

VDA-VF

Analogue video distribution amplifier



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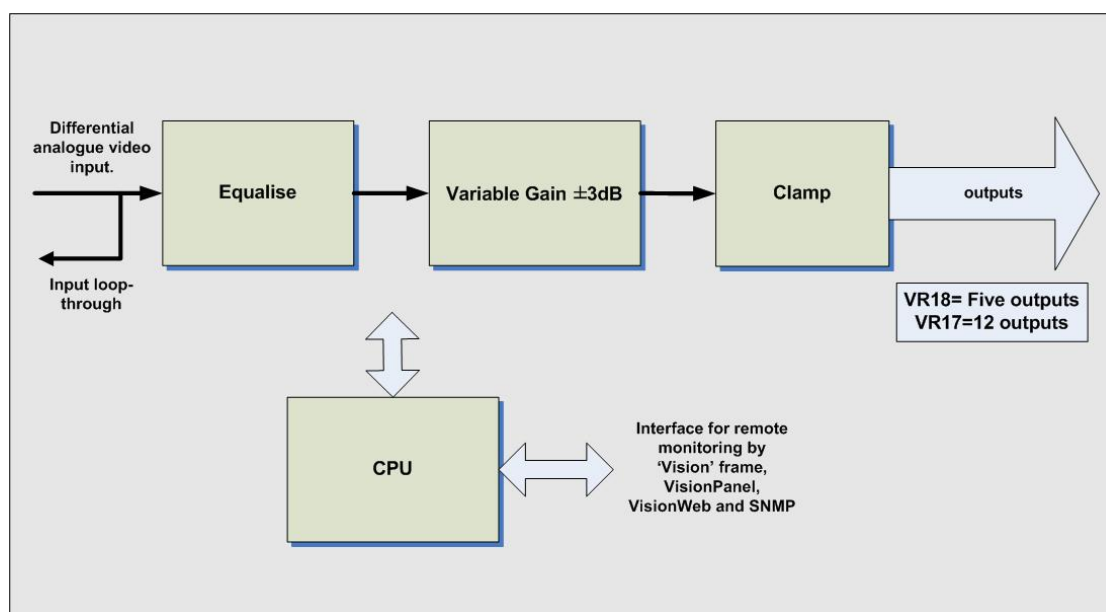
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1 Introduction

The VDA-VF is a single input, multi-output video distribution amplifier for analogue HD and SD sources for use with the Vision rack frames from Crystal Vision. The VDA-VF provides either five or 12 video outputs, depending on which rear module is fitted.

The VDA-VF allows remote control of gain ($\pm 3\text{dB}$), cable equalisation (up to 300m) and clamp (on/off).

The VDA-VF is a space-saving 96mm x 325mm module which fits in the standard Vision frames from Crystal Vision, with the inputs and outputs accessed by using either the VR17 or VR18 rear modules. Status monitoring is by the Vision frame active front panel, remote VisionPanel control panel, SNMP or VisionWeb PC software.






VDA-VF block diagram

The VDA-VF can use either the VR18 single-slot rear module or the VR17 double-slot rear module. The VR18 has seven BNC connectors for one differential input with loop-through output and five video outputs; the VR17 has 14 BNC connectors for one differential input with loop-through output and 12 video outputs.

The rear connector details may be found in the section [Rear modules and signal I/O](#).

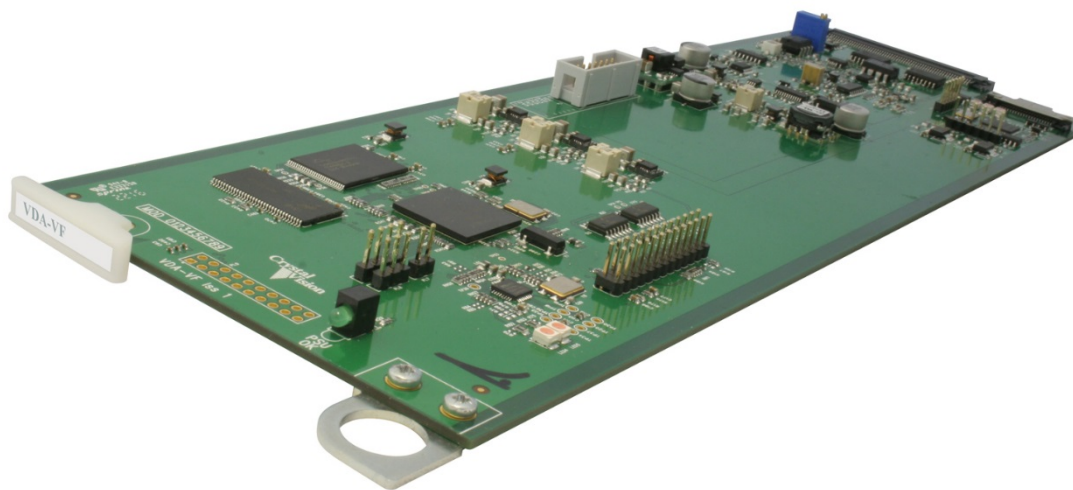
The main features are as follows:

-  Compatible with NTSC/PAL Standard Definition composite video and individual channels of SD or HD analogue component video.
-  Differential input with loop-through output.
-  Up to 12 outputs with VR17 rear module.

- Adjustable cable equalisation ensures a cable length of up to 300m metres with Belden 8281.
- Adjustable gain by $\pm 3\text{dB}$.
- Adaptive clamp on/off control for removing hum on signal caused by difference in ground voltages.
- Up to 20 VDA-VF cards in a Vision 3 3U frame depending on rear module.
- Less than 20ns delay.
- Remote monitoring and control via VisionPanel, VisionWeb control system, SNMP and the frame active panel.

2 Hardware installation

2.1 Board Configuration



VDA-VF card

Link Configuration

The VDA-VF has no user-selectable links. Any links or controls should remain in their factory set positions.

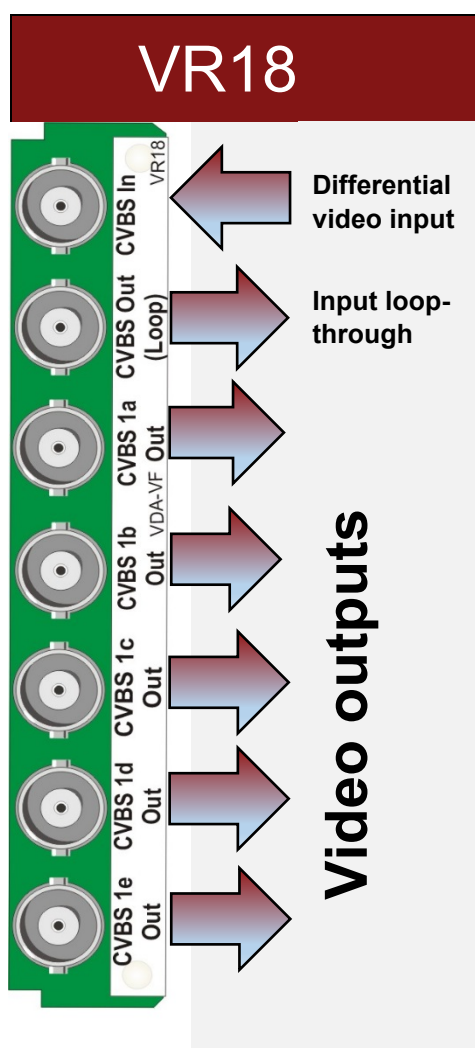
3 Rear modules and signal I/O

The VDA-VF distribution amplifier fits into all Vision rack frames from Crystal Vision and can be plugged in and removed while the frame is powered without damage.

Vision frames all have a hinged front panel that gives access to the PSUs and all cards. The universal frame wiring system allows any of the interface range of cards to be fitted in any position with the use of removable rear modules.

