AVDELAY 3G

3G/HD/SD audio/video delay

Crystal Vision

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Revision 1. Preset recall table amended, page 9. 16-04-13

1 Introduction

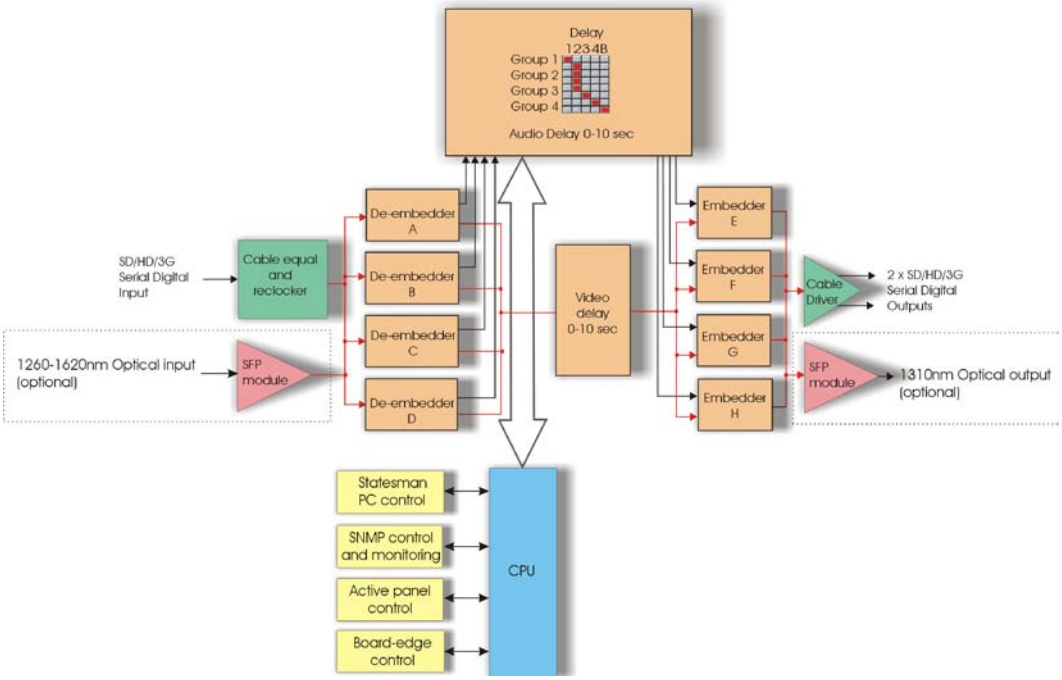
The AVDELAY 3G is an audio/video delay that has been designed for correcting large lip-sync errors on incoming 3Gb/s, HD or SD signals containing up to four groups of embedded audio and has the ability to change the relative audio/video timing by several seconds in either direction.

Ideal for any environment that uses High Definition with embedded audio, AVDELAY 3G is extremely straightforward to operate. It uses the intuitive Crystal Vision board edge interface which, using two select buttons, a shaft encoder and a display, allows you to instinctively and quickly locate any option from menus structured in the most logical way possible. Control can additionally be from an active front panel on the frame, a remote panel, the Statesman PC software or remotely via SNMP.

AVDELAY 3G fits in the standard frames (available in 4U, 2U, 1U and desk top box) and is used with the RM62 rear module to access all the inputs and outputs.

With the addition of the FIP optical input or FOP optical output, cable length will no longer be an issue when sending and receiving signals from beyond the local signal bay. The RM62 is configured for fibre connectivity.

AVDELAY 3G is a space-saving 100mm x 266mm module which fits in the standard Crystal Vision frames.



The main features are as follows:

- Perfect for correcting large lip-sync errors: the relative audio/video timing can be changed by several seconds in either direction, with independently adjustable video and audio delay
- Can be used with any sources: accepts 3Gb/s, HD or SD input
- Use as many audio groups as you need: works with up to four groups
- Connect the outputs to a digital monitor: and make any adjustments by eye
- Cope with big differences between the audio and video: provides up to ten seconds of video delay in SD, five seconds in HD and two seconds in 3Gb/s (depending on video format), along with ten seconds of audio delay
- Lip-sync can be out in either direction: if the audio is earlier than the video, you can delay the audio to let the video catch up
- Delay your audio channels differently: each mono audio channel can be assigned to any one of four separate audio delay settings, or can bypass the delay completely
- Flexible adjustments allow you to get the audio and video sync just right: with the video delay adjustable in seconds and frames, and the four audio delays adjustable in seconds, video frames and milliseconds
- Sophisticated handling of Dolby E: the audio delay applied to the Dolby E will be rounded to the nearest time that gives the correct guardband alignment with the outgoing video – and can be assigned to the four audio delay settings in the same way as other audio
- Rapidly correct lip-sync errors: the audio will jump instantly to the new delay setting
- Save time with a useful starting point for making your adjustments: three default buttons allow all the video and audio delays to be set to 0, 5 or 10 seconds
- Optional integrated fibre input/output connectivity in a single frame slot: means you won't be limited by cable lengths
- Flexible control: select from board edge, front and remote panels, SNMP, GPIs and PC software
- Saves rack space: the 100mm x 266mm module fits in Crystal Vision's standard frames and allows 12 AVDELAY 3G in 2U (24 in 4U, six in 1U and two in desk top box)

Delays

AVDELAY's design approach has been to provide the user with a full set of controls to set and/or bypass the delays – especially the various audio delays - as required. This has benefits in at least two areas:

- Maximum flexibility
- It simplifies the interaction between the different delays

Video Delay

The user selectable video delay consists of both a variable delay and a set of three fixed preset delays. The variable delay can be varied in both whole frames and seconds with the maximum delay being dependant on the video format. The preset delays will also be limited to the maximum delay for any given video format.

The following table lists the maximum delay for any given video format;

Video format	Maximum video delay (sec)	Maximum audio delay (sec)
625	10.2	10
525	8.5	10
720p50	5.2	10
720p59.94	4.25	10
1080i50	5.2	10
1080i59.94	4.25	10
1080p50	2.5	10
1080p59.94	2.1	10

Note: The minimum video and audio processing delay is one frame.

Audio Delays

All sixteen audio channels, four per group can individually be assigned to one of the four available delay blocks. These delay blocks can then have their delays individually varied in milliseconds, frames and seconds to a maximum of ten seconds irrespective of the video format. The delay block for any given channel can also be bypassed.

Each delay block also has three presets allowing a quick delay setting of 0 seconds, 5 seconds and 10 seconds.

Dolby E audio can also be delayed in the same manner as the AES audio but with the proviso that the audio channels are maintained as pairs, 1-2, 3-4, etc. The applied audio delay will also be rounded to the nearest time that gives the correct guardband alignment with the outgoing video.

Note: The audio will jump instantly to the new delay setting.

Alarms and Presets

A GPI output is reserved for alarm indication and may have assigned any of the 21 video and audio alarms.

Any number of alarms may be assigned to the GPI output; video missing and input groups missing will assert an alarm immediately whereas the silence alarms can be assigned a delay timer to delay the time after which an alarm is asserted. This ability is especially useful to prevent false alarming during quiet periods in the audio.

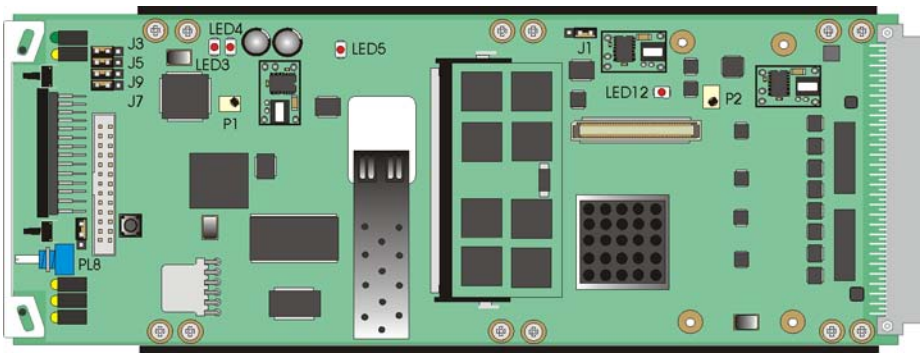
Where more than one alarm is flagged and an alarm condition is asserted, use the various status indicators to determine the exact cause.

Up to 16 user-defined configurations may be stored and recalled either from the board control, active front panel, Statesman or through the use of external GPIs. Presets store the board configuration including delay settings.

2 Hardware installation

2.1 Module configuration

There are six user settable links on the AVDELAY 3G. These are – J1, J3, J5, J7, J9 and PL8. PL8 sets the AVDELAY 3Gs IP address to default (10.0.0.201) or to a user-selected IP address. J1 has no user application.



AVDELAY 3G top side

The surface-mounted LEDs on the top side of the PCB are not visible from the front of the frame and are included for diagnostic purposes only.

Note: The two potentiometers have been factory set and should not require further adjustments.

Engineering link and LEDs

PL8 sets the AVDELAY 3Gs IP address to default (10.0.0.201) or to a user-selected IP address. The LEDs LED3, LED4, LED5 and LED12 are included for diagnostic purposes and are not visible from the front of the frame.

Link	Towards front of board or Up	Towards the rear of board or Down
J1		JTAG bypassed
J3, 5, 7 & 9	GPI Preset control	422 controller on GPI 1-4
PL8	Default IP address 10.0.0.201	Custom set IP address
LED3	Link	
LED4	Data	
LED5	Configured	
LED12	Clock locked	

Potentiometers

These potentiometers have been factory set and should not require further adjustment.

Potentiometer	Function
P1	3.3V rail adjustment
P2	Clock free-running frequency

2.2 Rear modules and signal I/O

The 4U Indigo 4 frame will house up to 24 single height modules with up to four power supplies. The 2U Indigo 2 frame will house up to 12 single height modules and dual power supplies. The 1U Indigo 1 frame will house six single height modules and a single or dual power supply. The Indigo DT desk top boxes have a built-in power supply and will house up to two single height modules. All modules can be plugged in and removed while the frame is powered without damage.

Note: For details of fitting rear connectors please refer to the appropriate frame manual.

Rear module connections with RM62

The RM62 is a single height module used for video only applications.

RM62 rear module connector	Description
	**RM62** • 24 AVDELAY 3G modules per Indigo 4 frame • 12 per Indigo 2 frame • Six per Indigo 1 frame • 2 per Indigo DT • All frame slots can be used

BNC	I/O assignment
OPTICAL I/O	SC optical connector. Input or output depending on optical module fitted.
SDI OUT(B)	3G/High Definition/Standard Definition serial digital output
SDI OUT(A)	3G/High Definition/Standard Definition serial digital output
NC	No user connection
NC	No user connection
SDI IN	3G/High Definition/Standard Definition serial digital input

2.3 General Purpose Interface (GPI)

Each frame slot has up to six connections ‘a-f’ for GPI control and monitoring. These connections are available at the rear of the frame on the 26-way D-Type remote connectors.

