

## Chapter Two: Video Toaster Card and Breakout Box





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## Video Toaster Card and Breakout Box

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### VIDEO TOASTER CARD INPUT/OUTPUT

The Video Toaster card, a 32-bit PCI card with 32MB onboard memory, is the hardware that translates your video and audio signals into the digital language a computer can understand.

The section on connections briefly reviews the options on the Video Toaster card that let you attach a video input and output and an audio input and output. The remainder of this chapter explains how to attach multiple video and audio sources to the Video Toaster through the SX-8 breakout box.

### CONNECTIONS

Each cable supplied with Video Toaster lets you attach one component, S-video, or composite video device at a time (see Figure 2.1). 1/8" stereo mini-jacks supply input and output for one audio source at a time. The breakout cable attaches to the D-Sub 9-pin port on the plate of the Video Toaster card.



#### NOTE

The cables for these different devices are not interchangeable.

The Video Toaster card also includes a Movie-2 bus with three connectors. With a bridge card, you can support a second video input if you use the breakout cable, or it supports the card for the breakout box. A special bridge card that comes with the Serial Digital Interface (SDI) card lets you add both the breakout box and the SDI card, discussed at the end of the chapter.

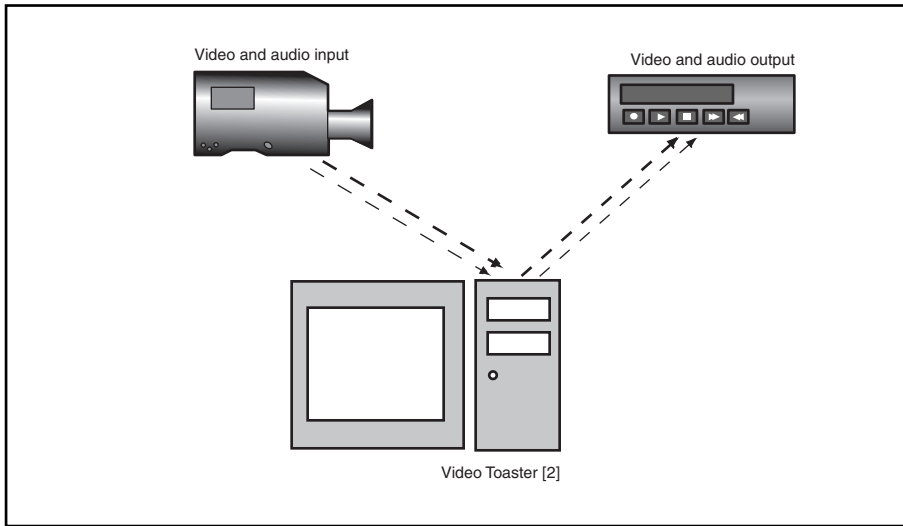
## 2.2 VIDEO TOASTER [2]

### Video Cables

- Gray (or White): Composite video
- Green: Luminance (Y) for component video, or Luminance (Y) for S-Video
- Blue: Chrominance (U) for component video
- Red: Chrominance (V) for component video or Chrominance (C) for S-Video

### Audio Connectors

- 1/8" Stereo mini-jacks



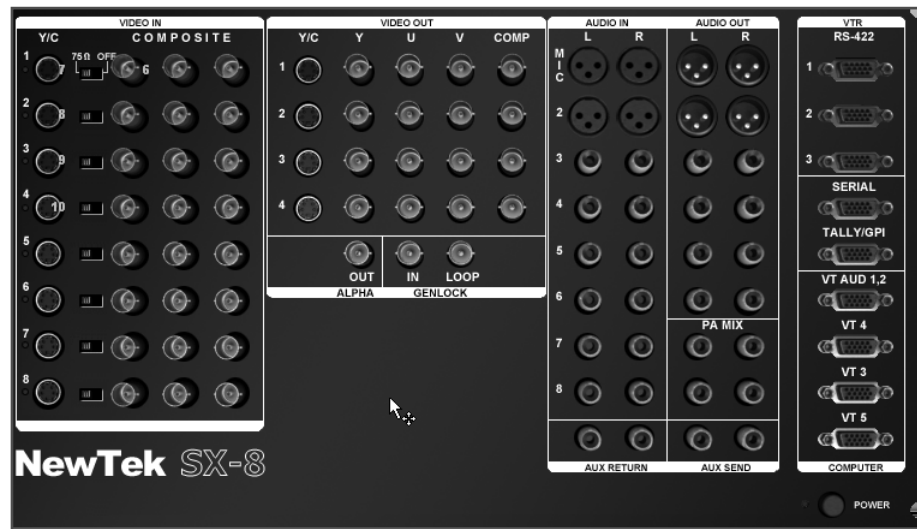
**Figure 2.1.** Connections with the Video Toaster Card

## SX-8 BREAKOUT BOX

When you need to feed multiple sources, like cameras, microphones, and videotape recorders (VTRs), to the Video Toaster, you attach those devices through the SX-8 Breakout Box.

### HARDWARE BREAKOUT BOX

The SX-8 breakout box is grouped from left to right into video inputs and outputs, audio inputs and outputs, and VTR and peripheral control. Across the top of the breakout box, are headings for each section; labels across the bottom of the board refer to special connections, which are boxed in white.



**Figure 2.2.** The SX-8 Breakout Box software interface

The SX-8 breakout box offers the following inputs and outputs for video:

- eight channels for component or Y/C video input
- 24 channels for composite video input; this means you can feed 24 separate signals from composite devices to your breakout box
- four channels for component or Y/C video output
- four channels for composite output

## 2.4 VIDEO TOASTER [2]



### WARNING

When you use component and Y/C signals, you can use any combination of the two signals to create eight input signals in total. However, when you choose an output signal, you can choose Y/C only or component only—you cannot use combinations of the two. You always have access to composite output.

The difference between component, Y/C, and composite signals is explained later in this chapter.

