ViPA204

Video proc-amp

USER MANUAL

Crystal Vision

Contents

1   Introduction

ViPA204 is a dual channel 10 bit video proc-amp allowing flexible independent adjustments of a digital signal image in the YUV colour space, essential for correcting transmission errors and colour space or A to D conversion errors.

ViPA204 passes all ancillary data, including embedded audio, transparently. Sixteen memories are provided to store user-defined adjustments and there is GPI output indication of YUV clipping. Control options include active frame front panel, remote panel and the Statesman PC Control System.
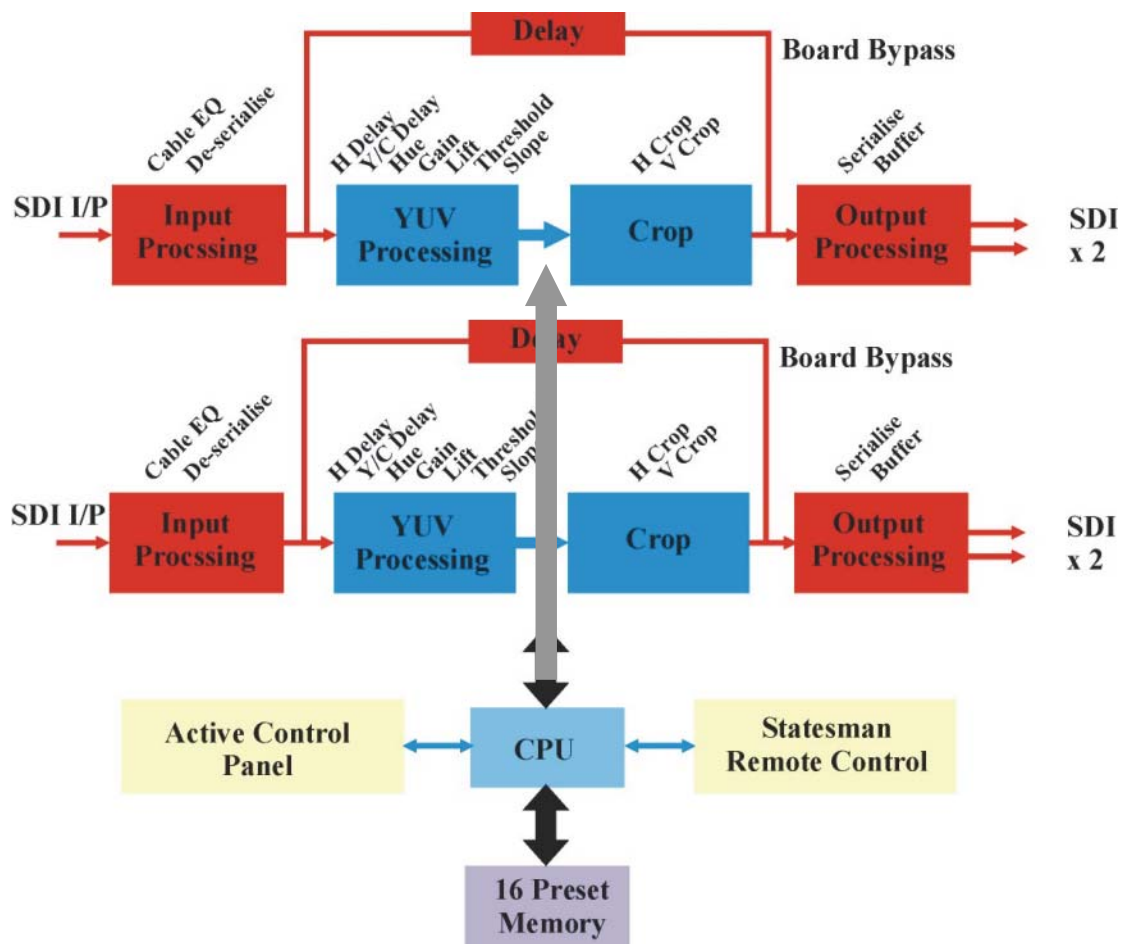
ViPA204 10-bit processing amplifier

The main features are as follows:

- Digital processing amplifier
- Upto 24 channels available in an Indigo 4 frame
- Allows independent digital image adjustments in YUV domain
- Tools to adjust level, gain, soft clipping and timing

- All limiting has adjustable softness
- Enforces CCIR601 dynamic range specification
- Bypass control
- Passes ancillary information
- Sixteen user memories
- EDH generation
- Flexible control

The ViPA204 has 2 channels both with one input and two outputs, The single channel ViPA102 is also available.

Both versions are based on 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.

Processing modes

Processing modes are as follows:

- Advance/retard Y/C offset delay in 148ns steps
- Advance/retard overall horizontal delay (74ns increments)
- Correct for NTSC colour shift (Hue) errors on the U and V channels
- Increase/decrease Y, U and V channel lift and gain independently
- Set and soft limit Y, U, and V channel positive (Hi) and negative (Lo) excursions independently
- Set horizontal and vertical active picture area cropping region on final output

Independent YUV adjustable soft clipping ensure colours do not overrun the CCIR601 specification by forcing the picture to remain within the valid dynamic signal range whilst avoiding picture artefacts caused by hard clipping.

The adjustable horizontal and vertical cropping may be used to clean up picture edges. For example, the vertical crop can be used to remove widescreen-signalling information now part of the active picture following aspect ratio conversion.

If no correction is required processing is completely transparent, preserving signal integrity.

26/09/05

Soft limiting

Soft limiting or clipping is provided by a combination of adjustable threshold and slope controls. The luminance channel has both high and low limiting, whilst UV channels have one clipping control for each colour component.

