DDA108A-BP

SDI distribution amplifier with relay bypass

USER MANUAL

Crystal Vision

Contents

1   Introduction

The DDA108A-BP is a non-reclocking serial digital video and ASI distribution amplifier with up to eight outputs. 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.
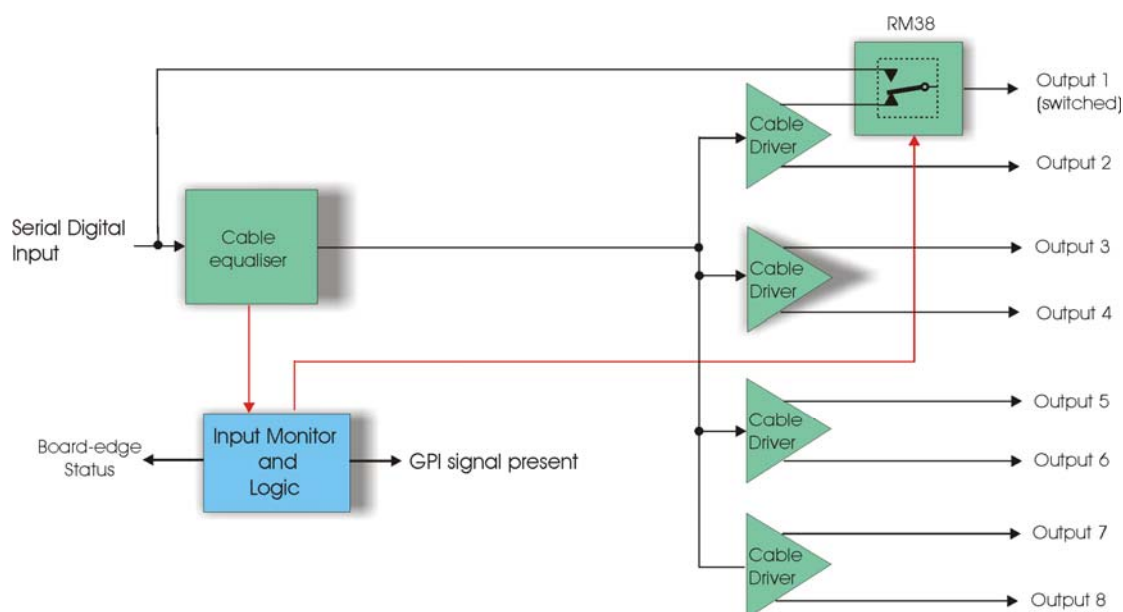
DDA108A-BP non reclocking ASI/SDI distribution amplifier

The DDA108A-BP may be used with the RM01 single slot rear connector, the RM02 quadruple slot rear connector and the RM18 double slot rear connector. If relay bypass is required the rear module used is the RM38. A single slot rear connector provides five equalised outputs and three extra outputs are available with the double and quadruple slot connectors.

It is very compact with 12 modules fitting in a 2U frame when a single slot rear connector is used.

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

The main features are as follows:

- 1 in 8 out DVB-ASI/SDI distribution amplifier
- Automatic equalisation for up to 250 metres of coaxial cable
- LED input presence indication
- Card edge control
- Relay bypass available with the RM38 rear module

2 Card edge operation

The front edge of the DDA108A-BP card provides power rail monitoring and signal status.

DDA108A-BP front edge view

LED	Location/colour	Meaning when lit
INPUT	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 DDA108A-BP 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 4U Indigo frame will house up to 24 modules with up to four power supplies, the 2U Indigo frame will house up to 12 modules and dual power supplies, the 1U Indigo frame will house 6 modules and a single or dual 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 4U, 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 DDA108A-BP may be used with the RM01 and RM38 single slot rear connector, the RM02 quadruple slot rear connector and the RM18 double slot rear connector.

Rear module connections with RM01

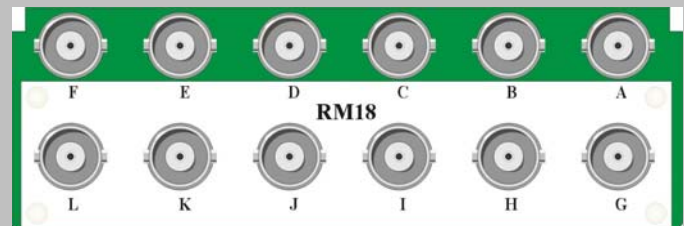| RM01 fits in all frames	Description
SDI OUT(5) SDI OUT(4) SDI OUT(3) SDI OUT(2) SDI IN SDI OUT(1) RM01	**RM01** • 12 modules in 2U, 6 in 1U & 2 in a desk top box • All frame slots can be used

BNC	I/O assignment
SDI OUT(1)	DVB-ASI/SDI Output
SDI IN	DVB-ASI/SDI Input
SDI OUT(2)	DVB-ASI/SDI Output
SDI OUT(3)	DVB-ASI/SDI Output
SDI OUT(4)	DVB-ASI/SDI Output
SDI OUT(5)	DVB-ASI/SDI Output

