VDA110M

Analogue video distribution amplifier

USER MANUAL

Crystal Vision

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Contents

1 Introduction

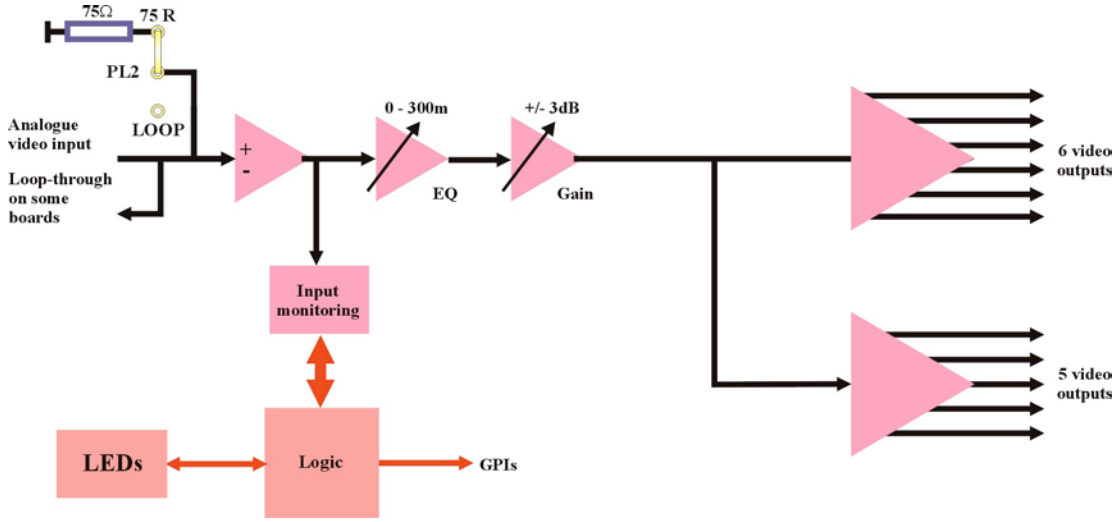
The VDA110M is a 1-in, 11-out distribution amplifier with continuously variable gain and equalisation for up to 300 metres of coaxial cable.

The VDA110M may be used with the RM01 single slot rear connector, the RM02 quadruple slot rear connector and the RM16 and RM18 double slot rear connectors. A single slot rear connector provides five equalised outputs and five or six extra outputs and input loop-through are available with alternative frame rear modules.

Input termination is link selectable and 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.

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.



VDA110M dual analogue video DA

The VDA110M has LED and GPI indication of input presence/failure.

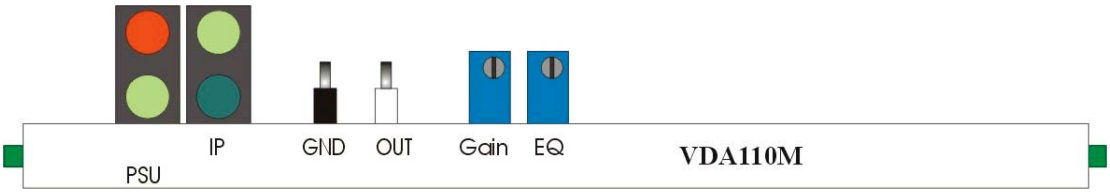
The main features are as follows:

- 1 in 11 out video distribution amplifier (use RM18 for 11 outputs)
- Continuously variable equalisation for up to 300 metres of coaxial cable.
- GPI/LED input presence indication
- Card edge control

Note: This manual covers the VDA110M. The VDA110R with Statesman/remote control is also available.

2 Card edge operation

The front edge of the VDA110M card provides power rail monitoring, signal status and gain/EQ adjustments for each input. There is no provision for remote control.



VDA110M front edge view

LED	Location/colour	Meaning when lit
IP	Green (top)	525/625-line signal present on input 1
	Green (bottom)	Not used
	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 control.

Adjusting input gain

Gain is continuously variable ± 3.0dB using the GAIN control. The VDA110M 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

3 Hardware installation

The VDA110M 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, 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.

