ViViD 3GT-20

3G/HD/SD variable video delay which passes timecode without delay

Crystal Vision

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Revision 1	Added note about removal of card edge control in 2019.	20/01/21

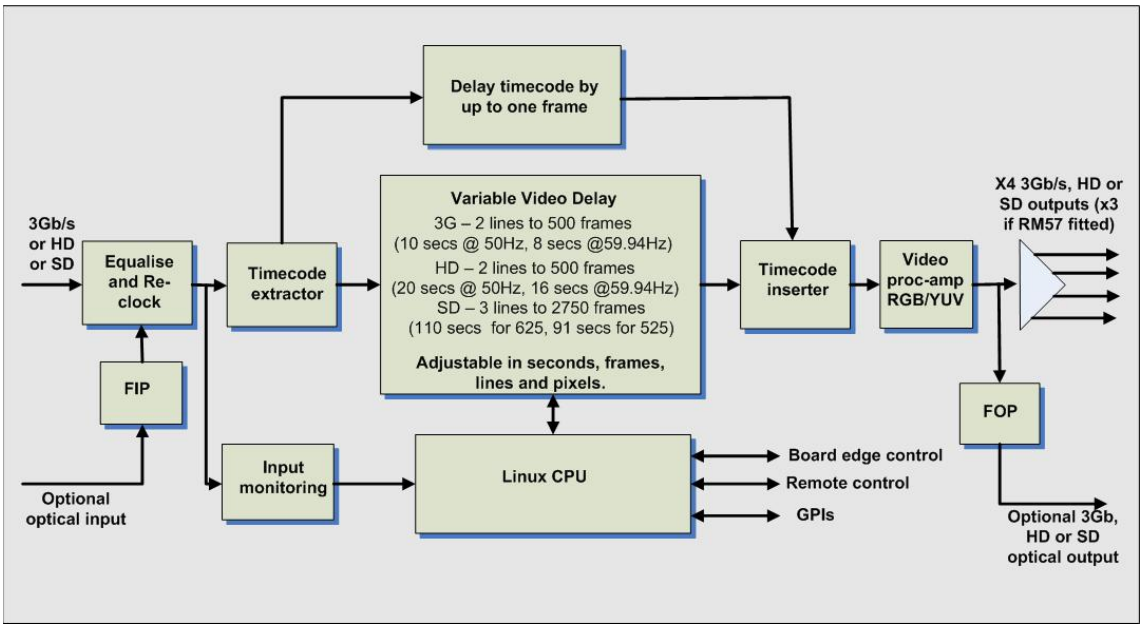
1 Introduction

ViViD 3GT-20 is a 3Gb/s-compatible variable video delay. The maximum delays possible are ten seconds for 3Gb/s, 20 seconds for HD and 110 seconds for SD signals. Delays are adjustable in seconds,frames, lines and pixels for precise matching of system delays. The pass-through delay for ancillary timecode (ATC) or VITC can be set to match the video signal or set to a minimum value to effectively advance timecode with respect to the video.

The main features are as follows:

- **Use with any source – works with 3Gb/s, HD and SD.**
- **Supports the following video standards:** 625, 525, 720p50, 720p59, 1080i50, 1080i59.
- **Optimise the video:** video proc-amp allows adjustment of video gain, black level and independent YUV gains.
- **Multiple video outputs** – Four delayed outputs save the need for an additional DA.
- **Control** of ViViD 3GT-20 is most easily achieved with VisionWeb PC software but also by an active front panel on the frame, a remote panel and SNMP. Board edge control was also available prior to 2019.
- **Optical connectivity** – send signal beyond the local equipment bay with the fibre input and output options.
- **GPI control** – 16 presets allow different delay values to be assigned then recalled automatically by GPI.
- **HANC and VANC** blanking option.
- **EDH** insertion.
- **Supports rear module connectors:** RM41, RM57, RM67.
- **Compatible** with Crystal Vision standard frames available in 2U, 1U and desk top box.
- **Passes** all timecode, AFD, subtitling information, Dolby E metadata and embedded audio.
- **Timecode pass-through delay** can follow video or be set to minimum.
- **Freeze output** – Force output to freeze or produce black, blue or bars manually, or automatically if input video lost.
- **GPI Output Alarms** – Two output alarms if input video is missing, black or frozen.

Block diagram



ViViD 3GT-20 Functional Block Diagram

Input video from either the BNC input or the (optional) optical input is equalised and then re-clocked. The video signal is passed to a delay line whose length is adjustable in seconds, frames, line and pixel increments under control of the CPU. Following the delay line is the timecode reinserter where previously extracted ATC packets or VITC data is added to the video before the proc-amp where lift and gain can be applied to the video components in the YUV or RGB domain. Finally, depending on the rear module fitted, the video is output to the rear modules as either four BNC or three BNC and one optical output.

Video delays in ViViD 3GT-20

3GT-20	Video Format		
	3Gb/s	HD	SD
Delay Range in lines and frames.	2 lines->500 frames	2 lines->500 frames	3 lines->2750 frames
Max. Delay in Secs.	10 secs @ 50Hz 8 secs @ 59.94Hz	20 secs @ 50Hz 16 secs @ 59.94Hz	110 secs @ 625 line 91 secs @ 525 line

Video Delays for ViViD 3GT-20

Timecode delay

The timecode delay through a ViVid 3GT-20 is set by the 'Timecode Delay Mode' control (see *Timecode Delay* in section *Control Descriptions*) to be either the same as the video signal or to a minimum value.

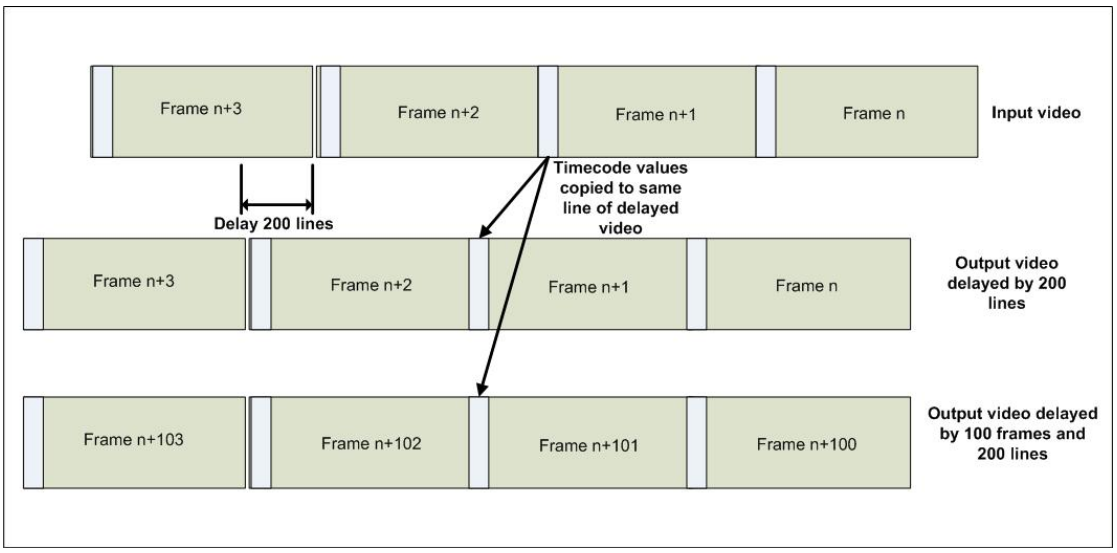
When set to '**Follow Video Delay**' the timecode data remains encoded within the video signal and passes through the video delay line to the video output with exactly the same delay.

