

digital keying modular
interface audio
converters analogue video

Up-and-down

Combined up, down and cross converter

USER MANUAL

Crystal  **Vision**

Contents

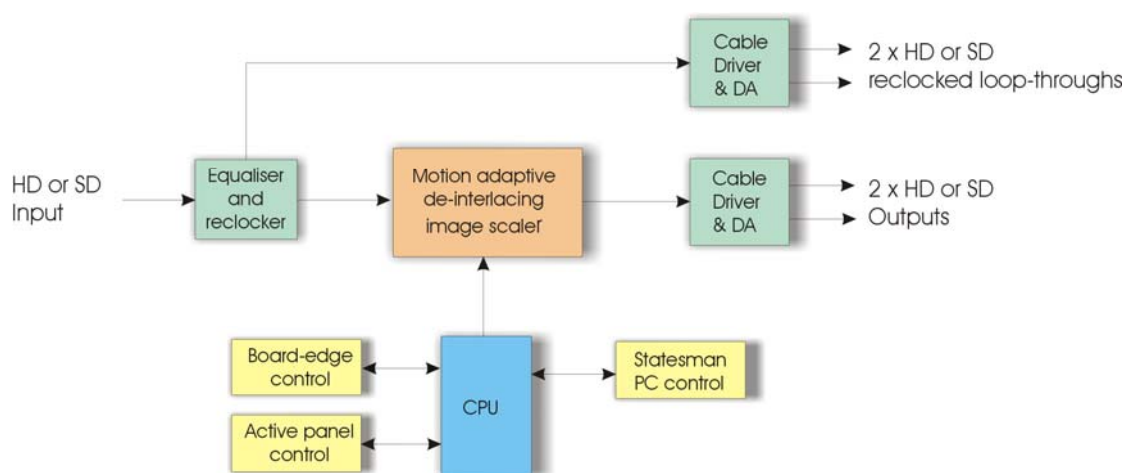
1	Introduction	3
1.1	Operating modes	4
2	Hardware installation	6
2.1	Rear modules and signal I/O	6
	Rear module connections with RM34	6
	Rear module connections with RM29	7
2.2	General Purpose Interface (GPI)	7
3	Card edge operation	11
3.1	Card edge controls	11
3.2	Card edge buttons	11
3.3	Card edge rotary control	11
3.4	Reading card edge LEDs	12
3.5	Navigating card edge menus	12
3.6	Card edge configuration	13
	Menu Tree	13
	Card edge status	14
	Setting the output configuration (Control)	14
	Recalling factory default settings (Reset)	16
	Video gains and offsets (Gain)	16
4	Using the front control panel	17
4.1	Module selected	17
	Updating the display	19
4.2	The Up-and-down active panel menu structure	19

Up-and-down Menu Structure	20
Video Control Menu	20
Reset (factory defaults)	21
Gains and Offsets	21
Status	23
5 Statesman	24
5.1 Statesman operation	24
Detail Enhancement	25
Reset (factory defaults)	26
Gains and Offsets	26
6 Trouble shooting	27
6.1 Card edge status LEDs	27
Basic fault finding guide	27
7 Specification	28

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1 Introduction

Up-and-down provides format conversion between High Definition and Standard definition and different HD formats sharing the same line rate. This is achieved by using the latest motion adaptive video de-interlacing techniques incorporating both detail and edge enhancement processing. DA outputs are available for both the reclocked input and converted program.



Up-and-down converter

The main features are as follows:

- Combined up, down and cross conversion
- Motion adaptive video de-interlacing with both detail and edge enhancement
- Flexible aspect ratio conversion
- Auto bypass when input and output are the same standard
- One frame video delay in all modes
- Two scaled outputs and two input loop-throughs
- Fits in standard frames alongside HD, SD and audio products

Up-and-down is a 100mm x 266mm module, which fits in the four standard frames and can be integrated with any boards from the company's full product range. The RM34 is the rear module of choice although the RM29 can also be used.

1.1 Operating modes

Up-and-down incorporates a number of processing features to ensure that maximum performance is maintained under all circumstances. To obtain the best results when scaling up or down generally requires different techniques depending on whether the video contains slow or fast moving images. Up-and-down employs motion adaptive video de-interlacing to maximise the picture's vertical resolution alongside a scaler and frame rate converter to achieve the best picture that always appears smooth and natural-looking. Up converting from SD to HD will give a softer picture: the adjustable detail enhancement feature allows image sharpening. Fine edge detail processing additionally ensures that the picture remains clear and sharp without creating unpleasant jagged edges.

To maintain best picture quality Up-and-down automatically enters a bypass mode when the input is the same as the selected output standard. This is achieved by bypassing the major processing blocks. Whilst in bypass the gain, offset, detail and aspect ratio controls will be inactive.

Up conversion	
	625/50 to 720p 50
	525/59.94 to 720p 59.94
	625/50 to 1080i 50
	525/59.94 to 1080i 59.94

Down conversion	
	720p 50 to 625/50
	720p 59.94 to 525/59.94
	1080i 50 to 625/50
	1080i 59.94 to 525/59.94

Cross conversion	
	720p 50 to 1080i 50
	720p 59.94 to 1080i 59.94
	1080i 50 to 720p 50
	1080i 59.94 to 720p 59.94

High Definition aspect ratio is always 16:9, but Standard Definition can be 16:9 or 4:3. Up-and-down has a selection of aspect ratio settings for both SD inputs and SD outputs.

