VDA110R HD

Analogue video distribution amplifier

Crystal Vision

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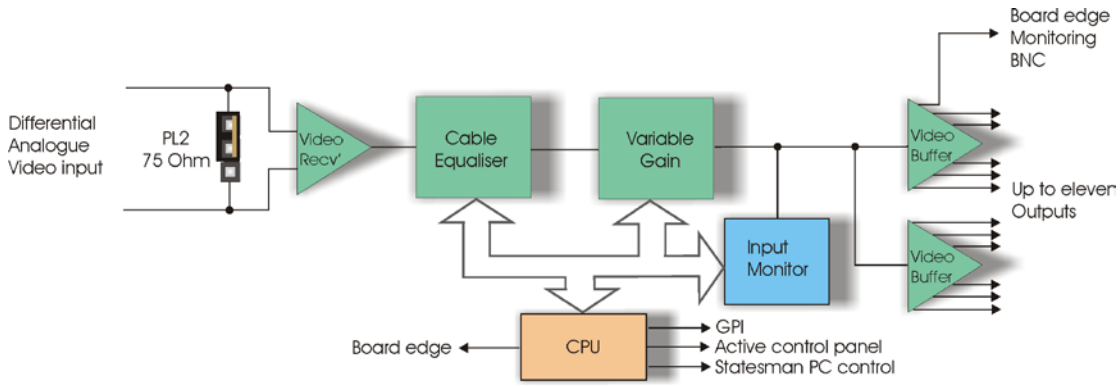
1 Introduction

The VDA110R HD is a single input analogue video DA with up to eleven outputs. A loop-through output may be available depending on the rear module fitted.

The VDA110R HD has adjustable gain, equalisation and DC restoration and gives comprehensive error reporting, including sync amplitude, dark and white clip video. Video format is also reported due to the sophisticated sync detection circuitry. Input termination is link selectable.

The VDA110R HD may be used with the RM01 and RM09 single slot rear connectors for up to 12 modules in a 2U frame, the RM02 and RM10 quadruple slot rear connectors for up to 9 modules in a 2U frame and the RM16 and RM18 double slot rear connectors for up to 6 modules in a 2U frame. The eleventh output is only available with the RM18.

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 input status, error status and controls for cable equalisation, gain and output clamping.



VDA110R HD video distribution amplifier

The VDA110R HD has LED and GPI indication of dark and clip input failure and input standard for each channel. General Purpose Interface lines are also provided to indicate dark, clip and input presence.

The main features are as follows:

- Single 1 in 11-out video distribution amplifier
- Continuously variable equalisation for up to 300 metres of coaxial cable.
- GPI dark, clip and input presence indication
- Card edge, active/remote panel and Statesman control options

Note: The dark error indication can be unreliable with signals containing tri-level syncs due to the positive sync excursion.

2 Hardware installation

The VDA110R HD single 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.

2.1 Universal rear connectors

When used with a single height rear connector, the 4U Indigo frame will house up to 24 modules and three power supplies, 2U Indigo frame will house up to 12 modules and two power supplies, the 1U Indigo frame will house 6 modules and a single or dual power supply. The 1U desktop box has a built-in power supply and will house up to 2 modules with a single height rear connector.

The 4U, 2U and 1U frames have a hinged front panel, which gives access to the PSU and all modules. The desktop 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 six types of rear connector available that provide system flexibility by allowing a mix between total I/O access and module packing density.

The VDA110R HD may be used with the RM01 and RM09 single slot rear connector for up to 24 modules, the RM02 and RM10 quadruple slot rear connectors for up to 8 modules and the RM16 and RM18 double slot rear connectors for up to 12 modules in a 4U frame.

Note: The 1U Indigo frame and desk top box will not accept either the quad height RM02 or RM10.

The following table summarises the rear connectors available and their recommended use.

Connector	No of Slots	No of Cards *	Loop-through	VDA110R HD	Differential inputs
RM01	1	1	No	1 in 5 out	No
RM09	1	1	1	1 in 4 out	Yes
RM16	2	1	1	1 in 10 out	Yes
RM18	2	1	No	1 in 11 out	No
RM02	4	3	No	1 in 8 out	Yes
RM10	4	3	1	1 in 7 out	Yes

Notes: *Table shows number of cards per rear connector.
A passive loop-through is independent of the amplifier; the module may be removed without losing the looped-through source.

Rear module connections with RM01

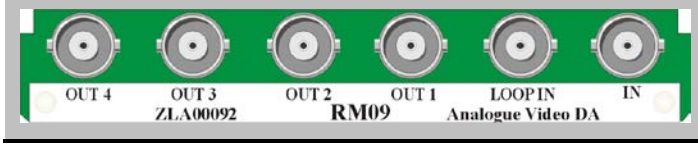
The RM01 single height rear module will give five DA outputs and will fit in all frames and all frame positions.

