VDA210R

Analogue video distribution amplifier

USER MANUAL

Crystal Vision

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Contents

1 Introduction

The VDA210R is a dual analogue video distribution amplifier with two inputs. In dual channel mode it supports up to five main outputs per channel. In single channel mode, it supports up to ten main outputs.

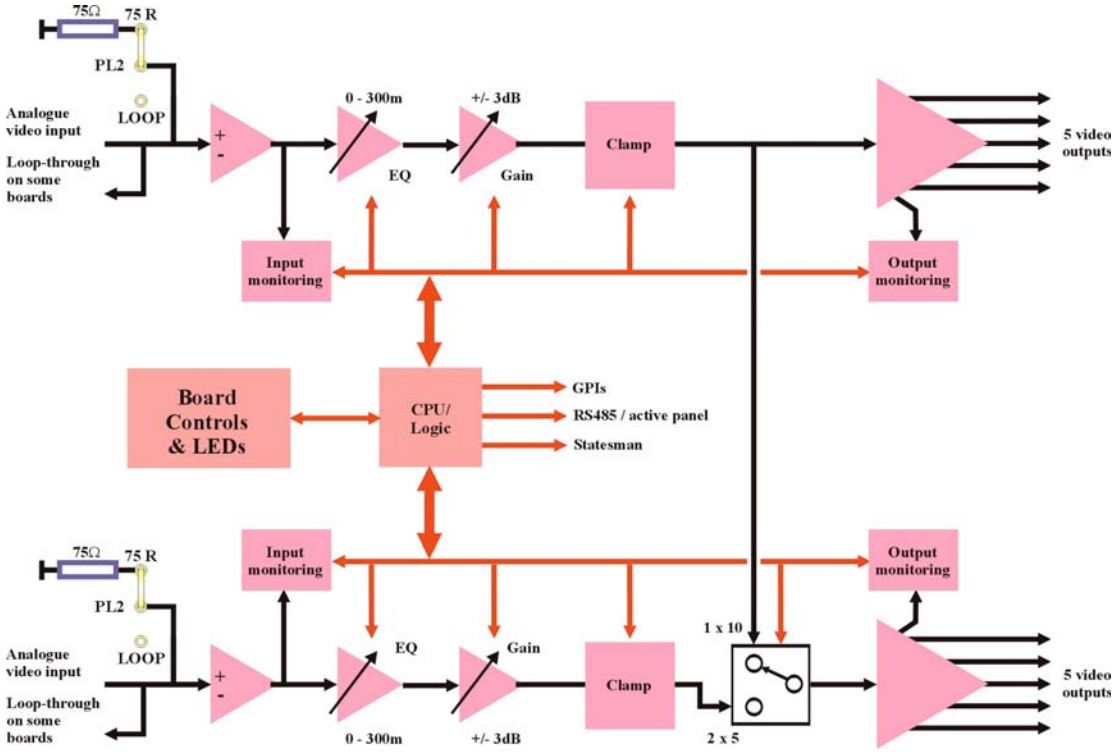
It has adjustable gain, equalisation and clamp and gives sophisticated error reporting, including dark and white clip video. Input termination is link selectable.

The VDA210R may be used with the RM01 single slot rear connector, the RM02 quadruple slot rear connector and the RM15 and RM18 double slot rear connectors.

The rear module used determines the number of loop-though and main outputs. Passive loop-through is independent of the amplifier; the module may be removed without losing the looped-through source.

The unit plugs into the front of the rack frame, and the universal connection system allows a mixture of Crystal Vision modules in the frame.

The hinged front panel of the case reveals LED indication of Dark, Clip, Input Sync Error line standard (525/625), PSU status and controls for cable equalisation, gain and output clamping.



VDA210R video distribution amplifier

General-Purpose Interface lines are also provided to indicate dark, clip and input presence.

The main features are as follows:

- Dual 1 in 5-out or single 1 in 10-out video distribution amplifier
- Continuously variable equalisation for up to 300 metres of coaxial cable.
- GPI dark, clip and input presence indication for each channel
- Inputs may be terminated in 75Ω or left unterminated (HiZ) – on-board jumper
- Optimise error correction and clamp for channel two signal type – ideal for split Luma/Chroma operation
- Bulb or LED GPI drive capability
- Card edge, active/remote panel and Statesman control options

Note: This manual covers the dual channel VDA210R. The single channel VDA110R and the VDA110M/210M without remote control are also available.

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 VDA210R 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 or Statesman enabled control panel. A passive panel cannot be used for Statesman control.

Minimum pre-requisites:

- A PC running either Windows 2000 or Windows XP is recommended
- A parallel port dongle for Statesman PCs with attached Crystal Vision frames
- An RS422 serial connection from the host PC to the Control/422 RJ45 or Remote/RMT 2 connector on Crystal Vision frames
- An active or Statesman enabled control panel MUST be fitted to the frame with version 1.63 or above firmware – if it is an Indigo frame the firmware must be V1.04 or above
- 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 will require licence information and an administrator name and password. It will also need to know which computer port is being used to connect to a Crystal Vision frame(s).

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

3 Statesman operation

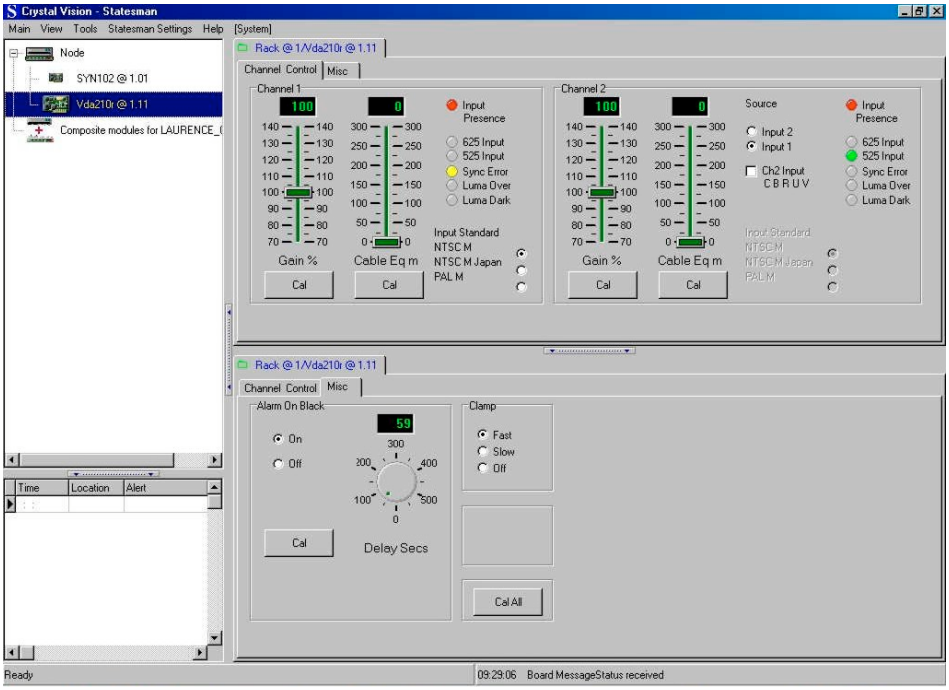
Once Statesman is configured it should automatically detect any statesman compatible modules in the connected frame or frames and display them in the left hand explorer-style window of the main application.