GPI			Low (<1V)	High (+5V)
1	‘a’	**Recall preset bit 1**	See following table for user preset control	
2	‘b’	**Recall preset bit 2**		
3	‘c’	**Recall preset bit 4**		
4	‘d’	**Recall preset bit 8**		
5	‘e’			
6	‘f’	**Alarms (**See alarm table)	Alarm condition	No alarm

As supplied, each GPI output has a 270Ω resistor in series with its output. This allows for an external LED to be driven, connected to a DC voltage of +5V.

Each General Purpose Input (GPI) is fitted with a 6800Ω resistor connected to the internal +5V.

The 16 user preset configurations can be recalled using binary notation.

GPI Preset	Bit 8	Bit 4	Bit 2	Bit 1	GPI Preset	Bit 8	Bit 4	Bit 2	Bit 1
1	H	H	H	H	**9**	L	H	H	H
2	H	H	H	L	**10**	L	H	H	L
3	H	H	L	H	**11**	L	H	L	H
4	H	H	L	L	**12**	L	H	L	L
5	H	L	H	H	**13**	L	L	H	H
6	H	L	H	L	**14**	L	L	H	L
7	H	L	L	H	**15**	L	L	L	H
8	H	L	L	L	**16**	L	L	L	L

GPI out 6 (f) can be configured to be asserted for a selection of error conditions.

The following table lists the conditions to be selected from.

Reportable error conditions
Video Missing
Input group 1 Missing
Input group 2 Missing
Input group 3 Missing
Input group 4 Missing
Silence on Group 1 Channel 1&2
Silence on Group 1 Channel 3&4
Silence on Group 2 Channel 1&2
Silence on Group 2 Channel 3&4
Silence on Group 3 Channel 1&2
Silence on Group 3 Channel 3&4
Silence on Group 4 Channel 1&2
Silence on Group 4 Channel 3&4
Dolby E on Input Group 1 Channel 1&2
Dolby E on Input Group 1 Channel 3&4
Dolby E on Input Group 2 Channel 1&2
Dolby E on Input Group 2 Channel 3&4
Dolby E on Input Group 3 Channel 1&2
Dolby E on Input Group 3 Channel 3&4
Dolby E on Input Group 4 Channel 1&2
Dolby E on Input Group 4 Channel 3&4

4U frame GPI connections

GPI lines ‘a’ to ‘f’ of each card connect to two of eight rear remote connectors as follows:

Slot no.	‘a’ pin	‘b’ pin	‘c’ pin	‘d’ pin	‘e’ pin	‘f’ pin
1	8 (1)	9 (1)	18 (1)	26 (1)	19 (2)	20 (2)
2	7 (1)	16 (1)	17 (1)	25 (1)	10 (2)	11 (2)
3	8 (3)	9 (3)	18 (3)	26 (3)	19 (4)	20 (4)
4	7 (3)	16 (3)	17 (3)	25 (3)	10 (4)	11 (4)
5	5 (1)	6 (1)	15 (1)	24 (1)	1 (2)	2 (2)
6	4 (1)	14 (1)	13 (1)	23 (1)	3 (2)	4 (2)
7	5 (3)	6 (3)	15 (3)	24 (3)	1 (4)	2 (4)
8	4 (3)	14 (3)	13 (3)	23 (3)	3 (4)	4 (4)
9	3 (1)	12 (1)	22 (1)	21 (1)	12 (2)	13 (2)
10	10 (1)	11 (1)	19 (1)	20 (1)	21 (2)	22 (2)
11	3 (3)	12 (3)	22 (3)	21 (3)	12 (4)	13 (4)
12	10 (3)	11 (3)	19 (3)	20 (3)	21 (4)	22 (4)
Slot no.	**‘a’ pin**	**‘b’ pin**	**‘c’ pin**	**‘d’ pin**	**‘e’ pin**	**‘f’ pin**
1	8 (5)	9 (5)	18 (5)	26 (5)	19 (6)	20 (6)
2	7 (5)	16 (5)	17 (5)	25 (5)	10 (6)	11 (6)
3	8 (7)	9 (7)	18 (7)	26 (7)	19 (8)	20 (8)
4	7 (7)	16 (7)	17 (7)	25 (7)	10 (8)	11 (8)
5	5 (5)	6 (5)	15 (5)	24 (5)	1 (6)	2 (6)
6	4 (5)	14 (5)	13 (5)	23 (5)	3 (6)	4 (6)
7	5 (7)	6 (7)	15 (7)	24 (7)	1 (8)	2 (8)
8	4 (7)	14 (7)	13 (7)	23 (7)	3 (8)	4 (8)
9	3 (5)	12 (5)	22 (5)	21 (5)	12 (6)	13 (6)
10	10 (5)	11 (5)	19 (5)	20 (5)	21 (6)	22 (6)
11	3 (7)	12 (7)	22 (7)	21 (7)	12 (8)	13 (8)
12	10 (7)	11 (7)	19 (7)	20 (7)	21 (8)	22 (8)

Upper

Lower

Table shows pin number (remote number)

Note: Remote 1, Remote 3, Remote 5 and Remote 7 are 26-way high-density D-Type female sockets. Frame ground is pin 2 and +5V @500mA is pin 1 in each case.

Remote 2, Remote 4, Remote 6 and Remote 8 are 26-way high-density D-Type male plugs and frame ground is pin 6 in each case and +5V @500mA is pin 15 on Remote 2 and Remote 6.

Note: The +5V output is protected by self-resetting thermal fuses, which limit the total output current available from Remotes 1-4 to approximately 1A. Remotes 5-8 are similarly protected.

2U frame GPI connections

GPI lines ‘a’ to ‘f’ of each card connect to two of four rear remote connectors as follows:

Slot no.	‘a’ pin	‘b’ pin	‘c’ pin	‘d’ pin	‘e’ pin	‘f’ pin
1	8 (1)	9 (1)	18 (1)	26 (1)	19 (2)	20 (2)
2	7 (1)	16 (1)	17 (1)	25 (1)	10 (2)	11 (2)
3	8 (3)	9 (3)	18 (3)	26 (3)	19 (4)	20 (4)
4	7 (3)	16 (3)	17 (3)	25 (3)	10 (4)	11 (4)
5	5 (1)	6 (1)	15 (1)	24 (1)	1 (2)	2 (2)
6	4 (1)	14 (1)	13 (1)	23 (1)	3 (2)	4 (2)
7	5 (3)	6 (3)	15 (3)	24 (3)	1 (4)	2 (4)
8	4 (3)	14 (3)	13 (3)	23 (3)	3 (4)	4 (4)
9	3 (1)	12 (1)	22 (1)	21 (1)	12 (2)	13 (2)
10	10 (1)	11 (1)	19 (1)	20 (1)	21 (2)	22 (2)
11	3 (3)	12 (3)	22 (3)	21 (3)	12 (4)	13 (4)
12	10 (3)	11 (3)	19 (3)	20 (3)	21 (4)	22 (4)

Table shows pin number (remote number)

Note: Remote 1 and Remote 3 are 26-way high-density D-Type female sockets. Frame ground is pin 2 and +5V @500mA is pin 1 in each case.

Remote 2 and Remote 4 are 26-way high-density D-Type male plugs and frame ground is pin 6 in each case and +5V @500mA is pin 15 on Remote 2.

Note: The +5V output is protected by self-resetting thermal fuses, which limit the total output current available from Remotes 1-4 to approximately 1A.

1U frame GPI connections

GPI lines ‘a’ to ‘f’ of each card connect to two rear remote connectors as follows:

Slot no.	‘a’ pin	‘b’ pin	‘c’ pin	‘d’ pin	‘e’ pin	‘f’ pin
1	8 (1)	9 (1)	18 (1)	26 (1)	19 (2)	20 (2)
2	7 (1)	16 (1)	17 (1)	25 (1)	10 (2)	11 (2)
3	5 (1)	6 (1)	15 (1)	24 (1)	1 (2)	2 (2)
4	4 (1)	14 (1)	13 (1)	23 (1)	3 (2)	4 (2)
5	3 (1)	12 (1)	22 (1)	21 (1)	12 (2)	13 (2)
6	10 (1)	11 (1)	19 (1)	20 (1)	21 (2)	22 (2)

Table shows pin number (remote number)

Note: Remote 1: 26-way high-density D-Type female socket. Frame ground is pin 2 and +5V @500mA is pin 1.

Remote 2: 26-way high-density D-Type male plugs and frame ground is pin 6 and +5V @500mA is pin 15.

Note: The +5V output is protected by self-resetting thermal fuses, which limit the total output current available from Remotes 1-2 to approximately 1A.

Indigo DT desk top box GPI connections

GPI lines ‘a’ to ‘f’ of each card connect to two rear remote connectors as follows:

Slot no.	‘a’ pin	‘b’ pin	‘c’ pin	‘d’ pin	‘e’ pin	‘f’ pin
1	8 (1)	9 (1)	18 (1)	26 (1)	19 (2)	20 (2)
2	7 (1)	16 (1)	17 (1)	25 (1)	10 (2)	11 (2)

Table shows pin number (remote number)

Note: Remote 1: 26-way high-density D-Type female socket. Frame ground is pin 2 and +5V @500mA is pin 1.

Remote 2: 26-way high-density D-Type male plugs and frame ground is pin 6 and +5V @500mA is pin 15.

Note: The +5V output is protected by self-resetting thermal fuses, which limit the total output current available from Remotes 1-2 to approximately 1A.

3 Card edge operation

3.1 Card edge controls

AVDELAY 3G board edge

3.2 Card edge buttons

The two tactile push button switches allow the operator to navigate within the menu structure.

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Button	Function	Normal state Up, Action Down
^	Up Menu	Push to jump up a menu level or cancel a selection
ENTER	Select/Action	Push to select a menu and to action and confirm a change

3.3 Card edge rotary control

The board edge rotary encoder is used to navigate through the menu categories and adjust parameter values.

Control	Function
SCROLL/ ADJ	Rotate SCROLL/ADJ to identify a menu category. In combination with the ENTER button select and ADJUST to change the current level or select a further option.

Notes: The rotary control can access menus and parameter values by clockwise or anti-clockwise rotation.

3.4 Reading card edge LEDs

Card edge LEDs may be used in conjunction with status information from any connected remote status panel display or from Statesman if available.

Refer also to the trouble-shooting chapter for more help with solving problems and monitoring status information.