RM01 fits in all frames	Description
	**RM01** • 24 modules in 4U, 12 in 2U, 6 in 1U & 2 in a DTB • All frame slots can be used

BNC	Signal assignment
IN	Input.
OUT 1	Output
OUT 2	Output
OUT 3	Output
OUT 4	Output
OUT 5	Output

Rear module connections with RM09

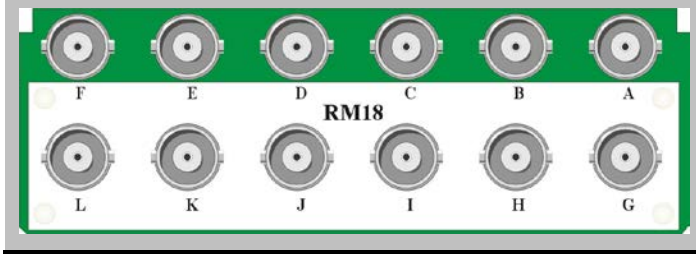
The RM09 single height rear module has a passive input loop-through and will give four DA outputs. It will fit in all frames and all frame positions.

RM09 fits in all frames	Description
	**RM09** • 24 modules in 4U, 12 in 2U, 6 in 1U & 2 in a DTB • All frame slots can be used

BNC	Signal assignment
IN	Input.
LOOP IN	Input loop through
OUT 1	Output
OUT 2	Output
OUT 3	Output
OUT 4	Output

Rear module connections with RM18

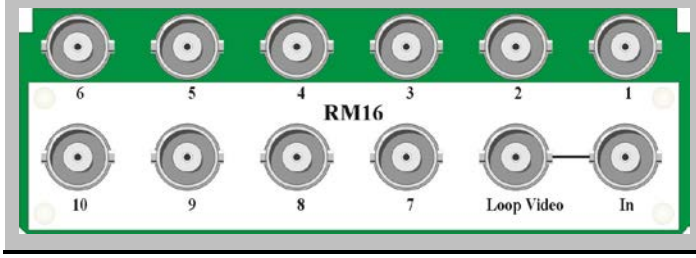
The RM18 double height rear module will give the maximum eleven DA outputs and will fit in all frames. In the 2U and 4U frames the RM18 can only fit in slot pairs 1-2, 3-4 etc. it is not possible to use slots 2-3, 4-5 etc.

RM18 fits in all frames	Description
	**RM18 (eleven outputs)** • 12 modules per 4U frame, 6 per 2U frame, 3 per 1U frame, 1 per DTB • 1 module per rear connector • Card fits in upper slot • No card fits in lower slot

BNC	Signal
A	Output
B	Input
C	Output
D	Output
E	Output
F	Output
G	Output
H	Output
I	Output
J	Output
K	Output
L	Output

Rear module connections with RM16

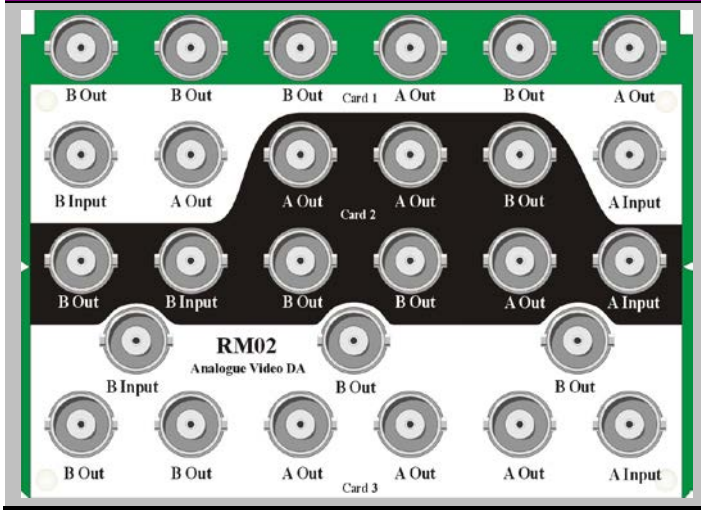
The RM16 double height rear module has a passive input loop-through, will give ten DA outputs and will fit in all frames. In the 2U and 4U frames the RM16 can only fit in slot pairs 1-2, 3-4 etc. it is not possible to use slots 2-3, 4-5 etc.