When set to '**Minimum Delay**' timecode data is extracted from the incoming video signal to bypass the video delay. A separate timecode delay is used to delay the timecode by the minimum amount necessary for it to be reinserted into the delayed video on the same line from where it was extracted.

The amount of timecode delay to achieve this depends on the amount of video delay selected. The longer the video delay then the longer the timecode delay must be to reinsert timecode into the original line. Timecode delay can be increased to a maximum of one frame after which the delay reverts to zero and timecode is reinserted into the original line but of the previous frame. At the video output the reinserted timecode values will be effectively advanced by one frame for every frame of video delay. In this way down-stream equipment will see the timecode value for a event prior to the video image.

The precise amount of timecode delay depends on not only the video delay but also the timing of the RP186 switch line to the start of active video.

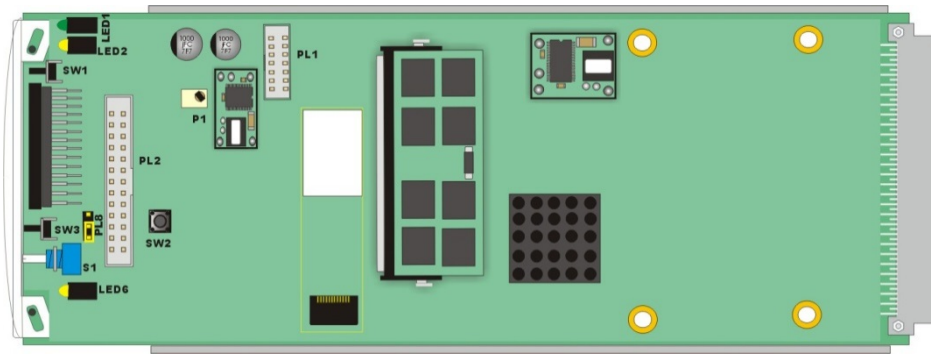
For HD signals the original incoming ATC packets are marked for deletion prior to the video delay and new packets are written on the same line when reinserted. For SD signal the reinserted VITC overwrites the original data.



The diagram above shows two instances where the video is first delayed by 200 lines and then by 100 frames plus 200 lines. In the first instance a timecode delay of 200 lines will align the input timecode for reinsertion into the the same line of the same frame. The timecode values will remain unchanged as the timecode delay is less than one frame. In the second instance the timecode delay will remain at 200 lines but timecode reinsertion will be into a frame 100 frames later. The timecode values will be 100 frames less than the delayed video.

2 Hardware installation

Board configuration



ViViD 3GT-20 main board top-side

Note: The potentiometer P1 is factory set and should not be adjusted.

Link Configuration

There are no user-settable links on the ViViD 3GT-20.

Link	Towards front of board or Up	Towards the rear of board or Down
PL8	Debug mode	Normal mode (factory set, do not alter)

3 Rear modules and signal I/O

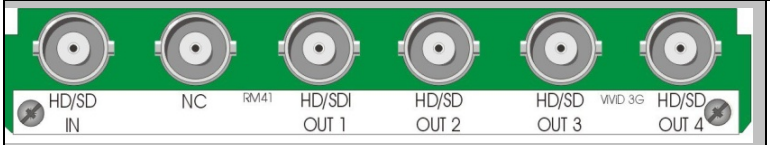
The 2U Indigo 2 frame will house up to 12 single height modules and dual power supplies. The 1U Indigo 1 frame will house six single height modules and a single or dual power supply. The Indigo DT desk top boxes have a built-in power supply and will house up to two single height modules. All modules 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.

The ViViD 3GT-20 can support the following rear modules: RM41, RM57 and RM67.

Rear module connections with RM41

The RM41 being a single height module will allow maximum packing density with one HD/SD video input and four HD/SD video outputs.

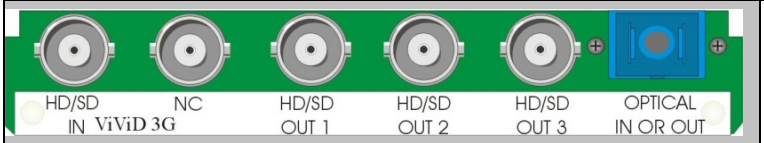
RM41 rear module connector	Description
	**RM41** • 12 per Indigo 2 frame • Six per Indigo 1 frame • Two per Indigo DT • All frame slots can be used

BNC Connections

BNC	I/O assignment
HD/SD IN	3G/High Definition/Standard Definition serial digital input.
NC	No connection.
HD/SD OUT 1	3G/High Definition/Standard Definition serial digital output.
HD/SD OUT 2	3G/High Definition/Standard Definition serial digital output.
HD/SD OUT 3	3G/High Definition/Standard Definition serial digital output.
HD/SD OUT 4	3G/High Definition/Standard Definition serial digital output.

Rear module connections with RM57

The RM57 being a single height module will allow maximum packing density with one HD/SD video input and three HD/SD video outputs and a single optical I/O connector.

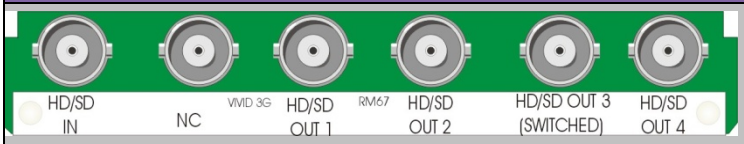
RM57 rear module connector	Description
	**RM57** • 12 per Indigo 2 frame • Six per Indigo 1 frame • Two per Indigo DT • All frame slots can be used

BNC connections

BNC	I/O assignment
HD/SD IN	3G/High Definition/Standard Definition serial digital input.
NC	No connection
HD/SD OUT 1	3G/High Definition/Standard Definition serial digital output.
HD/SD OUT 2	3G/High Definition/Standard Definition serial digital output.
HD/SD OUT 3	3G/High Definition/Standard Definition serial digital output.
OPTICAL IN/OUT	3G/High Definition/Standard Definition serial digital optical input/output.

Rear module connections with RM67

The RM67 relay bypass rear module is a single height module that allows maximum packing density with one HD/SD video input and four HD/SD video outputs. In the event of power failure, the video input is automatically connected to HD/SD OUT 3 (SWITCHED).

RM67 rear module connector	Description
	**RM67** • 12 per Indigo 2 frame • Six per Indigo 1 frame • Two per Indigo DT • All frame slots can be used

BNC Connections

BNC	I/O assignment
HD/SD IN	3G/High Definition/Standard Definition serial digital input.
NC	No connection.
HD/SD OUT 1	3G/High Definition/Standard Definition serial digital output.
HD/SD OUT 2	3G/High Definition/Standard Definition serial digital output.
HD/SD OUT 3 (SWITCHED)	3G/High Definition/Standard Definition serial digital output. HD/SD IN is automatically connected to this output in the event of power failure.
HD/SD OUT 4	3G/High Definition/Standard Definition serial digital output.

