



GeNETics Product Information

User Guide For: SA-2HD High Definition Safe Area Generator

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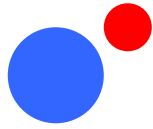


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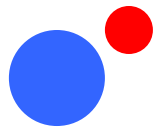


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1 System Overview

This manual describes the function of the SA-2HD. This unit is full-featured Safe area Generator system compatible with 1.5 Gbit/s Serial Digital formats in 1920 pixels by 1080 lines as per SMPTE 274. The unit has full internal 10 Bit processing.

Section 1 The SA-2HD Product

The SA-2HD is a unit that overlays boxes/patterns onto HD SDI Signal.

- Provides three generators for Safe area, Safe Caption, Digital and analogue edge in all the current Screen formats (4:3 and 16:9) including "Shoot to protect" with Thick/Thin/Dashed line and Shade/Full Black Blanking options.
- Provides one generator for Film Blanking positions providing optional on-screen "White lines", or full "Black" Blanking.
- Provides one generator for Centre Indication, H and V electronic line-up cursors, Box generation with Aspect ratio Readout for 4:3 or 16:9 targets, Analogue blanking, Text Height Measurement, Line and Pixel strobe with readout of line and pixel number.
- Provides SMPTE Graticule and Grid generators.
- 24Hz, 25Hz and 30Hz standards both Interlaced and Progressive - auto sensing. As per SMPTE 274.
- 6 User Memories.

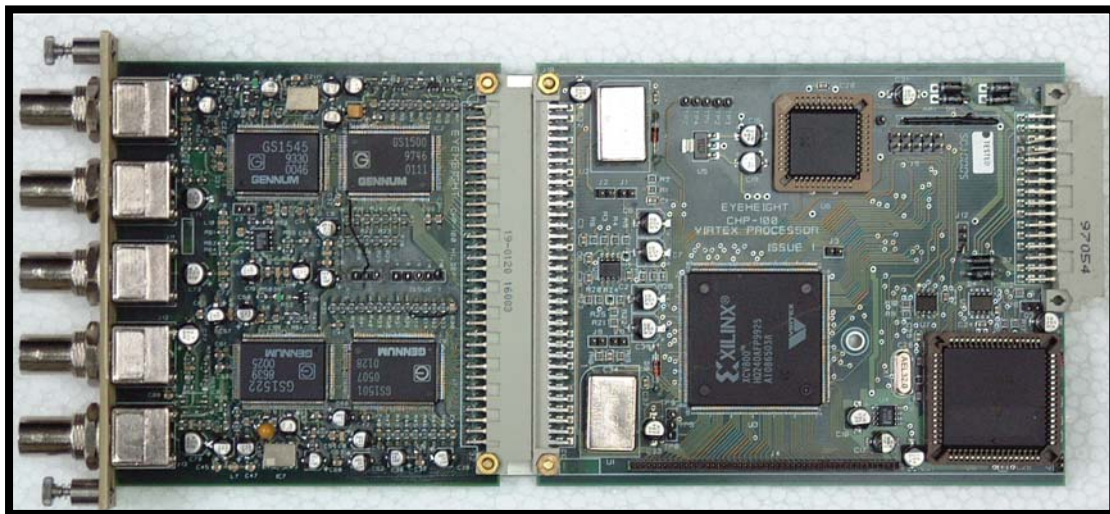


Figure 1 SA-2HD Module.

Section 2 Applications for the SA-2HD

Applications for the SA-2HD include the following:-

- Ensuring correct alignment of video within industry recognised limits for broadcasting.

Section 3 Associated Equipment for the SA-2HD

Hardware Requirements

The SA-2HD is a module and requires both a chassis and a control surface to function. In it's simplest form and system would consist of:-

- 1 off SA-2HD Modules
- 1 off FB-9 Flexi-box
- 1 off FP-9 Flexipanel

Software Requirements

There are no special software requirements. The system is controlled via the front panel, however, it may be alternatively controlled by the Eyeheight front panel emulator, Softpanel which runs on a PC.

Chassis Types Available :-

- The 1RU chassis is called a **Flexibox** (Order code FB-9) This will hold a maximum of 3 SA-2HD Modules