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 and choosing rename.

To aid user recognition of module and frame status quickly, the following colour and size coding is used:

- A module is shown present by full colour and absent by greyed colour
- A module is shown open by large icon size and closed by small icon
- A module is the source of an active alarm if red and not alarmed if green

Double-clicking on a module will enable the display of the main application menus.



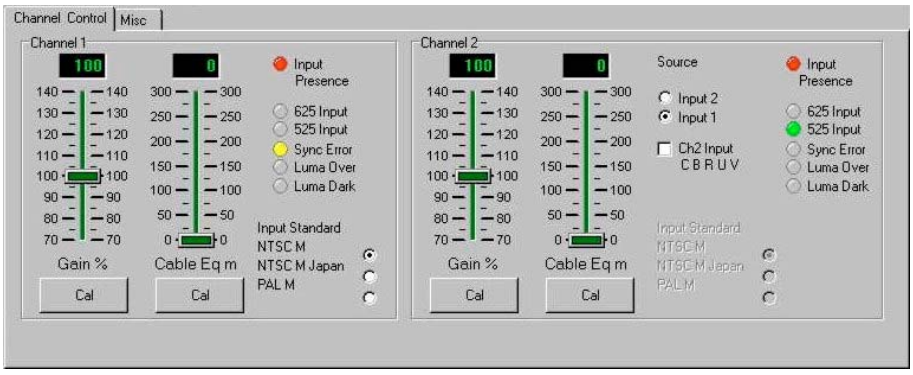
Statesman main application window

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 plane or drag the button to vary the size of the panes.

3.1 Video status and settings

The VDA 210 Control tab provides access to the following

- Variable gain for each channel
- Variable equalisation for each channel
- Input status/error status/standard for each channel
- Source select
- Second channel type select



VDA210R Control tab

Gain

Video gain may be varied in gain in 0.025dB steps from 70% (–3.0dB) to 140% (+3.0dB) using the slider provided. Press the CAL button to restore unity gain.

Equalisation

Cable loss compensation may be varied in 1.2m (4 feet) steps from zero to 300m (0 to 984 feet).

Press the CAL button to restore the default of zero equalisation.

Status indicators

Ind	Colour	Meaning when lit
Inp Presence	Green	Composite / Y + sync / Green + sync input signal present.
Sync Error	Yellow	Input sync size <90% or >110% of expected value.
Luma Over	Yellow	Output Luma levels >110% of peak white
Luma Dark	Yellow	Output Luma level <15% of peak white for time delay set by rotary Delay control
525	Green	525-line signal input
625	Green	625-line signal input

Input standard select

Although the input standard is detected automatically, it may help to match the on-board video content error detection with the precise input video standard. Use the Input standard check boxes to select the standard that matches the actual input present.

Std	Default	Alternatives
625	PAL-B, -G, -H or -I.	PAL-N or PAL-N (Argentina).
525	NTSC-M	PAL-M or NTSC-M (Japan).

Source select

The VDA210R can be operated in two modes:

- 2 x 5 – dual channel mode; seconds channel uses Input 2 as source
- 1 x 10 – single channel mode; second channel uses Input 1 as source

To change mode check either Input 1 or Input 2 as the source for Channel 2.

Note: The second channel input will not appear at the output when Channel 2 uses Input 1 and Input 2 status indicators will be greyed out.

Second channel type select

The Channel 2 CBRUV check box is provided to allow the on-board error detection and output clamp to be matched with the input 2 video format.

If the CBRUV box is left unchecked a composite video, Y + sync or G + sync input is assumed. In this case, input error status reporting is activated and the output clamp uses the sync pulses on input 2 to DC-restore output 2.

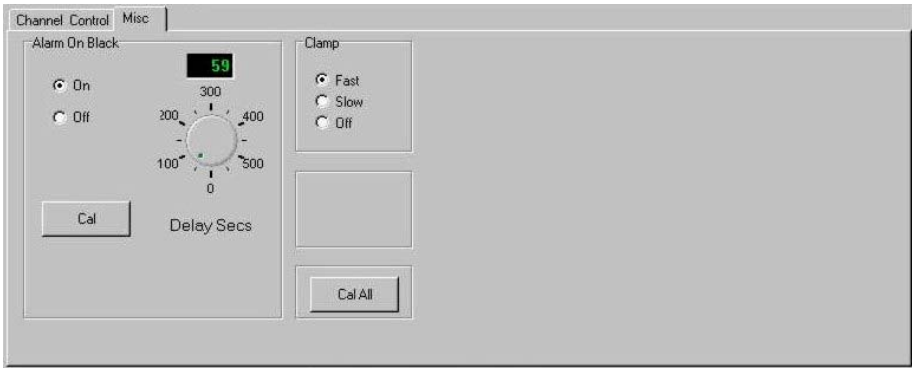
If the CBRUV box is checked, a chroma input is assumed. In this case channel 2 error detection is disabled and the output clamp uses the sync pulses on input 1 to DC-restore output 2.

Note: The second channel input type box is not greyed out even when Input 2 is not used to contribute to any outputs.