4 General Purpose Interface

Introduction

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.

ViViD 3GT-20 has four GPI inputs and two GPI outputs.

Each General Purpose Interface (GPI) input is fitted with a 6800Ω resistor connected to the internal +5V and in the following table, this equates to logic ‘H’, so with no connections to the GPI lines, preset 1 (logic ‘HHHH’) will be selected. See the ‘Presets’ section on page 31 for details of inverting the GPI preset logic.

Each General Purpose Interface (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.

The GPI inputs can be programmed to automatically recall a previously saved preset configuration. The 16 user preset configurations are selected using binary notation.The two outputs can be programmed to assert themselves for a number of different alarm conditions.

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’	**Alarms** (See alarm table)	Alarm condition	No alarm
6	‘f’	**Alarms (**See alarm table)	Alarm condition	No alarm

Table showing the six GPI functions

GPI	Bit 8	Bit 4	Bit 2	Bit 1	GPI	Bit 8	Bit 4	Bit 2	Bit 1
Preset					Preset				
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

Binary coding of GPI inputs to recall preset configurations

Alarms

GPI outputs 5 and 6 (e, f) can be configured to be asserted (logic 'L') for a selection of error conditions.

For each GPO there are four separate alarm conditions and all of the alarm conditions can be assigned to both.

See *GPO Alarms* for more details of alarms.

Reportable error conditions	No. of alarms
Input Video Missing	1
Input Video Black	1
Input Video Frozen	1

Alarm Table

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.*

5 Control and Status Monitoring

ViViD 3GT-20 controls and status can be accessed most easily by Crystal Vision's 'VisionWeb' PC software but also by card edge control and the rack front panel.

Board edge control was removed from ViViD 3GT-20 in 2019. Therefore the card edge control information detailed here is only relevant for older versions of the product.

Card edge controls

ViViD 3GT-20 board edge

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.

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.*

Reading card edge LEDs

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

Refer also to the troubleshooting 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
Ref	Yellow	Reference input present (Not relevant to this product)	Not relevant to this product
IP1HD	Yellow	Video input standard is HD (High Definition)	Input not present
IP1SD	Yellow	Video input standard is SD (Standard Definition)	
GPO5	Yellow	GPO 5 active / low	GPO 5 inactive / high
GPO6	Yellow	GPO 6 active / low	GPO 6 inactive / high

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 changes to ***italics*** to indicate that a change has been made and requires confirmation
- When required push ENTER to action the change. The display will return to normal non-italic text
- Use the up-arrow [^] and SCROLL/ADJ control to navigate to further menus

Using the front control panel

At power up, the LEDs of all eight control panel keys will illuminate briefly. Once the panel has completed its power up and configuration sequence, the panel will enter its status mode and display the current software version and frame IP address.

'Status' menu showing current software version and IP address

Selecting a ViViD 3GT-20

To continue with control panel operation or configuration, press the 'DEVICE' key once. 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. Rotate the Shaft control to poll through the available cards.Use the F2 soft key to toggle between the card's serial number and issue number with modification level.

'Device' menu showing ViViD 3GT-20 in slot 1.01

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 ViViD 3GT-20 home 'Status' menu

Rotate the shaft control to scroll through the menu structure and press ENTER to select the sub-menus. Press HOME at any time to return to the home menu.

ViViD 3GT-20 Video Status sub-menu

Press ENTER to select the Video Status menu or SCROLL to display other sub-menus. See description of menu structure below for list of sub-menus.

Control Panel keys overview

The functions assigned to the control panel keys are:

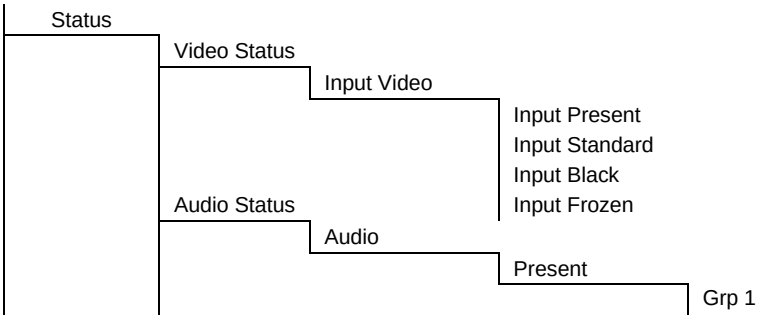
- DEVICE – enters 'device' menu to select a card or show available cards.
- ASTERISK (*) – selects 'network configuration' menu.
- F1 to F4 – soft keys not currently used by ViViD 3GT-20.
- HOME – returns to top of ViViD 3GT-20's menu structure.
- ENTER – accepts current selection.
- Up arrow – used to move up through the menu structure.
- Rotary control – shaft encoder used to select sub-menus or variable data.

