPTE 12M defines the parameters required for both linear and vertical interval time codes.

SMPTE 272M: The SMPTE standard for embedding audio in serial digital standard definition (SMPTE 259M) video signals.

SMPTE 274M: The SMPTE standard for bit parallel digital interface for high definition component video signals with an active picture of 1080 lines x 1920 pixels.

SMPTE 292M: The SMPTE standard for high definition serial digital component interfaces.

SMPTE 296M: The SMPTE standard for bit parallel digital interface for high definition component video signals with an active picture of 720 lines x 1280 pixels.

SMPTE 299M: The SMPTE standard for embedding audio in serial digital high definition (SMPTE 292M) video signals.

SMPTE RP188: The SMPTE recommended practice for embedding SMPTE 12M timecode into ancillary data packets in serial digital video signals.

TRS: Timing reference signals used in composite digital systems. (It is four words long).

TRS-ID: Abbreviation for "Timing Reference Signal Identification". A reference signal used to maintain timing in composite digital systems. (It is four words long.)

CHAPTER 2
TABLE OF CONTENTS

Figures

Tables

2. INSTALLATION

The 9625SW Switcher hardware consists of a 1204 X Series Router, seamlessly integrated with a 9625SW Logo Inserter and Downstream keyer unit. Section 2.1 gives an overview of the connections to the Router unit and section 2.2 gives an overview of the connections to the keyer unit. Sections 2.5 to 2.11 describe how to interconnect the two units and connect them into your system.

2.1. ROUTER UNIT REAR PANEL OVERVIEW

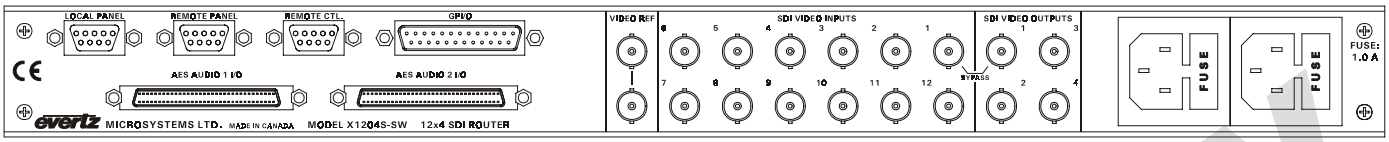


Figure 2-1: X1204S-SW Rear Panel

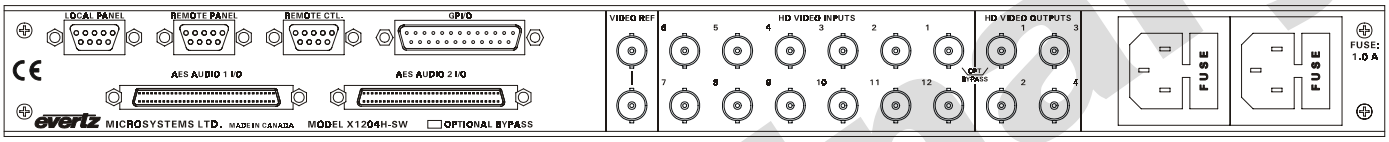


Figure 2-2: X1204H-SW Rear Panel

Figure 2-1 and Figure 2-2 show the rear panels of the standard definition and high definition X1204 router units respectively. Sections 2.2.1 to 2.1.6 describe the specific video, audio, and control signals that should be connected to the X1204 router units.

2.1.1. Standard Definition Digital Video Connections (X1204S-SW)

SDI VIDEO INPUTS 1 to 12 These BNC connectors are for connecting 10-bit serial digital video signals, compatible with the SMPTE 259M standard to the respective video input buss.

SDI VIDEO OUTPUTS 1 to 4 There is one video output connectors for each of the four video router busses on X1204S-SW routers. Each output should be connected to the corresponding video input on the Keyer unit.

OUTPUT 1 is protected by a bypass relay to the adjacent **INPUT 1** BNC. When the bypass relay is activated on power loss to the router the **OUTPUT 1** will be a direct relay connection to the **INPUT 1** input.

With the current firmware video signal connected to input 11 and 12 of the X1204 router are the Key and Fill respectively for DSK layer functions. Future firmware will support the switching of key and fill signals sources on the X1204 router.

2.1.2. High Definition Digital Video Connections (X1204H-SW)

HD VIDEO INPUTS 1 to 12 These BNC connectors are for connecting 10-bit serial digital video signals, compatible with the SMPTE 292M standard to the respective video input buss.

HD VIDEO OUTPUTS 1 to 4 There are two video output connectors for each of the two video router busses. Each output should be connected to the corresponding video input on the Keyer unit.

When the bypass relay option is fitted (HBP option), **OUTPUT 1** is protected by a bypass relay to the adjacent **INPUT 1** BNC. When the bypass relay is activated on power loss to the router the **OUTPUT 1** will be a direct relay connection to the **INPUT 1** input.

With the current firmware video signal connected to input 11 and 12 of the X1204 router are the Key and Fill respectively for DSK layer functions. Future firmware will support the switching of key and fill signals sources on the X1204 router.

2.1.3. AES Audio Connections

There are two 68 pin connectors used to connect the X1202ABO AES Audio Breakout panels to the Router. These panels are connected using the cables provided. Each Audio Breakout Panel has two identical sections consisting of 12 AES inputs and 2 outputs.

When connecting the Audio Breakout Panel cables, insert the cable carefully into the connector on the router and the breakout panel, being careful not to bend the pins. Press it firmly in place and hand tighten the hold down screws firmly to provide proper strain relief.

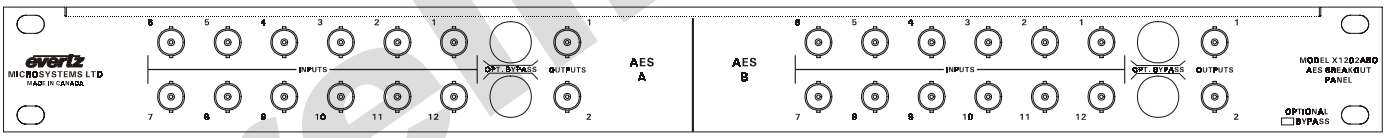


Figure 2-3: X1202ABO Audio Breakout Panel Layout

INPUTS 1 to 12 These BNC connectors are for connecting unbalanced AES audio signals compatible with the SMPTE 276M standard to the respective audio input buss.

OUTPUTS 1 and 2 These BNC connectors are for connecting unbalanced AES audio signals compatible with the SMPTE 276M standard from the respective audio input buss.

When the bypass relay option is fitted (standard on X1204S-SW routers, HBP option on X1204H-SW routers), **OUTPUT 1** is protected by a bypass relay to the adjacent **INPUT 1** BNC. When the bypass relay is activated on power loss to the router the **OUTPUT 1** will be a direct relay connection to the **INPUT 1** input.

The inputs and outputs from the AES 1 (A) and AES 2 (B) busses and are located on the on the breakout panel connected to the **AES AUDIO 1 I/O** connector. The audio associated with video buss 1 will be available on output 1 of AES A and AES B sections of the breakout panel. These outputs

should be connected to the **MAIN ABO1** inputs **1A** and **1B** on the Keyer unit. The audio associated with video buss 2 will be available on output 2 of AES A and AES B sections of the breakout panel. These outputs should be connected to the **ALT ABO1** inputs **2A** and **2B** on the Keyer unit.

The inputs and outputs from the AES 3 (A) and AES 4 (B) busses and are located on the on the breakout panel connected to the **AES AUDIO 2 I/O** connector. The audio associated with video buss 1 will be available on output 1 of AES A and AES B sections of the breakout panel. These outputs should be connected to the **MAIN ABO2** inputs **1A** and **1B** on the Keyer unit. The audio associated with video buss 2 will be available on output 2 of AES A and AES B sections of the breakout panel. These outputs should be connected to the **ALT ABO2** inputs **2A** and **2B** on the Keyer unit.

2.1.4. Reference Video Connections

VIDEO REF is a high impedance loop through for connecting an analog video or tri-level sync (X1204H-SW series only) reference. Connect the reference input sync to one side of the loop through and connect the other side to the **REF IN** connector on the Keyer unit. The *REFERENCE* menu is used to select the correct type of video reference being used.

2.1.5. Remote Control Connections

REMOTE CTL This 9 pin female D connector provides an RS-232 serial interface used for serial connection to the Keyer unit. This port is normally connected to the **SERIAL CONTROL C** port on the Keyer unit using the cable provided. This port is also used for updating the firmware in the router unit. This port is wired at the factory as an RS232 DCE port as shown in Table 2-1.

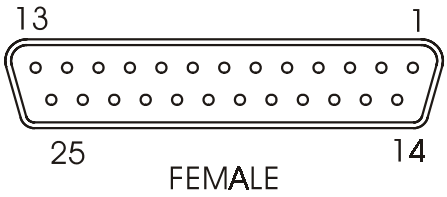
Pin #	Name	Description
1	GND	Chassis ground
2	TxD	RS-232 Transmit Output
3	RxD	RS-232 Receive Input
4		
5	Sig Gnd	RS-232 Signal Ground
6		
7	RTS	RS-232 RTS Input
8	CTS	RS-232 CTS Output
9		

Table 2-1: Router RS-232 Port Pin Definitions

REMOTE PANEL This 9 pin female D connector provides an RS-422 serial interface that is not used in the 9625SW configuration.

LOCAL PANEL This connector is currently not used.

GPI / O This female DB-25 pin connector provides 14 General Purpose Opto-isolated inputs (GPIs) and 4 General Purpose isolated relay outputs (GPOs) from the router unit. Table 2-2 shows the pin definitions of the GPIO connector. Currently this connector is not used.



Pin #	Name	Description
1	GPI 01	General Purpose Input 01
2	GPI 02	General Purpose Input 02
3	GPI 03	General Purpose Input 03
4	GPI 04	General Purpose Input 04
5	GPI 05	General Purpose Input 05
6	GPI 06	General Purpose Input 06
7	GPI 07	General Purpose Input 07
8	GPI 08	General Purpose Input 08
9	GPI 09	General Purpose Input 09
10	GPI 10	General Purpose Input 10
11	GPI 11	General Purpose Input 11
12	GPI 12	General Purpose Input 12
13	GPI 13	General Purpose Input 13
14	GPI 14	General Purpose Input 14
15	Vext	External voltage input to power opto isolators
16	Vint	Protected +5 volts output from router
17	GPO 01 C	General Purpose Output 01 Common contact
18	GPO 01 NC	General Purpose Output 01 Normally closed contact
19	GPO 02 C	General Purpose Output 02 Common contact
20	GPO 02 NC	General Purpose Output 02 Normally closed contact
21	GPO 03 C	General Purpose Output 03 Common contact
22	GPO 03 NC	General Purpose Output 03 Normally closed contact
23	GPO 04 C	General Purpose Output 04 Common contact
24	GPO 04 NC	General Purpose Output 04 Normally closed contact
25	GND	Router Chassis ground

Table 2-2: GPI/O Pin Definitions

2.1.6. Power Connections

The router has one or two (redundant supply is optional) universal power supplies that operate on 100 to 240 Volts 50/60 Hz AC.

2.2. KEYER UNIT REAR PANEL OVERVIEW

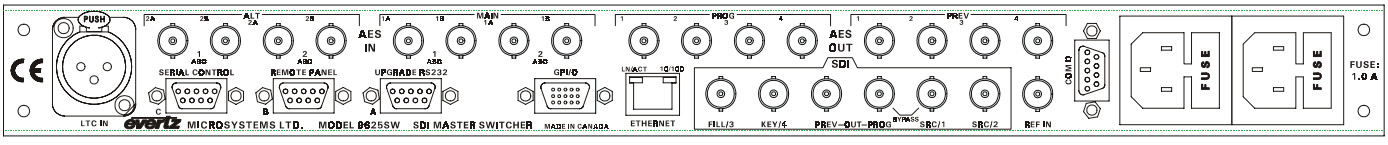


Figure 2-4: 9625SW Rear Panel

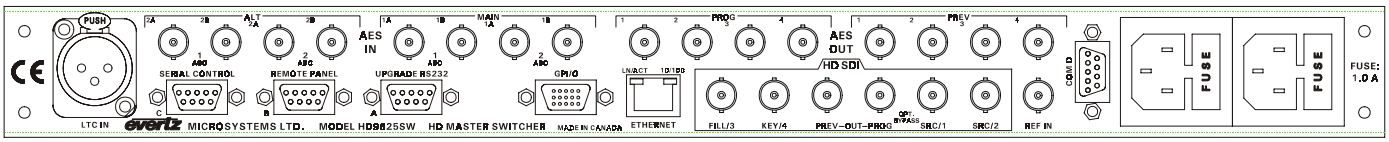


Figure 2-5: HD9625SW Rear Panel

Figure 2-4 and Figure 2-5 show the rear panels of the standard definition and high definition Keyer units respectively. Figure Sections 2.2.1 to 2.2.9 describe the specific video, audio, and control signals that should be connected to the Keyer units.

2.2.1. Standard Definition Video Connections (9625SW)

SDI SRC/1 and SRC/2, These BNC connectors are the program SDI inputs to the Keyer unit. Connect them to Video outputs 1 and 2 of the router unit using the 2 foot BNC cables marked Video 1 and 2 provided for this purpose.

SDI FILL/3 and KEY/4, These BNC connectors are the key and fill SDI inputs to the Keyer unit. Connect them to Video outputs 3 and 4 of the router unit using the 2 foot BNC cables marked Video 3 and 4 provided for this purpose.

With the current firmware video signal connected to input 11 and 12 of the X1204 router are the Key and Fill respectively for DSK layer functions. Future firmware will support the switching of key and fill signals sources on the X1204 router.

SDI PREVIEW OUT , This output BNC connector is the serial component SMPTE 259M preview video output from the keyer unit. This preview output connector is normally connected to a SDI preview monitor.

SDI PROGRAM OUT , This output BNC connector is the serial component SMPTE 259M program video output from the keyer unit. Connect this output to the next video device in your output path. This output is protected by a bypass relay to the adjacent **SRC/1** input BNC. When the bypass relay is activated on power loss to the keyer the **SDI PROGRAM OUT** will be a direct relay connection to the **SRC/1** input.

2.2.2. High Definition Video Connections (HD9625SW)

HD SDI SRC/1 and SRC/2, These BNC connectors are the program HD SDI inputs to the Keyer unit. Connect them to Video outputs 1 and 2 of the router unit using the 2 foot BNC cables marked Video 1 and 2 provided for this purpose.

HD SDI FILL/3 and KEY/4, These BNC connectors are the key and fill HD SDI inputs to the Keyer unit. Connect them to Video outputs 3 and 4 of the router unit using the 2 foot BNC cables marked Video 3 and 4 provided for this purpose.

With the current firmware video signal connected to input 11 and 12 of the X1204 router are the Key and Fill respectively for DSK layer functions. Future firmware will support the switching of key and fill signals sources on the X1204 router.

HD SDI PREVIEW OUT , This output BNC connector is the serial component SMPTE 292M preview video output from the keyer unit. This preview output connector is normally connected to an HD SDI preview monitor.

HD SDI PROGRAM OUT , This output BNC connector is the serial component SMPTE 292M program video output from the keyer unit. Connect this output to the next video device in your output path. When the optional bypass relay is fitted (HBP option) this output is protected by a bypass relay to the adjacent **SRC/1** input BNC. When the bypass relay is activated on power loss to the keyer the **HD SDI PROGRAM OUT** will be a direct relay connection to the **SRC/1** input.

2.2.3. Reference Video Connections

REF IN is a 75 ohm terminated input for connecting an analog video or tri-level sync (high definition units only) reference. Connect the **REF IN** connector on the Keyer unit to one side of the loop **VIDEO REF** loop through on the Router unit and connect the other side of the loop to the reference input sync. The *REFERENCE* menu is used to select the correct type of video reference being used.

2.2.4. AES AUDIO Connections

AES ALT IN These 4 input BNC connectors provide inputs for the 4 levels of non program AES audio. They are designed for alternate audio that can be inserted over the normal program audio. These inputs are the switch too audio inputs. If the Ext Audio Mix button is pressed, then the audio provided on these inputs will be mixed with the program output audio at the specified levels. Switching the preview video source will cause the audio on these inputs to follow the preview bus video. Connect the ABO1 2A and 2B inputs to output 2 of the A and B sections of audio breakout panel 1 of the router electronics. Connect the ABO2 2A and 2B inputs to output 2 of the A and B sections of audio breakout panel 2 of the router electronics.

AES PROG IN These 4 input BNC connectors provide inputs for the 4 levels of main program AES audio. Connect the ABO1 1A and 1B inputs to output 1 of the A and B sections of audio breakout panel 1 of the router electronics. Connect the ABO2 1A and 1B inputs to output 1 of the A and B sections of audio breakout panel 2 of the router electronics.

AES PROG OUT These 4 input BNC connectors provide outputs for the 4 levels of main program AES audio. In Voice Over mode they will contain the contents from the AES ALT IN. Custom audio routings can also be set from the front panel

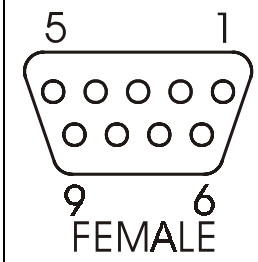
AES PREV OUT These 4 input BNC connectors provide outputs for the 4 levels the preview AES audio. In Voice Over mode they will contain the contents from the AES PROG IN. Custom audio routings can also be set from the front panel

2.2.5. Linear Timecode

LTC IN This female XLR connector is an input for SMPTE/EBU linear time code for driving the internal clock for the insertion of “Breakfast” clock style logos.

