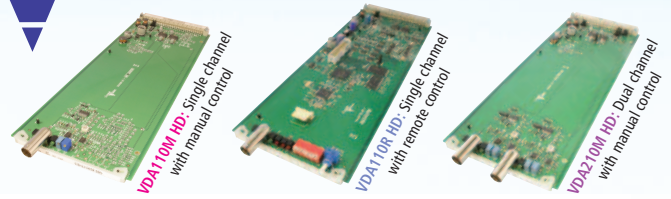


# Crystal Vision

## HD/SD Analogue Video Distribution Amplifiers



### Distribute any analogue source

Crystal Vision's three analogue video distribution amplifiers are ideal for providing multiple outputs of any analogue source. Use them to distribute your reference signals – either SD Black and Burst or HD tri-level syncs. Alternatively use them to distribute SD or HD analogue composite or component video. Between them they offer the choice of varying numbers of inputs, outputs, loop-throughs and manual or remote control to suit any installation requirements.

### Get up to eleven analogue outputs

The popular single channel VDA110M HD gives a maximum of eleven outputs or ten outputs with a loop-through and has board edge control. The VDA110R HD is a remotely-controlled single channel board which gives a maximum of eleven outputs or ten outputs with a loop-through. For reduced cost multi-channel applications where fewer outputs are required, the dual channel manually-controlled VDA210M HD is perfect, giving a maximum of five outputs per channel (or four outputs with a loop-through). The VDA210M HD also has the flexibility to be configured as a single channel board for those applications where more outputs are required.

It's possible to get the perfect output combination for every application, with five different frame rear modules available. Decide how many outputs you need and how many boards you'd like to fit in a frame, and then select the rear module that meets those criteria. The VDA110M HD and VDA110R HD can both be used with the RM01,

RM02, RM16 and RM18, while the VDA210M HD can be used with the RM01, RM02, RM15 and RM18.

### You won't lose your signals

You can use the distribution amplifiers with either differential or non-differential inputs (or a mixture of the two – useful if only some of your feeds come from another area) simply by choosing an appropriate rear module. The passive loop-throughs are independent of the distribution amplifier, allowing you to remove the board without losing the looped-through source – and maybe your station syncs feed.

### Maximise the quality of your signal

The boards all include continuously variable gain adjustments of +/-3dB, while high quality equalisation will correct any distortion to the analogue signal caused by up to 300m of cable, making the boards suitable for applications involving long cable runs. The gain and equalisation are adjusted manually on the VDA110M HD and VDA210M HD and both manually and remotely on the VDA110R HD. The inclusion of a clamp on the VDA110R HD will compensate for differences in ground voltage by removing hum already on the signal. It can be set to suit the type of material being transported, with fast, slow or off settings available.

### Easy to install

Installing the boards is made easy with the inclusion of an SD or HD present indication, while a video monitoring test point BNC at the board edge means a waveform monitor can be plugged straight into the board,

facilitating signal monitoring during the setting up of the cable equalisation.

### Always know what's happening

Troubleshooting is easy too: all three distribution amplifiers have GPI and LED indication of input failure and loss of power.

The VDA110R HD additionally includes comprehensive signal reporting including input standard, sync amplitude and dark and white-clip video input – available through board edge LEDs, GPIs and the various remote control options. The VDA110R HD will tell you if your analogue syncs are not the correct amplitude, with an error reported if the sync level is greater than 110% of the expected value. A dark video alarm will be triggered if the video signal's content remains below 15% luma for a specified time period of up to 600 seconds – useful for alerting you to the fact that something in the chain has lost its input. You'll also get white-clip notification if the output luma levels exceed 110% of peak white.