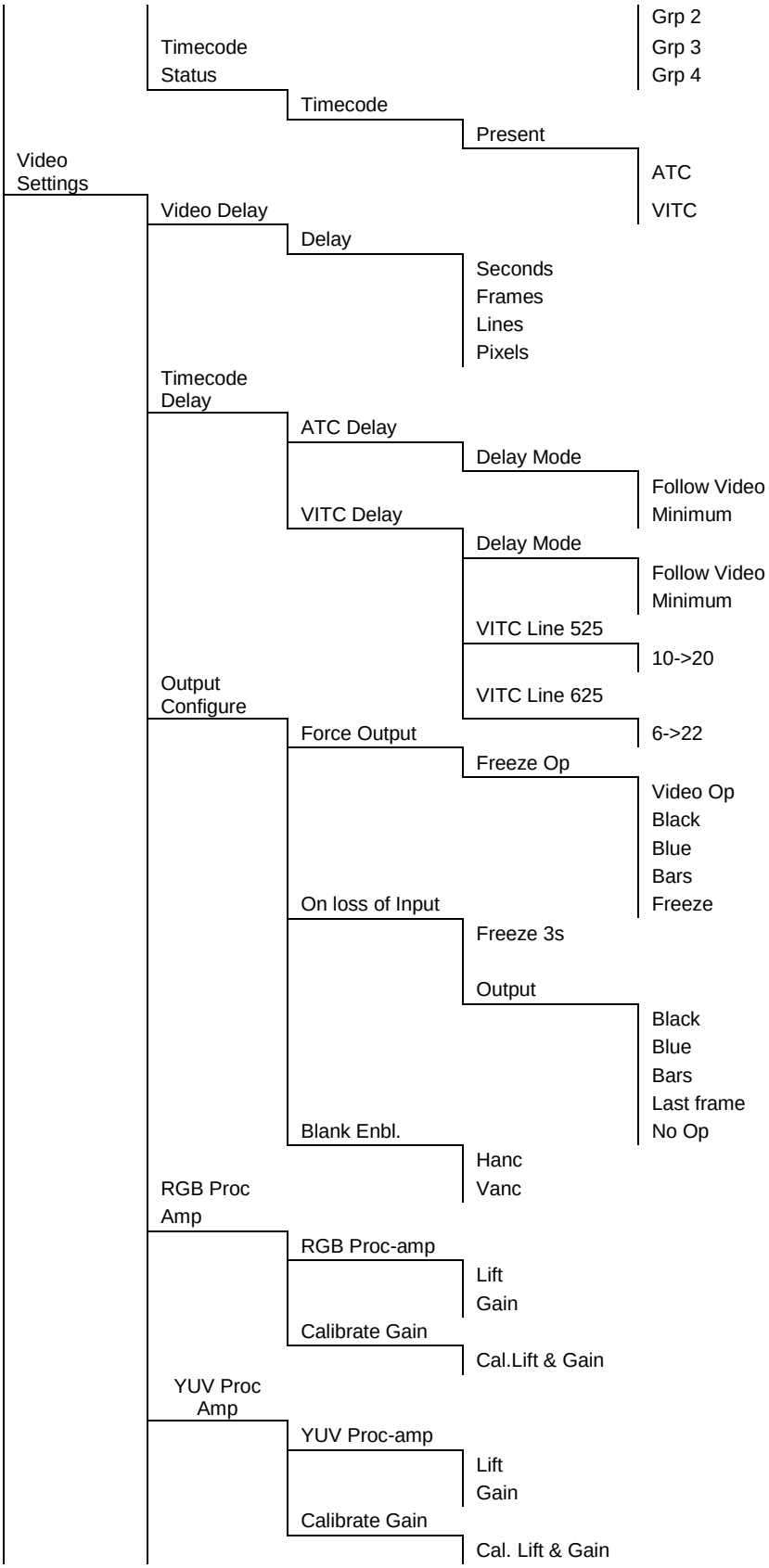
Updating the display

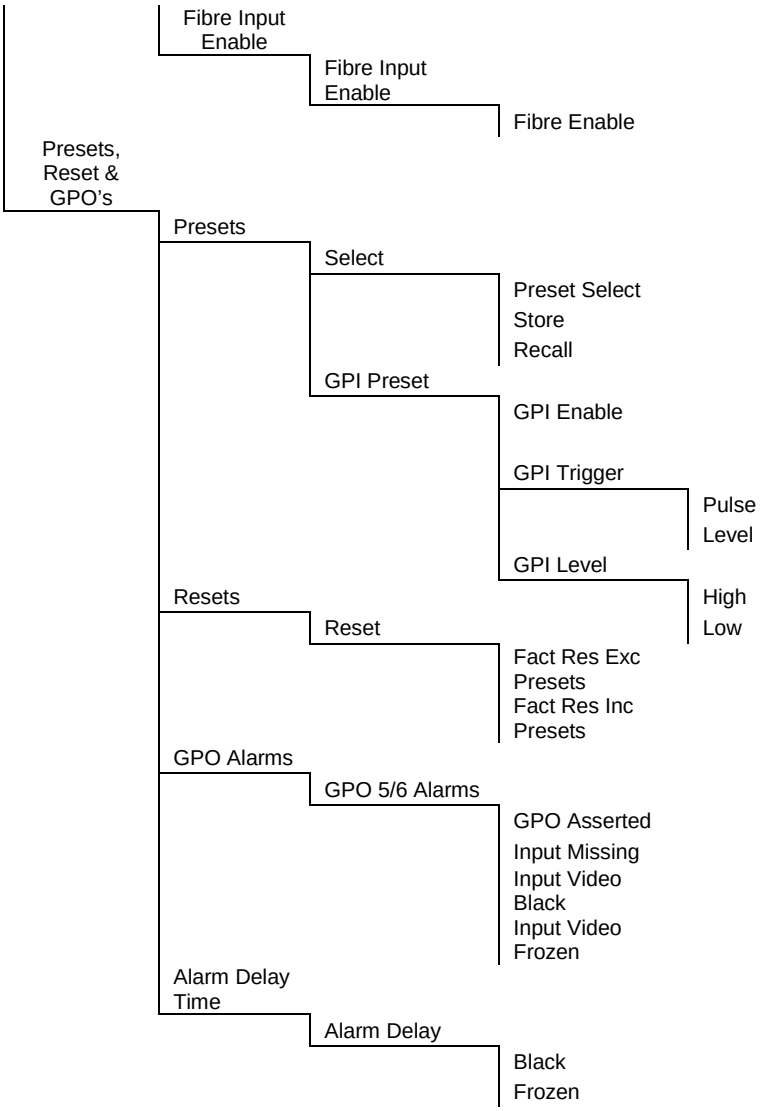
The values displayed on an active front panel are only updated when an adjustment is made and when changing menu level. If changes occur through the use of card edge controls or other remote control, the text displayed on the active front panel will not be updated immediately. If necessary, use the upward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

Menu Structure

The basic menu structure for card edge, front panel access and VisionWeb is identical and consists of the following menus and sub-menus.




Video Settings
Timecode Status
Grp 2
Grp 3
Grp 4
Timecode
Present
ATC
VITC
Video Delay
Delay
Seconds
Frames
Lines
Pixels
Timecode Delay
ATC Delay
Delay Mode
Follow Video
Minimum
VITC Delay
Delay Mode
Follow Video
Minimum
VITC Line 525
10->20
Output Configure
VITC Line 625
6->22
Force Output
Freeze Op
Video Op
Black
Blue
Bars
Freeze
On loss of Input
Freeze 3s
Output
Black
Blue
Bars
Last frame
No Op
Blank Enbl.
Hanc
Vanc
RGB Proc Amp
RGB Proc-amp
Lift
Gain
Calibrate Gain
Cal.Lift & Gain
YUV Proc Amp
YUV Proc-amp
Lift
Gain
Calibrate Gain
Cal. Lift & Gain



The above menu structure is the means to access the various ViViD 3G controls and status. A more detailed description is in the section *Control Descriptions.*

Controlling cards via VisionWeb

Crystal Vision cards use an XML file to create a control database that is used by the card's front-edge controller, the Indigo frame front panel controller and VisionWeb software. VisionWeb software offers a full range of controls with slider controls etc. similar to that available with the older Statesman PC software.

Accessing the Indigo Home page with a PC browser via the Ethernet connector of an Ethernet-enabled frame will display a list of the cards fitted. (See appropriate frame manual for more details.)

Indigo home page

The example above shows a ViViD 3GT-20 card fitted in slot one and the frame's power supply and status monitor in slots 13 and 14. Clicking on the ViViD 3GT-20 card will bring up the card's home (Status) page:

ViViD 3GT-20 Status Page

6 Control Descriptions

The controls of ViViD 3GT-20 are accessible from the front panel, the board edge or from Crystal Vision's VisionWeb software. The description of controls used in this manual is based on VisionWeb GUI screen grabs but the path to locate controls via the front panel or board edge follows the same logic. For instance, in the VisionWeb GUI the 'Input Frozen' control is located in the '**Video Status'** group of the '**Status'** menu. To find the same control using the card edge or front panel follow the path **Status->Vid Status** to the **Ip Frozen** control.

