Crystal Vision

Q-Down-AG 3G and Q-Down-ATG 3G

Short-delay broadcast down converters and distribution amplifiers

The Q-Down range has been designed for broadcasters who want to keep the maximum quality of their 3Gb/s or HD signals when down converting and simplify their system design.

They combine the three advantages of outstanding picture quality, short processing delay and competitive pricing – and incorporate many other features including input distribution, flexible digital and analogue outputs, aspect ratio conversion, video delays, four group audio handling, integrated fibre input or output connectivity and transport of embedded data.

Integration with the full Crystal Vision interface and keying range is intentionally easy, with the Q-Downs housed alongside any other product in the Indigo frames – available in a size to suit you, from 2U down to desk top box. Control options include an integrated control panel on the AE frame, the VisionPanel remote control panel, the SBB-4 smart button box, SNMP, the Statesman Lite PC software and the VisionWeb web browser control.

The Q-Down range enables broadcasters to design incredibly flexible installations working with both High Definition and Standard Definition pictures.

All versions:

- Short-delay broadcast down converter and distribution amplifier, available in two versions
- Accepts 3Gb/s, HD or SD input
- Distribution amplifier: provides up to two or eight reclocked input loop-throughs
- Down converter: allows flexible configuration of the three video outputs, with mixtures of HD digital, SDI, composite, Y/C, YUV and RGB
- Short processing delay (just 16 or 52 SD lines)
- Match other delays in system with fixed delay settings and fully flexible video delay of up to one frame
- Unique level of image quality at this price level
- Sophisticated two dimensional filtering gives broadcast results without the complication of looking at multiple fields or movement detection
- Optimise the performance for your material with four different vertical filter characteristics
- Passes four groups of embedded audio
- Includes HD to SD aspect ratio converter, with Anamorphic, Letterbox and Full Screen with centre cut conversions
- Create customised aspect ratios with size, position and crop controls
- Select your output aspect ratio according to the SMPTE 2016 AFD data embedded in the input video
- Insert SMPTE 2016 AFD data or WSS into the output for aspect ratio correction by downstream equipment
- Flag up faulty video and audio signals with signal probe
- Video proc-amp, with RGB and YUV lift and gain
- Option of integrated fibre input/output connectivity
- Space-saving: 100mm x 266mm module allows 12 Q-Down-AG/ATG 3G in 2U (six in 1U and two in desk top box), while 'double decker' module allows six Q-Down-AG/ATG 3G with DA6 top board fitted in 2U (three in 1U and one in desk top box)
- Flexible control, including your web browser

Additional features on Q-Down-ATG 3G:

- Transport and insertion of timecode
- Use the Ancillary Timecode to get the interlace phasing correct when down converting from 1080p or 720p
- Transport of closed captions

FLEXIBLE OUTPUT COMBINATIONS

The Q-Downs offer real flexibility when it comes to configuring the outputs – with up to eight reclocked input loop-throughs along with three down converted video outputs, selectable as mixtures of digital and analogue.

Q-Down-AG 3G and Q-Down-ATG 3G can down convert 1080p 3Gb/s, 720p HD and 1080i HD at 50Hz and 59.94Hz. The down converter is bypassed when the input and output are the same standard so that the signal is passed without degradation.

The Q-Downs each provide three down converted video outputs, individually link selectable between analogue and digital. 1080p video can be converted to 720p or 1080i digital and analogue (YUV and RGB, with integrated tri-level syncs) or to SD digital and analogue (composite, Y/C, YUV and RGB). 720p and 1080i video can be converted to mixtures of SD digital and analogue (composite, Y/C, YUV and RGB).

Get up to eight input loop-throughs by fitting a DA6 top board

Q-Down-AG 3G and Q-Down-ATG 3G provide either one (with fibre option fitted) or two reclocked loop-throughs of the 3Gb/s, HD or SD input, along with an additional six loop-throughs if a DA6 top board is fitted.

EXCEPTIONAL PERFORMANCE

Using Crystal Vision's proprietary processing, the Q-Downs provide a unique level of image quality in their price range – avoiding aliasing while retaining picture sharpness. The sophisticated two dimensional filtering gives broadcast results without the complication of looking at multiple fields or movement detection – resulting in reliable, artefact-free conversion. There's the choice of four alternative vertical bandwidth filter characteristics for those who want to optimise the performance for their material. RGB and YUV lift and gain controls are available to help maintain colour fidelity.

SHORT PROCESSING DELAYS AND VARIABLE VIDEO DELAYS

With the Q-Downs there is no need to compensate audio or other signals for the video delay. The short processing delay of just 16 SD lines (or 52 lines with Letterbox conversions) keeps everything in sync, making your system design much simpler – and makes it easy to detect real lip-sync errors when you're monitoring the video and listening to separate audio.