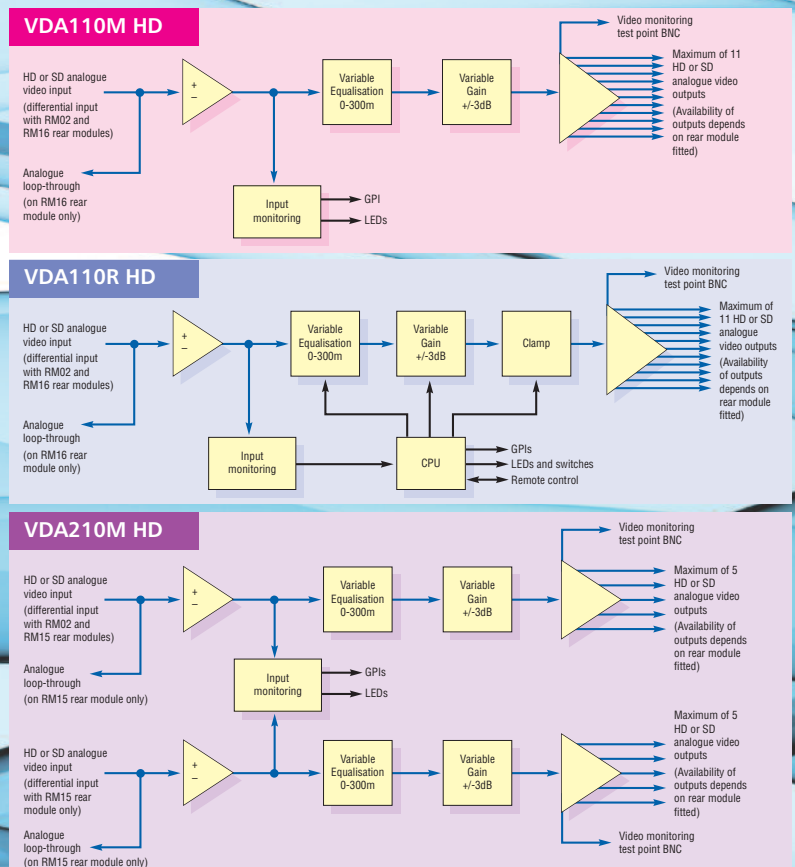
### Save yourself rack space

These 100mm x 266mm modules fit in Crystal Vision's standard rack frames alongside any other products, allowing 24 boards in 4U (that's 48 channels with the VDA210M HD), 12 boards in 2U, six in 1U or two in a desk top box.

The remote control and monitoring options for the VDA110R HD include an active front panel on the frame, a remote control panel, SNMP or the Statesman PC software.

## Choosing the right DA for you

FEATURE	VDA110M HD	VDA110R HD	VDA210M HD
Single or dual channel	Single	Single	Dual
Will distribute HD analogue video and tri-level syncs	●	●	●
Will distribute SD analogue video and Black & Burst	●	●	●
Option of differential and non-differential inputs	●	●	●
Maximum number of outputs	11 (10 with loop-through)	11 (10 with loop-through)	5 per channel (4 with loop-through)
Remote control		●	
High quality equalisation for up to 300m	Adjustable by board edge	Adjustable by board edge and remotely	Adjustable by board edge
Gain adjustments of +/-3dB	Adjustable by board edge	Adjustable by board edge and remotely	Adjustable by board edge
Clamp adjustment		●	
Comprehensive error reporting		●	
Rear module options	RM01, RM02, RM16 and RM18	RM01, RM02, RM16 and RM18	RM01, RM02, RM15 and RM18



# SPECIFICATION

## MECHANICAL

Standard Crystal Vision modules 266mm x 100mm  
Weight: 140g (VDA110M HD and VDA110R HD); 160g (VDA210M HD)  
Power consumption: 1.4 Watts (VDA110M HD and VDA210M HD); 4 Watts (VDA110R HD)

## ANALOGUE VIDEO INPUTS

VDA110M HD and VDA110R HD: One SD or HD analogue input  
VDA210M HD: Two SD or HD analogue inputs  
SD or HD composite video input, 1 volt with syncs. Composite PAL or NTSC. Component video up to 30MHz bandwidth  
SD Black and Burst, HD tri-level syncs, or 2 volt syncs  
VDA110M HD and VDA110R HD: Loop-through available with RM16 rear module, or 75 ohm termination  
VDA210M HD: One loop-through per channel available with RM15 rear module, or 75 ohm termination  
Loop-through does not need VDA to be fitted – rear connector has all circuitry required  
VDA110M HD and VDA110R HD: Differential input with RM02 and RM16 rear modules  
VDA210M HD: Differential input with RM02 (first channel only) and RM15 rear modules

