eyeheight

SA-2U Dual Link 444 safe-area generator

user manual

User Manual Versions

Versions	Changes	Date	S/W Ver
0.02	Provisional Version	27/02/08	
1.00	First Released Version	21/04/08	1.6
1.10	Moveable user Box and Onscreen aspect ratio calculation added	17/06/09	2.10
1.20	Changed Title, Expanded section on cage uploader	28/9/09	2.11

eyeheight Unit 34 Park House Watford Business Park Greenhill Crescent Watford Herts GB WD18 8PH
Reg. No. 2855535 Telephone: +44 (0) 1923 256 000 Fax: +44 (0) 1923 256 100 email: eesales@eyeheight.com

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eyeheight Unit 34 Park House Watford Business Park Greenhill Crescent Watford Herts GB WD18 8PH
Reg. No. 2855535 Telephone: +44 (0) 1923 256 000 Fax: +44 (0) 1923 256 100 email: eesales@eyeheight.com

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Reg. No. 2855535 Telephone: +44 (0) 1923 256 000 Fax: +44 (0) 1923 256 100 email: eesales@eyeheight.com

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eyeheight Unit 34 Park House Watford Business Park Greenhill Crescent Watford Herts GB WD18 8PH
Reg. No. 2855535 Telephone: +44 (0) 1923 256 000 Fax: +44 (0) 1923 256 100 email: eesales@eyeheight.com

1 System Overview

1.1 The SA-2U product

The **SA-2U** is a resolution independent safe area generator designed to operate independently of frame rate and interlaced/progressive transports and should work with the following image rasters.

Single link 4:2:2 SD 720x576 & 720x480

Single link 4:2:2 HD 1280x720 & 1920x1080

Dual link HD 4:4:4 1920x1080 & 2048x1080

For dual link standards the unit support 10 or 12 bit operation in YCbCr or RGB colour spaces and 100%, 200% or 400% dynamic range.

The **SA-2U** can display up to 4 simultaneous safe-areas/cursors and each safe-area/cursor has independent controls for style, colour and opacity. All safe-areas have independently controllable centre markers.

The **SA-2U** firmware is field re-programmable and all the defined safe-areas are user programmable to ensure that the unit stays up to date with emerging standards.

1.2 Associated Equipment for the SA-2U

The **SA-2U** processing card requires the following in order to set up and operate the unit.

1. An **etherBox** chassis (**FB-9E**). Up to six **SA-2U** units and be installed in one chassis.
2. A **flexiPanel** control surface such as an **FP-9** or an **FP-10**.

Figure 1 - Front view of etherBox (FB-9E) fitted with FF-9 blank panel

Figure 2 FP-9 flexiPanel can be fitted on the FB-9E or remotely using an RR-9 kit.

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2 Installation.

This unit requires HD-SDI or SDI digital video connections to the BNC connectors. Optionally RS232, GPI's and a Tally may also be connected normally using CAT5e cable. The user should refer to the **etherBox** user manual for installation of the **SA-2U** into a chassis and connection of **flexiPanel**s. This will also describe the process of acquiring a processing card (in this case the **SA-2U**) by the **flexiPanel** which is necessary to access the menu structure within the **SA-2U**.

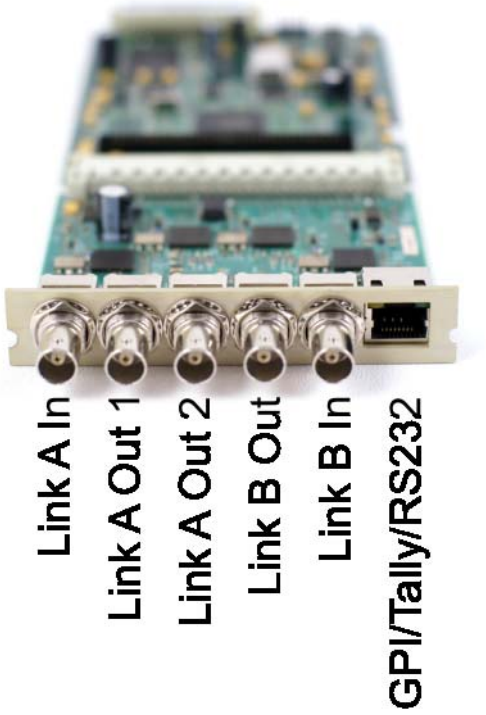

Figure 3 - Connections to the SA-2U

For single link standards only Link A In is required. For single link standards the unit has 3 outputs via Link A Out 1, Link A Out 2 and Link B Out.

For dual link standards Link A In and Link B In are required. For dual link standards the unit has one output via Link A Out 1 or Link A Out 2 and Link B Out.

For applications where SMPTE352 Video Payload Identification packets are not present in the input video it may be necessary to manually configure the input mode for proper operation. See section 3.4 for details.

See Section 5.1 for details of the GPI/Tally/RS-232 pinout.

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3 Operation

All **geNETics** products are controlled using a generic menu system. This generic menu system is operated from a generic panel (**flexiPanel FP-9** or **FP-10**). An **FP-9** is shown below (An **FP-10** has the same controls in a different layout style). For information about acquiring processor cards for control on a **flexiPanel** see the **etherBox** manual section 4.

3.1 General flexiPanel control

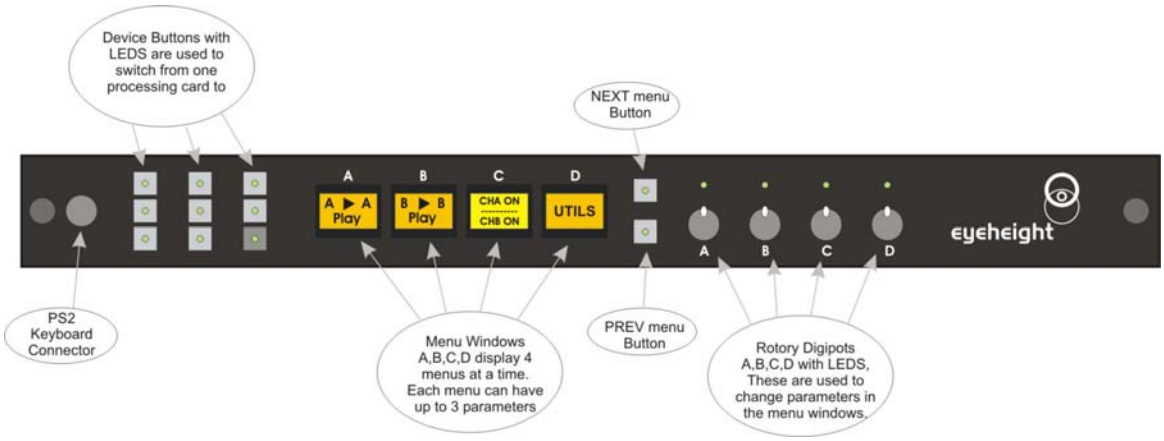

Figure 4 flexiPanel (FP-9) controls.

3.1.1 Device buttons

There are 8 grey device buttons. These switch between the currently selected processing cards installed in the **etherBox**. It is also possible to select cards in another chassis if the I-Bus is connected to the other chassis.

3.1.2 Menu navigation

There are two ways to navigate from menu to menu.

1. Using the NEXT ane PREV buttons. These are for “Flat” menu structures. The NEXT and PREV LEDS will flash while further menus are available.
2. Using a GOTO ANOTHER MENU LCD button (as below coloured orange). This is more common and will take you straight to a relevant set of menus. Examples are the Play and UTILS menu’s shown on Figure 8.

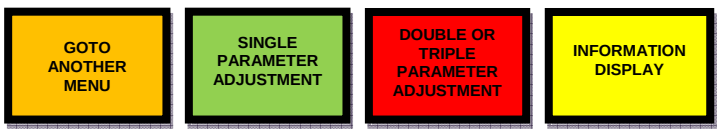

Figure 5 Types of menus showing their characteristic colours

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3.1.3 Parameter adjustment of a green menu

A green menu is one in which there is only one adjustable parameter. There are two ways to adjust the parameter in a green menu.

1. Press the green LCD button. This will increment the value in that window. This is most frequently done when the menu parameter is Textural for example switching a parameter between ON and OFF. In this case a button press is most natural.
2. Use the Rotary digipot (A,B,C or D) to adjust the parameter in the respective LCD window (A,B,C or D). The direction and speed of rotation enable numeric values to be set easily.

3.1.4 Parameter adjustment of a red menu

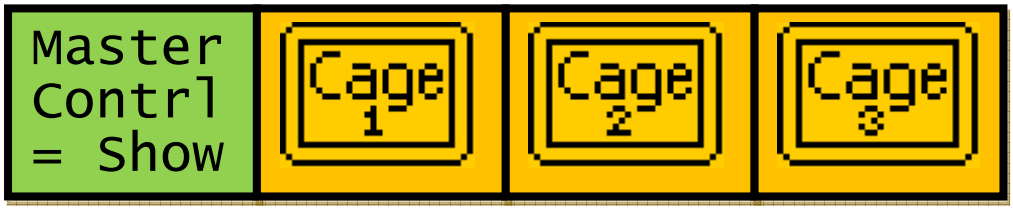
A red menu is one in which there is two or three adjustable parameters. In this case it is necessary to first select the menu by pressing the red button. When the red button is pressed it will turn green and either two or three of the rotary digipot LEDS will flash indicating that the respective rotary digipot will operate the respective parameter.

3.1.5 Information display

A Yellow menu (Which on most panels does look a light orange!) is one in which only information is displayed. An example of this is the software version display.

3.2 Primary safe-area generator control

The top level menu shown below gives direct access to the configuration menus for the three primary safe-area generators.



Pressing the “Next button” will take you to the menus for the special purpose cursor generator, input status and source configuration and memories. See sections 3.3, 3.4 and 4 for further details.

The Master Control menu operates across all cages and special purpose screen utilities and will allow them to be shown or will hide them.

The three primary safe-area generators operate identically and are composited onto the input video as separate layers each with independent colour and opacity. Cage 1 is the lowest layer and Cage 3 is the highest.

Pressing any of the “Cage” menus will display the menus below

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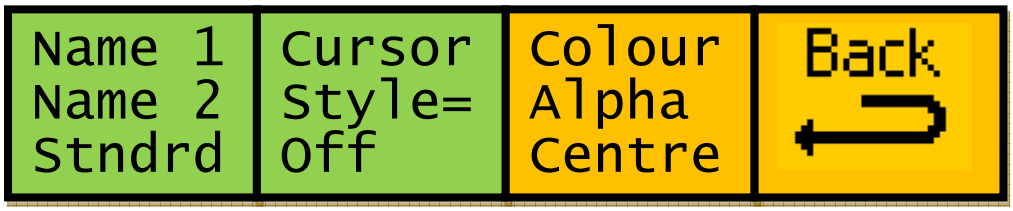


In the first menu “Name 1”, “Name 2” will be replaced by the names defined for the currently selected safe-area when the safe areas were configures in the cage uploader application, “Stndrd” will be replaced by the name defined for the currently detected raster as configured in the cage upload application. For details of the operation of the cage uploader application see section **Error! Reference source not found.**.

The “Cursor Style=” menu can be used to select the preferred display mode for the current safe-area.

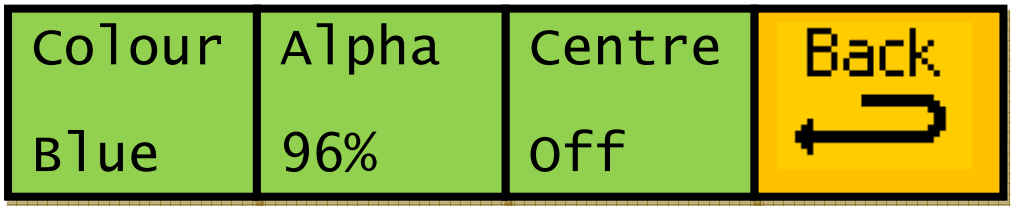
Mode	**Result**
Off	The safe-area is not displayed
Dash1	The safe-area is displayed as a single pixel/line wide dashed line
Dash2	The safe-area is displayed as a double pixel/line wide dashed line
Thick	The safe-area is displayed as a double pixel/line wide line
Thin	The safe-area is displayed as a single pixel/line wide line
Solid	The area outside the safe area is coloured

In all cases the colour of the display and the opacity can be configured via menus accessed by pressing the “Colour Alpha Centre” menu.

