

digital keying modular
interface audio
converters analogue video

ViViD114

SDI variable video delay

USER MANUAL

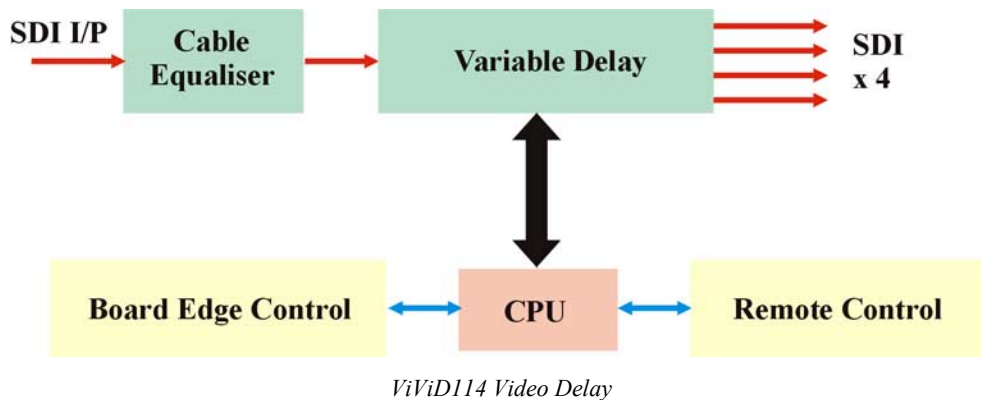


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1 Introduction

ViViD114 is a Variable Video Delay which offers up to a second of delay and has been designed to match system delays elsewhere in an equipment chain.



The main features are as follows:

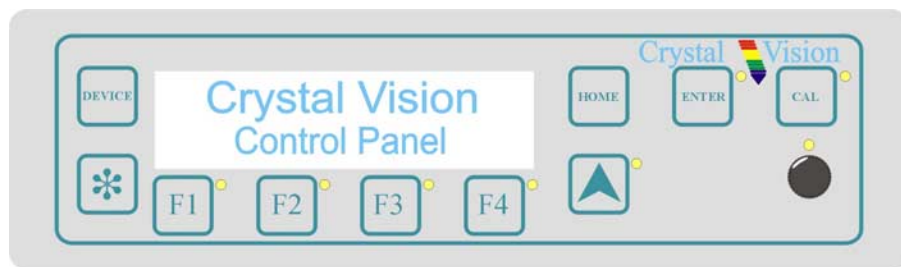
- passes entire SDI stream, including HANC and VANC
- auto 525/625 selection
- four SDI outputs
- delay adjustable from 30 pixels to 30 frames in 525 and 24 frames in 625 in increments of fields, lines and groups of six pixels

ViViD114 is a 100mm x 266mm module, which fits in the three standard frames and can be integrated with any boards from the company's full product range. It uses the RM01 rear connector.

Applications include virtual studios where ViViD114 can offset the virtual set delay so the camera feed and graphics both reach the chroma keyer at the same time and transmission where ViViD114 can compensate for the delay of MPEG encoders or decoders.

2 Using the active control panel

The Crystal Vision active control panel is available as an integral part of the FP2-LF front door for the FR2AV 2U frame, the FR1AV frame, and the DTBAV desktop box or as a remote panel. Only one control panel can be connected to any frame, although one panel can control two frames.



The Crystal Vision control panel

At power up, the two line 20-character screen will display 'Crystal Vision' followed by the firmware version number for the control panel. Once the control panel is initialised, each module in a frame is polled. Modules that have completed their own initialisation will respond with a node address. A node address is a unique number that defines a module's position in a rack.

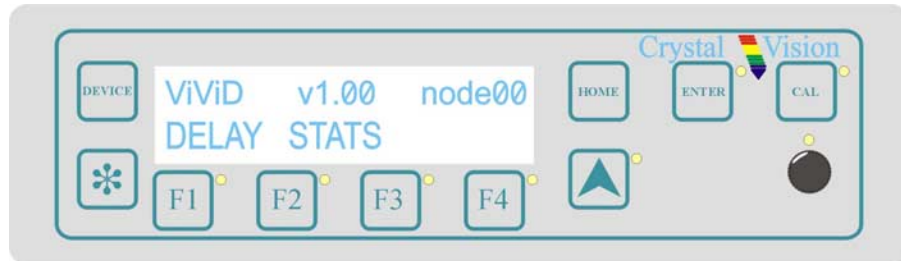
The control panel will display the name of the module that first responds to the polling request together with its node address.