## ANALOGUE VIDEO OUTPUTS

VDA110M HD and VDA110R HD: Maximum of eleven outputs using the RM18 rear module (five outputs with RM01, eight with RM02 and ten with RM16)  
VDA210M HD: Maximum of five outputs per channel using the RM18 rear module (four outputs per channel with RM15, three of the first channel and four of the second with RM02, and two per channel with RM01)

## PERFORMANCE

Input Return Loss: >48dB to 10MHz  
Output Return Loss: >48dB to 10MHz  
Frequency Response: +/-0.05dB 0 to 6MHz, +/-0.2dB 6 to 10MHz, +/-1.5dB 10 to 30MHz  
Differential Gain: <0.2% at 5MHz (VDA110M HD and VDA210M HD); <0.3% at 5MHz (VDA110R HD)  
Differential Phase: <0.4 degrees at 5MHz (VDA110M HD and VDA210M HD); <0.6 degrees at 5MHz (VDA110R HD)  
Signal to Noise Ratio at 0 to 10MHz: <70dB (VDA110M HD and VDA210M HD); <60dB (VDA110R HD)  
Cable equalisation: Belden 8281 manual adjustment up to 300m (can also be adjusted remotely on VDA110R HD)

Gain adjustment: +/-3dB manual adjustment (can also be adjusted remotely on VDA110R HD)  
On the VDA110R HD the output clamping can be set to suit the type of material being transported. These are fast clamp (six lines recovery time), slow clamp (60 lines recovery time) and off (AC-coupled)

## DELAY THROUGH BOARD

20ns

## LED INDICATION OF:

SD or HD present indication  
Power supplies okay  
625 line input (VDA110R HD only)  
Dark video (VDA110R HD only)  
White-clip video (VDA110R HD only)

## ERROR REPORTING (VDA110R HD ONLY)

Clip detector output luma levels: >110% of peak white  
Dark detect level: Output luma level <15% of peak white for an extended period (remote setting of time from 0-600 seconds)  
Sync amplitude detect level: Sync level >110% PAL, >115% NTSC

## GPI OUTPUT LEVELS

Electrically: Open collector transistors 30V, 270 ohm current limit resistors. Pulled up to +5V through 6800 ohm

## GPI OUTPUTS

VDA110M HD: One GPI output (Input detect)  
VDA110R HD: Three GPI outputs (Input detect, dark video and white-clip video)  
VDA210M HD: Two GPI outputs (Two sets of input detect)

## LOCAL CONTROL

Board edge control of cable equalisation 0-300m and gain +/-3dB (all boards) and clamp (VDA110R HD only)  
Video monitoring test point BNC allows waveform monitor to be plugged straight into the board

## REMOTE CONTROL (VDA110R HD ONLY)

RS422/485  
19200 baud, 8 bits, 1 stop no parity  
Control from frame active front panel and remote panel  
Statesman allows control from any PC on a network  
SNMP monitoring and control available as a frame option

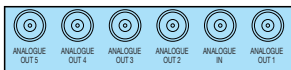
## Which rear module should you use?

### VDA110M HD and VDA110R HD

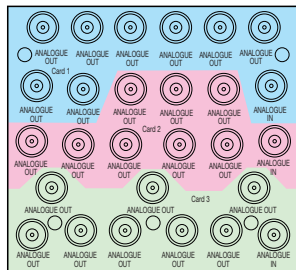
Rear module	Input	Outputs	Loop-through?
RM01	Non-differential	5	
RM02	Differential	8	
RM16	Differential	10	●
RM18	Non-differential	11	

### VDA210M HD

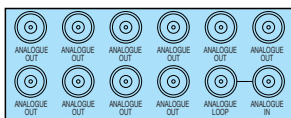
Rear module	Input 1	Input 2	Outputs of first channel	Outputs of second channel	Loop-throughs?
RM01	Non-differential	Non-differential	2	2	
RM02	Differential	Non-differential	3	4	
RM15	Differential	Differential	4	4	●
RM18	Non-differential	Non-differential	5	5	