Luminance soft clip
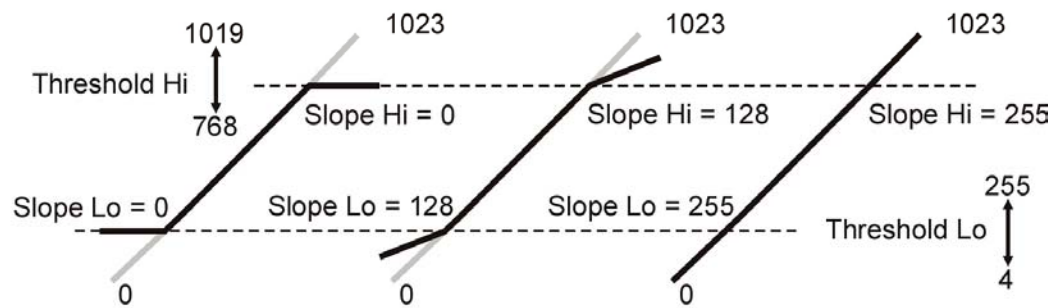
UV soft clip

ViPA soft limiting

2 Installing Statesman

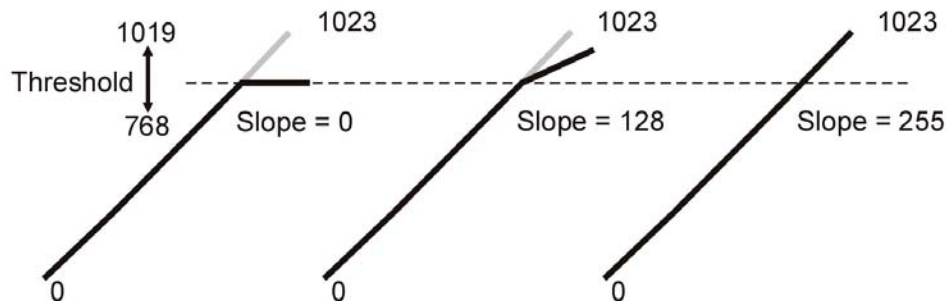The Crystal Vision Statesman PC control software is designed to control a range of Crystal Vision modules via serial control from a PC. Statesman provides a user friendly means of configuring and operating the ViPA204 with the benefit of see-at-a-glance status monitoring. Most functions can be accessed from Statesman menus.

The main Statesman application communicates with each module in a frame through an active control panel. An active panel must be fitted to allow for Statesman control.

2.1 Installation

Minimum pre-requisites:

- A PC running Windows 98, NT4 with SP 5 or higher Windows 2000 or Windows XP
- A parallel port dongle supplied with the Statesman software package
- An RS422 serial connection from the host PC to the Remote 2 connector on an FR1AV or FR2AV Crystal Vision frame with at least one ViPA102 module and/or other Statesman compatible module
- An active control panel MUST be fitted to the frame with version 1.50 or above firmware
- An optional RS422 to RS232 converter if the PC has no RS422 ports

Installing Statesman

- Refer to the readme and/or help file on the CD before proceeding
- To view all application windows, set graphics resolution to at least 1024 x 768
- Remove any previous version of the Statesman software using the Add/Remove Programs application in the Windows Control Panel
- Ensure that the Statesman dongle is fitted to the parallel port of the host PC
- Insert the Statesman CD and the installation should start immediately – if it does not, run the setup.exe file on the CD
- Obey any installation program prompts and restart the PC when prompted

Running Statesman for the first time

The Statesman PC Control System may be run from the Crystal Vision programs folder via the Start menu or by double-clicking on the Crystal Vision.exe file in the installed program directory.

When the program runs it should automatically detect any statesman compatible modules in the connected frame or frames and display them in the main application left hand explorer-style window.

Open any frame by clicking on the '+' sign or by double clicking on a frame. Installed modules should be shown with module icons. Frame and module icons can be named as desired by right-clicking or using the edit menu.

2.2 Statesman operation

The initial view will show an explorer style view of the connected frames and modules. Double-click on a module to display the main application control panes.
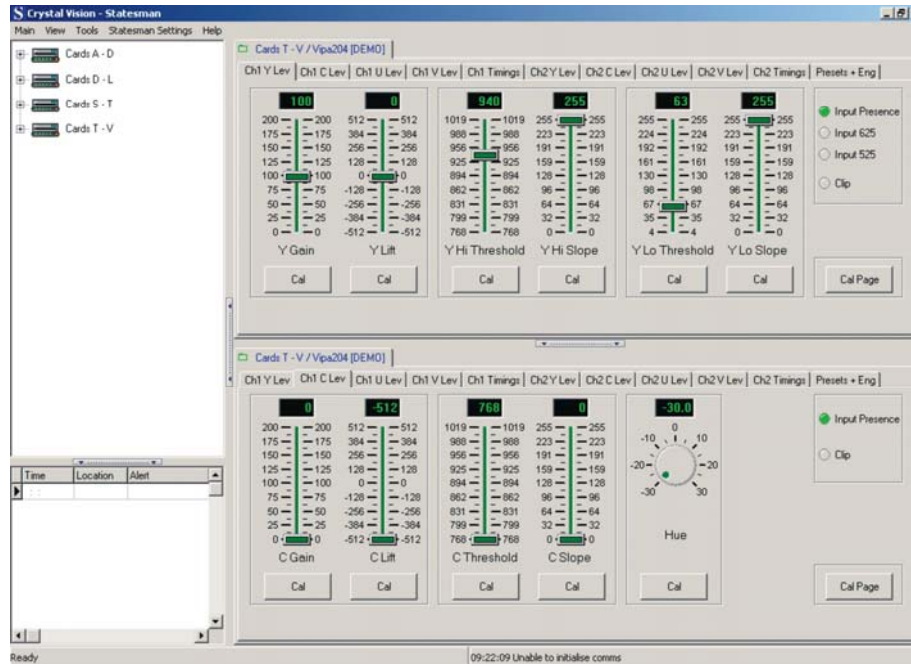
Statesman main application window. Note all panes are duplicated for both Ch1 & Ch2

The two control panes 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 plane or drag the button to vary the size of the panes.