Input / Output format	Output aspect ratio
HD(16:9) / SD(4:3)	16:9 Letterbox (Full image)
	14:9 Letterbox (Compromise)
	16:9 Full Screen (Centre cut)
	Anamorphic (compressed horizontally)

Input / Output format	Input aspect ratio
SD(4:3) / HD(16:9)	4:3 Pillarbox (Full image)
	14:9 Pillarbox (Compromise)
	4:3 Full Screen (Centre cut)
	Anamorphic (compressed vertically)

4:3 to 16:9



4:3 Full Screen

Full 4:3 source width mapped to 16:9 monitor width
 Central 75% of source height stretched to monitor height
 No vertical black bands required
 Significant picture lost



14:9 Pillarbox

Full 4:3 source width compressed to central 87.5% of 16:9 monitor width
 Central 87.5% of source height stretched to monitor height
 Vertical black bands added to left and right
 Minimal picture lost



4:3 Pillarbox

Full 4:3 source width compressed to central 75% of 16:9 monitor width
 Full source height mapped to monitor height
 Vertical black bands added to left and right
 No picture lost



4:3 Anamorphic

Full 4:3 source width horizontally stretched to 16:9 monitor width
 Full source height mapped to monitor height
 No picture lost but possible significant distortion

16:9 to 4:3



16:9 Full Screen

Central 75% of 16:9 source width stretched to 4:3 monitor width
 Full source height mapped to monitor height
 No horizontal black bands required
 Significant picture lost



14:9 Letterbox

Central 87.5% of 16:9 source width stretched to 4:3 monitor width
 Full source height compressed to 87.5% of monitor height
 Horizontal black bands added to top and bottom
 Minimal picture lost



16:9 Letterbox

Full 16:9 source width mapped to 4:3 monitor width
 Full source height compressed to 75% of monitor height
 Horizontal black bands added to top and bottom
 No picture lost



16:9 Anamorphic

Full 16:9 source width mapped to 4:3 monitor width
 Full source height stretched to monitor height
 No picture lost but possible significant distortion

2 Hardware installation

The Up-and-down single height module uses the RM34 rear connector that will fit into all Crystal Vision rack frames. All modules can be plugged in and removed while the frame is powered without damage.

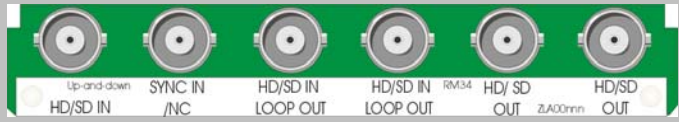
2.1 Rear modules and signal I/O

The Indigo 4 4U frame will house up to 24 single height modules with up to three power supplies. The Indigo 2 2U frame will house up to 12 single height modules and dual power supplies. The Indigo 1 1U frame will house six single height modules and a single power supply. The Indigo DT desk top box has a built-in power supply and will house up to two single height modules.

Note: For details of fitting rear connectors please refer to the appropriate frame manual.

Rear module connections with RM34

The RM34 being the rear module of choice is a single height module that will allow maximum packing density with the maximum number of outputs available.

RM34 rear module connector		Description
		<p>RM34</p> <ul style="list-style-type: none"> • 24 Up-and-down modules per Indigo 4 frame • 12 per Indigo 2 frame • Six per Indigo 1 frame • 2 per Indigo DT • All frame slots can be used
BNC	I/O assignment	
HD/SD OUT	Scaler serial digital output	
HD/SD OUT	Scaler serial digital output	
HD/SDI IN LOOP OUT	High Definition / Standard Definition serial digital input reclocked loop-through	
HD/SD IN LOOP OUT	High Definition / Standard Definition serial digital input reclocked loop-through	
SYNC IN/NC	No user connection	
HD/SD INPUT	High Definition / Standard Definition serial digital input	

Rear module connections with RM29

The RM29 although no longer available for new installations can also be used. This is also a single height rear module giving maximum packing density with the maximum number of outputs available.

RM29 rear module connector		Description
		<p>RM29</p> <ul style="list-style-type: none"> • 24 Up-and-down modules per Indigo 4 frame • 12 per Indigo 2 frame • Six per Indigo 1 frame • 2 per Indigo DT • All frame slots can be used
BNC	I/O assignment	
HD SDI OUT	Scaler serial digital output	
HD SDI OUT	Scaler serial digital output	
HD SDI IN LOOP	High Definition / Standard Definition serial digital input reclocked loop-through	
HD SDI IN LOOP	High Definition / Standard Definition serial digital input reclocked loop-through	
HD SDI INPUT	High Definition / Standard Definition serial digital input	

2.2 General Purpose Interface (GPI)

Each frame slot has up to six connections ‘a-f’ for GPI control and monitoring. These connections are available at the rear of the frame on the 26-way D-type remote connectors.

GPI		Low (<1V)	High (+5V)
1	‘a’		
2	‘b’		GPI recall of Presets
3	‘c’		a,b,c,d high = Preset1, a,b,c,d low = Preset16
4	‘d’		
5	‘e’		No function at present
6	‘f’		No function at present

As supplied, each GPI output has a 270Ω resistor in series with its output. This allows for an external LED to be driven, connected to a DC voltage of +5V.

Each General Purpose Input (GPI) is fitted with a 10kΩ resistor connected to the internal +5V.

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	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)

Slot no.	'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	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.
Note. The +5V output 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.
Note. 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 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.
Note. 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 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)

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.