For those that want to match other equipment delays in the system there are fixed video delay settings available: 'minimum' (16 or 52 SD lines processing delay, depending on the conversion) and 'frame' – which can be used to match a variety of equipment or alternatively to connect with equipment that has no delay. Also available is a fully flexible variable video delay of up to one video frame, adjustable in one line steps.

FOUR GROUP EMBEDDED AUDIO HANDLING

You can use Q-Down-AG 3G and Q-Down-ATG 3G with up to four audio groups – which makes them ideal as your main signal path down converter if you're working with embedded audio. With a 3Gb/s or HD input they will de-embed the four groups of audio, converting them to the appropriate format before re-embedding them into the digital SD output. With a Standard Definition input they will pass the four groups of embedded audio transparently to the digital SD output.

ASPECT RATIO CONVERSIONS

The Q-Downs include the ability to deal with any 3Gb/s or HD to SD aspect ratio conversion requirements. You can select a 16:9 Anamorphic output for 16:9 SD systems and either a 16:9 to 4:3 Letterbox, 16:9 to 14:9 Letterbox compromise or 16:9 to 4:3 Full Screen with centre cut for 4:3 SD systems.

Q-Down-AG 3G and Q-Down-ATG 3G will also allow you to customise the shape of your output picture. Each of the standard aspect ratios can be individually adjusted away from the default values to create customised versions by using four independent sets of size, position and crop controls.

Q-Down-AG 3G and Q-Down-ATG 3G will ensure the picture is always the right shape by coping with both analogue and digital SD blanking widths – particularly useful for feeds that are up and down converted multiple times. When used with an Anamorphic conversion, the analogue blanking width option puts the active 1920 pixels from a 1080i or 1080p picture into 702 pixels of SD (rather than 720 pixels), with the rest of the pixels used to represent analogue blanking – which prevents the SD signal from losing the sides of the picture. All other aspect ratios are adjusted by a similar amount.

Q-Down-AG 3G and Q-Down-ATG 3G additionally offer AFD code activated aspect ratio conversion. (See the ACTIVE FORMAT DESCRIPTION AND WIDESCREEN SIGNALLING section.)

ACTIVE FORMAT DESCRIPTION AND WIDESCREEN SIGNALLING

You can let Q-Down-AG 3G and Q-Down-ATG 3G automatically choose the appropriate aspect ratio for you according to the SMPTE 2016 AFD data embedded in the 3Gb/s or HD input video.

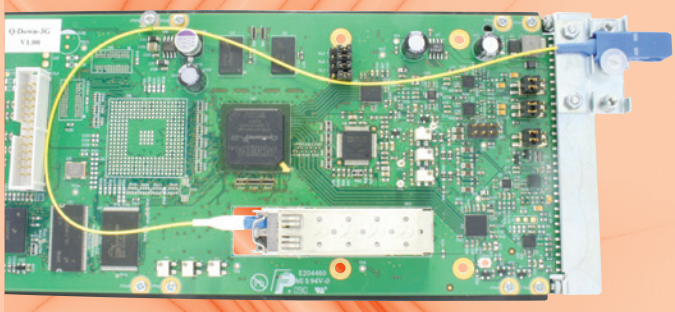
HD programmes are often made of a mixture of true High Definition sources and SD-originated sources that have been up converted, and the SMPTE 2016 AFD code in the signal gives information about which areas of the screen contain a picture and which areas have black 'padding'. The down converter needs to read this signal and select the correct aspect ratio conversion to be used with the down conversion.

Q-Down-AG 3G and Q-Down-ATG 3G offer three options for the SD output. With Auto 16:9 mode the SD outputs can be set to be always 16:9 and in this case it will perform the down conversion without ever changing the aspect ratio. Alternatively the SD output can be set to be always 4:3 (Auto 4:3 mode), in which case it will down convert and perform either a Letterbox or centre cut, depending on the source material. There is also a third, adaptive option: Auto Adaptive mode. Here, if the HD input is 16:9 full frame the picture is down converted with no aspect ratio conversion and is output as 16:9 SD. If the SMPTE 2016 data indicates that the HD input is a 16:9 Pillarbox, however, a centre cut is performed and the output is 4:3 SD.

Although it would normally be a requirement for an automatic system to label all the 3Gb/s or HD video images to show their format and control the down converter, with Q-Down-AG 3G and Q-Down-ATG 3G it is only necessary to label those that are not full frame 16:9 images. When the input is not labelled the down converter uses its default assumption that an HD image is a full frame 16:9. It is therefore possible to have a powerful system with the majority of signals not containing SMPTE 2016 information.

