VDA210M

Analogue video distribution amplifier

USER MANUAL

Crystal Vision

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Contents

1 Introduction

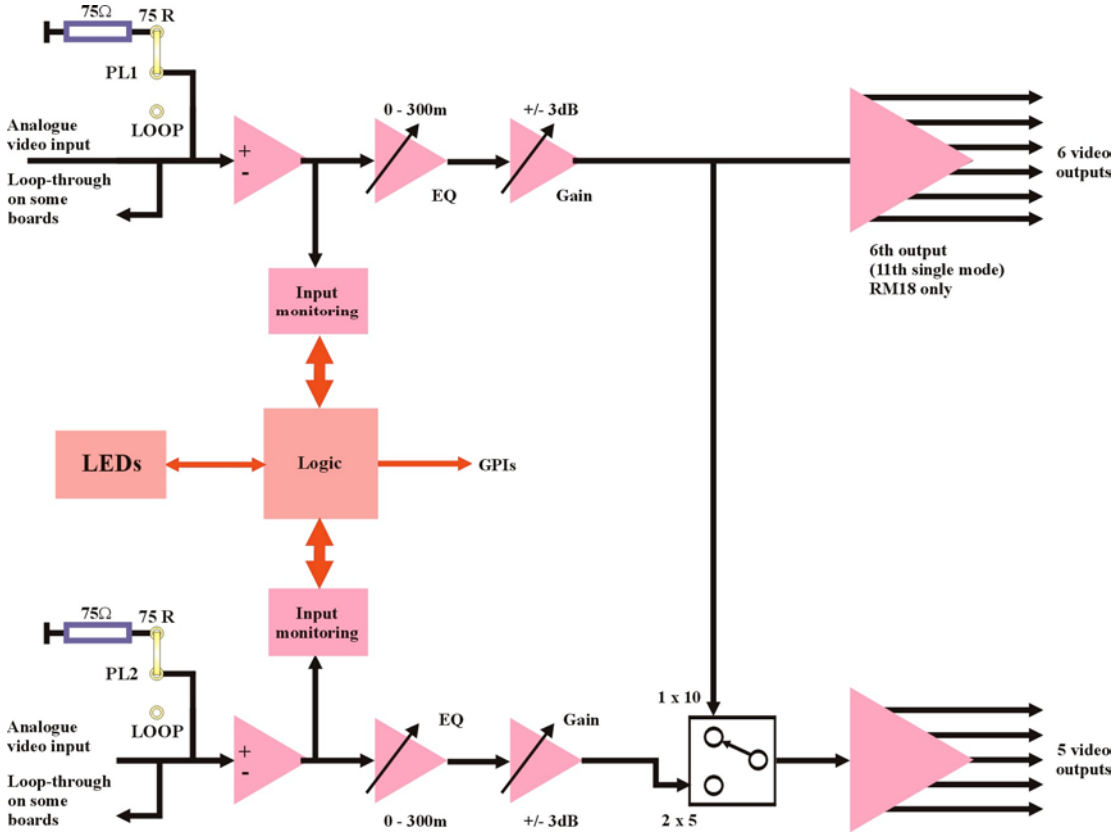
The VDA210M is a dual analogue video distribution amplifier with two inputs and up to two loop-through and eleven outputs depending on the mode and rear module fitted. It has adjustable gain and equalisation.

The VDA210M 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.

It is very compact with 12 modules fitting in a 2U frame when a single slot rear connector is used. Frame default is 5 equalised outputs. Input termination is link selectable. Five extra outputs and input loop-through are available with alternative frame rear modules.

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 and controls for cable equalisation and gain.



VDA210M dual analogue video DA

The VDA210M can be configured in one of two ways:

- 2 channels - channel 1 is 1-in 6-out; channel 2 is 1-in 5-out
- 1 channel - channel 1 in 11 out

The VDA210M has LED and GPI indication of input presence/failure for each channel.