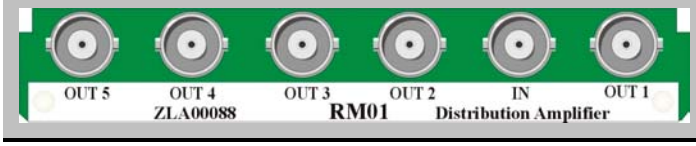
The VDA110M may be used with the RM01 and RM09 single slot rear connector for up to 12 modules, the RM02 and RM10 quadruple slot rear connectors for up to 4 modules and the RM16 and RM18 double slot rear connectors for up to 6 modules in a 2U frame.

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 7 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

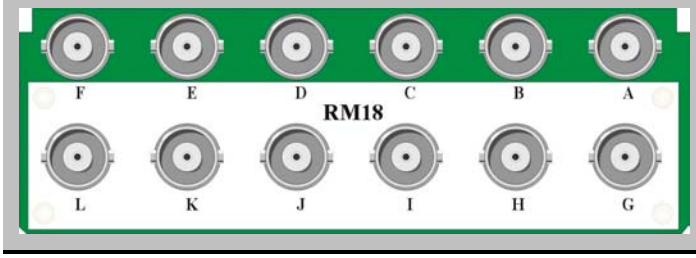
BNC	Signal assignment
IN	Input.
OUT 1	Output
OUT 2	Output
OUT 3	Output
OUT 4	Output
OUT 5	Output

Rear module connections with RM09

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

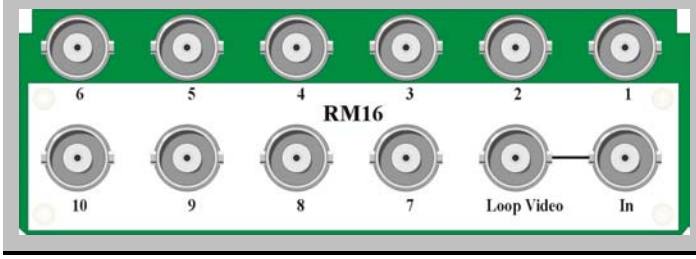
BNC	Signal assignment
IN	Input.
LOOP IN	Input loop through
OUT 1	Output
OUT 2	Output
OUT 3	Output
OUT 4	Output

Rear module connections with RM18

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

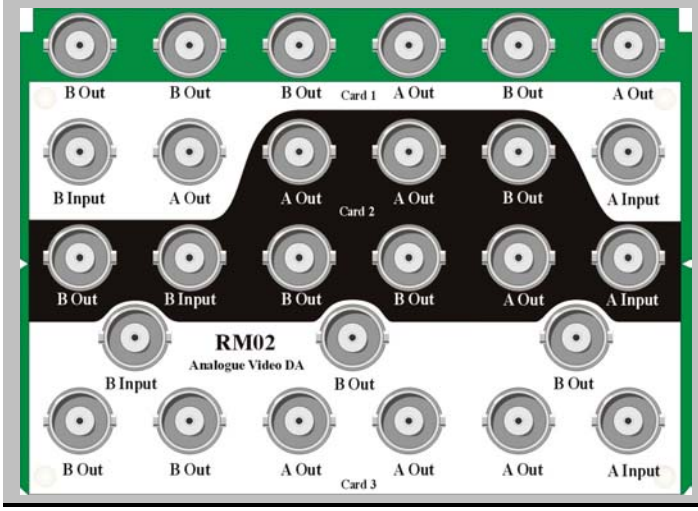
BNC	Signal
A	Output
B	Input
C	Output
D	Output
E	Output
F	Output
G	Output
H	Output
I	Output
J	Output
K	Output
L	Output