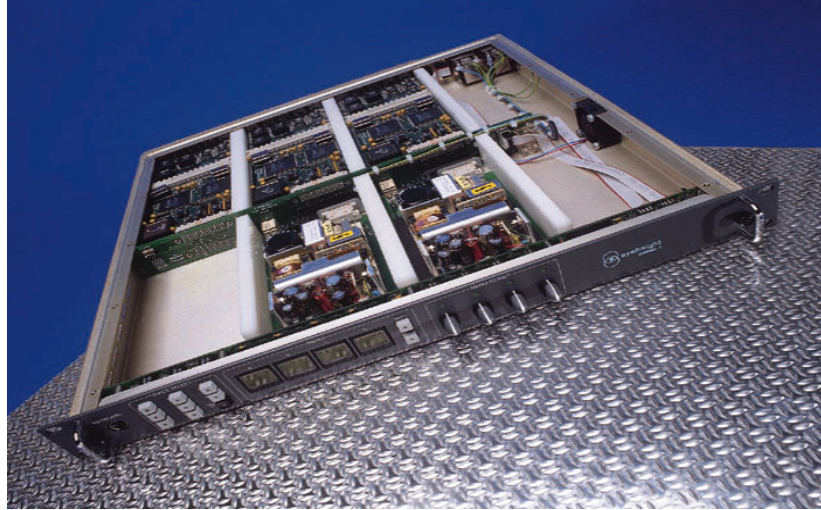


Figure 2 Flexibox with Flexipanel fitted

2^o Installation

Section 1 Installation of the SA-2HD Product

If this unit is already pre-installed in a Flexibox (FB-9) with either a local or remote panel from the Factory then refer to the "Hardware Installation Guide" which will be enclosed with the system.

If this unit has been ordered separately we assume here that you already have a Flexibox system with a Flexipanel and that the Flexibox has at least two spare slots one above the other for the SA-2HD card.

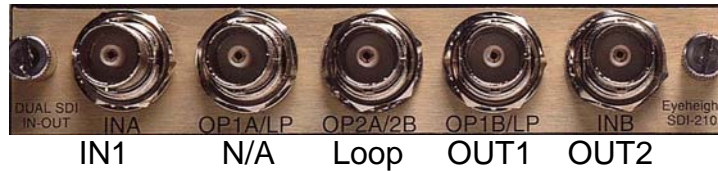
Section 2 Installing the SA-2HD into a Flexibox

To install the SA-2HD into a flexibox it is desirable (but not necessary) to power down the flexi-box. Follow these instructions.

1. On the rear of the flexibox are 6 slots for Products. Remove any spare blanking plate in the top row. There are 2 M2.5 Screws, which require unfastening for each blanking plate.
2. Slide the Product PCB into the spare slots and firmly push it "home".
3. Use the two thumbscrews to fasten the unit in place.
4. Now refer to the "GeNETics User Guide". If your system consists of a single Flexibox with a single Flexipanel then refer to the section titled "Flexipanel Auto Set-up". If your system is part of a network with more than one Flexipanel then refer to the section titled "Flexipanel Manual Set-up". This will guide you through acquiring your product as a device on the Flexipanel.

Section 3 Connecting Video & Audio to a SA-2HD

A diagram of the Video connections for the SA-2HD is shown below.



CHP-100 HI DEF Card

Note.

Always use a 75 ohm terminator on 'Loop' output when not used so that maximum cable length equalisation of 'A Input' can be achieved.

3^o Operation

Section 1 Control of the SA-2HD

Control of the SA-2HD is generally done using an FP-9 Flexi panel. It is also possible to control this unit with an FP-10 Panel (Desktop Panel). The unit can also be controlled remotely using a PC running the Softpanel software.

The SA-2HD is, as are all genetics modules, controlled using a set of MENUS. Each of these menus contains up to 3 parameters that are adjusted using the rotary digipots. The Menus define all of the adjustable operational parameters in the SA-2HD. Pressing the rotary digipots brings the parameter to its default value. Device selection is done using the device select switches which, when pressed, will offer the name of the device in the LCD Window. Modules can be acquired and then de-acquired using the set-up switch. For a full description of the operation philosophy of the GeNETics system refer to the "geNETics User Guide" (section "Operation of the Flexipanel")
A full list of the Menus and their functions are given in section 3 of this chapter.

Section 2 Safe Area Generator Processing

The unit has 5 Generic Box generators, which can do on screen lines, shading and blanking. There are also SMPTE Graticule and Grid generators.

'Text', 'Box', 'Centre', 'Strobe' and 'Cursor' all use the same Generic Box generator and so only one of these 5 can be displayed at any one time. All other boxes/patterns can be displayed simultaneously.

The lines on all of the generators can be either "static" or "dynamic". "Static" lines are white lines, "Dynamic" lines change their level according to the picture background and so can make them more visible against a white background.

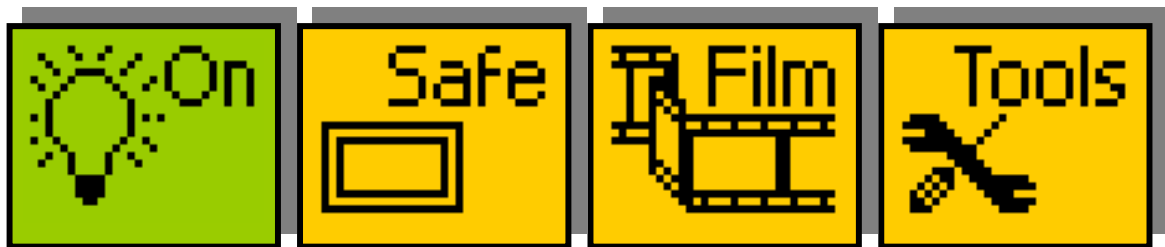
Section 3 Operational Menus for the SA-2HD