The following table summarises the card edge LED functions and colours:

Name	LED Colour	Function when ON	Function when Off
PSU	Green	Good power supply (PSU) rails	One or more of the monitor supplies is out of specification
	Yellow		
HD	Yellow	Video input standard is HD (High Definition)	Input not present
SD	Yellow	Video input standard is SD (Standard Definition)	
G1	Yellow	Audio Group 1 present	Audio Group 1 not present
G2	Yellow	Audio Group 2 present	Audio Group 2 not present
G3	Yellow	Audio Group 3 present	Audio Group 3 not present
G4	Yellow	Audio Group 4 present	Audio Group 4 not present
	Yellow		
GPO6	Yellow	GPO6 active / low	GPO6 inactive / high

3.5 Navigating card edge menus

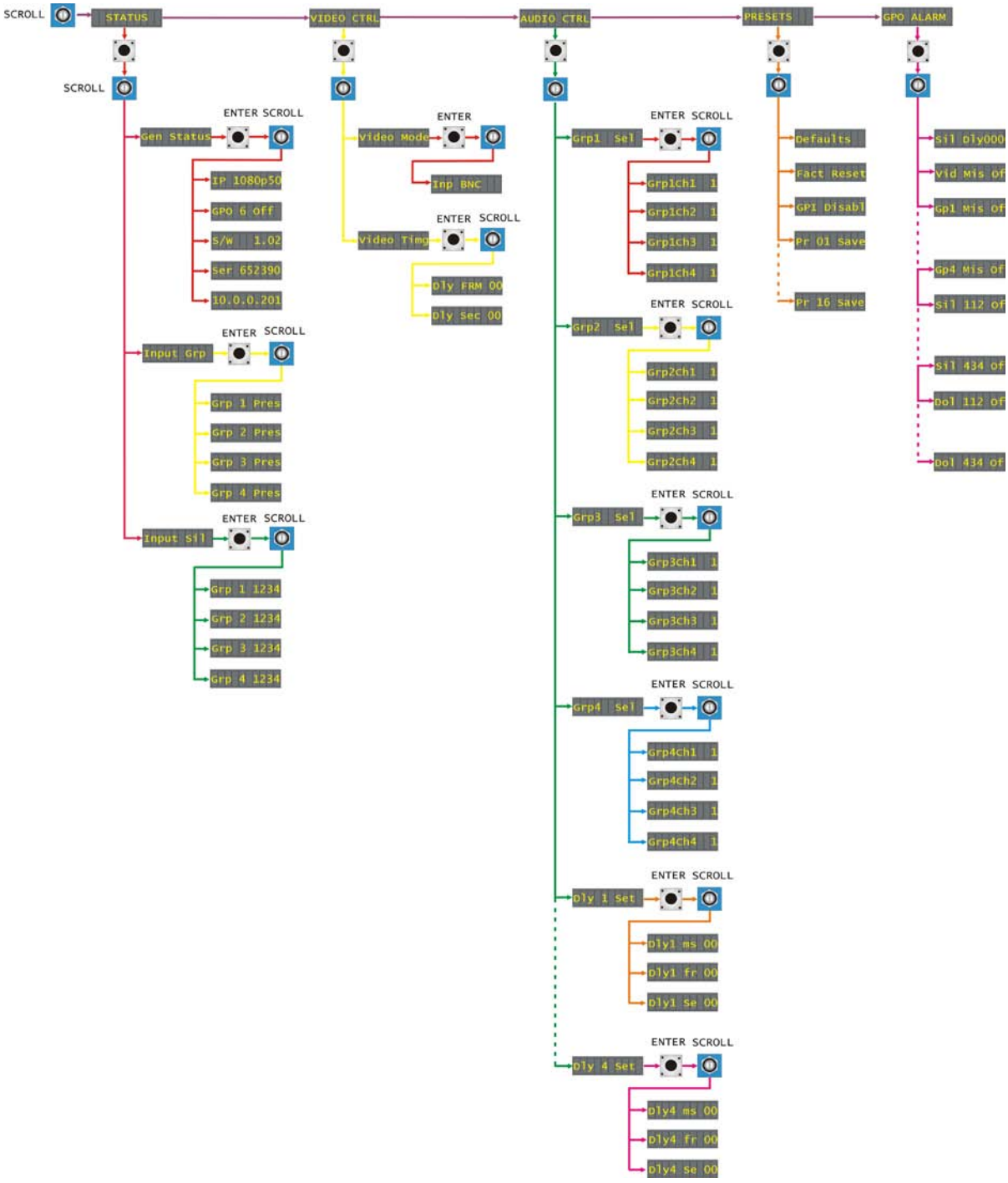
To access the card edge menu system proceed as follows:

- Press the up-arrow [^] until a top menu category is reached
- Rotate the SCROLL/ADJ control until the desired menu category is found
- Press ENTER to enter the sub menus of that category
- Rotate SCROLL/ADJ to select a sub menu
- Press ENTER to select the desired function. Selection will be indicated by the text being displayed in ***italic*** text
- Rotate ADJUST to make the desired change to the selected parameter. The display brightness flashes slowly to indicate that a change has been made and requires confirmation
- When required push ENTER to action the change. The display will cease flashing
- Use the up-arrow [^] and SCROLL/ADJ control to navigate to further menus

Note: The displayed menu brightness will flash slowly if confirmation of a change is required.

3.6 Card edge configuration

Menu tree

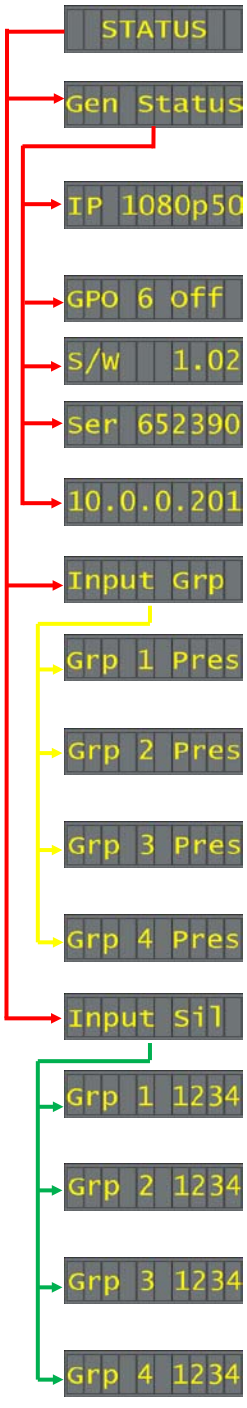


AVDELAY 3G Board edge menu structure

Tip: To reach the top menu push the ^ button repeatedly until a top menu is reached. Rotate the SCROLL/ADJ control anti-clockwise until the STATUS menu appears.

Status menus

From the STATUS top menu press ENTER then SCROLL/ADJ to access the five status sub menu options. These options are; General Status, Input Groups present, Output Groups present, Embedded Input channel silence and AES input silence. To enter a sub menu once selected press ENTER and use the SCROLL/ADJ/ADJ control to traverse the sub menu.



Menu		Comment
General Status		Press ENTER and rotate SCROLL/ADJ.
	Input present	The Input video standard is shown. ***Ip 1080p50/59/60, Ip 1080i50/59/60, Ip720p50/59/60, Ip 525, Ip 625, IP Missing, IP Not Sup.***
	GPO 6 status	GPO 6 Status. ***On, Off.***
	Board software	The version number of the currently installed software.
	Serial number	The electronically stored PCB serial number.
	IP address	AVDELAY 3G IP address. Note, the Ethernet connection is available on-board and is only used when updating the board software
Input Groups		Press ENTER and rotate SCROLL/ADJ.
	Audio Group 1	Input Video Embedded Audio Group 1 status ***Group 1 Present, Group 1 Missing.***
	Audio Group 2	Input Video Embedded Audio Group 2 status ***Group 2 Present, Group 2 Missing.***
	Audio Group 3	Input Video Embedded Audio Group 3 status ***Group 3 Present, Group 3 Missing.***
	Audio Group 4	Input Video Embedded Audio Group 4 status ***Group 4 Present, Group 4 Missing.***
Input Silence		Press ENTER and rotate SCROLL/ADJ.
	Audio Group 1	Input Video Embedded Audio Group 1 channel status ***1234, s=silent, m=missing, dd=dolby E***.
	Audio Group 2	Input Video Embedded Audio Group 2 channel status ***1234, s=silent, m=missing, dd=dolby E***.
	Audio Group 3	Input Video Embedded Audio Group 3 channel status ***1234, s=silent, m=missing, dd=dolby E***.
	Audio Group 4	Input Video Embedded Audio Group 4 channel status ***1234, s=silent, m=missing, dd=dolby E***.

Video controls

From the STATUS top menu rotate SCROLL/ADJ to select the Video control menu. Press ENTER and then rotate SCROLL/ADJ to access the two video control menu options. These options are; video mode and video timing. To enter a sub menu once selected press ENTER and use the SCROLL/ADJ control to traverse the sub menu.

	Menu	Comment
VIDEO CTRL		
Video Mode	**Video mode**	Press ENTER and rotate SCROLL/ADJ.
Inp BNC	Input select	Rotate the SCROLL/ADJ. control to show the frame delay control. Press ENTER and rotate SCROLL/ADJ. to select. ***BNC, Optical.***
Video Time	**Video timing**	Press ENTER and rotate SCROLL/ADJ.
Dly FRM 00	Video delay in frames	Rotate the SCROLL/ADJ. control to show the video delay in frames control. Press ENTER and rotate SCROLL/ADJ. to vary. ***0-30.***
Dly Sec 00	Video delay in seconds	Rotate the SCROLL/ADJ. control to show the video delay in seconds. Press ENTER and rotate SCROLL/ADJ. to vary. ***0-10.***

Input mode

The AVDELAY 3G has the option of either receiving an optical input or transmitting an optical output once the necessary SPF optical module has been fitted. If the optical receiver module is fitted the fibre optic I/O input select will allow the video input to be selected between the input BNC and the optical input.

Video timing controls

The video delay is a straight forward fixed bulk video delay that can be adjusted in whole-frame steps and seconds up to a maximum of 10 seconds depending on the video format.

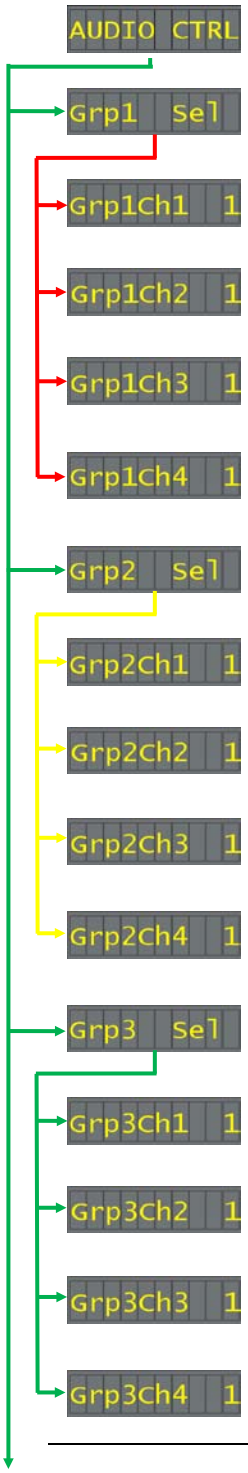
See the table in the Delay section of the Introduction for maximum delay per video format.

Note: The maximum delay will automatically limit to the maximum for any given video format.