Rear module connections with RM16

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

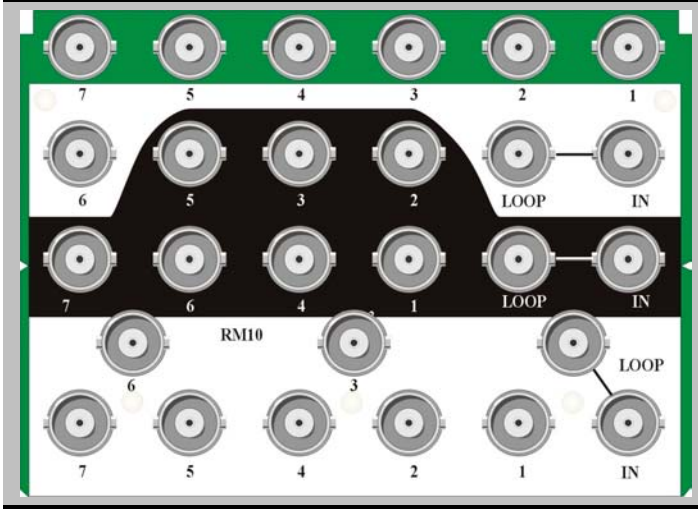
BNC	Signal
In	Input
Loop Video	Loop Video
1	Output
2	Output
3	Output
4	Output
5	Output
6	Output
7	Output
8	Output
9	Output
10	Output

Rear module connections with RM02

RM02 fits in Indigo and FR2AV frames	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	Signal
A Input	Input
B Input	Output
A Output	Output
B Output	Output

Rear module connections with RM10

RM10 fits in Indigo and FR2AV frames	Description
	**RM10** • 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	Signal
IN	Input
LOOP	Input loop through
1	Output
2	Output
3	Output
4	Output
5	Output
6	Output
7	Output

3.2 General purpose interface

GPI outputs use switch-closure to indicate VDA110M 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'	Not used	Not used
'c'	Not used	Not used
'd'	Not used	Not used
'e'	Not used	Not used
'f'	Not used	Not used

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 VDA110M is equipped with an on-board jumper link to change input termination.

VDA110M showing termination jumper and GPI drive resistor

Changing the input termination

Move jumper PL2 to the appropriate position to set the input termination to either 75Ω or high impedance loop through.

Input termination

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

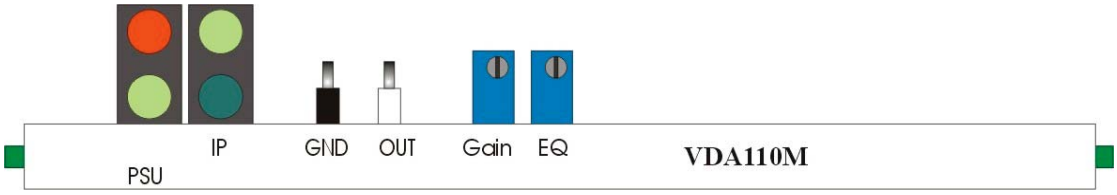
Changing the GPI output drive

As supplied, the GPI output can drive a 24V or 48V bulb. For 5V LED drive, resistor R1 (near edge connector) must be changed from 0Ω to 680Ω 0805 surface-mount type. The module can be supplied with an LED drive resistor if requested at the time of ordering.

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.



VDA110M 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 an input is present and the lower right hand green LED is not used.

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
IP	Green (top)	525/625-line signal present on input 1
	Green (bottom)	Not used
	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

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

Outputs

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

Gain adjustment

Continuous adjustment:	± 3.0dB

Cable Equalisation

Continuous adjustment:	0 to 300m Belden 8281 or equivalent

Performance

Frequency response:	± 0.05dB 0 to 6MHz.
Differential phase:	< 1^{o}
Differential gain:	< 1%
Signal to noise ratio:	< -60dB weighted

GPI lines

Outputs:	1 (D-type on frame)
	Input presence/absent

Status monitoring

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

Ordering information

VDA110M	Analogue 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
RM09	Single slot rear module with 6 BNCs. Allows single loop-through
RM02	Quad slot rear module with 27 BNCs for 3 boards
RM10	Quad slot rear module with 27 BNCs for 3 boards. Allows loop-through for single VDAs
RM16	Dual slot rear module for 1 VDA with 12 BNCs. Allows single loop-through
RM18	Dual slot rear module for 1 VDA with 12 BNCs. Accesses all 11 outputs.