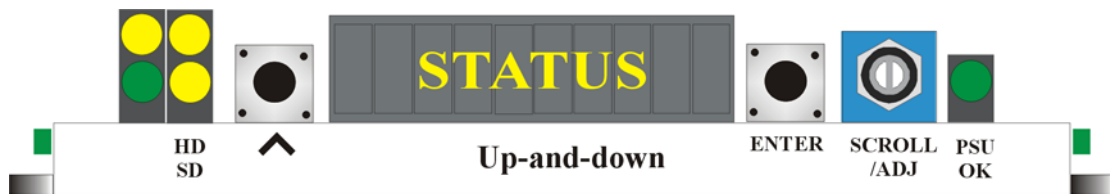
Note. The +5V output is protected by self-resetting thermal fuses, which limit the total output current available from Remotes 1-2 to approximately 1A.

3 Card edge operation

3.1 Card edge controls

Once the start-up initialisation procedure is complete, the Up-and-down card can be controlled or configured from the card edge, the active control panel or the Statesman PC interface. This chapter will concentrate on the card edge controls.

The front edge of the card provides power rail monitoring, menu selection, variables adjustment and a ten-digit visual status display.



Up-and-down front edge view

3.2 Card edge buttons

The Up-and-down is fitted with two tactile push button switches that allow the operator to navigate within the menu structure.

Button	Function	Normal state Up, Action Down
	Up Menu	Push to jump up a menu level or cancel a selection
ENTER	Select/Action	Push to select a menu and to action and confirm a change

3.3 Card edge rotary control

The board edge rotary encoder is used to navigate through the menu categories and adjust parameter values.

Control	Function
SCROLL /ADJUST	Rotate SCROLL to identify a menu category. In combination with the ENTER button select and ADJUST to change the current level or select a further option.

Notes: The rotary control can access menus and parameter values by clockwise or anti-clockwise rotation.

3.4 Reading card edge LEDs

Card edge LEDs may be used in conjunction with status information from any connected remote status panel display or from Statesman if available.

Refer also to the trouble shooting chapter for more help with solving problems and monitoring status information.

The following table summarises the card edge LED functions and colours:

Name	LED Colour	Function when ON	Function when Off
HD	Yellow	Video input standard is HD (High Definition)	} Input not present
SD	Yellow	Video input standard is SD (Standard Definition)	
PSU OK	Green	Good power supply (PSU) rails.	One or more of the monitor supplies is out of specification
	Yellow	No function at present	
	Green	No function at present	

3.5 Navigating card edge menus

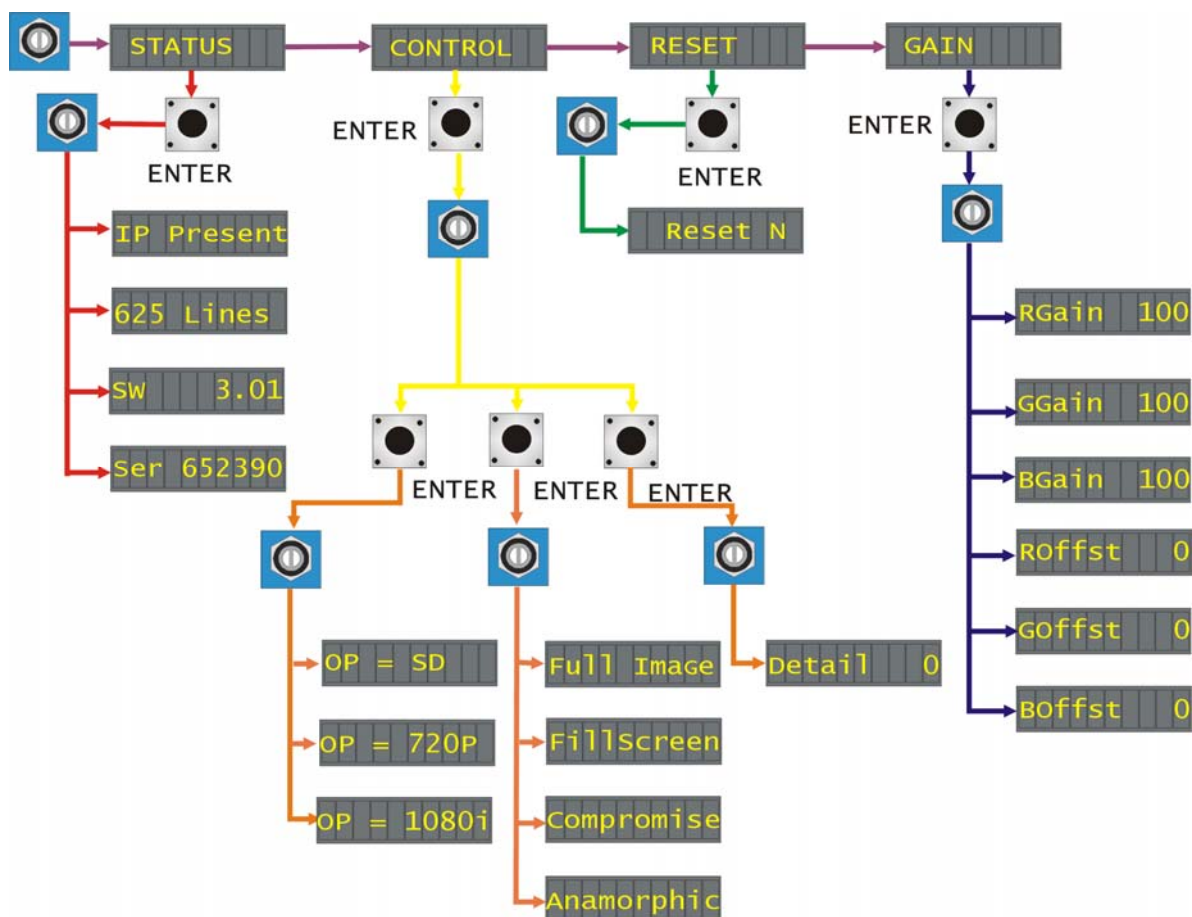
To access the card edge menu system proceed as follows:

- Press the up-arrow [^] until a top menu category is reached
- Rotate the SCROLL control until the desired menu category is found
- Push ENTER to enter the sub menus of that category
- Rotate SCROLL to select a sub menu
- Push ENTER to select the desired function. Selection will be indicated by the text being displayed in *italic* text
- Rotate ADJUST to make the desired change to the selected parameter. The display brightness will flash slowly to indicate that a change has been made and requires confirmation
- Push ENTER to action the change. The display will cease flashing
- Use the up-arrow [^] and SCROLL control to navigate to further menus

Note. The displayed menu brightness will flash slowly if confirmation of a change is required.