The two panes allow dual-control display of two menus such as Luminance and Chrominance controls or U and V controls.

Associated controls such as U and V may be ganged together by right-clicking on them to associate them. Moving the last selected control should then move all associated controls.

Controlling luminance levels

The Y Levels menu provides access to Y Gain, Y Lift, Y Hi Threshold, Y Hi Slope, Y Lo Threshold and Y Lo Slope controls.
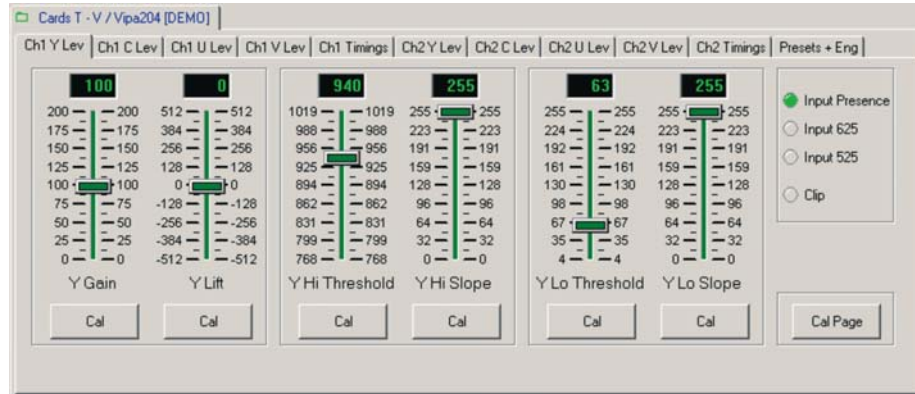
The Y level control ranges and default values are as follows:

Y controls	Min	Default	Max
Y Gain	0	100	200
Y Lift	-512	0	512
Y Hi Threshold	768	940	1019
Y Hi Slope	0	255	255
Y Lo Threshold	4	63	255
Y Lo Slope	0	255	255

Default values can easily be entered by clicking on individual Cal buttons or by clicking on the Cal Page button to enter default values for all controls.

The Input Present, Input line standard and Clipping warning indicators are shown on the right of the menu.

Controlling chrominance levels

The Chroma Levels menu provides access to C Gain, C Lift, C Threshold and C Slope.
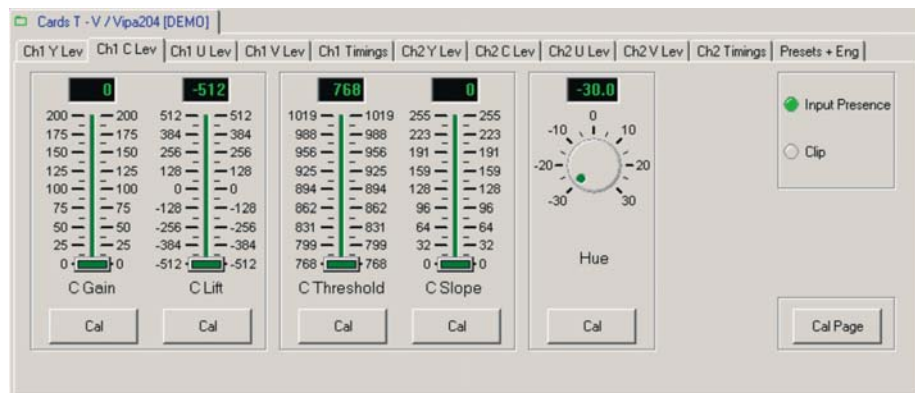
Chroma level controls

The Chroma level control ranges and default values are as follows:

C controls	Min	Default	Max
C Gain	0	100	200
C Lift	-512	0	512
C Threshold	768	960	1019
C Slope	0	255	255
Hue	-30	0	30

Default values can easily be entered by clicking on individual Cal buttons or by clicking on the Cal Page button to enter default values for all controls.

The Input Present and Clipping warning indicators are shown on the right of the menu.

Controlling U levels

The U Levels menu provides access to U Gain, U Lift, U Threshold, and U Slope controls.

U level controls

The U level control ranges and default values are as follows:

U controls	Min	Default	Max
U Gain	0	100	200
U Lift	-512	0	512
U Threshold	768	960	1019
U Slope	0	255	255

Default values can easily be entered by clicking on individual Cal buttons or by clicking on the Cal Page button to enter default values for all controls.

The Input Present and Clipping warning indicators are shown on the right of the menu.

Controlling V levels

The V Levels menu provides access to V Gain, V Lift, V Threshold, and V Slope controls.