VisionWeb GUI controls are accessed by menus at the bottom of the page which, when selected, offer sub-menus containing a number of controls. Some controls are simulated LEDs that are used to show status, others are check boxes, buttons or sliders which change various ViViD 3GT-20 settings.

The description of the menus are in the order shown in the GUI i.e.

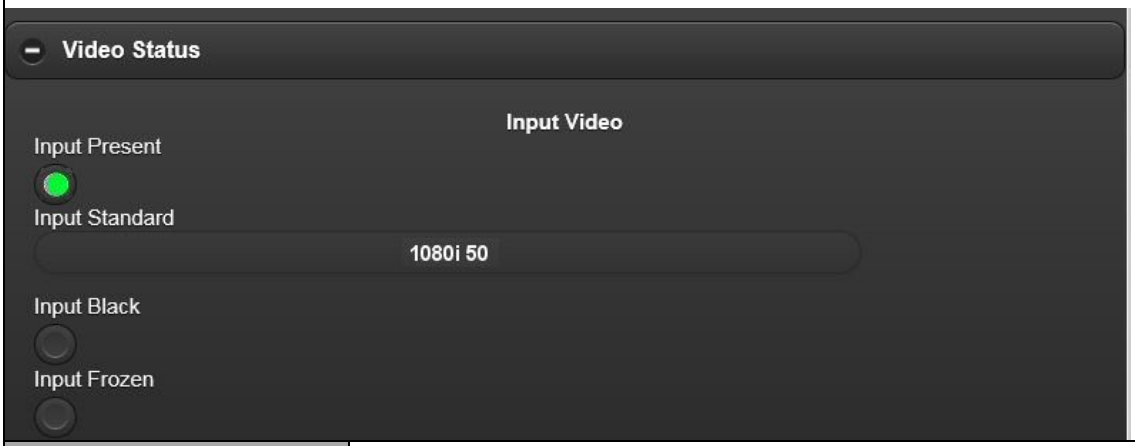
VIDEO STATUS, AUDIO STATUS, TIMECODE STATUS, VIDEO DELAY, TIMECODE DELAY, OUTPUT CONFIGURE, RGB PROC AMP, YUV PROC AMP, FIBRE INPUT ENABLE, PRESETS, GPO ALARMS, ALARM DELAY TIME.

Each tab is shown with a screen grab and description of each control's function:

Status Menu

Video Status

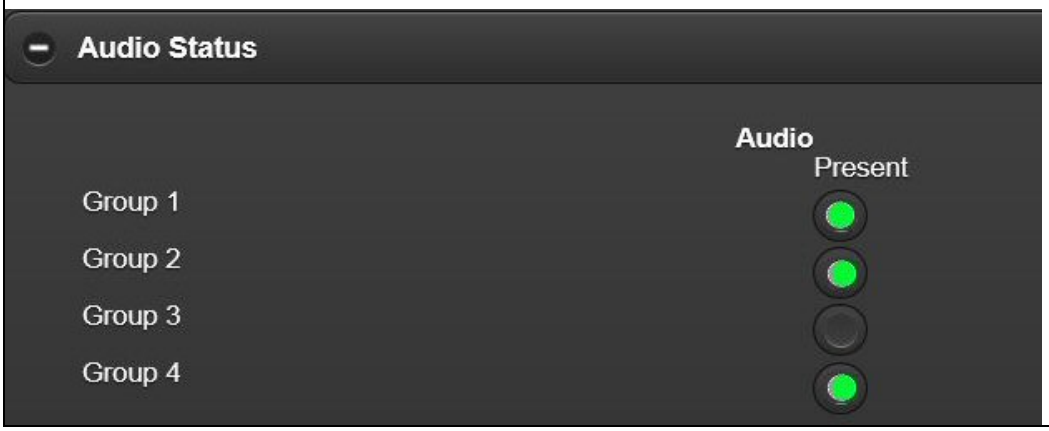
Display presence, standard and status of incoming video signal.



Input Present	**On when input video is present.**
Input Standard	**Displays video standard of incoming video. i.e. 1080i 50, 1080p 50, 720p 50, 625, 525 etc.**
Input Black	**On if video input is permanently at black level.**
Input Frozen	**On if video input is a permanent still frame.**

Audio Status

Displays presence of embedded audio groups.



Group 1 – 4 Present	**On when embedded audio group is present in video.**

Timecode Status

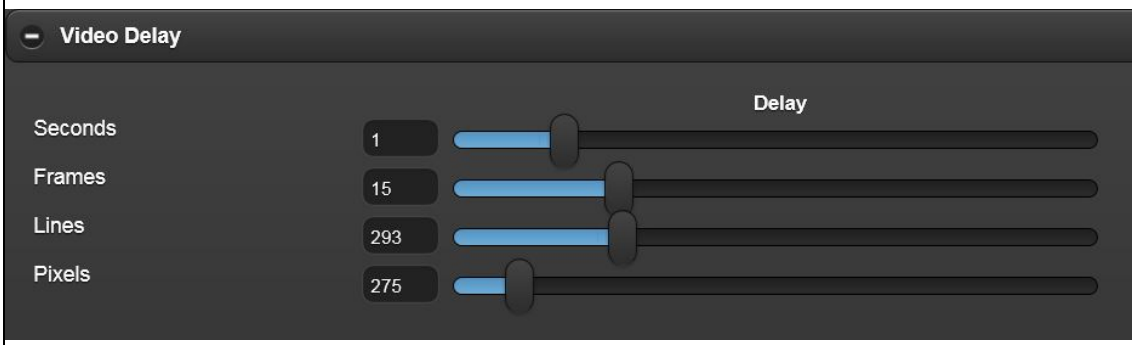
Displays presence of timecode

Present	**On when ATC or VITC timecode is present in video.**

Video Settings Menu

Video Delay

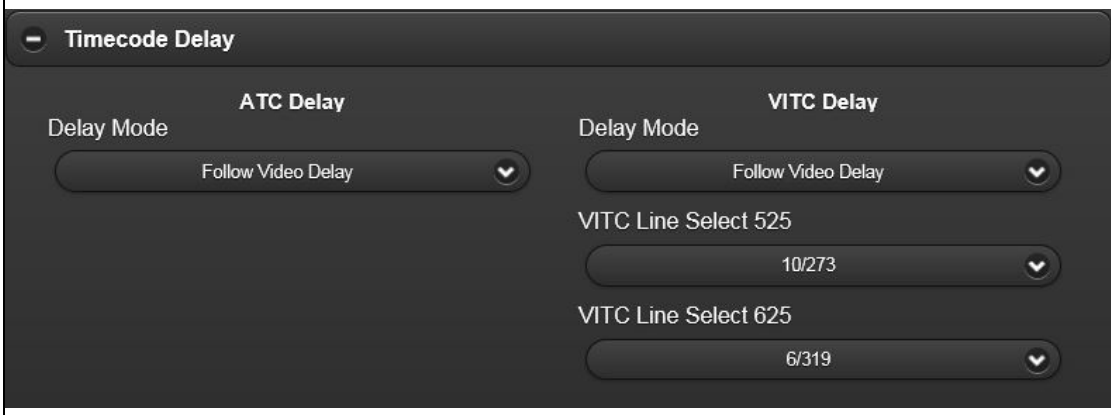
These controls set the length of the delay period in seconds, frames, lines and pixels. The delay range that can be achieved is from 8 seconds to 110 seconds depending on the input video standard. The maximum delay that can be set by the controls is auto limited according to the video standard.