You get the following options for audio:

- Four XLR inputs for microphone or balanced line
- Six unbalanced RCA stereo inputs
- Two balanced XLR pairs of line-level outputs
- Six unbalanced RCA stereo outputs which include two outputs for PA feed
- One pair of Aux Send and Aux Return

The SX-8 breakout box provides machine control with three RS-422 ports for playback or record decks. GPI Triggers and Genlock are also available on the breakout box.

Eight LEDs align with the i/o connections on the breakout box. These LEDs are tally lights that illuminate when an input sits on the switcher's Main bus. For example, if you choose a Y/C input that sits in the third row as your Main input, the LED labeled 3 lights up.



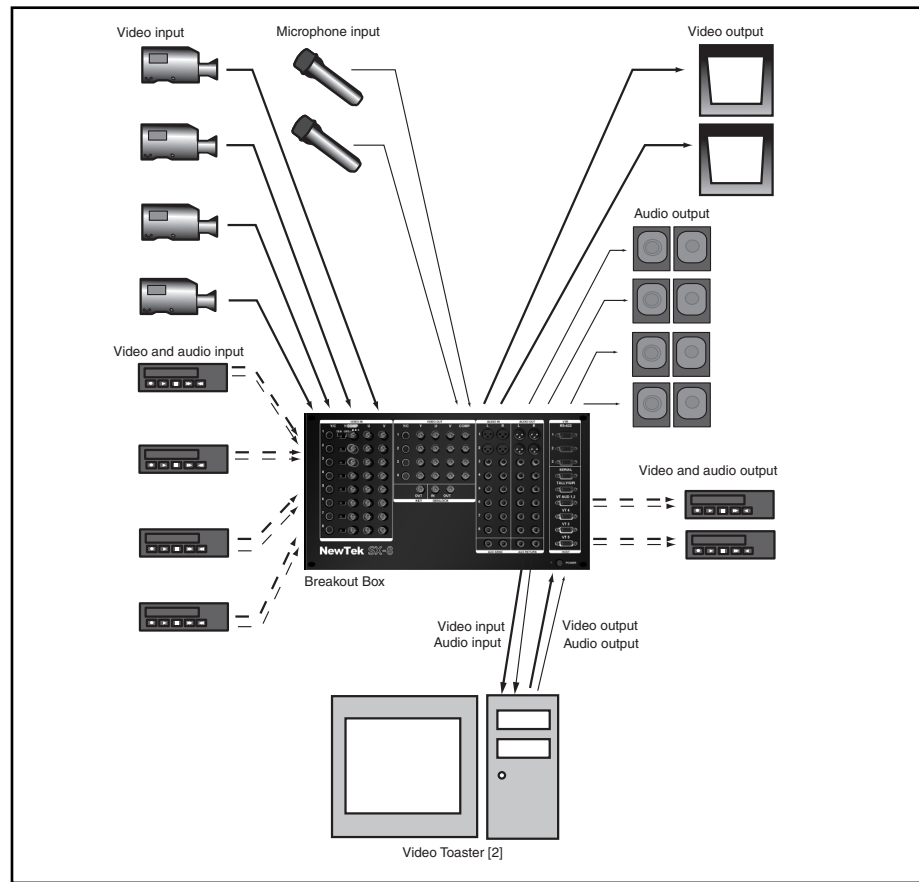
### Note

This chapter refers often to the Main bus and the Preview bus on the switcher. A bus is a row of buttons: the Main bus is the row where you place the video source that you want to go to LIVE output. The Preview bus is the row where you place a source to be next-in-line for the Main bus (see Figure 2.3). Why don't we just say row? Because we're working with video and we call it a bus.



Figure 2.3. The Switcher

You can attach a wide variety of combinations of cameras, VCRs, monitors, microphones, and other sources to the breakout box. You access the SX-8 breakout box through the Virtual BoB, which is an on-screen interface that mimics the breakout box itself.



**Figure 2.4.** One of many possibilities for connecting devices through the Breakout box.

## ATTACHING THE SX-8 BREAKOUT BOX TO THE VIDEO TOASTER CARD

To work with the SX-8 breakout box, you must attach it to the Video Toaster and supply it with power. The computer connections are the ports where you run cables between the SX-8 breakout box and the daughter card in your computer. The SX-8 breakout box gets its power internally when you attach the daughter card to system power, like you do with a floppy drive.

### COMPUTER CONNECTIONS

The computer connections are at the bottom right of the breakout box; you use cables to connect the SX-8 breakout box to the daughter card in the host computer. The host computer is the computer where you installed your Video Toaster card and the Video Toaster [2] software.



**Figure 2.5.** VT Audio and Video ports for input to and output from Video Toaster [2].

### VT Audio

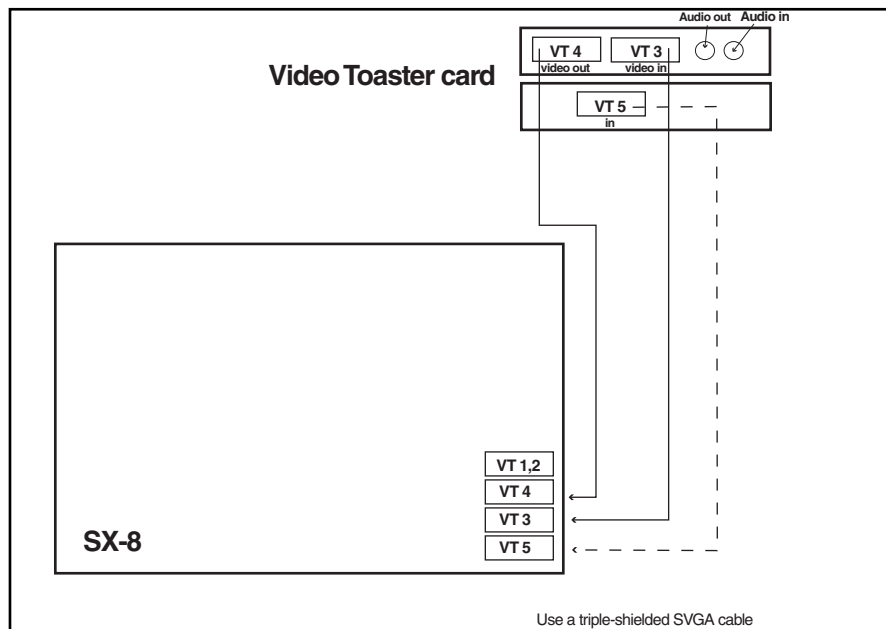
VT Audio 1,2 connects audio between the breakout box and the Video Toaster audio port. This line actually feeds information between the breakout box and the Video Toaster software.

