Crystal Vision

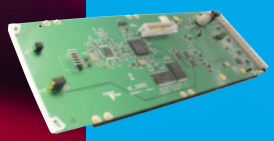
3G/HD/SD Distribution Amplifiers

Crystal Vision offers a choice of six Indigo video distribution amplifiers for the distribution of 3Gb/s, HD, SD or DVB-ASI sources – to suit all budgets and applications.

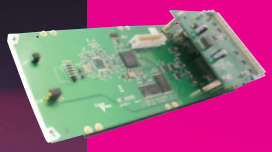
Ideal for distributing signals in multi-standard environments or for those planning for the future, the selectable options include single or dual channel, a number of outputs to suit the application, signal reporting and relay bypass protection.

With distribution amplifiers a fundamental part of any interface system, Crystal Vision provides broadcast engineers with a high quality, compact and affordable solution.

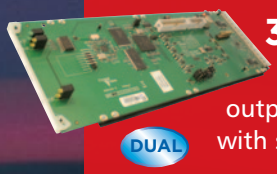
- **Find the perfect distribution amplifier for you:** six versions to suit all applications and budgets
- **Distribute a wide range of signals:** they work with 3Gb/s, HD, SD and DVB-ASI
- **Get multiple copies of your signals:** choice of two, five, ten or eleven outputs
- **Use them in multi-channel systems:** choice of single and dual channel versions
- **Distribute two different video standards at the same time:** using the dual channel DAs
- **Protect your output:** with optional relay bypass protection
- **Ideal for big systems:** remote monitoring of input present and signal type on 3GDA105R, 3GDA111R, 3GDA204R and 3GDA210R
- **Space-saving:** 100mm x 266mm module allows 12 3GDA105R/C and 3GDA204R in 2U (six in 1U and two in desk top box), double decker' module allows six 3GDA111R/C and 3GDA210R in 2U (three in 1U and one in desk top box)



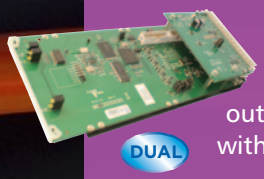
3GDA105R
Five reclocked outputs with signal reporting



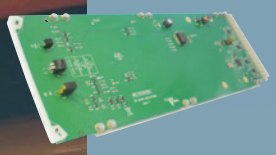
3GDA111R
Eleven reclocked outputs with signal reporting



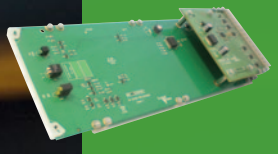
3GDA204R
Two reclocked outputs per channel with signal reporting



3GDA210R
Five reclocked outputs per channel with signal reporting



3GDA105C
Five reclocked outputs



3GDA111C
Eleven reclocked outputs

MULTI-STANDARD DISTRIBUTION

Crystal Vision's six digital video distribution amplifiers are designed for the distribution of 3Gb/s, HD or SD sources. All outputs are DVB-ASI compatible – a useful feature given the wide use of ASI within the broadcast environment.

This ability to distribute so many different signals makes them ideal for multi-standard environments, for broadcasters who need to distribute 3Gb/s now or in the near future, and for engineers who want to 'future proof' their SD or HD installations.

CHOOSE YOUR CHANNELS AND OUTPUTS

How many outputs do you need?

There are four single channel distribution amplifiers. The 3GDA105R and 3GDA105C both give five outputs, while the 3GDA111R and 3GDA111C provide eleven outputs.

There are two options for dual channel distribution, with the 3GDA204R and 3GDA210R designed to bring financial savings to those working with many channels in big systems. The two channels are independent allowing you to put different standards through each – perfect, for example, if you have HD and SD copies of the programme you want to distribute. The 3GDA204R provides two outputs of each channel and is a neat single slot solution for those who need to double the outputs on a couple of video feeds, saving you rack space by allowing 24 channels to fit in 2U. For those requiring five outputs of each channel, the 'double decker' 3GDA210R offers cost savings compared to using two of the single channel DAs and fits 12 channels in 2U. Both boards can be configured instead to be single input to meet a change in requirement, with input 1 then driving the outputs of both channels.

EXCELLENT PERFORMANCE

The six distribution amplifiers are all reclocking, providing excellent jitter performance on long cable inputs.