2.2.6. Serial I/O Connections

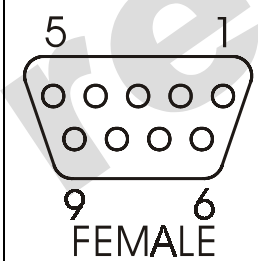
UPGRADE RS232 (A) This 9 pin female 'D' connector provides an RS-232 serial interface for connection to a computer and is used for firmware upgrades to the 9625SW. The pin definitions are shown in Table 2-3. See section 5.2 for more information on upgrading firmware.



Pin #	Name	Description
1	GND	Chassis ground
2	TxD	RS-232 Transmit Output
3	RxD	RS-232 Receive Input
4		
5	Sig Gnd	RS-232 Signal Ground
6		
7	RTS	RS-232 RTS Input
8	CTS	RS-232 CTS Output
9		

Table 2-3: Upgrade RS232 Port A Pin Definitions

REMOTE PANEL (B) , This 9 pin female D connector provides an RS-422 serial interface for connection to the Evertz Remote Control Panel supplied with the switcher package. This port is wired as a SMPTE 207M Tributary as shown in Table 2-4. See section 2.5 for information on connecting the Evertz remote control panel.



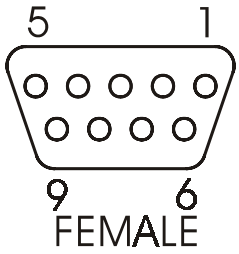
Pin #	Name	Description
1	GND	Chassis ground
2	Tx-	RS-422 Tx-(A) Output
3	Rx+	RS-422 Rx+(B) Input
4	GND	
5		
6	GND	
7	Tx+	RS-422 Tx+(B) Output
8	Rx-	RS-422 Rx-(A) Input
9	GND	

Table 2-4: Remote Panel Port Pin Definitions

SERIAL CONTROL C This 9 pin female D connector provides an RS-232 serial interface between the router and keyer electronics units. This port has the same pinout as Port A (shown in Table 2-3). Connect the one end of the special Null Modem cable provided to the **SERIAL CONTROL C** port on the keyer unit and the other end to the **REMOTE CTL** port on the router unit.

COM D This 9 pin female D connector provides an serial interface designed for connection to Automation Systems including the Evertz MetaCast 2 software. This port can be changed to run in either RS422 or RS232 mode by reconfiguring jumper J20 on the 7700FC card inside the unit. When it is set for the RS-232 mode of operation the port has the same pinout as Port A (shown in Table 2-3). When it is set for the RS-422 mode of operation the port has the pinout shown in Table 2-5.

The RS-422 pinout for the COM D port is not a standard SMPTE RS422 pinout. You will have to make a custom cable in order to use these ports in the RS422 configuration.



Pin #	Name	Description
1	GND	Chassis ground
2	Tx-	RS-422 Tx-(A) Output
3	Rx-	RS-422 Rx-(A) Input
4		
5	GND	
6		
7	Rx+	RS-422 Rx+(B) Input
8	Tx+	RS-422 Tx+(B) Output
9	GND	

Table 2-5: Serial Port D – RS422 Pin Definitions

As multiple devices can be connected to this port, the function of the port must be configured using the *Setup* menu. See section 3.6.5 for more information on configuring port D.

2.2.7. GPI/O Connections

GPI/O This 15 pin female high density 'D' connector contains several general purpose control inputs and outputs. The inputs are used to connect manual or automatic triggers for the display or insertion of media. The outputs provide feedback on internal unit status of the switcher. See section 2.11 for information on connecting the general purpose inputs and outputs. For information on the GPO functions see the *General* menu item on the *Setup* menu (section 3.12.4). For GPI information, please see the *Preset* menu item on the *Setup* menu (section 3.12.3).

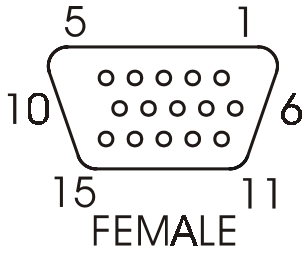
	Pin #	Name	Description
	1	GND	Chassis ground
	2	GPO2	General purpose output 2
	3	GPO1	General purpose output 1
	4	GPO3	General purpose output 3
	5	GPIC	General purpose input Load assigned preset
	6	GPO4	General purpose output 4
	7	GPIF	General purpose input Load assigned preset
	8	GPIA	General purpose input Load assigned preset
	9	GPID	General purpose input Load assigned preset
	10	GP+3.3V	+3.3V from general purpose interface board
	11	GPIH	General purpose input Load assigned preset
	12	GPIE	General purpose input Load assigned preset
	13	GPIG	General purpose input Load assigned preset
	14	GPIB	General purpose input Load assigned preset
	15	Vext	External voltage source for GPI's

Table 2-6: GPI/O Connector Pin Definitions

2.2.8. Ethernet Network Connections

ETHERNET This RJ-45 connector is an Ethernet Port used for high speed firmware upgrades as well as FTP logo transfers. See section 2.10 for information on connecting to an Ethernet network. See section 3.6.4 in the *General* menu descriptions for information on configuring the network addresses for the switcher.

2.2.9. Power Connections

The keyer has one or two (redundant supply is optional) universal power supplies that operate on 100 to 240 Volts 50/60 Hz AC.

2.3. MOUNTING

Each of the 9625SW units are equipped with rack mounting angles and fit into a standard 19 inches by 1.75 inches (483 mm x 45 mm) rack space. Normally the keyer electronics will be mounted on adjacent to the router unit occupying 2 rack units by 17.75 inches (451mm) of depth. The audio breakout panels occupy one rack unit each and are normally mounted on the rear of the equipment rack. They can be conveniently mounted up to 3 feet away from the router electronics. The Remote control panel is equipped with rack mounting angles and fits into a standard 19 inches by 1.75 inches by 3.75 inches (483 mm x 45 mm x 150mm) rack space. The mounting angles may be removed if rack mounting is not desired.

2.4. POWER REQUIREMENTS

Power requirements are 100 to 240 volts AC at 50 or 60 Hz. The 9625SW units have universal power supplies that automatically sense the input voltage. Power should be applied by connecting a 3-wire grounding type power supply cord to the power entry module on the rear panel. The power cord should

be minimum 18 AWG wire size; type SVT marked VW-1, maximum 2.5 m in length. If the units are fitted with the redundant power supply there will be an additional IEC-320 connector on the rear panel.

The power entry module combines a standard power inlet connector, two 5 x 20 mm fuse holders and an EMI line filter.

The Remote Control panel is supplied with a universal input (100 to 240 volts AC at 50 or 60 Hz) 12 VDC power adapter. Power should be applied by connecting a 3-wire grounding type power supply cord to the power adapter. Plug the 12 VDC output of the power adapter into the DC power jack on the rear of the Remote panel, and secure it by turning the fastening nut.

2.4.1. Changing the Fuse

The fuse holder is located inside the power entry module. To change the fuses, disconnect the line cord from the power entry module and pull out the fuse holder from the power entry module using a small screwdriver. The fuse holder contains two fuses, one for the line and one for the neutral side of the mains connection. Pull out the blown fuse and place a fuse of the correct value in its place. Use slo blo (time delay) 5 x 20 mm fuses rated for 250 Volts with a current rating of 1 amp. Carefully reinsert the fuseholder into the power entry module.

Never replace with a fuse of greater value.

2.5. TYPICAL CONNECTIONS

Figure 2-6 shows how to interconnect the router unit with its audio breakout panels, the keyer unit and the remote control panel.

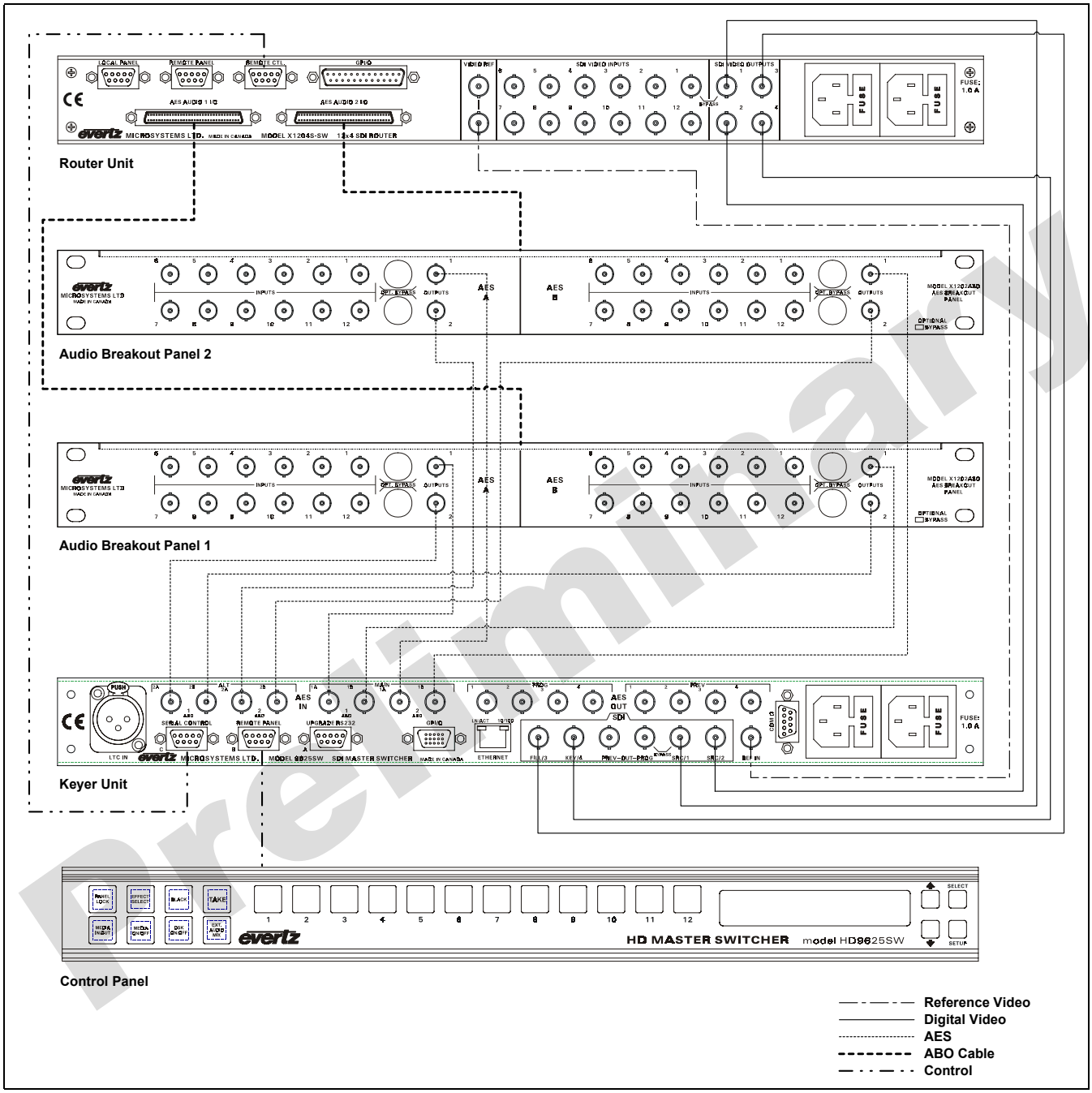


Figure 2-6: Typical System Interconnect

2.6. CONNECTING THE REMOTE CONTROL PANEL

The 9625SW Series switchers are sold with a rack mountable remote control panel. The remote control panel is connected to the **REMOTE PANEL** connector on the Keyer units using the straight through cable provided. For longer distances, simply make your own cable of the required length according to the diagram in Table 2-7. Communications to the remote panel is through a standard straight through RS-422 connection, so the panel can be located up to 1000 feet from the main electronics unit.

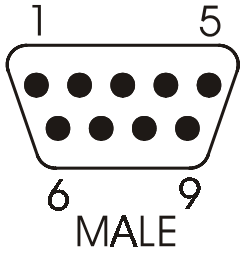
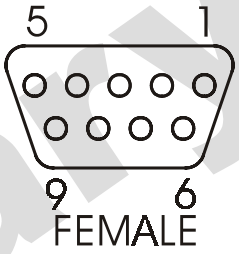
9625SW End				Remote Panel End		
	9 pin D Male	Pin	Belden 9729	9 pin D Female	Pin	
		1			1	
	Tx-	2	-------1a------	Rx-	2	
	Rx+	3	-------2b------	Tx+	3	
	Rx Gnd	4	---drain 2----	Rx Gnd	4	
		5				
	Tx Gnd	6	---drain 1----	Tx Gnd	6	
	Tx+	7	-------1b-----	Rx+	7	
	Rx-	8	-------2a------	Tx-	8	
		9			9	
	Frame Gnd	Shield	---drain 1----	Frame Gnd	Shield	

Table 2-7: Remote Control Panel Extender Cable

2.7. CONNECTING THE VIDEO

2.7.1. Standard Definition Video Inputs (PKG9625SW only)

The standard definition program video sources should be connected to the **SDI VIDEO INPUT 1 to 12** BNCs on the X-1204S-SW router unit. If you are using a downstream key source for the switcher the Key video should be connected to input 11 and the fill should be connected to input 12. The 9625SW supports high definition digital video in the formats shown in Table 2-8. The video standard must be set manually to match the incoming video type using the *Video Standard* menu item on the *General* menu (see section 3.6.1).

Common Name	Pixels / Active Lines	Frame Rate	Progressive /Interlace	Standard	Valid Genlock Types
525i/59.94	720 x 486	29.97 (30/1.001)	I	SMPTE 125M	NTSC
625i/50	720 x 576	25	I	EBU TECH 3267-E	PAL

Table 2-8: Standard Definition Video Input Formats

Connect the four video outputs of the X-1204S-SW router unit to the video inputs with the same numbers on the 9625SW keyer unit.

2.7.2. Standard Definition Video Outputs (PKG9625SW only)

The **PROG** output contains the video output from the program buss and should be connected to the main broadcast chain of your plant. The **PROG** output may be protected by an optional bypass relay (+HBP option). When the relay is active, the **PROG** output is directly connected to the **SDI VIDEO INPUT 1** on the X-1204S-SW router unit.

The **PREV** output contains the video output from the preview and will normally be connected to an HDSDI monitor to allow you to view the program output before it goes on air. If your unit is fitted with the optional bypass relay (+HBP option), then when the relay is active, the **PREV** output will not have any video on it.

2.7.3. High Definition Video Inputs (PKGHD9625SW only)

The high definition program video sources should be connected to the **HD VIDEO INPUT 1 to 12** BNCs on the X-1204H-SW router unit. If you are using a downstream key source for the switcher the Key video should be connected to input 11 and the fill should be connected to input 12. The HD9625SW supports high definition digital video in the formats shown in Table 2-9. The video standard must be set manually to match the incoming video type using the *Video Standard* menu item on the *General* menu (see section 3.6.1).

Common Name	Pixels / Active Lines	Frame Rate	Progressive /Interlace	SMPTE Standard	Valid Genlock Types
1080i/59.94	1920 x 1080	29.97 (30/1.001)	I	274M	1080i/59.94 1080p/29.97sF NTSC
1080i/50	1920 x 1080	25	I	274M	1080i/50 PAL
720p/59.94	1280 x 720	59.94 (60/1.001)	P	296M	1080i/59.94 1080p/29.97sF 720p/59.94

Table 2-9: High Definition Video Input Formats

Connect the four video outputs of the X-1204H-SW router unit to the video inputs with the same numbers on the HD9625SW keyer unit.

2.7.4. High Definition Video Outputs (PKGHD9625SW only)

The **PROG** output contains the video output from the program buss and should be connected to the main broadcast chain of your plant. The **PROG** output may be protected by an optional bypass relay (+HBP option). When the relay is active, the **PROG** output is directly connected to the **HD VIDEO INPUT 1** on the X-1204H-SW router unit.

The **PREV** output contains the video output from the preview and will normally be connected to an HDSDI monitor to allow you to view the program output before it goes on air. If your unit is fitted with the optional bypass relay (+HBP option), then when the relay is active, the **PREV** output will not have any video on it.

2.7.5. Gen Lock Reference

For proper switching of the video and audio signals an analog video genlock reference must be supplied to both the router and the keyer units. Connect a composite analog NTSC or PAL colour black video signal to one side of the VIDEO REF loop on the switcher unit. Connect the other side of this loop to the REF IN connector on the keyer unit. Make sure that the signal type is correct for the video standard in use. (See Table 2-8 and Table 2-9.)