The following set of menus defines the operation of the SA-2HD. This is indicated

Operational Menus for the SA-2HD

Menus 00-03

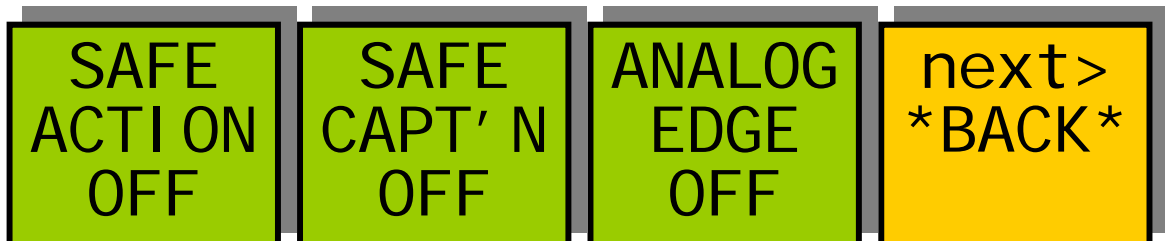
Top Level Menus



Menu Num.	Heading	Automation	Function
0	On/Off	Off, On [0→1]	This will switch in and out the system as a whole, effectively putting it into and out of bypass mode.
1	Safe	None	Displays Safe Areas menus
2	Film	None	Displays Film Areas menus
3	Tools	None	Displays menus for Text, Box, Centre, Strobe, Cursor, Memories, SMPTE Graticule, SMPTE Grid and Setup

Menus 04-07

Safe Areas Menus

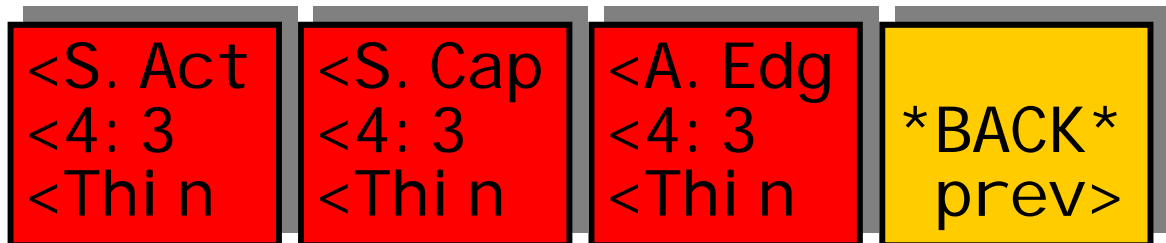


Menu Num.	Heading	Automation	Function
4	'Safe Action' or 'Safe Capt'n' or 'Analog Edge' or 'Digital Edge' or	On/Off [0→1]	This turns 'Safe Area box 1' On/Off

	'Clean Aperature'		
5	'Safe Action' or 'Safe Capt'n' or 'Analog Edge' or 'Digital Edge' or 'Clean Aperature'	On/Off [0→1]	This turns 'Safe Area box 2' On/Off
6	'Safe Action' or 'Safe Capt'n' or 'Analog Edge' or 'Digital Edge' or 'Clean Aperature'	On/Off [0→1]	This turns 'Safe Area box 3' On/Off
7	Back	none	Pressing this button moves the display back up a level of the nested menu structure

Menus 08-11

Safe Areas Menus

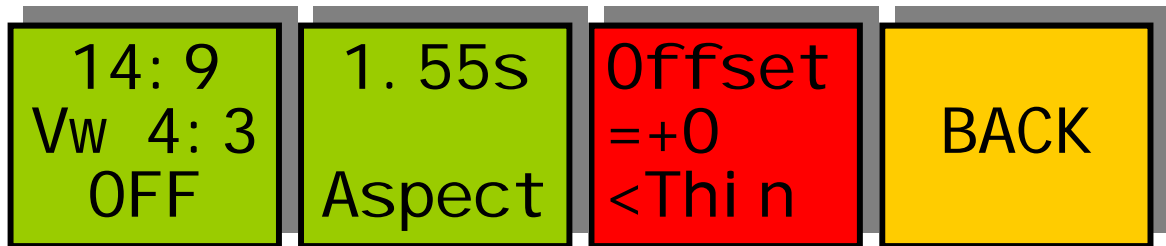


Menu Num.	Heading	Automation	Function
8	'S. Act' or 'S.Cap' or 'D.Edg' or 'A.Edg' or 'C.App'	<u>Digipot A</u> S. Act S.Cap D.Edg A.Edg C.App [0→4] <u>Digipot B</u> 4:3 16:9 16p4:3 16p149 43p16:9 [0→4]	Controls 'Safe Area box 1' When this button is pressed to "Green". The Three-line display in the window indicates the three options, which can be changed by adjusting the three rotary digipots A, B and C. Determines the basic Function Selects "Safe Action" option Selects "Safe Caption" option Selects "Digital Edge" option Selects the "An. Edge" option Selects the "Clean Aperatur" option Determines the Screen Format Standard 4:3 Screen Standard 16:9 Screen 16:9 Shoot to protect 4:3 16:9 Shoot to protect 14:9 4:3 Shoot to protect 16:9