RM16 fits in all frames	Description
	**RM16** • 12 modules per 4U frame, 6 per 2U frame, 3 per 1U frame, 1 per DTB • 1 module per rear connector • Card fits in upper slot • No card fits in lower slot

BNC	Signal
In	Input
Loop Video	Loop Video
1	Output
2	Output
3	Output
4	Output
5	Output
6	Output
7	Output
8	Output
9	Output
10	Output

Rear module connections with RM02

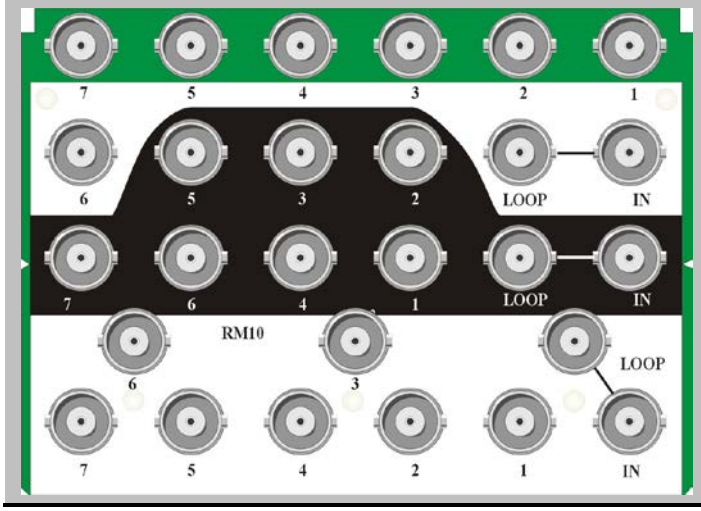
The RM02 quad height rear module will give eight DA outputs and will only fit in the 2U and 4U frames. The RM02 will only accept three VDA110R HD cards, the third slot down from the top being left vacant.

RM02 fits in Indigo 2 and Indigo 4 frames	Description
	**RM02** • 12 modules per 4U frame • 9 modules per 2U frame • 3 modules per rear connector • 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	Signal
A Input	Input
A Out	Output
B Out	Output
A Out	Output
B Out	Output
B Out	Output
B Out	Output
B Input	Output
A Out	Output

Rear module connections with RM10

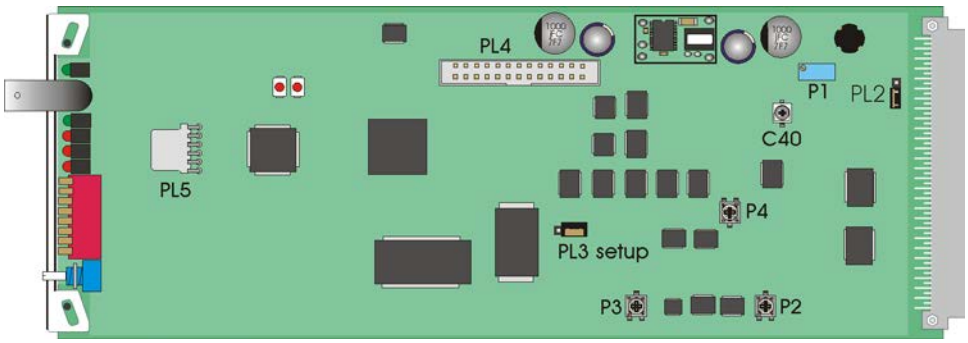
The RM10 quad height rear module has a passive input loop-through, will give seven DA outputs and will only fit in the 2U and 4U frames. The RM10 will only accept three VDA110R HD cards, the third slot down from the top being left vacant.

RM10 fits in Indigo 2 and Indigo 4 frames	Description
	**RM10** • 9 modules per 2U frame • 3 modules per rear connector • 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	Signal
IN	Input
LOOP	Input loop-through
1	Output
2	Output
3	Output
4	Output
5	Output
6	Output
7	Output

2.2 Module configuration

The VDA110R HD is equipped with an on-board jumper link to change input termination and NTSC pedestal compensation.



There are several variable resistors and a variable capacitor which have been factory set. Their function is listed for reference only.

Reference	Function
P1	Gain calibration
P2	Dark alarm black level calibration
P3	Output black level calibration
P4	Sync error calibration
C40	Frequency response calibration

Note: These components have been factory set and any adjustment will effect the board calibration.

Changing the input termination

Move jumper PL2 to the appropriate position to set the input termination to either 75Ω or high impedance loop-through. When PL2 is set to high impedance external termination should be supplied.

PL 2 position	Termination
Loop-through position (top)	High impedance
75R position (bottom)	Terminated 75 Ω

Pedestal compensation

Move jumper PL3 to the appropriate position if the input is NTSC-N for correct dark level threshold. PL3 is only active when the VDA110R HD is set to local control.