2.8. CONNECTING THE AUDIO

The 9625 series switchers are capable of working with either embedded audio or discrete AES audio. If you are using embedded audio then you will have to set the *Audio Type* menu item to *Embedded.* (See section 3.7.2) The embedded audio from group 1 and 2 will be de-embedded and output on the AES OUT connectors of the keyer unit. If some of your embedded audio channels are being used for non-PCM audio data such as Dolby E, then you will have to configure those channels for non-PCM processing using the *EA Non-PCM* menu items. (See section 3.7.4)

If you are using discrete AES audio then you will have to set the *Audio Type* menu item to *Discrete.* (See section 3.7.2)

The switcher has two modes of audio processing set by the *Audio Mode* menu item. (See section 3.7.1). The *4+0* mode processes all 4 AES channels (8 channels of audio) as program audio. The *3+1* mode processes 3 AES channels (6 channels of audio) as program audio. The 4th AES channel (2 channels of audio) is used as an alternate audio source for mixing with the program audio when the **EXT AUDIO MIX** button is pressed. It is also used as the audio input for Emergency Alerts when the EAS option is fitted. Make sure that the *Audio Mode* menu item is set correctly or you may not achieve the desired results when you switch the audio. See section 2.8.3 for information on connecting the audio that will be mixed in to the program audio.

2.8.1. AES Inputs

Connect the AES audio that is associated with the video inputs to the breakout panels for the router. The router supports 4 levels of AES for each video input. AES 1 and 2 are connected to the breakout panel connected to the A and B sides respectively of the AES1 Audio connector of the router and AES 3 and 4 are connected to the A and B sides respectively of the breakout panel connected to the AES2 Audio connector of the router.

Connect the four audio outputs labelled 1 of the router unit to the **MAIN** audio inputs with the same numbers on the keyer unit. Connect the four audio outputs labelled 2 of the router unit to the **ALT** audio inputs with the same numbers on the keyer unit.

2.8.2. AES Outputs

The **PROG AES OUT** connectors contain the audio outputs from the program audio buss and should be connected to the main broadcast chain of your plant. The **PROG AES OUT** outputs are protected by bypass relays (optional on HD Switchers). When the relays are active, the **PROG AES OUT** outputs are directly connected to the four **AUDIO 1** inputs on the breakout panels.

The **PREV AES OUT** connectors contains the audio outputs from the preview audio buss and will normally be connected your audio monitoring system to allow you to hear the program audio output before it goes on air. If your unit is fitted with the bypass relays, then when the relays are active, the **PREV AES OUT** outputs will not have any audio on them.

2.8.3. Connecting Voice Over or EAS Audio

Connect the AES audio source that you want to use for mixing (voice over, EAS, etc.) to input 12B of the breakout panel connected to the AES2 Audio connector of the router. This audio will be mixed with the program audio at the mix level set by the *Audio Mix Level* menu item. (See section 3.7.3)

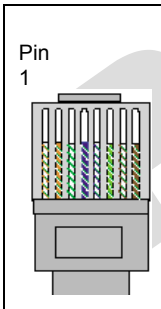
2.9. CONNECTING THE LINEAR TIME CODE

The Keyer unit has a linear time code (LTC) input used to provide time information for the analog or digital clock logos. Connect the LTC output from your house master time code source to the LTC IN XLR connector. When using an unbalanced input to the reader, the signal should be applied to pin 3 of the reader input connector. Normally, the unused input (pin 2) should be connected to ground (pin 1).

2.10. CONNECTING TO AN ETHERNET NETWORK

The 9625SW is designed to be used with either 10Base-T (10 Mbps) or 100Base-TX (100 Mbps) also known as *Fast Ethernet*, twisted pair Ethernet cabling systems. When connecting for 10Base-T systems, category 3, 4, or 5 UTP cable as well as EIA/TIA – 568 100Ω STP cable may be used. When connecting for 100Base-TX systems, category 5 UTP cable is required. The cable must be “straight through” with a RJ-45 connector at each end. Make the network connection by plugging one end of the cable into the RJ-45 receptacle of the 9625SW and the other end into a port of the supporting.

The straight-through RJ-45 cable can be purchased or can be constructed using the pinout information in
Table 2-10. A color code wiring table is provided in Table 2-10 for the current RJ 45 standards (AT&T 258A or EIA/TIA 258B color coding shown). Also refer to the notes following the table for additional wiring guide information.



Pin #	Signal	EIA/TIA 568A	AT&T 258A or EIA/TIA 568B	10BaseT or 100BaseT
1	Transmit +	White/Green	White/Orange	X
2	Transmit –	Green/White or White	Orange/White or Orange	X
3	Receive +	White/Orange	White/Green	X
4	N/A	Blue/White or Blue	Blue/White or Blue	Not used (required)
5	N/A	White/Blue	White/Blue	Not used (required)
6	Receive –	Orange/White or Orange	Green/White or Green	X
7	N/A	White/Brown	White/Brown	Not used (required)
8	N/A	Brown/White or Brown	Brown/White or Brown	Not used (required)

Table 2-10. Standard RJ45 Wiring Color Codes

Note the following cabling information for this wiring guide:

- Only two pairs of wires are used in the 8-pin RJ 45 connector to carry Ethernet signals.
- Even though pins 4, 5, 7 and 8 are not used, it is mandatory that they be present in the cable.
- 10BaseT and 100BaseT use the same pins, a crossover cable made for one will also work with the other.
- Pairs may be solid colors and not have a stripe.
- Category 5 cable must use Category 5 rated connectors.

The maximum cable run between the switcher and the supporting hub is 300 ft (90 m). The maximum combined cable run between any two end points (i.e. switcher and PC/laptop via network hub) is 675 feet (205 m).

Devices on the Ethernet network continually monitor the receive data path for activity as a means of checking that the link is working correctly. When the network is idle, the devices also send a link test signal to one another to verify link integrity. The switcher rear panel is fitted with two LEDs to monitor the Ethernet connection.

10/100 This Amber LED is ON when a 100Base-TX link is last detected. The LED is OFF when a 10Base-T link is last detected (the LINK LED is ON). Upon power-up the LED is OFF as the last detected rate is not known and therefore defaults to the 10Base-T state until rate detection is completed.

LN/ACT This dual purpose Green LED indicates that the 9625SW has established a valid linkage to its hub, and whether the 9625SW is sending or receiving data. This LED will be ON when the 9625SW has established a good link to its supporting hub. This gives you a good indication that the segment is wired correctly. The LED will BLINK when the 9625SW is sending or receiving data. The LED will be OFF if there is no valid connection.

2.11. CONNECTING THE GENERAL PURPOSE INPUTS AND OUTPUTS

Figure 2-7 shows a simplified schematic diagram of the GPIO circuitry. The user can connect GP+3.3V supplied from the keyer unit into the Vext pin to provide power to the GPIO opto-isolator circuitry. In this configuration the user can activate GPIs simply by connecting the GPI input pins to Ground (see Figure 2-8). This can be done with a button, switch, relay or an open collector transistor. In this configuration the GPOs will be internally pulled up to 3.3 volts. (See Figure 2-10) 3.3 volts is available to the user to be used for driving external circuitry. Care must be taken to limit the load to 0.5W so there is no affect on the power supply source on the unit.

Warning: Do not connect GP+3.3V from one unit to another unit's GP+3.3V output.

Alternately, the user can connect an external power source for the opto-isolator circuitry. The Vext voltage must be greater than the voltage supplied to GPI by at least 3v. Figure 2-9 and Figure 2-11 show how to wire the GPIs and GPOs from an external power supply.

The tally outputs are active low with an internal pull up (10k Ohm) resistor to the Vext pin. When active, the output will go low and is able to sink up to 10mA. When inactive, the signal will go high (to the voltage applied to the Vext pin). Do not attempt to source more than 100μA from the output.

Table 2-11 shows the maximum limits that the user must adhere to so that no circuitry is damaged.

Description	Name	Value
Maximum GP+3.3V current load	$I_{GP+3.3V}$ max	100 mA
Minimum input voltage for a high	V_{gpi} high min	3 V
Maximum input voltage for a low	V_{gpi} low max	0.8 V
Maximum GPO sink current	I_{gpo} max	25 mA

Table 2-11: GPIO Maximum Ratings

All GPI inputs are level triggered. Lowering the GPI input to a potential below Vext will select the allocated preset definition. The 8 GPIs (A through H) are dedicated as load logo controls. When one of these GPI inputs are activated, the corresponding logo is loaded into active video. If multiple inputs are active both commands are ignored until a single input is recognized.

The GPI to logo allocation is programmable from the front panel of the 9625SW. (See section 3.12.3).

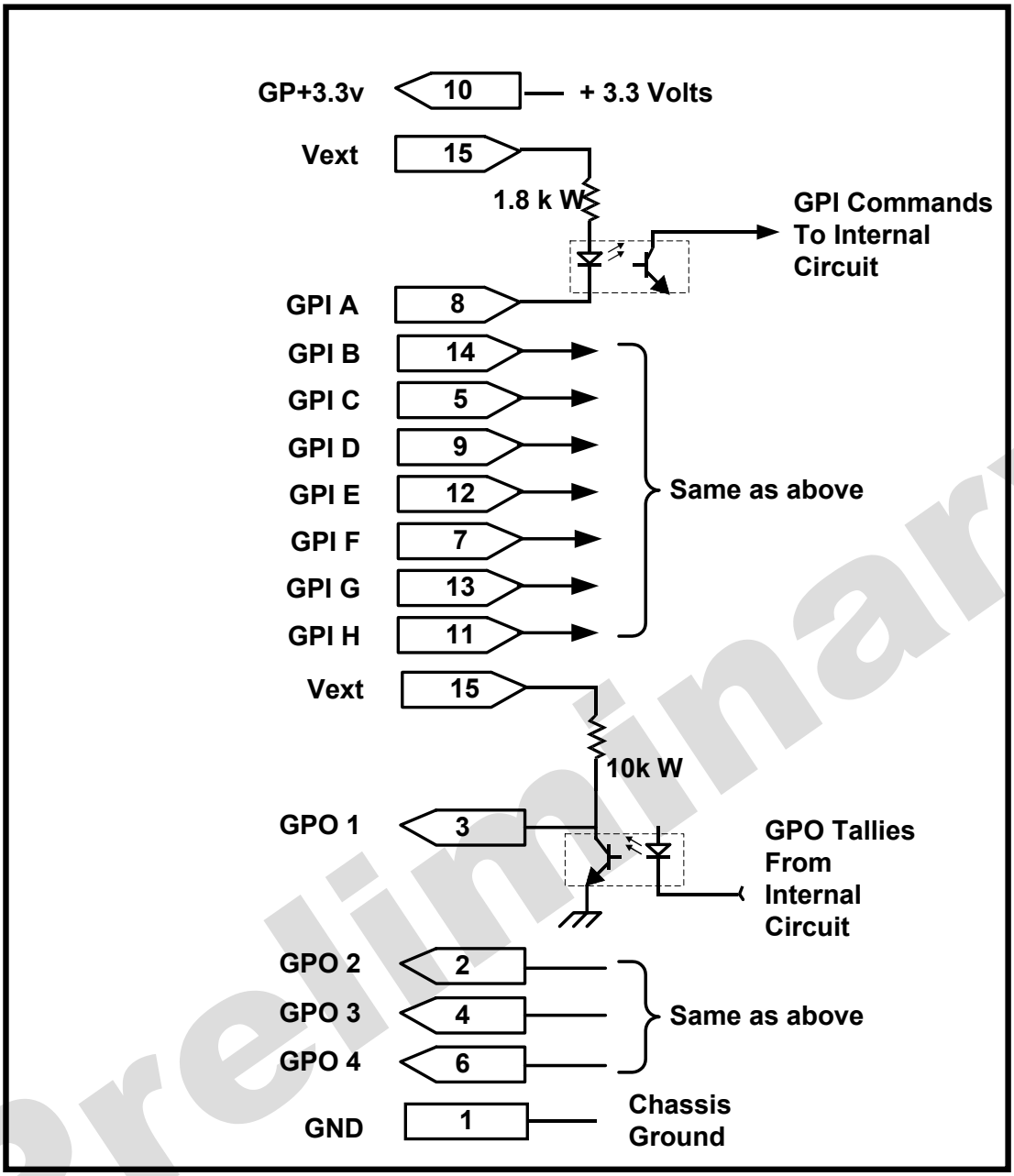


Figure 2-7: Keyer GPIO Opto Isolator Circuitry

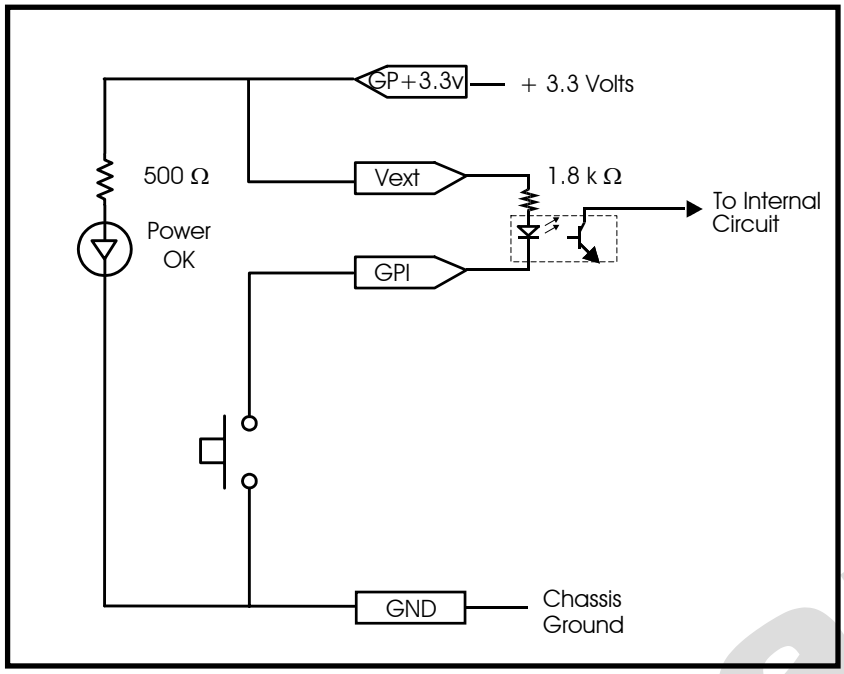


Figure 2-8:Powering the General Purpose Input Opto Isolators from the Unit

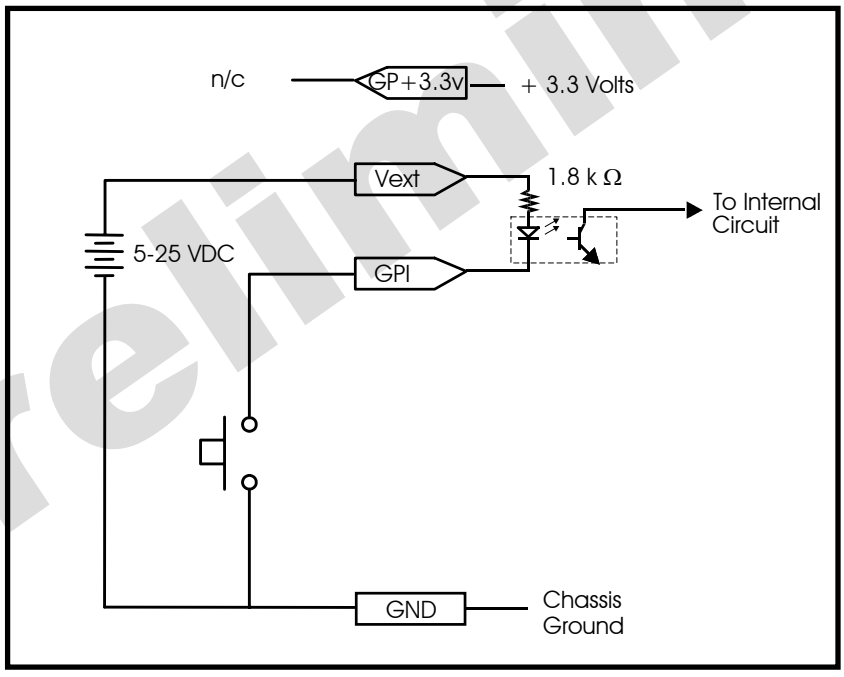


Figure 2-9: Powering the General Purpose Input Opto Isolators from an External Power Supply