3.2 Setting alarm/clamp options and recalling factory defaults

The Misc tab provides access to the following:

- Alarm on black on/off/delay
- Clamp – fast, slow, off
- Set defaults – Cal All



VDA210R Misc tab

Alarm on black

Use the rotary control to adjust the delay time after which dark (<15% Luma) picture content sets an alarm. The delay is adjustable in 1 second steps from 1 second to 10 minutes. Check the Off box to disable the dark alarm and the corresponding GPI output.

Output clamp

Check an appropriate clamp option.

Fast provides a recovery time of approximately 6 lines. Slow provides a recovery time of approximately 60 lines. Off selects an AC-coupled output.

Cal all

Click on Cal All to clear all user adjustments and set the VDA210R to factory defaults.

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

4 Using the active control panel

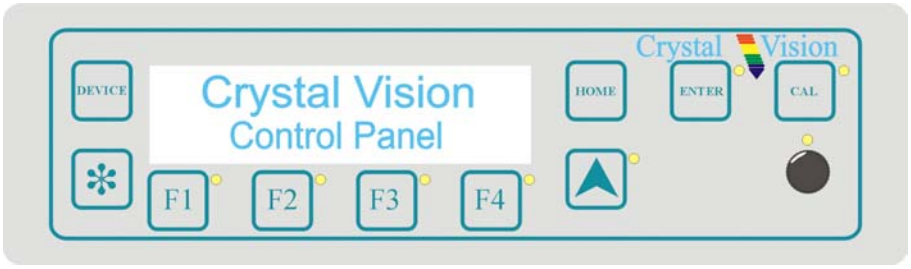
This operational guide assumes that the panel has been setup according to the Panel setup procedure described in the Crystal Vision Control Panel manual.

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 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

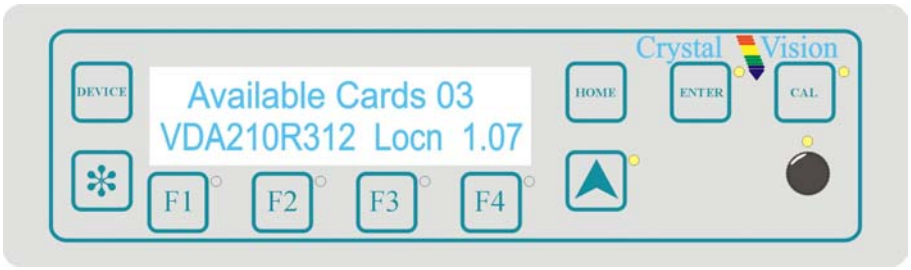
To continue with control panel operation or configuration, press the 'CAL' key once. A second press of the 'CAL' key will return to Statesman control.

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.

Selecting the VDA210R

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.



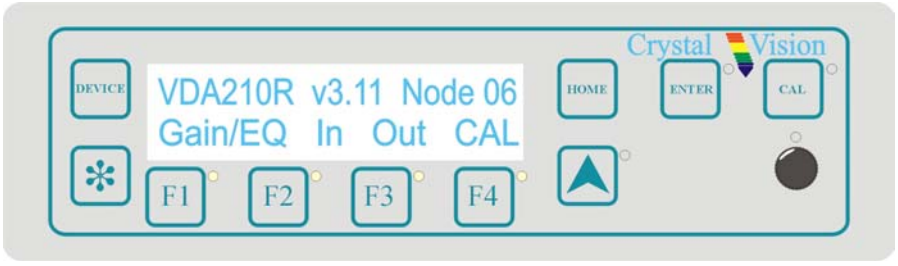
Device menu showing available cards

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 7.

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

If remote control has been enabled, the control panel will then enter card mode and communicate with the VDA210R at the node number (usually location –1 in a single frame) most recently displayed in the available cards list. If the card is in local mode, 'Remote Ctrl Disabled' will be displayed.



The VDA210R home menu

Note: The VDA210R will need to have the card edge local/remote switch (lever 2) in the DOWN position to enable active or remote control panel operation. Refer to the Card edge operation chapter or Installation chapter for more information.

Navigating the display

The functions assigned to control panel keys are dependent on the card selected for control, and the panel mode. The following list illustrates the functions when controlling a VDA210R.

- DEVICE – enters Device menu to select a card or card to control / enter Panel setup when held down during power up / shows frame status when pressed from Statesman mode
- CAL – Enter or leave Statesman mode / enter panel diagnostics mode when held down during power up / set default value when enabled
- 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

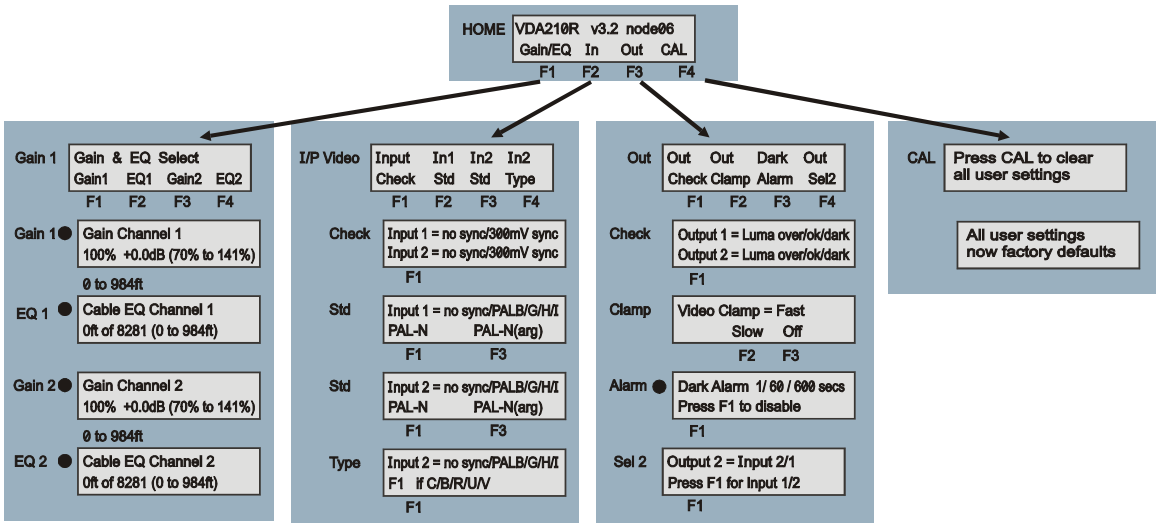
Note: Please refer to the Crystal Vision Control Panel manual for details of the Panel Setup, Lock Panel and Diagnostic menus.