The V level control ranges and default values are as follows:

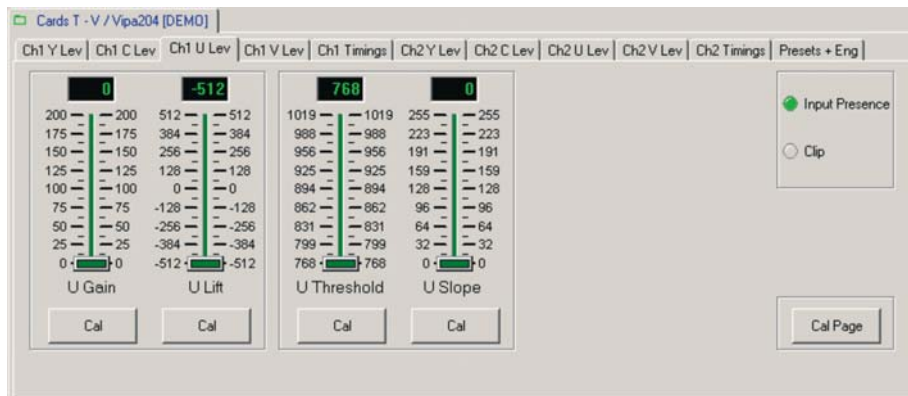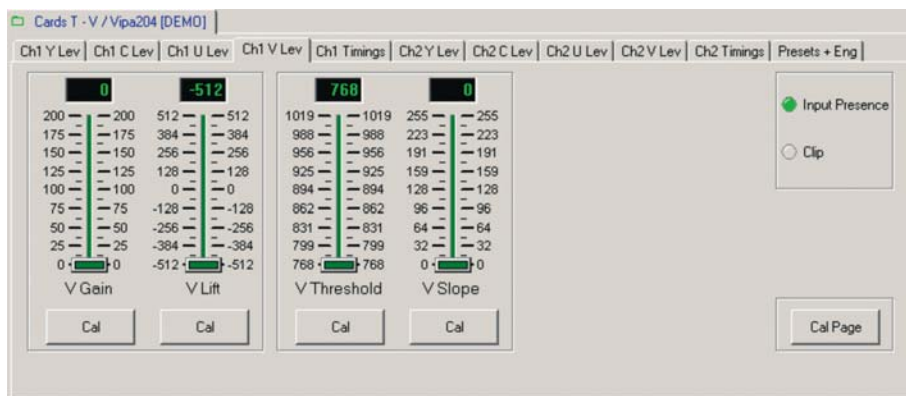| V controls	Min	Default	Max
V Gain	0	100	200
V Lift	-512	0	512
V Threshold	768	960	1019
V Slope	0	255	255

Default values can easily be entered by clicking on individual Cal buttons or by clicking on the Cal Page button to enter default values for all controls.

The Input Present and Clipping warning indicators are shown on the right of the menu.

Adjusting picture timing and crop

The picture crop menu provides access to the H Crop Start, H Crop End, V Crop Start, V Crop End, H Delay and Y/C offset controls.
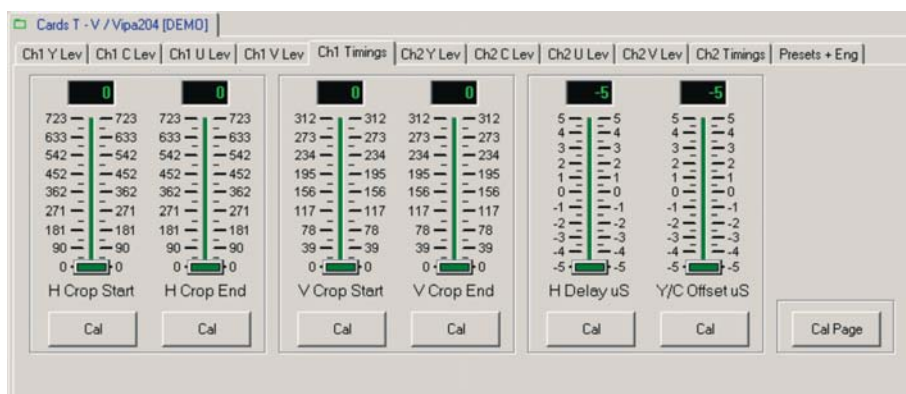
Timing and Picture crop controls

The Picture Crop control ranges and default values are as follows:

Crop controls	Min	Default	Max
H Crop Start	0	0	723
H Crop End	0	723	723
V Crop Start - 625	22	22	312
V Crop End - 625	22	312	312
V Crop Start - 525	20	20	265
V Crop End - 525	20	265	265

The Delay control ranges and default values are as follows:

Delay controls	Min	Default	Max
H Delay	-128	0	128
Y/C Delay	-128	0	128

Default values can easily be entered by clicking on individual Cal buttons or by clicking on the Cal Page button to enter default values for all controls.

Presets and Engineering

The presets menu allows up to 16 card configurations for each channel to be stored as recallable presets.
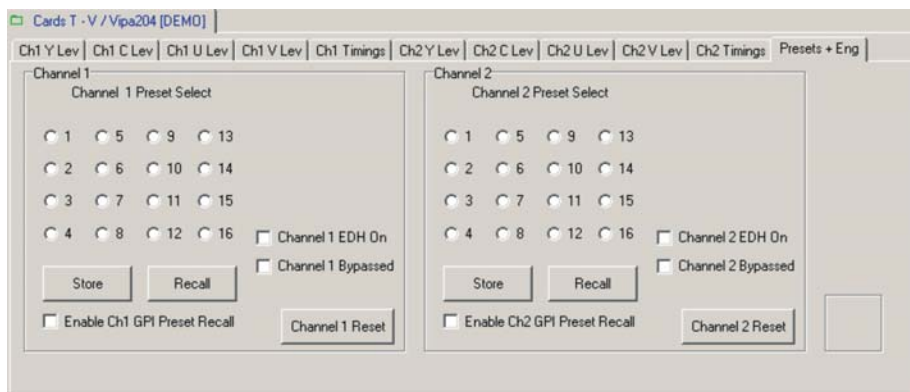
Presets and Engineering controls

It is strongly recommended to uncheck the Enable GPI Preset recall, to prevent inadvertent GPI recall whilst using this menu.