The boards can also be used to provide picture format information to downstream equipment, by inserting either Widescreen Signalling or one of 16 SMPTE 2016 AFD codes. The WSS and SMPTE 2016 AFD can be inserted into the HD (SMPTE 2016 AFD only) and SD analogue and digital outputs either manually or by automatically following the incoming AFD.

FIBRE CONNECTIVITY – ON THE BOARD



Should you need to down convert signals from beyond the local equipment bay, it's easy to give Q-Down-AG 3G and Q-Down-ATG 3G integrated fibre connectivity – and still only use a single frame slot. Simply request either the FIP fibre input option or FOP fibre output option to be fitted to the motherboard by Crystal Vision. Designed for SMPTE 297-2006 short-haul applications, the FIP is used to receive an optical input and the FOP to transmit an optical output using a Class I laser. The FIP is the more popular option here, with the higher data rate input having less copper cable length capability. If a FIP is fitted, you can select your video input source to be taken either from the input BNC or the optical input, with the input loop-throughs then showing whichever of the inputs has been selected. Having the fibre integral to the board reduces the need to use up additional rack space for separate fibre optic transmitters and receivers – and also saves you money. Q-Down-AG 3G and Q-Down-ATG 3G can also support a CWDM laser if required.

FLAG UP FAULTY VIDEO OR AUDIO SIGNALS

Q-Down-AG 3G and Q-Down-ATG 3G also include signal probe functionality, making them useful for flagging up faulty signals – especially in multi-channel applications. The 14 status indications available include input missing, video black, video frozen, aspect ratio information, audio input missing, audio silent and input incompatible, with the boards able to provide warnings of any problems via SNMP traps.

DEALING WITH TIMECODE AND CLOSED CAPTIONS (Q-Down-ATG 3G only)

Q-Down-ATG 3G's special features allow it to meet the challenge of down converting material containing timecode or closed captions – making it ideal for 'big system' users or the US market.

Carried in the vertical blanking, timecode timing information is ideal for describing a set of frames unambiguously. Q-Down-ATG 3G takes the HD timecode information (Ancillary Timecode, or ATC) and translates it to the SD DVITC (Digital Vertical Interval Timecode) format. It can also insert ATC into the outgoing SD – which saves you having to decode the DVITC if you up convert again at a later stage. Q-Down-ATG 3G can also help with your system timing by using the ATC data to get the interlace phasing correct when you are down converting from 1080p or 720p – reducing the need to sort it out later using a synchroniser.

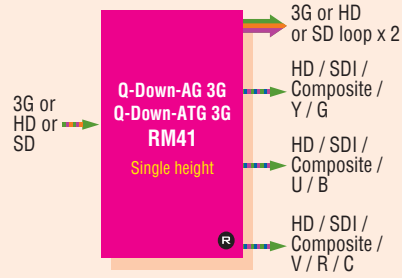
Closed captions provide additional or interpretive information to viewers who wish to access it, such as subtitles, audio description or an alternative language. When down converting 59.94Hz video, Q-Down-ATG 3G takes the HD closed captions (to the CEA-708 standard) and extracts the data it needs to insert the corresponding SD closed captions (to CEA-608) into the SD output stream.

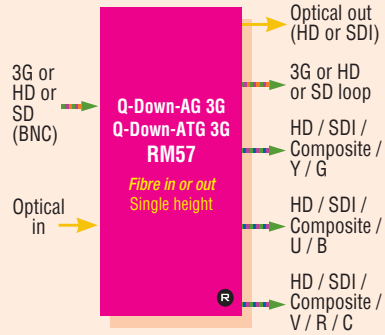
CHOOSING THE RIGHT Q-DOWN FOR YOU	Q-Down-AG 3G	Q-Down-ATG 3G
Input formats (50Hz and 59.94Hz)	1080p, 720p, 1080i, 625i and 525i	1080p, 720p, 1080i, 625i and 525i
Number of reclocked input loop-throughs	2 (1 with RM57) or 8 if DA6 fitted (7 with RM57 + RM34)	2 (1 with RM57) or 8 if DA6 fitted (7 with RM57 + RM34)
Number of configurable video outputs	3	3
HD outputs configurable as mixture of HD, YUV and RGB	●	●
SD outputs configurable as mixture of SDI, composite, Y/C, YUV and RGB	●	●
Integrated fibre input/output connectivity	●	●
Four group embedded audio handling	●	●
Four vertical filter characteristics	●	●
RGB lift and gain controls	●	●
Standard HD to SD aspect ratio conversions	4 (16:9 Anamorphic, 16:9 to 4:3 Letterbox, 16:9 to 14:9 Letterbox compromise or 16:9 to 4:3 Full Screen with centre cut)	4 (16:9 Anamorphic, 16:9 to 4:3 Letterbox, 16:9 to 14:9 Letterbox compromise or 16:9 to 4:3 Full Screen with centre cut)
Aspect ratio adjustments using size, position and crop controls	●	●
AFD code activated aspect ratio conversion (HD sources)	●	●
Manual or auto SMPTE 2016 AFD insertion	● (Uses default line)	● (Uses user-selected line)
Manual or auto WSS insertion	●	●
HD input processing delay of just 16 SD lines (Anamorphic/Full Screen) or 52 SD lines (Letterbox)	●	●
Fixed delay settings	Minimum and frame	Minimum and frame
Variable video delay of up to one frame	●	●
14 signal probe indications	●	●
Transport and insertion of timecode		●
Transport of closed captions		●
Rear modules used	RM41 or RM57 (RM41 + RM34 or RM57 + RM34 if DA6 fitted)	RM41 or RM57 (RM41 + RM34 or RM57 + RM34 if DA6 fitted)
Boards in 2U	12 (6 if DA6 fitted)	12 (6 if DA6 fitted)