3.6 Card edge configuration

Menu Tree



Tip. To reach the top menu push the ^ button repeatedly until a top menu is reached. Rotate the SCROLL control anti-clockwise until the STATUS menu appears.

Card edge status

From the STATUS top menu press ENTER then SCROLL to access the status menu options.

STATUS	Menu	Comment
IP Present	Valid video input present	Rotate the Scroll/Adj. control to show input video status. <i>IP Present, IP Missing.</i>
625 Lines	Input video line rate	Rotate the Scroll/Adj. control to show input video standard. <i>625 Lines, 525 Lines, IP Missing</i>
SW 3.01	Software version fitted	Rotate the Scroll/Adj. control to show version number of the software currently fitted.
Ser 652390	PCB serial number	Rotate the Scroll/Adj. control to show the electronically stored PCB serial number. This should correspond with the serial number label affixed to the PCB connector.

Setting the output configuration (Control)

Output Standard

From the CONTROL top menu press ENTER then SCROLL to access either the Output standard, Aspect Ratio selection or Detail control. Press enter to select Output standard.

CONTROL	Menu	Comment
OP = SD	Output standard	Rotate Scroll/Adj. to show output standard. Press ENTER to select. Rotate Scroll/Adj. to select output standard and press ENTER to select standard definition.
OP = 720P	Output standard	Rotate Scroll/Adj. to show output standard. Press ENTER to select. Rotate Scroll/Adj. to select output standard and press ENTER to select high definition <i>720p</i> .
OP = 1080i	Output standard	Rotate Scroll/Adj. to show output standard. Press ENTER to select. Rotate Scroll/Adj. to select output standard and press ENTER to select high definition <i>1080i</i> .

Note. For all selections the output line rate will be determined by the input line rate.

Aspect Ratio controls

From the CONTROL top menu press ENTER then SCROLL to access either Output standard, Aspect Ratio selection or Detail control. Press ENTER to select Aspect Ratio. These control will be inactive whilst in bypass mode.

CONTROL	Menu	Comment
Full Image	Full image	Full 4:3 source width compressed to central 75% of 16:9 monitor width. Full source height mapped to monitor height. Vertical black bands added to both sides, no picture loss. (4:3 Pillarbox)
FillScreen	Full screen	Full 16:9 source width mapped to 4:3 monitor width. Full source height compressed to 75% of monitor height. Horizontal black bands added to top and bottom, no picture loss. (16:9 Letterbox)
Compromise	Compromise	Full 4:3 source width mapped to 16:9 monitor width. Central 75% of source height stretched to monitor height. Significant picture loss.
Anamorphic	Anamorphic	Central 75% of 16:9 source width stretched to 4:3 monitor width. Full source height mapped to monitor height. Significant picture loss.
		Full 4:3 source width compressed to central 87.5% of 16:9 source width. Central 87.5% of source height stretched to monitor height. Vertical black bands added left and right. Minimal picture loss. (14:9 Pillarbox)
		Central 87.5% of 16:9 source width stretched to 4:3 monitor width. Full source height compressed to 87.5% of monitor height. Horizontal black bands added to top and bottom. Minimal picture loss. (14:9 Letterbox)
		Full 4:3 source width horizontally stretched to 16:9 monitor width. Full source height to map to monitor height. No picture loss but significant distortion.
		Full 16:9 source width mapped to 4:3 monitor width. Full source height stretched to monitor height. No picture loss but significant distortion.

Detail enhancement

From the CONTROL top menu press ENTER then SCROLL to access either Output standard, Aspect Ratio selection or Detail control. Press ENTER to select Detail. This control will be inactive whilst in bypass mode.

CONTROL	Menu	Comment
Detail 0	Detail	Rotate the Scroll/Adj. control to set the amount of detail enhancement required. Press enter to action change. Adjustment 0-50.

Recalling factory default settings (Reset)

From the RESET top menu press ENTER then SCROLL to select YES option.

RESET	Menu	Comment
Reset N	Reset	Press ENTER to access reset menu. Rotate the Scroll/Adj. control to select Yes, press ENTER to action reset. Display will confirm reset.

Parameter	Default value
Gains	100%
Offsets	0
Aspect Ratio	Anamorphic
Detail	0

Video gains and offsets (Gain)

From the GAIN top menu press ENTER then SCROLL to access the video gain and offset controls. These controls will be inactive whilst in bypass mode.

