DDA208A

SDI distribution amplifier

USER MANUAL

Crystal Vision

Crystal Vision Ltd., Lion Technology Park, Station Road East, Whittlesford, Cambridge, CB22 4WL, England.
E-mail: sales@crystalvision.tv Website: www.crystalvision.tv Tel: +44(0) 1223 497049 Fax: +44(0) 1223 497059

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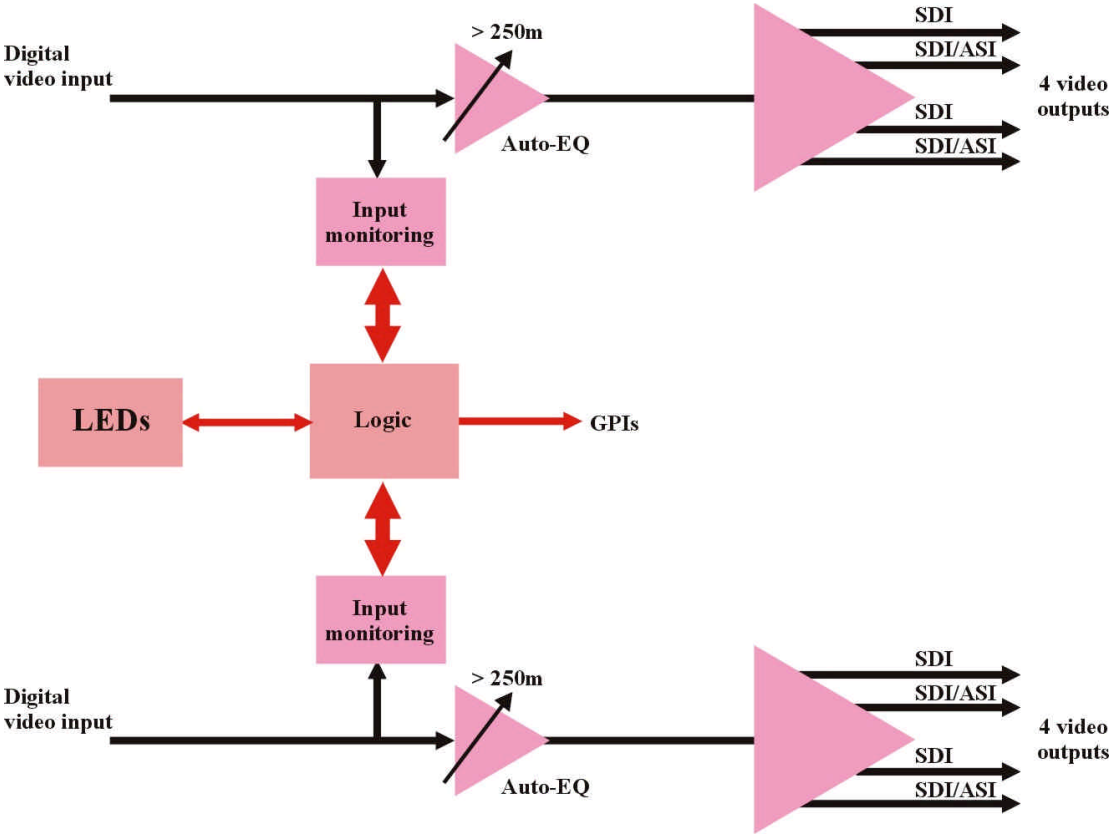
1 Introduction

The DDA208A is a dual non-reclocking serial digital video and ASI distribution amplifier with up to four outputs per channel. It has auto-equalisation for up to 250 metres of coaxial cable.

The universal connection system allows a mixture of Crystal Vision modules in the frame. The modules plug in the front and the rear connectors plug in the rear. Depending on frame design, a hinged or removable front panel reveals LED indication of input and PSU status when opened.



DDA208A dual non reclocking ASI/SDI distribution amplifier

The single slot rear connector provides two DVB-ASI compliant serial digital outputs per channel with 12 modules in 2U of rack space. Alternative rear modules provide more outputs but with fewer modules per frame.

It may be used with the RM01 single slot rear connector, the RM02 quadruple slot rear connector or the RM18 double slot rear connector. The RM18 provides access to all four outputs per channel, with 6 modules in 2U of rack space.

Further rear connector details may be found in the Installation chapter.

The main features are as follows:

- 2 x 1-in 4-out DVB-ASI/SDI distribution amplifier
- Automatic equalisation for up to 250 metres of coaxial cable
- LED input presence indication
- Card edge control

Firmware covered

The following table shows the firmware covered by this manual:

Module type	Manual revision	Firmware covered	Comments
DDA208A	R1.1	V2.10 and V4.00	The single channel DDA108A with 8 non re-clocked ASI/SDI outputs is also available.

2 Card edge operation

The front edge of the DDA208A card provides power rail monitoring and signal status.

DDA208A front edge view

LED	Location/colour	Meaning when lit
INPUT A	Green	Valid DVB-ASI/SDI input detected.
INPUT B	Green	Valid DVB-ASI/SDI input detected.
PSU	Green	Power supply voltage present.

Cable equalisation

Cable equalisation is automatically adjusted for up to 250 meters of Belden 8281 or similar cable. There are no user adjustments.