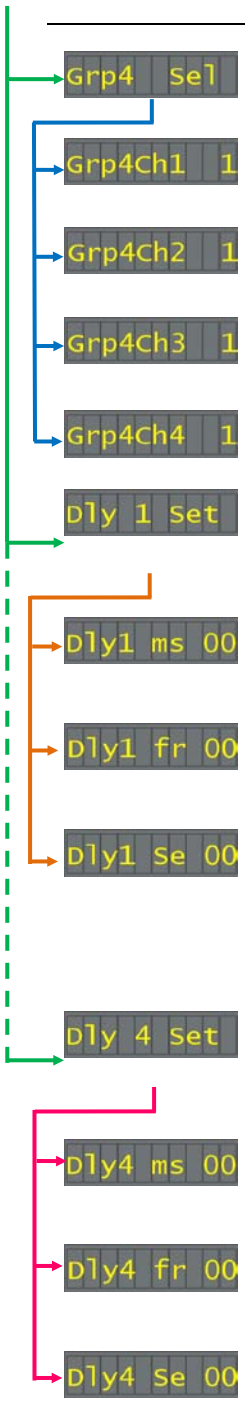
Audio Control menu

From the STATUS top menu rotate SCROLL/ADJ to select the Audio control menu. Press ENTER and then rotate SCROLL/ADJ to access the audio control menu options. To enter a sub menu once selected press ENTER and use the SCROLL/ADJ control to traverse the sub menu.

The audio control menu contains all of the delay controls.



Menu	Comment
Group 1 delay select	Press ENTER and rotate SCROLL/ADJ
Channel 1 delay group select	Rotate the SCROLL/ADJ. control to show the Group 1 Ch1 control. Press ENTER and rotate SCROLL/ADJ. to select. ***1, 2, 3, 4, By.***
Channel 2 delay group select	Rotate the SCROLL/ADJ. control to show the Group 1 Ch2 control. Press ENTER and rotate SCROLL/ADJ. to select. ***1, 2, 3, 4, By***
Channel 3 delay group select	Rotate the SCROLL/ADJ. control to show the Group 1 Ch3 control. Press ENTER and rotate SCROLL/ADJ. to select. ***1, 2, 3, 4, By***
Channel 4 delay group select	Rotate the SCROLL/ADJ. control to show the Group 1 Ch4 control. Press ENTER and rotate SCROLL/ADJ. to select. ***1, 2, 3, 4, By***
Group 2 delay select	Press ENTER and rotate SCROLL/ADJ
Channel 1 delay group select	Rotate the SCROLL/ADJ. control to show the Group 2 Ch1 control. Press ENTER and rotate SCROLL/ADJ. to select. ***1, 2, 3, 4, By.***
Channel 2 delay group select	Rotate the SCROLL/ADJ. control to show the Group 2 Ch2 control. Press ENTER and rotate SCROLL/ADJ. to select. ***1, 2, 3, 4, By***
Channel 3 delay group select	Rotate the SCROLL/ADJ. control to show the Group 2 Ch3 control. Press ENTER and rotate SCROLL/ADJ. to select. ***1, 2, 3, 4, By***
Channel 4 delay group select	Rotate the SCROLL/ADJ. control to show the Group 2 Ch4 control. Press ENTER and rotate SCROLL/ADJ. to select. ***1, 2, 3, 4, By***
Group 3 delay select	Press ENTER and rotate SCROLL/ADJ
Channel 1 delay group select	Rotate the SCROLL/ADJ. control to show the Group 3 Ch1 control. Press ENTER and rotate SCROLL/ADJ. to select. ***1, 2, 3, 4, By.***
Channel 2 delay group select	Rotate the SCROLL/ADJ. control to show the Group 3 Ch2 control. Press ENTER and rotate SCROLL/ADJ. to select. ***1, 2, 3, 4, By***
Channel 3 delay group select	Rotate the SCROLL/ADJ. control to show the Group 3 Ch3 control. Press ENTER and rotate SCROLL/ADJ. to select. ***1, 2, 3, 4, By***
Channel 4 delay group select	Rotate the SCROLL/ADJ. control to show the Group 3 Ch4 control. Press ENTER and rotate SCROLL/ADJ. to select. ***1, 2, 3, 4, By***



Group 4 delay select	Press ENTER and rotate SCROLL/ADJ
Channel 1 delay group select	Rotate the SCROLL/ADJ. control to show the Group 4 Ch1 control. Press ENTER and rotate SCROLL/ADJ. to select. ***1, 2, 3, 4, By.***
Channel 2 delay group select	Rotate the SCROLL/ADJ. control to show the Group 4 Ch2 control. Press ENTER and rotate SCROLL/ADJ. to select. ***1, 2, 3, 4, By***
Channel 3 delay group select	Rotate the SCROLL/ADJ. control to show the Group 4 Ch3 control. Press ENTER and rotate SCROLL/ADJ. to select. ***1, 2, 3, 4, By***
Channel 4 delay group select	Rotate the SCROLL/ADJ. control to show the Group 4 Ch4 control. Press ENTER and rotate SCROLL/ADJ. to select. ***1, 2, 3, 4, By***
Delay 1	Press ENTER and rotate SCROLL/ADJ
Delay 1 time in milliseconds	Rotate the SCROLL/ADJ. control to show the Delay 1 millisecond control. Press ENTER and rotate SCROLL/ADJ. to select. ***0-40 ms***
Delay 1 time in frames	Rotate the SCROLL/ADJ. control to show the Delay 1 frame control. Press ENTER and rotate SCROLL/ADJ. to select. ***0-30 frames***
Delay 1 time in seconds	Rotate the SCROLL/ADJ. control to show the Delay 1 second control. Press ENTER and rotate SCROLL/ADJ. to select. ***0-10 sec***
Delay 4	Press ENTER and rotate SCROLL/ADJ
Delay 4 time in milliseconds	Rotate the SCROLL/ADJ. control to show the Delay 1 millisecond control. Press ENTER and rotate SCROLL/ADJ. to select. ***0-40 ms***
Delay 4 time in frames	Rotate the SCROLL/ADJ. control to show the Delay 1 frame control. Press ENTER and rotate SCROLL/ADJ. to select. ***0-30 frames***
Delay 4 time in seconds	Rotate the SCROLL/ADJ. control to show the Delay 1 second control. Press ENTER and rotate SCROLL/ADJ. to select. ***0-10 sec***

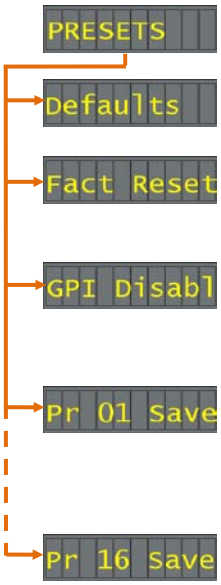
Audio controls

Any number of audio channels can be assigned to any of the four audio delays either separately or if desired all sixteen channels to a single delay. All four delays have their own delay controls giving the maximum flexibility when adjusting the audio and video sync.

Note: Both channels of a Dolby E signal must be assigned to the same delay.

Presets menu

From the STATUS top menu rotate SCROLL/ADJ to select the Presets menu. Press ENTER and then rotate SCROLL/ADJ to access the presets menu options. To enter a sub menu once selected press ENTER and use the SCROLL/ADJ control to traverse the sub menu.



Menu	Comment
Factory defaults	Rotate the SCROLL/ADJ. control to show the defaults menu. Press ENTER to action.
Factory reset	Rotate the SCROLL/ADJ. control to show the factory reset menu. Press ENTER to action.
Enable GPI control of presets	Selecting ENABLE allows the recall of previously saved user configurations via GPI inputs 1-4. ***Enable, Disable***
Preset location 1	Rotate the SCROLL/ADJ. control to show the preset save menu and select the chosen location 1-16. Press ENTER and rotate SCROLL/ADJ. to select SAVE or RECALL. Press ENTER to action a save or recall.
Preset location 16	

Preset menu and factory reset

Up to 16 user-defined configurations may be stored and recalled either from the board control, active front panel, Statesman or through the use of external GPIs. Presets store the board setup data including operating mode card status. The presets are numbered 1-16.

Note: Care should be taken when storing presets that the desired configuration is not changed by any external input prior to saving. When pasting a board setup from Statesman, GPI enable will be set to disabled.

Saving and recalling presets

The current board settings can be saved in one of 16 locations to be recalled as desired. This allows the user to store and recall up to 16 different configurations for later use.

To save the current settings, select the preset location and press ENTER. Select the save option and press ENTER to write the current settings into this location.

Note: If the selected location contains previously saved setting information it will be over-written by the new setting data.

To recall previously stored setting information, again choose the selected location and select recall, pressing ENTER will recall the stored configuration.

The recalling of previously stored presets can also be implemented externally via the GPI port. To use this facility, enable GPI control of presets.

Factory reset

The user has the choice of performing a total factory reset or a partial reset. Factory Reset will return all parameters to their factory default values and erase all user-stored configuration presets. Selecting the Defaults option will perform the same reset to factory defaults values but will leave any user-stored configurations unaffected.

Note: Factory reset will erase all user-stored presets

Parameter	Default value
Video delay controls	0
Video input select	BNC
Audio Controls	Delay 1
Audio delay	0
Selected Preset	1
GPI Enable	Disabled
GPO6 Alarms	Un-selected
Silence delay	0 seconds

GPI Alarms menu

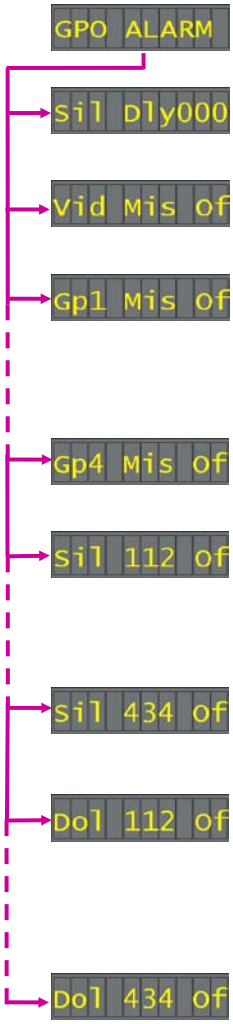
The GPO6 output is reserved for alarm indication and may have assigned any of the 21 video and audio alarms.

Any number of alarms may be assigned to the GPI output; video missing and input groups missing will assert an alarm immediately whereas the silence alarms can be assigned a delay timer to delay the time after which an alarm is asserted. This ability is especially useful to prevent false alarming during quiet periods in the audio.

Where more than one alarm is flagged and an alarm condition is asserted, use the various status indicators to determine the exact cause.

Visual indication of GPO6 status is provided on the board edge.

See Section 2.3 for further discussion of GPIs and pinout details.