GAIN	Menu	Comment
RGain 100	R Gain	Rotate SCROLL to show RGain and press ENTER to select. Rotate [ADJ] shaft encoder to set the R amplitude (80% to 120%). Example: RGain 100%
GGain 100	G Gain	Rotate SCROLL to show GGain and press ENTER to select. Rotate [ADJ] shaft encoder to set the G amplitude (80% to 120%). Example: GGain 100%
BGain 100	B Gain	Rotate SCROLL to show BGain and press ENTER to select. Rotate [ADJ] shaft encoder to set the B amplitude (80% to 120%). Example: BGain 100%
ROffst 0	R Offset	Rotate SCROLL to show ROffst and press ENTER to select. Rotate [ADJ] shaft encoder to set the R offset (80% to 120%). Example: ROffst 100%
GOffst 0	G Offset	Rotate SCROLL to show GOffst and press ENTER to select. Rotate [ADJ] shaft encoder to set the G offset (80% to 120%). Example: GOffst 100%
BOffst 0	B Offset	Rotate SCROLL to show BOffst and press ENTER to select. Rotate [ADJ] shaft encoder to set the B offset (80% to 120%). Example: BOffst 100%

4 Using the front control panel

4.1 Module selected

This operational guide assumes that the panel has been set up according to the Panel setup procedure described in the Crystal Vision Control Panel manual.

Note: It is **ESSENTIAL** that the Panel setup procedure is followed and any old or unknown passwords cleared prior to using the panel for the first time.

At power up, the two line 20-character screen will display 'Crystal Vision' followed by the firmware version number for the control panel. All eight control panel keys LEDs will illuminate.



The Crystal Vision control panel start up display

'Control Panel' then briefly replaces the version number display.



If the control panel firmware has been updated for Statesman control (version 1.5.0 or higher), Statesman Mode will be entered and the message, 'Press CAL to Exit' will be displayed and the CAL LED will light.



Statesman mode is entered by default

To continue with control panel operation or configuration, press the CAL key once. A second press of the CAL key will return to Statesman control.

The control panel will display the name of the card that first responds to the polling request together with its location number.

The location number consists of the frame number plus the card position in the frame.

Navigating the display

The functions assigned to control panel keys are:

- DEVICE – enters Device menu to select a card or show cards available / enters Panel setup when held down during power up / shows frame status when pressed from Statesman mode
- CAL – enters or leaves Statesman mode / enters panel diagnostics mode when held down during power up / updates the display
- Asterisk – enters board rename menu from the Device menu
- F1 to F4 – soft keys, function assigned within each menu
- HOME – moves the display to the home menu
- ENTER – accept current selection
- Upward arrow – used to move up the menu structure / enter lock panel menu from the Device menu
- Rotary control – shaft encoder used to select options or variable data

Note: Please refer to the Crystal Vision Control Panel manual for details of the Panel Setup, Lock Panel and Diagnostic menus.

Selecting Up-and-down

To select a particular card in a frame, press the DEVICE key to go to the Device menu. Note, there may be a delay whilst the frame is interrogated during which time the 'No cards Found' could be displayed.

The top line of the display will show 'Available Cards X', where X is the number of cards that have responded so far to the polling request.

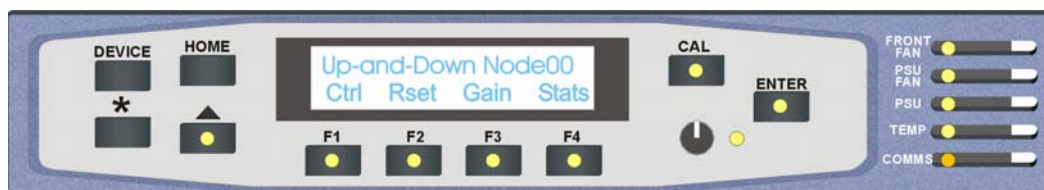


The available cards menu

Rotate the shaft encoder and the bottom row will display the successfully polled cards by name and location or slot number.

In the example above, the card displayed is located in the first frame in slot number 3.

When the desired card is selected press the ENTER key to access that card's HOME menu. The message shows that an Up-and-down has been selected.



The Up-and-down home menu

Updating the display

The values displayed on an active front panel are only updated when an adjustment is made and when changing menu level. If changes occur through the use of card edge controls or other remote control, the text displayed on the active front panel will not be updated immediately. If necessary, use the upward arrow to leave and then re-enter a menu to update the display.

4.2 The Up-and-down active panel menu structure

At any time the main top-level menu (Home) is obtained by pressing the HOME key. From the home menu further selections can be made. Active function keys are indicated by illuminated, integrated LEDs.