4.1 The VDA210R active panel menu structure

The main top-level menus for the VDA210R module are obtained by pressing the F1, F2, F3 and F4 keys from that module's HOME menu. Menu keys are illuminated when active and when further menus are available. The four top-level menus are:

- Video gain and/or EQ – press F1
- Input menu – press F2
- Output menu – press F3
- CAL – press F4

The following chart shows the available menus.



The VDA210R menu tree

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

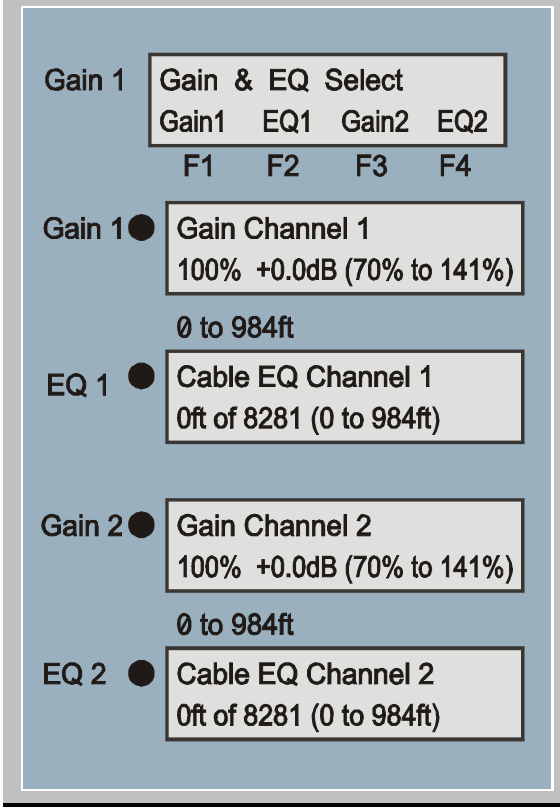
Shorthand codes

The following shorthand codes are used in active control panel menus:

Menu code	Meaning
EQ	Equalisation
Std	Video standard
Clamp	DC restoration

4.2 Adjusting video gain and EQ

Pressing F1 from the home menu will display the gain/EQ menu.

Channel gain menu	Description
	Press the F1 for the Ch 1 gain menu Press the F2 for the Ch 1 equalisation menu Press the F3 key for the Ch 2 gain menu Press the F4 for the Ch 2 equalisation menu Rotate the shaft encoder to vary Ch1 video gain in 0.025dB steps from 70% (–3.0dB) to 141% (+3.0dB). Press CAL button to restore 0dB gain. Rotate the shaft encoder to vary Ch1 input video equalisation from zero to 984 feet of Belden 8281 or similar cable. Press CAL button to restore zero equalisation. Rotate the shaft encoder to vary Ch2 video gain in 0.025dB steps from 70% (–3.0dB) to 141% (+3.0dB). Press CAL button to restore 0dB gain. Rotate the shaft encoder to vary Ch2 input video equalisation from zero to 984 feet of Belden 8281 or similar cable. Press CAL button to restore zero equalisation.

Note: The gain and EQ values in remote mode and local mode may be different to each other and are retained through power down, and restored when the unit is powered up.

4.3 Input video status and settings

Pressing F2 from the home menu will display the Input video menu:

- Check – Input horizontal sync status
- Std – Display/set input standard (to optimise error detection)
- Type – Channel 2; Composite, Y or G plus sync or chroma

Input video menu	Description
I/P Video: Input Check / In1 Std / In2 Std / In2 Type F1 F2 F3 F4	Press the F1 key to view the input sync status Press the F2 to set input standard details
Check: Input 1 = no sync/300mV sync Input 2 = no sync/300mV sync F1	Displays status of Ch1 and Ch2 horizontal sync pulse. Press the F1 or CAL button to update the screen with current status.
Std: Input 1 = no sync/PALB/G/H/I PAL-N PAL-N(arg) F1 F3	Matches the on-board video content error detection with the input video standard for Ch1.
Std: Input 2 = no sync/PALB/G/H/I PAL-N PAL-N(arg) F1 F3	Matches the on-board video content error detection with the input video standard for Ch2.
Type: Input 2 = no sync/PALB/G/H/I F1 if C/B/R/U/V F1	Select the video format type for Channel 2 to allow the on-board error detection and output clamp to be matched with the input 2-video format. Press F1 if Ch2 is chroma (C/B/R/U/V)

Note: The input sync is of the form nnnmV sync, where nnn is the sync-tip to blanking level in millivolts.
Expected value is 300mV for PAL-B, PAL-G, PAL-H, PAL-I or PAL–N (Argentina).
Expected value is 286mV for NTSC-M, PAL-M or PAL-N.

Although the input standard is detected automatically, it may help to match the on-board video content error detection with the precise input video standard.

The input standard defaults with a 625-line input to PAL-B, -G, -H or -I. Press the F1 key to set PAL-N, press F3 to set PAL-N (Argentina). With a 525-line input it defaults to NTSC-M. Press the F1 key to set PAL-M, press F3 to set NTSC-M (Japan).

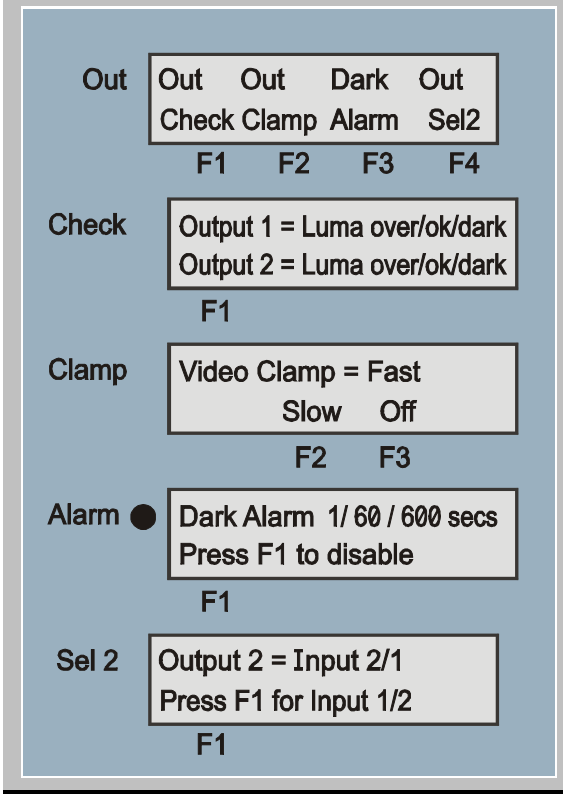
By default channel 2 is assumed to be composite video, Y + sync or G + sync input. In this case, input error status reporting is activated and the output clamp uses the sync pulses on input 2 to DC-restore output 2. If F1 is pressed for CBRUV (chroma) channel 2 error detection is disabled and the output clamp uses the sync pulses on input 1 to DC-restore output 2.