Menu	Comment
Silence delay	Rotate the SCROLL/ADJ. control to show the silence delay control. Press ENTER and rotate SCROLL/ADJ. to vary. ***0-128 seconds.***
Input video present	Rotate the SCROLL/ADJ. control to show the video missing alarm. Press ENTER and rotate SCROLL/ADJ. to select. ***On, Off.***
Input audio group 1 missing	Rotate the SCROLL/ADJ. control to show the input audio groups missing alarms. ***Group 1, Group 2, Group 3, Group 4.*** Press ENTER and rotate SCROLL/ADJ. to select. ***On, Off.***
Input audio group 4 missing	
Group1 Ch1-2 silent	Rotate the SCROLL/ADJ. control to show the de-embedder channel silent alarms. ***Group 1 channel 1-2 to Group 4 channel 3-4.*** Press ENTER and rotate SCROLL/ADJ. to select. ***On, Off.***
Group4 Ch3-4 silent	
Dolby E on Input Gp1 Ch1-2 silent	Rotate the SCROLL/ADJ. control to show the Dolby E on the input group silent alarms. ***Group 1 channel 1-2 to Group 4 channel 3-4.*** Press ENTER and rotate SCROLL/ADJ. to select. ***On, Off.***
Dolby E on Input Gp4 Ch3-4 silent	

Note: With the silence delay control set to its minimum there will remain a small delay to prevent false triggering.

4 Using the front control panel

4.1 Module selected

This operational guide assumes that the panel has been set up according to the panel setup procedure described in the Crystal Vision Control Panel manual.

Note: It is **ESSENTIAL** that the panel set up procedure is followed and any old or unknown passwords cleared prior to using the panel for the first time.

At power up all eight control panel key LEDs will illuminate briefly. Once the panel has completed its power up and configuration sequence the panel will enter Statesman mode and the message 'Press Cal to Exit' will be displayed.

Statesman mode is entered by default

To continue with control panel operation or configuration, press the CAL key once. A second press of the CAL key will return to Statesman control.

The control panel will display the name of the card that first responds to the polling request together with its location number.

The location number consists of the frame number plus the card position in the frame.

Navigating the display

The functions assigned to control panel keys are:

- DEVICE – enters Device menu to select a card or show cards available/enters panel set up when held down during power up/shows frame status when pressed from Statesman mode
- CAL – enters or leaves Statesman mode/enters Panel Diagnostics mode when held down during power up/updates the display
- Asterisk – enters board rename menu from the Device menu
- F1 to F4 – soft keys, function assigned within each menu
- HOME – moves the display to the Home menu
- ENTER – accept current selection
- Upward arrow – used to move up the menu structure/enter lock panel menu from the Device menu

- Rotary control – shaft encoder used to select options or variable data

Note: Please refer to the Crystal Vision Control Panel manual for details of the Panel Setup, Lock Panel and Diagnostic menus.

Selecting a AVDELAY 3G

To select a particular card in a frame, press the DEVICE key to go to the Device menu.

Note: There may be a delay whilst the frame is interrogated during which time the 'No cards Found' could be displayed.

The top line of the display will show 'Available Cards X', where X is the number of cards that have responded so far to the polling request.

The available cards menu

Rotate the shaft encoder and the bottom row will display the successfully polled cards by name and location or slot number.

In the example above, the card displayed is located in the first frame in slot number 1.

When the desired card is selected press the ENTER key to access that card's HOME menu. The message shows that an AVDELAY 3G has been selected.

The AVDELAY 3G home menu

Updating the display

The values displayed on an active front panel are only updated when an adjustment is made and when changing menu level. If changes occur through the use of card edge controls or other remote control, the text displayed on the active front panel will not be updated immediately. If necessary, use the upward arrow to leave and then re-enter a menu to update the display.

4.2 The AVDELAY 3G active panel menu

At any time the main top-level menu (Home) is obtained by pressing the HOME key. From the Home menu further selections can be made. Active function keys are indicated by illuminated, integrated LEDs.

Rotating the SCROLL control will traverse the horizontal menus which can then be entered by pressing a function key. Once within a menu or sub menu the SCROLL control will take the user back down the menu.

Menu keys are illuminated when active and when further menus are available.

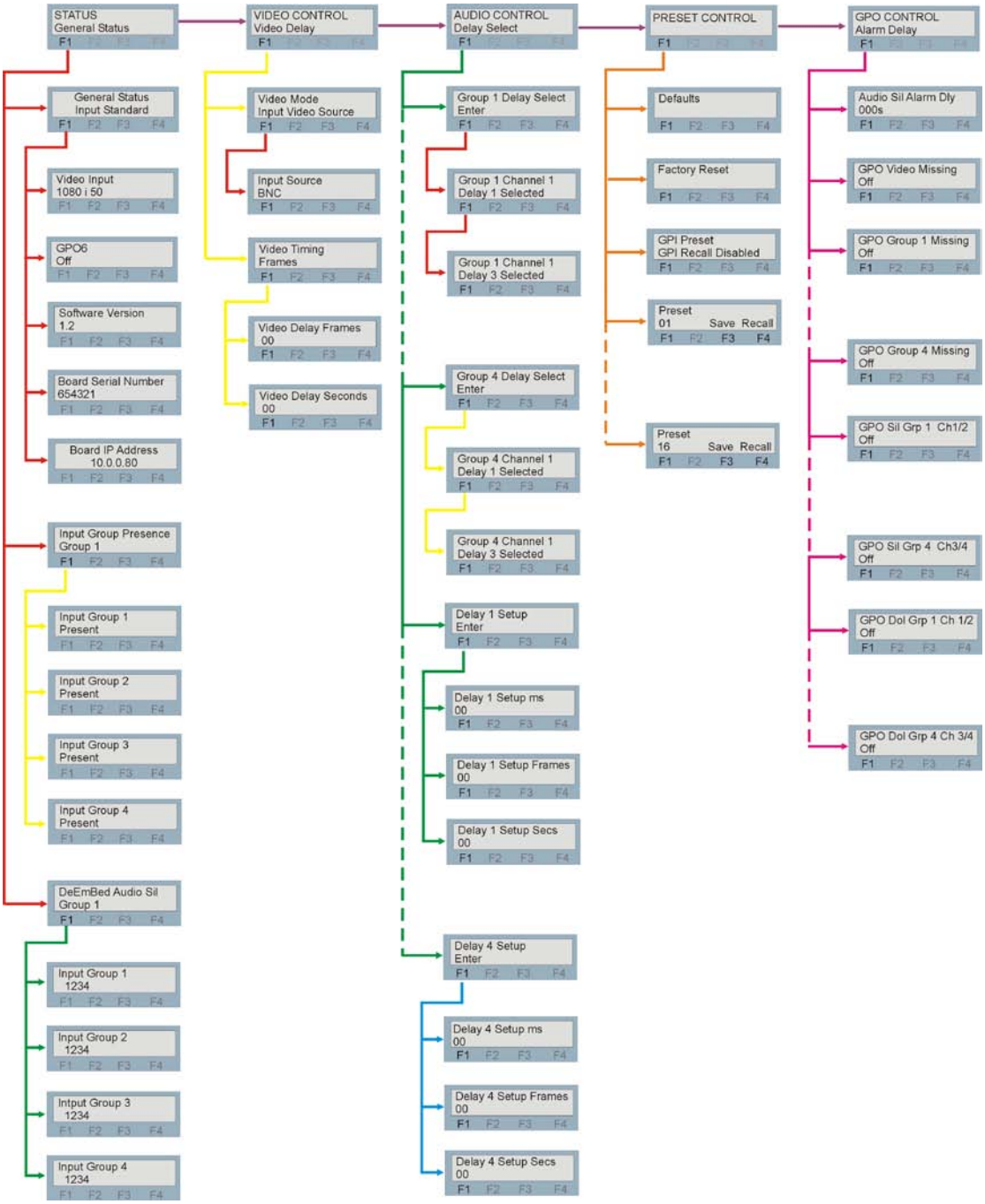
The top-level menus are:

- Status
    - General Status
    - Input Group Presence
    - De Embedder Audio Silence
- Video Control
    - Video Mode
    - Video Timing
- Audio Control
    - Delay Select
- Preset Control
- GPO Control

When a sub menu has been selected, further options may be obtained by using the Shaft control to SCROLL/ADJ through them. Once the desired option has been located a selection or value change can be made by either toggling the appropriate function key or by selecting and using the shaft control to alter a numerical value. A configuration change or value will be activated as the shaft control is rotated or function button is toggled. The following chart shows the available AVDELAY 3G menus.

The actual menus available may vary slightly as software is updated.

Active control panel menus

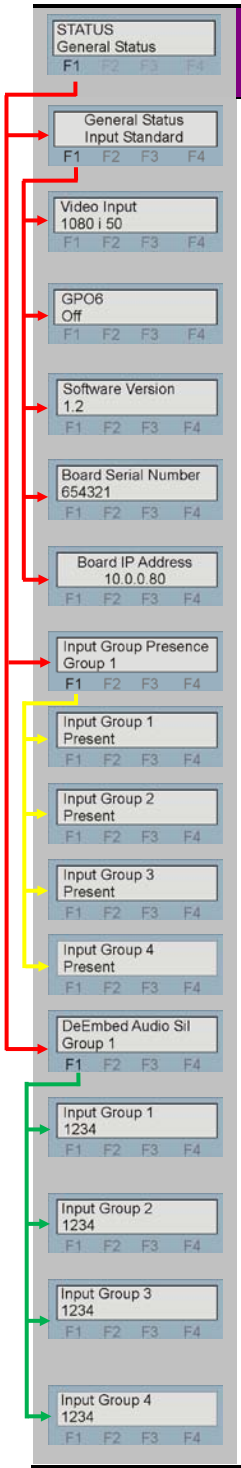


Note: Function key LEDs are illuminated when active.

The Status menu

From the STATUS top menu press F1 then SCROLL/ADJ to access the three status sub menu options. These options are; General Status, Input Groups present and DeEmbedded Audio silence. To enter a sub menu once selected press F1, then use the SCROLL/ADJ/ADJ control to traverse the sub menu.

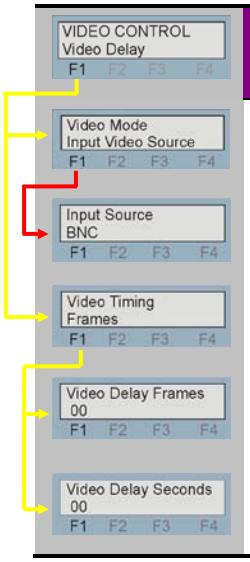
Note: No changes can be made from this read only menu. Not all status information will be updated in real time. If necessary press the * button to cause the display to update.



