

E422SX

Time Base Corrector/Synchronizer
With Video Compression

OPERATION MANUAL

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PRELIMINARY

Due to possible design modifications, the description and technical data given in the manual are subject to change without prior notice. For technical assistance or service, contact KeyWest Technology at:

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1. INTRODUCTION

- 1.1. The E422SX is a TBC/Synchronizer and Digital Video Effects unit all in one. It not only stabilizes video output, but it has the unique ability to scale video both vertically and horizontally then position it anywhere on the screen. Featuring digital comb filtering as well as notch filtering, line and pixel interpolation, the E422SX produces a high resolution picture output and preserves maximum image content for smooth image resizing and positioning.
- 1.2. The E422SX is ideal for "over-the-shoulder" effects. With the optional combiner board, the EFFECT may also be used to produce a multitude of special editing effects such as dissolves, cuts, fade-to-black and zooming transitions. Users may produce bulletins and captions with the E422SX or use it to manipulate an image via aspect ratio control for a perfect fit on any screen, or they may display multiple images on one screen for teleconferencing, training and before/after effects.

2. INSTALLATION

STEP 1 - Mount the E422SX in a 19" rack. (see instructions below)

STEP 2 - If operating the E422SX via serial port, make the necessary cable connections.

STEP 3 - If looping an input(s), remove the lid on the E422SX chassis and set header pin(s) in unterminated position.

STEP 4 - Connect your video equipment to the E422SX BNC input and output connectors exiting the rear chassis.

STEP 5 - Turn the E422SX unit on.

3. MOUNTING

- 3.1. The mounting of the E422SX conforms to standard 19" rack specifications. The unit should always be mounted by four rack ear bolts to provide sufficient support for the chassis. NOTE: When the unit is rack mounted, do not put additional weight on top without added support beneath the unit.

- 3.2. The E422SX should be operated in a relatively dust-free environment. The most important factor in locating and installing the unit is to ensure that the air intake vents and exhaust fan are not obstructed. The air intake vents are located on the side of the unit. Since the cooling occurs from the sides, mounting the E422SX on top of another unit is safe as long as the unit is not expending a great amount of heat.

4. SERIAL PORT

- 4.1. If operating the E422SX via serial port remote control, locate the 9-pin serial port connector on the back of the unit. Connect one end of a 9-way cable to this connector and the other end to the serial port connector on your computer.

5. TERMINATION/LOOPING DEFINITIONS

- 5.1. When operating the E422SX with a second TBC, you must set the header pins for the CV and Genlock inputs in either the terminated or unterminated positions. This will ensure that the video is at the proper amplitude levels (signal strength).

5.2. Terminated Mode

- 5.2.1. The CV and Genlock inputs are set at the factory in the terminated position. Thus, when your input signal is non-continuous (not passing through the board to another input), you will not need to change the header pin position.

5.3. Unterminated Mode/Looping

- 5.3.1. When the CV or Genlock input signal is looping or continuous and is passing through one TBC to another input, you will need to set the header pin for that input in the unterminated position. When an input is passed through a TBC, it is referred to as looping.
- 5.3.2. NOTE: To loop a signal, you will need to use a T-Connector.
- 5.3.3. For Example: One BNC on the T-Connector serves as an input from a reference, such as a black burst generator, and one serves as an output to the next reference input, such as a second TBC.

6. LOOPING INSTRUCTIONS

- 6.1. Looping is most often used when genlocking two TBCs. For example: If you wish to genlock two TBCs to an external reference, you would connect the T-Connector to the Genlock input. Then, using a co-axial cable, connect a reference, such as a black burst, to one BNC on the T-Connector. (This will be the input.) Connect another co-axial cable out to an input on TBC B. Remember that the TBC with the "T" Connector is looping and the second TBC is terminating. The E422SX is set at the factory in the terminated mode. To set each input (CV, Genlock) for terminate or unterminate mode, locate the header pin for each input on the TBC board. You will need to remove the lid of the E422SX unit. The jumper (shunt) will be set on two prongs of the header pin, the center prong being common for both the terminated and unterminated modes. To change modes, remove the jumper from the two prongs and replace it on the center prong and the prong on the opposite end of the header pin. For example: To set the Genlock input in the (UT) unterminated (looping) mode, remove the jumper from prongs 1 and 2 and replace it on prongs 2 and 3.

7. VIDEO CONNECTIONS

The E422SX has three standard inputs: Composite Video (CVS In), S-VHS In and Genlock (GL). The E422SX has three standard outputs: CVS Out, S-VHS Out, and Alpha Key Out. The unit also features two optional input/output formats: Component YCrCb (YRB) and Serial Digital (SDI). (Optional components are only installed when specified at time of ordering, and may not be available in all unit configurations.)

7.1. CVS IN

- 7.1.1. The rear panel BNC connector labeled "CVS IN" is used to input composite video into the E422SX. CVS is a format of video in which the entire video signal is transmitted in an analog domain along a single shielded conductor.

NOTE: The E422SX factory default input video format is CVS. This may be easily changed so that the E422SX powers on with another input selected. See Power-On Reset section of this manual.

7.2. S-VHS IN

- 7.2.1. The BNC connector labeled "S-VHS IN" is used to input Y/C video to the E422SX. A Y/C signal is a higher resolution signal than composite because it transmits and processes the luminance and chrominance information separately.

7.3. GL

- 7.3.1. The BNC connector labeled "GL" is used to input a genlock signal into the E422SX to lock the unit to a stable external reference, such as a black burst generator, a color bar generator, live camera or an output from another TBC. Genlock is required when you are using more than one TBC. The E422SX automatically genlocks when a proper signal is connected to the GL input.

7.4. CVS OUT

- 7.4.1. The output labeled "CVS OUT" is used to output composite video from the E422SX.

7.5. S-VHS OUT

- 7.5.1. The four-pin connector labeled "S-VHS OUT" is used to output Y/C video from the E422SX.

Note: All of the E422SX's outputs are simultaneously active. All outputs (standard and optional) will output the same video signal that is user selected as the active input source. This makes the E422SX an effective real-time video format translator (analog in, digital out...etc...).

7.6. ALPHA KEY OUTPUT

- 7.6.1. The BNC connector labeled Alpha is a monochrome key signal that resizes and positions video by tracking the video resizing. The Alpha Key allows usage of external keyers on any video system that accepts keying signals.

7.7. OPTIONAL COMBINER CONNECTIONS

- 7.7.1. **CV IN:** This BNC connector is used to input composite video source used for background video.
- 7.7.2. **SV IN:** This 4-pin DIN connector is used to input S-Video background video source.
- 7.7.3. **CV OUT:** This BNC connector is used to output combined video downstream.
- 7.7.4. **SV OUT:** This 4-pin DIN connector is used to output S-Video combined video downstream.