Link position	Standard
Left (towards board front)	Input is NTSC-M (Japan), PAL-B,G,H,I or PAL-N (Argentina) i.e. without +7.5 IRE setup
Right (towards board connector)	Input is NTSC-M, PAL-M or PAL-N i.e. with +7.5 IRE setup

2.3 General purpose interface

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

GPI	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’	Not used	Not used
‘e’	Not used	Not used
‘f’	Not used	Not used

GPI outputs use switch-closure to indicate VDA110R HD status. When closed-circuit, the GPI line is connected to Frame Ground

4U frame GPI connections

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

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

Table shows pin number (Remote number)

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

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

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

2U frame GPI connections

GPI lines 'a' to 'f' of each card connect to 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. 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.

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 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 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

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 the rear remote connector 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.

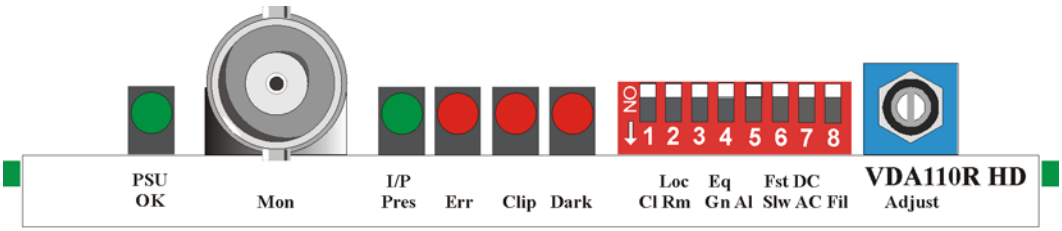
Remote 2: 26 way high-density D-Type male plugs and frame ground is pin 6 and +5V @500mA is pin 15

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

3 Card edge operation

Once the start-up initialisation procedure is complete, the VDA110R HD 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.



VDA110R HD front edge view

Card edge configuration

The 8-way piano switch allows the card settings to be adjusted when set to local mode.

Lever	Function	UP	DOWN
1	Calibrate		Rotate ADJUST to set all parameters to their default condition (local control only)
2	Local/Remote	Front-panel (local) control	Statesman and remote panel control
3	Not used	Not used	Not used
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	Fast/Slow	Fast (6 lines) output DC restore (local control only)	Slow (60 lines) output DC restore (local control only)
7	DC/AC	DC-restored video output (local control only)	AC-coupled video output (local control only)
8	Sync filter	Sync filter Off	Sync filter On

Note: The input present GPI output is active irrespective of the condition of the alarm switch

LED indication

LED	Location/colour	Action
PSU	Green	Power supply OK
I/P Present	Green	Valid input signal present
Error	Red	Input sync size >110% of expected value. (NTSC >115%)
Clip	Red	Output Luma levels >110% of peak white
Dark	Red	Output Luma level <15% of peak white for an extended period (set by timer)

Note: The dark error indication can be unreliable with signals containing tri-level syncs due to the positive sync excursion.

Calibrate

Setting DIP 1 to down and rotating the ADJUST control will reset all variables to their default values.

Parameter	Default value
Gain	100%
Cable Equalisation	0m
Dark Delay	10 seconds

Note: For calibration to take effect the VDA110R HD must be set for board edge control.

Control mode

DIP switch 2 sets the VDA110R HD in either local (board edge) control or remote i.e. Statesman or remote active control panel.

Adjusting cable equalisation and input gain

Cable equalisation is continuously variable from 0m to 300m. With DIP switch 4 in the up position adjust the cable equalisation with the ADJUST control.

With DIP switch 4 in the down position adjust the gain with the ADJUST control. Gain is continuously variable with an adjustment range of >± 3.0dB

Note: The cable equalisation has been optimised for 0-6Mhz operation. It will be less effective at frequencies of up to 30Mhz.

Alarm

Both the clip and black alarms are presented on the frame rear connectors as GPI alarms. Under certain circumstances such as with a black and burst or tri level input, these alarms can nuisance trigger. Setting DIP switch 5 to down will disable these GPIs.

Note: Although the input format is automatically detected for correct black level thresholds PL3 must be set accordingly. See section 2.2 Module configuration.

Output clamp

Output clamping is controlled by DIP switch 6. The fast position provides a recovery time of approximately 6 lines. Slow provides a recovery time of approximately 60 lines. DIP switch 7 selects DC-coupled output (clamp on) or AC-coupled (clamp off).

Sync filter

The sync filter can be used to remove chroma information from the sync separator input where large negative excursions could adversely effect the DC restoration.

Note: When an HD video signal is present leave the sync separator input filter set to off.

Video monitoring

A monitoring output is provided by the board edge BNC connector.

4 Using the front control panel

DIP switch 2 must be set to remote before an active front panel can be used.

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

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

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

Statesman mode is entered by default

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

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

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

Navigating the display

The functions assigned to control panel keys are:

- DEVICE – enters Device menu to select a card or show cards available / enters Panel 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 a VDA110R HD

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

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

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

The Available cards menu

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

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

When the desired card is selected press the ENTER key to access that card's Home menu. The message shows that a VDA110R HD has been selected.