Rear module connections with RM38

RM01 fits in all frames	Description
	RM38 • 24 modules in 4U, 12 in 2U, 6 in 1U & 2 in a desk top box • All frame slots can be used

BNC	I/O assignment
A	DVB-ASI/SDI Input (bypass to B)
B	DVB-ASI/SDI Output
C	DVB-ASI/SDI Output
D	DVB-ASI/SDI Output
E	DVB-ASI/SDI Output
F	DVB-ASI/SDI Output

Rear module connections with RM18

RM18 fits in all frames	Description
	RM18 • 12 modules in 4U, 6 in 2U, 3 in 1U, 1 in a desk top box • 1 module per rear connector • 8 connections available • Card fits in upper slot • No card fits in lower slot

BNC	I/O assignment
A	N/C
B	DVB-ASI/SDI Input
C	DVB-ASI/SDI Output
D	DVB-ASI/SDI Output
E	DVB-ASI/SDI Output
F	DVB-ASI/SDI Output
G	N/C
H	DVB-ASI/SDI Output
I	DVB-ASI/SDI Output
J	DVB-ASI/SDI Output
K	N/C
L	DVB-ASI/SDI Output

Rear module connections with RM02

RM02 fits in a 2U Indigo 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
SDI IN	DVB-ASI/SDI Input
1	DVB-ASI/SDI Output
2	DVB-ASI/SDI Output
3	DVB-ASI/SDI Output
4	DVB-ASI/SDI Output
5	DVB-ASI/SDI Output
6	DVB-ASI/SDI Output
7	DVB-ASI/SDI Output
8/IN2	DVB-ASI/SDI Output

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.

The GPI output is fitted with 6k8Ω pull-up to +5V and 270Ω series resistor so it can drive an LED directly. If the series resistor is shorted out, it can drive a bulb at +45V 500mA max.

GPI Connections

	Open	Connect to ground
'a'	Input Present	Input Absent
'b'	Not assigned	Not assigned
'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:

4U frame GPI Connections

GPI lines 'a' to 'f' of each card connect to two of eight 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	Upper	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)

		'a' pin	'b' pin	'c' pin	'd' pin	'e' pin	'f' pin
1		8 (5)	9 (5)	18 (5)	26 (5)	19 (6)	20 (6)
2		7 (5)	16 (5)	17 (5)	25 (5)	10 (6)	11 (6)
3		8 (7)	9 (7)	18 (7)	26 (7)	19 (8)	20 (8)
4		7 (7)	16 (7)	17 (7)	25 (7)	10 (8)	11 (8)
5		5 (5)	6 (5)	15 (5)	24 (5)	1 (6)	2 (6)
6	Lower	4 (5)	14 (5)	13 (5)	23 (5)	3 (6)	4 (6)
7		5 (7)	6 (7)	15 (7)	24 (7)	1 (8)	2 (8)
8		4 (7)	14 (7)	13 (7)	23 (7)	3 (8)	4 (8)
9		3 (5)	12 (5)	22 (5)	21 (5)	12 (6)	13 (6)
10		10 (5)	11 (5)	19 (5)	20 (5)	21 (6)	22 (6)
11		3 (7)	12 (7)	22 (7)	21 (7)	12 (8)	13 (8)
12		10 (7)	11 (7)	19 (7)	20 (7)	21 (8)	22 (8)

Table shows pin number (Remote number)

Note: Remote 1, Remote 3, Remote 5 and Remote 7 are 26 way high-density D-Type female sockets. Frame ground is pin 2 and +5V @500mA is pin 1 in each case.

Remote 2, Remote 4, Remote 6 and Remote 8 are 26 way high-density D-Type male plugs and frame ground is pin 6 in each case and +5V @500mA is pin 15 on Remote 2 and Remote 6.

The +5V is protected by self-resetting thermal fuses, which limit the total output current available from Remotes 1-4 to approximately 1A. Remotes 5-8 are similarly protected.

2U frame GPI Connections

GPI lines 'a' to 'f' of each card connect to two 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. 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 in each case and +5V @500mA is pin 15 on Remote 2.

The +5V output is protected by self-resetting thermal fuses, which limit the total output current available from Remotes 1-4 to approximately 1A.

1U frame GPI connections

GPI lines 'a' to 'f' of each card connect to the 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 female socket. Frame ground is pin 2 and +5V @500mA is pin 1.

Remote 2: 26 way high-density D-Type male plugs and frame ground is pin 6 and +5V @500mA is pin 15

The +5V output is protected by self-resetting thermal fuses, which limit the total output current available from Remotes 1-2 to approximately 1A.

Indigo DT desk top box 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	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)

Table shows pin number (remote number)

Note: Remote 1: 26 way high-density D-Type female socket. Frame ground is pin 2 and +5V @500mA is pin 1.

Remote 2: 26 way high-density D-Type male plugs and frame ground is pin 6 and +5V @500mA is pin 15

The +5V output is protected by self-resetting thermal fuses, which limit the total output current available from Remotes 1-2 to approximately 1A.

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 266mm 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