REAR MODULE CONNECTIONS

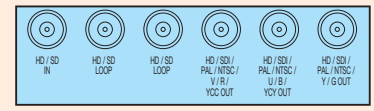
Note for all rear modules: YUV and RGB can be HD or SD. Composite and Y/C are SD only. "SDI" refers to digital SD

Q-Down-AG 3G and Q-Down-ATG 3G

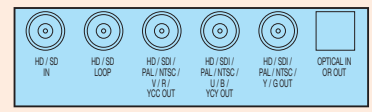




NB. Choose between fibre in or fibre out by selecting FIP or FOP fibre option

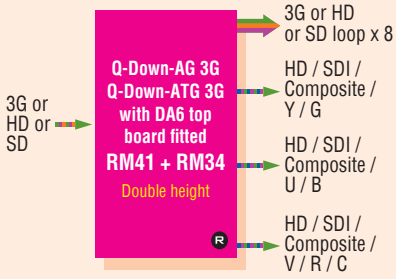


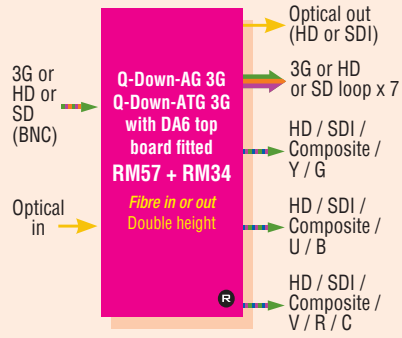
RM41



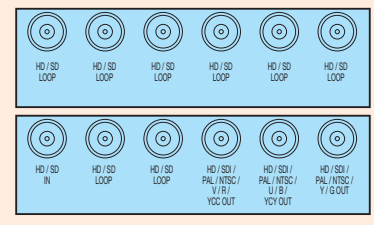
RM57

Q-Down-AG 3G and Q-Down-ATG 3G with DA6

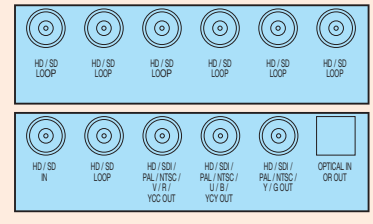




NB. Choose between fibre in or fibre out by selecting FIP or FOP fibre option



RM41 + RM34



RM57 + RM34

SPECIFICATION

MECHANICAL

Standard Crystal Vision module 266mm x 100mm

With DA6 top board fitted: 'Double decker' module 266mm x 100mm (uses two frame slots)

Weight: 180g (Q-Down-AG/ATG 3G); 240g (with DA6 fitted)

Power consumption: 11 Watts (Q-Down-AG/ATG 3G); 3 Watts (DA6); 0.6 Watts (FIP and FOP)

INTEGRATED FIBRE OPTIONS

Q-Down-AG/ATG 3G can be given integrated fibre connectivity by fitting either the FIP fibre input option or FOP fibre output option. The chosen option should be fitted at the factory

To access the optical inputs or outputs an RM57 frame rear module must be used

When fitted with a FIP or FOP, Q-Down-AG/ATG 3G can be housed in any frame slot position but due to its extra height it is not possible to place most Standard Definition or audio boards directly above it when the Q-Down-AG/ATG 3G is in even numbered slot positions. 3Gb/s and HD boards do not share this restriction.

