

USER MANUAL

The logo for Vision SYSTEM, featuring the word "Vision" in a white serif font with a colorful arc above it, and the word "SYSTEM" in a smaller, white sans-serif font below it.



3GDA-VF

3G/HD/SD Video or MADI (AES10)
Distribution Amplifier

Crystal  **Vision**

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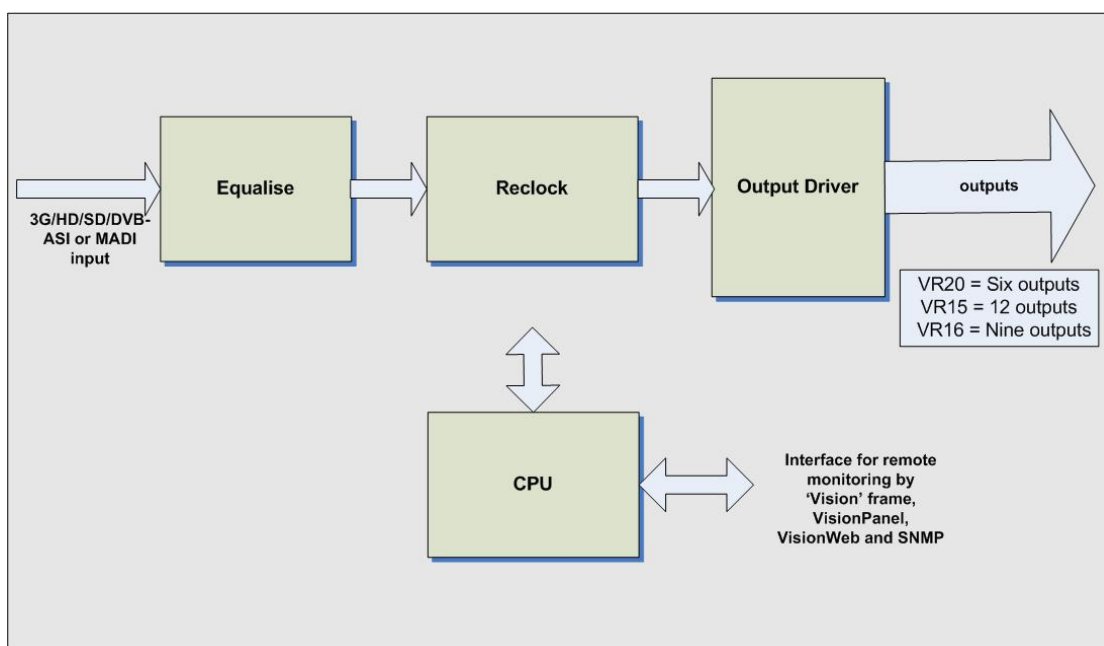
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1 Introduction

The **3GDA-VF** is a single input, multi-output, reclocking/non-reclocking distribution amplifier for 3Gb/s, HD, SD, DVB-ASI and MADI (AES10) sources for use with the 'Vision' rack frames from Crystal Vision. The **3GDA-VF** provides up to 12 reclocked or non-reclocked outputs depending on rear module fitted. All outputs are non-inverting for DVB-ASI compatibility.

Auto input cable equalisation and output drivers ensure an SD, DVB-ASI or MADI cable length of in excess of 250 metres with Belden 8281 or equivalent and up to 140 metres for HD and 100 metres for 3G HD with Belden 1694 or equivalent is obtainable.

3GDA-VF is a space-saving 96mm x 325mm card which fits in the standard 'Vision' frames from Crystal Vision, with the inputs and outputs accessed by using either the VR20, VR15 or VR16 rear modules. Status monitoring is by the 'Vision' frame active front panel, remote 'VisionPanel' control panel, SNMP or 'VisionWeb' PC software.



3GDA-VF block diagram

The 3GDA-VF can use either the VR20 or VR16 single-slot rear modules or the VR15 double-slot rear module. The VR20 has seven BNC connectors with one input and six outputs; the VR16 has ten Micro BNC connectors with one input and nine outputs; the VR15 has 14 BNC connectors with one input and 12 outputs.