The only way that you will hear anything is if you connect VT audio to your computer. Otherwise you can add all the audio components that you want to the SX-8 breakout box, and you will sit in blissful silence. The cables that you use for VT Audio 1,2 are packaged with the SX-8. If you need longer connections, you can use standard VGA cables, though long cables may introduce interference.

**VT**

Three connections, VT 4, 3, and 5, provide the input and output for video between the SX-8 and your host computer. Why are they labeled 4, 3, and 5 and why are they out of order? To give the breakout box character and to optimize the circuitry inside the board.

- **VT 4** is for *output*; connect the cable from VT 4 to the first serial port on the left on the Video Toaster card.
- **VT 3** is for *input*; connect the cable from VT 3 to the second serial port on the left.
- **VT 5** is for the *daughter card*; attach the cable from VT5 to the daughter card connection. (See the information that follows on attaching the bridge card, daughter card and power to the daughtercard.)



**Figure 2.6.** Connecting the SX-8 Breakout Box to the Video Toaster card.

The cables that you use for these connections are packaged with the breakout box; if you need longer cables, you can use standard VGA cables.

**Warning**

The SX-8 breakout box has been tested with 6-ft. and 10-ft. cables, but these are high-frequency analog signals—using longer cables may introduce signal interference or signal loss.

## DAUGHTER CARD

The daughter card must be installed and attached to the Video Toaster card so that you can connect the SX-8 breakout box.

### VIDEO 101:

#### COMMON FORMATS

##### Analog

**Betacam, BetacamSP.** Professional format for video tape developed by Sony Corporation; considered the standard for video tape recording. System has developed over the years to offer models for industrial and professional markets. Uses component signal.

**SVHS.** (Super VHS) A semi-professional format that is typically used for prosumer, electronic news gathering (ENG), and educational video. Uses Y/C signal.

**Hi-8.** Consumer format with quality similar to SVHS; Sony's advancement of the 8mm format using Hi-8 (Y/C) tapes for better resolution.

**8mm.** A consumer format that uses compact videocassette tapes and long recording times to produce quality video. 8mm refers to the eight millimeter wide magnetic tape. Uses composite signal.

**VHS.** A consumer format. Nuff said.

##### Digital

##### **Digital Betacam/Betacam SX.**

Professional format for digital recording often used for ENG; the signal is uncompressed. Digital Betacam units can play Betacam SP tapes, but cannot record to them.

**DVC Pro50.** Panasonic's professional format for digital recording; records at 50Mb per second—double that of other DV systems. Sampling is 4:2:2 for enhanced chroma resolution, which is useful in chroma keying.

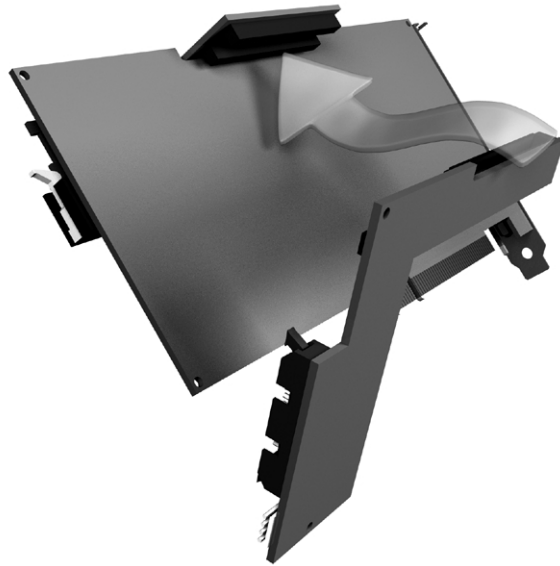
**DVCam/DVC Pro.** Panasonic DVCam and Sony DVC Pro are semi-professional formats; use IEEE-1394 connection (FireWire) and DV 5:1 compression to record 8-bit component digital video. Uses wider track to record data and a higher tape speed; time code is supported in Linear and Vertical Interval, and on an analog cue track. Records at 25Mb per second.

**Digital-8.** Popular consumer format developed by Sony that records 60 minutes on a two hour Hi-8 (Y/C) tape. Uses FireWire, Y/C, or composite signals.

**Mini-DV.** Consumer and prosumer format that uses 6.35mm tape. Uses FireWire and 5:1 DV compression to record 8-bit component digital video. Records at 25Mb per second.

**To install the daughter card**

- 1 Turn off your computer and all peripherals, and disconnect the power cord from your computer. ***Take precautions against electrostatic discharge (ESD) by using ground straps, gloves, and so on to avoid damaging the processor and other electrical components in the system.***
- 2 Remove the computer cover.
- 3 Locate the Video Toaster card and remove it.
- 4 Press the bridge card firmly into the edge connectors on the Video Toaster card and daughter card. Be sure connectors are aligned correctly.



Attach Daughter card to bridge card. Illustration by Argon Hennley.

- 5 Find an unused floppy drive power supply connector and plug into connector on daughter card. Observe polarity.