The DAs have auto detection of input and will recognise whether the standard is 3G/HD or SD and switch the output slew rate automatically, in addition to illuminating the appropriate LED.

The six DAs will always choose an appropriate cable equaliser for the signal type, ensuring an SD cable length in excess of 250m with Belden 8281 or equivalent, and up to 140m for HD and 80m for 3Gb/s with Belden 1694A – with no data errors.

MONITOR YOUR SIGNALS

The 3GDA105R, 3GDA111R, 3GDA204R and 3GDA210R are ideal for those seeking information about their signal, especially in big systems.

Your broadcast control system will know whether every DA in the system has got an input. The 'R' versions provide remote monitoring of input present and 3G/HD or SD signal, using either the integrated control panel on the AE frame, a remote control panel, GPIs, SNMP, the Statesman Lite PC software or the VisionWeb Control web browser software. SNMP additionally allows alarms to be set on loss of input and change in signal type.

All six DAs include local monitoring, with LED indication of inputs and power supplies present.

SAVE RACK SPACE

The distribution amplifiers incorporate Crystal Vision's usual space-saving benefits and are housed in the Indigo frames, available in 2U, 1U and desk top box sizes.

The 3GDA105R and 3GDA105C are single height 100mm x 266mm modules which sit in one frame slot allowing up to 12 DAs in 2U, and use the RM41 or RM67 frame rear modules to access the one input and five outputs. The 3GDA204R is also a single height module, and uses the RM75 or RM76 rear modules to access the two inputs and two outputs per channel.

The 3GDA111R and 3GDA111C are 'double decker' 100mm x 266mm modules which fill two frame slots, allowing up to six DAs in 2U. To access the one input and eleven outputs, they use either the RM41 and RM34 rear modules together or the RM67 and RM34 together. The 'double decker' 3GDA210R uses either the RM75 + RM34 or RM76 + RM34 to access its two inputs and five outputs per channel.

PROTECT YOUR OUTPUT

All versions include the option of relay bypass protection via the rear module – guaranteeing the maintenance of one output in the event of power failure or board removal.

The RM67's relay bypass protection has been designed to prevent signal loss on the single channel DAs. The RM76 rear module includes dual relay bypass protection, protecting both inputs on the 3GDA204R and 3GDA210R.

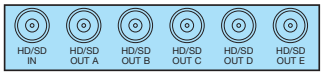
CHOOSING THE RIGHT DA FOR YOU

FEATURE	3GDA105R	3GDA111R	3GDA204R	3GDA210R	3GDA105C	3GDA111C
Distributes SDI	●	●	●	●	●	●
Distributes DVB-ASI	●	●	●	●	●	●
Distributes HD (720p and 1080i)	●	●	●	●	●	●
Distributes 3Gb/s (1080p)	●	●	●	●	●	●
Maximum number of outputs	5	11	2 per channel	5 per channel	5	11
Reclocking	●	●	●	●	●	●
Single or dual channel	Single	Single	Dual	Dual	Single	Single
Auto adjusts slew rate	●	●	●	●	●	●
Remote monitoring with signal reporting	● (input present, signal type)	● (input present, signal type)	● (input present and signal type for each channel)	● (input present and signal type for each channel)		
Rear modules used	RM41, RM67	RM41 + RM34, RM67 + RM34	RM75, RM76	RM75 + RM34, RM76 + RM34	RM41, RM67	RM41 + RM34, RM67 + RM34
Relay bypass protection option	● (with RM67)	● (with RM67 + RM34)	● (with RM76)	● (with RM76 + RM34)	● (with RM67)	● (with RM67 + RM34)
Boards in 2U	12	6	12	6	12	6