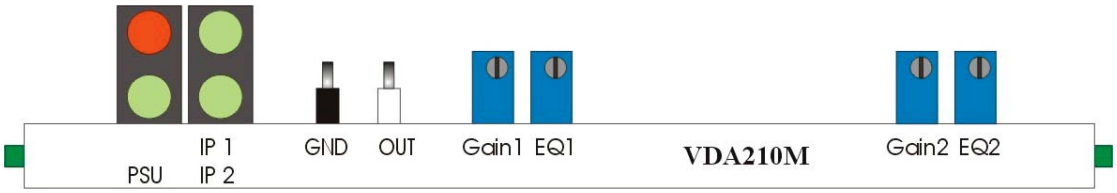
The main features are as follows:

- Dual 1 in 6/5-out or single 1 in 11 out video distribution amplifier
- Continuously variable equalisation for up to 300 metres of coaxial cable.
- GPI/LED input presence indication
- Card edge control

Note: Only the RM18 rear connector allows access to all 6 outputs of channel 1 (or all 11 outputs in single channel mode).
This manual covers the VDA210M. The VDA110R with Statesman/remote control is also available.

2 Card edge operation

The front edge of the VDA210M card provides power rail monitoring, signal status and gain/EQ adjustments for each input. There is no provision for remote control.



VDA210M front edge view

LED	Location/colour	Meaning when lit
IN 1	Green (top)	525/625-line signal present on input 1
IN 2	Green (bottom)	525/625-line signal present on input 2
	Red (top)	Not used
PSU	Green (bottom)	Power supply OK.

Adjusting cable equalisation

Cable equalisation is continuously variable from 0m to 300m using the EQ controls for input 1 (EQ1) and input 2 (EQ2).

Adjusting input gain

Gain is continuously variable ± 3.0dB using the GAIN controls for input 1 (Gain1) and input 2 (Gain2). The VDA210M is supplied with a factory-set gain of 0dB.

Video monitoring test point

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

On-board jumper link settings

Please refer to section 3.3 Configuration to set the following options when using card edge control:

- Changing the input termination – 75Ω or high impedance loop through
- Changing output 2 input source – single (1 x 10) or dual (2 x 5) channel operation

3 Hardware installation

The VDA210M 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.

3.1 Universal rear connectors

When used with a single height rear connector, 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 DeskTop Box has a built-in power supply and will house up to 2 modules with a single height rear connector.

The 2U and 1U frames have a hinged front panel that 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.

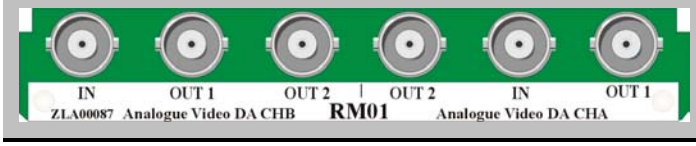
The VDA210M may be used with the RM01 single slot rear connector, the RM02 quadruple slot rear connector and the RM15 and RM18 double slot rear connectors.

The 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

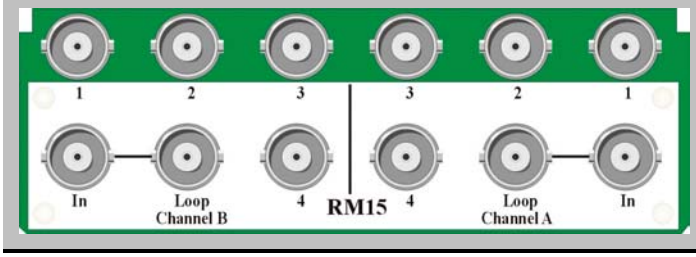
Notes: *Table shows no of cards per rear connector.
Passive loop-through is independent of the amplifier; the module may be removed without losing the looped-through source.

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	Output	Input 2

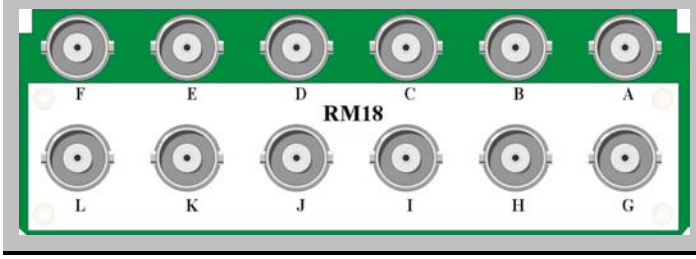
Rear module connections with RM15

RM15 fits in all frames	Description
	**RM15** • 6 modules in 2U , 3 in 1U, 1 in a 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	Output 1	Input 2
Channel B Loop	No connection – see note	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