The VDA110R HD Home menu

Note: If the card edge is set to local mode a warning of this will be given in place of the Home menu.

Updating the display

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

4.1 The VDA110R HD active panel menu structure

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

The main top-level menus for the VDA110R HD are obtained by pressing the F1- F4 keys from the Home menu. Menu keys are illuminated when active and when further menus are available.

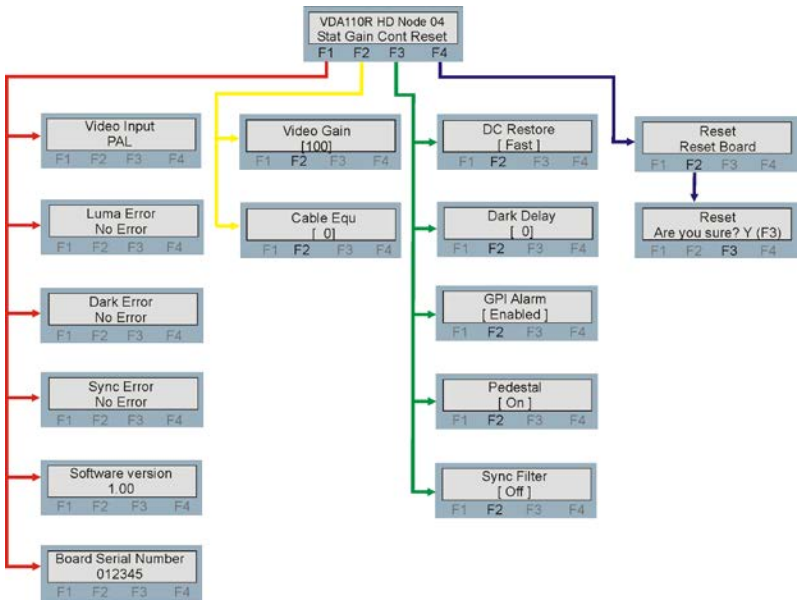
The top-level menus are:

- Status – Press F1
- Gain (Gain and cable equalisation) – Press F2
- Control (Clamp, dark delay and GPI enable) – Press F3
- Reset (Reset gain and equalisation to default values) – Press F4

When a sub menu has been selected, further options may be obtained by using the Shaft control to scroll through them. Once the desired option has been located a selection or value change can be made by either toggling the appropriate function key or by selecting and using the shaft control to alter a numerical value. A configuration change or value will be activated as the shaft control is rotated or function button is toggled. The variable being adjusted will appear in brackets. If the variable updates in real time it will be contained within square brackets [letter box] or if the change requires to be accepted angular brackets will be used <CVBS>. Pressing ENTER will fix the new value.

The following chart shows the available VDA110R HD menus. The actual menus available may vary slightly as software is updated.

Active control panel menus

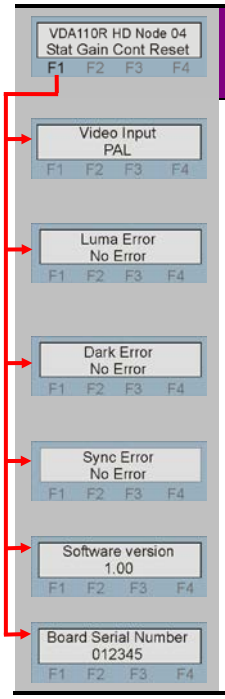


Note: Function key LEDs are illuminated when active.

The Status menu

Pressing button F1 from the Home menu will enter the Status menu. This menu is traversed by rotating the shaft control. No changes can be made from this menu as it is read only.

Note: Not all status information will be updated in real time. If necessary press the * button to cause the display to update.

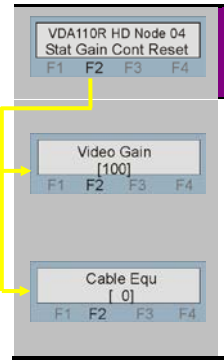


Menu	Description
Video Input	Rotate the shaft control to view the input format. ***PAL, NTSC, 720 P 59.94/60Hz, 1080 I 50Hz, 1080 I 59.94/60Hz, Missing, Unknown.***
Luma clip error	Rotate the shaft control to view the Luma clip error status >110% (PAL), 115% (NTSC). ***No Error, Error.***
Dark level error	Rotate the shaft control to view the Dark level error status <15%. ***No Error, Error.***
Sync level error	Rotate the shaft control to view the Sync level error status >110%. ***No Error, Error.***
Software version	Fitted software level
PCB serial number	Electronically stored board serial number

Note: The dark error indication can be unreliable with signals containing tri-level syncs due to the positive sync excursion.