Control panel showing available cards

To select a particular module in a frame, press the DEVICE key. The top line of the display will change to show 'Available Cards X', where X is the number of cards that have responded so far to the polling request. Rotating the shaft encoder will cause the bottom row of the display to cycle through the successfully polled cards by name and node number.

When the ViViD114 module is selected press the ENTER key to access that module's HOME menu.



ViViD114 home menu

Ensure that ViViD114 card-edge switch lever 2 is in the DOWN position to enable remote control via the active control panel.

Note:

In the 2U frame the node address is calculated in one of two ways:

*slot number minus 1 – giving a range of 0 – 11 in frame #1, OR

*slot number plus fifteen – giving a range of 16 – 27 in frame #2

The two ranges are provided to allow one control panel to control two frames.

In the 1 U frame the address range is 0-5 OR 16-21.

Please refer to the frame manual for further information on node addresses.

2.1 Navigating the display

The control panel keys are assigned the following functions when controlling ViViD114:

- DEVICE – selects a card or module to control
- Asterisk – no function assigned
- F1 to F2 – soft keys, function assigned within each menu
- HOME – moves the display to the home menu
- ENTER – accepts device selection
- CAL – assigns minimum delay value
- Upward arrow – used to move up the menu structure
- Rotary control – shaft encoder used to select options or variable data

2.2 Updating the display

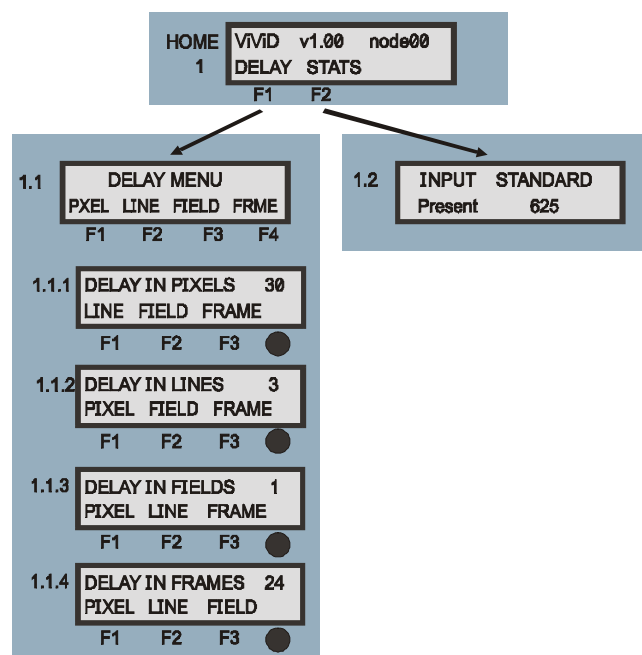
The values displayed on an active front panel are only updated when an adjustment is made and when changing menu level. If changes occur through the use of card edge controls or other remote control, the text displayed on the active front panel will not be updated immediately. If necessary, use the upward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

2.3 The ViViD114 active panel menu structure

The main top-level menus for the ViViD114 module are obtained by pressing the F1 and F2 keys from the HOME menu. Menu keys are illuminated when active and when further menus are available. The top-level menus are:

- Delay (Configure Pixel, Line Filed and Frame delay) – press F1
- Stats (Status) – press F2

The following chart shows the available menus.



The ViViD114 menu tree

Note:

Function keys and shaft encoder LEDs are illuminated when active. Menus or function keys associated with the shaft encoder for changing assigned values are shown with a black circle.

Menu numbering scheme

This manual uses a simple menu numbering convention based on the sequence of keys required to reach each menu from the top level home menu. For example, menu 1.1.2 is reached from the home menu by pressing F1, then F2. Menu 1.2.3 is reached by pressing F2 and then F3.