Rear modules can be either single or double slot width depending on number of outputs required:

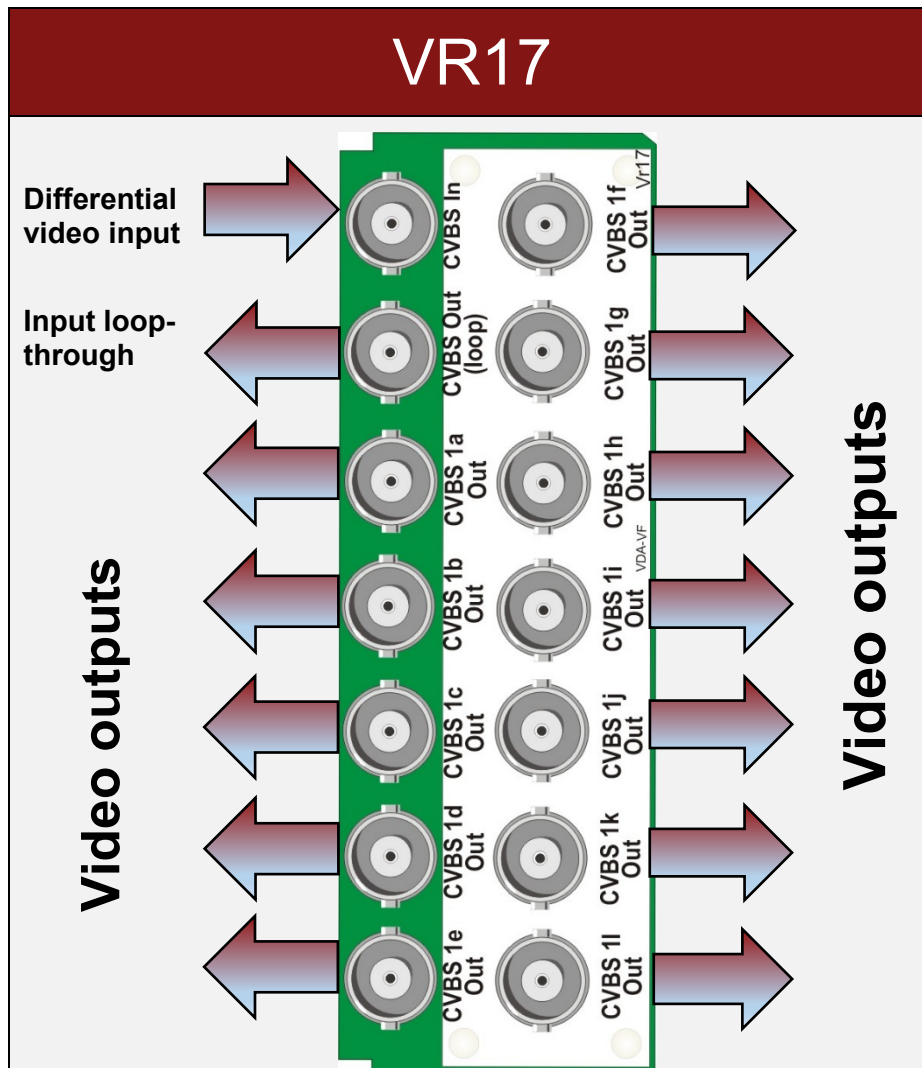
3.1 Rear module connections with VR18



The VR18 single-slot rear module allows maximum packing density. BNC connectors provide one differential video input with loop-through output and five video outputs.

Up to 20 VR18 rear modules can fit into a Vision 3 frame.

3.2 Rear module connections with VR17



The VR17 double-slot rear module uses BNC connectors to provide one differential video input with loop-through output and 12 video outputs. Up to ten VR17 rear modules can fit into a Vision 3 frame.

4 Status monitoring

VDA-VF status can be accessed most easily by VisionWeb remote control PC software but also by VisionPanel, the Vision frame's front panel and SNMP. The following screen grabs are from the VisionWeb GUI and are used to identify the various available status indications. The menu tree for VisionWeb, front panel and VisionPanel operation is identical although the appearance and labelling of some controls may vary according to the available space. See the Vision frame and VisionPanel's User Manuals for more details.

4.1 Controlling cards via VisionWeb

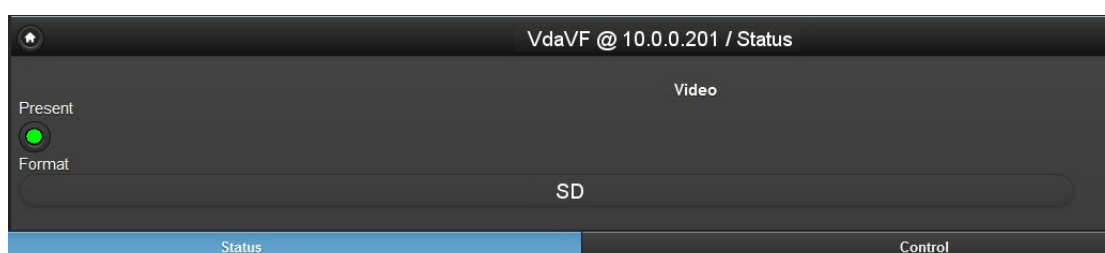
Crystal Vision cards use an XML file to create a control database that is used by the Vision frame front panel controller, VisionPanel and VisionWeb software. VisionWeb software offers a full range of controls with slider controls etc.