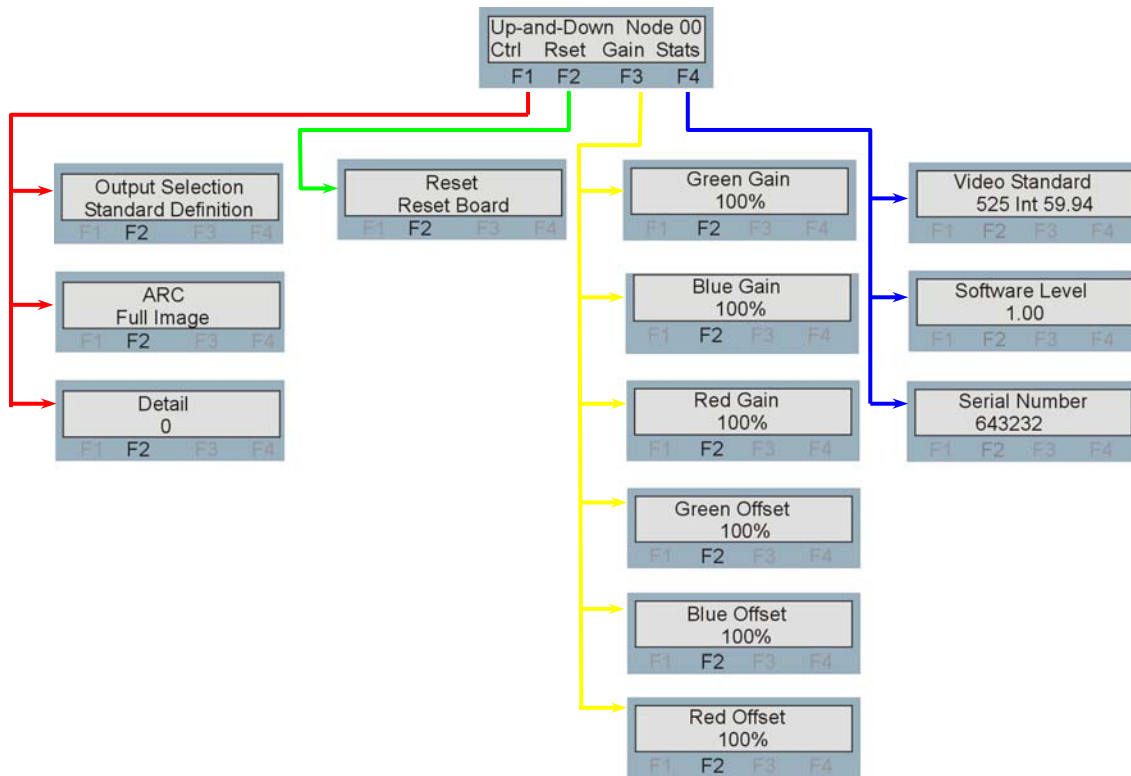
The main top-level menus for the Up-and-down module are obtained by pressing the F1-F4 keys from the HOME menu. Menu keys are illuminated when active and when further menus are available. The top-level menus are:

- Video controls (Output format selection, Aspect ratio and Detail) – press F1
- Reset (Factory defaults) – press F2
- Gains (Video gains and offsets) – press F3
- Stats (Status) – press F4

When a sub menu has been selected, further options may be obtained by using the Shaft control to scroll through them. Once the desired option has been located a selection or value change can be made by either toggling the appropriate function key or by selecting and using the shaft control to alter a numerical value. A configuration change or value will be activated as the shaft control is rotated or function button is toggled. The variable being adjusted will appear in brackets. Pressing Enter will fix the new value.

The following chart shows the available Up-and-down menus. The actual menus available may vary slightly as software is updated.

Up-and-down Menu Structure



Video Control Menu


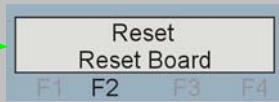
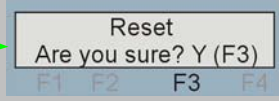
Output standard, aspect ratio and detail enhancement are all controlled from this menu.

Up-and-down Video control menu	Description
	<p>From the Home menu, press F1 to select the Control menu, which is then traversed by rotating the shaft control.</p> <p>Rotate shaft encoder to select Output Selection. Press F2 to select to change the value. Rotate shaft encoder to set the new value. Standard Definition, 1280 x 720p, 1920 x 1080i. Press enter to accept the new value.</p> <p>Rotate shaft encoder to select the Aspect Ratio. Press F2 to select to change the value. Rotate shaft encoder to set the new value. Compromise 16:9, Full Image, Fill Screen, Anamorphic Press enter to accept the new value.</p> <p>Rotate shaft encoder to select the Detail control. Press F2 to select to change the value. Rotate shaft encoder to set the new value (0-100%). Press enter to accept the new value.</p>

- Note:**
- At all times the output line rate will follow the input line rate, i.e. 50Hz, 59.94Hz.
 - If the input video standard is the same as the set output, the message **No ARC** will be displayed.

Reset (factory defaults)

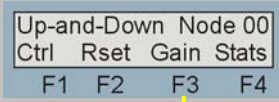
This menu gives access to the reset control which will return all user controlled variables to their factory default values.

Up-and-down reset menu	Description
	From the Home menu, press F2 to select the Reset menu.
	Press F2 to select to Reset.
	Press F3 to action Reset.

Parameter	Default value
Gains and levels	100%
Output format	Standard definition
Aspect Ratio	Anamorphic
Detail	0

Gains and Offsets

Pressing F3 from the home menu will bring up the Gains and Offset menu. This menu allows the user to adjust individually the RGB gain and dc offset. Rotate the shaft encoder to select each sub-menu and also change parameters. These controls will be inactive whilst in bypass mode.

Up-and-down gains and offsets control menu	Description
	From the Home menu, press F3 to select the Gain menu, which is then traversed by rotating the shaft control.



Rotate shaft encoder to select Green Gain.
 Press F2 to select to change the value.
 Rotate shaft encoder to select value (80-120%).
 Press enter to accept the new value.

Rotate shaft encoder to select Blue Gain.
 Press F2 to select to change the value.
 Rotate shaft encoder to select value (80-120%).
 Press enter to accept the new value.

Rotate shaft encoder to select Red Gain.
 Press F2 to select to change the value.
 Rotate shaft encoder to select value (80-120%).
 Press enter to accept the new value.

Rotate shaft encoder to select Green Offset.
 Press F2 to select to change the value.
 Rotate shaft encoder to select value (80-120%).
 Press enter to accept the new value.

Rotate shaft encoder to select Blue Offset.
 Press F2 to select to change the value.
 Rotate shaft encoder to select value (80-120%).
 Press enter to accept the new value.

Rotate shaft encoder to select Red Offset.
 Press F2 to select to change the value.
 Rotate shaft encoder to select value (80-120%).
 Press enter to accept the new value.