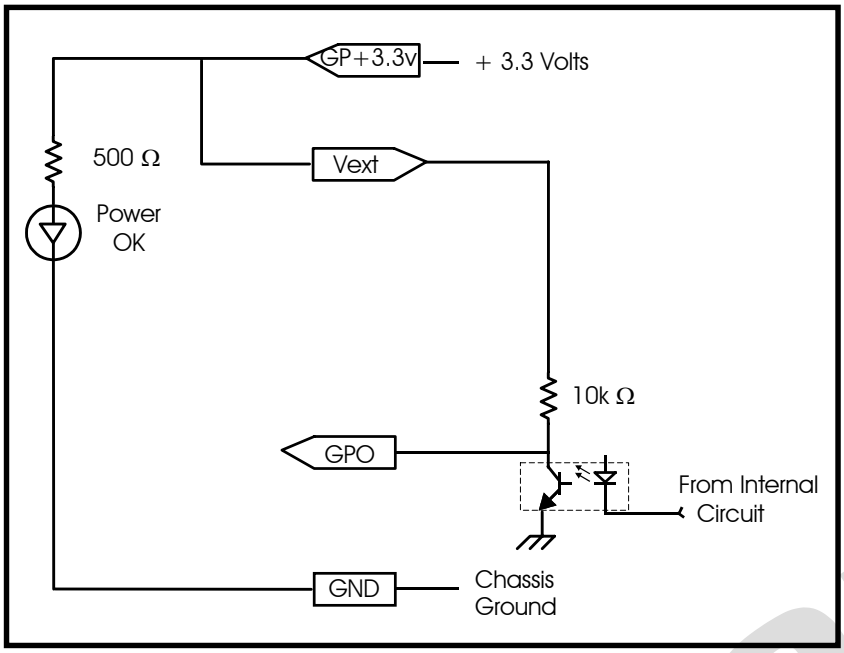


Figure 2-10: Powering the General Purpose Output Opto Isolators from the Unit

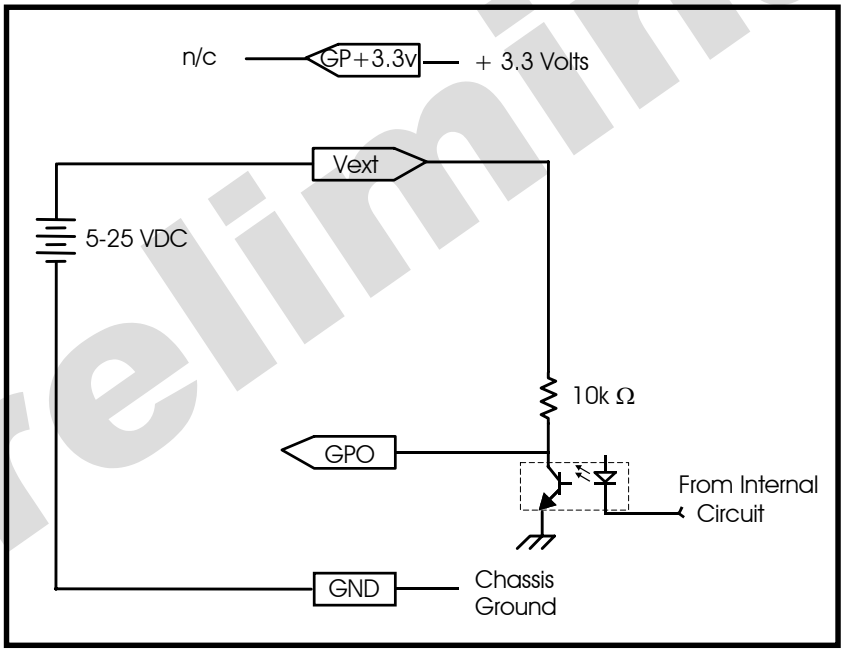


Figure 2-11: Powering the General Purpose Output Opto Isolators from an External Power Supply

CHAPTER 3
TABLE OF CONTENTS

Figures

Tables

This page left intentionally blank

3. HOW TO OPERATE THE MINI MASTER CONTROL SWITCHER USING THE RACK MOUNT CONTROL PANEL

The standard Mini Master Control Switcher consists of two 1 RU units with a 1RU rack mountable remote control panel. For information about connecting the rack mount remote panel to the switcher electronics see section 2.6

3.1. AN OVERVIEW OF KEY AND DISPLAY FUNCTIONS

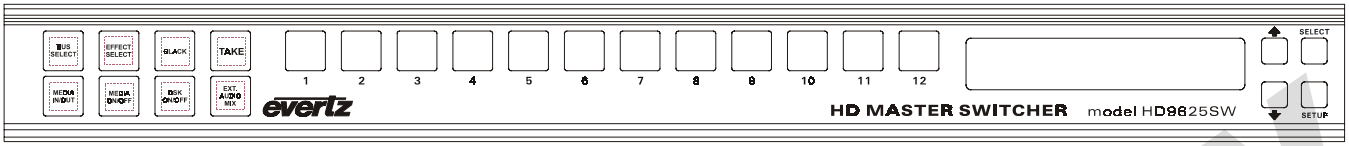


Figure 3-1: HD9625SW Front Panel Layout

The front panel controls consist of a 16 digit alphanumeric display, 20 illuminated pushbuttons and 4 non-illuminated pushbuttons.

The illuminated keypad it used to provide control of the switcher and to switch the various input sources. The non-illuminated keypad is used to navigate the front panel *Setup* menu system, a quick and simple method of configuring the 9625SW Switcher for your application. The front panel layout for the 9625SW and HD9625SW are identical except for the model number silkscreen.

3.1.1. Input Selection Button Group

A button LEDs that is On solid indicates that it is the selected input for the program buss. A button LEDs that is flashing On and Off indicates that it is the selected input for the preview buss.

1 to 12 These twelve buttons allow the user to select between the 12 available video inputs for the two video output busses, as well as selecting the 12 available audio inputs for the four AES busses. The button caps can be removed to allow the user to provide his own legends for the buttons.

BLACK This button selects the internal black generator as the source for the applicable video buss.

The switcher may still be controlled from the GPI inputs or the serial remote control protocol when the front panel is Locked.

3.1.2. The Function Button Group

This group of six buttons are used to control objects on either the program buss or the preview buss.

BUS SELECT This button (which may be labelled **PANEL LOCK** on older versions of the front panel) controls whether the numbered input buttons and the other buttons in the Function control group, operate on the preview buss or the program buss.

If the button LED is flashing On and Off, then the **MEDIA IN/OUT**, **MEDIA ON/OFF, DSK ON/OFF** and Input selection buttons **1-12** & **BLACK** are controlling the preview buss. The LEDs in the Function buttons will be flashing also if they are active. The Input button LED that is Flashing indicates the input that is currently assigned to the preview buss.

If the button LED is On solid, then the then the **MEDIA IN/OUT**, **MEDIA ON/OFF, DSK ON/OFF** and Input selection buttons **1-12** & **BLACK** are controlling the program buss. The LEDs in the Function buttons will be On sold also if they are active. The Input button LED that is On solid indicates the input that is currently assigned to the program buss.

Pressing the **BUS SELECT** key and holding it for three seconds will lock the front panel. The **BUS SELECT** key LED will turn off indicating that the front panel keys are disabled. When any of the other front panel buttons the front panel display will show the message `Panel Locked` for a few seconds. Pressing the **BUS SELECT** key again and holding it for three seconds will return the front panel keys to their normal functions and the **BUS SELECT** key LED key will come on flashing indicating that the front panel controls will affect the preview buss.

MEDIA ON/OFF This button controls the complete logo key layer for the selected output buss. If the button LED is not illuminated, then the logo key layer is not active and no logos can be displayed. If the button LED is flashing then the logo key layer is enabled on the preview buss. If the button LED is On solid then the logo key layer is enabled on the program buss. You can use the **BUS SELECT** button to toggle control/status between the two busses to verify the logo key layer status for each buss.

To control the logo key layer, first select the buss you want the logo to appear on using the **BUS SELECT** key. To enable the logo key layer on the selected output video buss, press the **MEDIA ON/OFF** button. The button LED will be illuminated (On Solid for program buss, flashing for preview buss). To disable the logo key layer from the selected output video buss, press the **MEDIA ON/OFF** button. The button LED will be Off.

MEDIA IN/OUT This button controls whether a selected logo (the logo shown on the front panel display) is being keyed into the video on the respective buss. To control whether a logo is keyed or not, first select the buss you want the logo to appear on using the **BUS SELECT** key. The **MEDIA ON/OFF** button LED must be illuminated (On Solid for program buss, flashing for preview buss) for logos to display. Scroll to the logo required using the ↑ & ↓ buttons. If the logo is currently being keyed its name will flash in the front panel display. To key the logo into the selected output video buss, press the **MEDIA IN/OUT** button. The button LED will be illuminated (On Solid for program buss, flashing for preview buss) and the logo name display will be flashing. To remove a keyed logo from the selected output video buss, press the **MEDIA IN/OUT** button. The button LED will be Off and the logo name display will stop flashing.

DSK ON/OFF This button controls the downstream keyer layer for the selected output buss. If the button LED is not illuminated, then the downstream keyer layer is not active. If the button LED is flashing then the downstream keyer layer is enabled on the preview buss. If the button LED is On solid then the downstream keyer layer is enabled on the program buss. You can use the **BUS SELECT** button to toggle control/status between the two busses to verify the downstream keyer layer status for each buss.

To control the downstream keyer layer, first select the buss you want the downstream key to appear on using the **BUS SELECT** key. To enable the downstream keyer layer on the selected output video buss, press the **DSK ON/OFF** button. The button LED will be illuminated (On Solid for program buss, flashing for preview buss). To disable the logo key layer from the selected output video buss, press the **DSK ON/OFF** button. The button LED will be Off.

When the downstream keyer layer is enabled, the video present on video input 12 is mixed with the background video of the selected buss based on the key signal provided on video input 11, or it can be self-keyed. Using user defined thresholds. See section 3.10 for information about setting up the *DSK MODE* and other settings.

TAKE This button starts a starts a transition of what is displayed on the preview buss to the program buss. Transitions can also be triggered using GPI, or automation control. The button LED indicates that a transition from the preview bus to the program bus is in progress when it is illuminated, regardless of how the transition was triggered.

When the *Transition Swap Mode* is set to *Swap* the input video and audio of the preview buss and the program buss will be swapped at the end of the transition. Logos and other media being keyed on the respective busses will also be swapped with the inputs.

When the *Transition Swap Mode* is set to *No Swap* the input video and audio of the preview buss will be transferred to the program buss transition. Logos and other media being keyed on the preview buss will also be transferred to the program buss. The preview buss will remain unchanged.

EFFECT SELECT This button provides a quick access into the *Transition* menu item. The *Transition Type*, *Transition Rate* and *Transition Swap Mode* are configured using the *Transition* menu items. See section 3.11 for more information.

EXT AUDIO MIX This button will mix the alternate audio with the program audio. When the *Audio Mode* is set to *3 + 1*, there are 3 AES channels (6 channels of audio) of program audio and 1 AES channel (2 channels of audio) of alternate audio. With the current firmware, the alternate audio will be the AES audio connected to input 12B on the audio breakout panel 2. The audio mix levels are configured using the provided in the *Audio* menu items. See section 3.7 for more information.

3.1.3. Setup Key Group

SETUP This button is used to enter *Setup* menu which is used to control various setup options to configure the operating modes of the switcher. (See section 3.2 for an overview of the *Setup* menu.) When you are in the *Setup* menu, this button is also used to back out of menu selections to the next higher menu level or to exit the *Setup* menu and return to normal panel operation.

SELECT When in the *Setup* menu, this button is used to choose a submenu and navigate to the next level down in the menu structure. When you are at the bottom level of the menu system it is also accept numeric values or to make the displayed menu choice the active value for that

menu item. When not in the *Setup* menu, this button is also used to fade logos in and out on the selected output buss.

↑, ↓ When in the *Setup* menu, the ↑ and ↓ arrow keys are used to move to various items at the current menu level in the menu system. The ↑ and ↓ arrow keys are also used to enter numeric values for menu choices at the bottom level of the menu system.

3.1.4. Control Panel Status Indicators

The buttons in the Function group and the Input group are all fitted with internal status LEDs that illuminate to show operational status of the switcher at a glance. In general when a button is flashing on and off that indicates that the associated function is active on the preview buss. In general when a button is On solid that indicates that the associated function is active on the program buss. The **BUS SELECT** button is used to switch the control and status indications between the two busses.

BUS SELECT This button LED indicates that the control and status functions of the Front Panel are delegated to the preview buss when it is flashing and to the program buss when it is On solid. When it is Off it indicates that the *Panel Lock* function is active and the remainder of the front panel buttons are disabled.

MEDIA IN/OUT This button LED indicates that the logo whose name appears on the front panel is being keyed on the preview buss when it is flashing and to the program buss when it is On solid. When it is Off it indicates that the logo whose name appears on the front panel is being not being keyed on the buss indicated by the **BUS SELECT** LED.

MEDIA ON/OFF This button LED indicates that the logo key layer is enabled on the preview buss when it is flashing and is enabled on the program buss when it is On solid. When it is Off it indicates that the logo key layer is disabled on the buss indicated by the **BUS SELECT** LED.

DSK ON/OFF This button LED indicates that the downstream keyer layer is enabled on the preview buss when it is flashing and is enabled on the program buss when it is On solid. When it is Off it indicates that the downstream keyer layer is disabled on the buss indicated by the **BUS SELECT** LED.

EXT AUDIO MIX This button LED indicates that the audio mix function is enabled on the preview audio buss when it is flashing and is enabled on the program audio buss when it is On solid. When it is Off it indicates that the audio mix function is disabled on the audio buss indicated by the **BUS SELECT** LED.

TAKE This button LED indicates that a transition from the preview buss to the program buss is in process when it is On solid. When it is Off it indicates that no transition is currently in progress

BLACK This button LED indicates that the internal black video generator is selected as the source for the preview video buss when it is flashing and for the program video buss when it is On solid.

1 to 12 These twelve button LEDs indicates that the video inputs and the associated audio are selected for the preview buss outputs when it is flashing and for the program video buss outputs when it is On solid.

3.1.5. Electronics Unit Status Indicators

PSU STATUS 1, 2 These green LEDs indicate that the corresponding power supply is functioning normally. On units fitted with a single power supply the **PSU STATUS 2** LED will be Off all the time.

3.1.6. Front Panel Display Functions

The 16 character alphanumeric display is used to show the name of the logo that will be faded in or out by pressing the **MEDIA IN/OUT** button. The display is also used to show the *Setup* menu items to configure the switcher.

3.2. OVERVIEW OF FRONT PANEL OPERATION

3.2.1. Audio Follow Video Switching

The 9625SW Mini Master Control Switchers have two video busses two sets of four audio busses (1A, 1B, 2A and 2B). The 9625SW switchers have a quad 12 x 2 AES configuration and are shipped with two breakout panels (X1202ABO). On these units output 1 from audio busses 1A, 1B, 2A and 2B will follow the program video buss and output 2 from audio busses 1A, 1B, 2A and 2B will follow the preview video buss.

To select an input for the preview buss, you must first select the preview buss using the **BUS SELECT** button. The preview bus is selected when the **BUS SELECT** button LED is flashing On and Off. Select desired input for the preview buss by pressing the **BLACK** button or one of the input buttons **1** to **12.** When the desired input is selected the button LED for that bus will flash On and Off.

To transition the preview buss to the program buss press the **TAKE** button. The transition type and duration are set using the *Transition* menu items. When the *Transition Swap Mode* is set to *Swap* the input video and audio of the program buss as well as logos and other media being keyed on program buss the will be swapped back to the preview buss at the end of the transition. When the *Transition Swap Mode* is set to *No Swap* the input video and audio of the preview buss will remain unchanged.

To manually select an input for the program buss, you must first select the program buss using the **BUS SELECT** button. The program buss is selected when the **BUS SELECT** button LED is On solid. Select desired input for the program buss by pressing the **BLACK** button or one of the input buttons **1** to **12.** When the desired input is selected the button LED for that bus will be On solid.

3.2.2. Displaying Logos

3.3. AN OVERVIEW OF THE SETUP MENU SYSTEM

The *SETUP* menu system uses the 16 digit alphanumeric display and provides a quick, intuitive method of configuring the Router. The *SETUP* Menu contains items that pertain to the overall operation of the router. These items are normally only required to be set up at installation time, and do not pertain to the day to day operation of the unit. Figure 3-2 gives an overview of the *Setup* menu system.

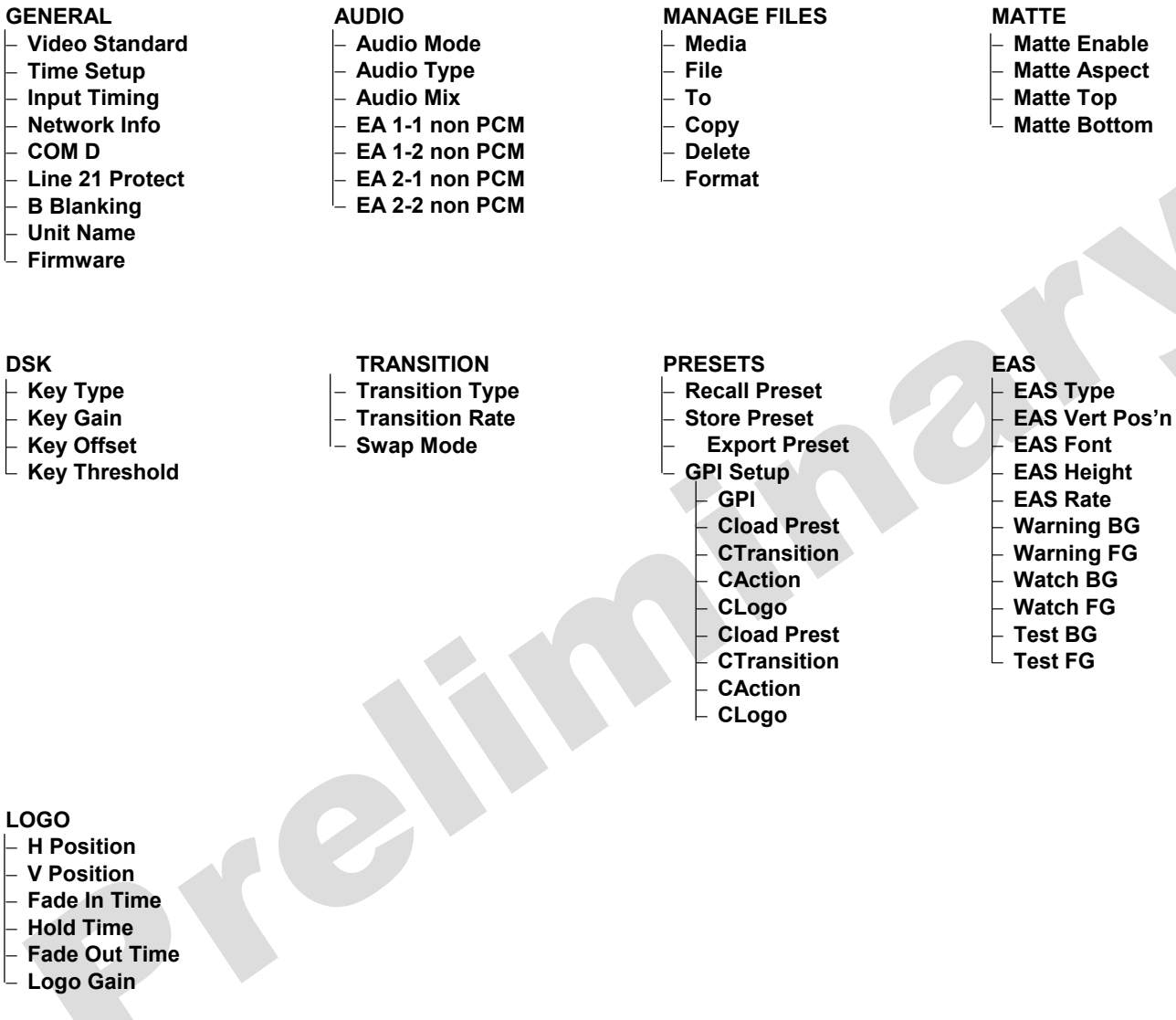


Figure 3-2: Overview of the Setup Menu

3.4. NAGIVATING THE SETUP MENU

To enter the *Setup* menu, press the **SETUP** button. This will bring you to the main *Setup* menu where you can use the ↑ & ↓ buttons to move up and down the list of available sub menus. Top level menu items are shown in UPPERCASE. Once you have chosen the desired sub menu, press the **SELECT** button to select the next menu level.