N.B. For interlaced displays selecting “Dash1” or “Thin” may result in horizontal lines that flicker. For 4:2:2 interfaces selecting “Dash1” or “Thin” may result in vertical lines which do not accurately reflect the selected colour due to chrominance sub-sampling.

Pressing “Back” will return to the top level cage menus.

Pressing the “Colour Alpha Centre” menu display the menus below



The ”Colour” menu allows the user to select the colour for the current safe area generator for a set of standard colours (white, yellow, cyan, green, magenta, red, blue, black).

The “Alpha” menu allows the user to specify the opacity for the current overlay.

N.B. The safeEyes4:4:4 holds two independent values for alpha for each safe-area, one used when the display mode is “Solid” and another for all other display modes. This provides an improved user experience when switching between the

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solid and line display modes and is largely transparent to the user as only the appropriate alpha is displayed and adjusted.

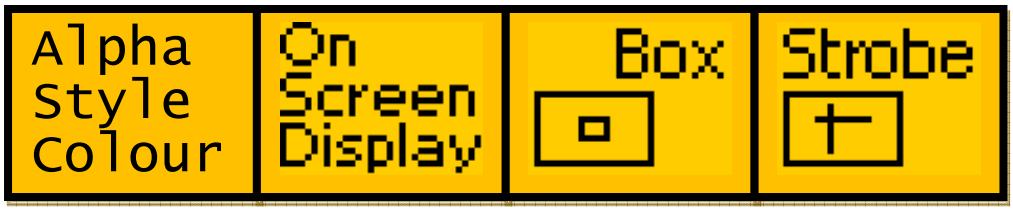
The “Centre” menu allows the user to turn on or off the centre marker for each safe-area independently. The centre marker is automatically sized depending on the size of the selected safe-area and will automatically display as either a single or double line depending on the height and width of the safe area so as to most accurately indicate the centre.

Pressing “Back” will return you to the previous menus.

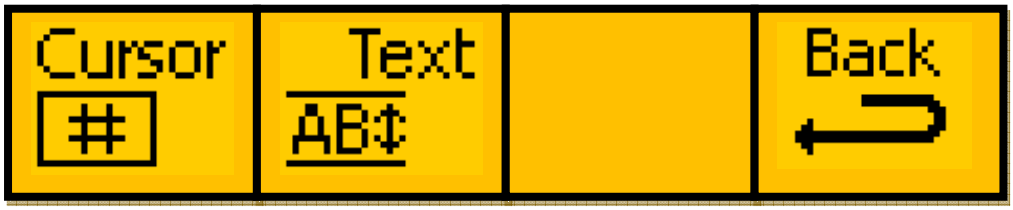
3.3 Special purpose cursor generator control

The special purpose cursor provides real-time user configurable safe-area, text height measurement, pixel strobe, cursor functionality and onscreen aspect ratio information. The special purpose cursor layer is composited on top of the primary safe-area layers.

Pressing the “Next” button (to the immediate right of the right-most menu button) from the top level menu then “Special screen utils” displays the menus below.

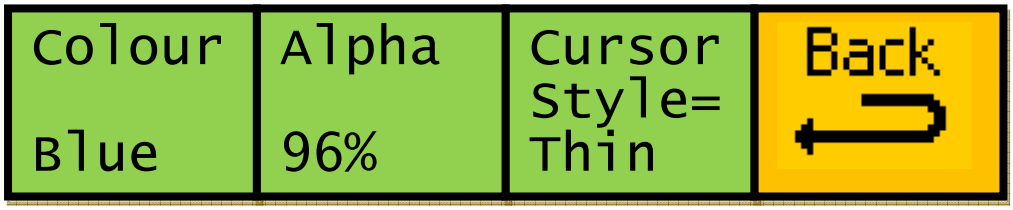


Pressing the “Alpha Style Colour” menu displays the menus detailed in section 3.3.1. Pressing “On Screen Display” displays the menus detailed in section 3.3.2. Pressing “Box” displays the menus detailed in section 3.3.4. Pressing “Strobe” displays the menus detailed in 3.3.6. Pressing the “Next” button (to the immediate right of the right-most menu button) displays the menus shown below.



Pressing “Cursor” displays the menus detailed in section 3.3.6. Pressing the “Text ABC” menu displays the menus detailed in section 0. Pressing the “Back” menu takes you back to the top level menus.

3.3.1 Special purpose cursor display options



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Reg. No. 2855535 Telephone: +44 (0) 1923 256 000 Fax: +44 (0) 1923 256 100 email: eesales@eyeheight.com

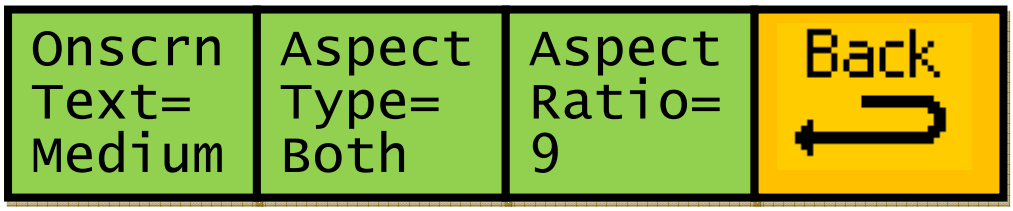
The ”Colour” menu allows the user to select the colour for the current safe area generator for a set of standard colours (white, yellow, cyan, green, magenta, red, blue, black).

The “Alpha” menu allows the user to specify the opacity for the special purpose cursor overlay.

The “Cursor Style=” menu can be used to select the preferred display mode for the special purpose cursor when used to display the user box. This menu is overridden for all other special purpose cursor functions.

Mode	Result
Dash1	The user box is displayed as a single pixel/line wide dashed line
Dash2	The user box is displayed as a double pixel/line wide dashed line
Thick	The user box is displayed as a double pixel/line wide line
Thin	The user box is displayed as a single pixel/line wide line
Solid	The area outside the user box is coloured

3.3.2 On Screen Display



When the user box is turned ON the aspect ratio details for the user box will be displayed on screen. The calculations using a denominator of 9 are as follows:

PAL: 702 x 576 (Pixels 0 to 701 x Lines 1 to 576) user box, pixel aspect ratio = 1.09401. Ratio = 12/9 on a 4:3 glass and 16/9 on a 16:9 glass.

NTSC: 704:480 (0 to 703 x 1 to 480) user box, pixel aspect ratio = 0.90909. Ratio = 12/9 on a 4:3 glass and 16/9 on a 16:9 glass. HD pixels aspect ratio = 1.

“Onscrn Text” allows the user to select the size of the characters for the aspect ratio calculation text, if the user box is turned ON, or to hide the onscreen information by selecting OFF.

“Aspect Type” allows the user to select which lines of aspect ratio calculation text are displayed on the screen if the user box is turned ON.

The “Aspect Ratio” menu allows the user to select the denominator (usually 1, 3 or 9) to be used for the aspect ratio calculation text which will be displayed on the screen if the user box is turned ON.

The aspect ratio calculation text displayed on the screen will be similar to the example shown below, user box = 150 to 570 x 100 to 475, denominator = 9.

ASPECT RATIO

11.02/9 STND 4:3 glass using a denominator of 9

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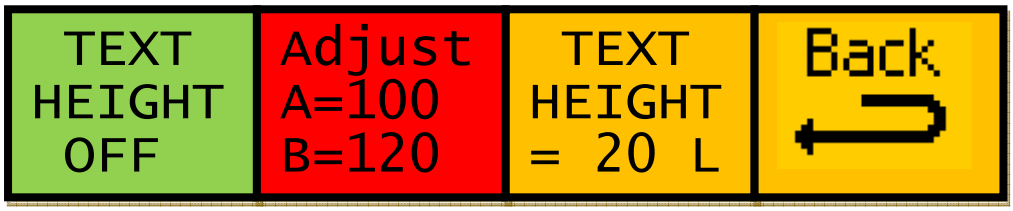
14.70/9 WIDE 16:9 glass using a denominator of 9

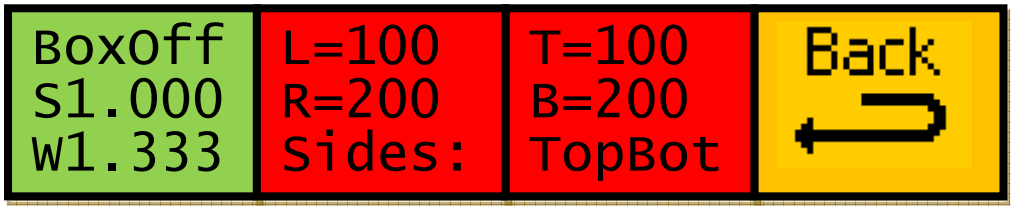
With HD video, STND will always be 0.00 because only WIDE is relevant . STND could be hidden using “Aspect Type” as explained above.

3.3.3 Text height measurement



Pressing the first button or adjusting digi-pot 1 will toggle the visibility of the text height measurement cursor. If another special purpose cursor is being displayed it will be removed. The text height measurement cursor displays a horizontal opaque stripe across the full width of the image. The “Adjust” menu is red to indicate that it is an unopened nested menu. Pressing the “Adjust” menu will open it (the “Adjust” menu will turn green and the first “TEXT HEIGHT” menu will go red) The A value can no be adjusted using the first digi-pot and the B value can be adjusted using the second. Align the top and bottom of the opaque band with the top and bottom of the text to be measured and read of the text height in lines from the third menu. The “Adjust” menu can be closed by pressing any of the menu buttons.

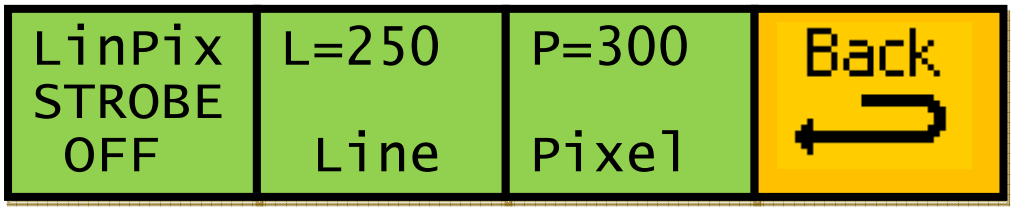
3.3.4 User Box



Pressing the first menu button or adjusting digi-pot 1 will toggle the user box display through Off, On and On+ which displays the user box and its centre marker. If another special purpose cursor is in use it will be removed. The W and S values indicate the aspect ratio of the user box when viewed in standard aspect ratio (4:3) and widescreen aspect ratio (16:9). For HD signals only the W value is active.

The position and size of the user box can be adjusted by opening the “Sides:” and “TopBot” menu by pressing them and then adjusting using digi-pots 1 and 2.

3.3.5 Strobe



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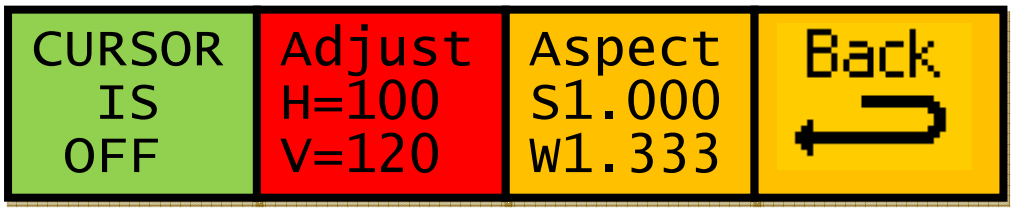
Pressing the first menu button or adjusting digi-pot 1 will toggle the strobe on and off. If another special purpose cursor is being displayed it will be removed. The selected line and pixel can be adjusted using digi-pots 2 and 3.