## 2.10 VIDEO TOASTER [2]

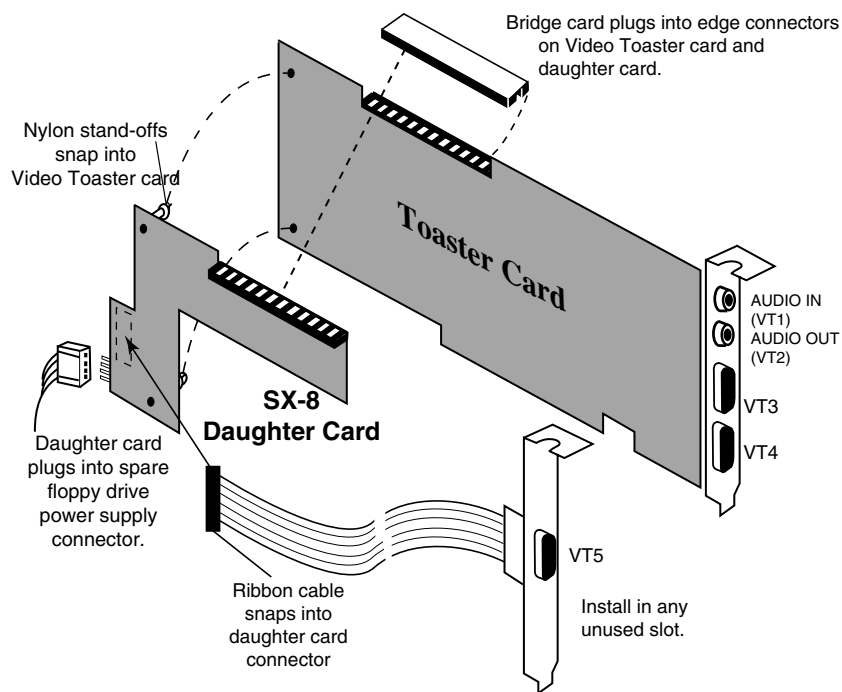


Illustration and instructions provided by Dexter Welton

- 6 Re-install Video Toaster Card with attached daughter card. Be sure it is seated firmly.
- 7 Install the VT5 faceplate in any convenient slot.
- 8 Connect supplied cables from computer to SX-8 breakout box carefully to assure that connections are correct.

### Power for the Daughtercard

As explained in the previous instructions, you must supply power to the daughter card. The daughter card supplies power to the SX-8 breakout box and LED indicators and enables phantom power for microphones.

You should have an unused floppy drive power connector leading from your computer power supply. The daughter card plugs into this connector. If you do not have an unused floppy connector you need an adapter, as shown in Figure 2.7, which plugs into an unused power supply connector. You attach the daughter card to this connector.



**Figure 2.7.** Power supply cable to floppy drive adapter for supplying power to daughter card.

## VIRTUAL BREAKOUT BOX

In the Video Toaster [2] interface, you click on **SX-8 Virtual BoB** in the main menu. This action launches the breakout box emulation. You can double-click on an active input in the Virtual BoB panel and automatically add it to the switcher. The item is placed in the first available channel.



### NOTE

If you do not install the SX-8 breakout box, then the panel for the Virtual BoB reads “Not available.”

You can select multiple items simultaneously by either **SHIFT**-clicking to select a consecutive range of items or **CTRL**-clicking to select items independently. Your items are added in the order that you select them. If the switcher is already running, your first item in the group goes to the Preview bus. However, if you start the Switcher by adding inputs from the Virtual BoB, your first item goes directly onto the Main bus and the next item goes to the Preview bus. The rest of your inputs just go into available channels on the Switcher.

In the Virtual BoB, color-coded dots appear beside any input that sits on one of the Switcher busses. The Main bus appears as a red dot, the Preview bus appears as a green dot, and the Key bus appears as a yellow dot. A purple dot represents DSK, which means the item is used for downstream keying.

### **BREAKOUT BOX CONTEXT MENU**

Like other panels, when you right-click in the Virtual BoB you get a context menu. The menu options vary depending on where you right-click in the panel. In an open area of the panel, you launch the menu to save and load module configurations. When you save a module configuration, you save a link to inputs and outputs that sit on the breakout box. You can then load the configuration later if you set up the breakout box in the same way.

#### **VIDEO 101: DIGITAL ACTIVE AREA**

In virtually all digital formats the digital active line is longer than the active video area in the older analog specifications. This is to insure that you record all analog program material, and to avoid any edge problems with the digital video (like an instant jump from blanking to full white).

Some blanking numbers for NTSC (active = H, = appx. 63.556 uS):

RS-170A Blanking (analog): 10.9 uS

D1 Blanking (digital): 10.3 uS

Digital black bars (apps. 9 pixels):  
00.7 uS

It is normal to see a black area of about four to five pixels on both the left and right edges of a D1 digitized image. This is simply one of the quirks (like interlacing) that video professionals must accept. Note that when you send data from the digital

world (e.g. Lightwave or Aura) to the real video world (e.g., a video recording device) you need to blank the corresponding amount of the left and right side of the image, and provide a fade up/down (typically of a few pixels) in order to generate legal analog video (correct active area, no out of band frequency components). Unfortunately, there are no standards for how to accomplish this.

Because a digital image has a larger digital active area, a digital image with its black edges will display correctly on video monitors, projectors, and test equipment, because it is legal video. However, if a digital image occupied the entire horizontal line (i.e., no black edges), it would be illegal, if you played it back without cropping.

You can right-click on a Virtual BoB input and choose “Edit Procamp settings for this input.” Video Toaster launches the Processing Amplifier, which lets you adjust your input video signal. But remember that the breakout box doesn’t automatically save settings on the proc amp when you close the breakout box. You save proc amp settings only when you specifically save an individual proc amp or when you save or close the desktop. For more information on adjusting your inputs, see Chapter Eighteen: Processing Amplifier.

When you right-click on certain Virtual BoB inputs, a different menu appears that gives you options specific to the input. For example, the context menu for a video input gives you several options ranging from simply placing the input on the Switcher to performing a Take between one input and another without the Switcher. This is a quick way to patch and test an input without the Switcher. These options are discussed in Chapter Seven: Switcher.