Accessing the Vision frame homepage with a PC browser via the Ethernet connector of a frame will display a list of the cards fitted. (See Vision frame User Manual for more details.)



Typical Vision 3 frame homepage

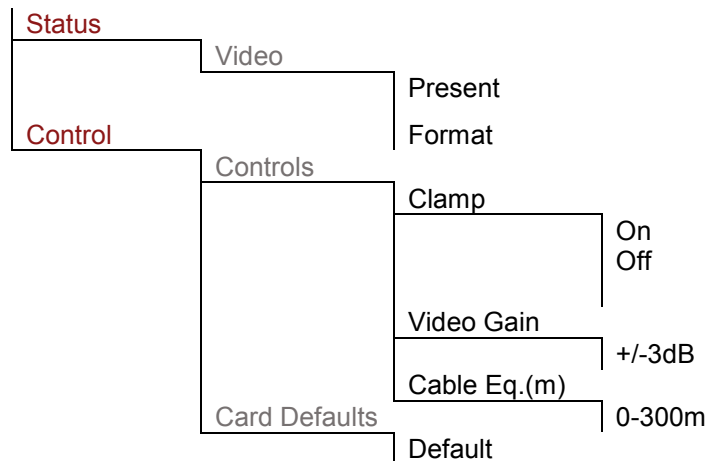
The example above shows a VDA-VF card fitted in slot 1 and other Vision cards in slots 2, 3, 5 and 7. Clicking on the VDA-VF card will bring up the card's Status page, for example:



VDA-VF Status page

4.2 Menu Structure

Operators of a Vision frame active front panel or VisionPanel should use the following tree to access the VDA-VF controls:



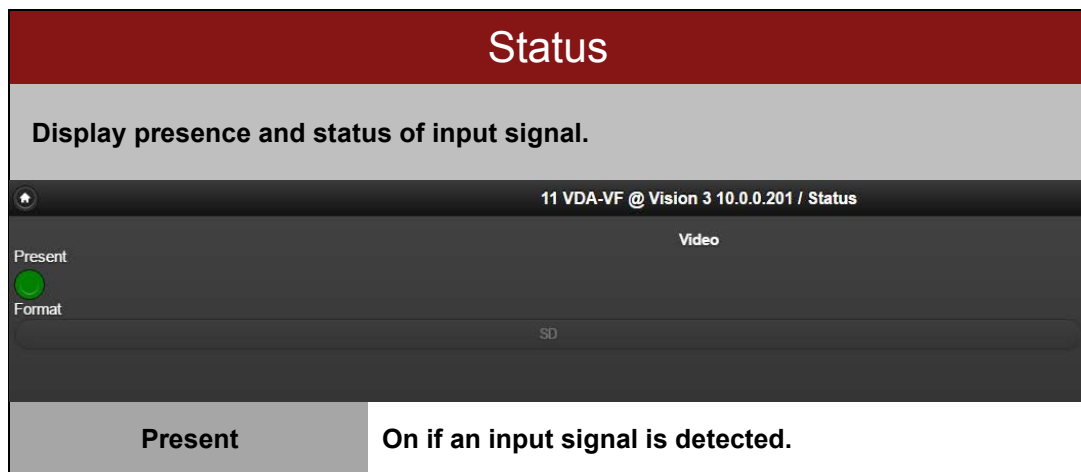
Users of VisionWeb need only select the tabs shown above in red to access the pages containing the set of controls. The intermediate steps shown above in grey are displayed as labels on the GUI.

4.3 Control Descriptions

The description of controls used in this manual is based on VisionWeb GUI screen grabs. VisionWeb monitoring and control pages are accessed by tabs at the bottom of the page which, when selected, offer controls such as LEDs, check boxes, buttons, sliders and labels.