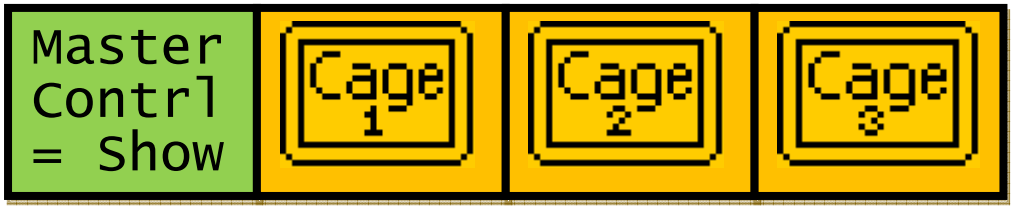
3.3.6 Cursor



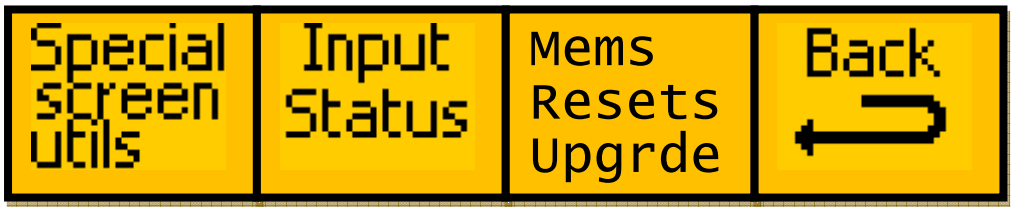
Pressing the first menu button or adjusting digi-pot 1 will toggle the cursor on and off. If another special purpose cursor is being displayed it will be removed. The width and height of the cursor can be adjusted by opening the “Adjust” menu and using digi-pot 1 and 2. The W and S values indicate the aspect ratio of the user box when viewed in standard aspect ratio (4:3) and widescreen aspect ratio (16:9). For HD signals only the W value is active.

3.4 Input status and source configuration

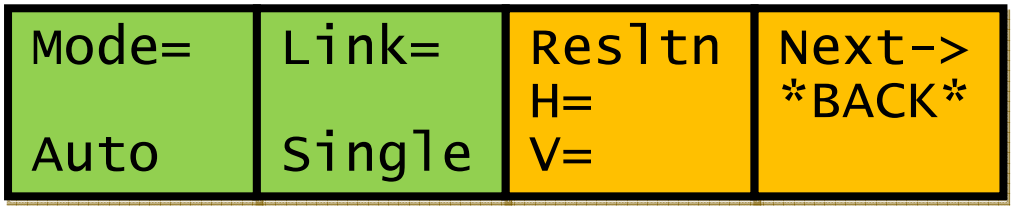
For sources which do not contain SMPTE352 video source identification packets the input status must be manually configured.



From the top level menu shown above press the “Next” button (to the immediate right of the right-most menu button) to display the menus below.



Now press “Input Status” to be taken to the input status and source configuration menus as shown below.



Pressing the Mode button will toggle between “Auto”, which will attempt to automatically configure the input mode based on detected SMPTE352 packets, and “Manual” mode which allows the user to manually specify the link type and subsequent settings. In “Auto” mode all source configuration menus are locked.

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Reg. No. 2855535 Telephone: +44 (0) 1923 256 000 Fax: +44 (0) 1923 256 100 email: eesales@eyeheight.com

The “ResItn” menu displays the detected input resolution which is used by the sefeEyes4:4:4 to select the set of safe areas that the user can select. For a safe area to be available the resolution it was designed for must match the detected input resolution.

Pressing the “next” button (to the immediate right of the right-most menu button) will display the menus below which can be used to configure the subsequent input parameters.

Colour Mode= YCbCr	Bit Depth= 10b	D.Rnge = 100%	*BACK* Prev->

For “Link = Single” all other source configuration are locked as shown above. Selecting “Link = Dual” will allow either RGB or YCbCr to be selected in the “Colour Mode” menu and either 10b or 12b to be selected in the “Bit Depth” menu. With “Bit Depth = 12b” selected the “D.Rnge” menu can select 100%, 200% or 400% dynamic range.

3.5 Memories

3.5.1 User Memories

The user memories are a generic feature of all eyeheight **geNETics** products. Six of these are included in the **SA-2U**. Only the menu parameters shown in RED are saved.

The selected cages can be saved but will only be restored if the current video standard is the same as when the memory was saved. If the video standard has changed the first cage available for the current standard will be selected.

3.5.2 Naming User Memories

The user memories can be named with up to 6 characters. To do this plug in a PS-2 Keyboard into a **flexiPanel** and select the appropriate processor card with a device button. (See Figure 5 for connector location). To name memory 1, “TXroom”

1. Hit F9 function key. The LCD displays will change to text entry mode
2. Type “M01:TXroom” and then press enter.
3. You may get a “not acknowledged” message, this does not matter.

Other memories can be named in the same way but changing the 01 to another memory number.

3.5.3 Power on memory

This product will restore the settings that were current when the “Set As Pow On Memory” menu button was pressed with the same limitations as for User Memories.

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3.6 Tamper Locking the SA-2U.

The user can lock specific menus or all the menus on the **SA-2U** so that it cannot be adjusted with a manual control panel. This does not affect automation.

To do this plug in a PS-2 Keyboard into a **flexiPanel** and select the appropriate processor card with a device button. (See Figure 5 for connector location). To lock only menu 5. (Next Logo for channel A)

1. Hit F9 function key. The LCD displays will change to text entry mode
2. Type “L05:” and then press enter.

A padlock symbol will appear on the menu and it cannot be adjusted. To unlock menu 5, type “A05:” as step 2 above. Other menus are done in the same way

To lock the whole product type “L:” as step 2 above and to unlock the whole product type “A:” as step 2 above.

3.7 GPI/Tally Set-up.

3.7.1 On-Board GPI’s

The **SA-2U** is a **geNETics** product. The **geNETics** system uses generic Input/Output cards which have 3 GPI’s and one Tally output. These have been used in this system as opportunistic GPI’s which may be of use to the user. They do not provide a comprehensive GPI control but may be used as part of a GPI solution in conjunction with the GPI’s on the **etherBox**.

The operation of the two GPI’s used is explained in the table below.

Table 1 - On-Board GPI settings

	GPI1	GPI2	GPI3	Effect
OFF	1	1	1	The GPI’s have no effect
Master Hide	0	1	1	All cages will be hidden.
Master Show	1	0	1	Selected cages will be displayed.

0=Short to ground or logic 0V, 1=Pulled up internally or logic +3→+12V

3.7.2 On-Board Tally

The single tally output has two modes:

1. Indicate that one or more cages are being displayed.
2. Indicate that no cages are being displayed..

The operation of these is explained in the table below.

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Table 2 - On-Board Tally settings.

	Tally State	Meaning
ON	0	A cage is being displayed
OFF	1	No cages are being displayed

0=Transistor ON, shorting to ground, 1=Transistor OFF, open.

3.7.3 Configuring tallies on the etherBox.

The **SA-2U** can also make use of the three configurable tallies on the **etherBox** chassis. The **etherBox** chassis has three usable tallies. These are 11,12 and 13. Set up these menus for the box number and tally number for channel A and channel B. If you do not wish to use a tally set the box number to 0. Refer to the **etherBox** man

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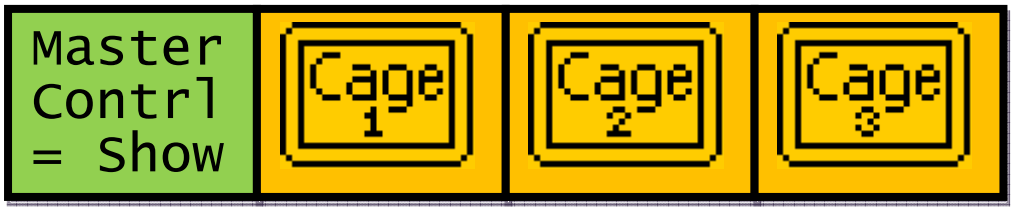
4 The SA-2U Menu Set.

The following set of menus defines the operational controls of the sa-2u.

Note: Only parameters with RED menu numbers are stored in the memories and the Power-ON memory.

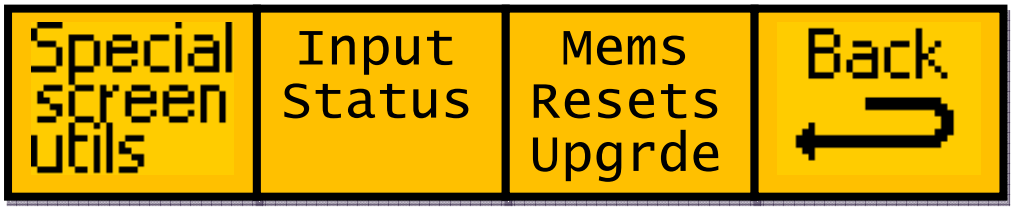
Menus 00-03 Top Level Menus



Menu Num.	Heading	Function
0	Hide/Show	Setting this menu to “Hide” will hide all the cages, strobes and cursors etc.
1	Cage 1	Press this button to take you to the Cage 1operational control menus (Go To Menu 8).
2	Cage 2	Press this button to take you to the Cage 2 operational control menus (Go To Menu 16).
3	Cage 3	Press this button to take you to the Cage 3 operational control menus (Go To Menu 24).

Pressing the “NEXT” button while the Top Level Menus are displayed will take you to menus 04-07.

Menus 04-07 Menus



Menu Num.	Heading	Function
4	Special screen	Press this button to take you to the User Box, Text etc. operational control menus

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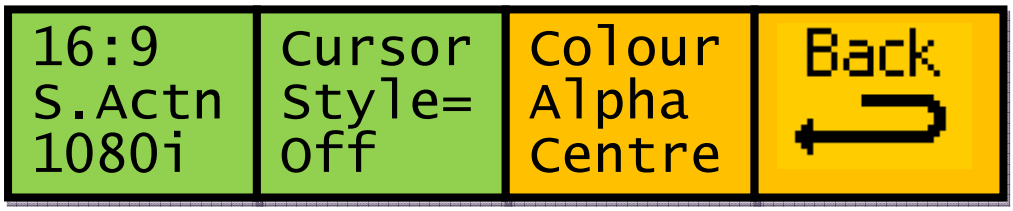
	utils	(Go To Menu 32).
5	Input Status	Press this button to take you to the Input Status operational control menus (Go To Menu 60).
6	Mems, Resets, Upgrde	Press this button to take you to the Tally, Memory, Reset and Upgrade operational control menus (Go To Menu 108).
7	Back	Press this button to take you back to the Top Level Menus (00-03).

Menus 08-11 Menus Cage 1



Menu Num.	Heading	Function
8 See 3.5	Cage = Variable depending on video standard	Use this menu to select a cage from a list of cages that have been created for the detected video standard.
9	Style 0-5 Off Dash 1 Dash 2 Thick Thin Solid	Use this menu to select the desired cage style.
10	Colour, Alpha, Centre	Press this button to take you to the Colour, Alpha and Centre operational control menus (Go To Menu 12).
11	Back	Press this button to take you back to the Top Level Menus (00-03).