7.7.5. **BLK OUT:** This BNC connector is used to output blackburst for external device synchronizing.

7.7.6. **GPI:** This 3-pin DIN connector is used to input GPI 1 and GPI 2 switching pulses

8. FRONT PANEL CONTROL OPERATION

8.1. LEVEL 1

8.1.1. **SHIFT:** Press the SHIFT button to toggle between menu levels. The E422SX has 3 menu levels, referred to as 1, 2, and 3. The front panel liquid-crystal display (LCD) will indicate the current menu level in the lower right corner.

8.1.2.  Press this button to JUMP BACK through key frames to the previous START mode key frame stored in memory.

8.1.3.  Press this button to initiate a REVERSE SEQUENCE.

8.1.4.  Press this button to HALT an sequence in progress.

8.1.5.  Press this button to initiate a FORWARD SEQUENCE.

8.1.6.  Press this button to SKIP to the next key frame in numerical order.

8.1.7.  Press this button to JUMP FORWARD to the next STOP mode keyframe stored in memory.

8.1.8. **FRZ/STB:** Press FRZ/STB button to cycle between the video FREEZE, MIX and Fade to Black (FTB) functions (MIX and FTB are only functional in units with built-in combiners).

8.1.8.1. **FREEZE:** Rotate the encoder to toggle between freeze modes of FRM (frame), FD1 (field 1), and FD2 (field 2). Press the encoder to activate the selected FREEZE mode. Press the encoder again to UNFREEZE the image.

8.1.8.2. **MIX:** Rotate or press the encoder to toggle between the MIX ON and MIX off mode. MIX ON will show the picture-in-picture insert video generated by the Effect board, overlaid on the video input on the combiner board.

- 8.1.8.3. **FTB:** Rotate or Press the encoder to toggle between FTB ON and FTB OFF modes. FTB ON will fade the entire on-screen image to black, while FTB OFF will fade from black the entire on-screen image.

8.2. LEVEL 2

- 8.2.1. **SIZE:** Press the SIZE button to access the SIZE function.

8.2.1.1. **ZOOM:** The LCD will display horizontal and vertical size values, each indicated by an upper or lower case H or V respectively. The case of the letters H and V indicates which value is active and will be changed by adjusting the joystick or the encoder. If the H and V indicators are both uppercase, then rotating the encoder or pushing the joystick up or down, will re-size the image in both the horizontal and vertical aspects, maintaining current aspect ratio.

8.2.1.2. **ASPECT RATIO:** Press the encoder to toggle the H and V indicator controls to change aspect ratio of your compressed video. An uppercase letter indicates that the selected value will change with actuator adjustments. If the "H" is uppercase, and the "v" is lower case, then turning the encoder will adjust the horizontal aspect only. If the "h" is lower case, and the "V" is upper case, turning the encoder will adjust the vertical aspect only. This allows you to set any aspect ratio desired. When the aspect ratio mode is entered, the joystick will control vertical aspect with up and down movements, and will control horizontal aspect with left and right movements.

8.2.2. **POS:** Press POS to access the position function of the E422SX. Press the encoder to select the axis in which to position your video. An upper case "H" indicator and lower case "v" indicator on the LCD denotes that the horizontal axis movement is active. Rotate the encoder to move the video in the horizontal axis. A lower case "h" and upper case "V" indicates that the vertical axis movement is active, and rotation of the encoder will cause the image to move in the vertical axis. The joystick will move the image in the horizontal or vertical axis regardless of the "H" and "V" indicators. Up and down joystick movement will control the vertical axis, while left and right joystick movement will control the horizontal axis.

8.2.3. **FRM:** Press the FRM button to access the sequencing frame length. This function is available in the software, but sequencing is not to be used in this version. Control of the E422SX in sequencing mode is not recommended at this time and may lead to unpredictable performance.

8.2.4. **CTRL:** Press the CTRL button to access the control mode of the active keyframe while in sequencing mode. This control toggles between START, PAUSE, CONT (continue), LOOP, and STOP.

8.2.5. **Border:** Press the BORDER button to access and toggle between the E422SX border functions. These functions are:

8.2.5.1. **BDR=On/Off**—when the LCD indicates this option, rotate the encoder to toggle the image border on and off.

8.2.5.2. **SIZE=xx**—when the LCD indicates this option, rotate the encoder to select border size value (from 00 to 15)

8.2.5.3. **RED=xx**—when the LCD indicates this option, rotate the encoder to select red component of the border color value (00-15).

8.2.5.4. **GREEN=xx**—when the LCD indicates this option, rotate the encoder to select green component of the border color value (00-15).

8.2.5.5. **BLUE=xx**—when the LCD indicates this option, rotate the encoder to select blue component of the border color value (00-15).

8.2.5.6. **BACKGND**—when the LCD indicates this option, rotate the encoder to toggle between the following background options:

8.2.5.6.1. **FILL:** Fills background (area not covered by compressed video signal) with the genlock input signal. This mode allows the E422SX to perform a picture-in-picture function without the need for external keyers or mixers. Simply input the desired background video into the GL connector and select the FILL mode and select the KEY mode to INSERT (see paragraph g below)

8.2.5.6.2. **BLACK:** Fills background (area not covered by compressed video signal) with black.

8.2.5.6.3. **COLOR:** Fills background (area not covered by compressed video signal) with colored background. The background color is determined by setting of the border color as described above.

8.2.5.7. **KEY**—when the LCD indicates this option, rotate the encoder to toggle between the following KEY options:

8.2.5.7.1. **INSERT:** Fills background (area not covered by compressed video signal) with genlock signal (see paragraph f1 above).

8.2.5.7.2. **FULL:** Outputs a full KEY signal for use with color background or external devices

8.2.5.7.3. **OFF:** Disables KEY signal.

8.2.6. **CROP:** Press the CROP button to access the crop function. Press the encoder to toggle between the following options:

8.2.6.1. **TOP=xx**—rotate the encoder in this mode to select crop value for top of full screen image

8.2.6.2. **BTM=xx**—rotate the encoder in this mode to select crop value for bottom of full screen image

8.2.6.3. **LEFT=xx**—rotate the encoder in this mode to select crop value for left edge of full screen image

8.2.6.4. **RIGHT=xx**—rotate the encoder in this mode to select crop value for right edge of full screen image.

8.2.7. **ENTER:** Press the ENTER button to access the Key Frame Storage function. Rotate the encoder to select keyframe to store (00 thru 09). Press the encoder to store the selected keyframe.

8.3. LEVEL 3

8.3.1. **SRC:** Press the SRC button to access input video source options. Repeatedly pressing the SRC button will toggle between CV, SV, YRB, and SDI input formats. Rotating the encoder in this mode will also toggle between available inputs. While in this mode, pressing the joystick right and left will allow for bypass of the CV signal (CV input/output only).