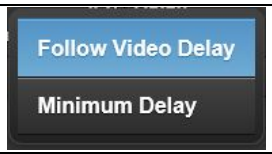
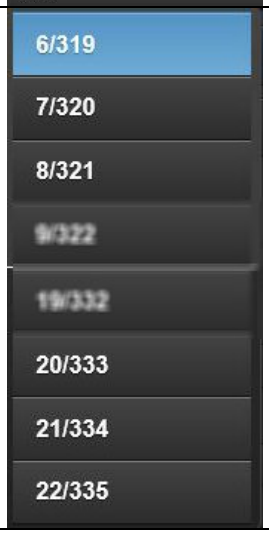


Seconds, Frames, Lines, Pixels Delay	**Use these controls to set the variable delay from 0 to the maximum possible for the video standard. *See section* *Video delays in ViViD 3GT-20*.**

Timecode Delay

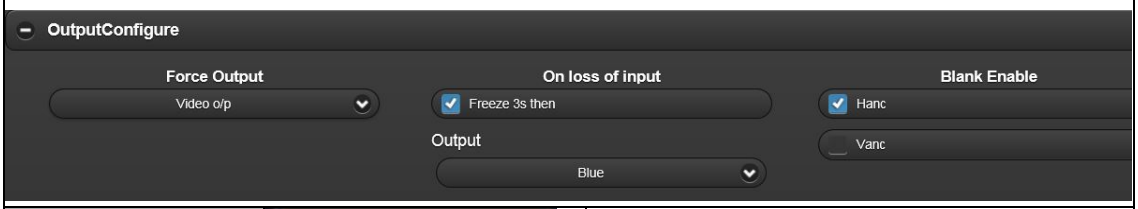
These controls set the timecode by-pass delay to be the same as the video or to the minimum value necessary to reinsert timecode into the same video line. Select which SD line number to extract VITC and reinsert into the delayed video.

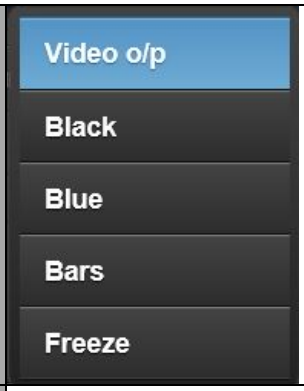


Delay Mode		**Select the delay mode for the timecode path. Either match the selected video delay or the minimum value. See *Timecode delay* for more information.**
VITC Line Select 525		**Select the 525 standard VANC line pair from line 10/273 to 20/283 that will be extracted from the input and inserted into the same line on the delayed output.**
VITC Line Select 625		**Select the 625 standard VANC line pair from 6/319 to 22/335 that will be extracted from the input and inserted into the same line on the delayed output.**

Output Configure

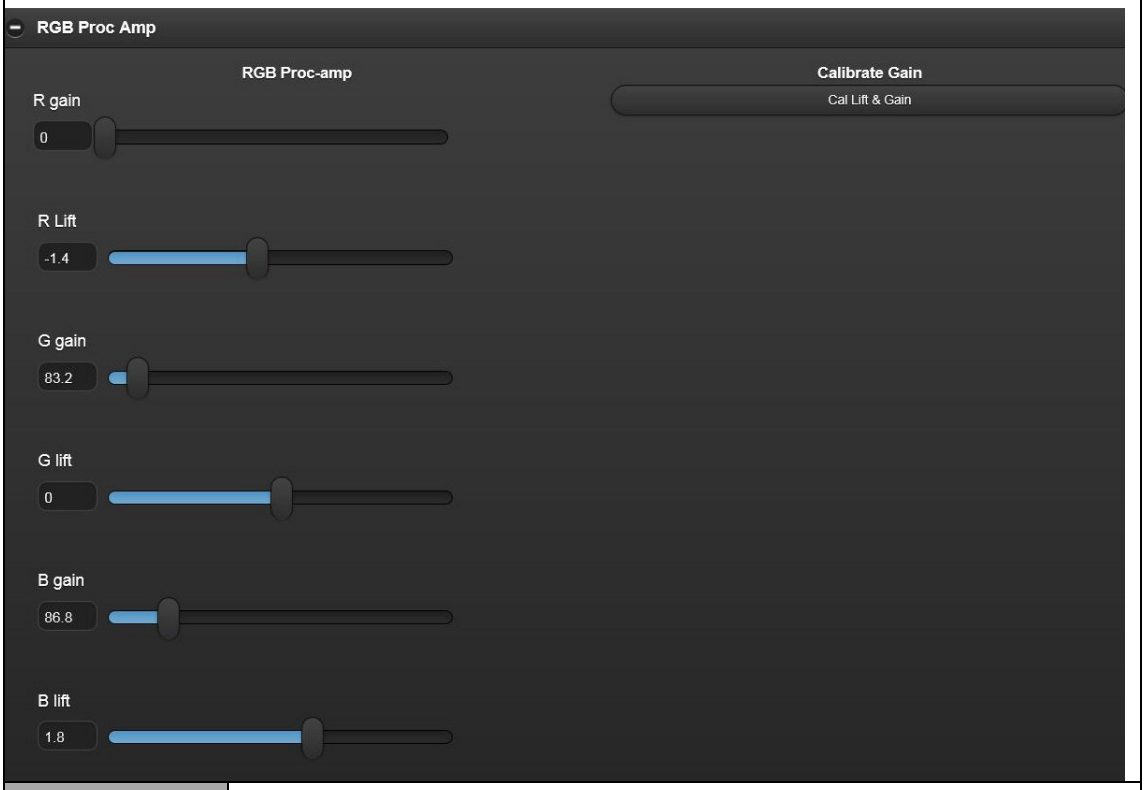
These controls force the output video to a manually selected state or automatically if the input fails.



Force Output		**Force output to the selected state regardless of input condition.**
Freeze 3s then	**Select to enable a three second freeze of last received input frame in the event of the video input disappearing before outputting black, blue, bars etc. as selected by the Output control below.**	
Output		**Select output video condition in the event of the input video missing.**
Blank Enable Hanc/Vanc	**Select to blank horizontal or vertical ancillary data in the video signal blanking intervals.**	