The gain menu

Press F2 from the Home menu and rotate the shaft control to view the Gain Adjustment menus.



Menu	Description
Video gain	Press F2 from the Home menu and rotate the shaft control to view the Video Gain menu. Press F2 and rotate the shaft control to adjust the gain level ***70-140%.***
Cable equalisation	Press F2 from the Home menu and rotate the shaft control to view the Cable Equalisation menu. Press F2 and rotate the shaft control to adjust the amount of equalisation ***0-300m.***

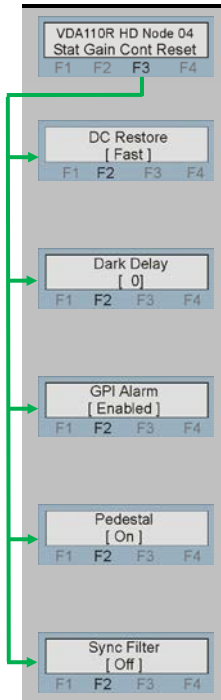
Adjusting cable equalisation and input gain

Cable equalisation is continuously variable from 0m to 300m. Video gain is continuously variable with an adjustment range of >± 3.0dB

Note: The cable equalisation has been optimised for 0-6Mhz operation. It will be less effective at frequencies of up to 30Mhz.

The control menu

Press F3 from the Home menu and rotate the shaft control to view the Control menus.



Menu	Description
DC restoration (output clamp)	Press F3 from the Home menu and rotate the shaft control to view the DC restoration status. Press F2 and rotate the shaft control to make selection ***Fast, Slow, Off.***
Dark error delay	Press F3 from the Home menu and rotate the shaft control to view the Dark delay value. Press F2 and rotate the shaft control to adjust to the required delay ***0-600 seconds.***
GPI alarm enable	Press F3 from the Home menu and rotate the shaft control to view the GPI alarm status. Press F2 and rotate the shaft control to make selection ***Enable, Disable.***
Dark error pedestal compensation	Press F3 from the Home menu and rotate the shaft control to view the Pedestal compensation status. Press F2 and rotate the shaft control to make selection ***On, Off.***
Sync separator input filter	Press F3 from the Home menu and rotate the shaft control to view the Sync filter status. Press F2 and rotate the shaft control to make selection ***On, Off.***

Note: When an HD video signal is present leave the sync separator input filter set to off.

DC Restoration (output clamp)

The output clamping can be set to suit the type of material being transported by the VDA110R HD. The fast setting provides a recovery time of approximately 6 lines. Slow provides a recovery time of approximately 60 lines. Clamp off sets the outputs to AC-coupled.

Dark delay

The dark delay is used to set the time period for which the video signals content must remain below 15% Luma before a dark alarm is triggered. Unlike in local mode where the dark delay is fixed, in remote mode the dark delay can be continuously adjusted from 0-600 seconds.

Alarm

Both the clip and black alarms are presented on the frame rear connectors as GPI alarms. Under certain circumstances such as with a black and burst or tri level input these alarms can nuisance trigger. This can be prevented by setting GPI Alarm to disable these GPIs.

Pedestal compensation

Although the input format is automatically detected for correct black level thresholds, the pedestal compensation must be set accordingly.

	Standard
Off	Input is NTSC-M (Japan), PAL-B,G,H,I or PAL-N (Argentina) i.e. without +7.5 IRE setup
On	Input is NTSC-M, PAL-M or PAL-N i.e. with +7.5 IRE setup

Note: Setting this control inappropriately will result in the dark alarm being triggered at an incorrect level.

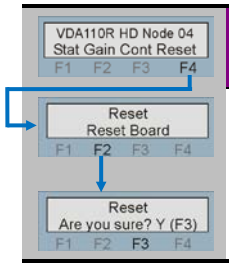
Sync filter

The sync filter can be used to remove chroma information from the sync separator input where large negative excursions could adversely effect the DC restoration.

Note: When an HD video signal is present leave the sync separator input filter set to off.

Reset Menu

The Reset menu is used to return all parameters to their default condition.