8.3.2. **PROC:** Press the PROC button to toggle between processor amplifier options, Contrast, Brightness, Color, and Tint. Pressing the PROC button repeatedly will toggle through these options, as will pressing the joystick to the left when in the PROC mode. Rotate the encoder to set the values of the selected proc option (contrast, brightness, color, and tint). Pressing the joystick up and down will also adjust the values. Pressing the joystick to the right will restore the default proc levels.

8.3.3. **ZAP:** Press the ZAP button to recall key frames. When in this mode, rotate the encoder to select keyframe to recall (00-09). Press the encoder to recall the selected keyframe.

8.3.4. **TIMING:** Press the TIMING button to toggle between system timing variables, Horizontal Phase and Sub-Carrier Phase. Press the TIMING button repeatedly to toggle between these options:

- 8.3.4.1.**HORZ PHA:** rotate the encoder to adjust the horizontal phase value.
This allows for horizontal position of background (genlocked) video
- 8.3.4.2.**SC PHASE:** rotate the encoder to adjust the sub-carrier phase value.
This option is used to control the color phase of a background video that is being used to genlock a foreground (picture-in-picture) compressed image.
- 8.3.5. **MENU:** Press the MENU button repeatedly to toggle between the following options:
 - 8.3.5.1.**STANDARD:** rotate the encoder to select between NTSC and PAL video standards
 - 8.3.5.2.**NOTCH:** rotate the encoder to select NOTCH FILTER on or off
 - 8.3.5.3.**COMB:** rotate the encoder to select COMB FILTER on or off
 - 8.3.5.4.**VERSION:** This will display installed software version and date.
- 8.3.6. **RECALL:** Press the recall button repeatedly to toggle between the following options:
 - 8.3.6.1.**POR:** press the encoder in this mode to recall the Power-On Reset settings. (see paragraph 7 below to store POR settings)
 - 8.3.6.2.**SYS TIMING:** press the encoder in this mode to recall system timing settings (see paragraph 7 below to store SYS TIMING settings)
 - 8.3.6.3.**PROC:** press the encoder in this mode to recall processor amplifier settings (see paragraph 7 below to store PROC settings)
- 8.3.7. **STORE:** Press the STORE button repeatedly to toggle between the following options:
 - 8.3.7.1.**POR:** press the encoder in this mode to store current settings as power-on reset defaults
 - 8.3.7.2.**SYS TIMING:** press the encoder in this mode to store current system timing (horizontal phase and sub-carrier phase) settings
 - 8.3.7.3.**PROC:** press the encoder in this mode to store current processor amplifier settings (contrast, brightness, hue, tint).

9. SEQUENCING

- 9.1. Sequencing is the function of performing live transitions between pre-stored key frames. You may program and initiate key frame sequences based on the 10 available key frame registers (00 through 09).
- 9.2. Some common uses of sequencing include: transitioning from a full screen image to a compressed image for an "over-the-shoulder" shot; or from a full screen to a compressed image to reveal a scroll on-screen (stock tickers, school closings, news tickers, weather alerts); or from compressed image to compressed image for on-screen special effects. The uses of sequencing are limited only by your imagination. Sequences can include borders with transitioning colors, aspect ratio changes, position changes, size changes; they can also be reversed, paused, looped or continued.

9.3. STORING, EDITING, AND RECALLING SEQUENCES

9.3.1. EDITING AND STORING A SEQUENCE

- 9.3.1.1. Enter the sequence mode by activating menu level 1 with the SHIFT button. Press the  button to activate the sequence mode.
- 9.3.1.2. Enter the edit mode by pressing the ENCODER (this will activate menu level 2).
- 9.3.1.3. Use the menu level 2 controls to set the size, aspect ratio, position, frames, control, border, background, key, and crop values you desire for the key frame you are editing.
- 9.3.1.4. Once you have all of your parameters set, press the ENTER button; the LCD will read "STORE KEYFRAME" and display the number of the keyframe you are editing. You may change the key frame number by rotating the encoder.
- 9.3.1.5. Select the key frame you wish to store by rotating the encoder; Press the encoder to store the key frame; The LCD will read "**DONE", and the unit will automatically return to menu level 1 and enter SEQUENCE MODE.
- 9.3.1.6. You may then proceed to the next key frame to edit by pressing the  button; The LCD will indicate which keyframe you are on; press the encoder when you have reached the key frame you wish to edit; proceed to step 9.3.1.2 and repeat for each key frame you edit.

9.3.1.7. RULES FOR EDITING AND STORING KEYFRAMES

- 9.3.1.7.1. Key Frame 00 must always be a "START" Key Frame
- 9.3.1.7.2. Remember, when in sequencing mode, pressing the encoder will send you to edit mode (menu level 2); storing a key frame while in edit mode will send you to sequence mode (menu level 1).
- 9.3.1.7.3. Each sequence must end with a STOP or a LOOP key frame

9.3.2 RECALLING AND PERFORMING SEQUENCES

- 9.3.2.1 A sequence may be performed in the FORWARD or REVERSE directions. Press the ► button to run a forward sequence. The E422SX will then transition through all of your key frames from a start keyframe to a stop or loop keyframe. Press the ◀ button to run a reverse sequence. The E422SX will then transition through your key frames from a stop key frame to the previous start key frame. Pressing the ■ button will halt the sequence immediately, which may be in mid-transition, note where your sequence is when you halt it, because if you progress to the edit mode and store the keyframe, the halted position will become the new key frame position.
- 9.3.2.2 Press the ►| button to skip to the next key frame in numerical order; this control can be used to cue up a sequence or to simply toggle through all of your key frames to verify settings.
- 9.3.2.3 Press the ►|| button to skip to the end of a programmed sequence (the subsequent stop or loop keyframe).

10. COMBINER FUNCTIONS

- 10.1. The combiner board is an optional board that can be installed in the E422SX unit. The model number becomes E422/1CSX when the combiner is installed. The combiner allows for GPI, MIX, and FADE TO BLACK functions, as well as unity gain background video in composite, or S-Video formats (NTSC and PAL). The board performs the mixing function for Picture-in-Picture effects. The background video from the combiner board is not resizeable or repositionable, but does have potentiometers installed for fine tuning of levels. When the optional combiner is installed, the GPI and MIX functions become available under MENU LEVEL 3, MENU button. Cycle the MENU button to access the controls.