REAR MODULE CONNECTIONS

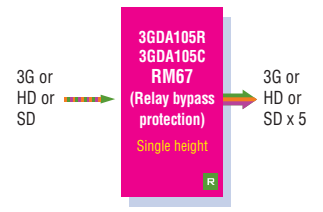
3GDA105R and 3GDA105C

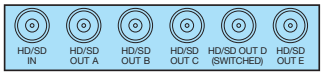
For default applications



RM41

For relay bypass protection applications



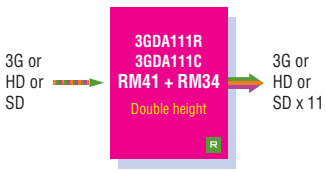


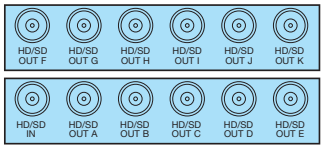
RM67

Remote monitoring available on 'R' version

3GDA111R and 3GDA111C

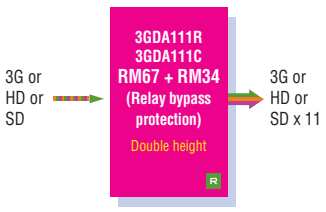
For default applications

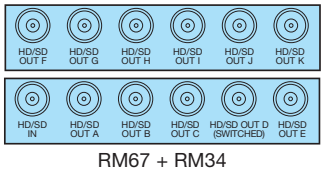




RM41 + RM34

For relay bypass protection applications

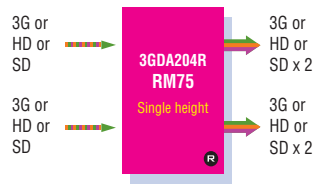


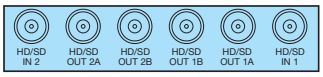


RM67 + RM34

3GDA204R

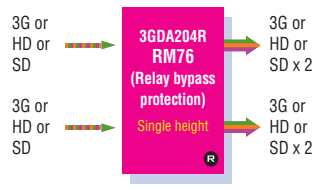
For default applications

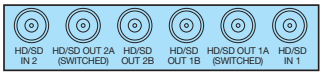




RM75

For relay bypass protection applications

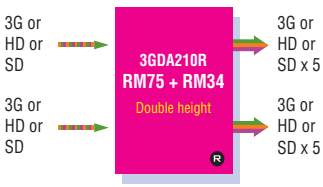


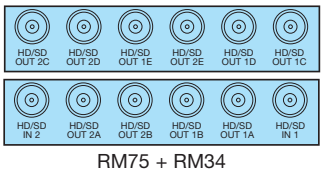


RM76

3GDA210R

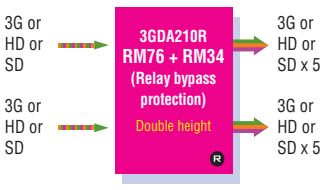
For default applications

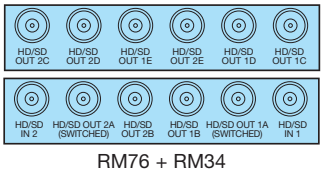




RM75 + RM34

For relay bypass protection applications





RM76 + RM34

DVB-ASI OUTPUT DETAILS

The distribution amplifiers are all DVB-ASI compatible.

	The following outputs are non-inverted:	The following outputs are inverted:
3GDA105R	B, C and D	A and E
3GDA111R	B, C, D, F, G, H, I, J and K	A and E
3GDA204R	1A, 1B, 2A, 2B	
3GDA210R	1A, 1B, 1C, 1D, 1E, 2A, 2B, 2C, 2D, 2E	
3GDA105C *	B, C and D	A and E
3GDA111C	B, C, D, F, G, H, I, J and K	A and E

** On older versions of the 3GDA105C, outputs A, C and D were non-inverted and outputs B and E were inverted*

SPECIFICATION

MECHANICAL

3GDA105R/C and 3GDA204R: Standard Crystal Vision module 266mm x 100mm

3GDA111R/C and 3GDA210R: 'Double decker' module 266mm x 100mm (uses two frame slots)

Weight: 140g (3GDA105R/C and 3GDA204R); 200g (3GDA111R/C and 3GDA210R)

Power consumption:
3GDA105R 5.6 Watts;
3GDA111R 8 Watts;
3GDA204R: 3.5 Watts;
3GDA210R: 4.5 Watts;
3GDA105C 3.2 Watts;
3GDA111C 5.6 Watts

VIDEO INPUTS

3GDA105R/C and 3GDA111R/C: One 3Gb/s or HD or SD input

3GDA204R and 3GDA210R: Two independent 3Gb/s or HD or SD inputs. Channels can be of different video standards

270Mb/s or 1.5Gb/s or 3Gb/s serial compliant to SMPTE 259 or ASI data, SMPTE 292-1 and SMPTE 424/425-A