Remember that although you can cut or dissolve between inputs on the breakout box, without accessing the Switcher, you’ve got to work in the Switcher to use DVEs for your transitions.



#### NOTE

You must have an active input to access its context menu. If no input is attached to the breakout box, then nothing happens when you right-click on it.

### Virtual BoB Skins

The Virtual BoB offers two skins that you can access through the context menu. You can stay with the default skin, which shows all available inputs in the virtual display, or you can choose a smaller skin that shows only your Video In inputs. You can toggle between the two skins by clicking on the small **S** at the top right of the panel.

## INPUTS AND OUTPUTS

When you work with the Virtual BoB, choosing an input is usually a matter of just selecting the input that you want. There is, however, a small trick to selecting between composite and component inputs, because they share the same BNC connectors.

**To select a Y/C input**

- Click on the desired Y/C input in the Virtual BoB.

**To select a composite input**

- 1 Verify that the Virtual BoB reads “Composite” over the video inputs; if not, click on the YUV heading to change it to Composite.
- 2 Click on the desired composite input.

**To select a component input**

- 1 Verify that the Virtual BoB reads “YUV” over the video inputs; if not, click on the Composite heading to change it to YUV.
- 2 Click on the desired input to choose the entire component row.

**COMPONENT**

The component inputs divide video into three signals, referred to as YUV. Y represents the luminance value of the signal, or the black and white information. The rest of the signal are values of difference between the color and luminance: R-Y, or U, is red minus luminance, and B-Y, or V, is blue minus luminance. Devices that use YUV use three separate cables to send the YUV signals.

You receive YUV breakout cables with the Video Toaster [2] package (Figure 2.8). If you add the optional SX-8 breakout box, you can plug in component devices to the YUV inputs (Figure 2.9).



**Figure 2.8.** YUV breakout cables. Green, Red and Blue refer to typical colors for the cable casing.

You get the best video information possible from a YUV signal; it offers the highest quality for analog resolution of all available inputs. You can connect up to eight component devices to the Video Toaster.



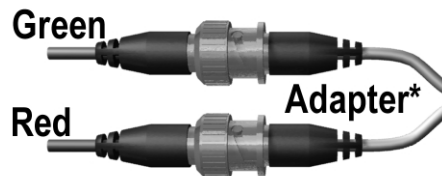
**Figure 2.9.** The YUV on the SX-8 breakout box for component video input.

Component devices are professional or semi-professional equipment such as a Betacam™, Digital-S™ and DVCPro. This equipment offers the sharpest imagery and the greatest ease for pulling a clean Chroma Key (see Chapter Sixteen: Keying for more information.)

## Y/C

Y/C (or S-Video) is a signal that is separated into two parts: the Y, or luminance signal, along with sync, is separated from the C, or color signal. Though Y/C signals give you more information than a composite signal, it does not compete with the quality of a component signal. Y/C devices use a cable with 4-pin mini-DIN connector.

The Video Toaster gives you a breakout cable for one Y/C device (Figure 2.10). If you add the optional SX-8 breakout box, you get eight Y/C inputs.



**Figure 2.10.** Y/C (S-video) for the breakout cables. Green and Red refer to typical colors for the cable casing.

You can connect Y/C two different ways on the SX-8: connect through the S-connector (Y/C connector) on the far right of the SX-8 (Figure 2.11) or use BNC connectors and plug into the Y and V inputs, which leaves the center row for composite inputs.



**Figure 2.11.** The Y/C video inputs and outputs on SX-8 breakout box.

Y/C devices can be Y/C, S-Video, and Hi-8 cameras, as well as S-VHS decks and Betadecks.

### Composite

Luminance and color information are combined into one input for the composite signal. Devices with composite inputs send the entire video signal through one cable to the Video Toaster.

Video Toaster gives you a breakout cable for one composite device (Figure 2.12). If you add the optional SX-8 breakout box, you have 24 composite input connectors and four composite output connectors.



**Figure 2.12.** Composite cable without SX-8 breakout box. Gray refers to typical color for the cable casing.

High-end composite devices may use a cable with a BNC connector, but many consumer composite devices use a phono jack. When your composite device uses a phono jack, you will need a BNC female adaptor to attach it to the SX-8 breakout box.



**Figure 2.13.** The composite inputs on SX-8 breakout box for composite video.

Composite devices are usually consumer equipment like camcorders and VCRs.

### Digital Inputs

Video Toaster [2] can accept professional digital input via the optional Serial Digital Input (SDI) card. The SDI card is discussed at the end of this chapter. SDI is usually uncompressed digital input that uses professional or semi-professional equipment.

In the Video Toaster software, you can edit files captured from Digital Video (DV), but you must install an IEEE 1394/Firewire card to actually capture DV input. DV is compressed digital input that uses consumer equipment.

## POSSIBLE VIDEO COMBINATIONS

You can combine any variety of sources using the video inputs and outputs. For example, you could use four component cameras and four Y/C VCRs, or you could use all eight Y/C channels and add eight more composite inputs. You can always combine devices that use different signal types, as long as the necessary channels are open on the BoB.

## GENLOCK

Genlock is an optional card that you can add to your Video Toaster card. Genlock, an abbreviation for generator locking device, lets a composite video machine, such as a television, accept two or more signals simultaneously. The genlock accepts a reference signal (house sync), such as a black burst signal, and locks other devices to the same frequency as the reference signal. In the past, you needed genlock to superimpose titles and graphics over video; for example, to combine titles created on a computer with a video source.



**Figure 2.14.** The composite video inputs and outputs.

You will typically use Video Toaster genlock as a loop-through for house sync. House sync locks all devices on different editing systems to the same sync signal; one system sends a master sync signal that all other systems use as a reference. On the SX-8 breakout box, you feed the reference signal from the other system into **Genlock In** and send it on to other systems through **Genlock Loop**. There is a Preferences setting for **Genlock Termination**—if you plan to loop house sync through Video Toaster you should turn the termination off. You could use Video Toaster as the source for the master sync signal by sending the black burst from a signal generator into the **Genlock In**. (In the first group of SX-8 breakout boxes, this connection may simply be labelled Loop.)