Menu	Comment
Reset	Press F4 from the Home menu and press F3 to set all board variable to their default value

Parameter	Default value
Gain	100%
Cable Equalisation	0m
Dark Delay	10 seconds
Enable GPI Alarm	Disable
DC Restore, Pedestal Comp, Sync Filter	Off

5 Statesman

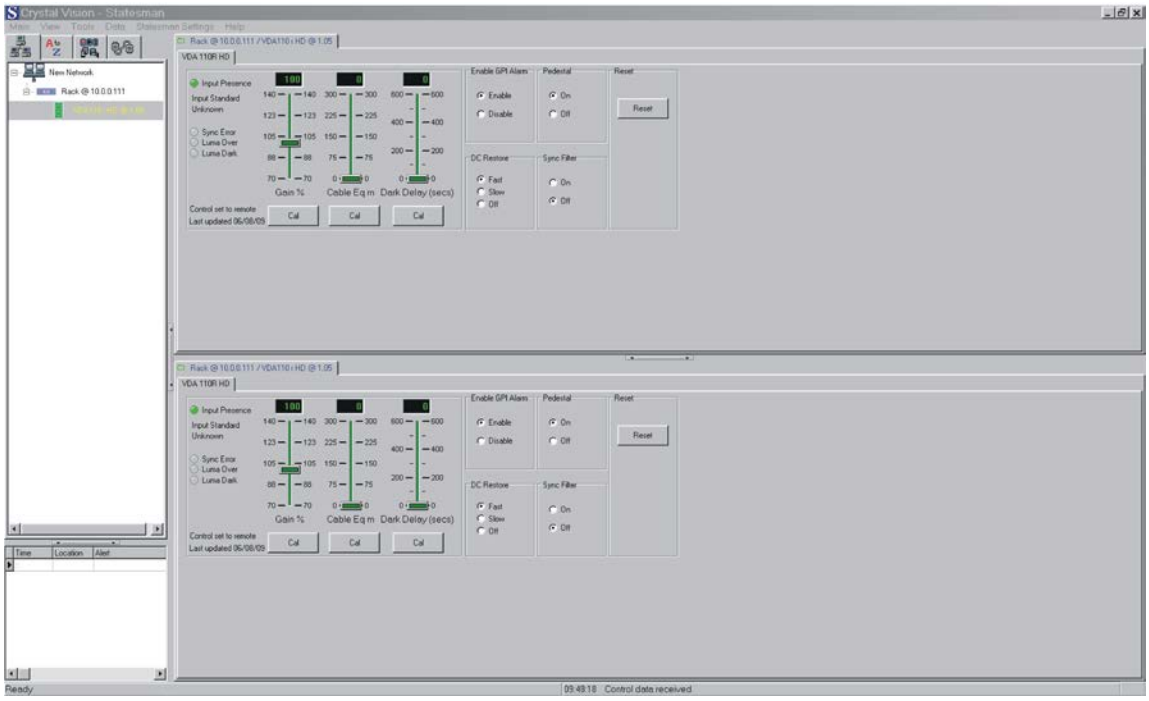
5.1 Statesman operation

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

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

5.2 Statesman operation

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



Statesman main application window

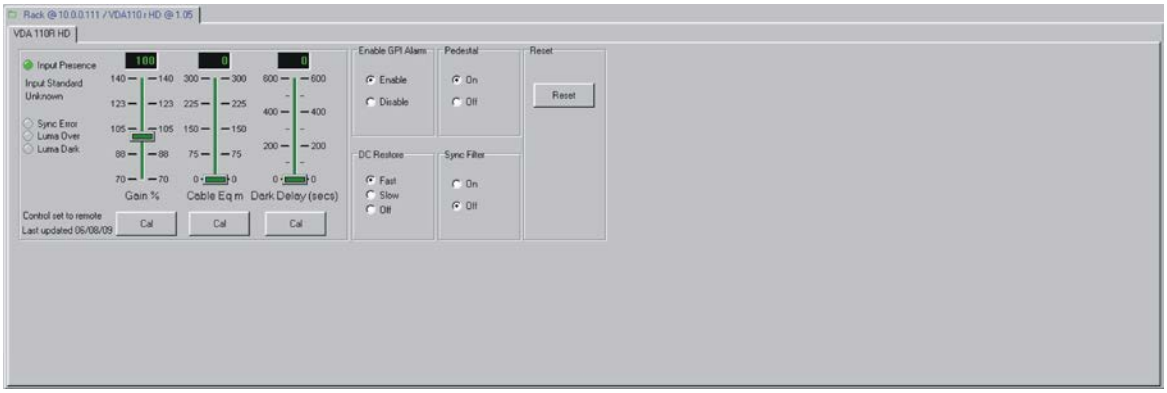
The two large control panes shown in the upper and lower halves of the window may display different menus for the same card, or controls for different cards. Click on the horizontal button-bar between the two panes to close the lower pane or drag the button to vary the size of the panes.

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

Status and control

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

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



Status monitoring

Input Present

The input present LED will be green when a valid input is present, red will indicate no input. The video input standard will also be given.

The accepted standards are;

PAL
NTSC
720 P 59.94/60Hz
1080 I 50Hz
1080 I 59.94/60Hz
Unknown

Note: Unknown. VDA110R HD is unable to determine the input video standard. A valid output may be possible but it may be necessary to disable DC restoration.