RGB Proc Amp

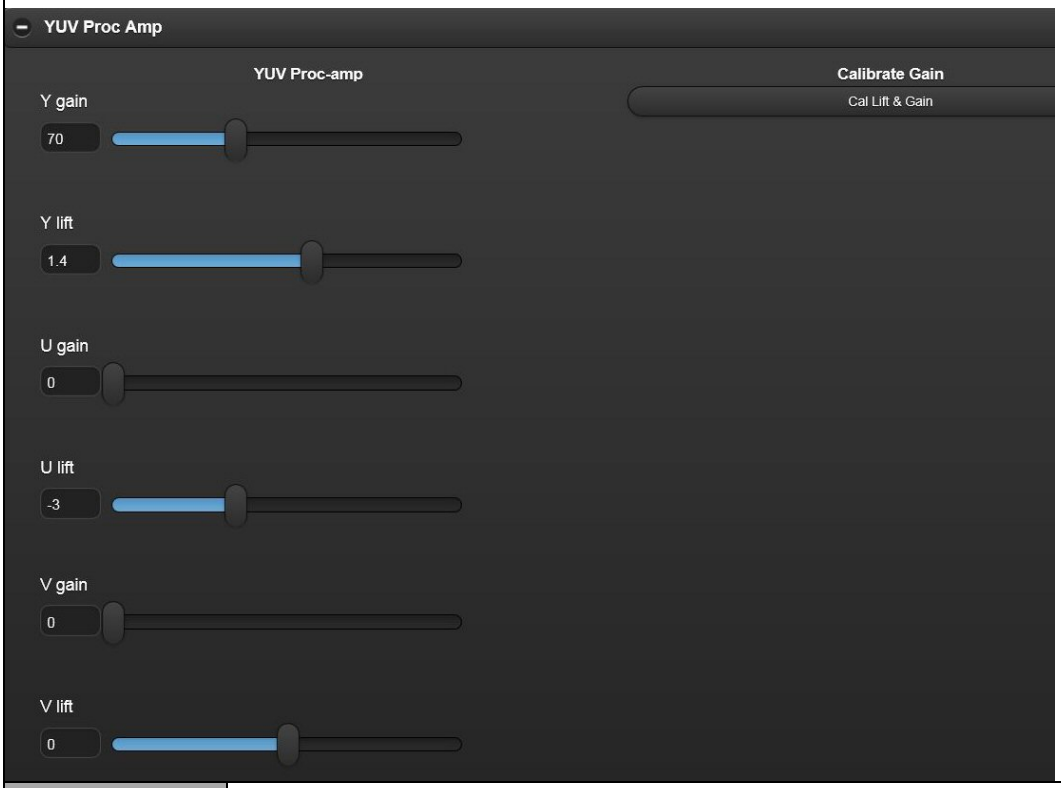
Alter the lift and gain of the R, G and B components of the video path.



RGB Lift	**Alter the DC offset of the RGB components by +/- 10%.**
RGB Gain	**Alter the gain of the RGB components between 80% to 120%.**
Calibrate gain	**Set RGB Lift and Gain back to their calibrated values.**

YUV Proc Amp

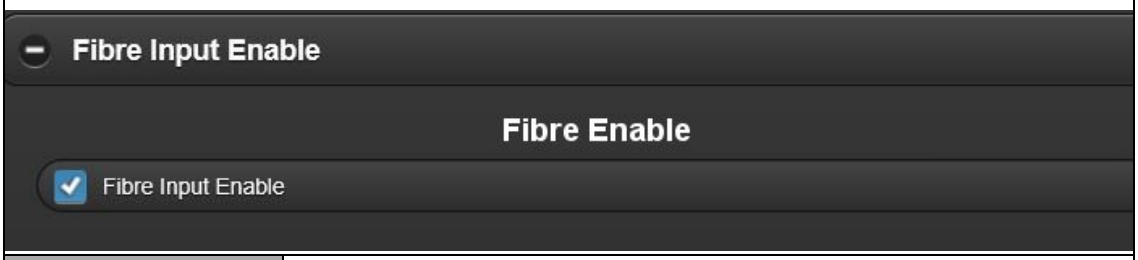
Alter the lift and gain of the Y, U and V components of the video path.



YUV Lift	**Alter the DC offset of the YUV components by +/- 10%.**
YUV Gain	**Alter the gain of the YUV components between 80% to 120%.**
Calibrate gain	**Set YUV Lift and Gain back to their calibrated values.**

Fibre Input Enable

Select fibre optic for video input.

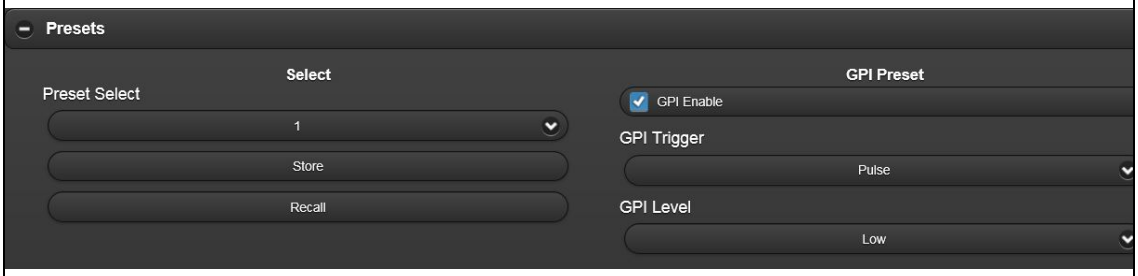


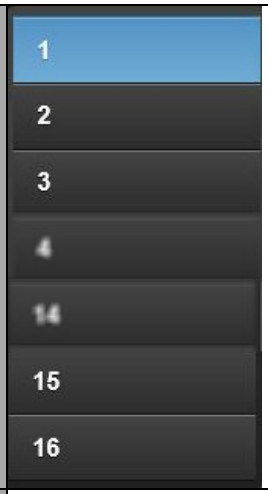
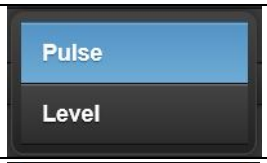
Fibre Input Enable	**Select to enable optical as the input video source instead of BNC*. N.B. The optional SPF module and RM57 rear module must be fitted.***

Presets, Resets And GPOs

Presets

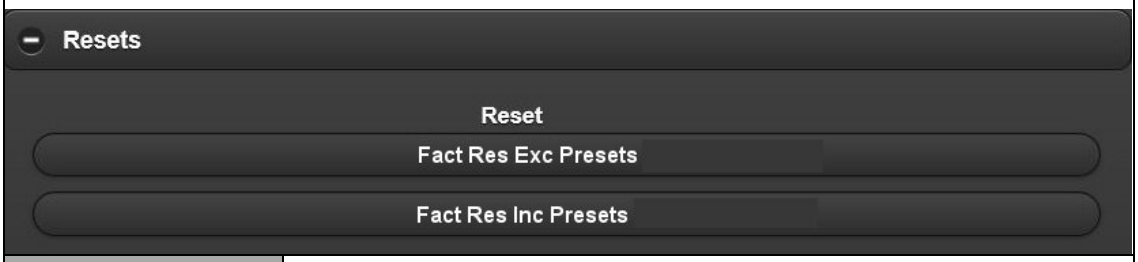
Up to 16 user-defined configurations may be stored and recalled either from VisionWeb or through the use of external GPIs. Presets store the board setup data including operating mode card status.