Note: Pressing CAL at any time will return the variable to its default value. If ENTER is not pressed to accept the changed value it will revert to the value last saved.

Status

The status menu contains various information about the board and the video input.

Up-and-down status menu	Description
<p>The diagram shows a sequence of three menu screens. The first screen displays 'Up-and-Down Node 00' with options 'Ctrl', 'Rset', 'Gain', and 'Stats' below it, and function keys 'F1', 'F2', 'F3', and 'F4' at the bottom. A blue arrow points from the 'Stats' option to the second screen. The second screen displays 'Video Standard' with '525 Int 59.94' below it, and function keys 'F1', 'F2', 'F3', and 'F4' at the bottom. A blue arrow points from the 'F4' key to the third screen. The third screen displays 'Serial Number' with '643232' below it, and function keys 'F1', 'F2', 'F3', and 'F4' at the bottom.</p>	<p>From the Home menu, press F4 to select the status menu, which is then traversed by rotating the shaft control.</p> <p>Rotate the shaft control to view the video input status and line rate.</p> <p>Rotate the shaft control to view the currently fitted software version.</p> <p>Rotate the shaft control to view the electronically stored board serial number.</p>

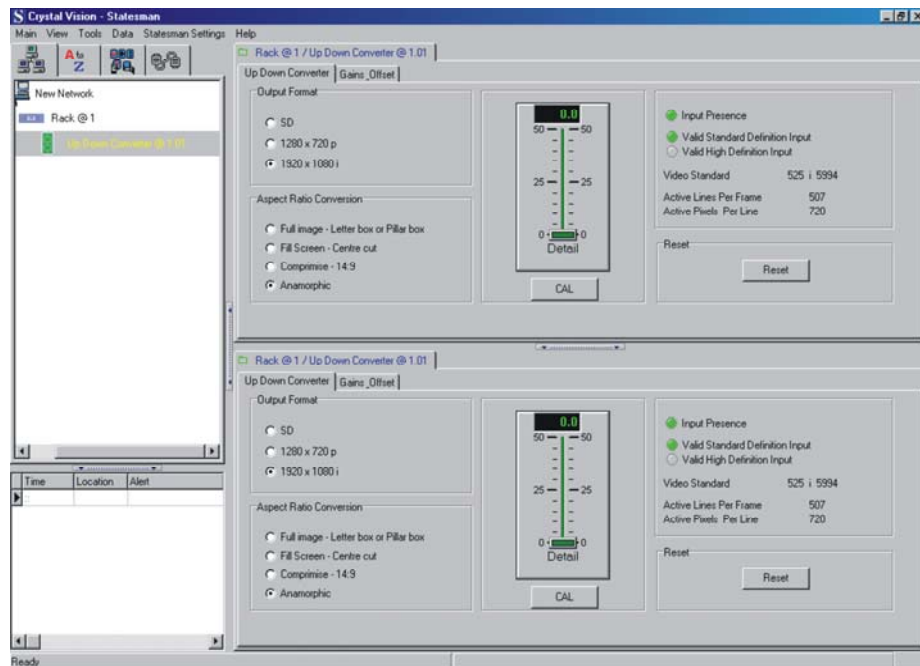
5 Statesman

The Crystal Vision Statesman PC control software is designed to control a range of Crystal Vision modules via serial control from a PC. Statesman provides a user friendly means of configuring and operating Crystal Vision modules with the benefit of “see-at-a-glance” status monitoring.

The main Statesman application communicates with each module in a frame through a Statesman capable or active control panel. An active panel or REMIND remote control panel must be fitted to allow for Statesman control.

5.1 Statesman operation

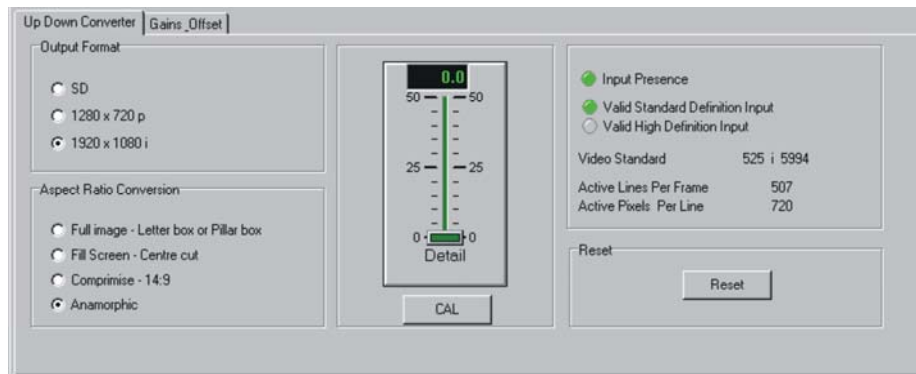
The initial view will show an Explorer style view of the connected frames and modules. Double clicking on a module will enable the display of the main application menus.



The Statesman main application window

The menu display is repeated for convenience to allow dual-control display of modules with duplicate signal paths or to allow two functions to be viewed at the same time.

Up-and-down has two Statesman menu tabs, one that provides status information and allows configuration of output format, Aspect ratio conversion and detail enhancement, and a second for RGB gain and dc offset.



Up-and-down Status and Configuration menu

The status pane is divided into five sections: Output Format, Aspect Ratio Conversion, Detail Enhancement, Input Status and Factory Reset.

Output Format

The output format is selected by checking the appropriate radio button. The selection is Standard Definition (525/625 line), High Definition 1280x720p and 1920x1080i.

Note: The output line rate will follow the input line rate. Up-and-down will auto detect the input format.