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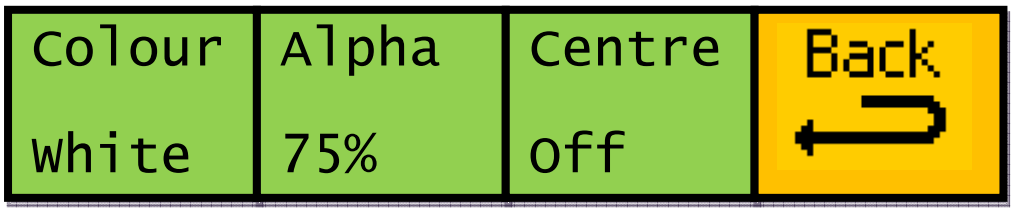
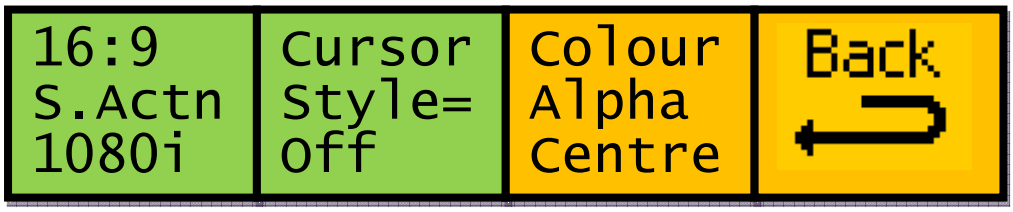
Menus 12-15 Menus Cage 1



Menu Num.	Heading	Function
12	Colour 0-7 White Yellow Cyan Green Magenta Red Blue Black	Use this menu to select a colour for the selected cage.
13	Alpha % 0-128	Use this menu to select the desired opacity of the cage.
14	Centre 0-1 Off On	Use this menu to select whether the centre marker of the cage is to be displayed.
15	Back	Press this button to take you back Menus 08-11.

Menus 16-19 Menus Cage 2



Menu Num.	Heading	Function
16	Cage = Variable depending on video standard	Use this menu to select a cage from a list of cages that have been created for the detected video standard.
17	Style 0-5 Off Dash 1	Use this menu to select the desired cage style.

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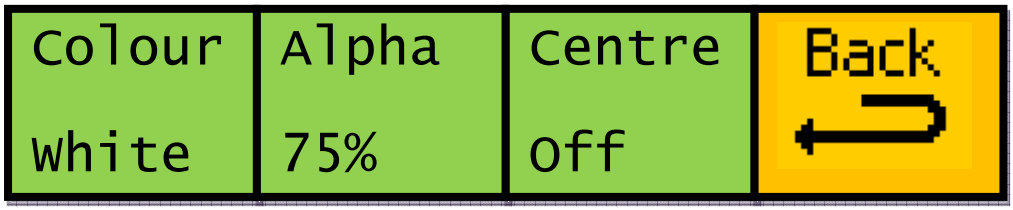
	Dash 2 Thick Thin Solid	
18	Colour, Alpha, Centre	Press this button to take you to the Colour, Alpha and Centre operational control menus (Go To Menu 12).
19	Back	Press this button to take you back to the Top Level Menus (00-03).

Menus 20-23 Menus Cage 2



Menu Num.	Heading	Function
20	Colour 0-7 White Yellow Cyan Green Magenta Red Blue Black	Use this menu to select a colour for the selected cage.
21	Alpha % 0-128	Use this menu to select the desired opacity of the cage.
22	Centre 0-1 Off On	Use this menu to select whether the centre marker of the cage is to be displayed.
23	Back	Press this button to take you back to Menus 08-11.

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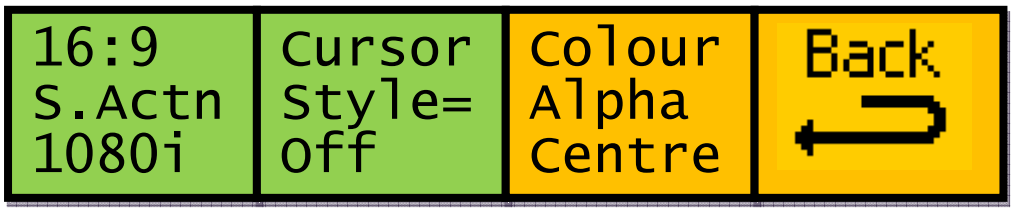
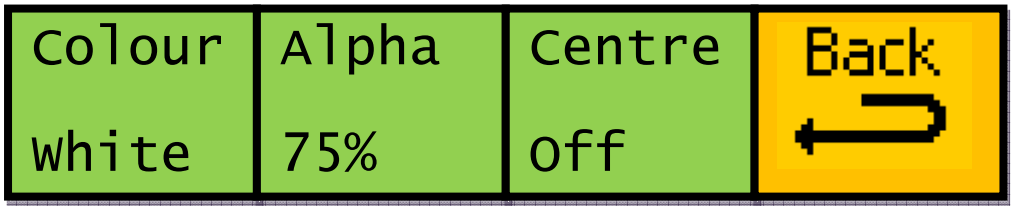
Menus 24-27 Menus Cage 3



Menu Num.	Heading	Function
24	Cage = Variable depending on video standard	Use this menu to select a cage from a list of cages that have been created for the detected video standard.
25	Style 0-5 Off Dash 1 Dash 2 Thick Thin Solid	Use this menu to select the desired cage style.
26	Colour, Alpha, Centre	Press this button to take you to the Colour, Alpha and Centre operational control menus (Go To Menu 12).
27	Back	Press this button to take you back to the Top Level Menus (00-03).

Menus 28-31 Menus Cage 3



Menu Num.	Heading	Function
28	Colour 0-7 White Yellow Cyan Green	Use this menu to select a colour for the selected cage.

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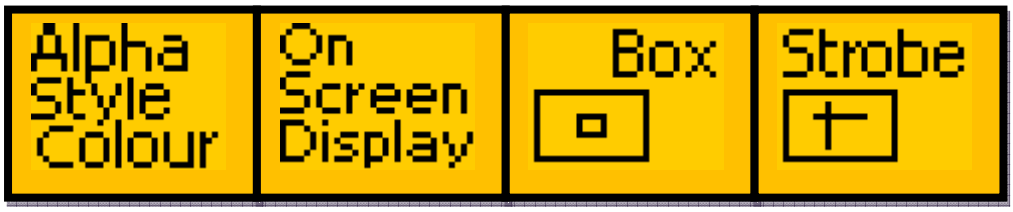
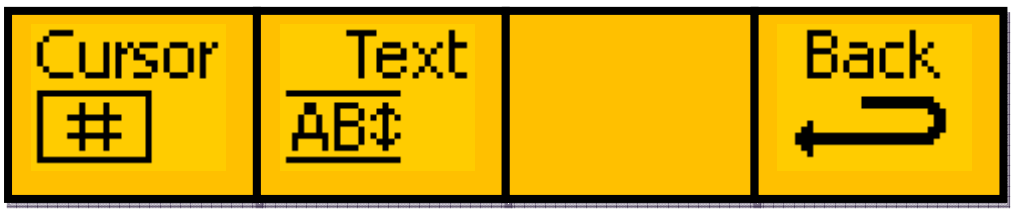
	Magenta Red Blue Black	
29	Alpha % 0-128	Use this menu to select the desired opacity of the cage.
30	Centre 0-1 Off On	Use this menu to select whether the centre marker of the cage is to be displayed.
31	Back	Press this button to take you back to Menus 08-11.

Menus 32-35 Menus User Controls.



Menu Num.	Heading	Function
32	Alpha, Style, Colour	Press this button to take you to the Colour, Alpha and Centre operational control menus for the User Box (Go To Menu 40).
33	On Screen Display	Press this button to take you to the On Screen Display menus (Go To Menu 112).
34	Box	Press this button to take you to the User Box menus (User definable cage) (Go To Menu 48).
35	Strobe	Press this button to take you to the Strobe menus (Go To Menu 52).

Menus 36-39 Menus User Controls



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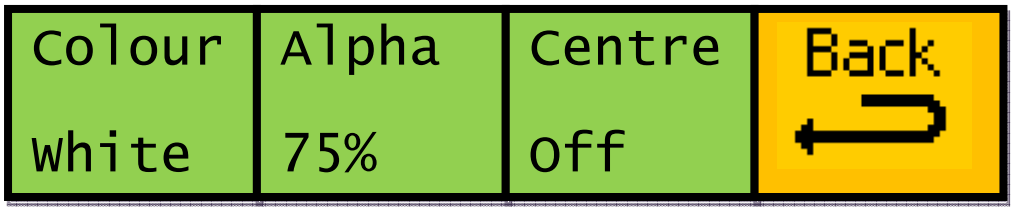
Menu Num.	Heading	Function
36	Cursor	Press this button to take you to the Cursor operational control menus (Go To Menu 56).
45	Text	Press this button to take you to the Text Height control menus (Go To Menu 44).
46		
47	Back	Press this button to take you back to Menus 32-35.

Menus 40-43 Menus User Controls



Menu Num.	Heading	Function
40	Colour 0-7 White Yellow Cyan Green Magenta Red Blue Black	Use this menu to select a colour for the User controls.
41	Alpha % 0-128	Use this menu to select the desired opacity of the user controls.
42	Cursor Style 0-4 Thin Thick Dash1 Dash2 Solid	Use this menu to select whether the centre marker of the cage is to be displayed.
43	Back	Press this button to take you back to Menus 32-35.

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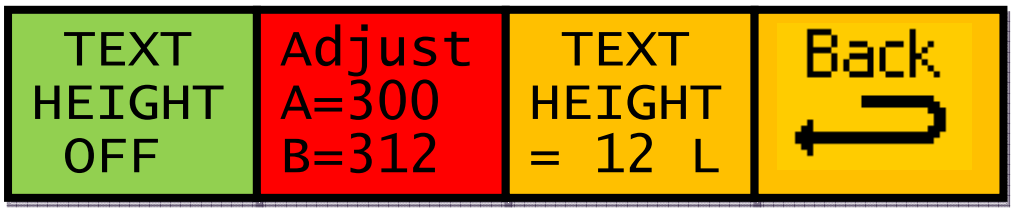
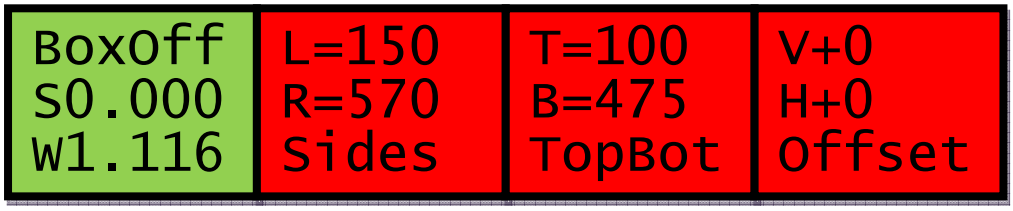
Menus 44-47 Menus User Controls



Menu Num.	Heading	Function
44	Text Height 0-1 OFF ON	Use this menu to turn the text height reference lines on or off.
45	Text Top / Bottom	Use this menu to select the desired position of the top and bottom reference lines. Position the top line to the top of the text to be measured and the bottom line to the bottom of the text.
46	Text Height	This menu shows the height of the text (the distance between the top and bottom reference lines) in Video Lines.
47	Back	Press this button to take you back to Menus 32-35.