Once in a sub menu, there may be another menu layer (shown in Title Case), or there may be a list of parameters to adjust (shown in lower case). If there is another set of menu choices, use the ↑ & ↓ buttons to select the desired menu item and press the **SELECT** button. Continue this process until you get to the bottom of the menu tree where the list of parameters to be adjusted is shown.

To adjust any parameter, use the ↑ & ↓ buttons to move up or down the parameter list to the desired parameter. To view the possible values for that item, press the **SELECT** button. The current value for that parameter will be shown blinking. Pressing the ↑ & ↓ buttons allows you to show the possible values for the selected parameter. The various parameter values that are not currently selected will NOT be blinking. When you have stopped at the desired value, press the **SELECT** button to save your selection. The value shown will begin blinking; indicating that it is now the current value. To move up one level in the menu press the **SETUP** button.

You can select other parameters from that sub menu by using the ↑ & ↓ buttons, followed by the **SELECT** button. Alternately you can move up one menu item by pressing the **SETUP** button.

When you have made all the desired changes, press the **SETUP** button one or more times until you return to the top of the Menu tree and exit the *Setup* menu.

Each of the menu items is described in the following sections, with an explanation of what each choice does.

3.5. FRONT PANEL SETUP MENU – MAIN MENU

The Front panel *Setup* menu is arranged in a layered structure that groups similar configuration items together. The following section gives a brief description of the first level of menus that appear when you enter the menu. Selecting one of these items will take you to the next menu level. Sections 3.6 to 3.14 provide detailed descriptions of each of the sub menus. The tables in these sections are arranged in an indented structure to indicate the path taken to reach the control. Menu items or parameters that are underlined indicate the factory default values.

GENERAL	This menu is used to set up the video standard, COM ports, network address, time and other miscellaneous settings and to update firmware
AUDIO	
MANAGE FILES	This menu is used to manage logos and other media files – to copy them from one media device to another, to delete them, etc.
MATTE	This menu is used to configure the matte attributes.
DSK	This menu is use to configure the DSK functions – key type, gain, and thresholds
TRANSITION	This menu is used to set up the transition type, rate and switcher swap mode
PRESETS	This menu is used to save and recall user presets, and to configure the General Purpose inputs and outputs
EAS	This menu is used to configure the EAS crawl functions – speed, position, font type and height, and colours (only available when the EAS option is enabled)
LOGO	This menu is used to position logos and to set their fade in, hold and fade out time

3.6. GENERALCONFIGURATION ITEMS

The *GENERAL Setup* menu is used to set up various items related to the overall operation of the 9625SW such as Video standard, Time settings, Network info, COM port settings and firmware versions. Table 3-1 shows the items available in the *GENERAL Setup* menu. Sections 3.6.1 to 3.6.2.2 give detailed information about each of the sub menus.

Video Standard	Sets the video standard
Time Setup	Selects the generator framing reference
Input Timing	Selects the vertical phase offset to the generator framing reference
Network Info	Selects the horizontal phase offset to the generator framing reference
COM D	Sets the amplitude level of the main LTC output
Line 21 Protect	Sets the amplitude level of the auxiliary LTC output
B Blanking	Sets the amplitude level of the auxiliary LTC output
Unit Name	Sets the amplitude level of the auxiliary LTC output
Firmware	Displays the current firmware version of the unit

Table 3-1: Top Level of the General Setup Menu

3.6.1. Selecting the Video Standard

GENERAL
- *Video Standard*
  - *Vstd: 525i/59.94*
  - *Vstd: 16x9 525i*
  - *Vstd: 625i/50*
  - *Vstd: 16x9 625i*

The *Video Standard* menu item is used to set the video standard in use. For standard definition switchers the following video standards are supported.

Select *525i/59.94* for operation with 4 x 3 aspect ratio 525i/59.94 video conforming to SMPTE 125M.

Select 16x9 *525i* for operation with 16 x 9 aspect ratio 525i/59.94 video conforming to SMPTE 125M. This setting is used where the picture has been anamorphically compressed into a 4 x 3 raster.

Select *625i/50* for operation with 4 x 3 aspect ratio 625i/50 video conforming to EBU TECH 3267-E.

Select 16x9 *625i* for operation with 16 x 9 aspect ratio 625i/50 video conforming to EBU TECH 3267-E. This setting is used where the picture has been anamorphically compressed into a 4 x 3 raster.

GENERAL
Video Standard
Vstd: 1080i/59.94
Vstd: 1080i/50
Vstd: 720p/59.94

The *Video Standard* menu item is used to set the video standard in use. For high definition switchers the following video standards are supported.

Select *1080i/59.94* for operation with 1080i/59.94 video conforming to SMPTE 274M.

Select *1080i/50* for operation with 1080i/50 video conforming to SMPTE 274M.

Select *720p/59.94* for operation with 720p/59.94 video conforming to SMPTE 296M.

3.6.2. Configuring the Real Time Clock in the Switcher

The switcher contains a real time clock that is used to drive the clock display logos that can be placed on the screen. This battery backed up real time clock (known as RTC) free runs on an internal oscillator and can be set from the front panel. When the switcher is powered up with a valid video input, a separate clock (known as the UTC) is initialized from the RTC and maintains Universal Co-ordinated time (UTC) accurately from the video input so that it will not drift. The switcher automatically updates the RTC clock from the UTC clock to minimize long term time drift. In order to keep the UTC clock can in sync with your house master time code it also be locked to incoming linear time code connected to the LTC IN connector. The UTC clock time is internally maintained as Universal Co-ordinated time (UTC) but can also be adjusted for time zone offsets from UTC and for daylight saving time, and displayed as local time (Local). The *Time Setup* sub-menus of the *General* setup menu are used to configure the real time clock and display the UTC and Local times.

3.6.2.1. Setting the Real Time Clock

GENERAL
Time Setup
RTC 12:34:56

This menu item is used to display and set the hardware real time clock in the switcher. The time displays are always shown in the 24 hour time format.

When you press the **SELECT** button, the display shows the current real time clock time which will be something like:

```
12:34:56
```

To set the time press the **SELECT** button and the hours digits will be flashing to indicate that they are in entry mode. Use the ↑ or ↓ pushbuttons to change the hours to the desired value. Then press the **SELECT** button and the minute's digits will be flashing to indicate that they are in entry mode. Set the minutes and second in the same way. When you have entered the correct time press the **SELECT** button to update the hardware real time clock. The second's digits will stop flashing and the time will begin incrementing indicating that the Real Time Clock has been set. When you set the hardware real time clock the UTC clock time will automatically be adjusted.

When there is a valid LTC input to the switcher, the LTC time will overwrite the Real Time clock that has been entered.

3.6.2.2. Displaying the UTC Time

GENERAL
Time Setup
UTC 12:34:50

This menu item is used to display the UTC time clock. The time displays are always shown in the 24 hour time format.

3.6.2.3. Displaying the Local Time

GENERAL
Time Setup
Local 12:34:50

This menu item is used to display the clock time as local time. (UTC time adjusted for the time zone offset and DST adjustment) The time displays are always shown in the 24 hour time format.

3.6.2.4. Setting the Time Zone Offset

GENERAL
Time Setup
zone 12:34:56

This menu item allows the user to set a time zone offset between the UTC time and the Local time. This time zone offset will be added to the UTC time along with the Daylight Saving time correction (see section 3.6.2.5) to obtain the Local time. Time zones are normally in one hour or 30 minute increments and can be + or – from UTC. (Time zones east of Greenwich are +, and time zones west of Greenwich are -)

To set the time zone press the **SELECT** button and the hours digits will be flashing to indicate that they are in entry mode. Use the ↑ or ↓ pushbuttons to change the hours to the desired value. To set negative time zone offsets continue pressing the ↓ pushbuttons until the hours values show a negative sign. Then press the **SELECT** button and the minutes digits will be flashing to indicate that they are in entry mode. Set the minutes and second in the same way. When you have entered the correct time press the **SELECT** button to the set the time zone offset. The seconds digits will stop flashing to indicate that the time zone offset has been set.

3.6.2.5. Enabling Daylight Saving Time Compensation

GENERAL
Time Setup
DST Active
Dst active : off
Dst active : on

This menu item allows the user to control whether Daylight Saving Time (DST) compensation will be applied to the UTC time to get the local time.

When set to *off*, Daylight Saving Time compensation will not be applied.

When set to *on* Daylight Saving Time compensation will be applied and the local time will be adjusted back by 1 hour.

The switcher must be manually changed from Daylight Saving Time to Standard time using this menu setting. If you want to automatically keep the local time clock in the switcher in sync with the correct local time, connect a source of linear time code that contains local time to the LTC IN connector. See section 3.6.2.6

3.6.2.6. Selecting Whether the Time Code input is UTC or Local Time

GENERAL
Time Setup
LTC Time Zone
Ltc zone : local
Ltc zone: utc

This menu item allows the user to select whether incoming time code will be in UTC or local time. This information is necessary to correctly update the RTC clock from the time code.

Select *utc*, when the incoming LTC is Universal Co-ordinated time.

Select *local*, when the incoming LTC is local time.

3.6.2.7. **Synchronizing the Real Time Clock to the UTC Time**

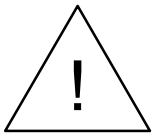
GENERAL
Time Setup
Jam RTC from UTC
RTC force jam

The hardware real time clock (RTC) will drift slightly from the video rate UTC Clock time under normal operation. When this drift exceeds 5 seconds the RTC will be automatically resynchronized to the UTC time. This menu item allows the user to synchronize the RTC to the UTC Clock time immediately.

To synchronize the RTC time immediately, press the **SELECT** button when `RTC force jam` is shown on the display. The front panel display will show `RTC JAMMED` for 1 second after the time has been synchronized.

3.6.3. Setting the Video Output Timing

The output stage of the switcher contains a line buffer so that the output video can be timed with respect to the reference applied to the **GENLOCK** input loop.



The *H Phase Offset* adjustment is a REAL TIME ADJUSTMENT and will affect the output video timing immediately. These settings should not be adjusted when the output video is in the broadcast chain.

GENERAL
Output H Offset
0
0 to max samples

This menu item allows you to set the horizontal timing of the output video with respect to the genlock reference input. Setting this control to 0 keeps the output video in time with the Genlock reference.

Increasing the value will delay the output video in one-sample increments.

3.6.4. Setting Up the Switcher Network Addresses

The *Network Info* sub-menus of the *General* Setup menu are used to configure the switcher for FTP uploads of logos and other media. In most cases you will only have to plug in your Ethernet cable and configure the network IP address (*A*) to contain an unused IP address in the valid range. Entries are made in standard IP address format. Please consult your Network administrator for IP address allocations, netmask and gateway requirements.

To set the various *Network Info* parameters, tress the **SELECT** button when the desired parameter is shown on the front panel display (indicated by the letter on the left side of the display). The left group

of digits will be flashing to indicate that they are in entry mode. Use the ↑ or ↓ pushbuttons to change this group to the desired value. Then press the **SELECT** button and the next group of digits will be flashing to indicate that they are in entry mode. Set the remaining groups of digits in the same way. When you have entered the correct value for the right group of digits, press the **SELECT** button to set the parameter. The display will stop flashing to indicate that the parameter value has been set. The settings become active immediately after you return to the *Network Info* menu level. A reboot is not required.

3.6.4.1. Setting Up the IP Address

GENERAL
Network Info
A 196.168.1.1

This menu item sets the unique IP address of the 9625SW within the network. 192.168.1.XXX is an example of an IP address in a private (internal) network. If connecting multiple switchers, take care not to use the same IP address for each.

3.6.4.2. Setting Up the Sub Net Mask

GENERAL
Network Info
M 255.255.255.0

This menu item sets the "subnet mask" of the network. Specifically, this parameter outlines all the IP addresses that can communicate with the 9625SW. This parameter us usually set to 255.255.255.0 for a private network. Normally you will not have to adjust this parameter from its default value.

3.6.4.3. Setting Up the Gateway

GENERAL
Network Info
G 192.168.1.1

This menu item identifies the IP address of the "gateway" (commonly referred to as the "firewall"). In its simplest sense the gateway could be the PC directly connected to the 9625SW and running the network application software (i.e. InstaLogo or Nomad). In a private network, this gateway could be identified as 192.168.1.YYY. Normally you will not have to adjust this parameter from its default value.

3.6.4.4. Displaying the Ethernet Hardware Address

GENERAL
Network Info
0:2:C5:01:03:E2

This menu item displays the Ethernet hardware address of the unit (which can not be changed).

3.6.5. Setting the Serial Protocol for COM Port D

The four serial ports on the 9625 switchers are used for various functions. The UPGRADE (A) port is used a console ports for upgrading firmware and other utility functions. The REMOTE PANEL (B) port is used to connect the rack mount remote control panel. The SERIAL CONTROL (C) port is used for communications between the keyer electronics unit and the router electronics unit. The COM D port is programmable and is can be used for a variety of functions.

GENERAL
COM D
none
eas cg
temperature
evertz-auto
m2100-auto
xy-auito

This menu item allows you to set the communications protocol that will be used on COM port D.

Select *none* to disable the use of COM port D

Select *eas cg* when you have the EAS option (+EAS) enabled and have an EAS decoder connected to port D. See section 4.1 for more information about connecting the EAS decoder. See sections 4.2 and 3.13 for information about configuring the EAS functions of the switcher.

Select *temperature* when you have the temperature probe option (+TP) enabled and have the 9600LG-TP temperature probe connected to port D. See section xxx for more information about connecting the temperature probe. See section xxx for information about configuring the temperature functions of the switcher.

There are three settings that are used when the switcher is under automation control. See your automation vendor for information about the protocols that are supported.

Select *evertz-auto* when you want to control the switcher using the Evertz automation protocol. This is the setting you should use when you are controlling the switcher from the Evertz MetaCast software.

Select *m2100-auto* when you want to control the switcher using the Grass Valley M2100 switcher automation protocol. See section xxx for information about M2100 automation control functions of the switcher.

Select *xy-auto* when you want to control the switcher using the xy logo inserter automation protocol. Note that only logo functions of the switcher can be controlled using the xy protocol. See section xxx for information about XY automation control functions of the switcher.

3.6.6. Protecting Line 21 Captions (standard definition units only)

GENERAL
Line 21 Protect
L21 protect: off
L21 protect: on

This menu item allows the user to control logos can be placed on line 21 where closed captions are located in North American television systems. When the video standard is set to one of the 625 line standards, the setting of this menu item is ignored.

When set to *off*, logos can be placed vertically beginning at line 21.

When set to *on*, logos can be placed vertically beginning at line 22, preserving any closed caption information that is encoded on line21.

3.6.7. Setting the M2100 Unit Name

GENERAL
M2100 Unit Name
Unit name: evz1
…
Unit name: evz8

This menu item allows the user to set the switcher unit name required when the 9625 switcher is used in conjunction with a M2100 control panel. Each switcher connected to the panel must have a unique name assigned.

3.6.8. Viewing and Updating the Firmware Version

GENERAL
Firmware
1.0 build 100
boot 1.01
Upgrade firmware

The Firmware menu item allows you to view the firmware version that is installed in the 9625SW and to update the firmware.

When you press the **SELECT** pushbutton, the display shows the software version which will be something like:

```
1.0 build 100
```

Use the ↑ or ↓ pushbuttons to display the boot code version which will be something like:

```
Boot 1.01
```

Select *Upgrade firmware* to upgrade the firmware in the switcher. For information on completing the firmware upgrade see the Firmware Upgrade section (5.2) of this manual.