3Gb/s cable equalisation up to 80m with Belden 1694A or equivalent

HD cable equalisation up to 140m with Belden 1694A or equivalent (approx. 100m with Belden 8281)

SD cable equalisation >250m Belden 8281 or equivalent

Input return loss: -15dB for 50MHz to 1.5GHz

Auto detection of input – recognises whether the standard is 3G/HD or SD and switches the output slew rate automatically

VIDEO OUTPUTS

3GDA105R/C: Five reclocked 3Gb/s, HD or SD outputs using RM41 or RM67 frame rear modules

3GDA111R/C: Eleven reclocked 3Gb/s, HD or SD outputs using RM41 and RM34 rear modules together or RM67 and RM34 rear modules together

3GDA204R: Two reclocked 3Gb/s, HD or SD outputs per channel using RM75 or RM76 rear modules. Can be configured to be single input device instead with four outputs

3GDA210R: Five reclocked 3Gb/s, HD or SD outputs per channel using RM75 and RM34 rear modules together or RM76 and RM34 rear modules together. Can be configured to be single input device instead with ten outputs

The RM67 rear module provides relay bypass protection for the 3GDA105R/C and 3GDA111R/C. An electromechanical relay switch needs power to hold the switch in one state and will revert to the other state (board bypass) on loss of power. It prevents signal loss by mechanically connecting the input of the DA to one of its outputs on complete frame power failure or board removal

The RM76 rear module provides dual relay bypass protection for the 3GDA204R and 3GDA210R and prevents signal loss by mechanically connecting each input of the DA to its first output on complete frame power failure or board removal

270Mb/s or 1.5Gb/s or 3Gb/s serial compliant to SMPTE 259 or ASI data, SMPTE 292-1 and SMPTE 424/425-A. Output follows the input format

All outputs are DVB-ASI compatible

DELAY THROUGH BOARD

50ns max

LED INDICATION OF:

3GDA105R/C and 3GDA111R/C:

Input present

Power supplies okay

3GDA204R and 3GDA210R:

Input 1 3G or HD

Input 1 SD

Input 2 3G or HD

Input 2 SD

LED pair unlit for no input or unrecognised input

Power supplies okay

GPI OUTPUT LEVELS

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

GPI OUTPUTS

3GDA105R and 3GDA111R:

Four GPI outputs

Input present

Input SD

Input 3G or HD

Power supplies okay

3GDA204R and 3GDA210R:

Six GPI outputs

Input 1 present

Input 1 SD

Input 1 3G or HD

Input 2 present

Input 2 SD

Input 2 3G or HD

3GDA105C/N and 3GDA111C/N:

Two GPI outputs

Input present

Power supplies okay

LOCAL CONTROL

DIP switch on the board edge can be set to either auto detect input (up position) or to force output drivers' slew rate (down position)

REMOTE MONITORING (3GDA105R, 3GDA111R, 3GDA204R and 3GDA210R)

Monitoring of input(s) present and 3G/HD or SD signal

Software:

VisionWeb Control is available via the web server on the frame and allows monitoring using a standard web browser on a computer, tablet or phone

Statesman Lite allows monitoring from any PC on a network

SNMP monitoring available as a frame option

Monitor using ASCII and JSON protocols

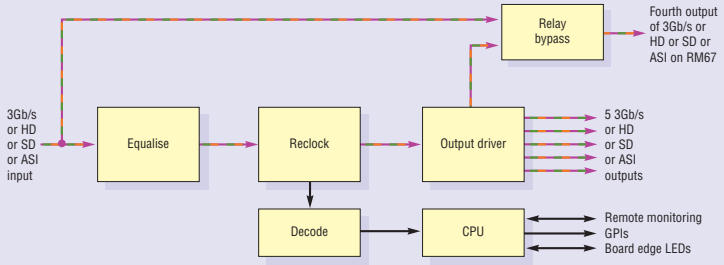
Hardware:

Monitor from integrated control panel on Indigo 1AE-DP frame

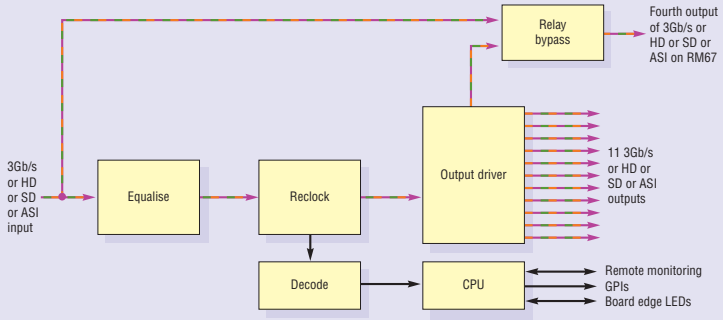
Monitor from VisionPanel 3U remote panel

THE INPUTS AND OUTPUTS

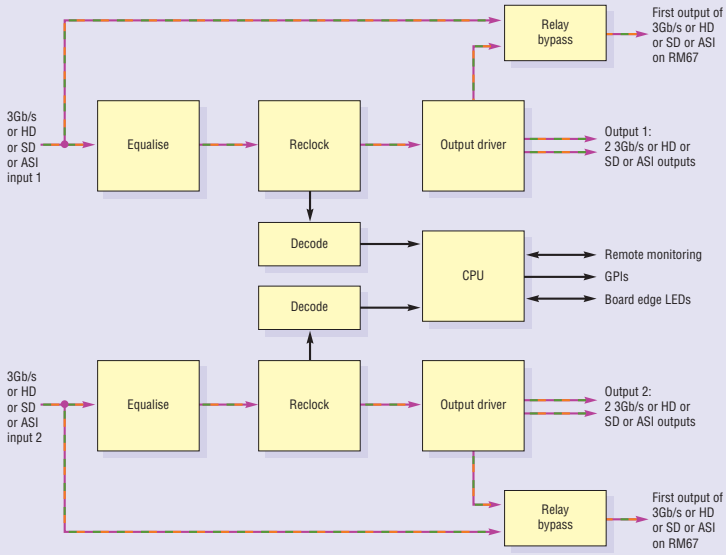
3GDA105R



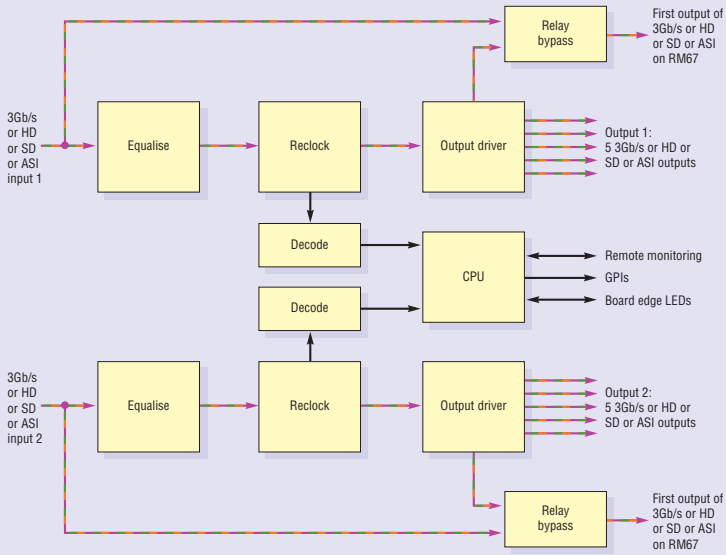
3GDA111R



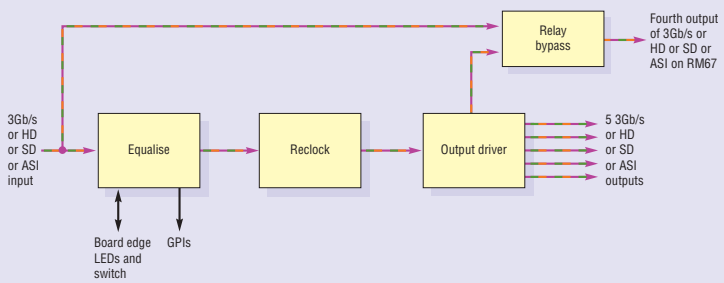
3GDA204R



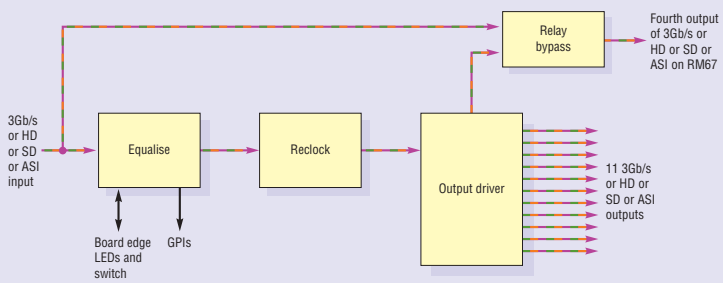
3GDA210R



3GDA105C



3GDA111C



ORDERING INFORMATION

3GDA105R	3G/HD/SD reclocking distribution amplifier with five outputs and signal reporting
3GDA111R	3G/HD/SD reclocking distribution amplifier with eleven outputs and signal reporting
3GDA204R	3G/HD/SD dual channel reclocking distribution amplifier with two outputs per channel and signal reporting
3GDA210R	3G/HD/SD dual channel reclocking distribution amplifier with five outputs per channel and signal reporting
3GDA105C	3G/HD/SD reclocking distribution amplifier with five outputs
3GDA111C	3G/HD/SD reclocking distribution amplifier with eleven outputs
Indigo 2SE	2U frame with active front panel featuring smart CPU for up to 12 Crystal Vision modules
Indigo 1AE-DP	1U frame with active front panel featuring smart CPU and integrated control panel for up to six Crystal Vision modules, with included power supply redundancy
Indigo 1SE-DP	1U frame with active front panel featuring smart CPU for up to six Crystal Vision modules, with included power supply redundancy
Indigo DT	Desk top box with passive front panel for up to two Crystal Vision modules
Indigo DTSE	Desk top box with active front panel featuring smart CPU for up to two Crystal Vision modules
RM41	Single slot frame rear module used for 3GDA105R and 3GDA105C. Allows maximum number of boards in frame (12 in 2U, six in 1U, two in desk top box). Gives access to one 3Gb/s, HD or SD input and five 3Gb/s, HD or SD outputs