Menus 48-51 Menus User Controls



Menu Num.	Heading	Function
48	Box 0-2 BoxOff Box On BoxOn+	This Menu allows you to select whether the User Box will be off, on or on and with centre marker on. The S and W values give the aspect ratio of the User Box. S = Standard, W = Wide Screen.
49	Left / Right	This menu allows you to position the Left and Right sides of the User Box.
50	Top /	This menu allows you to position the

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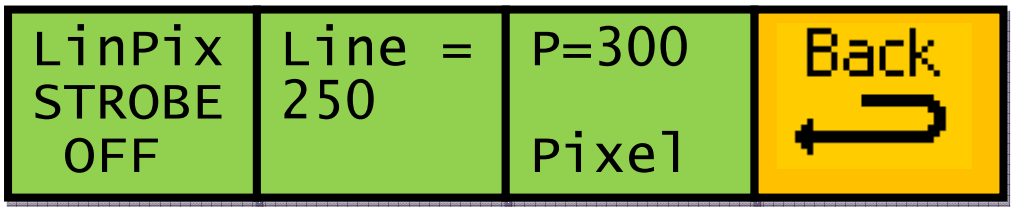
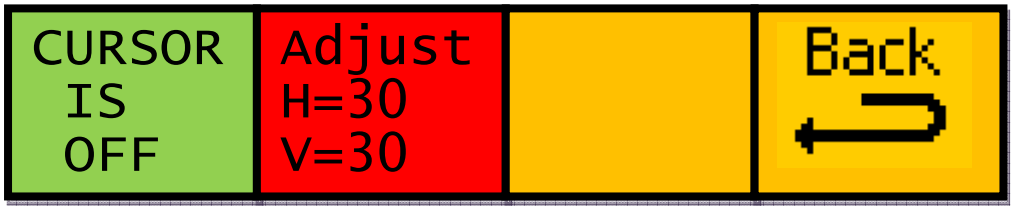
	Bottom	Top and Bottom of the User Box.
51	Box Position	This menu allows you to quickly re-position the User Box on the screen.

Menus 52-55 Menus User Controls



Menu Num.	Heading	Function
52	Strobe 0-1 OFF ON	This Menu allows you to select whether Strobe will be off, or on. The strobe can be used to locate the line and pixel position of a position on the screen.
53	Line	This menu allows you to position the line position of the strobe.
54	Pixel	This menu allows you to position the pixel position of the strobe.
55	Back	Press this button to take you back to Menus 44-47.

Menus 56-59 Menus User Controls



Menu Num.	Heading	Function
56	Cursor 0-1 OFF ON	This Menu allows you to select whether Strobe will be off, or on. The strobe can be used to locate the line and pixel position of a position on the screen.
57	Adjust	This menu allows you to position the line position of the strobe.
58	Blank	This menu allows you to position the pixel position of the strobe.

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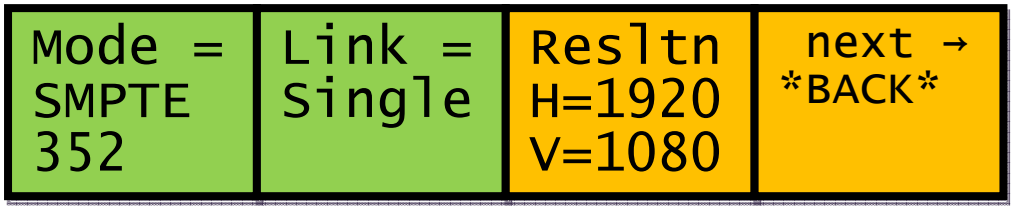
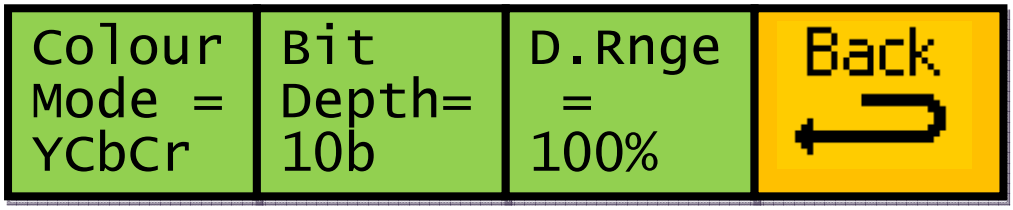
59	Back	Press this button to take you back to Menus 44-47.

Menus 60-63 Menus Input Status



Menu Num.	Heading	Function
60	Mode 0-1 SMPTE 352 MANUAL	This Menu allows you to select whether Link, Colour Mode, Bit Depth and Dynamic Range will be interpreted from the SMPTE 352 packet or set manually by the operator.
61	Link If in MANUAL mode 0-1 Single Dual	This menu allows you to select Single or Dual Link Mode if Menu 60 is set to MANUAL. Will indicate the link mode if SMPTE 352 packets are being received.
62	Resolution	This menu displays the Horizontal and Vertical resolution of the detected video standard.
63	Back	Press this button to take you back to Menus 04-07. Press the “NEXT” button to take you to Menus 64-67.

Menus 64-67 Menus Input Status



Menu Num.	Heading	Function
64	Colour If in	This menu allows you to select YCbCR or RGB Colour Mode if Menu 60 is set

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	MANUAL mode 0-1 YCbCr RGB	to MANUAL and Menu 61 is set to Dual. Will indicate the colour mode if SMPTE 352 packets are being received.
65	Bit Depth If in MANUAL mode 0-1 10b 12b	This menu allows you to select 10 Bit or 12 Bit Depth if Menu 60 is set to MANUAL and Menu 61 is set to Dual. Will indicate the Bit Depth if SMPTE 352 packets are being received.
66	Dynamic Range If in MANUAL mode 0-2 100% 200% 400%	This menu allows you to select 100%, 200% or 400% Dynamic Range if Menu 60 is set to MANUAL, Menu 61 is set to Dual and Menu 65 is set to 12 Bit. Will indicate the Dynamic Range if SMPTE 352 packets are being received.
67	Back	Press this button to take you back to Menus 60-63.

Menus 72-75 Menus For Automation

These menus allow automation control of cages 1, 2 and 3.

They are similar to Menus 8, 16 and 24 except that they are not dynamic but contain all the cage types held in memory whereas Menus 8, 16 and 24 are dynamic and only contain the set of cage types relevant to the current video standard.

If a cage is selected that is relevant to the current video standard input then that cage will be displayed and the automation menu value will change to the selected cage.

If a cage is selected that is not relevant to the current video standard input the displayed cage will not change and the automation menu value will not display the requested menu value.

The variable values are 0-99 where 0 = Cage 1 and 99 = Cage 100.

If user defined cages have been uploaded using the “CageUploader” software use “Tools” -> “Save list of cages” to generate a full list of the available cages.

Refer to sections 5.3, 5.4 and 5.5 for more information.

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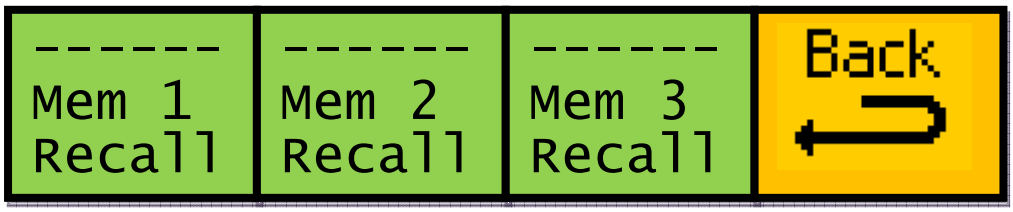
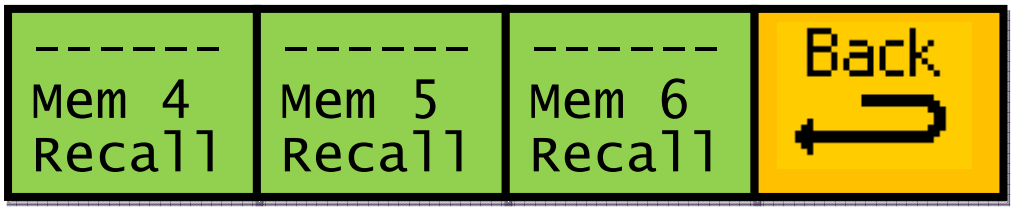
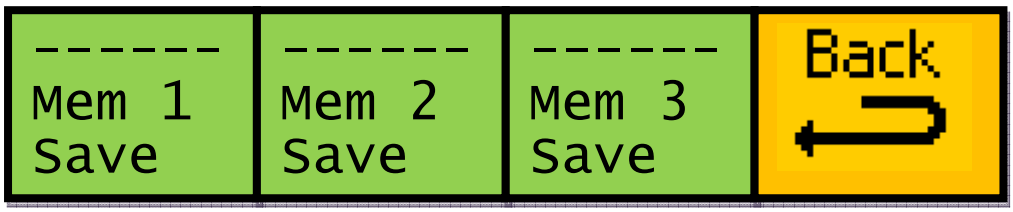
Menus 76-91 User Memories



Menu Num.	Heading	Function
76	MEM1	Pressing this will recall Memory number 1. User Names can be programmed in to the memories using a keyboard. See “geNETics User guide”, section “Giving product Memories names”
77	MEM2	Pressing this will recall Memory number 2.
78	MEM3	Pressing this will recall Memory number 3.
79	BACK	Go to Menu 04-07



Menu Num.	Heading	Function
80	MEM4	Pressing this will recall Memory number 4.
81	MEM5	Pressing this will recall Memory number 5.
82	MEM6	Pressing this will recall Memory number 6.
83	BACK	Go to Menu 04-07



Menu Num.	Heading	Function
84	SAVE MEM1	Pressing this will Save Memory number 1.
85	SAVE MEM2	Pressing this will Save Memory number 2.

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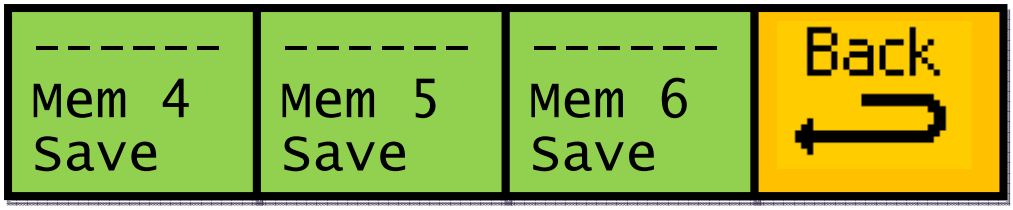
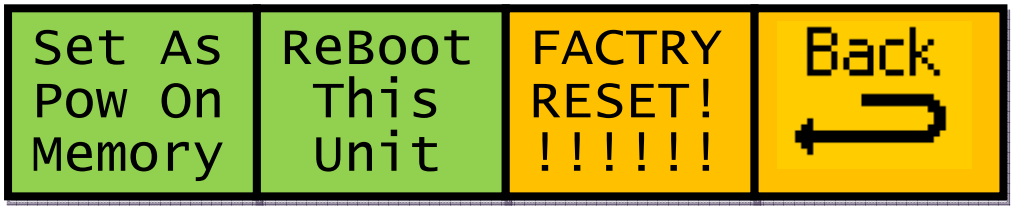
86	SAVE MEM3	Pressing this will Save Memory number 3.
87	BACK	Go to Menu 04-07



Menu Num.	Heading	Function
88	SAVE MEM4	Pressing this will Save Memory number 4.
89	SAVE MEM5	Pressing this will Save Memory number 5.
90	SAVE MEM6	Pressing this will Save Memory number 6.
91	BACK	Go to Menus 04-07

Menus 92-95 Reset Menus



Menu Num.	Heading	Function
92 See 3.5	Set as Power on Memory	Pressing this will set the current settings as the default settings when the unit is powered up. This only applies to menus whose menu number is in RED.
93	Reboot this unit	This applies a warm restart to the unit. It is the software equivalent of recycling the power.
94	Factory Reset	Pressing this will take you to the Factory Reset Last Chance menu. (Go To Menu 44).
95	BACK	Go to Menus 04-07

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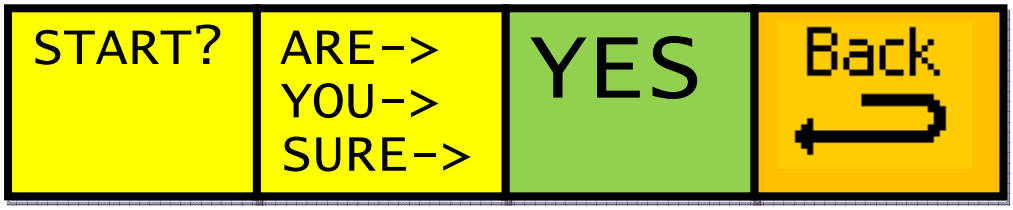
Menus 96-99 Reset Confirmation Menus