EDH generation

To enable EDH generation place a tick in the EDH On check box.

Board bypass

The entire YUV processing may be bypassed, creating in effect a simple one in, two out
SDI distribution amplifier, by clicking in the Board Bypass check box.

Factory reset

The factory reset can be applied to both channels of the ViPA204 module individually,
restoring the factory defaults to all parameters. This is a convenient way to re-initialise
the board in the unlikely event of any suspected malfunction.

3 Using the active control panel

3.1 Module selected

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

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

At power up, the two line 20-character screen will display 'Crystal Vision' followed by the firmware version number for the control panel. All eight control panel keys LEDs will illuminate.

The Crystal Vision control panel start up display

'Control Panel' then briefly replaces the version number display.

If the control panel firmware has been updated for Statesman control (version 1.5.0 or higher), Statesman Mode will be entered and the message, 'Press CAL to Exit' will be displayed and the CAL LED will light.

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 setup 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 VIPA204

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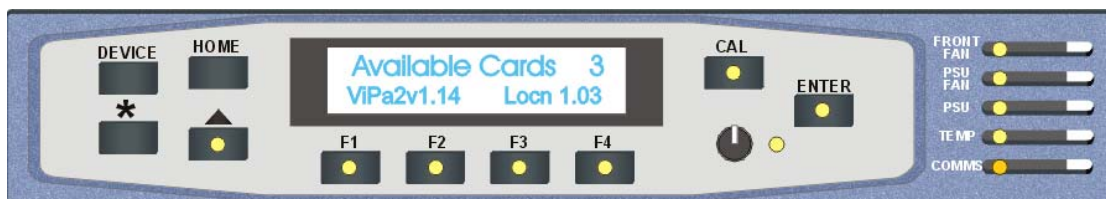
The available cards menu

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 3.

When the desired card is selected press the ENTER key to access that card's HOME menu.

The message shows that a ViPa204 has been selected with the version of software fitted as V1.40.
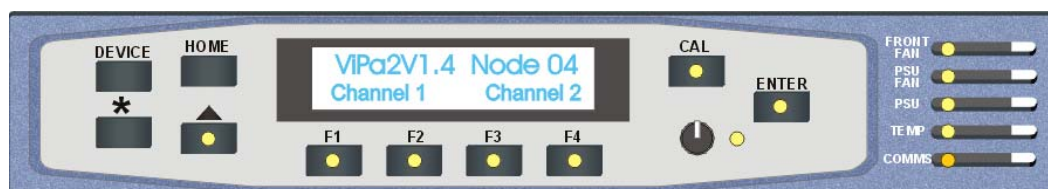
The ViPa204 home menu

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 mode changes occur through the use of Statesman, card edge controls or through automatic response to the input video signal, the text displayed on the active front panel will not be updated immediately. If necessary, press CAL to update the display.

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.

3.2 The ViPA204 active panel menu structure

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.
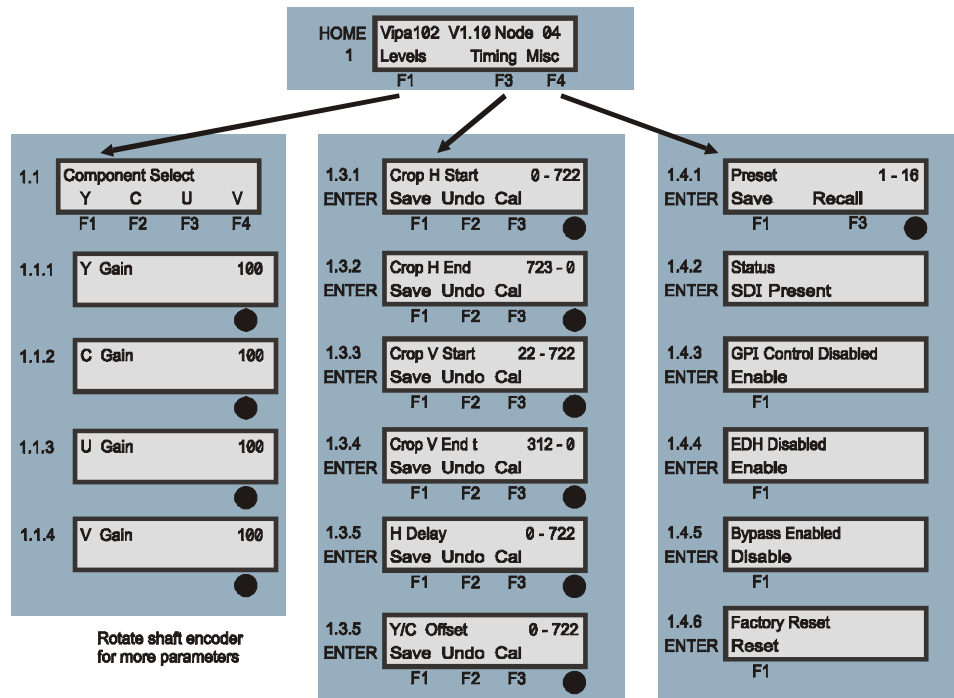
. Both channels have an identical structure so only Channel 1 is shown here.

The ViPa204 home menu

The main top-level menus for the ViPa204 module are obtained by pressing the F1, F3 and F4 keys from the HOME menu. Menu keys are illuminated when active and when further menus are available.