		<u>Digipot C</u> Thin Thick Shade Black Dash1 Dash2 [0→5]	Determines the Style of Indicate Thin White lines are used Thick White lines are used Shade is used for "danger area" Black is used for "danger area" Thin Dashed White lines are used Thick Dashed White lines are used
9	Same as Menu 8	Same as Menu 8	Controls 'Safe Area box 2' Same as Menu 8
10	Same as Menu 8	Same as Menu 8	Controls 'Safe Area box 3' Same as Menu 8
11	Back	none	Pressing this button moves the display back up a level of the nested menu structure

Menus 12-15

Film Menus

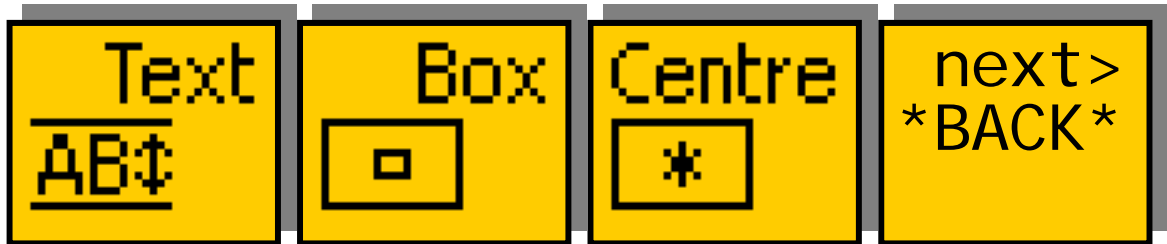


Menu Num.	Heading	Automation	Function
12	Film Safe Areas	Digipot A On/Off [0→1] <u>Digipot B</u> 1.55s 1.66s 1.78s 1.85s 2.05s 2.35s 1.33w 1.55w 1.66w 1.85w 2.05w 2.35w [0→11]	Activates the Film Box Generator -Determines the basic Function -14:9 AR viewed on a 4:3 Glass -Super16 viewed on a 4:3 Glass -16:9 AR viewed on a 4:3 Glass -1.85 AR viewed on a 4:3 Glass -2.05 AR viewed on a 4:3 Glass Cinemascope Vw'd on 4:3 Glass 4:3 Viewed on a 16:9 Glass 14:9 Viewed on a 16:9 Glass Super16 Viewed on a 16:9 Glass 1.85 Viewed on a 16:9 Glass 2.05 Viewed on a 16:9 Glass Cinemascope Vw'd on 16:9 Glass
13	Selected Aspect Ratio	1.33 to 2.35	Shows the decimal equivalent of the aspect ratio chosen in menu 12
14	Offset		The Selected area is chosen by pressing

		<u>Digipot A</u> [-134 to 255] Digipot B Thin Thick Shade Black Dash1 Dash2 [0→5]	the "Red" switch next to this one and adjusting the rotary digipots with the green LED's which are alight. This determines the position of the frame vertically in line increments. These frames are often offset to include subtitles or teletext. Determines the Style of Indicate Thin White lines are used Thick White lines are used Shade is used for "danger area" Black is used for "danger area" Thin Dashed White lines are used Thick Dashed White lines are used
15	Back	none	Pressing this button moves the display back up a level of the nested menu structure

Menus 16-19

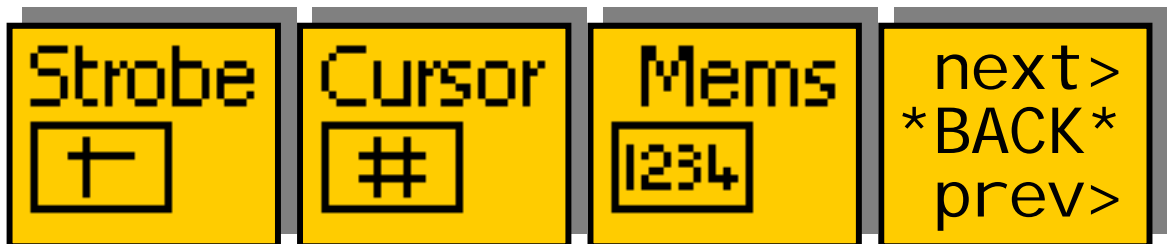
Tools Menus 1



Menu Num.	Heading	Automation	Function
16	Text	none	Displays Text Height menu
17	Box	none	Displays User Box menu
18	Centre	none	Displays Centre menu
19	Back	none	Pressing this button moves the display back up a level of the nested menu structure

Menus 20-23

Tools Menus 2



Menu Num.	Heading	Automation	Function
20	Strobe	none	Displays Strobe menu
21	Cursor	none	Displays Cursors menu
22	Mems	none	Displays Memories menu
23	Back	none	Pressing this button moves the display back up a level of the nested menu structure