The description of the monitoring and control pages is in the order shown in the menu tree i.e.

STATUS, CONTROL:



Format	<p>Displays current format of input video signal as SD, HD or unknown.</p> <p>525i/59.94Hz (NTSC) and 625i/50Hz (PAL) composite and component video formats are reported as 'SD'.</p> <p>1280x720p 50/59.94/60 Hz, 1920x1080i 50/59.94/60Hz and 1920x1080p 23.98/24/25/29.97/30Hz HDTV component formats are reported as 'HD'.</p> <p>Other formats reported as 'unknown'.</p>
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Control

Set gain, clamp on/off and reset card to default settings.

11 VDA-VF @ Vision 3 10.0.0.201 / Control

Controls

Clamp

On

Video gain(dB)

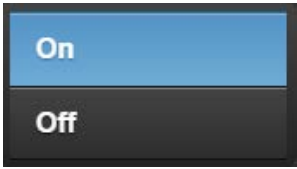
-0.000x

Cable Eq(m)

0

Card defaults

Default

Clamp		<p>Set clamp to On for a DC-coupled input, used to remove mains hum caused by differences in ground voltages. Off selects an AC-coupled input.</p>
Video gain (dB)	<p>Change the gain of the amplifier by $\pm 3\text{dB}$ in 0.1dB steps.</p>	
Cable Eq (m)	<p>Set the cable equalisation in metres to match the input cable length.</p>	
Card default	<p>Click on this button to return the card to its default values: Clamp set to 'On', zero metre cable equalisation and video gain set to '0dB'.</p>	

5 Troubleshooting

5.1 Card edge monitoring

The green LED on the front edge of the card provides power rail monitoring. The red LED, if fitted, currently has no function.



VDA-VF front edge

5.2 Basic fault finding guide

- 🚩 **Power OK LED not illuminated:** Check that the frame PSU is functioning – refer to the Vision frame manual for detailed information.
- 🚩 **There is no output:** Check that a valid input is present and that any cabling is intact. Check with VisionWeb that there is a signal present and of the expected format.
- 🚩 **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 output exhibits low frequency errors or DC restoration problems:** Try changing the video clamp setting.
- 🚩 **The card no longer responds to front panel control:** Check that the card is seated correctly and that the Power OK LED is lit. Check if the control panel can control another card in the same frame. If necessary reset the card.
- 🚩 **Resetting the card:** If required, the card may be reset by removing the card from the frame and then re-inserting it. It is safe to re-insert the card whilst the frame is powered. Any previous configuration will be retained.

6 Specification

General

Dimensions	96mmx325mm module with connector.
Weight	200g.
Power consumption	VDA-VF 4 Watts.

Inputs

Video	<p>Detected formats: Analogue composite video NTSC 525i/59.94Hz and PAL 625i/50Hz. Analogue component SD 625i/50, 525i/59.94 and 525i/60. HD 1280x720p 50/59.94/60 Hz, 1920x1080i 50/59.94/60Hz and 1920x1080p 23.98/24/25/29.97/30Hz.</p> <p>Cable Equalisation: Remote equalisation up to 300 metres with Belden 8281 or equivalent.</p>
Input Return loss	>31dB to 10MHz.
Differential Gain	<0.3% @ 5MHz.
Differential Phase	<0.6 degrees @ 5MHz.
Signal to noise ratio	>66dB to 6MHz.
Frequency response	0 to 6MHz \pm 0.1dB, 6 to 10MHz \pm 0.2dB, 10 to 30MHz \pm 1.5dB.

Outputs

Video	Composite SD or Component SD or HD.
Return loss	>42dB to 10MHz.

Rear Module I/O

VR18	One BNC differential video input with loop-through output and five BNC video outputs. Single-slot module.
VR17	One BNC differential video input with loop-through output and 12 BNC video outputs. Double-slot module.

Delays

Delay through board	Less than 20nS.
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Monitoring and Control

Remote:	<p>Monitor and control from Vision frame front panel, VisionPanel remote panel and VisionWeb Control which is available via the web server on the frame and allows operation using a standard web browser on a computer, tablet or phone.</p> <p>Complimentary SNMP control and monitoring via frame CPU and Ethernet connection.</p>
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