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

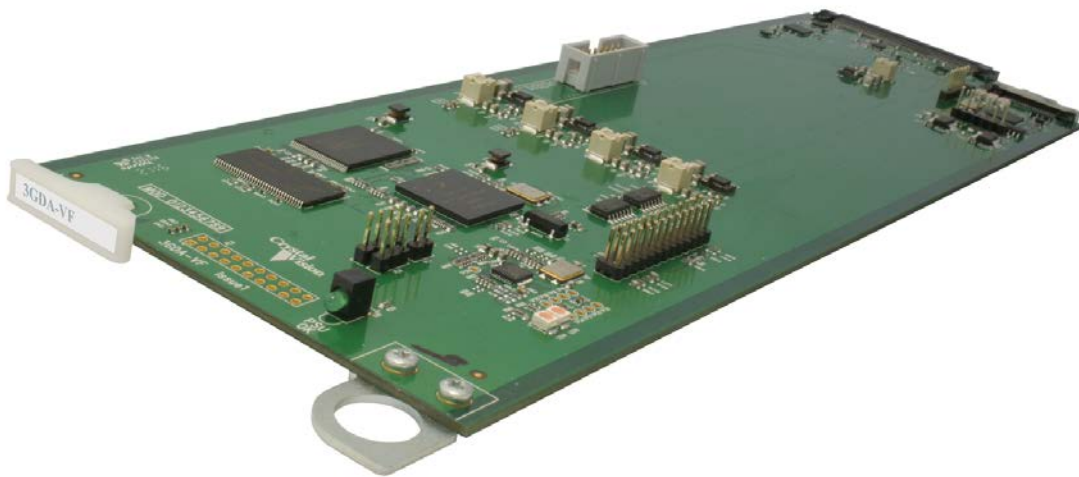
The main features are as follows:

- 📺 Compatible with 3G/HD, SD, DVB-ASI and MADI.
- 📺 Up to 12 outputs depending on rear module fitted.
- 📺 User selectable reclocking or non-reclocking.

- Non-inverting outputs for DVB-ASI compatibility.
- Auto cable equalisation appropriate to the input signal type.
- Auto output slew rate control for SD and HD/3G signals.
- Up to 20 3GDA-VF in a 'Vision 3' 3U frame depending on rear module.
- Less than 50ns delay.
- Ancillary data passed from input to all outputs.
- Remote monitoring via 'VisionPanel', VisionWeb control system, SNMP and the frame active panel.

2 Hardware installation

2.1 Board Configuration



3GDA-VF main board

Link Configuration

The 3GDA-VF has no user-selectable links. Any links or controls should remain in their factory set positions.

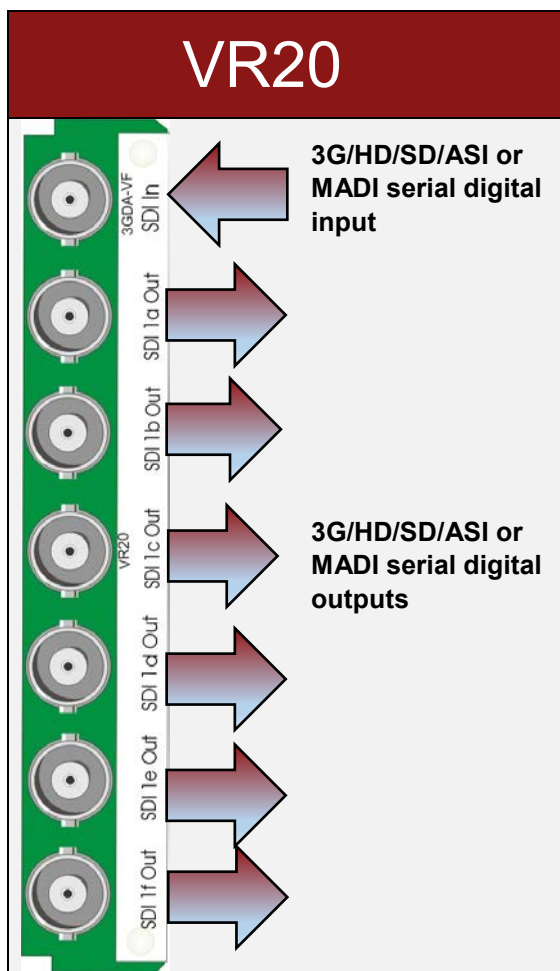
3 Rear Modules and Signal I/O

The 3GDA-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:

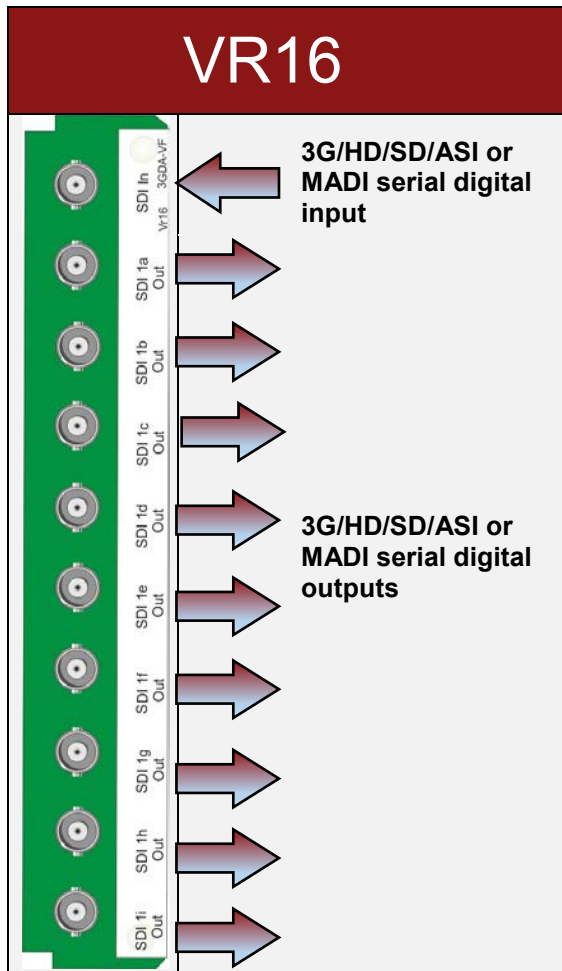
3.1 Rear module connections with VR20



The VR20 single-slot rear module uses BNC connectors to provide one 3G/HD/SD/ASI or MADI input and six outputs.

Up to 20 VR20 rear modules can fit into a Vision 3 frame.