4.4 Checking the output and adjusting clamp/alarm settings

Pressing F3 from the home menu will display the Output menu.

The following settings can be adjusted:

- Check – output luminance status
- Clamp – display/set DC restoration setting
- Alarm – set dark alarm settings
- Sel2 – select source for output 2

Output video menu	Description
	Press the F1 key to view output luminance status Press the F2 key to set output DC restoration Press the F3 key to set the Dark Alarm settings Press the F4 key to set the Dark Alarm settings Displays status of output 1 and output 2 luminance content Press the F1 or CAL key to update the screen with current status Display/set DC restoration type. Press F2 or F3 to cycle though the available choices: Fast, Slow or Off Adjusts period after which dark (<15% Luma) picture content sets an alarm. Press the CAL key to set the dark decay to the default of 60 seconds Press the F1 key disables the dark & clip alarms Selects source for Output 2 Press F1 to change between Input 2 and Input 1

Notes:

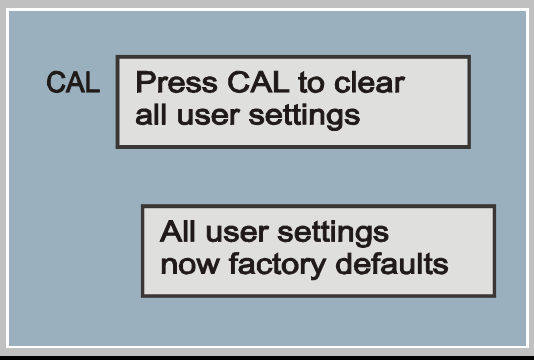
Output luminance status is one of the following:
Ok: Output Luma levels between 15% and 110% of peak white.
Dark: Output Luma levels less than 15% of peak white for a period determined by Dark Alarm menu.
Over: Output Luma levels greater than 110% of peak white.

Video clamp defaults to Fast (approximately 6 lines recovery time). Press the F2 and/or F3 keys to set the clamp to Slow (approximately 60 lines recovery time) or Off (AC-coupled output).

Dark alarm timer adjustable in 1 second steps from 1 second to 10 minutes. Press the F1 key to disable the dark & clip alarms and their corresponding GPI outputs.

4.5 Recalling factory defaults

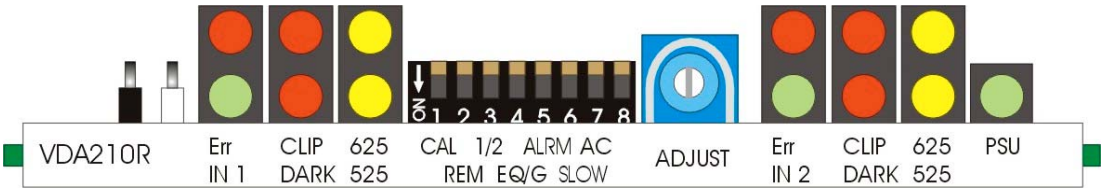
Pressing the F4 key provides access to factory defaults recall (CAL) menu.

Cal menu	Description
	Press F4 from the home menu to display the CAL menu Press the CAL key to clear all user adjustments & set the VDA210R to factory defaults.

5 Card edge operation

Once the start-up initialisation procedure is complete, the VDA210R card can be controlled or configured from the card edge, the active control panel or the Statesman PC interface. This chapter will concentrate on the card edge controls.

The front edge of the card provides power rail monitoring, signal status, gain/EQ adjustment, output clamp type, dark and clip GPI alarm settings and remote/local selection.



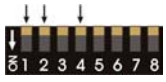
VDA210R front edge view

The 8-way piano switch allows the card settings be adjusted.

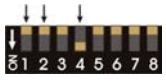
Lever	Function	UP	DOWN
1	CAL	Rotate ADJUST to alter the selected parameter (local control only)	Rotate ADJUST to calibrate the selected parameter (local control only)
2	REMOTE	Front-panel (local) control	Serial remote control
3	1 / 2	Channel 1 selected (local control only).	Channel 2 selected (local control only).
4	EQ / GAIN	Rotate ADJUST to alter cable equalisation (local control only)	Rotate ADJUST to alter gain (local control only)
5	ALARM	Dark and Clip alarm GPI outputs enabled (local control only)	Dark and Clip alarm GPI outputs disabled (local control only)
6	SLOW	Fast (6 lines) output DC restore (local control only)	Slow (60 lines) DC restore (local control only)
7	AC	DC-restored video output (local control only)	AC-coupled video output (local control only)
8	Not used	Not used	Not used

8-Way piano switch menu functions

The VDA210R is supplied factory-set with zero cable equalisation and 0dB gain.

EQ CH1 

DIL levers 1, 2 and 4 UP: Cable Equalisation continuously variable from 0 to 300m using the ADJUST control

GAIN Ch1 

DIL levers 1, 2 UP, 4 DOWN: Gain continuously variable ± 3.0dB using the ADJUST control

For channel 2 gain/EQ put lever 3 into the DOWN position.

Video monitoring test point

A 75Ω monitoring output is provided on two test hooks at the board edge. White is Monitor Out, black is Ground.