Error indication

Three error conditions are monitored for; they are sync level greater than 110% for PAL and 115% NTSC. Luma level greater than 110% and Luma dark less than 15% of nominal 100% luminance for a time period great than set by the Luma Dark delay control.

Note: The dark error indication can be unreliable with signals containing tri-level syncs due to the positive sync excursion.

Video gain

The video gain is continuously adjustable between 70% and 140% by using the video gain slider control.

Cable equalisation

Cable equalisation is continuously adjustable between 0m and 300m by using the cable equalisation slider control.

Dark delay

The delay period after which an alarm is given for video dark can be adjusted from 0 seconds to a maximum of 600 seconds using the dark delay slider control.

Pressing the Cal button found under each slider control will reset that control to its default value.

Enable GPI alarm

The GPI alarm for both the Luma over and Luma dark detectors can be enabled and disabled by checking the appropriate radio button.

Note: GPI 1 input present is always active cannot be disabled.

DC restoration (output clamp)

The output clamping can be set to suit the type of material being transported by the VDA110R HD. The fast setting provides a recovery time of approximately 6 lines. Slow provides a recovery time of approximately 60 lines. Clamp off sets the outputs to AC-coupled.

Pedestal compensation

Although the input format is automatically detected for correct black level thresholds the pedestal compensation must be set accordingly.

	Standard
Off	Input is NTSC-M (Japan), PAL-B,G,H,I or PAL-N (Argentina) i.e. without +7.5 IRE setup
On	Input is NTSC-M, PAL-M or PAL-N i.e. with +7.5 IRE setup

Note: Setting this control inappropriately will result in the dark alarm being triggered at an incorrect level.

Sync filter

To prevent large negative chroma excursion affecting the DC restoration an input filter to the sync separator circuitry has been included. Selecting On will activate this filter should it be required. Note, it is not recommended to activate this filter when an HD video signal is present as this will disrupt the DC restoration.

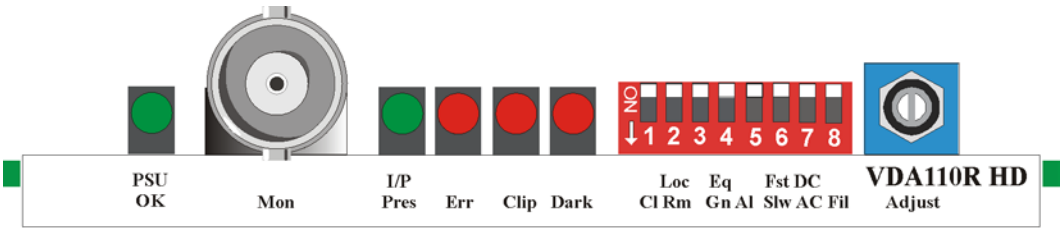
Reset

Pressing the reset control will return all parameters to their default value.

Parameter	Default value
Gain	100%
Cable Equalisation	0m
Dark Delay	10 seconds
Enable GPI Alarm	Disable
DC Restore, Pedestal Comp, Sync Filter	Off

6 Trouble shooting

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



VDA110R HD front edge view

Video monitoring

A monitoring output is provided by the board edge BNC connector.

LED indication

Card edge LED status indication.

LED	Location/colour	Action
PSU	Green	Power supply OK.
I/P Present	Green	Valid input signal present.
Error	Red	Input sync size >110% of expected value.
Clip	Red	Output Luma levels >110% of peak white
Dark	Red	Output Luma level <15% of peak white for an extended period (set by timer)

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

Basic fault finding guide

The Power OK LEDs are not illuminated

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

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

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'

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 DC restoration and sync separator input filter setting

Do the GPI outputs drive LEDs or bulbs?

GPI drive resistors R107, 108 and 109 should be ZERO Ohms (default) to drive bulbs and 680 Ohms to drive LEDs

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

Check position of the Remote/Local switch

Re-setting the card

If required, the card may be reset by simply 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

7 Specification

General

Dimensions	100mm x 266 mm module with DIN 41612 connector
Weight	160g
Power consumption	4 W

Inputs

Video	1 analogue. Input loop-through available with selected rear modules

Outputs

Number and type:	11 (maximum) cable-equalised analogue

Gain adjustment

Continuous adjustment:	Greater than ± 3.0dB

Cable Equalisation

Continuous adjustment:	0 to 300m Belden 8281 or equivalent

Performance

Frequency response:	± 0.05dB 0 to 6MHz.
Differential phase:	< 0.6^{o}
Differential gain:	< 0.3%
Signal to noise ratio:	Greater than 60dB weighted

Clip detector

Output Luma levels:	>110% of peak white

Dark detector

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

Sync detector

Detect level:	Sync level >110% PAL, >115% NTSC

GPI lines

Outputs:	6 (D-type on 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 Input present Dark, Clip, Sync error