Menu	Description
General Status	Rotate the shaft control and press F1.
Input present	Rotate the shaft control to view the Input video standard is shown. ***Ip 1080p50/59/60, Ip 1080i50/59/60, Ip720p50/59/60, Ip 525, Ip 625, IP Missing, IP Not Supported.***
GPO 6 status	Rotate the shaft control to view the GPO 6 status. ***On, Off.***
Board software	Rotate the shaft control to view currently installed software version
Serial number	Rotate the shaft control to view the electronically stored PCB serial number
IP address	Rotate the shaft control to view the AV DELAY 3G IP address. **Note:** the Ethernet connection is available on-board and is only used when updating the board software.
Input Groups	Rotate the shaft control and press F1.
Input Group 1 audio	Rotate the shaft control to view the input audio group 1 status ***Present, Missing.***
Input Group 2 audio	Rotate the shaft control to view the input audio group 2 status ***Present, Missing.***
Input Group 3 audio	Rotate the shaft control to view the input audio group 3 status ***Present, Missing.***
Input Group 4 audio	Rotate the shaft control to view the input audio group 4 status ***Present, Missing.***
De-embedder audio silence	Rotate the shaft control and press F1.
De-embedder Group 1 audio channel silence	Rotate the shaft control to view de-embedder group 1 channel status. ***1234***=channel not silent, ***s***=silent, ***m***=missing, ***dd***= Dolby E present.
De-embedder Group 2 audio channel silence	Rotate the shaft control to view de-embedder group 2 channel status. ***1234***=channel not silent, ***s***=silen***t***, ***m***=missing, ***dd***= Dolby E present.
De-embedder Group 3 audio channel silence	Rotate the shaft control to view de-embedder group 3 channel status. ***1234***=channel not silent, ***s***=silent, ***m***=missing, ***dd***= Dolby E present.
De-embedder Group 4 audio channel silence	Rotate the shaft control to view de-embedder group 4 channel status. ***1234***=channel not silent, ***s***=silent, ***m***=missing, ***dd***= Dolby E present.

Video control menu

From the STATUS top menu, rotate shaft control to select the Video control menu. Press F1 and then rotate the shaft control to access the two video control menu options. These options are: - video time, video gain and optical input selection. To enter a sub menu once selected, press F1 and use the shaft control to traverse the sub menu.



Menu	Description
Video source	Rotate the shaft control and press F1.
Video input source	Rotate the shaft control to view the video input source. Press F1 and rotate the shaft control to select. ***BNC, Optical.***
Video Timing	Rotate the shaft control and press F1.
Video delay in Frames	Rotate the shaft control to view the video timing in frames. Press F1 and rotate the shaft control to adjust. ***0-30.***
Video delay in Seconds	Rotate the shaft control to view the video timing in seconds. Press F1 and rotate the shaft control to adjust. ***0-10.***

Input mode

The AVDELAY 3G has the option of either receiving an optical input or transmitting an optical output once the necessary SPF optical module has been fitted. If the optical receiver module is fitted the fibre optic I/O input select will allow the video input to be selected between the input BNC and the optical input.

Video timing controls

The video delay is a straight forward fixed bulk video delay that can be adjusted in whole-frame steps and seconds up to a maximum of 10 seconds depending on the video format.

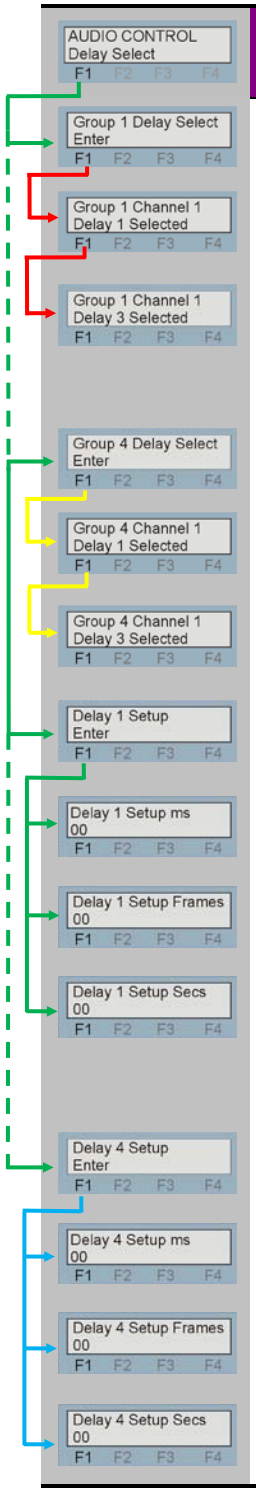
See the table in the Delay section of the Introduction for maximum delay per video format.

Note: The maximum delay will automatically limit to the maximum for any given video format.

Audio controls

From the STATUS top menu, rotate shaft control to select the Audio control menu. Press F1 and then rotate shaft control access the audio control sub menu options. To enter a sub menu once selected press F1, use the shaft control to traverse that sub menu.

The audio control menu contains the Delay selection and Delay length controls.



Menu	Description
Group 1 delay selection	
Group 1 channel selection	
Group 1 delay selection	Rotate the shaft control to view audio group 1-4 channel selection. Press F1 and rotate the shaft control to select. ***Channel 1, Channel 2, Channel 3, Channel 4.*** Press F1 to fix and enter delay selection and rotate shaft control to select delay. ***Delay 1 Selected, Delay 2 Selected, Delay 3 Selected, Delay 4 Selected, Bypass.***
Group 4 delay selection	
Group 4 channel selection	
Group 4 delay selection	
Delay 1 setup	
Delay 1 setup in milliseconds	
Delay 1 setup in frames	
Delay 1 setup in seconds	Rotate the shaft control to view delay 1-4. Press F1 and rotate the shaft control to select milliseconds, Frame, Seconds. Press F1 and rotate the shaft control to set the delay time. ***0-40 milliseconds, 0-30 Frames, 0-10 Seconds***
Delay 4 setup	
Delay 4 setup in milliseconds	
Delay 4 setup in frames	
Delay 4 setup in seconds	

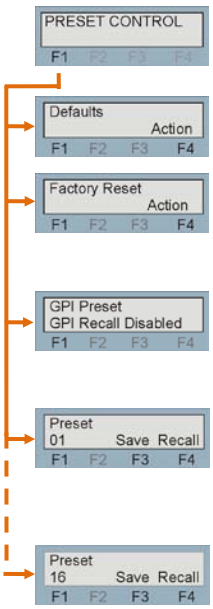
Audio controls

Any number of audio channels can be assigned to any of the four audio delays either separately or if desired all sixteen channels to a single delay. All four delays have their own delay controls giving the maximum flexibility when adjusting the audio and video sync.

Note: Both channels of a Dolby E signal must be assigned to the same delay.

Preset controls

From the STATUS top menu rotate the shaft control to select the Presets menu. Press F1 and then rotate the shaft control to access the presets menu options. To enter a sub menu once selected press ENTER and use the shaft control to traverse the sub menu.



Menu	Comment
Factory defaults	Rotate the shaft control to show the defaults menu. Press F1 to select and press F4 to action.
Factory reset	Rotate the shaft control to show the factory reset menu. Press F1 to select and press F4 to action.
Enable GPI control of presets	Rotate the shaft control to show the GPI preset control. Press F1 and rotate the shaft control to select. ***Enable, Disable*** Selecting enable allows the recall of previously saved user configurations via GPI inputs 1-4.
Preset location 1	Rotate the shaft control to show the preset save/recall menu. Press F1 and rotate the shaft control to select the chosen location 1-16. Press F1 to enter menu and press F3 to save the current configuration. Press F4 to recall a previously saved board configuration.
Preset location 16	

Preset menu and factory reset

Up to 16-user defined configurations may be stored and recalled either from the board control, active front panel, Statesman or through the use of external GPIs. Presets store the board setup data including operating mode card status. The presets are numbered 1-16.

Note: Care should be taken when storing presets that the desired configuration is not changed by any external input prior to saving.
When pasting a board setup from Statesman, GPI enable will be set to disabled.

Saving and recalling presets

The current board settings can be saved in one of 16 locations to be recalled as desired. This allows the user to store and recall up to 16 different configurations for later use.

To save the current settings, select the preset location and press ENTER. Select the save option and press ENTER to write the current settings into this location.

Note: If the selected location contains previously saved setting information it will be over-written by the new setting data.

To recall previously stored setting information, again choose the selected location and select recall, pressing ENTER will recall the stored configuration.

The recalling of previously stored presets can also be implemented externally via the GPI port. To use this facility, enable GPI control of presets.

Factory reset

The user has the choice of performing a total factory reset or a partial reset. Factory Reset will return all parameters to their factory default values and erase all user stored configuration presets. Selecting the Defaults option will perform the same reset to factory defaults values but will leave any user stored configurations unaffected.

Note: Factory reset will erase all user stored presets

Parameter	Default value
Video delay controls	0
Video input select	BNC
Audio Controls	Delay 1
Audio delay	0
Selected Preset	1
GPI Enable	Disabled
GPO6 Alarms	Un-selected
Silence delay	0 seconds

GPO Alarms menu

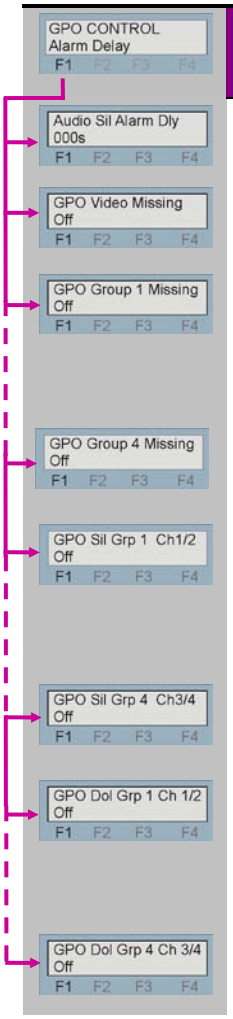
The GPO6 output is reserved for alarm indication and may have assigned any of the 21 video and audio alarms.

Any number of alarms may be assigned to the GPI output; video missing and input groups missing will assert an alarm immediately whereas the silence alarms can be assigned a delay timer to delay the time after which an alarm is asserted. This ability is especially useful to prevent false alarming during quiet periods in the audio.

Where more than one alarm is flagged and an alarm condition is asserted, use the various status indicators to determine the exact cause.

Visual indication of GPO6 status is provided on the board edge.

See Section 2.3 for further discussion of GPIs and pinout details.



Menu	Description
Silence delay	Rotate the shaft control to show the silence delay control. Press F1 and rotate the shaft control to vary. ***0-128 seconds.***
Input video present	Rotate the shaft control to show the video missing menu. Press F1 and rotate the shaft control to select. ***On, Off.***
Input audio group 1 missing Input audio group 4 missing	Rotate the shaft control to show the input audio groups missing alarms. ***Group 1, Group 2, Group 3, Group 4.*** Press F1 and rotate shaft control to select. ***On, Off.***
De-embedder Grp1 Ch1-2 silent De-embedder Grp4 Ch3-4 silent	Rotate the shaft control to show the de-embedder channel silent alarms. ***Group 1 channel 1-2 to Group 4 channel 3-4.*** Press F1 and rotate shaft control to select. ***On, Off.***
Dolby E on de-embedder Gp1 Ch1-2 silent Dolby E on de-embedder Gp4 Ch3-4 silent	Rotate the shaft control to show the Dolby E on the input group silent alarms. ***Group 1 channel 1-2 to Group 4 channel 3-4.*** Press F1 and rotate shaft control to select. ***On, Off***

Note: With the silence delay control set to its minimum there will remain a small delay to prevent false triggering.