- 10.1.1. **GPI:** There are two independent GPI switches available, GPI 1 and 2. When you have accessed the GPI sub-menu, indicated by the LCD reading GPI 1 or GPI 2, rotate the encoder to set the selected GPI to one of the following:
- 10.1.1.1. **FTB OFF:** Will cause image to fade from black when a GPI pulse is received.
 - 10.1.1.2. **FTB ON:** Will cause the image to fade to black when a GPI pulse is received.
 - 10.1.1.3. **FTB TOGGLE:** Will cause the image to fade to black on the first receipt of a GPI pulse; and fade from black on the second receipt of a GPI pulse
 - 10.1.1.4. **FTB FOLLOW:** Will cause the image to fade to black and remain there while the GPI signal is LOW (0.0 to 0.4 VDC); the image will immediately fade from black when the GPI signal returns high (4.0 to 5.0 VDC).
 - 10.1.1.5. **MIX OFF:** Will cause image to mix in (background with insert video) when a GPI pulse is received.
 - 10.1.1.6. **MIX ON:** Will cause the image to mix out (background video only) when a GPI pulse is received.
 - 10.1.1.7. **MIX TOGGLE:** Will cause the image to mix out on the first receipt of a GPI pulse; and mix in on the second receipt of a GPI pulse.
 - 10.1.1.8. **MIX FOLLOW:** Will cause the image to mix out and remain there while the GPI signal is LOW (0.0 to 0.4 VDC); the image will immediately mix in when the GPI signal returns high (4.0 to 5.0 VDC).
 - 10.1.1.9. **FRZ OFF:** Will cause image to unfreeze when a GPI pulse is received.
 - 10.1.1.10. **FRZ ON:** Will cause the image to freeze when a GPI pulse is received.
 - 10.1.1.11. **FRZ TOGGLE:** Will cause the image to freeze on the first receipt of a GPI pulse; and unfreeze on the second receipt of a GPI pulse

- 10.1.1.12. **FRZ FOLLOW:** Will cause the image to freeze and remain there while the GPI signal is LOW (0.0 to 0.4 VDC); the image will immediately unfreeze when the GPI signal returns high (4.0 to 5.0 VDC).
- 10.1.1.13. **SEQ BEG:** Will cause the unit to display the previous START mode keyframe when a GPI pulse is received.
- 10.1.1.14. **SEQ REV:** Will cause the unit to initiate a reverse sequence when a GPI pulse is received
- 10.1.1.15. **SEQ STOP:** Will cause the unit to halt an in-process sequence when a GPI pulse is received
- 10.1.1.16. **SEQ FWD:** Will cause the unit to initiate a forward sequence when a GPI pulse is received.
- 10.1.1.17. **SEQ NEXT:** Will cause the unit to skip to the next keyframe when a GPI pulse is received.
- 10.1.1.18. **SEQ END:** Will cause the unit to skip to the next STOP mode keyframe when a GPI pulse is received.
- 10.1.1.19. **SEQ FOLLOW:** Will cause the unit to initiate a forward sequence from KEYFRAME 00 to the next STOP mode keyframe and hold there while the GPI pulse is low (0.0 to 0.4 VDC); the unit will immediately initiate a reverse sequence returning to KEYFRAME 00 when the GPI signal returns high (4.0 to 5.0 VDC).
- 10.1.2. **MIX SPD:** Rotate the encoder to toggle between MIX speeds of slow, medium, fast, and cut.

10.1.3. STORING GPI/MIX SETTINGS

- 10.1.3.1. To store your GPI and MIX settings in non-volatile memory, press the SHIFT button and proceed to menu level 3; press the STOR button repeatedly until the LCD reads STORE GPI/MIX; press the encoder; the unit will return an acknowledgment that the settings are stored by writing **DONE on the LCD panel.

11. DUAL UNIT OPERATION

- 11.1. If you have a dual E unit, the model number will be E422/2SX. This is a single 1U rack mountable chassis with two E422SX processor boards installed. The operations of both boards are identical.

11.2 ACCESSING DUAL BOARDS

- 11.2.1. You will notice that the LCD indicates which menu level you are on as well as which processor you are controlling, "A" or "B". The lower right corner of the LCD will indicate "A1" or applicable values.
- 11.2.2. To access the second board on your unit, press the shift button which will return the control menu to the power on default, denoted by the "E422sx" identifier in the LCD window.
- 11.2.3. Once in the default menu level, press the encoder; this will cause the unit control software to toggle to the second installed board (so if you saw "A1" in the LCD, pressing the encoder should cause the LCD to now read "B1").
- 11.2.4. This is the only additional control for dual units, once in board "A" control menu, all front panel and RS-232 controls will affect only board "A", once in "B", only the "B" board is affected.

12. PROGRAMMING AND PERFORMING A SAMPLE SEQUENCE

- 12.1.1.1. A common use for the E422SX is to initiate a sequence from a full screen image to a compression to reveal a scroll at the bottom of the screen (school closings, stock tickers, sports tickers, news tickers, weather alerts, community information). This section will demonstrate how to program and recall such a sequence.
 - 12.1.1.1.1. Power on the E422SX; press the  button until the LCD indicates that you are in sequence mode and are viewing keyframe 00.
 - 12.1.1.1.2. Press the encoder to enter edit mode; the LCD should now indicate that menu level 2 is active.
 - 12.1.1.1.3. Press the SIZE button, and use the joystick to ensure the image is full size.
 - 12.1.1.1.4. Press the POS button, and use the joystick or encoder to ensure the upper left corner of the image is set to the uppermost and leftmost limits of the screen.

- 12.1.1.1.5. Press the FRM button; use the encoder or joystick to set the number of frames to perform the transition (the length of time the transition will take). Since we are working with the first keyframe in the sequence, this frames setting will only be used during a reverse sequence; during a forward sequence, the frames setting of the next keyframe will determine how long the transition takes. In this case, we want the E422SX to CUT immediately back to a full screen after the compression is no longer needed, so we'll set the frames value to 00.
- 12.1.1.1.6. Press the CTRL button to set the mode of key frame 00; we know that key frame 00 must always be a START keyframe, as should any keyframe that is the first in a sequence, so ensure the mode is set to START (rotate the encoder to change if necessary).
- 12.1.1.1.7. Press the BORDER button; we don't need borders for this effect, so repeatedly press the BORDER button until BKGND is displayed in the LCD; use the encoder to set the BKGND value to FILL, since we want the compression to reveal a background video, which is going to include our sports ticker scrolling at the bottom of the screen. These settings are based on the assumption that we are using the stand-alone E422/1SX unit to combine the foreground (compressible) and background images. The BKGND settings will change if additional combiners or external keyers/switchers are being used. See section 8.2.5.6. for information on BKGND settings; next press the BORDER button again and proceed to KEY settings; in this case we want the KEY to be set to INSERT, since we are in effect inserting a compressed video (program) over a background image (graphic scroll).
- 12.1.1.1.8. Press the CROP button; we don't need to crop the image for this sequence, so ensure CROP is set to OFF.
- 12.1.1.1.9. Press the ENTER button; the LCD should indicate that we are prepared to store key frame 00, now press the ENCODER and wait until the LCD indicates **DONE. The unit will have now stored keyframe 00 and will have also returned to menu level 1 sequence mode.
- 12.1.1.1.10. Next, Press the ►| button to skip to Key Frame 01; this key frame is going to be our compressed image over the scroll.
- 12.1.1.1.11. Press the encoder to enter edit mode for key frame 01.