The following chart shows the available menus.

The ViPA204 Channel 1 menu tree, (channel 2 identicale).

3.3 Component processing

Pressing F1 from the home menu will bring up the component Select menu. This menu provides access to Gain, Lift, Threshold and Slope parameters for Luminance (Y), Chrominance (C), and the Pb (U) and Pr(V) colour difference components of the incoming SDI signal.

ViPA102 Component Select menu	Provides access to the following sub-menus:
	Y (Luminance) Menu – press F1 C (Chrominance) Menu – press F2 U (Pb) Menu – press F3 V (Pr) Menu – press F4

Press F1 from Component Select menu 1.1 and then rotate the shaft encoder to access the Y processing menus. Press the ENTER key when the chosen menu is displayed to enter data-entry mode. Press ENTER again to leave the data-entry mode and continue navigating the available menus.

Note: It may be necessary to press the ENTER key when first navigating the available menus.

ViPA102 Y menu	Description

```
1.1.1.1  Y Gain     0 > 100 > 200
ENTER    Save  Undo  Cal
            F1     F2     F3      ●
```
Set Y gain from 0 to 200 – default/unity gain: 100
F1:Save, F2: Undo, F3: Cal (default value)

```
1.1.1.2  Y Lift    -512 > 0 > 512
ENTER    Save  Undo  Cal
            F1     F2     F3      ●
```
Set Y Lift from -512 to 512 – default is: 0
F1:Save, F2: Undo, F3: Cal (default value)

```
1.1.1.3  YThreshold Hi 768>940>1019
ENTER    Save  Undo  Cal
            F1     F2     F3      ●
```
Set Y Threshold Hi from 768 to 1019 – default is: 940
F1:Save, F2: Undo, F3: Cal (default value)

```
1.1.1.4  Y Slope Hi      0 > 255
ENTER    Save  Undo  Cal
            F1     F2     F3      ●
```
Set Y Slope Hi from 255 to 0 – default is: 255
F1:Save, F2: Undo, F3: Cal (default value)

```
1.1.1.5  Y Threshold Lo 4>63>255
ENTER    Save  Undo  Cal
            F1     F2     F3      ●
```
Set Y Threshold Lo from 4 to 255 – default is: 63
F1:Save, F2: Undo, F3: Cal (default value)

```
1.1.1.6  Y Slope Lo      0 > 255
ENTER    Save  Undo  Cal
            F1     F2     F3      ●
```
Set Y Slope Lo from 255 to 0 – default is: 255
F1:Save, F2: Undo, F3: Cal (default value)

Press F2 from Component Select menu 1.1 and then rotate the shaft encoder to access the C processing menus. Press the ENTER key when the chosen menu is displayed to enter data-entry mode. Press ENTER again to leave the data-entry mode and continue navigating the available menus.

ViPA102 C menu	Description

```
1.1.2.1  C Gain     0 > 100 > 200
ENTER    Save  Undo  Cal
            F1     F2     F3      ●
```
Set C gain from 0 to 200 – default/unity gain: 100
F1:Save, F2: Undo, F3: Cal (default value)

```
1.1.2.2  C Lift    -512 > 0 > 512
ENTER    Save  Undo  Cal
            F1     F2     F3      ●
```
Set C Lift from -512 to 512 – default is: 0
F1:Save, F2: Undo, F3: Cal (default value)

```
1.1.2.3  C Threshold  768>960>1019
ENTER    Save  Undo  Cal
            F1     F2     F3      ●
```
Set C Threshold from 768 to 1019 – default is: 960
F1:Save, F2: Undo, F3: Cal (default value)

```
1.1.2.4  C Slope       0 > 255
ENTER    Save  Undo  Cal
            F1     F2     F3      ●
```
Set C Slope from 255 to 0 – default is: 255
F1:Save, F2: Undo, F3: Cal (default value)

```
1.1.2.5  Hue          -30>0>30
ENTER    Save  Undo  Cal
            F1     F2     F3      ●
```
Set C Hue from -30 to 30 – default is: 0
F1:Save, F2: Undo, F3: Cal (default value)

Press F3 from Component Select menu 1.1 and then rotate the shaft encoder to access the U processing menus. Press the ENTER key when the chosen menu is displayed to enter data-entry mode. Press ENTER again to leave the data-entry mode and continue navigating the available menus.

ViPA102 U menu	Description
1.1.3.1 ENTER — U Gain 0 > 100 > 200 — Save Undo Cal — F1 F2 F3	Set U gain from 0 to 200 – default/unity gain: 100 F1:Save, F2: Undo, F3: Cal (default value)
1.1.3.2 ENTER — U Lift -512 > 0 > 512 — Save Undo Cal — F1 F2 F3	Set U Lift from -512 to 512 – default is: 0 F1:Save, F2: Undo, F3: Cal (default value)
1.1.3.3 ENTER — U Threshold 768>960>1019 — Save Undo Cal — F1 F2 F3	Set U Threshold from 768 to 1019 – default is: 960 F1:Save, F2: Undo, F3: Cal (default value)
1.1.3.4 ENTER — U Slope 0 > 255 — Save Undo Cal — F1 F2 F3	Set U Slope from 255 to 0 – default is: 255 F1:Save, F2: Undo, F3: Cal (default value)

Press F4 from Component Select menu 1.1 and then rotate the shaft encoder to access the V processing menus. Press the ENTER key when the chosen menu is displayed to enter data-entry mode. Press ENTER again to leave the data-entry mode and continue navigating the available menus.