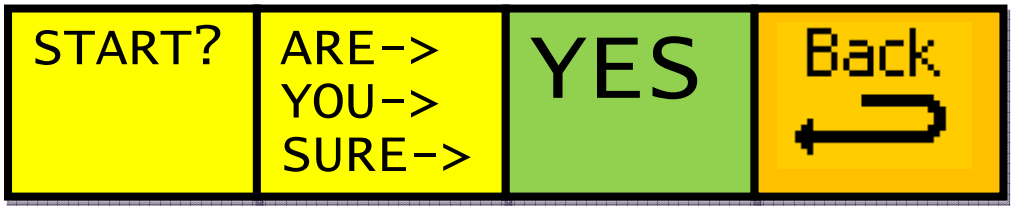


Menu Num.	Heading	Function
96	----	----
97	----	----
98	YES, I want to do a factory reset!	This will Start a factory Reset of the unit. This will Wipe ALL Cages and Settings that may have been previously set-up. Only do this if you are setting up from scratch, or there is a problem with your unit.
99	BACK	Go To Menus 04-07

Menus 100-103 Resets and Software Upgrade Menus

Menu Num.	Heading	Function
100	Upgrade Software	Pressing this will take you to the Software Upgrade last chance menu. (Go To Menu 104).
101	Software Version	This window displays the software version.
102	Resets	Pressing this will take you to the Reset Options. (Go To Menu 92).
103	BACK	Go to Menus 04-07

Menus 104-107 Software Upgrade Confirmation Menus



Menu Num.	Heading	Function

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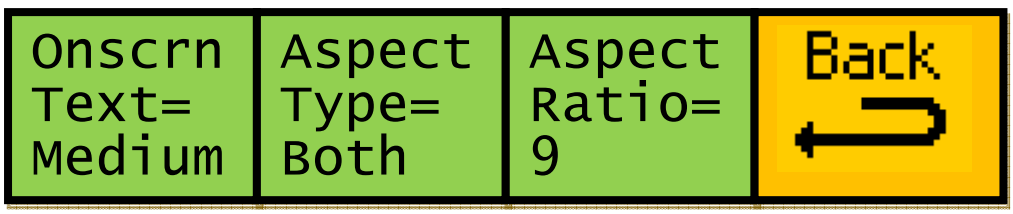
104	----	----
105	----	----
106	YES, I want to start a software upgrade	This will Start a software upgrade of the unit. You will need to follow the instructions in the etherbox (FB-9E) manual or the “Flasher User Manual” to correctly perform this procedure. This will Wipe ALL Logos and Settings that may have been previously set-up. The unit MUST be installed in an FB-9E to perform an upgrade.
107	BACK	Go to Menus 04-07

Menus 108-111 Menus Tally, Memories, Reset and Upgrade

Menu Num.	Heading	Function
108	Cage Tally Box 0-16 Tally 0-99	If a cage is displayed a tally will be set. This menu allows you to select the Box and the tally Number that will indicate this.
109	Memories	Pressing this will take you to the User Preset-able Memories Menus 76 - 91
110	Upgrade, Reset and Software Version.	Pressing this menu will take you to the Upgrade, Software Version and Reset Menus 100 - 103
111	Back	Go to Menus 04-07.

Menus 112-115 Menus Tally, Memories, Reset and Upgrade



Menu Num.	Heading	Function

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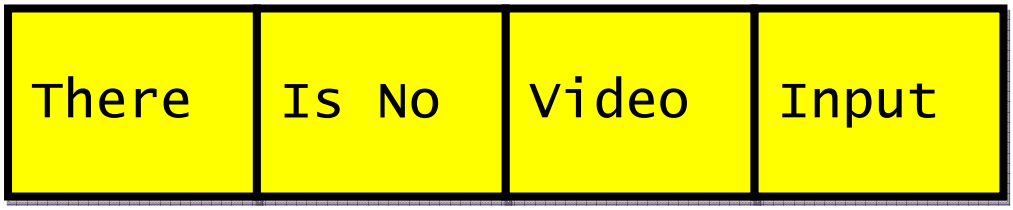
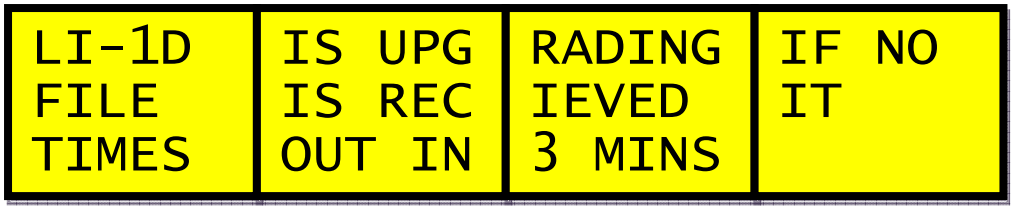
112	Onscreen Text 0 – 3 Off Small Medium Large	If the user box is on, this menu allows the text size to be altered. See section 3.3.2 for more details
113	Aspect Type 0-2 Both Stndrd (4:3) Wide (16:9)	If the user box is on, this menu allows the lines of text to be displayed
114	Denonimator 1 - 15	If the user box is on, this menu allows the denominator to be chosen
115	Back	Go to Menu 32.

Menus 116-119 No Video Input Info Menus



Menu Num.	Heading	Function
112	----	This is a system message. If the card loses the video signal this message is displayed.

Menus 116-119 Upgrade Info Menus



Menu Num.	Heading	Function
116	----	This is a system message. If you press “Software Upgrade” then this message appears. If you have done this accidentally, simply WAIT 3 minutes and the system will return back to normal.

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5 Technical Appendix

5.1 GPI/Tally/RS232 technical information.

The Processor card has an RJ-45 connector with GPI, Tally and RS232 connections as shown below:

1	GPI-1	White/Orange
2	GPI-2	Orange
3	GPI-3	White/Green
4	GND	Blue
5	RS232 TX	White/Blue
6	RS232 RX	Green
7	Not Used	White/Brown
8	Tally (open collector)	Brown

Table 3 GPI/Tally and RS232 pin-out on RJ-45.

5.1.1 GPI Inputs.

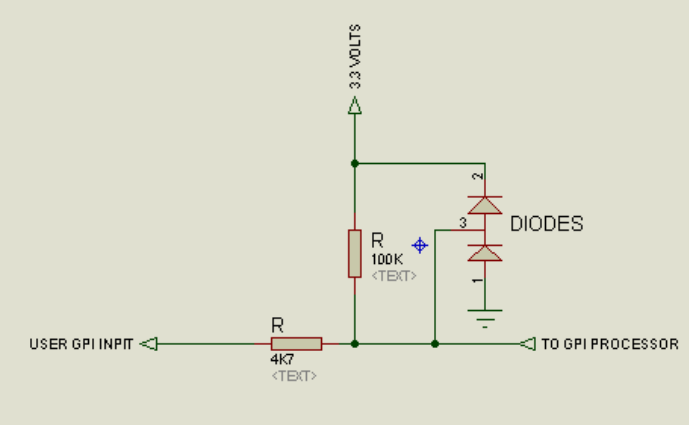

Figure 6 Typical GPI Input

GPI's are normally activated by a short to ground. The GPI has its own internal pull-up resistor. If the user is interfacing with logic then

- Vhigh = +12V>Vin>+3V
- Vlow = +0.3V>Vin>0V

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5.1.2 Tally Output.

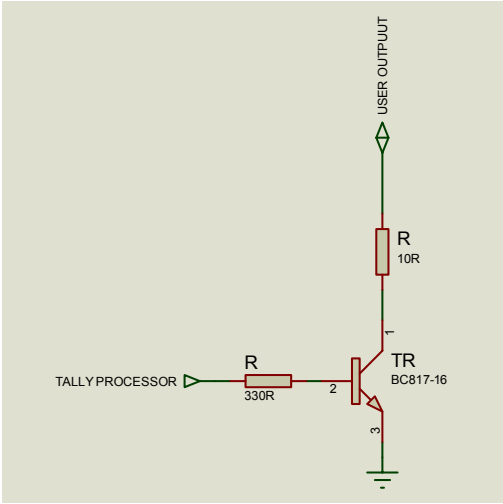

Figure 7 Tally Output

The user Tally Output is an open collector transistor. The drain should be <200mA. An electro-mechanical relay can be operated by this as shown in the example below.

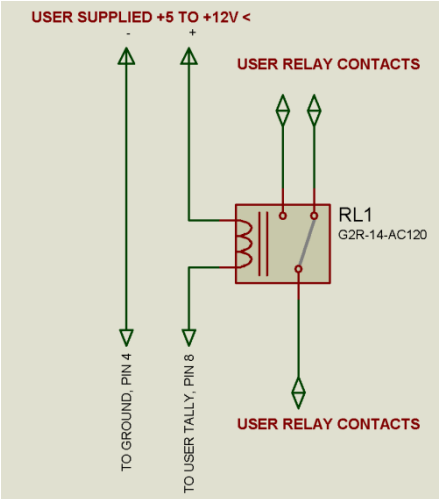

Figure 8 Tally interface to relay.

5.1.3 RS232 Interface.

This loosely follows the pin convention of EIA-561 which is a standard for RS232 on an RJ45 cable. Only TX, RX and Signal ground (pin 4) are implemented. For the **SA-2U** the following RS232 parameters apply:

- 115Kbaud
- 8 Bits, no parity
- 1 Stop bit.

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5.2 On-Board automation protocol.

5.2.1 Implimentation on RS232

A simple text based protocol has been implemented on the RS232 interface. All text strings are shown in inverted commas; do not include them in the actual command sent. Each byte within a text string must be sent within 10mS of each other or the command will time out. This on-board protocol is not the same as the geNETics protocol. Refer to the geNETics protocol in section 6 (Product Automation) of the etherbox manual. GeNETics protocol is used to control a number of processor cards using one connection.

The command set is as follows:

Command	Meaning	Example hex string
“MS”	Master Show. Show selected Cages and User Controls.	4D,53
“MH”	Master Hide. Any selected Cages and User Controls will be hidden.	4D,48
“M1”	Recalls User Presetable Memory 1.	4D,31
“M2”	Recalls User Presetable Memory 2.	4D,32
“M3”	Recalls User Presetable Memory 3.	4D,33
“M4”	Recalls User Presetable Memory 4.	4D,34

A response will occur within 100mS of the command. The responses are as follows:

Response	Meaning	Hex string
“OK”	Command was understood and will implement.	4F,4B
“E0”	Command timed out.	45,30
“E1”	Error 1. Unknown command.	45,31
“E2”	Error 2. Next Logo number is not in range.	45,32
“E3”	Error 3. Logo has been asked to fade down when it is down already, or up when it is up already	45,33

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5.3 geNETics Automation Protocol Parameter table.

This is the Automatically extracted parameters for the **SA-2U**. This is used for the generic **geNETics** automation protocol. See **etherBox** manual for a full description of its usage.