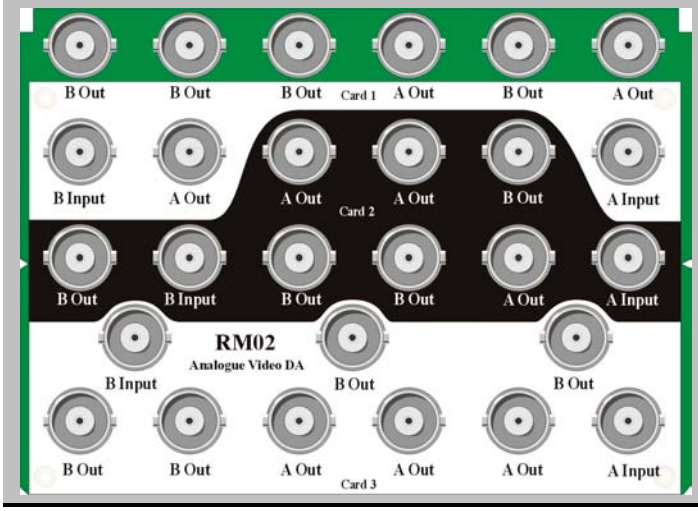
Notes: Do not make a connection to both Channel B In and B Loop in single mode, as this will double terminate that output.

Rear module connections with RM18

RM18 fits in all frames	Description
	**RM18** • 6 modules in 2U , 3 in 1U, 1 in a 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	Output	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 a 2U Indigo or FR2AV frame	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	Output	Input 2
A out	Output	Output 1
B out	Output	Output 2

3.2 General purpose interface

GPI outputs use switch-closure to indicate VDA210M status. When closed circuit, the GPI line is connected to Frame Ground.

Each GPI output can drive a 24V bulb (max current 500mA).

GPI	Closed-circuit (Ground)	Open-circuit
'a'	Input 1 present	Input 1 absent
'b'	Input 2 present	Input 2 absent
'c'		
'd'		
'e'		
'f'		

The following tables show the GPI pinout for each frame:

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 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 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 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.

DTB 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.

3.3 Configuration

The VDA210M is equipped with on-board jumper links for input termination and input/output channel configuration.

VDA210M showing configuration jumpers and GPI drive resistors

Changing the input termination

Move jumper PL2 (Ch1) and/or PL5 (Ch2) to the appropriate position to set the input termination to either 75Ω or high impedance loop through.

Input 1 termination

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

Input 2 termination

PL 5 position	Termination
75R position (top)	Terminated 75 Ω
Loop-through position (bottom)	High-impedance

Changing the channel mode

In dual-channel (standard) configuration, the VDA210M is configured as 2 inputs, 5 of each out. In single-channel configuration, the VDA210M is configured as Input 1 only, 10 out and input 2 is not used.

Mode	PL3 and PL4 position	PL6 position
Dual channel	B IN position (top)	B OUT position (Bottom)
Single channel	A OUT position (bottom)	A OUT position (top)

Changing the GPI output drive

As supplied, each GPI output can drive a 24V or 48V bulb. For 5V LED drive, resistors R1 and R2 (near edge connector) must be changed from 0Ω to 680Ω 0805 surface-mount types.

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

4 Problem solving

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

VDA210M front edge view

The top red LED is not used. The lower left hand PSU green LED indicates good power rails when lit.

The upper right hand green LED lights when input 1 is present and the lower right hand green LED lights when input 2 is present.

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
IN 1	Green (top)	525/625-line signal present on input 1
IN 2	Green (bottom)	525/625-line signal present on input 2
	Red (top)	Not used
PSU	Green (bottom)	Power supply OK.

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)

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 card no longer responds to card edge control

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

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

5 Specification

General

Dimensions	100mm x 266 mm module with DIN 41612 connector
Weight	140g
Power consumption	1 W

Inputs

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

Outputs

Number and type:	11 (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^{o}
Differential gain:	< 1%
Signal to noise ratio:	< -60dB weighted

GPI lines

Outputs:	2 (D-type on frame)
	Input presence/absent for each input

Status monitoring

LED display	Front of card edge visual monitoring with LED indicators to indicate:
	PSU rails present
	Input present

Ordering information

VDA210M	Analogue dual video distribution amplifier w/manual control
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-through
RM18	Dual slot rear module for 1 VDA with 12 BNCs. Accesses all 11 outputs.