LED indication (left hand side)

LED	Location/colour	Meaning when lit
Ch1 IN	Green (bottom)	Composite / Y + sync / Green + sync input signal present.
Ch1 ERROR	Red (top)	Input sync size <90% or >110% of expected value.
Ch 1 DARK	Red (bottom)	Output Luma level <15% of peak white for an extended period (set by timer)
Ch 1 CLIP	Red (top)	Output Luma levels >110% of peak white
Ch 1 525	Yellow (bottom)	525-line signal input
CH 1 625	Yellow (top)	625-line signal input

Ch 1LED indicators

LED indication (right hand side)

LED	Location/colour	Meaning when lit
Ch2 IN	Green (bottom)	Composite / Y + sync / Green + sync input signal present.
Ch 2 ERROR	Red (top)	Input sync size <90% or >110% of expected value.
Ch 2 DARK	Red (bottom)	Output Luma level <15% of peak white for an extended period (set by timer)
CH 2 CLIP	Red (top)	Output Luma levels >110% of peak white
Ch 2 525	Yellow (bottom)	525-line signal input
Ch 2 625	Yellow (top)	625-line signal input
PSU	Green	Power supply OK.

CH 2 and PSU LED indicators

Please refer to section 6.2 Configuration to set the following options when using card edge control:

- Changing the output setup – match video content error processing to video format
- Changing channel two format type – optimise error correction and clamp for signal type
- Changing output 2 input source – single (1 x 10) or dual (2 x 5) channel operation

6 Hardware installation

The VDA210R dual channel video distribution amplifier fits into all Crystal Vision rack frames. All modules can be plugged in and removed while the frame is powered without damage.

6.1 Universal rear connectors

The 2U Indigo or FR2AV frame will house up to 12 modules and dual power supplies. The 1U Indigo or FR1AV frame will house 6 modules and a single power supply. The 1U Desk Top Box has built-in power supply and will house up to 2 modules.

The 1U and 2U frames have a hinged front panel that gives access to the PSU and all modules. The Desk Top Box has a removable front. The universal frame wiring system allows any of the interface range of modules to be fitted in any position with the use of removable rear modules.

There are four types of rear connector available that provide system flexibility by allowing a mix between total I/O access and module packing density.

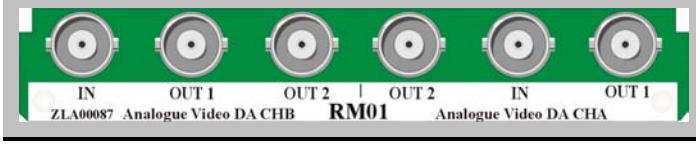
The VDA210R may be used with the RM01 single slot rear connector for up to 12 modules, the RM02 quadruple slot rear connector for up to 4 modules and the RM15 and RM18 double slot rear connectors for up to 6 modules in a 2U frame.

The following table summarises the rear connectors available and their recommended use with either the single channel VDA110 or the dual channel VDA210.

Connector	No of Slots	No of Cards *	Loop-through	VDA110	VDA210	Differential inputs
RM01	1	1	No	1 in 5 out	2 in 2 x 2 out	No
RM09	1	1	1	1 in 4 out	Not used	Yes
RM15	2	1	2	Not used	2 in 2 x 4 out	Yes
RM16	2	1	1	1 in 10 out	Not used	1st input only
RM18	2	1	No	1 in 10 out	2 in 5 out / 5 out	1st input only
RM02	4	3	No	1 in 8 out	2 in 3 out / 4 out	1st input only
RM10	4	3	1	1 in 10 out	Not used	Yes

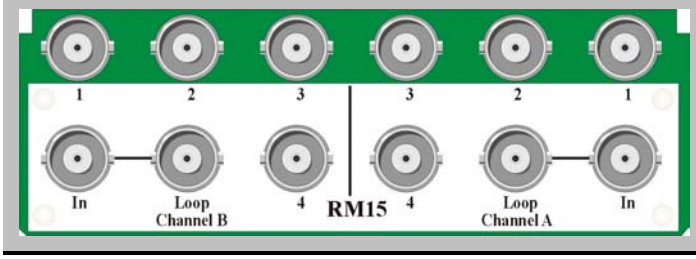
Notes: *Table shows no of cards per rear connector.
Passive loop-through is independent of the amplifier; the module may be removed without losing the looped-through source.

Rear module connections with RM01

RM01 fits in all frames	Description
	**RM01** • 12 modules in 2U, 6 in 1U & 2 in a DTB • All frame slots can be used

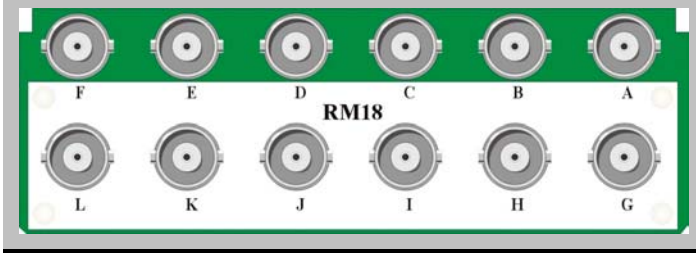
BNC	Single-channel configuration	Dual-channel configuration
IN Ch A	Input	Input 1
OUT 1 Ch A	Output	Output 1
OUT 2 Ch A	Output	Output 1
OUT 1 Ch B	Output	Output 2
OUT 2 Ch B	Output	Output 2
IN Ch B	Not used	Input 2

Rear module connections with RM15

RM15 fits in all frames	Description
	**RM15** • 6 modules per 2U frame, 3 per 1U frame, 1 per DTB • 1 module per rear connector • 6 connections available • Card fits in upper slot • No card fits in lower slot

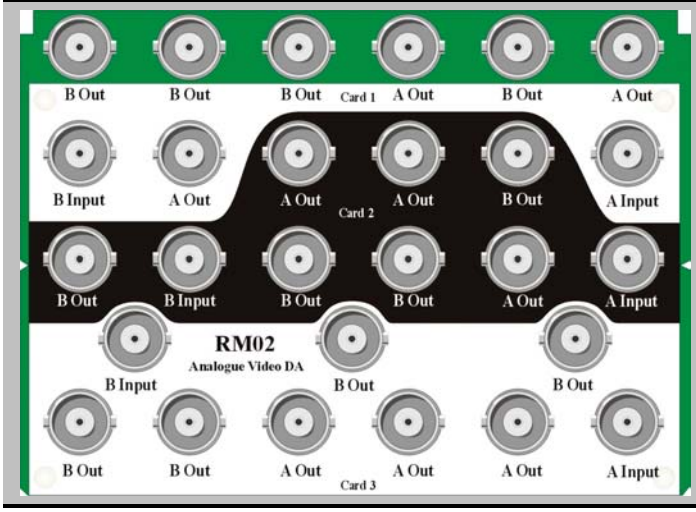
BNC	Single-channel configuration	Dual-channel configuration
Channel A In	Input 1	Input 1
Channel A Loop	Input 1 Loop-Through	Input 1 Loop-Through
Channel A 1	Output 1	Output 1
Channel A 2	Output 1	Output 1
Channel A 3	Output 1	Output 1
Channel A 4	Output 1	Output 1
Channel B In	Not used	Input 2
Channel B Loop	Not used	Input 2 Loop-Through
Channel B 1	Output 1	Output 2
Channel B 2	Output 1	Output 2
Channel B 3	Output 1	Output 2
Channel B 4	Output 1	Output 2