5 Statesman

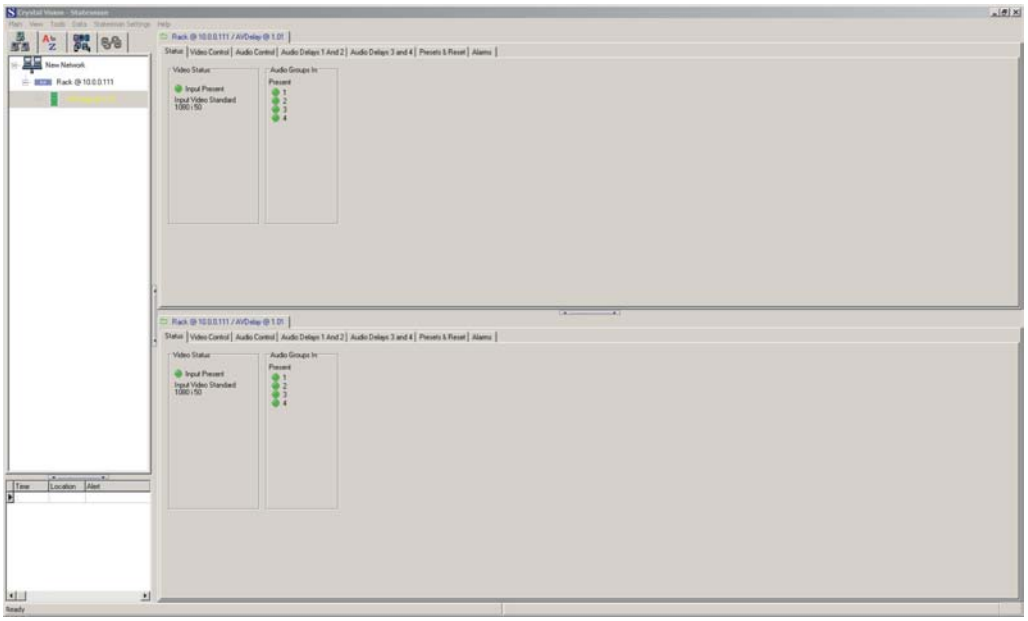
5.1 Statesman introduction

The Crystal Vision Statesman PC control software is designed to control a range of Crystal Vision modules via serial control from a PC. Statesman provides a user friendly means of configuring and operating Crystal Vision modules with the benefit of “see-at-a-glance” status monitoring.

The main Statesman application communicates with each module in a frame through a Statesman capable or active control panel. An active panel or REMIND remote control panel must be fitted to allow Statesman control.

5.2 Statesman operation

The initial view will show an Explorer style view of the connected frames and modules. Double clicking on a module will enable the display of the main application menus.



Statesman main application window

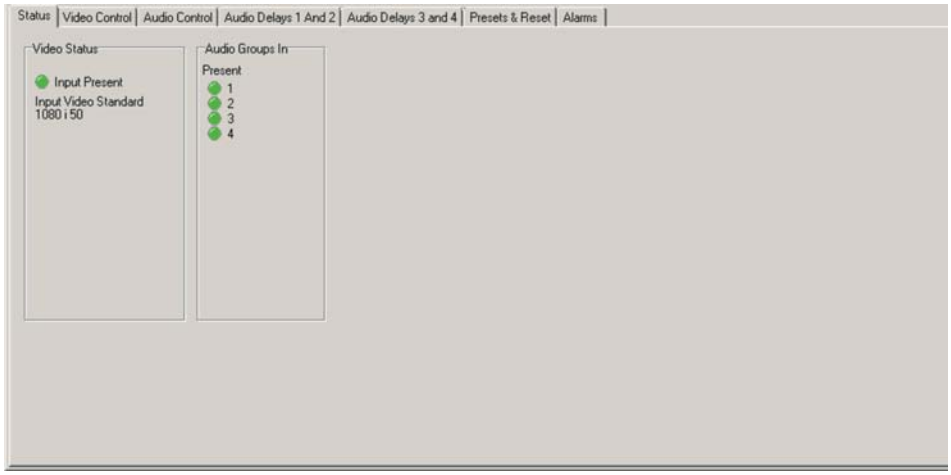
The two large control panes shown in the upper and lower halves of the window may display different menus for the same card, or controls for different cards. Click on the horizontal button-bar between the two panes to close the lower pane or drag the button to vary the size of the panes.

Note: For further details of Statesman configuration and operation please refer to the Statesman manual.

Status

The board status is shown using a mixture of simulated LEDs and text information. As a general rule a green LED shows a good condition such as input present. An amber LED will give a warning as with video black or video frozen. If a LED turns red this is a fault condition so input present will turn red if the input should go away. A greyed LED will indicate an absence such as non-alarm or non-warning status.

Text is used where more information is required than can be inferred by a simple LED such as video standards.



Status monitoring

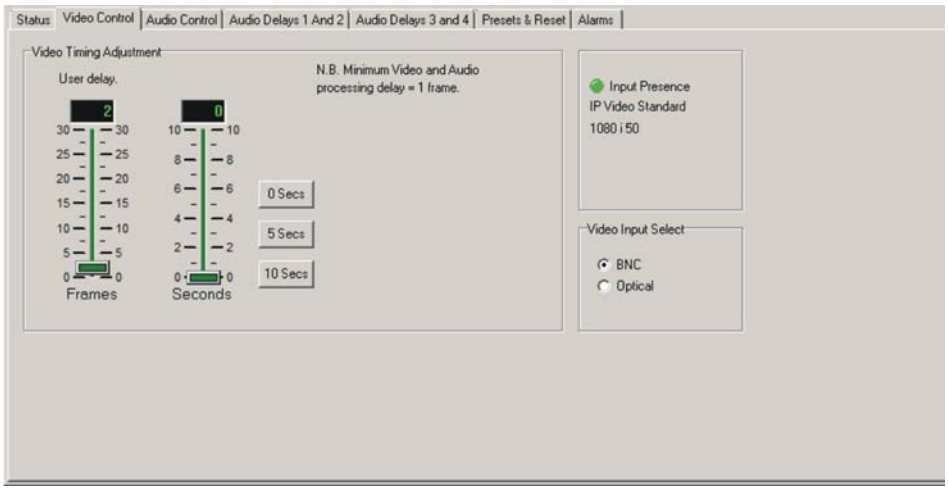
Input Video and audio status

Input present is indicated by a simulated LED, green will indicate that the input is present, red for no input. The video standard of the incoming video is also given in text.

Audio present on the input video and output video is indicated by green LEDs, one for each of the four available audio groups. Should an audio group be missing the corresponding LED will be greyed out.

Video Control

The video control tab contains the various controls associated with the board mode and video timing. Basic status information is also repeated here.



Video controls

Input mode

The AVDELAY 3G has the option of either receiving an optical input or transmitting an optical output once the necessary SPF optical module has been fitted. If the optical receiver module is fitted the fibre optic I/O input select will allow the video input to be selected between the input BNC and the optical input.

Video timing controls

The video delay is a straight forward fixed bulk video delay that can be adjusted in whole-frame steps and seconds up to a maximum of 10 seconds depending on the video format. The actual delay available using three preset buttons will be similarly affected by the video format.

See the table in the Delay section of the Introduction for maximum delay per video format.

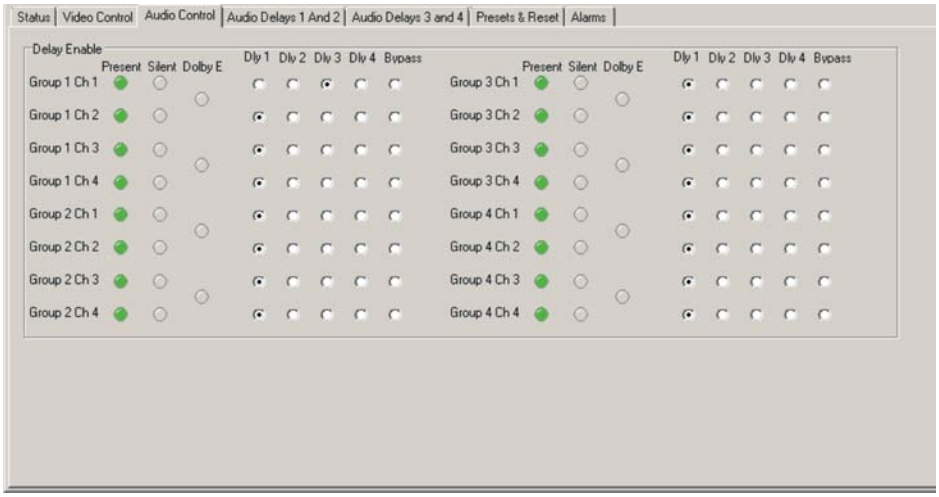
Note: The maximum delay will automatically limit to the maximum for any given video format.

Audio controls

The audio input tab is where the audio delay assignment controls are located. In this menu simulated LEDs are used to indicate audio present on the sixteen audio channels embedded in the incoming video stream. Further LEDs are used to indicate whether any of the channels are silent or contain Dolby E.

Any number of audio channels can be assigned to any of the four audio delays either separately or if desired all sixteen channels to a single delay by checking the appropriate radio buttons.

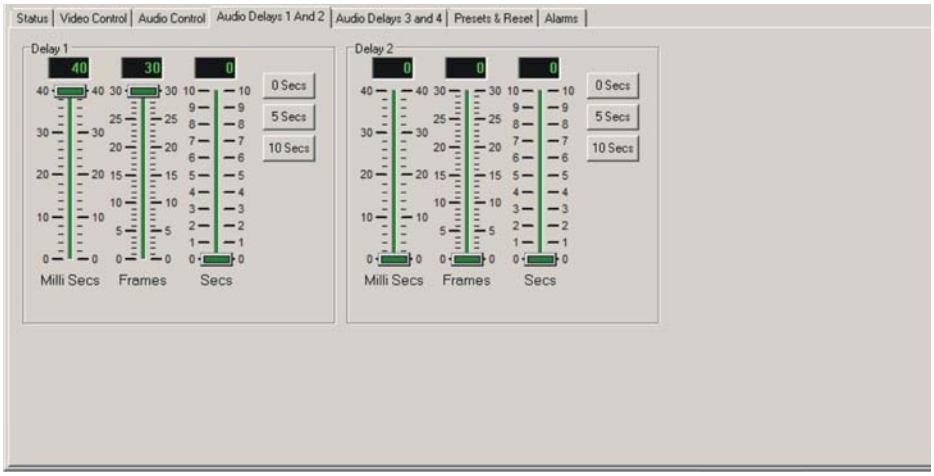
Note: Both channels of a Dolby E signal must be assigned to the same delay.