You will not need genlock when you attach devices only to the SX-8 breakout box, because sync is part of the circuitry of the board. When we discuss other editing systems, we mean, for example, that you have more than one computer running Video Toaster [2]. If you wanted to use the inputs from those other Video Toaster systems together, you would use genlock.

## ALPHA

The Alpha option is provided for future expansion. It will allow you to send the alpha value of a key to another system. The information from Program Out is translated to a pure black and white key shape that you can use as an overlay. For example, you'll be able to take titles from your Video Toaster Program Out and send them to another system. The Alpha option will need genlock.



**Figure 2.15.** Alpha output on the breakout box.

You can get more information about keying in Chapter Sixteen: Keying.

## AUDIO

### Microphone and XLR Inputs

The first two rows of left and right channels at the top of the Audio section may be used for microphone input or XLR connections. The switch is determined on the Audio Mixer (see Chapter Nine: Audio Mixer).

When the inputs are set for microphones, the left input in the first row is One Left and the right input is One Right. In the second row, the left is Two Left and the right is Two Right. Typically you use shotgun microphones, boom microphones and lavaliers (clip-on) microphones with these inputs.



#### Note

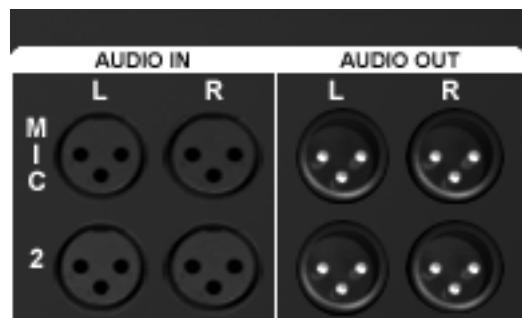
Some high-end microphones have internal battery power that increases audio sensitivity, but can accept an external, or 'phantom' power source. SX-8 Breakout Box can provide phantom power to these microphones.

When you set the first two rows as balanced XLR line input, the two rows become XLR lines. You have left and right stereo channels for two XLR inputs.

Balanced audio uses grounded cabling that reduces the chance of hum and noise, and lets you use longer cables. This is a professional-level format that is used for audio from professional Betacam decks.

### XLR Outputs

The first two rows of outputs under audio are for XLR balanced output.

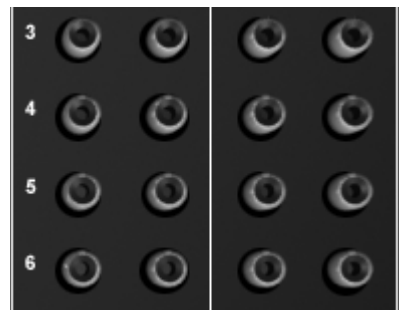


**Figure 2.16.** Microphone input and XLR Balanced input and outputs.

### RCA Unbalanced Inputs and Outputs

The remaining six inputs under audio are unbalanced inputs and outputs that use RCA phono jacks. Unbalanced audio is used in consumer and prosumer cameras and VCRs.

Just as with balanced audio, the unbalanced inputs have left and right stereo channels for each of the six inputs. If you want or need to use a mono input, you insert the jack in the left input.

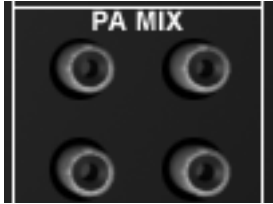


**Figure 2.17.** Right: Stereo inputs for unbalanced audio. Left: Stereo outputs.

### PA Mix

The outputs for PA Mix sit below the RCA audio outputs. With the PA Mix, you use the same signal for audio as the other outputs, but you can control the volume of the PA Mix separately on the Audio Mixer. With the **SX-8 Live** button on the Audio Mixer panel, you tap into an immediate feed directly from the SX-8 breakout box without going through the Video Toaster.

The PA Mix gives you two outputs, and you can attach the same stereo devices to the PA Mix as you would for unbalanced audio.



**Figure 2.18.** PA Mix outputs for the audio output channel on the breakout box.

### Aux Send and Return

Aux Send and Aux Return sit below the Audio connections. You connect Aux with headphone amplifiers, parametric equalizers, and equipment that can produce reverb and digital delay.

You send a either a pre-fader or post-fader audio signal from Video Toaster through Aux Send to the processing device that makes special effects. Then you feed the modified signal back to Video Toaster through Aux Return. For more information on Aux, see Chapter Nine: Audio Mixer.



**Figure 2.19.** Aux Send and Return for audio processing devices.

## VTR

The final column of inputs/outputs on the SX-8 breakout box lets you control a VTR deck, such as BetacamSP. The bottom of the VTR column contains your ports for connecting the SX-8 breakout box to your computer, which was discussed near the beginning of the chapter.



**Figure 2.20.** RS-422 serial ports for VTR machine control.

The top of the channel is labeled VTR, which stands for Video Tape Recorder. The SX-8 breakout box offers three connections where you can attach hardware VTRs.

You can control the transport controls on VTRs from Video Toaster. Remember though, to play and record video you must connect the video inputs and outputs also.

You use the External Control panel (Chapter Eleven) in Video Toaster [2] to control a VTR—to remotely tell the VTR to play, rewind, record, and so on. Setting up a VTR to record will depend on the specific equipment you use, so you should refer to its documentation.

## Serial

The serial connection lets you attach components like MIDI devices or RS422 decks that use serial connections. You may need a special cable to work with these devices. To control such a device through Video Toaster [2], you add it to the External Control panel.



**Figure 2.21.** Serial ports for machine control and Tally/GPI trigger.

### Tally/GPI

The Tally/GPI input combines Tally and GPI into one connection.