Rear module connections with RM18

RM18 fits in all frames	Description
	**RM18** • 6 modules per 2U frame, 3 per 1U frame, 1 per DTB • 1 module per rear connector • 6 connections available • Card fits in upper slot • No card fits in lower slot

BNC	Single-channel configuration	Dual-channel configuration
A	Output	Output 1
B	Input.	Input 1
C	Output	Output 1
D	Output	Output 2
E	Not used	Input 2
F	Output	Output 2
G	Output	Output 2
H	Output	Output 2
I	Output	Output 1
J	Output	Output 2
K	Output	Output 1
L	Output	Output 1

Rear module connections with RM02

RM02 fits in 2U frames	Description
	**RM02** • 9 modules per 2U frame • 3 modules per rear connector • 9 connections available • Card 1 fits in slots 1, 5 and 9 • Card 2 fits in slots 2, 6 and 10 • Card 3 fits in slots 4, 8 and 12 • No card fits in 3, 7 or 11

BNC	Single-channel configuration	Dual-channel configuration
A input	Input	Input 1
B input	Not used	Input 2
A out	Output	Output 1
B out	Output	Output 2

6.2 General purpose interface

GPI outputs use switch-closure to indicate VDA210R status. When closed circuit, the GPI line is connected to Frame Ground.

GPI	Closed-circuit (Ground)	Open-circuit
'a'	Input 1 absent	Input 1 present
'b'	Input 1 Luma <15% peak white	Input 1 Luma >15% peak white
'c'	Input 1 Luma >110% peak white	Input 1 Luma <110% peak white
'd'	Input 2 absent	Input 2 present
'e'	Input 2 Luma <15% peak white	Input 2 Luma >15% peak white
'f'	Input 2 Luma >110% peak white	Input 2 Luma <110% peak white

The following tables show the GPI pinout for each frame:

2U Indigo or FR2AV GPI Connections

GPI lines 'a' to 'f' of each card connect to one 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 and 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 and +5V @500mA is pin 15 in each case.

1U Indigo or FR1AV GPI connections

GPI lines 'a' to 'f' of each card connect to one of 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 socket. Frame ground is pin 2 and +5V @500mA is pin 1.
Remote 2: 26 way high-density D-type plug. Frame ground is pin 6 and +5V @500mA is pin 15.

Desk top box GPI connections

GPI lines 'a' to 'f' of each card connect to the rear remote connector as follows:

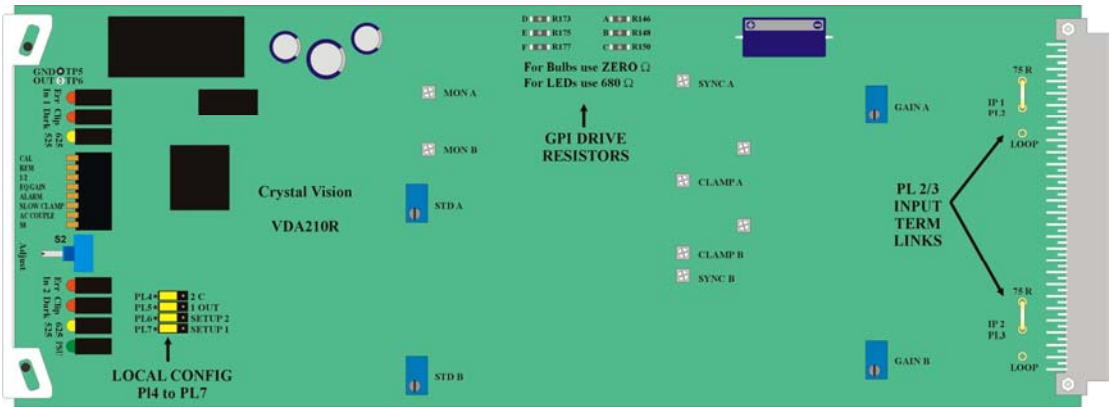
Slot no.	'a' pin	'b' pin	'c' pin	'd' pin	'e' pin	'f' pin
1	1	2	3	4	5	6
2	9	10	11	12	13	14

Note: Remote connector is 15 way normal density D-type socket. Frame ground is pin 15.

6.3 Configuration

The VDA210R is equipped with 5 on-board jumper links. These are PL2 (75R/HiZ) and PL4 to PL7 (local configuration) as shown below:

Other settings or adjustments on the card should normally be left in the factory default positions.



VDA210R showing configuration jumpers

Changing the input termination

Move jumper PL2 (Ch1) and/or PL3 (Ch2) to the appropriate position to set the input termination to either 75Ω or high impedance.

PL2/3 – Input termination

Link position	Impedance
75R (top)	Terminated 75Ω
Loop-through (bottom)	High-impedance

Optimising error masking - output setup (local mode only)

Move PL7 (Ch1) and/or PL6 (Ch2) to the appropriate position to change the setup option in local mode.

PL7/6 – Setup select (local control mode only)

Link position	Standard
(left)	Input is NTSC-M (Japan), PAL-B,G,H,I or PAL-N (Argentina) i.e. without +7.5 IRE setup
SETUP 1/2 (right)	Input is NTSC-M, PAL-M or PAL-N i.e. with +7.5 IRE setup

Note: The output setup setting set by the PL7/6 is used by video error masking and is valid for local mode only. Other values for error masking may be applied when remote or Statesman controls are active.

Changing channel two format type (local mode only)

The format type jumper PL4 is provided to allow the on-board error detection and output clamp to be matched with the input 2-video format.