3.7. AUDIO CONFIGURATION ITEMS

The *AUDIO Setup* menu is used to set up various items related to the configuring the audio operation of the switcher. Table 3-2 shows the items available in the *AUDIO Setup* menu. Sections 3.6.1 to 3.6.2.2 give detailed information about each of the sub menus.

Audio Mode	Sets the overall audio mode
Audio Type	Sets whether the switcher is working with discrete or embedded audio
Audio Mix	Sets the mix levels for voice over and EAS operations
EA 1-1 non PCM	Sets whether Group 1 channel 1 embedded audio is PCM or non-PCM
EA 1-2 non PCM	Sets whether Group 1 channel 2 embedded audio is PCM or non-PCM
EA 2-1 non PCM	Sets whether Group 2 channel 1 embedded audio is PCM or non-PCM
EA 2-2 non PCM	Sets whether Group 2 channel 2 embedded audio is PCM or non-PCM

Table 3-2: Top Level of the Audio Setup Menu

3.7.1. Selecting the Audio Mode

AUDIO
Audio Mode
audio mode: 4+0
audio mode: 3+*1*

The *Audio Mode* menu item is used to set how the 4 AES levels of audio in the switcher are used.

Select *4+0* if you are using all 4 AES channels (8 channels of audio) as program audio.

Select *3+1* if you are using 3 AES channels (6 channels of audio) of program audio. The 4th AES channel (2 channels of audio) is used as an alternate audio source for mixing with the program audio when the **EXT AUDIO MIX** button is pressed. With the current firmware, the alternate audio will be the AES audio connected to input 12B on the audio breakout panel 2. The audio mix levels are configured using the provided in the *Audio* menu items. See section 3.7.3

3.7.2. Selecting Whether you are using Discrete AES or Embedded Audio

AUDIO
Audio Type
audio: aes
audio: embedded

The *Audio Mode* menu item is used to set how the 4 AES levels of audio in the switcher are used.

Select *AES* if you are using discrete AES audio connected to the switcher using the audio breakout panels.

Select *embedded* if you are using embedded audio.

3.7.3. Selecting the External Audio Mix Level

AUDIO
Audio Mix Level
Mix level:: 50%

The *Audio Mix Level* menu item is used to set the level that the alternate audio (voice over audio) will have when an external audio mix is being performed. The alternate audio will be at the percentage specified. The normal program audio will be at 100% - the alternate audio level. To have the alternate audio completely replace the normal program audio, specify an audio mix level of 100%. See section 3.7.1 and 3.1.2.

3.7.4. Selecting the Whether the Embedded Audio contains PCM or Non-PCM Audio

The *AUDIO* menu contains four sub-menu items that select whether each of the 4 embedded audio channels contain normal PCM audio or non-PCM audio. For simplicity only the menu items for the Channel 1 of Group 1 is shown in the manual.

AUDIO *EA 1-1 non PCM* *ea 1-1 npcm: off* *ea 1-1 npcm: on*	When the switcher performs a switch of the audio following the video, it normally provides a cross fade for normal PCM audio sources. When there is non-PCM audio data such as Dolby E, the switcher must perform a clean cut of the audio to avoid corrupting the non-PCM data. This menu item is used to select whether the AES 1 channel of Embedded audio group 1 contains normal PCM audio data or non-PCM data. Select *off* if the embedded audio is normal PCM linear audio Select *on* if the embedded audio is non-PCM data such as Dolby E.

3.8. FILE MANAGEMENT CONFIGURATION ITEMS

The 9625SW Mini Master Control Switchers come standard with a 128 MB internal flash memory for storing logos and other media files. This can be upgraded to 1 GB of internal flash memory. The switchers can also be fitted with a removable compact flash expansion drive that can be used with either 128 MB or 1 GB compact flash memory cards. The *MANAGE FILES Setup* menu is used to set up various items related to the moving logo files between these different media drives. Table 3-3 shows the items available in the *MANAGE FILES Setup* menu. Sections 3.6.1 to 3.6.2.2 give detailed information about each of the sub menus.

Media	Selects the source media for the file operation
File	Selects the media file for the file operation
To	Selects the destination media for the file operation
Copy	Copies the media *File* from the *Source* to the *Destination* media
Delete	Deletes the media *File* from the *Source* media
Format	Erases the *Destination* media

Table 3-3: Top Level of the Manage Files Setup Menu

3.8.1. Selecting the Source Media

MANAGE FILES
Media
[serial number]

This menu item is used to select the source media drive that you are working with. Each media drive is identified by the serial number of the compact flash media that is currently in the drive. Units that are not fitted with one of the compact flash expansion drive will only have 1 item in this list.

Use the ↑ or ↓ pushbuttons to display the serial number of the media that will be the source for the file operation and press the **SELECT** button.

3.8.2. Selecting the Media File Name

MANAGE FILES
File
logo name

This menu item is used to select the file name of the logo or other media file that you want to perform the file operation on.

Use the ↑ or ↓ pushbuttons to display a list of all the media files on the drive selected with the *Media* menu item. When you have selected the desired media file press the **SELECT** button.

3.8.3. Selecting the Destination Media

MANAGE FILES
To
[serial number]

This menu item is used to select the destination media drive that you are working with. Each media drive is identified by the serial number of the compact flash media that is currently in the drive. Units that are not fitted with one of the compact flash expansion drive will only have 1 item in this list.

Use the ↑ or ↓ pushbuttons to display the serial number of the media that will be the source for the file operation and press the **SELECT** button to choose the displayed item.

3.8.4. Copying a File from one Drive to Another

MANAGE FILES
Copy

This menu item is used to make a copy of the file specified by the *File* menu item from the source media (chosen by the *Media* menu item) to the destination media (chosen by the *To* menu item).

Press the **SELECT** button to initiate the copy function. If a file of the same name already exists on the destination media, it will be overwritten in the copy function. If the target item is active (e.g. the logo is being keyed), the copy function will fail.

3.8.5. Deleting a File

MANAGE FILES *Delete*	This menu item is used to delete the file specified by the *File* menu item from the source media (chosen by the *Media* menu item) Press the **SELECT** button to initiate the delete function. If the file is active (e.g. the logo is being keyed), the delete function will fail.

3.8.6. Erasing all the Files from a Media Disk

MANAGE FILES *Format*	This menu item is used to delete all the files from the source media (chosen by the *Media* menu item) Press the **SELECT** button to initiate the format function. If there are active files on the media (e.g. one or more of the logo files are being keyed), the format function will fail.

Warning, this function is not recommended but is provided as last resort. The FORMAT function will completely remove all Media items, logos etc from the device specified in the MEDIA submenu. There is no undo provided.

3.9. MATTE CONFIGURATION ITEMS

The 9625SW switchers have a black overlay matte that blacks out video and produces a letterbox effect on the output video. The *MATTE Setup* menu is used to configure the matte that can be applied over the program video. Table 3-3 shows the items available in the *MATTE Setup* menu. Sections 3.6.1 to 3.6.2.2 give detailed information about each of the sub menus.

Matte Enable	Selects whether the matte is being keyed over the video or not
Matte Aspect	Sets the aspect ratio of the matte
Matte Top	Sets the last line of the top matte in user defined aspect ratio mode
Matte Bottom	Sets the first line of the bottom matte in user defined aspect ratio mode

Table 3-4: Top Level of the Matte Setup Menu

3.9.1. Turning the Matte On and Off

MATTE
Matte Enable
matte: enabled
matte: disabled

This menu item is used to turn the matte on and off.

Select *enabled* to turn on the black matte overlay. This matte is on the top layer of the keyer and will overwrite all the video on the respective lines of the active picture. The matte does not blank the lines in the vertical interval.

Select *disabled* to turn off the black matte overlay.

3.9.2. Setting the Matte Aspect Ratio

MATTE
Matte Aspect
matte: 1.77
matte: 1.85
matte: 2.35
matte: user

This menu item is used to set the aspect ratio of the matte.

There are three pre-defined aspect ratios available. When you select one of these aspect ratios the 9625SW will automatically set the *Matte Top* and *Matte Bottom* menu items.

In addition you can set a user defined aspect ratio by manually changing the *Matte Top* and *Matte Bottom* menu items. (See section 3.9.3.)

3.9.3. Setting a User Defined Matte Aspect Ratio

There are two menu items that allow the user to define custom aspect ratios for the matte. Selecting a pre-defined aspect ratio will lose any changes you have made to the *Matte Top* and *Matte Bottom* menu items unless they are stored using the user presets. (See section 3.12)

MATTE
Matte Top
top: 50

This menu item is used to set the bottom line of the top matte.

Use the ↑ or ↓ pushbuttons to change the line number to the desired value. Either field 1 or field 2 lines can be used.

MATTE
Matte Bottom
bottom: 233

This menu item is used to set the top line of the bottom matte.

Use the ↑ or ↓ pushbuttons to change the line number to the desired value. Either field 1 or field 2 lines can be used.

3.10. DOWNSTREAM KEYER CONFIGURATION ITEMS

The 9625SW switchers have a downstream keyer layer that allows you to key objects into the output video. The *DSK Setup* menu is used to configure the downstream keyer functions – key type, gain, and thresholds. Table 3-3 shows the items available in the *DSK Setup* menu. Sections 3.6.1 to 3.6.2.2 give detailed information about each of the sub menus.

Key Type	Selects whether the DSK will perform a self key or use the supplied key and fill signals
Key Gain	Adjusts the transparency of the keyed object with respect to the key input
Key Offset	Shifts the base level for the entire range of colour values with respect to the key input
Key Threshold	Sets the level of the signal where the self key will occur.

Table 3-5: Top Level of the Matte Setup Menu

3.10.1. Setting the Downstream Key Type

DSK
- *Key Type*
  - *key type: input*
  - *key type: self*

This menu item is used to select whether the downstream keyer will use the key and fill input to perform the keying function or whether it will perform a self key.

Select *input* to use the key and fill inputs provided on video inputs 11 and 12 of the switcher respectively.

Select *self* to perform a hard self key using the threshold value set in the *Key Threshold* menu item.

3.10.2. Setting the Downstream Key Object Transparency

DSK
- *Key Gain*
  - *100*
  - *50 to 170*

This menu item is used to modify the opacity (transparency) of the keyed object used in *input* key mode.

Use the ↑ or ↓ pushbuttons to change the *Key Gain* value. The default *Key Gain* value of 100 will leave the transparency of the keyed object unmodified from that defined by the key signal. Lowering the *Key Gain* value will reduce the opacity of the keyed object (i.e. make it more transparent). Increasing the *Key Gain* value will increase the opacity of the keyed object (i.e. make it less transparent).

3.10.3. Setting the Downstream Key Object Offset

DSK
- *Key Offset*
  - *0*
  - *-1023 to 1023*

This menu item is used to modify the key offset value used in *input* key mode. This value is the level that will be considered as black on the key input, and should not normally be changed from its default value of 0.

3.10.4. Setting the Downstream Self Key Threshold

DSK *Key Threshold* *4* *4 to 1020*	This menu item is used to modify the threshold value used in *Self Key* mode. The *Self Key* is a hard key based on the luminance value of the fill signal applied to video input 12. All luminance values that are above the *Key Threshold* will be keyed from the Fill signal. All values from the key that fall below the *Key Threshold* will be keyed from the background video. The default value for the *Key Threshold* is 4, which is black.

3.11. EFFECTS TRANSITION CONFIGURATION ITEMS

The 9625SW switchers can transition between the video sources using a variety of standard transitions types. The *TRANSITION Setup* menu is used to configure the transition type, rate and swap mode. Table 3-6 shows the items available in the *DSK Setup* menu. Sections 3.6.1 to 3.6.2.2 give detailed information about each of the sub menus. The front panel **EFFECTS SELECT** button provides a quick access to the top of the *TRANSITION* menu branch.

Transition Type	Selects type of video transition
Transition Rate	Adjusts the rate of the video transition
Swap Mode	Selects whether the program and preview busses will swap after the transition.

Table 3-6: Top Level of the Transition Setup Menu

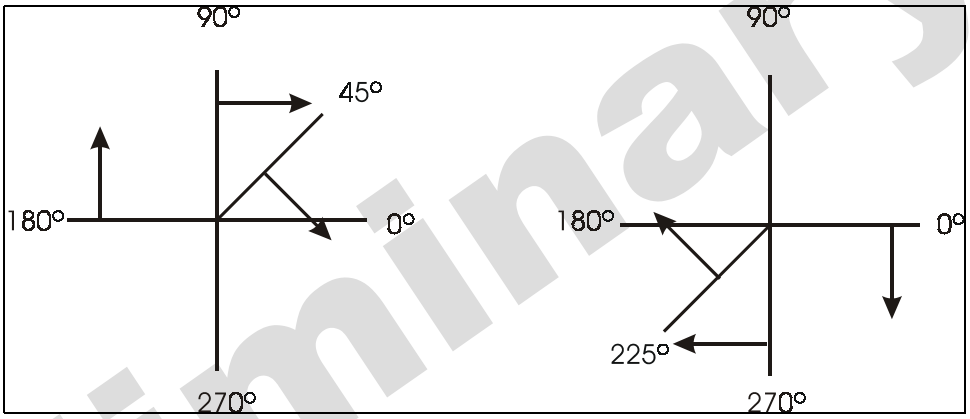
3.11.1. Setting the Transition Type

- *TRANSITION*
  - *Transition Type*
    - *fade*
    - *cut*
    - *fade-cut*
    - *fade-fade*
    - *cut-fade*
    - *diamond in*
    - *diamond out*
    - *circle in*
    - *circle out*
    - *box in*
    - *box out*
    - *vert. split*
    - *horiz. split*
    - *vert. curtain*
    - *horiz. curtain*
    - *top right box*
    - *top left box*
    - *bottom right box*
    - *bottom left box*
    - *wipe xxx*

This menu item is used to select the type on transition you would like applied when the **TAKE** button is pressed. Transition effects only appear of the program output. Transitions on the Preview Output are always a Cut type performed at the end of the transition to program.

The *fade-cut, fade-fade,* and *cut-fade* transitions are two stage transitions. The transition shown first will be applied to the outgoing video, followed by the second transition. For example a *fade-fade* transition is a fade out to black followed by a fade in from black.

The numbers following the wipe patterns reference the angle of the wipe and direction of the wipe. Arrows indicate direction of wipe. For example a *Wipe 45* transition will start a 45 degree wipe that will progress from the top left of the screen to the bottom right of the screen.



3.11.2. Setting the Transition Rate

- *TRANSITION*
  - *Transition Rate*
    - *0 to 90*

This menu item is used to set the time for the transition to complete. The duration is measured in frames.

Use the ↑ or ↓ pushbuttons to change the *Transition Rate* value and press the **SELECT** button.

3.11.3. Setting the Transition Swap Mode

TRANSITION	This menu item is used to set the time for the transition to complete. The duration is measured in frames. When set to *Swap* the input video and audio of the preview buss and the program buss will be swapped at the end of the transition. Logos and other media being keyed on the respective busses will also be swapped with the inputs. When set to *Off* the input video and audio of the preview buss will be transferred to the program buss transition. Logos and other media being keyed on the preview buss will also be transferred to the program buss. The preview buss will remain unchanged.
Swap Mode	
Swap mode: swap	
Swap mode: off	

3.12. PRESET CONFIGURATION ITEMS

The 9625SW switchers have 10 user presets that can store pre-defined configurations for such things as Matte settings, Transition settings and DSK settings. The parameter values stored are the menu settings that are current based on the status of the program buss. Therefore if you would like to store a preset that has a 2.35 matte applied, you must first configure the *Matte Aspect* and *Matte Enable* menu items. Then store the preset at one of the user preset addresses. When presets are recalled, the settings are recalled to the preview buss and will not show on the program buss until the TAKE button is pressed, or a GPI trigger invokes the transition.

The *PRESET Setup* menu is used to store and recall user presets as bell as to configure the GPI input functions. Table 3-7 shows the items available in the *DSK Setup* menu. Sections 3.6.1 to 3.6.2.2 give detailed information about each of the sub menus.

After upgrading the 9625SW with new firmware, all presets should be recalled using the *Recall Preset* menu item, the values for new features must be set, and the preset must be saved again using the *Store Preset* menu item.

IF THIS IS NOT DONE, OLD PRESETS COULD BE RECALLED WITH UNDESIRABLE SETTINGS.

Recall Preset	Recalls one of the 10 user presets to the Preview buss
Store Preset	Stores the Program buss settings to one of the 10 user presets
GPI Setup	Selects whether the program and preview busses will swap after the transition.

Table 3-7: Top Level of the Preset Setup Menu

3.12.1. Recalling a User Preset

PRESETS
Recall Preset
Recall # 1

This menu item is used to recall one of the ten user presets to the Preview buss.

Use the ↑ or ↓ pushbuttons to select the preset to restore. When you press the **SELECT** button the preset will be restored to the preview buss overwriting the active. These settings will show on the program buss when the **TAKE** button is pressed, or a GPI trigger invokes the transition.

3.12.2. Storing a User Preset

PRESETS
Store Preset
store # 1

This menu item is used to store the program buss settings to one of the ten user presets.

Use the ↑ or ↓ pushbuttons to select the preset to save the settings to. When you press the **SELECT** button the settings will be saved overwriting any preset that was previously stored at that location.