If a DA6 top board is also fitted, this positioning restriction does not apply

FIP and FOP meet the SMPTE 297-2006 short-haul specification, allowing operation with single-mode and multi-mode fibre

Connector type: SC/PC

FIP:

Optical wavelength: 1260-1620nm

Input level maximum: -1dBm

Input level minimum: Typical -20dBm (-18dBm 3Gb/s pathological)

FOP:

Optical power: Max -0.0dBm, min -5.0dBm

Fibre pigtail: Single-mode 9/125uM

Optical wavelength: 1290-1330nm (1310 typical)

Extinction ratio: 7.5dB

Laser safety classification: Class 1 FDA and IEC60825-1 Laser Safety compliant

CWDM laser can be fitted on request. The 18 output wavelengths defined by the ITU are 1271, 1291, 1311, 1331, 1351, 1371, 1391, 1411, 1431, 1451, 1471, 1491, 1511, 1531, 1551, 1571, 1591 and 1611nm. For CWDM, order the FOP-CWDM and specify the wavelength required

VIDEO INPUT

One 3Gb/s or HD or SD input with reclocking

When using FIP fibre input option allows selection between one optical and one BNC input. The input loop-throughs will show whichever input has been selected

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

3Gb/s cable equalisation up to 80m using Belden 1694A. HD cable equalisation up to 140m with Belden 1694 or equivalent (approx. 100m with Belden 8281). SD cable equalisation up to 250m with Belden 8281 or equivalent

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

VIDEO OUTPUTS

Using RM41 rear module: Two equalised and reclocked loop-throughs of the 3Gb/s, HD or SD input and three video outputs

Using RM57 rear module with FIP fibre input option: One equalised and reclocked loop-through of the optical or BNC 3Gb/s, HD or SD input and three video outputs

Using RM57 rear module with FOP fibre output option: One equalised and reclocked loop-through of the 3Gb/s, HD or SD input, one dedicated HD or SDI output (on fibre) and three video outputs

If a DA6 top board is fitted:

Using RM41 and RM34 rear modules together: Eight equalised and reclocked loop-throughs of the 3Gb/s, HD or SD input and three video outputs

Using RM57 and RM34 rear modules together with FIP fibre input option: Seven equalised and reclocked loop-throughs of the optical or BNC 3Gb/s, HD or SD input and three video outputs

Using RM57 and RM34 rear modules together with FOP fibre output option: Seven equalised and reclocked loop-throughs of the 3Gb/s, HD or SD input, one dedicated HD or SDI output (on fibre) and three video outputs

The three video outputs can be a mixture of HD digital and HD analogue (RGB and YUV with integrated tri-level syncs) or SD digital and SD analogue (PAL/NTSC, Y/C, YUV and RGB). Outputs configured using on board links

Output frame rate same as input frame rate

Setting the digital output to a higher format than the input will be flagged as incompatible and the output will be replaced with black, blue or muted as selected in the output incompatibility mode menu

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

Component: YUV and RGB 1 Volt +/- 2% into 75 ohm. Syncs on R, G and B

Composite: SD only. 1 Volt +/- 2% with syncs into 75 ohm. Selectable setup and Betacam levels

DOWN CONVERSIONS

1080p50 to 720p50

1080p59.94 to 720p59.94

1080p50 to 1080i50

1080p59.94 to 1080i59.94

1080p50 to 625/50

1080p59.94 to 525/59.94

720p50 to 625/50

720p59.94 to 525/59.94

1080i50 to 625/50

1080i59.94 to 525/59.94

ANALOGUE COMPONENT PERFORMANCE

Sampling: Video input is 10 bit processed for 12 bit output DACs

Monitoring quality HD component outputs

SD component performance:

Frequency response:

Luminance: +/- 0.3dB to 5.5 MHz.

Chrominance: +/- 0.4dB to 2.5 MHz

Noise: <-67dB weighted luminance or chrominance

Gain error: <1%

ANALOGUE COMPOSITE PERFORMANCE (SD ONLY)

Sampling: Video input is 10 bit processed for 12 bit output DACs

Frequency response:

Luminance: +/- 0.3dB to 5.5 MHz.

Chrominance: +/- 0.4dB to 2.5 MHz

Noise: <-67dB weighted luminance or chrominance

Differential gain: <2% typ

Differential phase: +/- 1 degree typ.

PICTURE PROCESSING WHEN DOWN CONVERTING

Sophisticated two dimensional filtering gets broadcast results and avoids the complication of looking at multiple fields or movement detection, resulting in reliable, artefact-free conversion with broadcast filter quality

When down converting the performance can be optimised by choosing one of four alternative vertical filter characteristics (sharpest, sharp, soft, softest)

When the input and output are the same standard the board processing can be bypassed, so that the signal is passed without degradation

RGB and YUV lift and gain controls allow independent digital image adjustments in both the RGB and YUV domains, essential for maintaining colour fidelity. In normal operation the RGB and YUV proc-amps are active simultaneously on both the digital and analogue outputs. In bypass mode the proc-amps will only be active on the analogue output