GPI stands for General Purpose Interface. You use the GPI to send a trigger to an external device to play or stop. You can also use the GPI to allow a device, like a joystick, to control a Video Toaster event like the Switcher **Auto** button.

Tally refers to tally lights, lights that illuminate to tell talent that a camera is live. Tally lights also tell you that a device is on the Main bus of the Switcher. The eight lights beside your input channels on the SX-8 breakout box are tally lights.

## SERIAL DIGITAL INTERFACE

Serial Digital Interface, or SDI, is an optional daughter card that you can attach to the Video Toaster for digital input and output. The SDI card gives you access to digital video, digital audio, and it includes a line for alpha output. You do not access the SDI card through the breakout box, but it is addressed here because the SDI gives you another input/output source.

You bring SDI input into Video Toaster by adding the SDI 1 input to the Switcher. You add the SDI 1 input by right-clicking on an available patch bay in the Switcher and choosing SDI 1 from the drop menu. With SDI on the Switcher, you can put it on the Main bus as an output source.

### SDI CARD

The optional SDI card must be placed in a PCI slot next to the Video Toaster card.

The expansion connector card should be placed snugly in the connections on the cards after they are installed. Make sure you orient the connector so that the small notches at the ends of the connectors are closest to the connector end of the cards (i.e, back of the computer).

#### To capture SDI input

- Open the Capture panel and choose **SDI** for the input. Then follow the procedures for capture. (For more information on Capture, see the Chapter Four.)

## **VIDEO 101**

### **SDI DEVICES AND INPUTS**

#### **SDI Devices**

The standard devices used with the SX-8 breakout box, such as cameras and microphones, send analog signals. Analog signals are electrical currents that vary in frequency. The SDI card accepts and transmits only digital signals to and from compatible, digital equipment. A digital signal travels in binary: basically all of your information is sent, quickly, as ones and zeros. The one means “on” and the zero means “off.”

#### **SDI Signal**

The digital signal from your device is uncompressed and the SDI card passes that uncompressed information to the Video Toaster software. Because digital signals are lossless formats, you can duplicate a digital signal indefinitely without losing any video and audio information. Analog signals will eventually degrade because of cables, or from generation loss from multiple duplications.

With a digital signal, you capture information that is relevant to what people can actually see or hear. An analog signal captures all frequencies, regardless of whether they can be perceived.

#### **SDI Inputs**

Your inputs to the SDI card must be digital equipment; you connect that equipment with a BNC cable. You can send video files from the Video Toaster and record to your SDI output, such as a Digital Betacam deck. For information on recording to a digital device, see the documentation that came with your device. Basically though, to record to a device on the SDI card, you just need to attach it to the correct SDI video and audio outputs on the card plate.

Capturing a digital signal from a device on the SDI card is just a matter of attaching the device to the SDI inputs on the card plate, and then adding the SDI input to the Switcher. For more information on the Switcher, see Chapter Seven: Switcher.

## TASK: SX-8 BREAKOUT BOX

### ADD THE BREAKOUT BOX TO THE VIDEO TOASTER CARD

*The daughter card must be installed and connected to the Video Toaster card and the power supply first: see page 2.9 in this chapter.*

- 1 Attach the cable to the **VT 1,2** input (Audio) and attach the other ends to Audio In (VT1) and Audio Out (VT2) on the Video Toaster card.
- 2 Attach the cable to the **VT 4** input (top) and attach the other end to the first serial port on the left on the Video Toaster card. This is your input cable. (illustration of the face plate)
- 3 Attach the cable to the **VT 3** input (middle) and attach the other end to the second serial port on the left on the Video Toaster card. This is your output cable.
- 4 Attach the cable to the **VT 5** input (bottom) and attach the other end to the connection for the daughter card.

### ADD COMPOSITE VIDEO TO THE BREAKOUT BOX

- 1 Get a composite camera or video deck.
- 2 Plug in the power for your camera to a power outlet.
- 3 Plug-in the composite cable to the output on the camera.
- 4 On the SX-8 breakout box, place a RCA (female) to BNC (male) adapter in an available composite video input if necessary, then add the camera cable to the input. (Don't try to put it in the Y/C input.)



- 5 Position your camera.

### ADD S-VIDEO TO THE BREAKOUT BOX

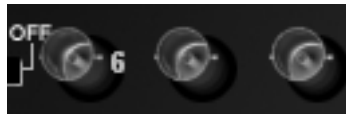
- 1 Get an S-video camera or S-VHS deck.
- 2 Plug in the power for the camera, and attach the cables for device output.
- 3 On the SX-8 breakout box, plug the S-video cable into an available Y/C input.



- 4 Position your camera.

### **ADD COMPONENT VIDEO TO THE BREAKOUT BOX**

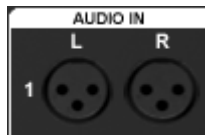
- 1 Get a component camera or deck, such as a Betacam.
- 2 Plug in the camera power and attach the camera output cables.
- 3 On the SX-8 breakout box, add the Y cable to the Y input, the U (R-Y) cable to the U input, and the V (R-B) cable to the V input.



- 4 Position your camera.

### **ADD A MICROPHONE TO THE BREAKOUT BOX**

- 1 Get a microphone, such as a shotgun or lavalier microphone.
- 2 Plug in the microphone power.
- 3 On the SX-8 breakout box, place the microphone cable into the first microphone input.



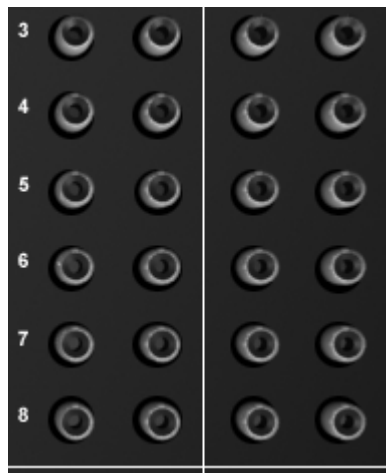
## 2.26 VIDEO TOASTER [2]

- 4 In Video Toaster [2], open the Audio Mixer. The input should appear in the first microphone channel. Set the input to Mic.