Aspect Ratio Conversion

Similarly the aspect ratio can be selected by checking the appropriate radio button, see chapter 1 for a pictorial explanation of the different aspect ratios available. These controls will be inoperative and greyed out whilst in bypass mode.

Detail Enhancement

The Detail slider sets the amount of enhancement applied to the picture. The enhancement slider can be effected in several ways - the cursor may be placed directly onto the slider bar and dragged whilst holding the left mouse button. The required value may be typed directly into the numeric display or if the cursor is placed over the slider, clicking with the left mouse button will cause the slider bar to jump directly to that value.

The enhancement level can be returned to zero at any time by pressing the CAL button. Detail enhancement will be unavailable in bypass mode.

Input Status

The Input Present indicator will illuminate green when a valid input is present or red if the input is missing.

The video standard is automatically detected and is shown. The input format is indicated by the illumination of a green indicator.

Further status information is provided by the Statesman logging and alarms feature, which is described in more detail in the Statesman manual.

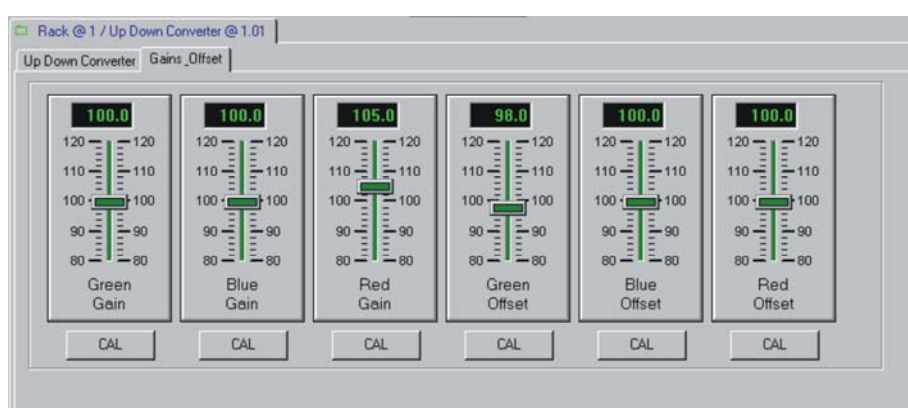
Reset (factory defaults)

The Reset button will return all parameters to their factory default levels

Parameter	Default value
Gains and levels	100%
Output format	Standard definition
Aspect Ratio	Anamorphic
Detail	0

Gains and Offsets

RGB picture level controls gain and dc offset allow control of the video image brightness, contrast and colour. These controls will be inactive whilst in bypass mode.



Up-and-down's gain and offset menu

The required value may be typed directly into the numeric display or if the cursor is placed over the slider left clicking with the mouse will cause the slider bar to jump directly to that value.

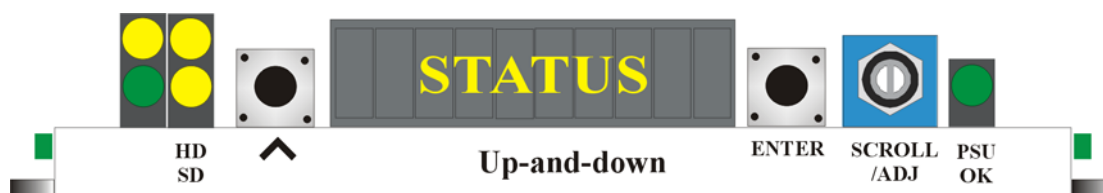
The gains and offset levels can be returned to zero at any time by pressing the CAL button under each slider.

6 Trouble shooting

Simple trouble shooting can be performed by using either the card edge or a remote status panel display.

6.1 Card edge status LEDs

Board edge LEDs provide status reporting and may be useful when fault finding.



The following table summarises the card edge LED functions and colours:

Name	LED Colour	Function when ON	Function when Off
HD	Yellow	Video input standard is HD (High Definition)	} Input not present
SD	Yellow	Video input standard is SD (Standard Definition)	
PSU OK	Green	Good power supply (PSU) rails	One or more of the monitor supplies is out of specification
	Yellow	No function at present	
	Green	No function at present	

The board edge display may also give some useful information when trouble-shooting

Basic fault finding guide

The Power OK LED is not illuminated

Check that the frame PSU is functioning – refer to the appropriate frame manual for detailed information

There is no video output

Check that a valid input is present and that any cabling is intact. Use the board edge, active control panel or Statesman status information to determine a likely fault

The video output exhibits jitter

Check that the input signal stability is within normal limits and that the maximum cable length has not been exceeded

The card no longer responds to card edge or front panel control

Check that the card is seated correctly and that the Power OK LED is lit

Check any active control panel cabling

Check if the control panel can control another card in the same rack

If necessary re-set the card by simply removing it from the rack whilst powered and re-inserting it after a few seconds. It is safe to re-insert the card whilst the rack is powered.

7 Specification

General

Dimensions	100mm x 266 mm module with DIN 41612 connector
Weight	225g
Power consumption	12 W

Inputs

Video	HD or SD SDI 270Mb/s to 1.485Gb/s serial digital compliant to SMPTE 259M and SMPTE 292M HD. Up to 140m with Belden 1694 or equivalent (Belden 8281 or equivalent up to 100m) SD (270Mb/s) >250 metres
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Outputs

Number and type:	4 reclocked SDI outputs 270Mb/s - 1.485Gb/s to SMPTE 259M and SMPTE 292M (2 x scaler outputs and 2 x input loop-throughs)
Jitter	Typically SDI 0.2UI @ 1kHz, HD 0.2UI @ 100kHz

Processing

10-bit. Active picture only.