Preset Select		**Select from 1-16 which preset to store or recall.**
Store	**Save the setup in preset memory 1-16.**	
Recall	**Restore the selected preset.**	
GPI Enable	**Select to recall previously saved presets via the external GPI port. See section *General Purpose Interface* for more information on GPIs.**	
GPI Trigger		**Select either level or pulse to trigger GPI recall.**
GPI Level		**Select either active low or high level to trigger the GPI recall.**

Resets

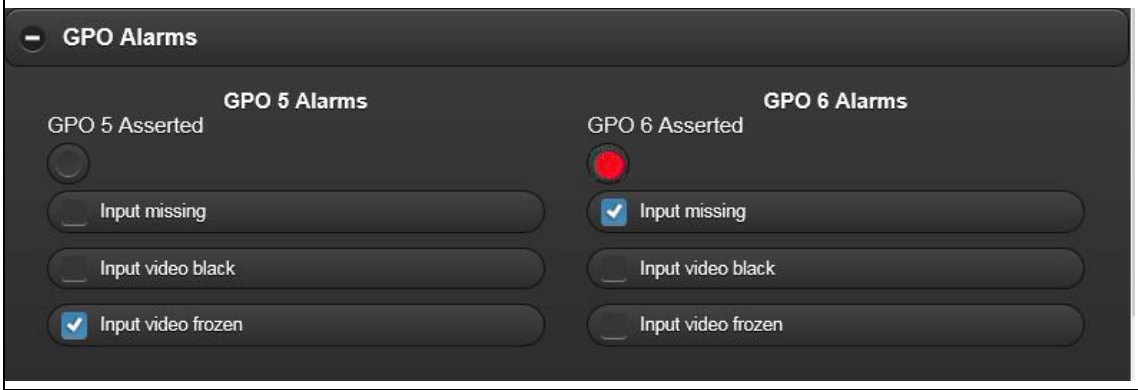
Reset ViViD 3GT-20 settings to default values.



Fact Res Exc Presets	**Reset the board to default settings but leave preset memories unaffected.**
Fact Res Inc Presets	**Reset the board to default settings and erase preset memories.**

GPO Alarms

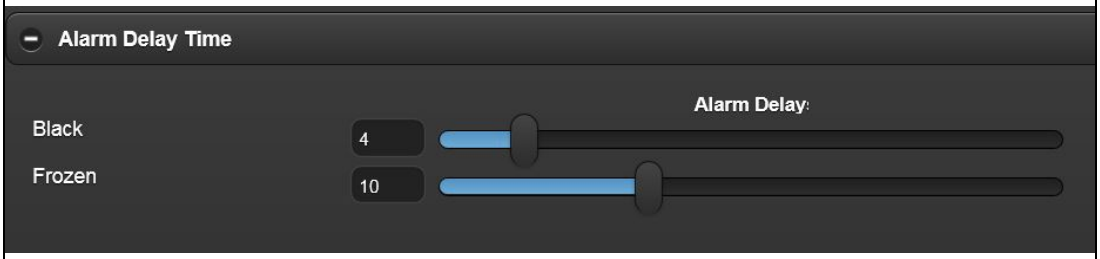
The GPO 5 and GPO 6 outputs are reserved for alarm indication and may each be assigned to any of the three video alarm conditions. Black and Frozen alarms have a delay timer to set the amount of time that the alarm condition must exist before the GPO is asserted.



GPO 5/6 Asserted	**On if the alarm conditions are met.**
Input Video Black	**Assert GPO if input video is black for the period set by the '*Black Delay*' control.**
Input Video Frozen	**Assert GPO if input video is still-frame for the period set by the '*Frozen Delay*' control.**

Alarm Delay Time

Set the time that the 'Input Video Black' and 'Input Video Frozen' conditions must be active before the alarms are asserted.



Black	**Set the time period that the video input must remain black before asserting the GPO. Can be set in the range 1 to 30 seconds.**
Frozen	**Set the time period that the video input must remain frozen before asserting the GPO. Can be set in the range 1 to 30 seconds.**

7 Troubleshooting

Card edge monitoring

The front edge of the card provides useful power rail monitoring and input status.

ViViD 3GT-20 front edge view

See *5.1 Card edge controls* for explanation of card edge LEDs.

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 VisionWeb or Statesman if available.

Board edge control was removed from ViViD 3GT-20 in 2019. Therefore the card edge control information is only relevant for older versions of the product.

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 reset the card

Resetting 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.

8 Specification

General

Dimensions	100mm x 266mm module with DIN 41612 connector.
Weight	200g.
Power consumption	ViViD 3GT-20 - 11.9 Watts. FIP - 0.6 Watts. FOP - 0.6 Watts.

Inputs

Video	HD or SD SDI 270 Mb/s to 2.970 Gb/s serial digital compliant to EBU 3267-E, SMPTE 259, SMPTE 292-1 and SMPTE 424/425-A. Cable Equalisation: 3G (2.970Gb/s) – 80 metres, Belden 1694A or equivalent. HD (1.485Gb/s) – 140 metres, Belden 1694A or equivalent. SD (270Mb/s) >250 metres, Belden 8281A or equivalent. SC optical input.
Video standards supported	625, 525, 720p50, 720p59, 1080i50, 1080i59. Input format auto selected.
Return loss	50Mhz to 1.5GHz -15dB.

Outputs

Video	Serial output: 270Mb/s to 2.970Gb/s serial compliant to EBU 3267-E, SMPTE 259, SMPTE 292-1 and SMPTE 424/425-A. Output follows the input format. SC optical outputs.

Video delay

Video delay	Maximum adjustable video delay from 8 to 110 seconds depending on video format.
Auxiliary data	Auxiliary data passed unless set to blank.

Timecode delay

Maximum delay	With ‘Timecode Delay Mode’ set to ‘Follow Video Delay’ - then same as adjustable video delay from 8 to 110 seconds depending on video format.
Minimum delay	With ‘Timecode Delay Mode’ set to ‘Minimum’ - delay is the minimum necessary to reinsert timecode into same line as was extracted. This depends on the adjustable video delay and could be up to one frame plus the time from the RP168 switch line to the start of active video.

Rear Module I/O

RM41	One video input and four video outputs, 75 ohm BNC.
RM57	One video input and three video outputs, 75 ohm BNC. Optical SC input/output.
RM67	As RM41, but relay bypass switch auto connects video IP to OP3 in the event of power failure.

Status monitoring

LEDs	Front of card edge LED indicators to indicate: PSU rails present, SDI input HD/SD, GPI Out 5 active, GPI Out 6 active.

GPI inputs

Number and type:	4 x GPI inputs. Recall of 16 presets. Active pull to ground, pulled up to +5V through 7 kohm.

GPI outputs

Number and type:	2 x GPI outputs, assignable to any of alarm conditions: video input missing, black or frozen. Electrically: Open collector transistors 30V, 270 ohm current limit resistors. Pulled up to +5V through 7 kohm.

Input fail output

Type:	Black, Blue, Bars, Last Frame or No Output as selected.

Control

Local:	Intuitive board edge interface with two select buttons, shaft encoder and ten character alphanumeric display.
Remote:	RS422/485. 19200 baud, 8 bits, 1 stop no parity. Control from frame active front panel and remote panel. VisionWeb Control is available via the web server on the frame and allows operation using a standard web browser on a PC or tablet. SNMP control and monitoring via frame CPU and Ethernet connection. SNMP traps can be set on the following alarms: input missing, video black, video frozen and input audio missing.