Menus 24-27

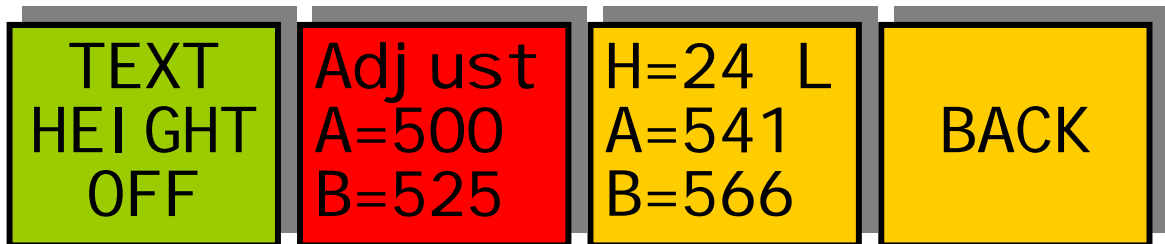
Tools Menus 3



Menu Num.	Heading	Automation	Function
24	SMPTE	none	Displays SMPTE Graticule menu
25	Grid	none	Displays SMPTE Grid menu
26	Set-up	none	Displays Setup menu
27	Back	none	Pressing this button moves the display back up a level of the nested menu structure

Menus 28-31

Text Menus

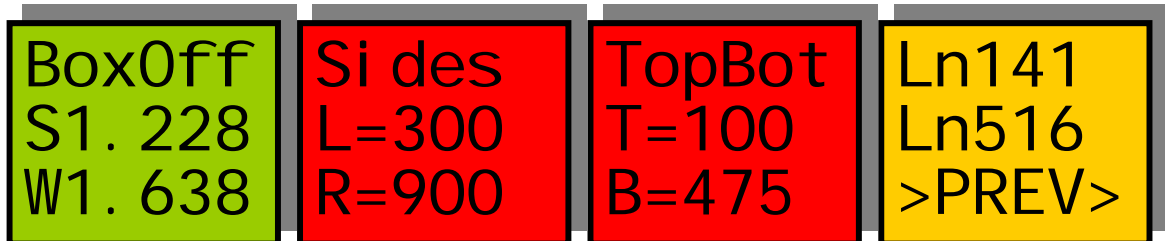


Menu Num.	Heading	Automation	Function
28	Text Height control	On/Off [0→1]	Activates the Text Height Generator
29	Offset	<u>Digipot A</u> [1→1080]	The Selected area is chosen by pressing the "Red" switch next to this one and adjusting the rotary digipots with the green LED's which are alight. This determines the position of one of the lines of text heigh.

		<u>Digipot B</u> [1→1080]	This determines the position of the other line of text height.
30	Text height value	H= 1 to 1078 A= 42 to 1121 B= 42 to 1121	Calculated text height between lines set in menu 29 Displays 'video format' line number for both line A and B, which will change for interlaced and progressive video
31	Back	none	Pressing this button moves the display back up a level of the nested menu structure

Menus 32-35

Box Menus

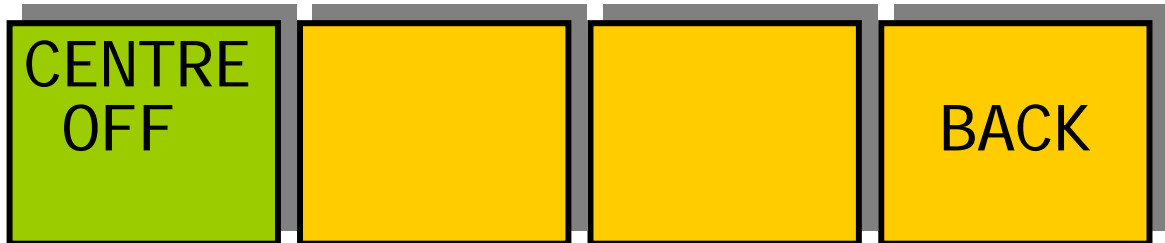


Menu Num.	Heading	Automation	Function
32	Box control & Aspect Ratio Readout	On/Off/Clip [0→2]	Activates the User Box Generator can also select 'clip' which blanks around box & Displays the Aspect Ratio of the user defined box. There are two readouts the readout prefixed by the "s" is the Aspect Ratio when the picture is viewed on a 4:3 monitor. The readout prefixed by the "w" is the Aspect Ratio when the picture is viewed on a 16:9 monitor.
33	Position of the sides in the Box	<u>Digipot A</u> 1→1920 [1→1920] <u>Digipot B</u> 1→1920 [1→1920]	When this button is pressed to "Green". The Three-line display in the window indicates the two options, which can be changed by adjusting the two rotary digipots A and B. -Defines the position of the left hand side -Defines the position of the right hand side

34	Position of the top and bottom of the Box	<u>Digipot A</u> 1 to 1080 [1→1080] <u>Digipot B</u> 1 to 1080 [1→1080]	When this button is pressed to "Green". The Three-line display in the window indicates the two options, which can be changed by adjusting the two rotary digipots A and B. -Defines the position of the Top -Defines the position of Bottom
35	Format line number	42 to 1121	Displays 'video format' line number for both top and bottom of box, which will change for interlaced and progressive video