2.4 Configuring delay

Pressing F1 from the home menu will bring up the delay menu. The delay menu provides access to the Pixel, Line, Field and Frame sub-menus:

| ViViD114 delay menu | Description |
|---|---|
| <p>1.1 DELAY MENU PXEL LINE FIELD FRME F1 F2 F3 F4</p> | <p>Provides access to the following sub-menus: PXEL (Pixel) Menu – press F1 LINE Menu – press F2 FIELD Menu – press F3 FRME (Frame) Menu – press F4</p> |
| <p>1.1.1 DELAY IN PIXELS 30 LINE FIELD FRAME F1 F2 F3 ●</p> | <p>Rotate shaft encoder to set delay in pixels. LINE/PIXEL menu – press F1 FIELD/LINE menu – press F2 FRAME/FIELD menu – press F3</p> |
| <p>1.1.2 DELAY IN LINES 3 PIXEL FIELD FRAME F1 F2 F3 ●</p> | <p>Rotate shaft encoder to set delay in lines. PIXE/LINE menu – press F1 FIELD/LINE menu – press F2 FRAME/FIELD menu – press F3</p> |
| <p>1.1.3 DELAY IN FIELDS 1 PIXEL LINE FRAME F1 F2 F3 ●</p> | <p>Rotate shaft encoder to set delay in fields. PIXEL/LINE menu – press F1 LINE/FIELD menu – press F2 FRAME/FRAME menu – press F3</p> |
| <p>1.1.4 DELAY IN FRAMES 24 PIXEL LINE FIELD F1 F2 F3 ●</p> | <p>Rotate shaft encoder to set delay in frames. PIXEL/LINE menu – press F1 LINE/FIELD menu – press F2 FIELD/FRAME menu – press F3</p> |

Maximum delay values

| | 625 max values | 525 max values |
|-------|----------------------------|----------------------------|
| Pixel | 858 | 852 |
| Line | 311(field 1) 312 (field 2) | 261(field 1) 262 (field 2) |
| Field | 2 | 2 |
| Frame | 24 | 28 |

If the adjustment exceeds the maximum allowed, the value displayed will be reset to zero and one will be added to the higher value delay menu. This works for all menus, except Frames.

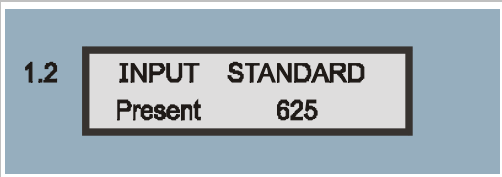
If an attempt is made to go below zero, one will be subtracted from the lower value delay menu. This works for all menus, except Pixels. It is not possible to reduce the total delay of the module below 30 pixels.

All delay variable controls – pixel, line, field and frame - can be accessed from any sub-menu. Use the F1, F2 and F3 controls to toggle through the available choices. The variable assigned to the shaft encoder is always shown in the top line of the display.

Resetting delay

Press CAL in any menu to assign the minimum delay value for the variable shown.

2.5 Input status

| Status menu | Description |
|---|---|
|  <p>1.2 INPUT STANDARD Present 625</p> | <p>Status menu: INPUT: Present or No Inp STANDARD: 625 or 525</p> |

Note:

The status menu will not change if the input status changes whilst the status display is shown. To refresh the status display, press the 'CAL' button.

3 Card edge operation

Once the start-up initialisation procedure is complete, the ViViD114 card can be controlled or configured from the card edge, the active control panel or the Statesman PC interface (future option). This chapter will concentrate on the card edge controls.

The front edge of the card provides power rail monitoring, menu selection, delay assignment and a ten-digit visual status display.