HD TO SD ASPECT RATIO CONVERSION

16:9 Anamorphic (for 16:9 SD systems) and either 16:9 to 4:3 Letterbox, 14:9 to 4:3 Letterbox compromise or 16:9 to 4:3 Full Screen with centre cut (for 4:3 SD systems)

The four standard aspect ratios can be adjusted from their default values by using four independent sets of size, position and crop controls:

Vertical and horizontal picture size adjustment: continuous adjustment of approximately +/- 10% of nominal image size

Vertical and horizontal picture position adjust + or - 50 lines and pixels

Vertical and horizontal picture crop adjust + or - 100 lines and pixels

The colour of any picture border present can be adjusted by varying its RGB component

Copes with both analogue and digital SD blanking widths. When used with an Anamorphic conversion, the analogue blanking width option puts the active 1920 pixels from a 1080i or 1080p picture into 702 pixels of SD (rather than 720 pixels), with the rest of the pixels used to represent analogue blanking – which prevents the SD signal from losing the sides of the picture. All other aspect ratios are adjusted by a similar amount

ACTIVE FORMAT DESCRIPTION AND WIDESCREEN SIGNALLING

With 3Gb/s or HD sources Q-Down-AG/ATG 3G can select its SD output aspect ratio according to the SMPTE 2016 AFD data embedded in the input video

SMPTE 2016 AFD data can also be inserted into the output video for aspect ratio conversion by downstream equipment – either manually or by automatically following the incoming AFD data. One of 16 AFD codes is embedded in an ANC data packet, which is carried in the vertical blanking. Q-Down-AG 3G inserts the data in the default line, while Q-Down-ATG 3G provides a user control to select the line used

Widescreen signalling information can be inserted into the analogue and SDI outputs (625 line applications only). WSS can be inserted manually or be set to automatically follow the incoming AFD data. If WSS data should be present on the input video this can either be passed to the output unchanged or substituted for a user selectable code. WSS data can also be set to be blanked

Response to SMPTE 2016 AFD codes:

Auto 16:9 mode: Will give an Anamorphic aspect ratio conversion for all SMPTE 2016 AFD input codes and the output WSS/SMPTE 2016 AFD will be set to full format 16:9

Auto 4:3 mode: Output aspect ratio and WSS/SMPTE 2016 AFD data will depend on the input AFD code. Undefined/reserved and full frame AFD codes will produce a Letterbox aspect ratio with the output WSS/SMPTE 2016 AFD set to box 16:9 centre. The Pillarbox 4:3, Pillarbox 14:9 and Letterbox >16:9 AFD codes will give a centre cut conversion and set the output WSS/SMPTE 2016 AFD to full format 4:3

Auto Adaptive mode: Will give an Anamorphic aspect ratio for any full frame input, with the output WSS/SMPTE 2016 AFD set to full frame 16:9. The Pillarbox 4:3 code will give a centre cut conversion and set the output WSS/SMPTE 2016 AFD to full format 4:3. The undefined/reserved, Pillarbox 14:9 and Letterbox >16:9 codes will make no change and the previous conversion will remain. On power up the default conversion will be Anamorphic

FIXED AND VARIABLE VIDEO DELAYS

There are two video delay settings available:

- 'minimum' – the video processing delay. With a 3Gb/s or HD input the delay is 16 SD lines (Anamorphic or Full Screen) or 52 SD lines (Letterbox). With an SD input the delay is 3.8us
- 'frame' – can be used to match a variety of equipment or to connect with equipment that has no delay

An additional variable video delay of up to one video frame, adjustable in one line steps, is also available to match other equipment in the system

EMBEDDED AUDIO PASSING

Down conversion: De-embeds and re-embeds the first four numbered audio groups. The minimum audio delay is 2.5ms. The audio delay will be 2.5ms if the video delay is less than 2.5ms – otherwise the audio delay will equal the video delay

Bypass: Audio bypassed in HANC space, with the same delay as the video

SIGNAL CHECKS

Checks can be performed on 14 video and audio parameters, with warnings of any problems provided via SNMP traps

The parameters are: Input Missing, Input Incompatible, Video Black, Video Frozen, Aspect Ratio Information, Input Audio Missing, Silence Group 1 Channels 1 and 2, Silence Group 1 Channels 3 and 4, Silence Group 2 Channels 1 and 2, Silence Group 2 Channels 3 and 4, Silence Group 3 Channels 1 and 2, Silence Group 3 Channels 3 and 4, Silence Group 4 Channels 1 and 2, Silence Group 4 Channels 3 and 4

All parameters, apart from Input Missing and Input Incompatible, can be delayed before an alarm is asserted to prevent false alarms during quiet audio periods or brief video pauses

TIMECODE TRANSPORT (Q-Down-ATG 3G ONLY)