3.12.3. Configuring the GPI Inputs

The 9625 switchers are fitted with 8 general purpose inputs (GPIs) that can be configured to trigger 2 different actions - *On Closure* and *On Open*. For example, the *On Closure* event can be used to load a preset and perform a transition to the program buss. The *On Open* event for the same GPI can be used to load a different user preset and perform a transition to the program buss. For each event you can configure a preset to load, transition to perform and loco to display.

3.12.3.1. Selecting One of the GPI Inputs to Configure

PRESETS
GPI Setup
GPI:A
GPI=A to H

This menu item is used to select one of the GPI inputs that will be configured using the other menu items in the *GPI SETUP* menu branch.

When you first enter this menu branch the selected GPI input will be shown. To change to configuring another GPI input press the **SELECT** button. The display will show `GPI=A` indicating that the GPI input can be changed. Use the ↑ or ↓ pushbuttons to select the GPI input you wish to configure and press the **SELECT** button. You can configure the preset to load, transition to make and logo to display when the selected GPI input is closed and opened using the other menu items in the *GPI SETUP* menu branch.

3.12.3.2. Configuring the GPI Actions

There are 4 menu items that configure that happens when the selected GPI closes (*Cload, Ctransition*, *Caction* and *Clogo)*. There are also 4 menu items that configure that happens when the selected GPI opens (*Oload, Otransition*, *Oaction* and *Ologo)*. For the sake of clarity in the manual only the *On Close* event menu items will be shown. The applicable GPI is shown on the left of the front panel display. Each GPI can be independently configured by first selecting the GPI using the *GPI* menu item described in section 3.12.3.1.

PRESETS
GPI Setup
A Cload Prest:1
non
1 to 10

This menu item is used to select the preset that will be loaded when the GPI input is closed to ground.

Select *non* to **not** load a user preset when the GPI is closed. The existing switcher settings will be used

Select *1* to *10* to load a specific user preset when the GPI is closed.

PRESETS
GPI Setup
A CTransition
A CTransition: no
A CTransition: ye

This menu item is used to select whether a transition will occur when the GPI is closed to ground.

Select *no* to **not** perform a transition when the GPI is closed.

Select *ye* to perform a transition when the GPI is closed.

PRESETS
GPI Setup
A CAction
A CAction:Toggle
A CAction:Duck I
A CAction:Duck O
A CAction:Duck
A CAction:All Ou
A CAction:None
A CAction:Cue
A CAction:In
A CAction:Out

This menu item is used to action to occur when the GPI input is closed to ground.

Select *Toggle* when the GPI is closed.

Select *Duck I* to begin a 'Duck Audio Insert'. This action is the same as pressing the **EXT AUDIO MIX** button when it is not illuminated.

Select *Duck O* to end a 'Duck Audio Insert'. This action is the same as pressing the **EXT AUDIO MIX** button when it is illuminated.

Select *Duck* to begin a 'Duck Audio Insert'. This action is the same as pressing the **EXT AUDIO MIX** button when it is not illuminated.

Select *All Out* to fade out all logos.

Select *None* to not perform any action

Select *Cue* to load the logo selected by the *CLogo* menu item into memory. The logo will not be displayed by this action.

Select *In* to load the logo selected by the *CLogo* menu item into memory and fade it in.

Select *Out* to fade out the logo selected by the *CLogo* menu item.

PRESETS
GPI Setup
A CLogo:none
None
List of logos

This menu item is used to select a logo to be acted on if the *Caction* menu item is set to *Cue, In or Out*

Select *none* to disable any logo actions.

Use the ↑ or ↓ pushbuttons to select from the list of available logos and press the **SELECT** button to make this the active logo for the *CAction* menu item.

3.12.4. Configuring the GPO Outputs

The 9625 switchers are fitted with 4 contact closure general purpose outputs (GPOs) that can be used as tallies for various functions. At this time the functions of the GPOs are fixed in firmware. The functions are as follows.

GPO	Pin #	Function
1	3	Transition tally - low during transitions
2	2	Bypass tally - low when the bypass relay is active.
3	4	Transition tally - low during transitions
4	6	Power supply/ fan monitor tally - low on fan or power supply failure

3.13. EAS CONFIGURATION ITEMS (EAS OPTIONED UNITS ONLY)

When the EAS option is added to the 9625SW switchers, they have the ability to key Emergency Alert messages received from a Sage or TFT EAS Decoder over the program video and to insert the emergency audio over the program audio. In order to insert the audio you will have to convert the analog audio from the decoder to AES and connect it to the External Audio input of the switcher. See chapter 4 for more information on connecting and configuring the EAS decoder.

The *EAS Setup* menu is used to configure items related to the EAS option and is only available on units fitted with the option. Table 3-8 shows the items available in the *EAS Setup* menu. Sections 3.6.1 to 3.6.2.2 give detailed information about each of the sub menus.

EAS Type	Selects how the EAS Crawl will transition onto the video
EAS Vert Pos'n	Sets the vertical position of the EAS crawl
EAS Font	Sets the font used to display the EAS crawl
EAS Height	Sets the font size used to display the EAS crawl
EAS Rate	Sets the crawl rate of the EAS crawl
Warning BG	Sets the colour of the background for EAS warning messages
Warning FG	Sets the font colour for EAS warning messages
Watch BG	Sets the colour of the background for EAS watch messages
Watch FG	Sets the font colour for EAS watch messages
Test BG	Sets the colour of the background for EAS test messages
Test FG	Sets the font colour for EAS test messages

Table 3-8: Top Level of the EAS Setup Menu

3.13.1. Setting the EAS Display Type

EAS
EAS Type
Type: Ramp On
Type: ramp off

This menu item is used to select how the EAS message will transition onto the video

Select *Ramp On* to have the crawl background appear as the text scrolls from right to left across the screen.

Select *Ramp Off* to have the crawl background appear all at once.

3.13.2. Setting the Vertical Position of EAS Crawl Display

EAS
EAS Vert Pos'n
Vert: pos'n:21

This menu item is used to set the vertical position of the EAS scrolling text message. The *Vert Pos'n* value is the video line where the top of the scrolling message will be placed. The range for placement is from 21 to 379 as set by the FCC rules.

When you first enter this menu branch the selected current position will be shown. To change the vertical position press the **SELECT** button. The display will show `vert pos'n=21` indicating that the line number can be changed. Use the ↑ or ↓ pushbuttons to select the line number and press the **SELECT** button. The display will show `vert pos'n:xx` indicating that this is the new the display position.

3.13.3. Setting the Font used for the EAS Crawl Display

EAS
EAS Font
Font:font

This menu item is used to set the font that will be used for the EAS scrolling text message.

When you first enter this menu branch the current font name will be shown. If there are no true type fonts loaded then the display will show *font* as the default font name. To change the font to another true type font press the **SELECT** button. The display will show `font=font` indicating that the font can be changed. Use the ↑ or ↓ pushbuttons to select the form the available true type fonts that have been loaded using the Nomad software. When you press the **SELECT** button the display will show `font:fontname` indicating that this is the new the display font.

3.13.4. Setting the Font Size for the EAS Crawl Display

EAS
EAS Height
Height: 60

This menu item is used to set the font size that will be used for the EAS scrolling text message.

The EAS height is the vertical size of the font measured in lines of video. The allowable range of lines is 30 to 75 for standard definition and 60 to 150 for high definition.

3.13.5. Setting the Crawl Rate for the EAS Crawl Display

EAS
EAS Rate
Rate:6 1 to 32

This menu item is used to set the speed with which the scrolling text moves from right to left across the screen measured in samples per frame.

For example it will take 120 frames for the text to scroll across a 720 pixel wide standard definition image with a scroll rate of 6. This default value of 6 should provide a comfortable rate, however should you change the size of the font, you should also adjust the scrolling speed.

3.13.6. Setting the Colours for the EAS Crawl Display

There are three different levels of EAS messages – warning messages, watch messages and test messages. Each message typically has a different background and foreground colour associated with it so that the viewer will immediately know the severity of the EAS alert. There are six menu items used to set the foreground and background colours. For the sake of simplicity only the menu item for setting the warning background colour will be shown in the manual. The other menu items are used in the same way.

EAS
Warning BG
R:255G:B 0 G: 0

This menu item is used to set the background colour for the warning messages. When you first enter this menu item you will be shown a set of colour values for each of the RGB colour components. The display will show something like:

```
R:255G:B   0 G:   0
```

To change the colour value press the **SELECT** button. The colon (:) after the R will change to an equals (=) sign indicating that you can change the R value. Use the ↑ or ↓ pushbuttons to change the red colour component value. When you press the **SELECT** button the colon after the G will change to an equals sign indicating that you can change the G value. Proceed to set the G and B values in the same way. After changing the B value, press the **SELECT** button and the display will show something like:

```
R:255G:B 128 G: 128
```

indicating that the warning background value has been changed.

3.14. LOGO CONFIGURATION ITEMS

The *LOGO Setup* menu is used to configure items related to the positioning individual logos and adjusting their fade in and fade out rates. Table 3-9 shows the items available in the *EAS Setup* menu. Sections 3.6.1 to 3.6.2.2 give detailed information about each of the sub menus.

H Position	Sets the horizontal position of the selected logo
V Position	Sets the vertical position of the selected logo
Fade In Time	Sets the fade in duration for the selected logo
Hold Time	Sets how long the selected logo will be displayed
Fade Out Time	Sets the fade out duration for the selected logo
Logo Gain	Sets the opacity (transparency) for the selected logo

Table 3-9: Top Level of the Logo Setup Menu

3.14.1. Setting the Logo Horizontal Position

LOGO
Logo H Position
H Position:0
0 to max pixels

This menu item is used to set the horizontal position for the current logo. The position is referenced to the left most edge of the logo. The range of values depends on video standard in use.

Use the ↑ or ↓ pushbuttons to adjust the position and then press the **SELECT** button to make the change.

3.14.2. Setting the Logo Vertical Position

LOGO
Logo V Position
V Position:0
0 to max lines

This menu item is used to set the vertical position for the current logo. The position is referenced to the top edge edge of the logo. The range of values depends on video standard in use.

Use the ↑ or ↓ pushbuttons to adjust the position and then press the **SELECT** button to make the change.

3.14.3. Setting the Logo Fade In Duration

LOGO
Fade In
Fade in:30

This menu item is used to set the fade in rate for the current logo. The range of values is 0 to 600 frames. The *Fade In* menu item only applies to static logos.

Use the ↑ or ↓ pushbuttons to adjust the *Fade In* time and then press the **SELECT** button to make the change.

3.14.4. Setting the Logo Display Time

LOGO
Hold Time
Hold:30

This menu item is used to set how long the current logo will be displayed. The range of values is 0 to 600 frames. The logo will automatically fade out after the *Hold Time* has been completed. Setting the value to zero (0) will cause the logo to be displayed until it is manually faded out. The *Hold Time* menu item only applies to static logos.

Use the ↑ or ↓ pushbuttons to adjust the *Hold Time* and then press the **SELECT** button to make the change.

3.14.5. Setting the Logo Fade In Duration

LOGO
Fade Out
Fade out:30

This menu item is used to set the fade out rate for the current logo. The range of values is 0 to 600 frames. The *Fade out* menu item only applies to static logos.

Use the ↑ or ↓ pushbuttons to adjust the *Fade Out* time and then press the **SELECT** button to make the change.

3.14.6. Setting the Logo Transparency

LOGO
Gain
Gain 100

This menu item is used to adjust the opacity (the inverse of transparency) of the logo as a percentage of the original opacity when the logo was created. When the *Logo Gain* is set at its default value of 100 the logo will be displayed at its original opacity.

For example if the logo is created at 10% opaque, adjusting the *Gain* value to 200 will render the logo as 20% opaque. If the logo is created at 50% opaque, adjusting the *Gain* value to 200 will render the logo as 100% opaque. *Gain* values resulting in opacity levels above 100%I are ignored.

Use the ↑ or ↓ pushbuttons to adjust the *Gain* and then press the **SELECT** button to make the change.

CHAPTER 4
TABLE OF CONTENTS

This page left intentionally blank

4. OPTIONAL EAS DECODER INTERFACE (EAS OPTIONED UNITS ONLY)

The 9625SW switchers with the EAS option fitted are the perfect solution for on-air insertion of channel branding bugs and Emergency Alert Services messages. The switcher is designed to receive Emergency Alerts message data and audio from a Sage or TFT EAS decoder unit and insert it over the program video and audio. This chapter describes how to connect you unit to your EAS decoder, configure the switcher and EAS decoder, and perform some tests to verify the unit is functioning properly.

4.1. CONNECTING THE SWITCHER TO THE EAS DECODER

Make sure that the basic video and audio connections are wired as recommended in section 2.5. You will also have to route the output program video to an appropriate monitor to view the on-screen scrolling messages generated by the switcher's built in character generator. Please ensure that your switcher is out of the broadcast path when testing functionality. Figure 4-1 gives a simplified connection overview.

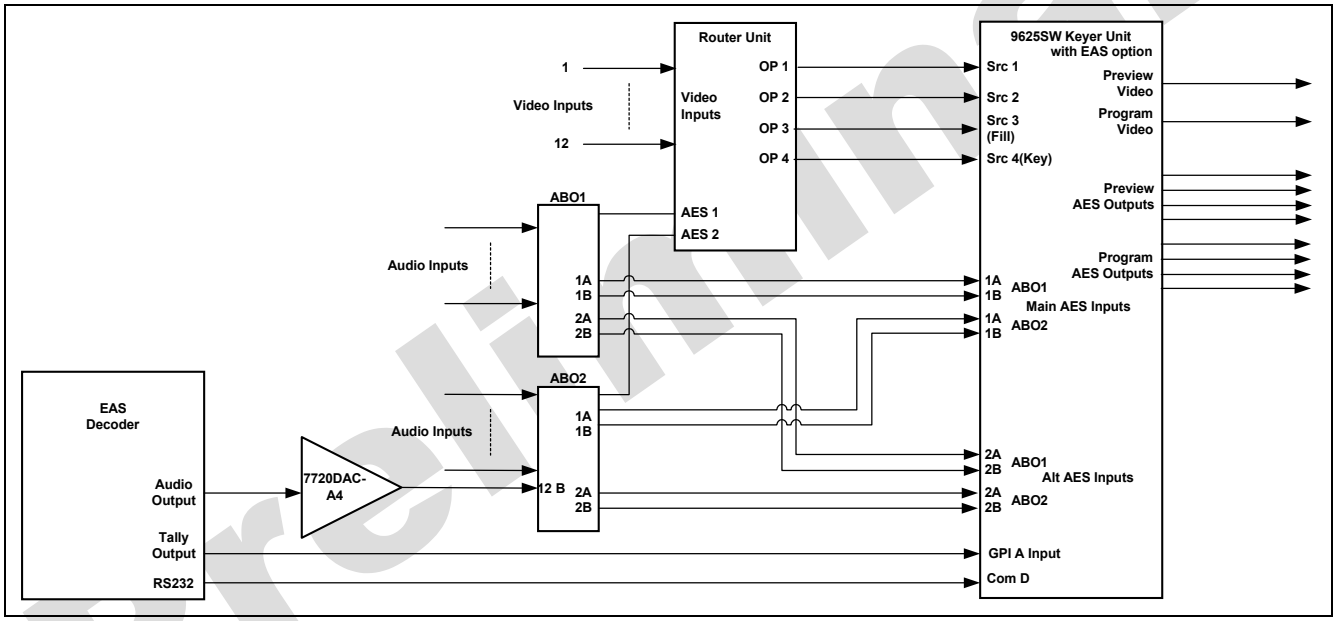


Figure 4-1: EAS Decoder Connection

4.1.1. Connecting The Serial Port

Connect a straight through RS232 cable (shipped with unit) to the COM D serial port on the keyer unit. The other end of the cable will connect to the EAS decoder. (See the section specific to your encoder manufacturer) For a permanent installation, you will require a custom length cable that fits between the EAS decoder unit and the 9625SW switcher electronics. You can purchase any off the shelf 9 pin straight through serial cable, or you may create this cable yourself according to the cable drawing in Table 4-1. This cable should not exceed 50 feet. Note that the COM D serial port must be set for RS-232 operation as described in section 2.2.6.

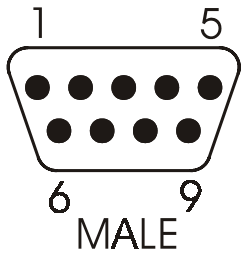
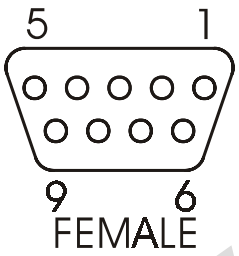
Switcher End				EAS Decoder End		
	9 pin D Male	Pin	Belden 9729	9 pin D Female	Pin	
		1			1	
	TxD	2	-------1a------	RxD	2	
	RxD	3	-------2b------	TxD	3	
		4		Rx Gnd	4	
	Sig Gnd	5	---drain 1----	Sig Gnd		
		6		Tx Gnd	6	
	RTS	7	-------1b-----	CTS	7	
	CTS	8	-------2a------	RTS	8	
		9			9	
	Frame Gnd	Shield	---drain 2----	Frame Gnd	Shield	

Table 4-1: EAS Decoder Extender Cable

If you are using a Sage model EAS decoder please see section 4.1.2 for port configuration information. If you are using a TFT model EAS decoder please see section 4.1.3 for port configuration information.