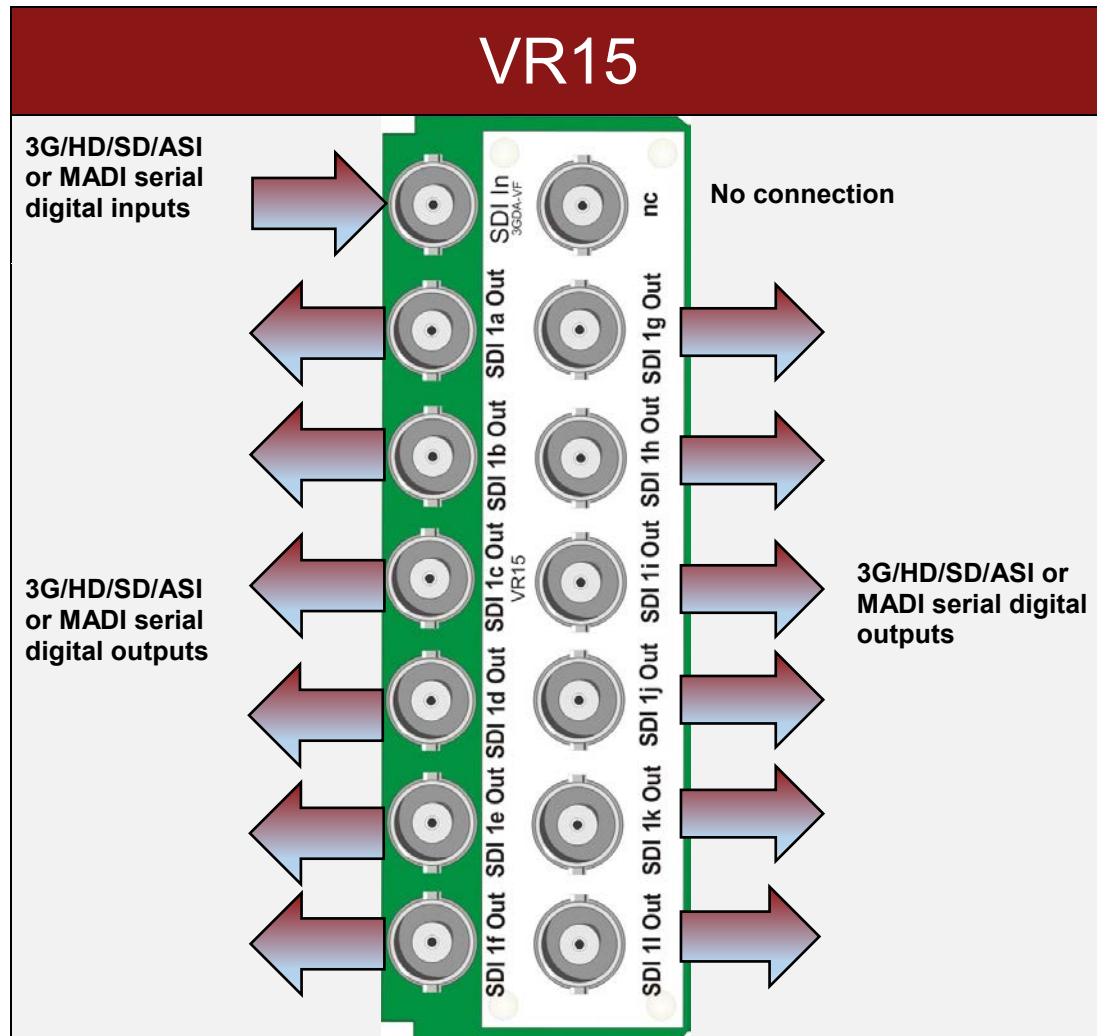
3.2 Rear module connections with VR16



The VR16 single-slot rear module uses Micro BNC connectors to provide one 3G/HD/SD/ASI or MADI input and nine outputs.

Up to 20 VR16 rear modules can fit into a Vision 3 frame.

3.3 Rear module connections with VR15



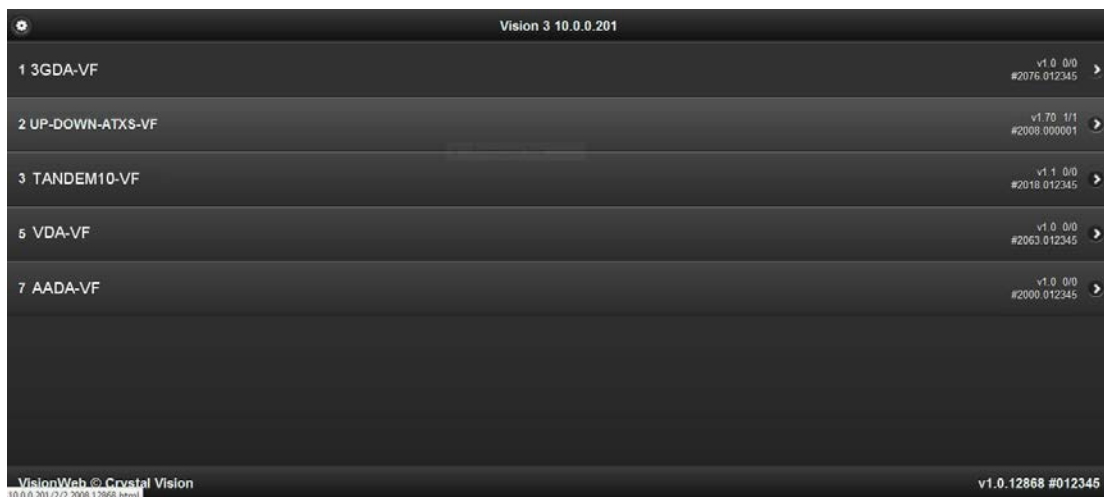
The VR15 double-slot rear module uses BNC connectors to provide one 3G/HD/SDI/ASI or MADI input and 12 outputs. Up to ten VR15 rear modules can fit into a Vision 3 frame.

4 Status monitoring

3GDA-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 User Manuals for more details.

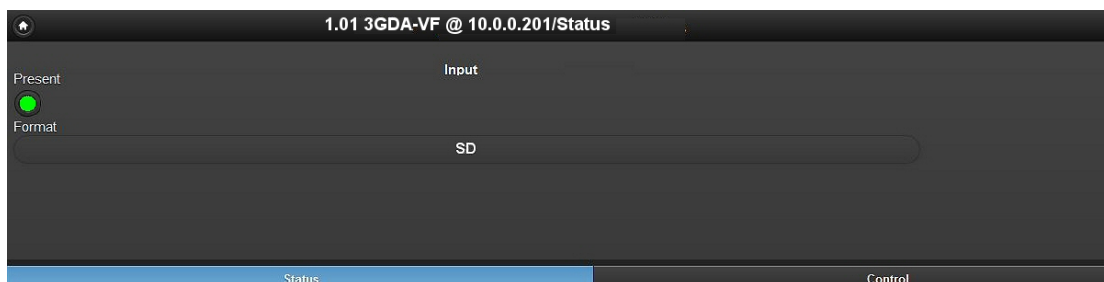
4.1 Controlling cards via VisionWeb

Crystal Vision cards use an XML file to create a control database that is used by the 'Vision' frame front panel controller 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