- 12.1.1.1.12. Press the SIZE button; the LCD will show that we have an H size and a V size (horizontal and vertical); for this application, we want to change only the V size, which means we are performing an ASPECT RATIO change; press the encoder repeatedly until the LCD indicates the h value with a lower case "h" and the V value with an uppercase "V", this indicates that we can now adjust the vertical size independent of the horizontal size (aspect ratio change); use the joystick or encoder to set the vertical size to about a 70% image size (70% of vertical full screen); we should now be able to see on screen that our background is visible in the lower 30% of the screen.
- 12.1.1.1.13. We do not need to change the position, therefore don't need to push the POS button, so next press the FRM button; we want this forward sequence to be a smooth squeeze that the viewer can see happening, so we need to set the frames value to 30 (this means it should take about 1 second for the full screen image to squeeze down to the 70% image we have set in keyframe 01).
- 12.1.1.1.14. Press the CTRL button, use the encoder to set the control mode to STOP, since we want this keyframe to be the last in our sequence.
- 12.1.1.1.15. Press the Border button repeatedly and toggle through the border settings since we don't need a border for this, stop once you have reached the BKGND settings; use the encoder and ensure that the BKGND setting is set to FILL; press the BORDER button again to reach the KEY settings, use the encoder to ensure the KEY setting is set to INSERT.
- 12.1.1.1.16. Press the CROP button; use the encoder to ensure that CROP is set to OFF.
- 12.1.1.1.17. Press the ENTER button, the LCD should now indicate that we are prepared to store keyframe 01; press the encoder to store keyframe 01; the E422SX should now indicate **DONE and return us to menu level 1 (sequence mode).
- 12.1.1.1.18. Now we are ready to try out our sequence; press the ||◀ button to return us to key frame 00, our full screen setting; now we are ready to sequence!

- 12.1.1.1.19. Press the ► button to activate our forward sequence; we should see the image on the screen compress from a full screen image to a 70% image, revealing a background video of about 30% that contains a scroll or anything else we decided to use for background video. Remember, it should take about 1 second to transition from full screen to 70% screen because we set the key frame 01 frames setting to 030.
- 12.1.1.1.20. Now, lets reverse the sequence to return to full screen; press the ◀ button to activate a reverse sequence; we should now see the 70% image immediately cut back to a 100% full screen image; the unit cuts immediately because we set the key frame 00 frames setting to 000 (no frames). Voila, that's it!!! We've successfully programmed a sequence!!!
- 12.1.1.1.21. Now that we can program sequences, experiment with the settings, change sizes, times, add borders, change border colors, try all of the possibilities...new applications will reveal themselves as you find out how powerful this E422SX can be. Be sure to try some multiple key frame sequences by setting the middle key frames to CONTINUE mode, utilizing different sizes and borders (or no borders, you can take an image and make it morph and bounce all around the screen, coming to rest for an attention getting display! And try the LOOP setting instead of STOP...you can really grab attention as you send your broadcast quality video image morphing and bouncing all around the screen in another attention grabbing display!

13. SERIAL PORT REMOTE CONTROL COMMANDS

13.1. COM SETTINGS: 9600 BAUD N, 8, 1

NOTE: ALL CMDS WITH CR MUST BE SENT IN LESS THAN FOUR FRAMES OR THE BOARD WILL IGNORE THE COMMAND.

13.2. 9P D-Sub connector pinot:

- 3-Data in (tx'd data)
- 2-Data out (rx'd data)
- 5-Ground

13.2.1. Board requires no handshake however, most serial ports do, therefore we recommend that at the computer (9p ser con) pins 4-6 (DTR DSR) are LINKED and pins 7-8 (RTS-CTS) are LINKED.

Example: Serial cable for IBM 9P D-Sub to FERAL EFFECT 9P D-Sub wiring:

FERAL END Male 9P Pin #	COMPUTER Female 9 Pin #
2-----	2 TX Data
3-----	3 RX Data
5-----	5 Ground
	4 DTR LINK
	6 DSR
	7 RTS LINK
	8 CTS

Command List

A	Ask	a	
B	Bypass	b	address
C	Color	c	
D		d	
E	Freeze	e	
F	FTB (combiner option)	f	
G		g	
H	Hue	h	
I	Comb Filter	i	
J	Notch Filter	j	
K		k	
L	Luma	l	
M	Mix (combiner option)	m	
N	NTSC/PAL-B	n	
O		o	
P		p	Position
Q		q	Size & Position
R	Recall	r	Recall Zap
S	Setup	s	Size
T	Store	t	Store ZAP
U	Genlock	u	Transition
V	Video	v	
W	Who Are You ?	w	
X	Version ?	x	
Y		y	Sequence
Z	System Timing	z	Border/Crop

Basic Command Functions

A Ask for settings (5 bytes)

Format:

```
a A @ n cr  Ask for stored video/proc values
a A @ C cr  Ask for current video/proc values
a A @ Z cr  Ask for current ZAP values
```

Where:

```
a  address byte, lower case ASCII 'A' to 'D'
A  upper case ASCII 'A'
@  ASCII 'at' (hex 40)
n  ASCII '0' thru '3'
    0 = CV      2 = YRB
    1 = SV      3 = SDI
C  ASCII 'C', upper case 'C'
Z  ASCII 'Z', upper case 'Z'
cr  carriage return, (0D hex).
```

Asks for the board setting returns the following string(s).

Returns:

For source request (0 thru 3), (11 bytes)

```
video,mode,cont,brit,color,tint,shar,filt,cr,lf,ack
```

For current request ('C'), -- (13 bytes)

```
video,mode,cont,brit,color,tint,shar,filt,
hPha,scPha,
cr,lf,ack
```

For ZAP request ('Z'), -- (19 bytes)

```
hSize(2),vSize(2),hPos(2),vPos(2),
ctrl1,ctrl2,bdr1,bdr2,
cropT,cropB,cropL,cropR,
cr,lf,ack
```

B Bypass (CV I/O only) (5 bytes)

Format:

```
a B @ + cr Bypass On
a B @ - cr Bypass Off
```

Where:

```
a address byte, lower case ASCII 'A' to 'D'
B upper case ASCII 'B'
@ ASCII 'at' (hex 40)
+ ASCII '+' (hex 2B)
- ASCII '-' (hex 2D)
cr carriage return, (0D hex).
```

Returns:

```
cr lf ack
```

C Color (5 bytes)

Format:

```
a C 1 + cr Increment Chroma value
a C 1 - cr Decrement Chroma value
a C 1 @ cr Normalize Chroma value
a C 2 x cr Set Chroma value
```