ViPA102 V menu	Description
1.1.4.1 ENTER — V Gain 0 > 100 > 200 — Save Undo Cal — F1 F2 F3	Set V gain from 0 to 200 – default/unity gain: 100 F1:Save, F2: Undo, F3: Cal (default value)
1.1.4.2 ENTER — V Lift -512 > 0 > 512 — Save Undo Cal — F1 F2 F3	Set V Lift from -512 to 512 – default is: 0 F1:Save, F2: Undo, F3: Cal (default value)
1.1.4.3 ENTER — V Threshold 768>960>1019 — Save Undo Cal — F1 F2 F3	Set V Threshold from 768 to 1019 – default is: 960 F1:Save, F2: Undo, F3: Cal (default value)
1.1.4.4 ENTER — V Slope 0 > 255 — Save Undo Cal — F1 F2 F3	Set V Slope from 255 to 0 – default is: 255 F1:Save, F2: Undo, F3: Cal (default value)

3.4 Timing

Pressing F3 from the home menu will bring up the Timing menu. The Timing menu provides access to Crop, horizontal delay and Y/C Offset controls.

ViPA102 Timing menu	Description
1.3.1 ENTER — Crop H Start 0 > 723 — Save Undo Cal — F1 F2 F3	Set Crop H Startn from 0 to 723 – default: 0 F1:Save, F2: Undo, F3: Cal (default value)
1.3.2 ENTER — Crop H End 723 > 0 — Save Undo Cal — F1 F2 F3	Set Crop H End from 723 to 0 – default is: 723 F1:Save, F2: Undo, F3: Cal (default value)
1.3.3 ENTER — Crop V Start 22 > 312 — Save Undo Cal — F1 F2 F3	Set Crop V Start from 22(20) to 312(265) – default is: 22(20) – number in brackets is for 525 F1:Save, F2: Undo, F3: Cal (default value)
1.3.4 ENTER — Crop V End 312 > 22 — Save Undo Cal — F1 F2 F3	Set Crop V End from 312(265) to 22(20) – default is: 312(265) – number in brackets is for 525 F1:Save, F2: Undo, F3: Cal (default value)
1.3.5 ENTER — H Delay -128 > 0 > 128 — Save Undo Cal — F1 F2 F3	Set H delay from -128 to 128 – default is: 0 F1:Save, F2: Undo, F3: Cal (default value)
1.3.5 ENTER — Y/C Offset -128 > 0 > 128 — Save Undo Cal — F1 F2 F3	Set Y/C Offset from -128 to 128 – default is: 0 F1:Save, F2: Undo, F3: Cal (default value)

3.5 Miscellaneous

Pressing F4 from the home menu will bring up the Miscellaneous menu. The Miscellaneous menu provides access to Preset, Status, GPI, EDH, Bypass and Factory Reset controls.

Rotate the shaft encoder to access the Miscellaneous menus. Press the ENTER key when the chosen menu is displayed to enter data-entry mode. Press ENTER again to leave the data-entry mode and continue navigating the available menus.
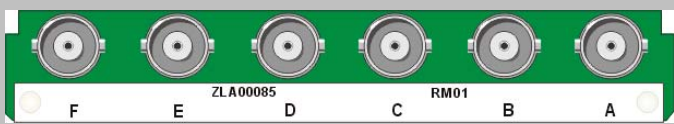
ViPA102 Miscellaneous menu	Description
1.4.1 ENTER Preset 1 - 16 Save Recall F1 F3 ●	Select preset memory from 1 to 16 F1:Save, F2: Undo, F3: Cal (default value)
1.4.2 ENTER Status SDI Present	Show current status - e.g. SDI Present/Missing It is not necessary to press ENTER
1.4.3 ENTER GPI Control Disabled Enable F1	Enable or disable GPI control F1: Enable/Disable
1.4.4 ENTER EDH Disabled Enable F1	Enable or disable EDH checking F1: Enable/Disable
1.4.5 ENTER Bypass Enabled Disable F1	Enable or disable board bypass F1: Enable/Disable
1.3.6 ENTER Factory Reset Reset F1	Apply factory reset F1: Reset

4   Installation

The ViPA102 colour corrector and legaliser 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 module and signal I/O

RM01 rear module connections:

RM01	Description
	RM01 (ZLA00085 artwork) • 24 modules per Indigo 4, 12 per Indigo 2, & 2 per DTBAV frame • All frame slots can be used

BNC	Signal
A	Channel 2 Serial Digital Out 2
B	Channel 1 Serial Digital In
C	Channel 2 Serial Digital In2
D	Channel 1 Serial Digital Out 1
E	Channel 1 Serial Digital Out 2
F	Channel 2 Serial Digital Out 1

4.2 ViPA204 configuration

The jumper links on the board are set correctly when ViPA204 is tested before despatch and should be left as set at the factory. The following information is for jumper position confirmation only.
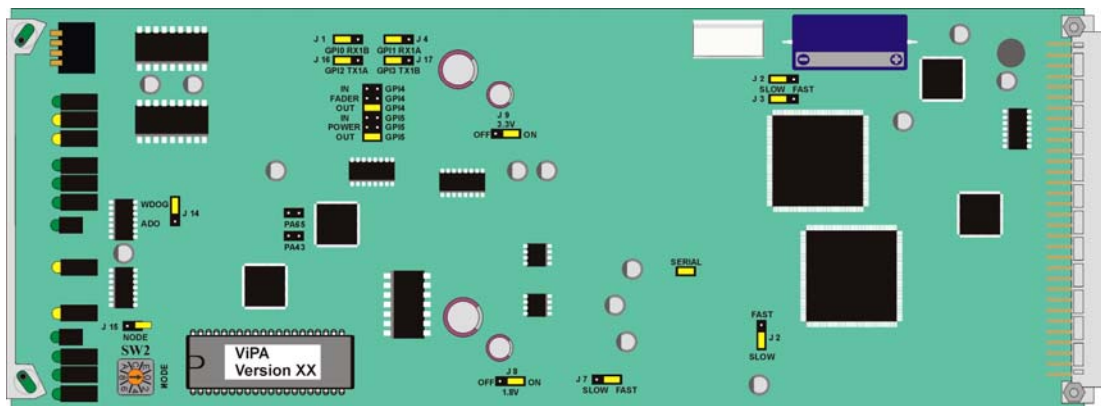
ViPA102 showing default factory jumpers