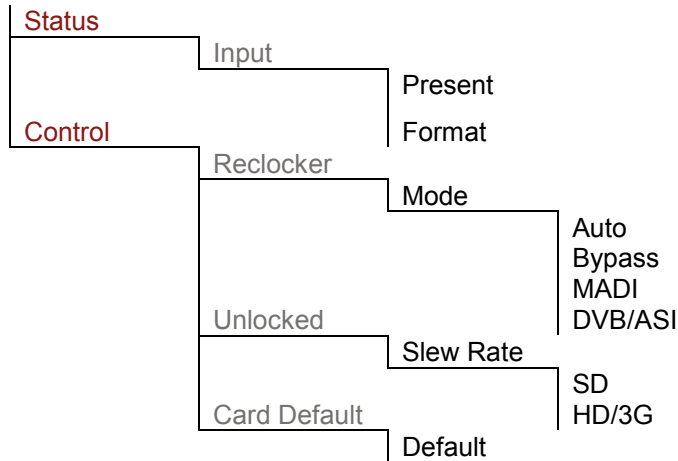
The example above shows a 3GDA-VF card fitted in slot 1 and other Vision cards in slots 2, 3, 5 and 7. Clicking on the 3GDA-VF card will bring up the card's home page, for example:



3GDA-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 3GDA-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:

Status	
Display presence and status of input signal.	
Present  Format	Input SD
Present	On if an input signal is detected (but not necessarily locked by the reclocker, as in the case of MADI inputs).

Format	Displays current format of input video signal as SD, HD/3G or unknown.
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Control

Control reclocker and set output slew rate. Reset card to default values.

Mode

Reclocker

Auto


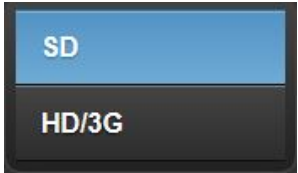
Slew rate

Unlocked

SD

Card default

Default

Mode		<p>Set reclocker mode according to the input signal:</p> <p>Select 'Auto' for SD or HD/3G signals to automatically set the correct output slew rate.</p> <p>Selecting 'Bypass' will bypass the reclocker and use the output slew rate as set by the 'Slew Rate' control below.</p> <p>Selecting 'MADI' will bypass the reclocker and set the output slew rate to SD.</p> <p>Selecting 'DVB/ASI' will force the reclocker into a 270Mb/s mode and set the output slew rate to SD.</p>
Slew Rate		<p>Select the output slew rate when the Mode control is set to 'Bypass' or if the input is unlocked.</p>
Card default	<p>Click on this button to return the card to its default values: reclocker 'Mode' control set to 'Auto' and 'Slew Rate' control set to 'SD'.</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.



3GDA-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 that the reclocker 'Mode' control is set to the correct input type.
-  **The video output exhibits jitter:** Check that the input SDI stability is within normal limits. Check that the reclocker 'Mode' control is set to the correct input type.
-  **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 rack. If necessary reset the card.
-  **Resetting the card:** If required, the card may be reset by removing the card from the rack and then re-inserting it. It is safe to re-insert the card whilst the rack is powered. Any previous configuration will be retained.

6 Specification

General

Dimensions	96mm x 325mm card with connector.
Weight	150g.
Power consumption	3GDA-VF 4 Watts.

Inputs

Video	HD or SD SDI 270 Mb/s to 2.970 Gb/s serial digital compliant to SMPTE 259, SMPTE 292-1 and SMPTE 424/425-A. Cable Equalisation: 3G (2.970Gb/s) – 100 metres, Belden 1694A or equivalent. HD (1.485Gb/s) – 140 metres, Belden 1694A or equivalent. SD (270Mb/s) >250 metres, Belden 8281 or equivalent.
Audio	MADI (AES10) >250 metres, Belden 8281 or equivalent. Sampling rates supported (as specified in AES10-2008): 32 kHz to 48 kHz +/- 12.5%, 56 channels; 32 kHz to 48 kHz nominal, 64 channels; 64 kHz to 96 kHz +/- 12.5%, 28 channels.

Outputs

Video	Serial output: 270Mb/s to 2.970Gb/s serial compliant to SMPTE 259, SMPTE 292-1 and SMPTE 424/425-A.
Audio	Non-reclocked MADI (AES10).

Rear Module I/O

VR20	One BNC video input and six BNC video outputs. Single-slot module.
VR16	One Micro BNC video input, nine Micro BNC video outputs. Single-slot module.
VR15	One BNC video input and 12 BNC video outputs. Double-slot module.

Delays

Delay through board	Maximum 50nS.
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Control

Remote:	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 PC or tablet. Complimentary SNMP control and monitoring via frame CPU and Ethernet connection.
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