Menu	Access	Text	Low	Up	Lev	Txt1	Txt2	Txt3	Txt4	Txt5	Txt6	Txt7	Txt8
0	R/W	{Master}{Contrl}{# }	0	1	A	= Hide	= Show						
1	N/A	[Gr]	N/A	N/A	A								
2	N/A	[Gr]	N/A	N/A	A								
3	N/A	[Gr]	N/A	N/A	A								
4	N/A	[Gr]	N/A	N/A	A								
5	N/A	[Gr]	N/A	N/A	A								
6	N/A	{ Mems }{Resets}{Upgrde}	N/A	N/A	A								
7	N/A	[Gr]	N/A	N/A	A								
8	R/W	{# }	0	Variable	A								
9	R/W	{Cursor}{Style=}{# }	0	5	A	Off	Dash 1	Dash 2	Thick	Thin	Solid		
10	N/A	[Gr]	N/A	N/A	A								
11	N/A	[Gr]	N/A	N/A	A								
12	R/W	{Colour}{ }{# }	0	7	A	White	Yellow	Cyan	Green	Magnta	Red	Blue	Black
13	R/W	{Alpha }{ }{# % }	0	128	A								
14	R/W	{Centre}{ }{# }	0	1	A	Off	On						
15	N/A	[Gr]	N/A	N/A	A								
16	R/W	{# }	0	Variable	A								
17	R/W	{Cursor}{Style=}{# }	0	5	A	Off	Dash 1	Dash 2	Thick	Thin	Solid		
18	N/A	[Gr]	N/A	N/A	A								
19	N/A	[Gr]	N/A	N/A	A								
20	R/W	{Colour}{ }{# }	0	7	A	White	Yellow	Cyan	Green	Magnta	Red	Blue	Black
21	R/W	{Alpha }{ }{# % }	0	128	A								
22	R/W	{Centre}{ }{# }	0	1	A	Off	On						
23	N/A	[Gr]	N/A	N/A	A								
24	R/W	{# }	0	Variable	A								
25	R/W	{Cursor}{Style=}{# }	0	5	A	Off	Dash 1	Dash 2	Thick	Thin	Solid		
26	N/A	[Gr]	N/A	N/A	A								
27	N/A	[Gr]	N/A	N/A	A								
28	R/W	{Colour}{ }{# }	0	7	A	White	Yellow	Cyan	Green	Magnta	Red	Blue	Black
29	R/W	{Alpha }{ }{# % }	0	128	A								
30	R/W	{Centre}{ }{# }	0	1	A	Off	On						
31	N/A	[Gr]	N/A	N/A	A								
32	N/A	[Gr]	N/A	N/A	A								
33	N/A	[Gr]	N/A	N/A	A								
34	N/A	[Gr]	N/A	N/A	A								
35	N/A	[Gr]	N/A	N/A	A								
36	N/A	[Gr]	N/A	N/A	A								
37	N/A	[Gr]	N/A	N/A	A								
38	N/A	{ }{ }{ }	N/A	N/A	A								

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39	N/A	[Gr]	N/A	N/A	A								
40	R/W	{Colour}{ }{# }	0	7	A	White	Yellow	Cyan	Green	Magnta	Red	Blue	Black
41	R/W	{Alpha }{ }{# % }	0	128	A								
42	R/W	{Cursor}{Style=}{# }	0	4	A	Thin	Thick	Dash 1	Dash 2	Solid			
43	N/A	[Gr]	N/A	N/A	A								
44	R/W	{ TEXT }{HEIGHT}{# }	0	1	A	OFF	ON						
45	R/W	{Adjust}{A=# }	0	Variable	A								
45	R/W	{B=# }	Variable	Variable	B								
46	RD	{ TEXT }{HEIGHT}{= # L}	0	Variable	A								
47	N/A	[Gr]	N/A	N/A	A								
48	R/W	{# }	0	2	A	BoxOff	Box On	BoxOn+					
48	RD	{S# }	0	32512	B								
48	RD	{W# }	0	32512	C								
49	R/W	{L=# }	0	Variable	A								
49	R/W	{R=# }	0	Variable	B								
50	R/W	{T=# }	1	Variable	A								
50	R/W	{B=# }	1	Variable	B								
51	R/W	{V# }	Variable	Variable	A								
51	R/W	{H# }	Variable	Variable	B								
52	R/W	{LinPix}{STROBE}{# }	0	1	A	OFF	ON						
53	R/W	{Line =}{# }	1	Variable	A								
54	R/W	{P=# }	0	Variable	A								
55	N/A	[Gr]	N/A	N/A	A								
56	R/W	{CURSOR}{ IS }{# }	0	1	A	OFF	ON						
57	R/W	{Adjust}{H=# }	0	Variable	A								
57	R/W	{V=# }	1	Variable	B								
58	N/A	{ }{ }{ }	N/A	N/A	A								
59	N/A	[Gr]	N/A	N/A	A								
60	R/W	{Mode =}{# }	0	1	A	Manual	SMPTE						
60	RD	{# }	0	1	B		352						
61	R/W	{Link =}{# }	0	1	A	Single	Dual						
61	RD	{# }	0	3	B		Swappd	A Only	B Only				
62	RD	{Resltn}{H=# }	0	575	A								
62	RD	{V=# }	0	575	B								
63	N/A	{ next]}{*BACK*}{ }	N/A	N/A	A								
64	R/W	{Colour}{Mode =}{# }	0	1	A	YCbCr	RGB						
65	R/W	{Bit }{Depth=}{# }	0	1	A	10b	12b						
66	R/W	{D.Rnge}{ = }{# }	0	2	A	100%	200%	400%					
67	N/A	[Gr]	N/A	N/A	A								
68	N/A	{ }{ The}{ }	N/A	N/A	A								
69	N/A	{Please}{Preset}{Being }	N/A	N/A	A								
70	N/A	{Wait }{Values}{Loaded}	N/A	N/A	A								
71	N/A	{ }{Are }{ }	N/A	N/A	A								
72	R/W	{# }	0	99	A								
73	R/W	{# }	0	99	A								
74	R/W	{# }	0	99	A								

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75	N/A	{ }{ }{ }	N/A		N/A		A				
76	R/W	{% > }{Mem 1 }{# }		0		1	A	Recall	DONE		
77	R/W	{% > }{Mem 2 }{# }		0		1	A	Recall	DONE		
78	R/W	{% > }{Mem 3 }{# }		0		1	A	Recall	DONE		
79	N/A	[Gr]	N/A		N/A		A				
80	R/W	{% > }{Mem 4 }{# }		0		1	A	Recall	DONE		
81	R/W	{% > }{Mem 5 }{# }		0		1	A	Recall	DONE		
82	R/W	{% > }{Mem 6 }{# }		0		1	A	Recall	DONE		
83	N/A	[Gr]	N/A		N/A		A				
84	R/W	{% > }{Mem 1 }{# }		0		1	A	Save	DONE		
85	R/W	{% > }{Mem 2 }{# }		0		1	A	Save	DONE		
86	R/W	{% > }{Mem 3 }{# }		0		1	A	Save	DONE		
87	N/A	[Gr]	N/A		N/A		A				
88	R/W	{% > }{Mem 4 }{# }		0		1	A	Save	DONE		
89	R/W	{% > }{Mem 5 }{# }		0		1	A	Save	DONE		
90	R/W	{% > }{Mem 6 }{# }		0		1	A	Save	DONE		
91	N/A	[Gr]	N/A		N/A		A				
92	R/W	{# }		0		1	A	Set As	!WAIT!		
93	R/W	{# }		0		1	A	ReBoot	!WAIT!		
94	N/A	{FACTRY}{RESET!}{!!!!!!}	N/A		N/A		A				
95	N/A	[Gr]	N/A		N/A		A				
96	N/A	{START?}{ }{ }	N/A		N/A		A				
97	N/A	{ ARE]}{ YOU]}{SURE?]}	N/A		N/A		A				
98	R/W	{# }		0		1	A	YES	OK!		
99	N/A	[Gr]	N/A		N/A		A				
100	N/A	{UPGRDE}{SOFTWR}{ NOW! }	N/A		N/A		A				
101	N/A	{! }{ }{ }	N/A		N/A		A				
102	N/A	{RESETS}{ }{ }	N/A		N/A		A				
103	N/A	[Gr]	N/A		N/A		A				
104	N/A	{START?}{ }{ }	N/A		N/A		A				
105	N/A	{ ARE]}{ YOU]}{SURE?]}	N/A		N/A		A				
106	R/W	{# }		0		1	A	YES			
107	N/A	[Gr]	N/A		N/A		A				
108	R/W	{CgeTal}{Box=# }		0		16	A				
108	R/W	{Tal=# }		0		99	B				
109	N/A	[Gr]	N/A		N/A		A				
110	N/A	[Gr]	N/A		N/A		A				
111	N/A	[Gr]	N/A		N/A		A				
112	R/W	{Onscrn}{Text= }{# }		0		3	A	Off	Small	Medium	Large
113	R/W	{Aspect}{Type= }{# }		0		2	A	Both	Stndrd	Wide	
114	R/W	{Aspect}{Ratio=}{# }		1		15	A				
115	N/A	[Gr]	N/A		N/A		A				
116	N/A	{ }{There }{ }	N/A		N/A		A				
117	N/A	{ }{Is No }{ }	N/A		N/A		A				
118	N/A	{ }{Video }{ }	N/A		N/A		A				
119	N/A	{ }{Input }{ }	N/A		N/A		A				

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120	N/A	{sa_2hd}{FILE }{TIMES }	N/A	N/A	A
121	N/A	{IS UPG}{IS REC}{OUT IN}	N/A	N/A	A
122	N/A	{RADING}{EIVED }{3 MINS}	N/A	N/A	A
123	N/A	{IF NO }{IT }{ }	N/A	N/A	A

5.4 The default set of cages for the SA-2U V1.50

Cage	Descr1	Descr2	Descr3	H	V	T	B	L	R
1	No	Video	Found	0	0	0	0	0	0
2	16:9	S.Actn	1080i	1920	1080	37	1044	88	1831
3	16:9	S.Cptn	1080i	1920	1080	54	1027	210	1709
4	16:9	A.Edge	1080i	1920	1080	1	1080	22	1896
5	169p43	S.Actn	1080i	1920	1080	37	1044	303	1616
6	169p43	S.Cptn	1080i	1920	1080	54	1027	350	1569
7	169p43	A.Edge	1080i	1920	1080	1	1080	257	1662
8	169p14	S.Actn	1080i	1920	1080	37	1044	210	1709
9	169p14	S.Cptn	1080i	1920	1080	54	1027	303	1616
10	169p14	A.Edge	1080i	1920	1080	1	1080	140	1779
11	43p149	S.Actn	1080i	1920	1080	108	973	116	1803
12	43p149	S.Cptn	1080i	1920	1080	124	957	210	1709
13	43p149	A.Edge	1080i	1920	1080	75	1006	22	1896
14	4:3	S.Actn	1080i	1920	1080	54	1027	116	1803
15	4:3	S.Cptn	1080i	1920	1080	108	973	210	1709
16	4:3	A.Edge	1080i	1920	1080	1	1080	22	1896
17	Clean	Apert.	1080i	1920	1080	9	1071	15	1903
18	Digit.	Edge	1080i	1920	1080	1	1080	0	1919
19	16:9	S.Actn	720p	1280	720	25	696	59	1220
20	16:9	S.Cptn	720p	1280	720	36	684	140	1139
21	16:9	A.Edge	720p	1280	720	1	720	15	1263
22	169p43	S.Actn	720p	1280	720	25	696	202	1077
23	169p43	S.Cptn	720p	1280	720	36	684	233	1045
24	169p43	A.Edge	720p	1280	720	1	720	171	1107
25	169p14	S.Actn	720p	1280	720	25	696	140	1139
26	169p14	S.Cptn	720p	1280	720	36	684	202	1077
27	169p14	A.Edge	720p	1280	720	1	720	93	1185