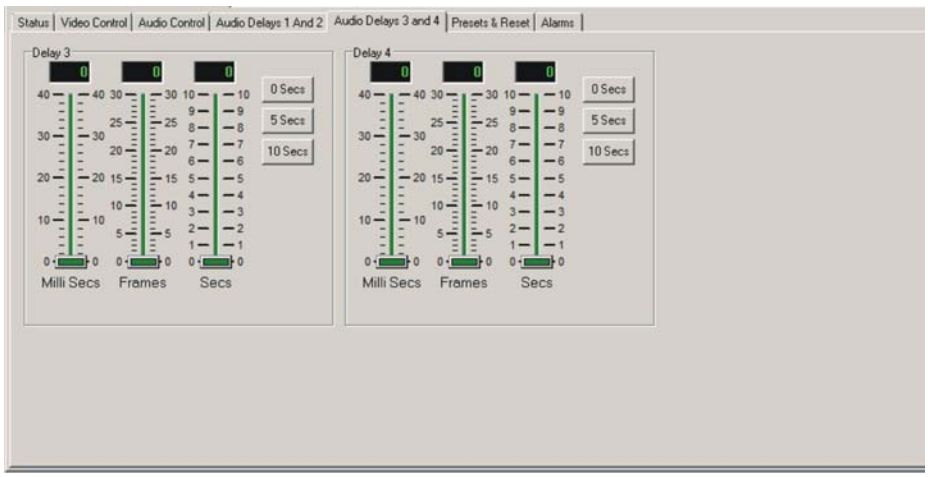


Audio input

Audio delay

The four audio delays have their own individual sets of adjustments. Alongside the slider controls are three preset buttons which can be used to apply a quick jump delay.

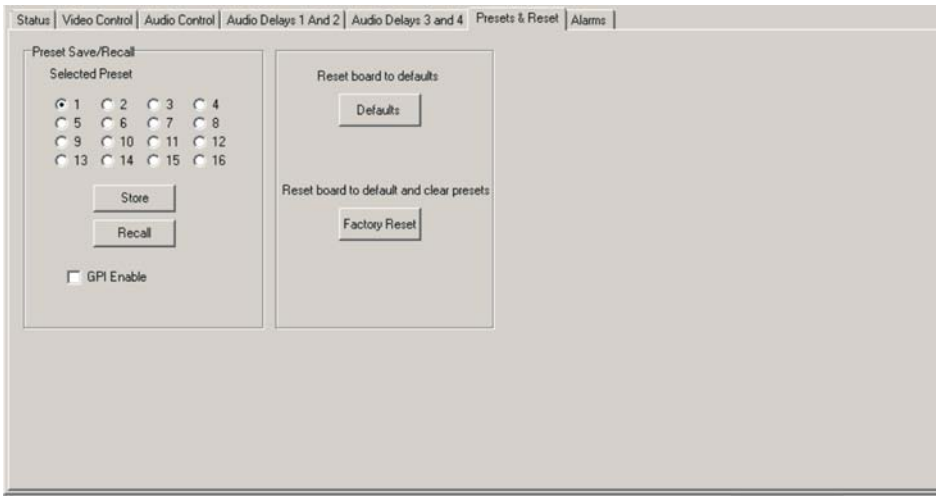




Audio Delays settings

Presets and factory reset

Up to 16 user-defined configurations may be stored and recalled either from the board control, active front panel, Statesman or through the use of external GPIs. Presets store the board setup data including operating mode card status. The presets are numbered 1-16.



Preset and factory reset

Note: Care should be taken when storing presets that the desired configuration is not changed by any external input prior to saving.

Saving and recalling presets

The current board settings can be saved in one of 16 locations to be recalled as desired. This allows the user to store and recall up to 16 different configurations for later use.

To save the current settings, select the preset location and press enter. This will write the current settings into this location.

Note: If the selected location contains previously saved setting information it will be over-written by the new setting data.
When pasting a board setup from Statesman, GPI enable will be set to disabled.

To recall previously stored setting information, again choose the selected location and press enter to recall the stored configuration. The recalling of previously stored presets can also be implemented externally via the GPI port. To sanction this facility, enable the GPI controls preset recall box.

Factory reset

The user has the choice of performing a total factory reset or a partial reset. Factory Reset will return all parameters to their factory default values and erase all user-stored configuration presets. Selecting the Defaults option will perform the same reset to factory defaults values but will leave any user-stored configurations unaffected.

Note: Factory reset will erase all user-stored presets

Parameter	Default value
Video delay controls	0
Video input select	BNC
Audio Controls	Delay 1
Audio delay	0
Selected Preset	1
GPI Enable	Disabled
GPO6 Alarms	Un-selected
Silence delay	0 seconds

Alarms

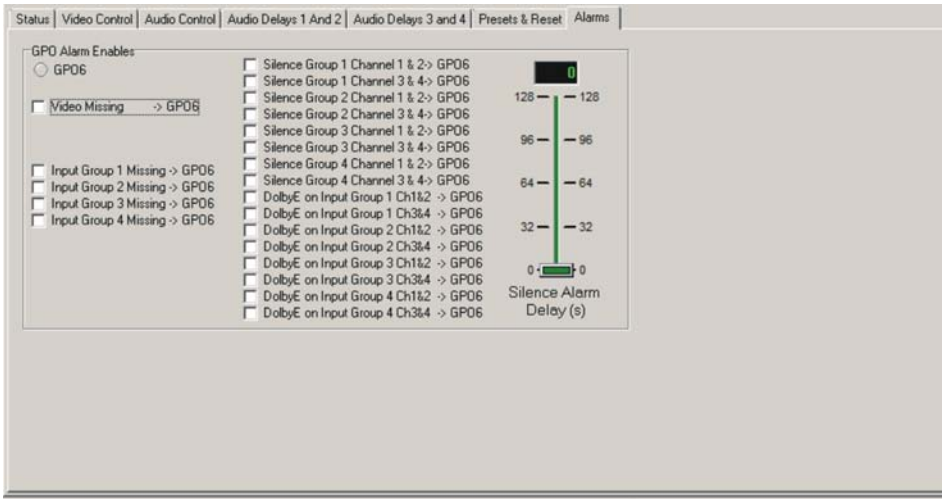
The GPO6 output is reserved for alarm indication and may have assigned any of the 21 video and audio alarms.

Any number of alarms may be assigned to the GPI output, video missing and input groups missing will assert an alarm immediately whereas the silence alarms can be assigned a delay time to delay the time after which an alarm is asserted. This ability is especially useful to prevent false alarming during quiet periods in the audio.

Where more than one alarm is flagged and an alarm condition is asserted, use the various status indicators to determine the exact cause.

Visual indication of GPO6 status is provided on the board edge.

See Section 2.3 for further discussion of GPIs and pinout details.



Alarms

6 Trouble shooting

Card edge monitoring

The front edge of the card provides useful power rail monitoring, input status, vertical filter and analogue output format.

AVDELAY 3G front edge view

The following table summarises the card edge LED functions and colours:

Name	LED Colour	Function when ON	Function when Off
PSU	Green	Good power supply (PSU) rails	One or more of the monitor supplies is out of specification
	Yellow		
HD	Yellow	Video input standard is HD (High Definition)	Input not present
SD	Yellow	Video input standard is SD (Standard Definition)	
G1	Yellow	Audio Group 1 present	Audio Group 1 not present
G2	Yellow	Audio Group 2 present	Audio Group 2 not present
G3	Yellow	Audio Group 3 present	Audio Group 3 not present
G4	Yellow	Audio Group 4 present	Audio Group 4 not present
	Yellow		
GPO6	Yellow	GPO6 active / low	GPO6 inactive / high

The card edge LEDs and 10-digit display may be used in conjunction with status information from any connected remote status panel display or from Statesman if available.

Basic fault finding guide

The Power OK LEDs are not illuminated

Check that the frame PSU is functioning – refer to the appropriate frame manual for detailed information

There is no video output

Check that a valid SDI input is present and that any cabling is intact

The video output exhibits jitter

Check that the input SDI stability is within normal limits

The card no longer responds to card edge or front panel control

Check that the card is seated correctly and that the Power OK LEDs are lit

Check any active control panel cabling

Check if the control panel can control another card in the same rack

If necessary re-set the card

Re-setting the card

If required, the card may be reset by removing the card from the rack and then re-inserting it

It is safe to re-insert the card whilst the rack is powered. Any previous configuration will be retained, use a factory reset to erase any configurations stored in the card.

7 Specification

General

Dimensions	100mm x 266mm module with DIN 41612 connector.
Weight	200g.
Power consumption	AVDELAY 3G - 11 Watts. FIP - 0.6 Watts. FOP - 0.6 Watts.

Inputs

Video	HD or SD SDI 270Mb/s to 2.970Gb/s serial digital compliant to EBU 3267-E, SMPTE-259M, SMPTE-292M and SMPTE-424M. Cable equalisation; 3G (2.970Gb/s) – 80 metres, Belden 1694 or equivalent. HD (1.485Gb/s) – 140 metres, Belden 1694 or equivalent. SD (270Mb/s) >250 metres, Belden 8281 or equivalent. Automatic de-embedding to SMPTE 272M or SMPTE 299M
Video standards supported	1080p 50/59.94, 1080i 50/59.94, 720p 50/59.94, PAL, NTSC. Input format auto selected.
Return loss	50Mhz to 1.5GHz -15dB, 1.5GHz to 2.97GHz -10dB.
Audio	Four groups of embedded audio.

Outputs

Video	Serial output: 270Mbit to 2.970Gbit serial compliant to EBU 3267-E, SMPTE 259M, SMPTE 292M and SMPTE 424M Output follows the input format Audio is embedded to SMPTE 272M or SMPTE 299M
RM62	Two video outputs and an optical I/O (no external audio connection)
Audio Delay	10.91 seconds max
Video Delay	Adjustable format dependant. Maximum 10 seconds (SD)
Audio protection	Full support for data recovery using SMPTE 299M error correction codes A variety of sophisticated techniques are employed to protect and minimise the effects of cuts to untimed and asynchronous SDI
Auxiliary data	Auxiliary data passed unless set to blank

Status monitoring

LEDs	Front of card edge LED indicators to indicate:
	PSU rails present
	SDI input HD/SD Input audio groups present
	GPI Out 6 active

GPI inputs

Number and type:	4 x GPI inputs. Recall of presets
	Active pull to ground, pulled up to +5V through 7kOhm

GPI outputs

Number and type:	1 x GPI output, selectable from loss of input, audio missing, audio channel silence.
	Electrically: Open collector transistors 30V, 270Ohm current limit resistors. Pulled up to +5V through 7kOhm

Input fail output

Type:	Delay Then Blue.

Control

Local	Intuitive board edge interface with two select buttons, shaft encoder and 10 character alphanumeric display
	All functions available from board edge
Remote	RS422/485
	19200 baud, 8 bits, 1 stop no parity
	Control from frame active front panel and remote panel
	Statesman allows control from any PC on a network
	All functions available from Statesman. All main functions available from frame active front panel and remote panel
	SNMP control and monitoring via frame CPU and Ethernet connection