RM67	Single slot frame rear module used for 3GDA105R and 3GDA105C. Allows maximum number of boards in frame (12 in 2U, six in 1U, two in desk top box). Provides relay bypass protection of the input. Gives access to one 3Gb/s, HD or SD input and five 3Gb/s, HD or SD outputs
RM41 + RM34	Two single slot frame rear modules used together for 3GDA111R and 3GDA111C. Allows six boards in 2U, three in 1U and one in desk top box. Gives access to one 3Gb/s, HD or SD input and eleven 3Gb/s, HD or SD outputs
RM67 + RM34	Two single slot frame rear modules used together for 3GDA111R and 3GDA111C. Allows six boards in 2U, three in 1U and one in desk top box. Provides relay bypass protection of the input. Gives access to one 3Gb/s, HD or SD input and eleven 3Gb/s, HD or SD outputs
RM75	Single slot frame rear module used for 3GDA204R. Allows maximum number of boards in frame (12 in 2U, six in 1U, two in desk top box). Gives access to two 3Gb/s, HD or SD outputs and two 3Gb/s, HD or SD outputs per channel
RM76	Single slot frame rear module used for 3GDA204R. Allows maximum number of boards in frame (12 in 2U, six in 1U, two in desk top box). Provides dual relay bypass protection of the two inputs. Gives access to two 3Gb/s, HD or SD outputs and two 3Gb/s, HD or SD outputs per channel
RM75 + RM34	Two single slot frame rear modules used together for 3GDA210R. Allows six boards in 2U, three in 1U and one in desk top box. Gives access to two 3Gb/s, HD or SD outputs and five 3Gb/s, HD or SD outputs per channel
RM76 + RM34	Two single slot frame rear modules used together for 3GDA210R. Allows six boards in 2U, three in 1U and one in desk top box. Provides dual relay bypass protection of the two inputs. Gives access to two 3Gb/s, HD or SD outputs and five 3Gb/s, HD or SD outputs per channel
VisionPanel	3U Ethernet remote control panel with touch screen
VisionWeb Control	VisionWeb web browser control included within frame software
Statesman Lite	PC Control System
SNMP	SNMP monitoring and control

Crystal Vision

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