ViViD114 front edge view

3.1 Selecting the control mode

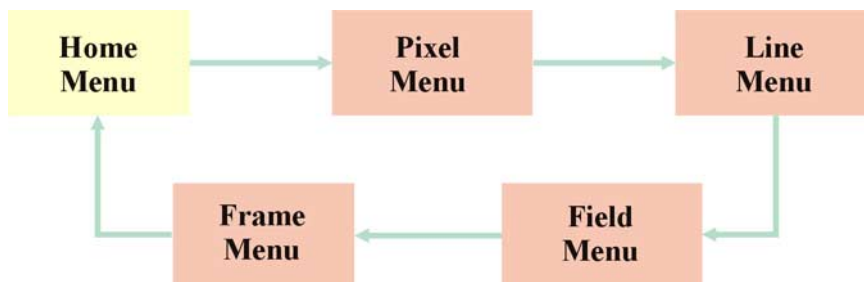
The 4-way piano switch allows control options to be selected.

| Lever | Function | Action |
|--------|-------------|--|
| All UP | Local mode | Card-edge control enabled |
| 1 Down | CAL | Set lever 1 down (and rotate shaft-encoder) to reset delay |
| 2 Down | Remote mode | Remote control enabled |
| 3 Down | N/A | No function assigned |
| 4 Down | N/A | No function assigned |

4-Way piano switch menu functions

3.2 Configuring delay

The SELECT control cycles through the HOME and DELAY menus:



ViViD114 card-edge menus

The ADJUST shaft encoder increases or decreases the delay in the given menu.

Maximum delay values

| | 625 max values | 525 max values |
|--------------|----------------------------|----------------------------|
| Pixel | 858 | 852 |
| Line | 311(field 1) 312 (field 2) | 261(field 1) 262 (field 2) |
| Field | 2 | 2 |
| Frame | 24 | 28 |

If the adjustment exceeds the maximum allowed, the value displayed will be reset to zero and one will be added to the higher value delay menu. This works for all menus, except Frames.

If an attempt is made to go below zero, one will be subtracted from the lower value delay menu. This works for all menus, except Pixels. It is not possible to reduce the total delay of the module below 30 pixels.

| SELECT menu | Function |
|------------------|--------------------------------------|
| Home | Shows ViViD114 firmware version |
| PIXEL XXX | Use ADJUST to change delay in pixels |
| LINE X | Use ADJUST to change delay in lines |
| FIELD X | Use ADJUST to change delay in fields |
| FRAME XX | Use ADJUST to change delay in frames |

Resetting delay

To reset the currently selected delay in any menu to its minimum value, press piano lever 1 DOWN (CAL) and rotate the ADJUST control. Return the CAL lever to the UP position to continue delay adjustment.

4 Installation


The ViViD114 video delay module is a single height module which fits into all Crystal Vision rack frames. All modules can be plugged in and removed while the frame is powered without damage.

4.1 Rear modules and signal I/O

FR2AV, FR1AV & DTBAV rear connectors

The FR2AV 2U frame takes up to 12 single height Crystal Vision modules, 6 single height modules fit in the FR1AV 1U frame and 2 single height modules fit in the DTB2AV 1U frame.

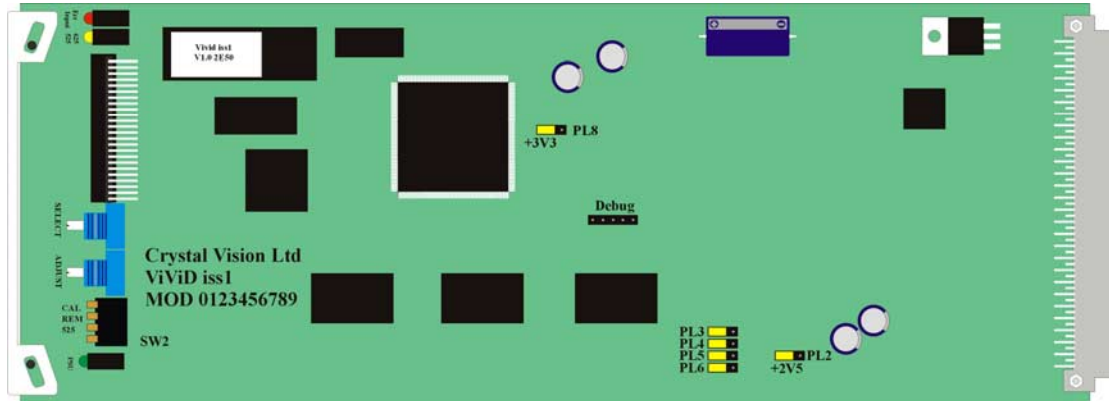
RM01 rear module connections:

| RM01 fits in FR2AV, FR1AV & DTBAV frames | Description |
|---|---|
|  | RM01 (ZLA00180 artwork) <ul style="list-style-type: none"> • 12 modules per FR2AV, 6 per FR1AV & 2 per DTBAV frame • All frame slots can be used |

| BNC | Signal |
|------------|--------------|
| SDI IN | SDI In |
| SDI OUT(1) | SDI output 1 |
| SDI OUT(2) | SDI output 2 |
| SDI OUT(3) | SDI output 3 |
| SDI OUT(4) | SDI output 4 |
| SDI OUT(5) | Not used |

4.2 ViViD114 configuration

The jumper links on the board are set correctly when ViViD114 is tested before despatch and should be left as set at the factory. The following information is for jumper position confirmation only.



ViViD114 showing default factory jumpers

Link positions - board viewed as above

| Link | Required position |
|-------|--|
| PL2 | Must be in the +2V5 position (link pins 1-2) |
| PL3-6 | Not used |
| PL8 | Must be in the +3V3 position (link pins 1-2) |

5 Problem solving

Trouble shooting may be performed by using the card edge or remote status panel display.

5.1 Card edge status LEDs

Board edge LEDs provide status reporting and may be useful when fault finding.



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

| Status | Led Colour | Description |
|---------|------------|----------------------------------|
| PSU | Green | Power supply rail OK |
| Err | Red | Invalid input |
| 625/525 | Amber | 625 (upper) or 525 (lower) input |

5.2 Control panel status

The input status is also shown in the STATS menu of the active control panel.

| Status menu | Description | | | | |
|--|-------------|----------|---------|-----|--|
| <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>1.2</p> <table border="1" style="margin-left: 20px;"> <tr> <td>INPUT</td> <td>STANDARD</td> </tr> <tr> <td>Present</td> <td>625</td> </tr> </table> </div> | INPUT | STANDARD | Present | 625 | <p>Status menu: INPUT: Present or No Inp (No Input) STANDARD: 625 or 525</p> |
| INPUT | STANDARD | | | | |
| Present | 625 | | | | |

Note:

The status menu will not change if the input status changes whilst the status display is shown. To refresh the status display, press the 'CAL' button.

Basic fault finding guide

The Power OK LED is 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 is present and that any cabling is intact

Check that SDI OUT(5) is not used, as this is not connected

The video output exhibits jitter

Check that the input SDI stability is within normal limits and that the maximum cable length has not been exceeded

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

Check that the card is seated correctly and that the Power OK LED is 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 by simply removing the rack power and re-applying power after a few seconds or by removing the card from the rack and then re-inserting the card

It is safe to re-insert the card whilst the rack is powered

6 Specification

General

| | |
|-------------------|--|
| Dimensions | 100mm x 266 mm module with DIN 41612 connector |
| Weight | 180g |
| Power consumption | 5 W |

Inputs

| | |
|-------|--|
| Video | 270Mb/s serial digital to EBU Tech 3267-E and SMPTE-259M Cable equalisation >200m Belden 8281 or equivalent Auto 525/625 selection |
|-------|--|

Outputs

| | |
|------------------|---|
| Number and type: | 4 reclocked SDI outputs to EBU Tech 3267-E and SMPTE-259M Will drive >200m Belden 8281 or equivalent |
|------------------|---|

Processing

| | |
|---------------|---|
| Vertical data | Passes entire SDI stream, including HANC and VANC |
| Delay | Adjustable in increments of 6 pixels, lines or fields from 30 pixels to 28 frames in 525 and 24 frames in 625 |

Ordering information

| | |
|----------------------|-------------------------------------|
| ViViD114 Video Delay | For long video processing delays |
| FR2AV | 2U frame for up to 12 modules |
| FR1AV | 1U frame for up to 6 modules |
| DTBAV | 1U Desk top box for up to 2 modules |