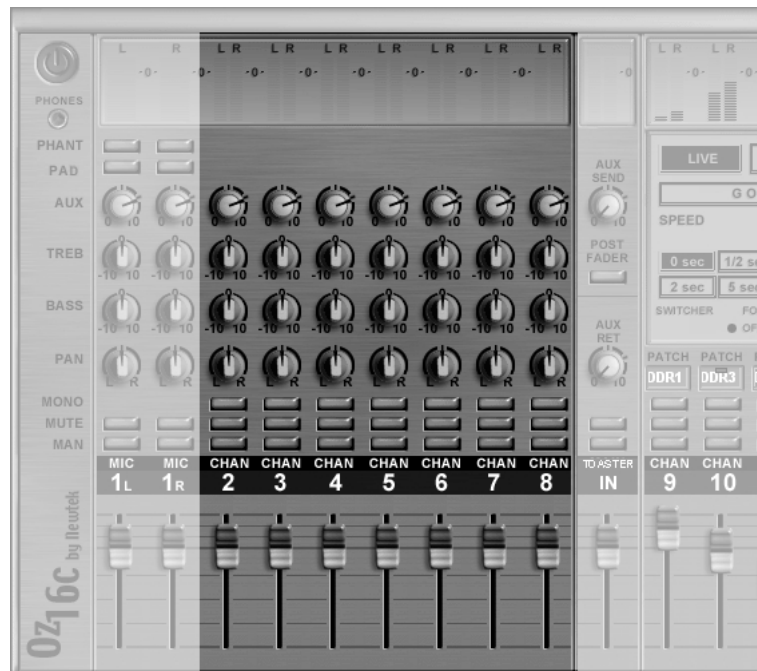


### ADD UNBALANCED AUDIO TO THE BREAKOUT BOX

- 1 Get audio input—this may be from a VHS, a camera, or other device.
- 2 Plug in the audio power. Make sure the RCA cable is attached to the audio output on your device.
- 3 On the SX-8 breakout box, add the audio input to the RCA jacks.



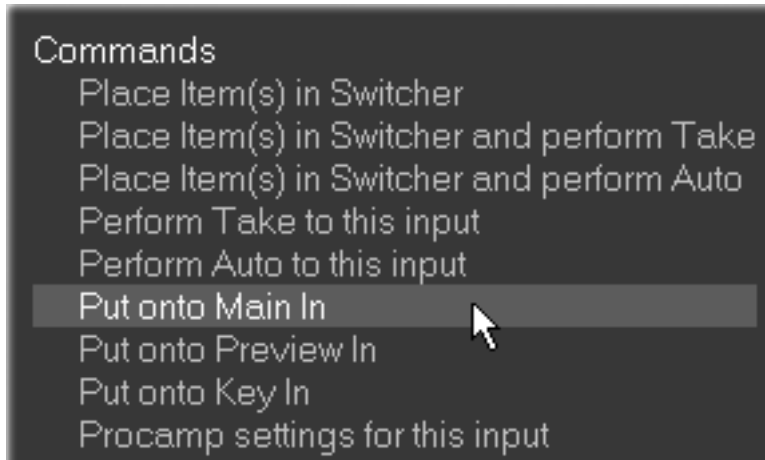
- 4 In Video Toaster [2], open the Audio Mixer. The input should appear on the same numbered audio channel as you placed it on the breakout box. For example, if you placed audio on input three, then you adjust channel three in the Audio Mixer.



## SWITCH WITHOUT THE SWITCHER

You can switch and test sources on the Virtual BoB without using the Switcher. This procedure assumes that you have more than one source attached to the BOB.

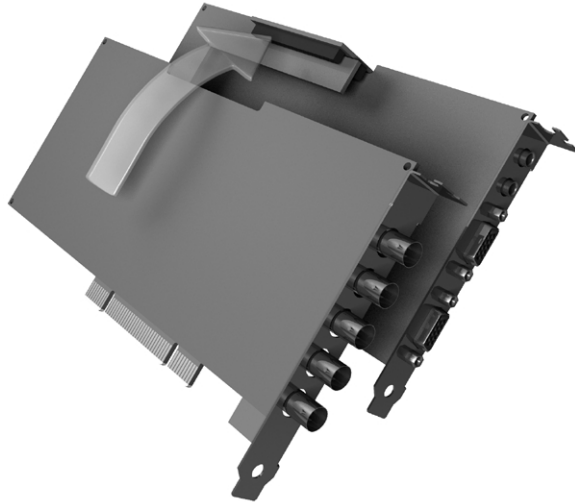
- 1 In Video Toaster [2], open the Virtual BoB and open ToasterVision.
- 2 In the Virtual BoB, right-click on a video input and from the menu that appears choose **Put onto Main In**.



- 3 Right-click on a second video input and choose **Perform Take to this input**. In ToasterVision, you should see the switch occur between inputs.

## INSTALLING THE SDI CARD

- 1 With your system off, disconnect the power cord from your computer.
- 2 Remove the computer cover. ***Take proper precautions against electrostatic discharge (ESD). Use ground straps, gloves, ESD mats, or other protective measures to avoid damaging the processor and other electrical components in the system.***
- 3 Locate a free PCI slot directly below the Video Toaster card and remove the slot's cover.
- 4 Carefully insert the card into the slot.
- 5 Secure the card with removed slot cover's retaining screw.
- 6 Carefully install the supplied expansion connector card into the matching connectors on the top of the Video Toaster and SDI cards. Note: If you are also installing an SX-8 breakout box, you need a special three slot connector card.



Attaching the SDI card to the bridge card on the Video Toaster Card.  
Illustration by Kevin Nations.

- 7** Replace the computer cover and reconnect the power.