Where:

```
a address byte, lower case ASCII 'A' to 'D'
C upper case ASCII 'C'
1 ASCII '1' (hex 31)
2 ASCII '2' (hex 32)
+ ASCII '+' (hex 2B)
- ASCII '-' (hex 2D)
@ ASCII 'at' (hex 40)
x value to be set, single byte hex 00-FF
cr carriage return, (0D hex).
```

Returns:

```
cr lf ack
```

E Freeze (5 bytes)

Format:

```

a E @ + cr Freeze On
a E @ - cr Freeze Off
a E @ 0 cr Select Frame
a E @ 1 cr Select Field 1
a E @ 2 cr Select Field 2
a E @ 3 cr Select Frame

```

Where:

```

a      address byte, lower case ASCII 'A' to 'D'
E      upper case ASCII 'E'
@      ASCII 'at' (hex 40)
0      ASCII '0' (hex 30)
1      ASCII '1' (hex 31)
2      ASCII '2' (hex 32)
3      ASCII '3' (hex 33)
+      ASCII '+' (hex 2B)
-      ASCII '-' (hex 2D)
cr     carriage return, (0D hex).

```

Returns:

```

cr lf ack

```

F Fade To Black (FTB) <Combiner option> (5 bytes)

Format:

```

a F @ + cr FTB On
a F @ - cr FTB Off

```

Where:

```

a      address byte, lower case ASCII 'A' to 'D'
F      upper case ASCII 'F'
@      ASCII 'at' (hex 40)
+      ASCII '+' (hex 2B)
-      ASCII '-' (hex 2D)
cr     carriage return, (0D hex).

```

Returns:

```

cr lf ack

```

H Hue (Tint) (5 bytes)

Format:

```

a H 1 + cr   Increment Hue value
a H 1 - cr   Decrement Hue value
a H 1 @ cr   Normalize Hue value
a H 2 x cr   Set Hue value

```

Where:

```

a   address byte, lower case ASCII 'A' to 'D'
H   upper case ASCII 'H'
1   ASCII '1' (hex 31)
2   ASCII '2' (hex 32)
+   ASCII '+' (hex 2B)
-   ASCII '-' (hex 2D)
@   ASCII 'at' (hex 40)
x   value to be set, single byte hex 00-FF
cr  carriage return, (0D hex).

```

Returns:

```

cr lf ack

```

I Comb Filter Control (5 bytes)

Format:

```

a I @ + cr   Comb Filter On
a I @ - cr   Comb Filter Off

```

Where:

```

a   address byte, lower case ASCII 'A' to 'D'
I   upper case ASCII 'I'
@   ASCII 'at' (hex 40)
+   ASCII '+' (hex 2B)
-   ASCII '-' (hex 2D)
cr  carriage return, (0D hex).

```

Returns:

```

cr lf ack

```

J Notch Filter Control

(5 bytes)

Format:

```
a J @ + cr  Notch Filter On
a J @ - cr  Notch Filter Off
```

Where:

```
a  address byte, lower case ASCII 'A' to 'D'
J  upper case ASCII 'J'
@  ASCII 'at' (hex 40)
+  ASCII '+' (hex 2B)
-  ASCII '-' (hex 2D)
cr carriage return, (0D hex).
```

Returns:

```
cr lf ack
```

L Luminance (Contrast)

(5 bytes)

Format:

```
a L 1 + cr  Increment Luma value
a L 1 - cr  Decrement Luma value
a L 1 @ cr  Normalize Luma value
a L 2 x cr  Set Luma value
```

Where:

```
a  address byte, lower case ASCII 'A' to 'D'
L  upper case ASCII 'L'
1  ASCII '1' (hex 31)
2  ASCII '2' (hex 32)
+  ASCII '+' (hex 2B)
-  ASCII '-' (hex 2D)
@  ASCII 'at' (hex 40)
x  value to be set, single byte hex 00-FF
cr carriage return, (0D hex).
```

Returns:

```
cr lf ack
```

M Mixer <Combiner option> (5 bytes)

Format:

```
a M @ + cr Mix On (A goes to B)
a M @ - cr Mix Off (B goes to B)
a M @ n cr Set Mixer Speed
```

Where:

```
a address byte, lower case ASCII 'A' to 'D'
M upper case ASCII 'M'
@ ASCII 'at' (hex 40)
+ ASCII '+' (hex 2B)
- ASCII '-' (hex 2D)
n ASCII '0' to '3' (hex 30 to 33)
    0 = Cut      2 = Medium
    1 = Slow    3 = Fast
cr carriage return, (0D hex).
```

Returns:

```
cr lf ack
```

N Standard (5 bytes)

Format:

```
a N @ 0 cr Set NTSC Standard
a N @ 1 cr Set PALB Standard
```

Where:

```
a address byte, lower case ASCII 'A' to 'D'
N upper case ASCII 'N'
@ ASCII 'at' (hex 40)
0 ASCII '1' (hex 30)
1 ASCII '2' (hex 31)
cr carriage return, (0D hex).
```

Returns:

```
cr lf ack
```

R Recall Video (5 bytes)

Format:

```

a R @ n cr Recall video/proc settings
a R @ P cr Recall POR state

```

Where:

```

a address byte, lower case ASCII 'A' to 'D'
R upper case ASCII 'R'
@ ASCII 'at' (hex 40)
n ASCII '0' thru '3' (hex 30 thru 33)
    0 = CV      2 = YRB
    1 = SV      3 = SDI
P upper case ASCII 'P'
cr carriage return, (0D hex).

```

Returns:

```

cr lf ack

```

S Setup (Brightness) 5 bytes

Format:

```

a S 1 + cr Increment Setup value
a S 1 - cr Decrement Setup value
a S 1 @ cr Normalize Setup value
a S 2 x cr Set Setup value

```

Where:

```

a address byte, lower case ASCII 'A' to 'D'
S upper case ASCII 'S'
1 ASCII '1' (hex 31)
2 ASCII '2' (hex 32)
+ ASCII '+' (hex 2B)
- ASCII '-' (hex 2D)
@ ASCII 'at' (hex 40)
x value to be set, single byte hex 00-FF
cr carriage return, (0D hex).

```

Returns:

```

cr lf ack

```

T Store Video/Proc Register (5 bytes)

Format:

a T @ C cr Store video/proc settings
a T @ P cr Store POR state

Where:

a address byte, lower case ASCII 'A' to 'D'
R upper case ASCII 'R'
@ ASCII 'at' (hex 40)
C upper case ASCII 'C'
P upper case ASCII 'P'
cr carriage return, (0D hex).