Menus 36-39

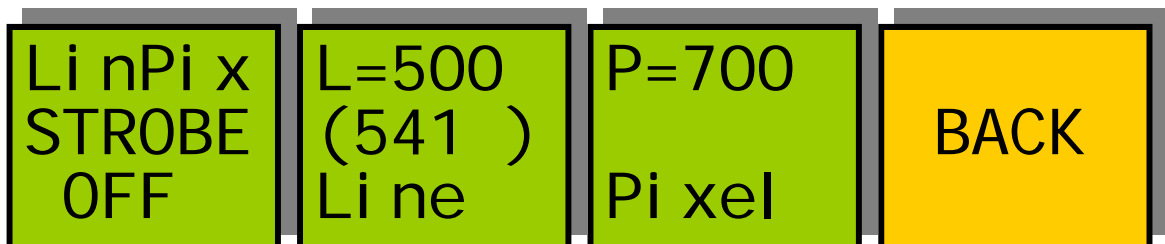
Centre Menus



Menu Num.	Heading	Automation	Function
36	Centre control	Off Cross Square Dot [0→3]	Activates the Centre Generator and controls it's format
37	none	none	none
38	none	none	none
39	Back	none	Pressing this button moves the display back up a level of the nested menu structure

Menus 40-43

Strobe Menus



Menu Num.	Heading	Automation	Function
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40	Strobe control	On/Off [0→1]	Activates the Strobe Generator
41	Line number	<u>Digipot B</u> 1→1080 [1→1080]	Can be changed by adjusting the rotary digipot B. Sets Strobes Line number Also shows Strobes line number represented in video format style within brackets, which will change for interlaced and progressive video.
42	Pixel number	<u>Digipot C</u> 1 to 1920 [1→1920]	Can be changed by adjusting the rotary digipot C. Sets Strobes pixel number
43	Back	none	Pressing this button moves the display back up a level of the nested menu structure

Menus 44-47

Cursor Menus

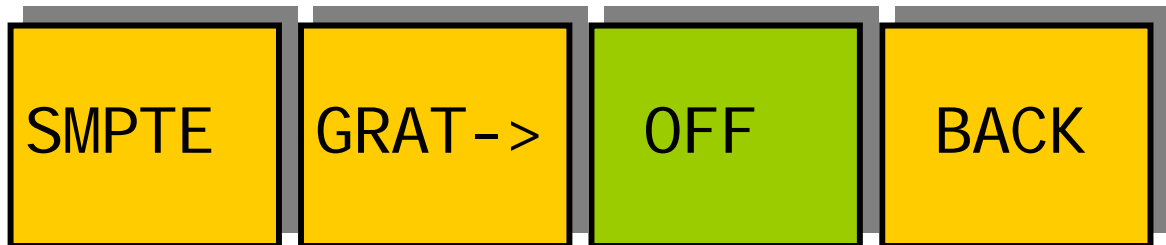


Menu Num.	Heading	Automation	Function
44	Cursor control	On/Off [0→1]	Activates the Cursor Generator
43		<u>Digipot A</u> Horiz' Position 2 to 1920 [2→1920] even numbers only <u>Digipot B</u> Vertical Position	When this button is pressed to "Green". The Three-line display in the window indicates the two options, which can be changed by adjusting the two rotary digipots A and B. Adjusts the horizontal position of the cursors from the centre of picture. Adjusts the vertical position of the cursors from the centre of picture.

		2 to 1080 [2→1080] even numbers only	
44	Mems	<u>Digipot C</u> Thin Thick [0→1]	When this button is pressed to "Green". The display in the window indicates the two options, that can be changed by adjusting the rotary digipot C which selects between thick and thin line cursors.
45	Back	none	Pressing this button moves the display back up a level of the nested menu structure

Menus 48-51

SMPTE Graticule Menus



Menu Num.	Heading	Automation	Function
48	none	none	Just displays "SMPTE"
49	none	none	Just displays "GRAT->"
50	SMPTE Graticule control	On/Off [0→1]	Activates the Graticule Generator
51	Back	none	Pressing this button moves the display back up a level of the nested menu structure

Menus 52-55

SMPTE Grid Menus



Menu Num.	Heading	Automation	Function
52	SMPTE Grid control	On/Off [0→1]	Activates the Grid Generator

53	Grid style	Lines/Dots [0→1]	Selects between displaying complete lines on grid or dots at intersections of lines
54	none	none	none
55	Back	none	Pressing this button moves the display back up a level of the nested menu structure