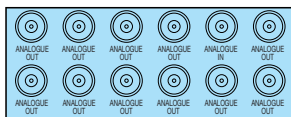
RM01



RM02



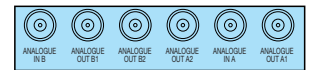
RM16



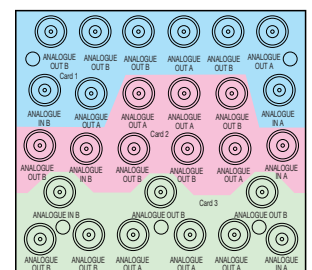
RM18

## ORDERING INFORMATION

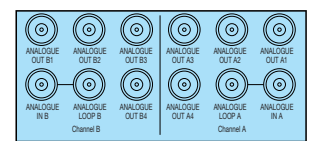
VDA110M HD	Single channel distribution amplifier for HD or SD analogue video with manual control
VDA110R HD	Single channel distribution amplifier for HD or SD analogue video with remote control
VDA210M HD	Dual channel distribution amplifier for HD or SD analogue video with manual control
Indigo 4	4U frame with passive front panel for up to 24 Crystal Vision modules
Indigo 4SE	4U frame with passive front panel fitted with Statesman CPU for up to 24 Crystal Vision modules
Indigo 2	2U frame with passive front panel for up to 12 Crystal Vision modules
Indigo 2AE	2U frame with active front panel for up to 12 Crystal Vision modules
Indigo 2SE	2U frame with passive front panel fitted with Statesman CPU for up to 12 Crystal Vision modules
Indigo 1	1U frame with passive front panel for up to six Crystal Vision modules. Power supply redundancy available with Indigo 1-DP
Indigo 1AE	1U frame with active front panel for up to six Crystal Vision modules. Power supply redundancy available with Indigo 1AE-DP
Indigo 1SE	1U frame with passive front panel fitted with Statesman CPU for up to six Crystal Vision modules. Power supply redundancy available with Indigo 1SE-DP
Indigo DT	Desk top box with passive front panel for up to two Crystal Vision modules
Indigo DTSE	Desk top box with passive front panel fitted with Statesman CPU for up to two Crystal Vision modules
RM01	Single slot frame rear module for use with all VDAs. Allows maximum number of boards in frame (24 in 4U, 12 in 2U, six in 1U, two in desk top box). On the VDA110M HD and VDA110R HD gives access to one analogue input and five analogue outputs. On the VDA210M HD gives access to two analogue inputs and two analogue outputs per channel
RM02	Four slot frame rear module for use with all VDAs. One rear module used for three boards, allowing 18 boards in 4U and nine in 2U. On the VDA110M HD and VDA110R HD gives access to one analogue input and eight analogue outputs. On the VDA210M HD gives access to two analogue inputs with three analogue outputs of the first channel and four outputs of the second
RM15	Two slot frame rear module for use with VDA210M HD. Allows 12 boards in 4U, six in 2U, three in 1U and one in desk top box. Gives access to two analogue inputs, with four analogue outputs and an analogue loop-through per channel
RM16	Two slot frame rear module for use with VDA110M HD and VDA110R HD. Allows 12 boards in 4U, six in 2U, three in 1U and one in desk top box. Gives access to one analogue input, ten analogue outputs and an analogue loop-through
RM18	Two slot frame rear module for use with all VDAs. Allows 12 boards in 4U, six in 2U, three in 1U and one in desk top box. On the VDA110M HD and VDA110R HD gives access to one analogue input and eleven analogue outputs. On the VDA210M HD gives access to two analogue inputs with five analogue outputs per channel
REMIND	19" remote control panel
REMIND-E	19" Ethernet remote control panel
Statesman	PC Control System
SNMP	SNMP monitoring and control



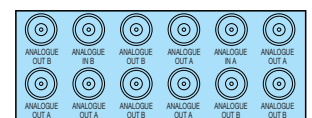
RM01



RM02



RM15



RM18

Performance and features are subject to change.  
Figures given are typical measured values.  
HDVDA0311