Returns:

cr lf ack

U Genlock (5 bytes)

Format:

a U @ ? cr Query Genlock

Where:

a address byte, lower case ASCII 'A' to 'D'
U upper case ASCII 'U'
@ ASCII 'at' (hex 40)
? ASCII '?' (hex 3F)
cr carriage return, (0D hex).

Returns:

U 0 cr lf ack for stand-alone mode (non-genlock)
U 1 cr lf ack for gen-lock mode

V Video select (5 bytes)

Format:

a V @ n cr Recall video/proc settings

Where:

a address byte, lower case ASCII 'A' to 'D'
V upper case ASCII 'V'
@ ASCII 'at' (hex 40)
n ASCII '0' thru '3' (hex 30 thru 33)
P upper case ASCII 'P'
cr carriage return, (0D hex).

Returns:

cr lf ack

Changes video source without changing proc settings

W Who are you ? (5 bytes)

Format:

a W @ ? cr Request board address

Where:

a address byte, lower case ASCII 'A' to 'D' (ignored in this case)
W upper case ASCII 'W'
@ ASCII 'at' (hex 40)
? ASCII '?' (hex 3F)
cr carriage return, (0D hex).

Returns:

W n cr lf ack where n is board address (ASCII 'a' thru 'd')

X Request Board Info (5 bytes)

Format:

a X @ ? cr Request board version

Where:

a address byte, lower case ASCII 'A' to 'D'
X upper case ASCII 'X'
@ ASCII 'at' (hex 40)
? ASCII '?' (hex 3F)
cr carriage return, (0D hex).

Returns:

name version date cr lf ack

i.e. E422sx V1.00 07/15/99 cr lf ack

Z System Timing 5 bytes)

Horizontal Phase:

Format:

```
a Z 1 + cr Increment hPha value
a Z 1 - cr Decrement hPha value
a Z 1 @ cr Normalize hPha value
a Z 2 x cr Set hPha value
```

Subcarrier Phase:

Format:

```
a Z 3 + cr Increment scPha value
a Z 3 - cr Decrement scPha value
a Z 3 @ cr Normalize scPha value
a Z 4 x cr Set scPha value
```

Where:

```
a      address byte, lower case ASCII 'A' to 'D'
Z      upper case ASCII 'Z'
1      ASCII '1' (hex 31)
2      ASCII '1' (hex 32)
3      ASCII '1' (hex 33)
4      ASCII '1' (hex 34)
+      ASCII '+' (hex 2B)
-      ASCII '-' (hex 3D)
@      ASCII 'at' (hex 40)
x      single hex byte
cr     carriage return, (0D hex).
```

Returns:

```
cr lf ack
```

ZAP Functions

p Set Position (lower case p) (7 bytes)

Format:

a p x x y y cr

Where:

a address byte, lower case ASCII 'A' to 'D'
 s lower case ASCII 'S'
 x x horz position, two hex bytes 0000 to 02C4 hex (0 to 708 decimal)
 y y vert position, two hex bytes 0000 to 00F2 hex (0 to 242 decimal)
 cr carriage return, (0D hex).

Returns:

cr lf ack

Sets a new position

q Position and Size (lower case q) (eleven bytes)

Format:

a q x x y y w w h h cr

Where:

a address byte, lower case ASCII 'A' to 'D'
 q lower case ASCII 'Q'
 x x horz position, two hex bytes 0001 to 02C4 hex (1 to 708 decimal)
 y y vert position, two hex bytes 0001 to 00F2 hex (1 to 242 decimal)
 w w pixel width, two hex bytes 0000 to 02C4 hex (0 to 708 decimal)
 h h line height, two hex bytes 0000 to 00F2 hex (0 to 242 decimal)
 cr carriage return, (0D hex).

Returns:

cr lf ack

Sets a new size and position

r Recall Zap register (lower case r) (five bytes)

Format:

a r @ n cr

Where:

a address byte, lower case ASCII 'A' to 'D'
 r lower case ASCII 'R'
 @ ASCII 'at' symbol (SHIFT 2 on keyboard, 40 hex)
 n ASCII '0' thru '9' and ASCII 'A' (upper case 'A')
 cr carriage return, (0D hex).

Returns:

cr lf ack

Recalls a saved size and position from the EEPROM to the video

s Set Size (lower case s) (seven bytes)

Format:

a s w w h h cr

Where:

a address byte, lower case ASCII 'A' to 'D'
 s lower case ASCII 'S'
 w w pixel width, two hex bytes 0000 to 02C4 hex (0 to 708
 decimal)
 h h line height, two hex bytes 0000 to 00F2 hex (0 to 242
 decimal)
 cr carriage return, (0D hex).

Returns:

cr lf ack

Sets a new size

t Store Zap register (five bytes)

Format:

a t @ n cr

Where:

a address byte, lower case ASCII 'A' to 'D'
 t lower case ASCII 'T'
 @ ASCII 'at' symbol (SHIFT 2 on keyboard, 40 hex)
 n ASCII '0' thru '9' (note: ASCII A not valid this command)
 cr carriage return, (0D hex).

Returns:

cr lf ack

Stores a video size and position to the EEPROM

u Update /Transition (lower case u) (twelve bytes)

Format:

a u x x y y w w h h d cr

Where:

a address byte, lower case ASCII 'A' to 'D'
 u lower case ASCII 'U'
 x x horz position, two hex bytes 0001 to 02C4 hex (1 to 708
 decimal)
 y y vert position, two hex bytes 0001 to 00F2 hex (1 to 242
 decimal)
 w w pixel width, two hex bytes 0000 to 02C4 hex (0 to 708
 decimal)
 h h line height, two hex bytes 0000 to 00F2 hex (0 to 242
 decimal)
 d frame count, single byte 02 to F0 hex (2 to 240
 decimal)
 cr carriage return, (0D hex).

Returns:

cr lf ack

Initiates a transition from the current size and position
 to the new specified size and position
 frame count determines the time of transition

Sequence Functions-----
y Sequence Control(5 bytes)

Format:

a y @ n cr

Where:

a address byte, lower case ASCII 'A' to 'D'

y lower case ASCII 'Y'

n ASCII 1 thru 6

Coresponds to buttons on front panel as follows:

1 = BEGin button	<
2 = REVerse button	<
3 = STOP button	[]
4 = FWD (forward)	>
5 = NEXT button	>
6 = END button	>

cr carriage return, (0D hex).