Menus 56-59

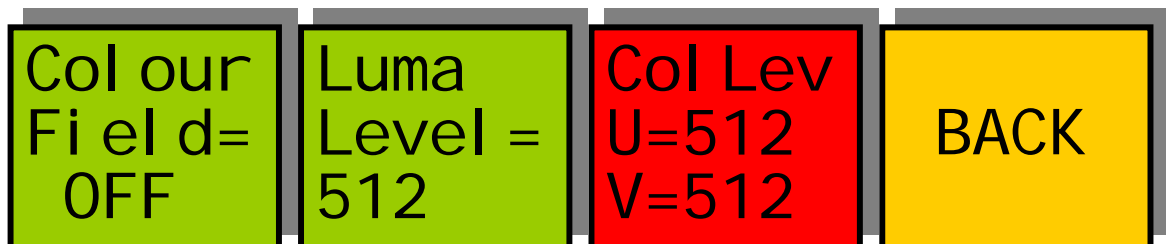
Setup Menus



Menu Num.	Heading	Automation	Function
56	Lines display type	Static/dynamic [0→1]	Selects line display style for all boxes/grids/cursors/etc. Static – Lines drawn as white Dynamic – Lines drawn as white on dark backgrounds and black on light backgrounds
57	Shade Level	0→99 [0→99]	Sets luminance level of shaded areas of box generators in menus 04 thru 15
58	none	none	none
59	Back	none	Pressing this button moves the display back up a level of the nested menu structure

Menus 60-63

Colour Field Generator Menus

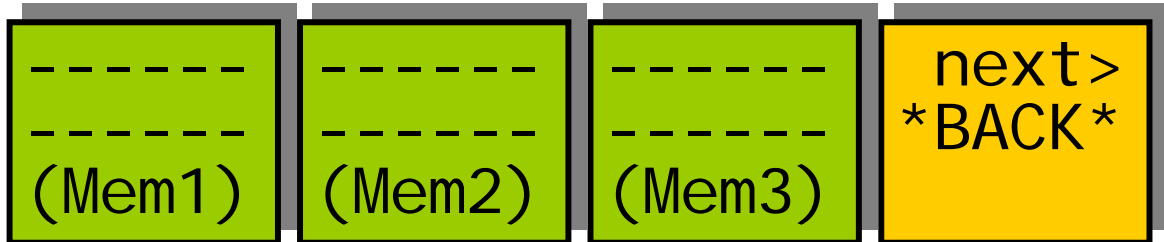


Menu Num.	Heading	Automation	Function
44	Colour Field	On/Off [0→1]	Activates the Colour Field Generator
45	Luma Level	<u>Digipot A</u> 4 to 1019 [4→1019]	Adjusts the Luma value of the Colour Field Generator

46	Colour Level	<p>Digipot A 4 to 1019 [4→1019]</p> <p>Digipot B 4 to 1019 [4→1019]</p>	<p>When this button is pressed to "Green". The Three-line display in the window indicates the two options, which can be changed by adjusting the two rotary digipots A and B</p> <p>Adjusts the Cb colour difference value</p> <p>Adjusts the Cr colour difference value</p>
47	BACK	none	Go To the Top Level Menus

Menus 64-67

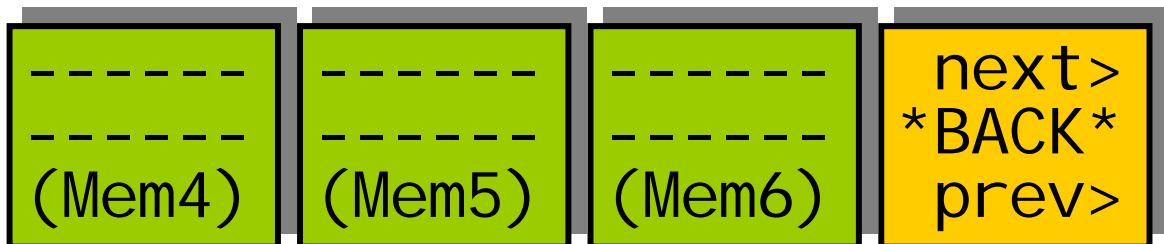
Utility Menus (Memories)



Menu Num.	Heading	Automation	Function
64	MEM1	1=Recall	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"
65	MEM2	1=Recall	Pressing this will recall Memory number 2.
66	MEM3	1=Recall	Pressing this will recall Memory number 3.
67	BACK	none	Go To the Top Level Menus

Menus 68-71

Utility Menus (Memories)

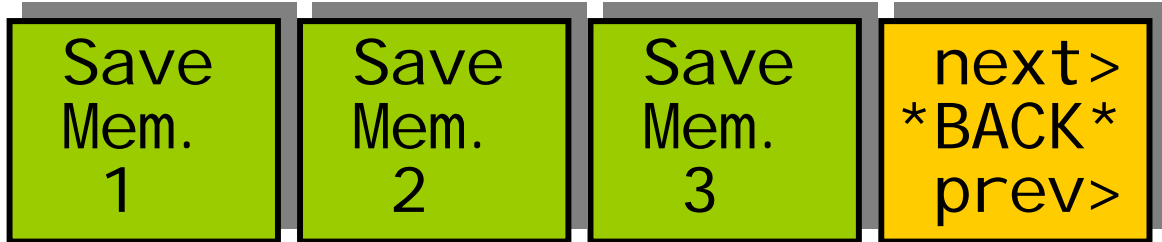


Menu Num.	Heading	Automation	Function
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68	MEM4	1=Recall	Pressing this will recall Memory number 4.
69	MEM5	1=Recall	Pressing this will recall Memory number 5.
70	MEM6	1=Recall	Pressing this will recall Memory number 6.
71	BACK	none	Go To the Top Level Menus