4.1.2. Sage Decoder Configuration

The Sage provides six serial ports that can be used for a variety of purposes. Each serial port is wired like a standard PC 9-pin connector. Refer to the Sage manual for specific port pin outs. (They are contained in section 12 of their manual at the time of this writing.) Plug the female end of the straight through RS232 cable into the COM 2 port of the Sage decoder. If this port is already in use you may use the COM 6 port.

The Sage port must be configured to output the type of data that the 9625SW unit is expecting. To do this, follow these steps on the Sage unit.

1) Press **Menu**
2) Scroll down to *Devices*
3) Press **Enter**
4) Scroll down to *COM2* or *COM6* (depending on the COM port you connected to)
5) Press **Enter**
6) Scroll down to *Device Type*
7) Press **Enter**
8) Scroll down to *Generic CGEN*
9) Press **Enter**
10) Enter *Password*
11) Scroll up to *Go Back*
12) Press **Enter**

Your Sage is now configured to work with the 9625SW. Proceed to section 4.1.4 to connect the audio and GPI controls, to configure the 9625SW and verify that the connections are functioning as expected.

4.1.3. TFT Decoder Configuration

The TFT unit has a number of communications ports on the rear of the unit marked as COM 1 to COM 3 and J103 and J104. The baud rate is fixed at 9600 within the 9625SW and it is configured to communicate using the *Alternate TFT I/F for Trilithic EAS Sytems ALT1 option*. This means you must plug the female end of the straight through RS232 cable into the COM 2 port of the TFT decoder and configure the port accordingly. The serial port is wired like a standard PC 9-pin connector. This will require that your TFT unit be equipped with the Four Port Expander Board option. If your unit is not so equipped, please contact TFT and order this field installable option.

The TFT port must be configured to output the type of data that the 9625SW unit is expecting. To do this, follow these steps on the TFT unit.

1) Press **Password**
2) Enter *Primary Password*
3) Press **Password**
4) Enter *Setup Password*
5) Scroll down to item 18 *Enter Character Generator Interface*
6) Press **Enter**
7) Scroll down to *Alt1 Alternate TFT I/F for Trilithic EAS Systems*
8) Press **Enter**
9) Scroll down to item 27 *Enable CG Text for RWT*
10) Press **Enter**
11) Scroll up or down to *Yes*
12) Press **Enter**
13) Press **Exit**

Your TFT unit is now configured to work with the 9625SW. Proceed to section 4.1.4 to connect the audio and GPI controls, to configure the 9625SW and verify that the connections are functioning as expected.

4.1.4. Connecting the Audio

The emergency audio from the Sage or TFT decoders must be converted to an AES audio stream before it can be used with the 9625Sw switcher. You can use the Evertz 7720ADC-A4 Analog Audio to AES Converter module, or other suitable device to do this. Connect the AES1 output from the 7720ADC-A4 into input 12 on the B side of the 1202ABO router audio breakout panel that is connected to the AES Audio 2 I/O connector. You will also need to configure the 9625SW for *3+1 Audio Mode* using the Audio *Mode* menu item as described in section 3.7.1.

4.1.5. Connecting the GPI Tally Control

The EAS decoders give out a tally control when to indicate when an EAS alert message is to be inserted into the program video and audio. This tally output must be connected to one of the GPI inputs on the switcher to signal it to key the EAS scrolling message and to ‘duck insert’ the emergency audio into the program audio. For the sake of simplicity in this description connect the tally output from the decoder to the GPI A input on the keyer unit of the switcher. (See Table 2-6 for a pinout of the GPIO connector on the keyer unit.)

4.2. CONFIGURING THE 9625SW FOR EAS

4.2.1. Configuring the Serial Port

In order for the EAS decoder to communicate to the 9625SW you must configure the COM D port for the correct protocol and baud rate. The *COM D* menu item on the *General* menu is used to accomplish this. Set this menu item to *EAS CG* in order for the EAS decoder to communicate to the 9625SW. See section 3.6.5 for information on setting the serial port protocol.

4.2.2. Configuring the GPI Input

In order to use the GPI to signal the EAS alert you must configure the GPI A input as shown in Table 4-2. See section 3.12.3 for information on configuring the GPI inputs.

Menu Item	Setting
Cprest	None
Ctransition	No
Caction	Duck In
Clogo	None
Oprest	None
Otransition	No
Oaction	Duck Out
Ologo	None

Table 4-2: GPI settings for EAS Tally Control

4.2.3. Configuring the EAS Controls

The EAS crawl is keyed in by the Logo keyer so ensure that the Logo layer is activated for the program and preview output busses, also ensure that all stored presets have the logo layer activated. See section 3.1.2 for information on turning on the Logo layer. See section 3.12 for information on storing presets.

The EAS menu items are used to configure the EAS crawl position, size, and colours. See section 3.13 for a complete description of these menu items. The brief descriptions of the menu items will guide you in setting up the unit quickly.

Vert Position. The default value should be adequate but you need to ensure that the messages fall within the safe area of the video display so that the entire message is legible once the message is broadcast.

Height: Sets the size of the Scrolling text. 30 indicates the smallest font size. This is about 1/20 of the active picture area. 45 indicates the medium font size of 1/10 of the active picture area. 75 indicates the largest font size of 1/3 of the active picture area.

Rate: Sets the speed of the scrolling text message. 1 indicates the slowest possible scrolling speed. 30 represents the fastest scrolling speed. If you adjust the font size you will have to adjust the scroll rate. The smaller the font size the slower you will have to scroll the text box. We recommend about 8 for font sizes 30 and 45 and about 20 for font size 75.

4.3. TESTING THE SYSTEM

Please ensure all output video from the HD9625LG-EAS is out of your on-air broadcast path for this test.

4.3.1. Testing The Sage Decoder

On the Sage decoder.

1) Press **Week**
2) Enter *Password*
3) Press **Enter**

The video monitor should now show a scrolling EAS weekly test message. If you do not see the test message, double check your video connections, ensure that you have the correct video standard selected in the 9625SW. Double check that you have configured the correct Sage port and the correct Device Type for the correct port and that the serial cable is valid and connected to the correct ports. Check the Evertz Web site at www.evertz.com for any new firmware releases for the switcher. Check that you are running the most up to date firmware in your Sage decoder at www.broadcast.harris.com .

Evertz tested this configuration with the Sage decoder model 1822 with firmware version 5.111

4.3.2. Testing The TFT Decoder

On the TFT decoder

1) Press **Weekly Test** button

The monitor should now show a scrolling EAS weekly test message. If you do not see the test message, double check your video connections, ensure that you have the correct video standard selected in the 9625SW. Double check that you have configured the correct CG Interface Type and that the serial cable is valid and connected to the correct ports. Check the Evertz Web site at www.evertz.com for any new firmware releases for the switcher. Check that you are running the most up to date firmware in your TFT decoder Phone: 1-800-347-3383.

Evertz tested this configuration with the TFT decoder model EAS 911 with firmware version T.838

This page left intentionally blank

CHAPTER 5
TABLE OF CONTENTS

This page left intentionally blank

5. TECHNICAL DESCRIPTION

5.1. SPECIFICATIONS

5.1.1. Video Specifications (PKG9625SW)

5.1.1.1. Standard Definition Serial Digital Video Input

Standard: 270 Mb/sec Serial digital component SMPTE 259M
standards supported shown in Table 2-8, software selectable
Number of Inputs: 12
Connector: BNC per IEC 60169-8 Amendment 2.
Equalization: Automatic to 100m @ 270 Mb/s with Belden 1694 or equivalent cable
Return Loss: > 15 dB up to 270 Mb/s

5.1.1.2. Standard Definition Serial Digital Video Outputs

Standard: SMPTE 259M, same as input
Number of Outputs: 1 Program, 1 preview
Connectors: BNC per IEC 60169-8 Amendment 2.
Signal Level: 800mV nominal
DC Offset: 0V ±0.5V
Rise and Fall Time: 750ps nominal
Overshoot: <10% of amplitude
Wide Band Jitter: < 0.2 UI

5.1.2. Video Specifications (PKGHD9625SW)

5.1.2.1. HDTV Serial Digital Video Input

Standard: 1.485 Gb/sec HDTV Serial component digital SMPTE 292M
standards supported shown in Table 2-9 - software selectable
Number of Inputs: 12
Connector: BNC per IEC 60169-8 Amendment 2.
Equalization: Automatic to 100m @ 1.5Gb/s with Belden 1694 or equivalent cable
25 m with optional bypass relay installed (+HBP option)
Return Loss: > 15 dB up to 1.5Gb/s Mb/s

5.1.2.2. HDTV Serial Digital Video Outputs

Standard: SMPTE 292M, same as input
Number of Outputs: 1 Program, 1 preview
Connectors: BNC per IEC 60169-8 Amendment 2.
Signal Level: 800mV nominal
DC Offset: 0V ±0.5V
Rise and Fall Time: 200ps nominal
Overshoot: <10% of amplitude
Wide Band Jitter: < 0.2 UI

5.1.3. Video Reference

Type: Menu selectable - depends on video format
NTSC or PAL Colour Black 1 V p-p
Connectors: BNC per IEC 60169-8 Amendment 2.
Termination: High impedance loop through on router unit
75 ohm terminated on keyer unit

5.1.4. AES Audio Inputs

Standards: SMPTE 276M single ended AES
Number of Inputs: 4 Groups of 12(on two 1202ABO AES Breakout panels provided)
Connector: BNC per IEC 60169-8 Amendment 2.
Signal Level: 1 V p-p ± 10%

5.1.5. AES Audio Outputs

Standards: SMPTE 276M single ended AES
Number of Outputs: 4 Program, 4 preview
Connector: BNC per IEC 60169-8 Amendment 2
Signal Level: 1 v p-p
Reference: From Video Reference.

5.1.6. LTC Reader

Standard: SMPTE 12M
Frame Rate: 24, 25 and 30 Fps nominal
Connectors: 3 pin female XLR type connector
Level: 0.2 to 4V p-p, balanced or unbalanced

5.1.7. Control

COM D Port: 9 pin female “D”, RS-232/422 8 bits, no parity, baud rate depends on protocol
Selectable protocols: Automation, EAS Interface, temperature probe interface

Upgrade Port: 9 pin female “D”, RS-232 57600 baud, 8 bits, no parity
firmware upgrade

Remote Panel Port: 9 pin female “D”, RS-422 9600 baud, 8 bits, no parity
Rack mount control panel interface

Logo Transfers: RJ-45 100Base T Ethernet, TCP/IP,

5.1.8. General Purpose Inputs and Outputs

Number of Inputs: 8, programmable functions
Number of Outputs: 4
Type: opto-isolated, active low
Connector: 15 pin female High-density D
Signal Level: Pulled up to Vext supplied voltage. 3.3V DC provided

5.1.9. Physical

Dimensions:
Switcher Electronics: 19“ W x 3.5” H x 18.75” D.
(483mm W x 90mm H x 477mm D)
Control Panel: 19“ W x 1.75” H x 4.25” D.
(483mm W x 45mm H x 110mm D)
Weight(total): 17 lbs. (7.8Kg)

5.1.10. Electrical

Power: Autoranging 100-240 VAC 50/60 Hz, 60 VA.
Safety: ETL listed.
Complies with EU safety directive
EMI/RFI: Complies with FCC Part 15 Class A,
EU EMC Directive

5.2. UPGRADING THE FIRMWARE

5.2.1. Overview

The firmware in the switcher units is contained on a FLASH EPROM. From time to time firmware updates will be provided to add additional features to the units. The router unit and the keyer unit each have their own firmware and each must be updated separately if required. The keyer unit update can be initiated using either the front panel or the terminal program method. As the router unit has not front panel it can only be initiated using the terminal program method.

You will need the following equipment in order to update the Firmware

- PC with available communications port. The communication speed is 57600 baud, therefore a 486 PC or better with a 16550 UART based communications port is recommended.
- “Straight-thru” serial extension cable (DB9 female to DB9 male).
- Terminal program that is capable of Xmodem file transfer protocol. (such as HyperTerminal)
- New firmware supplied by Evertz.

After upgrading the 9625SW with new firmware, all presets should be recalled using the *Recall Preset* menu item, the values for new features must be set, and the preset must be saved again using the *Store Preset* menu item.

IF THIS IS NOT DONE, OLD PRESETS COULD BE RECALLED WITH UNDESIRABLE SETTINGS.

5.2.2. Terminal Program Setup.

1. If you are updating the keyer unit firmware, connect the serial cable to the **UPGRADE RS232** DB9 connector on the keyer unit rear panel. If you are updating the router unit firmware, connect the serial cable to the **REMOTE CTL** DB9 connector on the router unit rear panel.

2. Connect the 9 pin connector on the end of the serial update cable to the PCs' RS-232 communications port

3. Start the terminal program.

4. Configure the port settings of the terminal program as follows:

Baud	**57600**
Parity	**no**
Data bits	**8**
Stop bits	**2**
Flow Control	**None**

5. Power up the unit.

5.2.3. Initiating Firmware Upgrade Mode Via The Front Panel (Keyer units only)

This is the recommended method of updating the software in the keyer units. It is activated through the *GENERAL* Setup menu branch. If you cannot invoke the upload mode via the front panel as outlined in step 6 then follow the steps in section 5.2.4.

6. You can invoke the Firmware upgrade mode using the front panel Setup Menu. (See section 3.3 and 3.4 for information on how to operate the front panel menus.) Press the **SETUP** button to enter the top level of the Setup menu. Use the ↑ or ↓ pushbuttons to find the *GENERAL* menu item and then press the **SELECT** button. Use the ↑ or ↓ pushbuttons to find the *Upgrade Code* menu item and then press the **SELECT** buttons. If you want to upgrade the operating firmware in the keyer unit then press the **SELECT** button or press the **SETUP** button if you want to abort the programming operation.

   When you press the **SELECT** button the keyer unit will be placed in programming mode and its serial port is opened to communicate with the terminal software program. The following message will appear on the terminal screen

```
EVERTZ 7700FC BOOT MONITOR
MON8240 1.1 BUILD 9
COPYRIGHT 2000 EVERTZ MICROSYSTEMS LTD. ALL RIGHTS RESERVED
```

```
EXEC RESULT 0
UPLOAD MAIN PROGRAM
```

Proceed to section 5.2.5 for instructions on uploading the firmware using the terminal program.

5.2.4. Initiating Firmware Upgrade Mode From The Terminal Program

You may send commands to the keyer unit or router unit boot monitor in order to upgrade the application firmware in either unit.

7. Power up the unit. After the unit powers up, a banner with the boot code version information should appear in the terminal window. The cursor to the right of the word “BOOT>” should be spinning.

   For example:

```
EVERTZ 7700FC BOOT MONITOR
MON8240 1.1 BUILD 9
COPYRIGHT 2000 EVERTZ MICROSYSTEMS LTD. ALL RIGHTS RESERVED
EXEC RESULT 0
COLD BOOT |
```

8. The following is a list of possible reasons for failed communications:

   - Defective Serial Upgrade cable.
   - Wrong communications port selected in the terminal program.
   - Improper port settings in the terminal program. (Refer to step 4 for settings). Note that HyperTerminal will not change port settings while connected. Click on HyperTerminal’s “Disconnect” Button then click the “Reconnect” button to activate changes to the port settings.

9. While the cursor is spinning press the <CTRL> and <X> keys, this should stop the cursor from spinning. The spinning prompt will only remain for about 5 seconds. You must press <CTRL-X> during this 5 second delay. If the unit continues to boot-up, simply cycle the power and repeat this step.

10. Hit the <ENTER> key on your computer once.

11. Type the word “upgrade”, without quotes, and hit the <ENTER> key once.

12. The boot code will ask for confirmation. Type "y", without quotes.

5.2.5. Uploading the new firmware

13. You should now see a prompt asking you to upload the file.

14. Upload the “*.bin” file supplied using the X-Modem transfer protocol of your terminal program. If you do not start the upload within 10 minutes the unit’s Boot code will time out. You can restart the upgrade process by power cycling the unit.

The application firmware is contained in a “bin” file will have a name consisting of the version number and the product name.

For the 9625SW keyer unit the name will be something like: 1v02_5_9625SW.bin

For the X-1204S-SW router unit the name will be something like: S1204A4L.bin

For the HD9625SW keyer unit the name will be something like: 1v02_5_HD9625SW.bin

For the X-1204H-SW router unit the name will be something like: H1204A4L.bin

15. The boot code will indicate whether the operation was successful upon completion of the upload.

    For Example:

```
UPLOAD OKAY
```

16. The following is a list of possible reasons for a failed upload:

- If you get the message "transfer cancelled by remote" you must restart the terminal program and load the bin file, then remove and install the module again.
- The supplied “*.bin” file is corrupt.
- Wrong file specified to be uploaded.
- Wrong file transfer protocol used – make sure you specify Xmodem, not Xmodem 1K.
- The PCs’ RS-232 communications port can’t handle a port speed of 57600.
- Noise induced into the Serial Upgrade cable.

5.2.6. Completing the Upgrade

17. Power cycle the unit. The unit should now reboot.

18. You can now close the terminal program and disconnect the RS-232 serial cable from the PC.

6. INDEX

F

G

H

I

L

M

N

O

P

R

S

T

U

V

This page left intentionally blank