Returns:

cr lf ack

Border/Crop Functions

```
-----
z  Set Border/Crop funtions                (5 bytes)
-----
```

BORDER

Format:

```

a z c + cr  Border On (override by Background Color On)
a z c - cr  Border Off (override by Background Color On)

a z s x cr  Set Border Size    (x is 01 to 0F hex)

a z r x cr  Set Border/Background Red value    (x is 00 to 0F
hex)
a z g x cr  Set Border/Background Green value  (x is 00 to 0F
hex)
a z b x cr  Set Border/Background Blue value   (x is 00 to 0F
hex)

a z f n cr  Set Background Fill mode
              (n is ASCII 0-2)
              0 = Black           2 = Genlock Fill
              1 = Color

a z k n cr  Set Key Output mode (alpha out to keyer and combiner)
              (n is ASCII 0-2)
              0 = Insert   2 = Off
              1 = Full

```

Where:

```

a    address byte, lower case ASCII 'A' to 'D'
z    lower case ASCII 'Z'
c    lower case ASCII 'C'
s    lower case ASCII 'S'
r    lower case ASCII 'R'
g    lower case ASCII 'G'
b    lower case ASCII 'B'
+    ASCII plus sign
-    ASCII minus sign

cr   carriage return, (0D hex).

```

Returns:

```
cr lf ack
```

CROP

Format:

```
a z C + cr Set Crop On
a z C - cr Set Crop Off

a z T x cr Set Crop Top      (x is 01 to ?? hex)
a z B x cr Set Crop Bottom (x is 01 to ?? hex)
a z L x cr Set Crop Left    (x is 01 to ?? hex)
a z R x cr Set Crop Right   (x is 01 to ?? hex)
```

Where:

```
a      address byte, lower case ASCII 'A' to 'D'
z      lower case ASCII 'Z'
C      upper case ASCII 'C'
T      upper case ASCII 'T'
B      upper case ASCII 'B'
L      upper case ASCII 'L'
R      upper case ASCII 'R'
+      ASCII plus sign
-      ASCII minus sign

cr     carriage return, (0D hex).
```

Returns:

```
cr lf ack
```

Frame Count

Format:

a z F x cr Set Frame Count (x is 02 to F0 hex)

Where:

a address byte, lower case ASCII 'A' to 'D'
z lower case ASCII 'Z'
F upper case ASCII 'F'

cr carriage return, (0D hex).

Returns:

cr lf ack

Sequence Control

Format:

a z K x cr Set Sequence Control (x is 00 to 04 hex)

Where:

a address byte, lower case ASCII 'A' to 'D'
z lower case ASCII 'Z'
K upper case ASCII 'K'

x is hex 00 Start
 01 Pause
 02 Continue
 03 Loop
 04 Stop

cr carriage return, (0D hex).

Returns:

cr lf ack

14. APPENDIX (GLOSSARY)

A/B

A/B is an output indicating the TBC that is being controlled. For single channel operation, the A output will be active. For dual channel operation, the B output will be active.

Alpha Key Output

Alpha Key is a BNC connector exiting the rear chassis used to track the video for resizing and positioning. It operates as an external keyer.

Aperture

Aperture increases picture detail. The FERAL EFFECT offers four level of enhancement.

Aspect

Aspect is activated by the ZAP button. It resizes video vertically and horizontally independently in unequal proportions.

BNC

A BNC is a standard connector in the video industry that is used to connect professional video equipment.

Chrominance (Chroma)

Chroma is a proc amp control that adjusts the chrominance level or color intensity of a NTSC/PAL video input.

Coring

The Coring function reduces noise in a NTSC/PAL video input.

CV (Composite Video Input)

Composite Video Input is a BNC connector exiting the rear chassis used to input composite NTSC/PAL video to the FERAL EFFECT.

Field 1 and Field 2

A field is one half of a frame (picture). The Field 1 and Field 2 functions allow users to display a picture that is created from only one field of video information.

Field Select

The field select function initiates field freeze or field out by selecting and displaying either field 1 or field 2 information.

Frame

A frame is the entire picture. It contains two fields, one odd and one even (referred to as field 1 and field 2).

Freeze

Freeze is a special effect function, allowing users to freeze a frame or a field of video for maximum resolution of still images.

Genlock

Genlock allows users to lock the TBC output to a stable external reference. It is used when working with two TBCs whose outputs must be matched in time so they can be mixed together.

H Phase

The H Phase, which is only active in the genlock mode, adjusts the horizontal position (picture alignment from left to right) of the TBC output relative to the genlock signal.

Header Pin

A header pin is a three-positioned component on the TBC board located inside the FERAL EFFECT chassis. There is one header pin for the CV and Genlock inputs. This allows selection for terminated or unterminated inputs.

HUE

Hue is a proc amp control that adjusts the flesh tones of a NTSC video input.

Key Frame

A key frame is a frame of video at a key point in time.

Luminance

Luminance is a proc amp control that adjusts the luminance or brightness/contrast of a NTSC/PAL video input.

Looping

Looping is a way to describe an input that does not stop at one TBC but passes through and continues to another input. It is used in dual channel operations.

Mono (Monochrome)

Monochrome means black and white. The Mono function eliminates color from a NTSC/PAL video input so that the picture appears black and white.

Output

The output function activates frame out (active NTSC/PAL video). It works in conjunction with field 1 and field 2 to eliminate flicker when active video is in slow motion.

PAL/NTSC

PAL and NTSC are video standards. NTSC is the established video standard for the United States, PAL is the established video standard for much of Europe. The FERAL EFFECT operates in either PAL or NTSC. The PAL/NTSC function allows users to switch between standards.

RATE

The Rate function works in conjunction with the Strobe effect. It indicates how often (rate) the video frames are captured.

RECALL

The Recall function allows users to check what they have stored or to initiate a zap or sequence setting. It allows works in conjunction with the Take button to return proc amp levels to unity.

SC PHASE

The SC Phase, which is only active in the genlock mode, adjusts the system SC Phase of the TBC output so its color Hues (flesh tones) match the genlock signal. They can then be input into a video switcher or mixed together.

SETUP

Setup is a proc amp control that adjusts the black level of a NTSC/PAL video input.

SEQUENCE

A sequence is made up of a multitude of continuous key frames for a series of special effect sizes and positions.

SHIFT

The Shift function allows users to activate the functions indicated in green print on the front panel.

SHUNT

A Shunt is a black cap that fits on a header pin. It determines whether an input is in the terminal or unterminated mode.

STATUS DISPLAY

The status display is a LCD window that digitally generates instructions and current readouts.

STORE

The Store function allows you to save preset proc amp levels, functions, inputs and video sized, positions and transition times.

STROBE

Strobe is a special effect function. Strobe allows users to vary the rate (how often frames are captured) of an input to produce a film-like look.

SV

S-Mode Video Input is a 4-pin connector exiting the rear chassis used to input Y/C video to the FERAL EFFECT from S-Mode or Hi-8 sources.

Y/C DELAY

The Y/C Delay function applies to the S-Mode input, ranging from 00 (chroma advance) to 02 (chroma delay) in relation to luminance.

ZAP

The ZAP (zoom, aspect, position) function activated a mode of compression control.

ZOOM

Zoom is activated by the ZAP button. It compresses video vertically and horizontally in equal proportions.