When down converting Q-Down-ATG 3G can take the HD Ancillary Timecode information (ATC, SMPTE 12M) and translate it to the SD Digital Vertical Interval Timecode (DVITC, SMPTE 266M) format. DVITC is inserted on two adjacent video lines, one in each field

Ancillary Timecode can be inserted into the outgoing SD

There are controls to select the data type on each line in the SD vertical interval: blank, AFD/ATC, DVITC, and (525 line only) Closed Caption

Q-Down-ATG 3G can use the Ancillary Timecode to get the interlace phasing correct when down converting from 1080p or 720p to an interlaced output

CLOSED CAPTIONS TRANSPORT (Q-Down-ATG 3G ONLY)

When down converting 59.94Hz video, Q-Down-ATG 3G takes the HD closed captions (to the CEA-708 standard) and extracts the data it needs to insert the corresponding SD closed captions (to CEA-608) into an SD output stream

Q-Down-ATG 3G can insert the closed caption information into any lines from line 12 to line 21. This includes extended data service (XDS)

LED INDICATION OF:

Power supplies on board

Input present

Aspect ratio selection

PRESETS

The current board settings can be saved in one of 16 locations to be recalled as required

GPI INPUT LEVELS

Active pull to ground, pulled up to +5V through 10 kohm

GPI OUTPUT LEVELS

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

GPI INPUTS

Two GPI inputs can recall 16 presets

GPI OUTPUTS

Two GPI outputs. Selectable from loss of input, video black, video frozen, aspect ratio information, audio missing, audio channel silence and input incompatible

BI-DIRECTIONAL GPIS

Two GPIs are individually selectable as either preset-recalling GPI inputs or fault-reporting GPI outputs

REMOTE CONTROL

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

Control from VisionPanel 3U remote panel

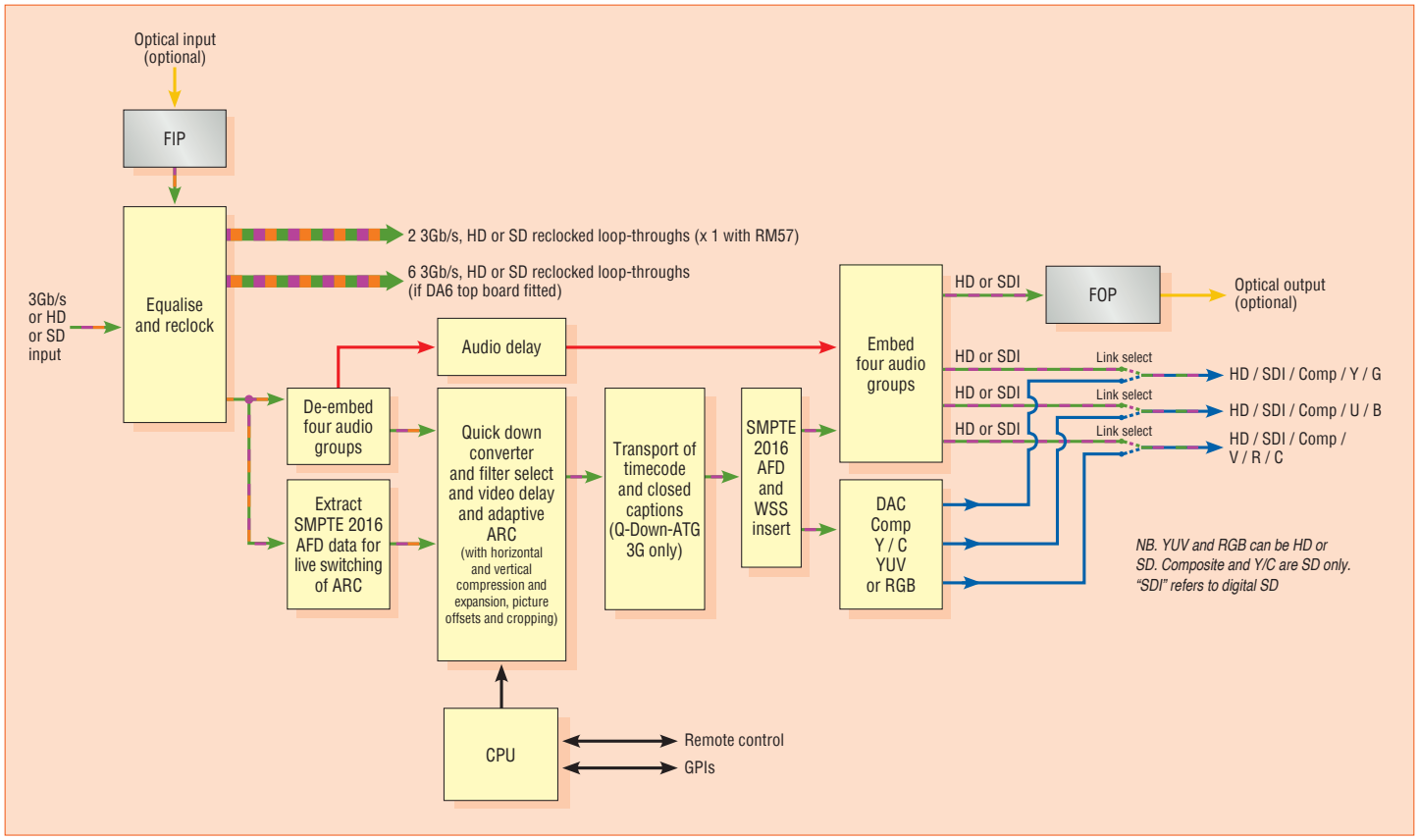
VisionWeb Control is available via the web server on the frame and allows operation using a standard web browser on a PC or tablet