3 Hardware installation

The DDA208A digital 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.

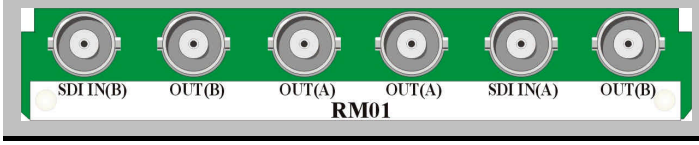
3.1 Universal rear connectors

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 Desk Top 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 Desk Top 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.

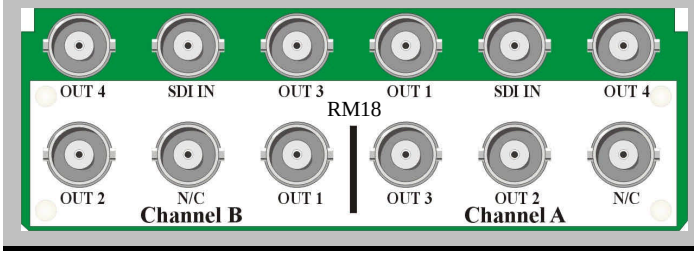
The DDA208A may be used with the RM01 single slot rear connector, the RM02 quadruple slot rear connector and the RM18 double slot rear connector.

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	I/O assignment
OUT(B)	DVB-ASI/SDI Output (B)
SDI IN CH(A)	DVB-ASI/SDI Input (A)
OUT(A)	DVB-ASI/SDI Output (A)
OUT(A)	DVB-ASI/SDI Output (A)
OUT(B)	DVB-ASI/SDI Output (B)
SDI IN CH(B)	DVB-ASI/SDI Input (B)

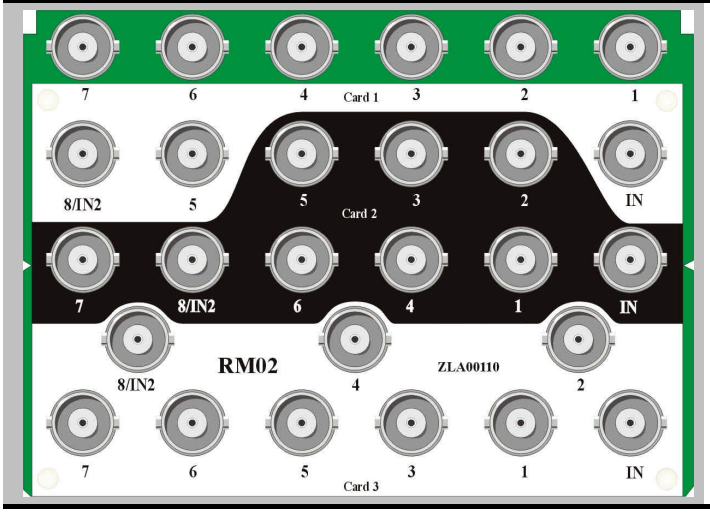
Rear module connections with RM18

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

Channel A	I/O assignment
OUT 4	SDI Output (A)
SDI IN	DVB-ASI/SDI Input (A)
OUT 1	DVB-ASI/SDI Output (A)
OUT 3	SDI Output (A)
OUT 2	DVB-ASI/SDI Output (A)
N/C	Unassigned

Channel B	I/O assignment
OUT 3	SDI Output (B)
SDI IN	DVB-ASI/SDI Input (B)
OUT 4	SDI Output (B)
OUT 2	DVB-ASI/SDI Output (B)
N/C	Unassigned
OUT 1	DVB-ASI/SDI Output (B)

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	I/O assignment
IN	DVB-ASI/SDI Input (A)
1	DVB-ASI/SDI Output (A)
2	DVB-ASI/SDI Output (A)
3	SDI Output (A)
4	DVB-ASI/SDI Output (B)
5	DVB-ASI/SDI Output (B)
6	SDI Output (B)
7	SDI Output (B)
8/IN2	DVB-ASI/SDI Input (B)

3.2 General purpose interface

The external GPI control lines 'a' to 'f' at the frame remote connectors are provided to allow remote control and/or remote status indication. Line 'a' is assigned as a GPI output to provide remote indication of input presence.

GPI lines are pulled up to +5V through 22k Ohm, 330 Ohm series resistor so they can drive an LED directly. If the series resistor is shorted out, the GPI output can drive a bulb at +45V 500mA max.

GPI Connections

	OPEN	CONNECT TO GROUND
'a'	Input A Present	Input A Absent
'b'	Input B Present	Input B Absent
'c'	Not assigned	Not assigned
'd'	Not assigned	Not assigned
'e'	Not assigned	Not assigned
'f'	Not assigned	Not assigned

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.

4 Problem solving

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 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 +5V LED is 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	96g
Power consumption	2.5 W

Inputs

Video	270Mb/s serial digital to EBU Tech 3267-E and SMPTE-259M Cable equalisation >250m Belden 8281 or equivalent

Outputs

Number and type:	8 non re-clocked Each will drive >250m Belden 8281 or equivalent

Status monitoring

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

Ordering information

DDA208A	DDA208A non re-clocking DVB-ASI/SDI video distribution amplifier
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
RM18	Dual slot rear module with 12 BNCs for 1 board