Link positions - board viewed as above

Link	Required position
J8 & J9	Must be in the ON position
J2, J3, J5, J7	Must be in the SLOW position
J6	Leave jumper in place
J14	Leave in WDOG position
J1, J4, J16, J17	Leave in GP 0 – 3 positions
PL7	Selects GPI 4 (IN/FADER/OUT) and GPI 5 (IN/POWER/OUT) function – default is OUT
PA43/PA65	Not used

Setting node addresses

In the Indigo 2, & Indigo 4 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.

5 Problem solving

Once the start-up initialisation procedure is complete, the ViPA102 card can be controlled or configured from active control panel or the Statesman PC interface. Although operation from the card edge is not possible status information is supplied at the card edge from a number of LEDs.

The front edge of the card provides status LEDs for serial control, input presence, GPI status and bypass indication. There is also a CPU heat beat LED and power rail monitoring.
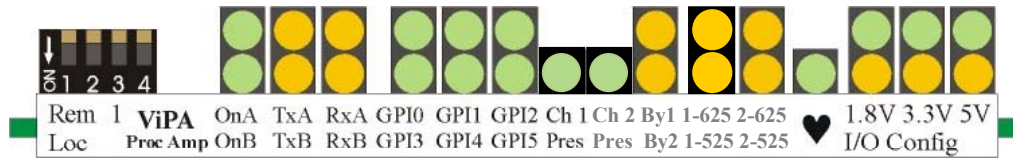
ViPA204 front edge view

Note:

The 4-way DIL switch has no function on ViPA204.
Both input LEDs illuminate when an input signal is present.

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

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

Status	Led Colour	Description
OnA, OnB	Green - flashing	Communications OK
TxA	Amber - flashing	Serial communication data transmission
RxA	Amber - flashing	Serial communication data reception
OnB, TxB, RxB	N/A	Not used
GPI 0 to 5	Green	GPI preset selection
Ch 1 Pres	Green	Input Present
Ch 2 Pres	Green	Input Present
Bypass 1	Amber	Bypass indication
Bypass 2	Amber	Bypass indication
1-625/525	Amber	Indicates 625 (upper LED) or 525 (lower LED)
2-625/525	Amber	Indicates 625 (upper LED) or 525 (lower LED)
♥ - flashing	Green	Heartbeat – CPU OK
1.3V	Green	1.3V supply rail OK
3.3V	Green	3.3V supply rail OK
5 V	Green	5V supply rail OK
I/O Config	Amber	Not used

26/09/05

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 Statesman 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 RXA and TXA lights – flashing indicates successful communications with panel

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	8 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:	2 reclocked SDI outputs to EBU Tech 3267-E and SMPTE-259M with inserted EDH
	Will drive >200m Belden 8281 or equivalent

Processing

Vertical data	Passes entire SDI stream, including HANC and VANC
Delay	Typical input to output delay approx 1μs

Control

Local/remote control panel	Multi-drop 19200 Baud, 8 bits, no parity – control from local frame active front panel / remote panel
Statesman	RS422 control via 9-way Remote 2 connector on FR2AV and FR1AV frames

GPI Inputs

Type	Memory recall
Active	Connect to ground
Inactive	High impedance, or 5 volts
Input current	Input current <50μA

GPI Outputs

Type	Picture clipped

Ordering information

ViPA204	two channel video proc amp
Statesman	PC Control System

Frames

Indigo 4	4U frame with passive front panel for up to 24 modules
Indigo 2	2U frame with passive front panel for up to 12 modules
Indigo 1	1U frame with passive front panel for up to 6 modules
Indigo DT	Desk top box with passive front panel for up to 2 modules
Indigo 2A	2U frame, Statesman enabled with active control panel for up 12 modules
Indigo 1A	1U frame, Statesman enabled with active control panel for up 6 modules
Indigo DTA	Desk top box, Statesman enabled with active control panel for up 2 modules
Indigo 4S	4U frame with passive front panel fitted with Statesman CPU for up to 24 modules
Indigo 2S	2U frame with passive front panel fitted with Statesman CPU for up to 12 modules
Indigo 1S	1U frame with passive front panel fitted with Statesman CPU for up to 6 modules
Indigo DTS	Desk top box with passive front panel fitted with Statesman CPU for up to 2 modules
Indigo 2-48V	48V 2U frame with passive front panel for up to 12 modules
Indigo 1-48V	48V 1U frame with passive front panel for up to 6 modules
Indigo 2A-48V	48V 2U frame, Statesman enabled, with active control panel for up 12 modules
Indigo 1A-48V	48V 1U frame, Statesman enabled, with active control panel for up 6 modules
Indigo 2S-48V	48V 2U frame with passive front panel fitted with Statesman CPU for up to 12 modules
Indigo 1S-48V	48V 1U frame with passive front panel fitted with Statesman CPU for up to 6 modules