Statesman Lite allows control from any PC on a network

SBB-4 smart button box connects to the frame via Ethernet and provides four programmable LCD switches (which are configured for each order). The SBB-4 uses information from VisionWeb for settings. Uses Power over Ethernet so must be used with PoE enabled switch

SNMP monitoring and control available as a frame option

Control using ASCII and JSON protocols



ORDERING INFORMATION

Q-Down-AG 3G	Short-delay broadcast down converter and distribution amplifier for 3Gb/s, HD and SD with four group embedded audio handling
Q-Down-ATG 3G	Short-delay broadcast down converter and distribution amplifier for 3Gb/s, HD and SD with four group embedded audio handling. Includes transport of timecode and closed captions
DA6	Top board for Q-Down-AG 3G and Q-Down-ATG 3G motherboard providing an additional six reclocked input loop-throughs
FIP	Fibre input option for Q-Down-AG 3G and Q-Down-ATG 3G motherboard providing integrated fibre input connectivity
FOP	Fibre output option for Q-Down-AG 3G and Q-Down-ATG 3G motherboard providing integrated fibre output connectivity. For CWDM laser options, contact Crystal Vision
Indigo 2SE	2U frame with passive front panel fitted with 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 fitted with smart CPU for up to two Crystal Vision modules
RM41	Single slot frame rear module. 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, two reclocked input loop-throughs and three video outputs (configurable as HD, SDI, PAL/NTSC, Y/C, YUV and RGB)
RM41 + RM34	Two single slot frame rear modules used together for when DA6 top board is fitted to Q-Down-AG 3G or Q-Down-ATG 3G. Allows six boards in 2U, three in 1U and one in desk top box. Gives access to one 3Gb/s, HD or SD input, eight reclocked input loop-throughs and three video outputs (configurable as HD, SDI, PAL/NTSC, Y/C, YUV and RGB)
RM57	Single slot frame rear module. Allows maximum number of boards in frame (12 in 2U, six in 1U, two in desk top box). Designed for applications using fibre inputs or outputs. **When using fibre input**, allows you to select between one fibre and one electrical 3Gb/s, HD or SD input, and gives access to one reclocked input loop-through and three video outputs (configurable as HD, SDI, PAL/NTSC, Y/C, YUV and RGB). **When using fibre output**, gives access to one 3Gb/s, HD or SD input, one reclocked input loop-through, one dedicated HD or SDI output (on fibre) and three video outputs (configurable as HD, SDI, PAL/NTSC, Y/C, YUV and RGB)
RM57 + RM34	Two single slot frame rear modules used together for when DA6 top board is fitted to Q-Down-AG 3G or Q-Down-ATG 3G. Allows six boards in 2U, three in 1U and one in desk top box. Designed for applications using fibre inputs or outputs. **When using fibre input**, allows you to select between one fibre and one electrical 3Gb/s, HD or SD input, and gives access to seven reclocked input loop-throughs and three video outputs (configurable as HD, SDI, PAL/NTSC, Y/C, YUV and RGB). **When using fibre output**, gives access to one 3Gb/s, HD or SD input, seven reclocked input loop-throughs, one dedicated HD or SDI output (on fibre) and three video outputs (configurable as HD, SDI, PAL/NTSC, Y/C, YUV and RGB)
VisionPanel	3U Ethernet remote control panel with touch screen
SBB-4	Smart button box with four programmable LCD switches. It is powered by Power over Ethernet and therefore needs to be connected to a PoE enabled switch
VisionWeb Control	VisionWeb web browser control included within frame software
Statesman Lite	PC Control System
SNMP	SNMP monitoring and control

Performance and features are subject to change. Figures given are typical measured values. Q-DOWN0619

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