Menus 72-75

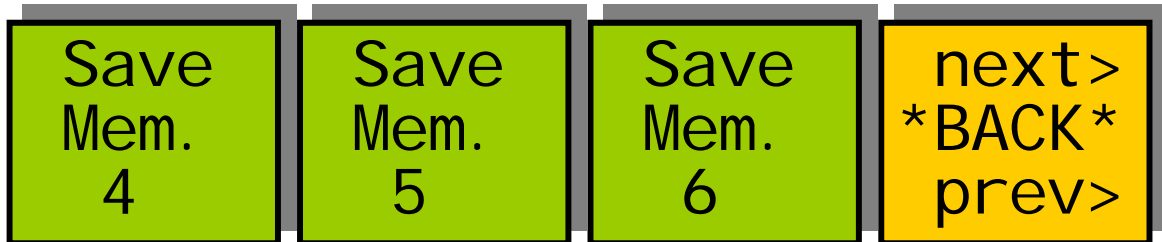
Utility Menus (Memories)



Menu Num.	Heading	Automation	Function
72	SAVE MEM1	1=Save	Pressing this will Save Memory number 1.
73	SAVE MEM2	1= Save	Pressing this will Save Memory number 2.
74	SAVE MEM3	1= Save	Pressing this will Save Memory number 3.
75	BACK	none	Go To the Top Level Menus

Menus 76-79

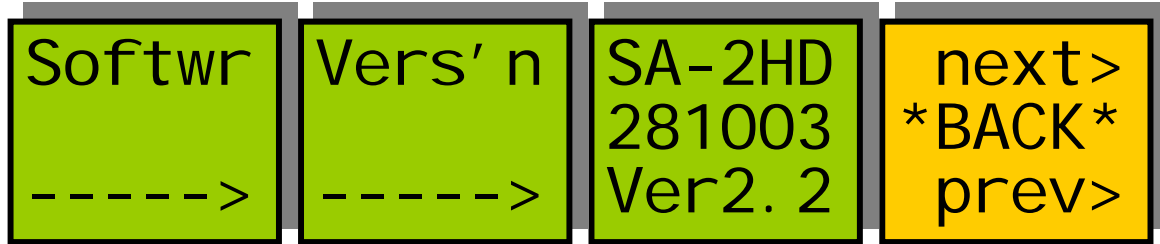
Utility Menus (Memories)



Menu Num.	Heading	Automation	Function
76	SAVE MEM4	1= Save	Pressing this will Save Memory number 4.
77	SAVE MEM5	1= Save	Pressing this will Save Memory number 5.
78	SAVE MEM6	1= Save	Pressing this will Save Memory number 6.
79	BACK	none	Go To the Top Level Menus

Menus 80-83

Utility Menus (Software)



Menu Num.	Heading	Automation	Function
80	Info	none	Information
81	Info	none	Information
82	none	none	Software Version Information
83	BACK	none	Go To the Top Level Menus

Menus 84-87

Utility Menus (Memories)



Menu Num.	Heading	Automation	Function
84	Set As Pow On Memory	1=Set	Pressing this will set the current system set-up as the Power on memory default.
85	Recall Pow On Memory	1=Recall	Pressing this will recall The Power-on memory set up in the last menu.
86	Total Reset	1=Reset	Pressing this will cause a first Birthday of the unit. All current memories and settings will be lost.
87	BACK	none	Go To the Top Level Menus

4 Technical Appendix

Section 1 Technical Specification for the SA-2HD

Number of Inputs	1
Type of Inputs	1.5Gbit Serial Digital Video Inputs 75 Ohm
Line Length	At least 50 Meters of PSF1/3
Number of Outputs	3 Output BNC's per Card
Type Of Outputs	1.5Gbit Serial Digital Video Outputs, 75 Ohm, 800mV
Total Number Of BNC Connections	5, consisting of 1 Fixed Input and 3 Fixed outputs. (One BNC not used)
Current Consumption	<1.5A at +5V
Size	215mm by 100mm

Section 2 Jumpering the I-BUS (CAN-BUS) Termination

The I-BUS Network is the "control system" under which all Products and Panels are networked together. Under certain circumstances it is necessary to terminate the network. This can be done on a Flexi-panel or a "Product". Should the network require terminating at the point of this product. To terminate this product, locate J6 on the LD-2V Product supplied which is between U8 and the Edge connector. (This is on the half of the card labelled "CHP-100 Virtex Processor"). Jumper this with a 2mm Jumper link.

The user should read the "Hardware Installation Guide" to know if this link is to be jumpered.