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```
28   43p149,S.Actn,720p  ,1280, 720,  72, 648,  77,1201
29   43p149,S.Cptn,720p  ,1280, 720,  83, 638, 140,1139
30   43p149,A.Edge,720p  ,1280, 720,  50, 670,  15,1263
31   4:3   ,S.Actn,720p  ,1280, 720,  36, 684,  77,1201
32   4:3   ,S.Cptn,720p  ,1280, 720,  72, 648, 140,1139
33   4:3   ,A.Edge,720p  ,1280, 720,   1, 720,  15,1263
34   Clean ,Apert.,720p  ,1280, 720,   6, 714,  10,1268
35   Digit.,Edge  ,720p  ,1280, 720,   1, 720,   0,1279
36   4:3   ,S.Actn,PAL   , 720, 576,  29, 547,  44, 676
37   4:3   ,S.Cptn,PAL   , 720, 576,  57, 519,  79, 641
38   4:3   ,A.Edge,PAL   , 720, 576,   1, 576,   9, 712
39   16:9  ,S.Actn,PAL   , 720, 576,  21, 555,  34, 686
40   16:9  ,S.Cptn,PAL   , 720, 576,  31, 545,  79, 641
41   16:9  ,A.Edge,PAL   , 720, 576,   1, 576,   9, 712
42   169p43,S.Actn,PAL   , 720, 576,  21, 555, 114, 606
43   169p43,S.Cptn,PAL   , 720, 576,  31, 545, 132, 588
44   169p43,A.Edge,PAL   , 720, 576,   0, 576,  97, 623
45   169p14,S.Actn,PAL   , 720, 576,  21, 555,  79, 641
46   169p14,S.Cptn,PAL   , 720, 576,  31, 545, 114, 606
47   169p14,A.Edge,PAL   , 720, 576,   1, 576,  53, 667
48   43p149,S.Actn,PAL   , 720, 576,  57, 519,  44, 676
49   43p149,S.Cptn,PAL   , 720, 576,  67, 509,  79, 642
50   43p149,A.Edge,PAL   , 720, 576,  41, 535,   9, 712
51   Digit.,Edge  ,PAL   , 720, 576,   1, 576,   0, 719
52   4:3   ,S.Actn,NTSC  , 720, 487,  26, 464,  37, 684
53   4:3   ,S.Cptn,NTSC  , 720, 487,  50, 441,  73, 648
54   4:3   ,A.Edge,NTSC  , 720, 487,   3, 486,   9, 712
55   16:9  ,S.Actn,NTSC  , 720, 487,  26, 464,  37, 684
56   16:9  ,S.Cptn,NTSC  , 720, 487,  50, 441,  73, 648
57   16:9  ,A.Edge,NTSC  , 720, 487,   3, 486,   9, 712
58   169p43,S.Actn,NTSC  , 720, 487,  26, 464, 117, 604
59   169p43,S.Cptn,NTSC  , 720, 487,  50, 441, 144, 577
60   169p43,A.Edge,NTSC  , 720, 487,   3, 486,  97, 623
61   Digit.,Edge  ,NTSC  , 720, 487,   1, 487,   0, 719
62   Digit.,Edge  ,D.Cine,2048,1080,   1,1080,   0,2047
```


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```
63   HD1080,D.Edge,D.Cine,2048,1080,   1,1080,  64,1983
64   2.39:1,D.Edge,D.Cine,2048,1080, 112, 968,   0,2047
65   Blank ,Blank ,Blank ,   0,   0,   0,   0,   0,   0
66         ,      ,      ,   0,   0,   0,   0,   0,   0
67         ,      ,      ,   0,   0,   0,   0,   0,   0
68         ,      ,      ,   0,   0,   0,   0,   0,   0
69         ,      ,      ,   0,   0,   0,   0,   0,   0
70         ,      ,      ,   0,   0,   0,   0,   0,   0
71         ,      ,      ,   0,   0,   0,   0,   0,   0
72         ,      ,      ,   0,   0,   0,   0,   0,   0
73         ,      ,      ,   0,   0,   0,   0,   0,   0
74         ,      ,      ,   0,   0,   0,   0,   0,   0
75         ,      ,      ,   0,   0,   0,   0,   0,   0
76         ,      ,      ,   0,   0,   0,   0,   0,   0
77         ,      ,      ,   0,   0,   0,   0,   0,   0
78         ,      ,      ,   0,   0,   0,   0,   0,   0
79         ,      ,      ,   0,   0,   0,   0,   0,   0
80         ,      ,      ,   0,   0,   0,   0,   0,   0
81         ,      ,      ,   0,   0,   0,   0,   0,   0
82         ,      ,      ,   0,   0,   0,   0,   0,   0
83         ,      ,      ,   0,   0,   0,   0,   0,   0
84         ,      ,      ,   0,   0,   0,   0,   0,   0
85         ,      ,      ,   0,   0,   0,   0,   0,   0
86         ,      ,      ,   0,   0,   0,   0,   0,   0
87         ,      ,      ,   0,   0,   0,   0,   0,   0
88         ,      ,      ,   0,   0,   0,   0,   0,   0
89         ,      ,      ,   0,   0,   0,   0,   0,   0
90         ,      ,      ,   0,   0,   0,   0,   0,   0
91         ,      ,      ,   0,   0,   0,   0,   0,   0
92         ,      ,      ,   0,   0,   0,   0,   0,   0
93         ,      ,      ,   0,   0,   0,   0,   0,   0
94         ,      ,      ,   0,   0,   0,   0,   0,   0
95         ,      ,      ,   0,   0,   0,   0,   0,   0
96         ,      ,      ,   0,   0,   0,   0,   0,   0
97         ,      ,      ,   0,   0,   0,   0,   0,   0
```


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Reg. No. 2855535 Telephone: +44 (0) 1923 256 000 Fax: +44 (0) 1923 256 100 email: eesales@eyeheight.com

```
98          ,      ,      ,   0,   0,   0,   0,   0,   0
99          ,      ,      ,   0,   0,   0,   0,   0,   0
100         ,      ,      ,   0,   0,   0,   0,   0,   0
```

5.5 CageUploader Software

The CageUploader software allows the editing, loading, capturing, addition and deletion of cages. However, if Factory Reset (menu number 96) is performed any changes will be lost as the default cages (see section 5.4) will be reloaded.

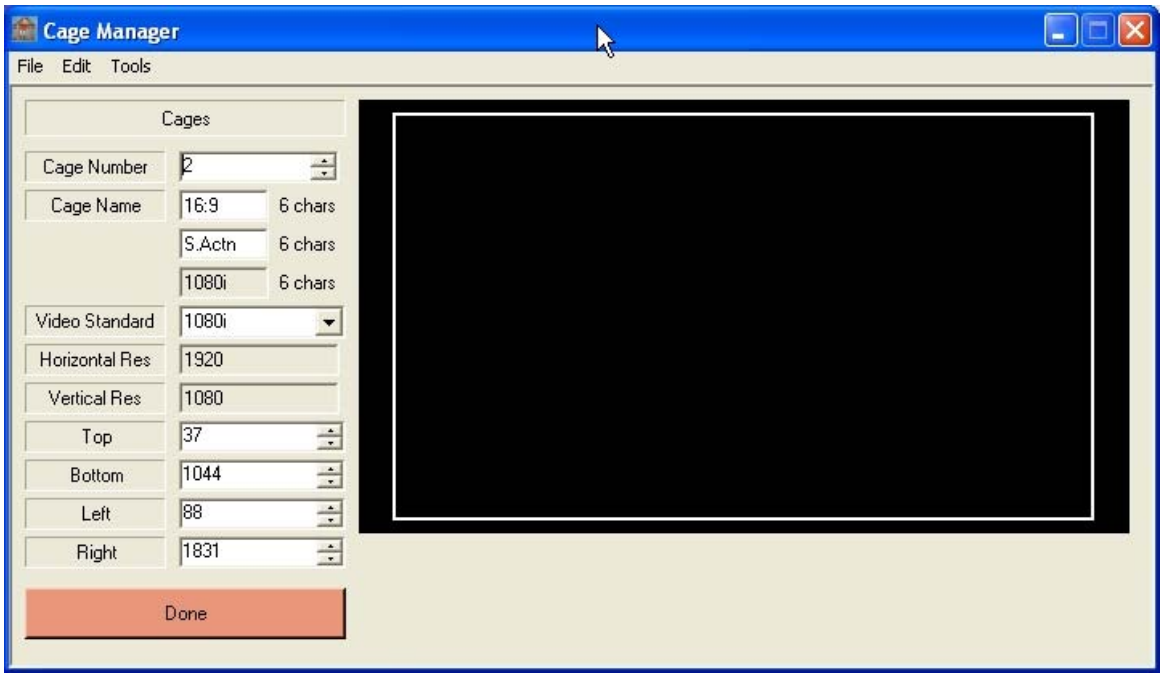

Figure 9 Cage Uploader Software

5.5.1 Connecting CageUploader

You can connect directly to the unit using the RJ-45 connector on the rear of the actual SA-2U card module. A specialised cable will be required. The connections for this are as follows:

RJ45 pin number	9W D type (Fem) pin number
4	5
5	2
6	3

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5.5.2 Defining New cursors.

Once connected using this cable run CageUploader. Under the "Tools→Comm Port Settings" menu, select the "SA-2U card" drop down option and select the correct COM PORT for your computer. The NID does not matter. Then under "Edit" select "Add/Edit Cage". At this point you can use the "cage number" field to step through the current Safe Areas installed. You will see a representation of this appear on the right hand side of the application. You will need to step as far as cage 123 to find a "Spare" location to define a new safe area. You next need to select the video standard that the sake area is defined in. You can then name the safe area and define the Pixel and line numbers (in progressive format).

5.5.3 Defining New video standards.

The SA-2U unit is ready for emerging line standards and it is possible to define a new line standard if the situation arises. Select "Edit→Add/Edit Video Standard". Scrolling through the standards you will see the ones already defined. Scroll to the next "Blank" to add a new video standard.

5.5.4 Upload/Download/Saving/Loading

Under the File menu you can Open either from a computer file or from a device ("device" meaning uploading the current safe areas stored in an SA-2U unit). Similarly you can save the current set of safe areas to a file or to a device ("device" meaning downloading the safe areas to an SA-2U).

5.6 Technical Specification.

When in SDI mode:

SDI Inputs (270 Mbps, 800mV p-p±10% into 75Ω)	2 Input to SMPTE 259M Link A In, Link B In
SDI Outputs (270 Mbps, 800mV p-p±10% into 75Ω)	3 Outputs to SMPTE 259M Link A Out1, Link A Out2, Link B Out
SDI cable equalisation	At least 200m of PSF 1/3 Return loss better than 18dB, 5 MHz – 270 Mhz

When in HD-SDI mode:

HD-SDI Inputs (1.845 Gbps, 800mV p-p±10% into 75Ω)	2 Input to SMPTE 292M, (Dual Link SMPTE 372M) Link A In, Link B In
HD-SDI Outputs (1.485 Gbps, 800mV p-p±10% into 75Ω)	3 Outputs to SMPTE 292M, (Dual Link SMPTE 372M) Link A Out1, Link A Out2, Link B Out
HD-SDI cable equalisation	At least 100m of Belden 1694A

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General:

Ancillary Data	Passes all ancillary data in vertical and horizontal blanking except for CRC reclalculation.
Control Surfaces	Option of local or remote **FP-9** control panel.
Chassis	**FB-9E etherBox** 1U enclosure
Supported Formats	720x576/50i 720x487/60i 720x507/60i 1280x720/23.98p 1280x720/24p 1280x720/25p 1280x720/29.97p 1280x720/30p 1280x720/50p 1280x720/59.94p 1280x720/60p 1920x1080/23.98p 1920x1080/23.98psf 1920x1080/24p 1920x1080/24psf 1920x1080/25p 1920x1080/50i 1920x1080/29.97p 1920x1080/59.94i 1920x1080/30p 1920x1080/60i 2048x1080/23.98p 2048x1080/23.98psf 2048x1080/24p 2048x1080/24psf
Delay	<10us
Power Supply	100-240v AC. Less than 50W power consumption with 6 **SA-2U** units installed.
FB-9E Dimension	Width 442mm Height 44mm Depth 300mm
Weight	<3Kg
Temperature	<25°C ambient, <55°C internal
Humidity	Recommended 40 to 55% Limits 20 to 80%

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Reg. No. 2855535 Telephone: +44 (0) 1923 256 000 Fax: +44 (0) 1923 256 100 email: eesales@eyeheight.com