If the second channel is used for composite video, Y + sync or G + sync set PL4 to the left. In this case, input error status reporting is activated and the output clamp uses the sync pulses on input 2 to DC-restore output 2.

If the second channel is used for a chroma input set PL4 to the '2 C' position. In this case channel 2 error detection is disabled and the output clamp uses the sync pulses on input 1 to DC-restore output 2.

PL4 – C/Y/G or chroma select (local control mode only)

Link position	Format
(left)	Input 2 is composite / Y + sync / G + sync
'2 C' (right)	Input 2 is chroma

Note: The 2nd channel format type setting set by the jumper is valid for local mode only. Other values for setup may be applied when remote or Statesman control is active.

Changing output 2 input source (local mode only)

Move PL5 to the appropriate position to change the input source for the second set of 5 x BNC outputs.

PL5 – 2 x 5 out or 1 x 10 out select (local control mode only)

Link position	Mode
(left)	Dual-channel configuration – 2 inputs, 5 out of each
'1 Out' (right)	Single-channel configuration – input 1 only, 10 out

Note: The output 2 input source setting set by the jumper is valid for local mode only. Other values for setup may be applied when remote or Statesman control is active.

Changing the GPI output drive

As supplied, each GPI output can drive a 24V bulb. For 5V LED drive, resistors R146, R148, R150, R173, R175 and R177 (labelled 'A' to 'F') must be changed from 0Ω to 680Ω 0805 surface-mount types.

The module can be supplied with LED drive resistors if requested at the time of ordering.

Note: Other adjustments on the card should normally be left in the factory default positions.

7 Problem solving

The front edge of the card provides useful power rail and video monitoring in addition to card-edge controls and status LEDs.

VDA210R front edge view

The left hand group of LEDs are for channel one and the right hand group are for channel two. The PSU green LED indicates good power rails when lit.

The yellow LEDs indicate the detected input standard (top for 625 and bottom for 525).

The top left hand red LED lights if an input sync error is detected, the lower left hand green LED lights when an input is present.

The middle top red LED lights if a clip error (luminance overload) is present and the lower middle red LED lights if the input remains black for greater than the dark detect delay period.

Video monitoring test point

A 75Ω monitoring output is provided on two test hooks at the board edge. White is Monitor Out, black is Ground.

LED indication

LED	Location/colour	Meaning when lit
Ch 1/2 IN	Green (bottom)	Composite / Y + sync / Green + sync input signal present.
Ch 1/2 ERROR	Red (top)	Input sync size <90% or >110% of expected value.
Ch 1/2 DARK	Red (bottom)	Output Luma level <15% of peak white for an extended period (set by timer)
CH 1/2 CLIP	Red (top)	Output Luma levels >110% of peak white
Ch 1/2 525	Yellow (bottom)	525-line signal input
Ch 1/2 625	Yellow (top)	625-line signal input
PSU	Green	Power supply OK.

Ch 1/2LED indicators

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

Check that the card is seated correctly in the frame

There is no video output

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

Input 2 does not work

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

Check that the input source set for the second set of BNC outputs is set for Input 2 - dual channel mode (2 x 5)

Channel 2 error rate or clamp operation does not appear to be correct

Check that the format type for channel two is set correctly (Composite, Y+sync, G+sync or Chroma)

The video output is low quality

Check that the cable equalisation is correct for the input cable and that the maximum length has not been exceeded

The Statesman sync indicator (yellow) or card edge error LED (red) is on

Check that the input video/syncs have not been 'double terminated'. An active panel will read the actual sync level in the input menu.

The dark (black picture) LED/GPI Alarm triggers too often

Check that the dark detect delay has not been set too low

The output exhibits low frequency errors or DC restoration problems

Try changing the video clamp setting

Do the GPI outputs drive LEDs or bulbs?

GPI drive resistors R148, 148, 150, 173, 175 and 177 should be ZERO Ohms (default) to drive bulbs and 680 Ohms to drive LEDs. Refer to section 6.3 for further details.

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

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

Check any active control panel/Statesman cabling

Check if the control panel/Statesman 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 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

8 Specification

General

Dimensions	100mm x 266 mm module with DIN 41612 connector
Weight	170g
Power consumption	6 W

Inputs

Video	2 analogue. Input loop-through available with selected rear modules

Outputs

Number and type:	10 (maximum) cable-equalised analogue

Gain adjustment

Continuous adjustment:	± 3.0dB per channel

Cable Equalisation

Continuous adjustment:	0 to 300m Belden 8281 or equivalent per channel

Performance

Frequency response:	± 0.05dB 0 to 6MHz.
Differential phase:	< 1°
Differential gain:	< 1%
Signal to noise ratio:	< -60dB weighted

Sync detectors

Number:	One per channel
Detect level:	Input sync <90% or >110% of expected value.

Clip detectors

Number:	One per channel
Output Luma levels:	>110% of peak white

Dark detectors

Number:	One per channel
Detect level:	Output Luma level <15% of peak white for an extended period (set by timer)

GPI lines

Outputs:	6 (D-type on FR2AV 2U frame)
	Input presence, dark detect and clip detect

Status monitoring

LED display	Front of card edge visual monitoring with LED indicators to indicate:
	PSU rails present
	Dark, Clip, Input Sync Error, 525/625

Ordering information

VDA210R	Dual channel analogue video distribution amplifier w/remote control
Statesman	PC Control System
Indigo 2	2U frame without active control panel for up to 12 modules
Indigo 1	1U frame without active control panel for up to 6 modules
Indigo DT	1U Desk top box without active control panel for up to 2 modules
Indigo 2A	2U frame with active control panel for up to 12 modules
Indigo 1A	1U frame with active control panel for up to 6 modules
Indigo DTA	1U Desk top box with active control panel for up to 2 modules
Indigo 2S	Statesman enabled only 2U frame for up to 12 modules
Indigo 1S	Statesman enabled only 1U frame for up to 6 modules
Indigo DTS	Statesman enabled only 1U Desk top box for up to 2 modules
RM01	Single slot rear module with 6 BNCs
RM02	Quad slot rear module with 27 BNCs for 3 boards
RM15	Dual slot rear module for 1 dual VDA with 12 BNCs. Allows loop-throughs
RM18	Dual slot rear module for 1 VDA with 12 BNCs.