ARC-10MC

10 bit aspect ratio converter

USER MANUAL

Crystal Vision

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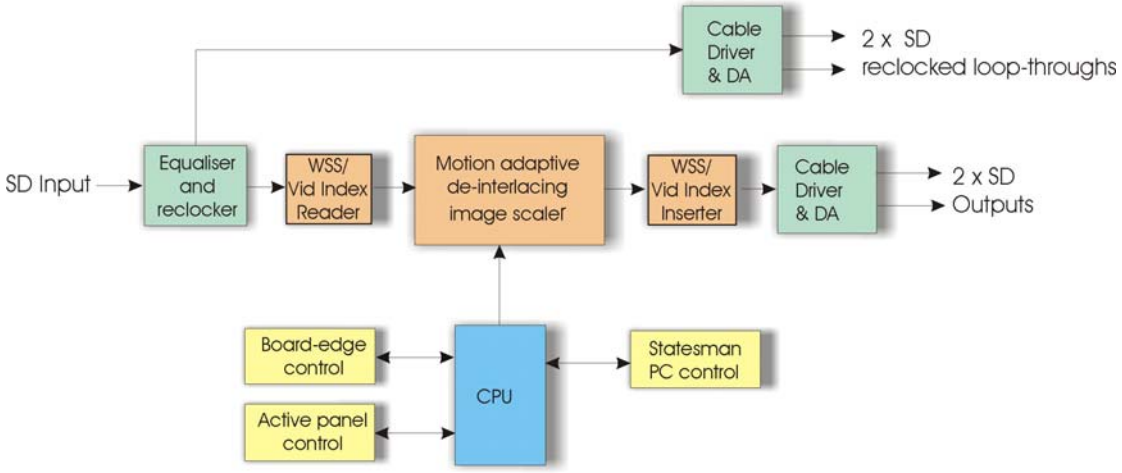
Revision 1	RM34 information added	09/03/07
Revision 2	Crop, presets and user specified ratio controls added, sw5.02	04/06/07
Revision 3	Video indexing and RM43 information added, sw5.03	07/12/07
Revision 4	RM43 table heading amended	28/01/08
Revision 5	Wide screen signalling information added	16/02/08
Revision 6	Increased size & position range. Software level 5.05 upwards	27/03/08
Revision 7	Amended GPI recall tables (Bit 3, Preset 4)	30/06/08
Revision 8	Amended GPI recall table to preset bit 3 on page 8	20/11/09

1 Introduction

ARC-10MC is a 10-bit Standard Definition aspect ratio converter that uses the latest motion adaptive video techniques, incorporating both detail and edge enhancement processing. DA outputs are available for both the reclocked input and converted programme.



ARC-10MC SD aspect ratio converter

The main features are as follows:

- 10-bit Standard Definition 625-line, 525-line
- Motion adaptive with both detail and edge enhancement
- Flexible aspect ratio conversion with GPI selection
- User control of picture size and position to create custom aspect ratios
- Picture crop, user presets, NTSC closed caption bypass
- One frame video delay in all modes
- Embedded audio passed with matched delay
- Two scaled outputs and two input loop-throughs
- GPI output of Video input missing
- Video indexing SMPTE RP186 and Wide Screen Signalling as per ETSI EN 300 294 V1.4.1
- Fits in standard frames alongside HD, SD and audio products

ARC-10MC 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. There is a choice of two rear connectors for the ARC-10MC the RM34 and RM43 with relay bypass. In an existing installation the now obsolete RM29 rear connector may also be used.

1.1 Operating modes

ARC-10MC incorporates a number of processing features to ensure that maximum performance is maintained under all circumstances. Obtaining the best results when scaling up or down generally requires different techniques depending on whether the video contains slow or fast moving images. ARC-10MC employs motion adaptive video de-interlacing to maximise the picture's vertical resolution to achieve the best picture that always appears smooth and natural looking.

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. Four individual crop controls acting on the input video allow picture cropping on the top, bottom and both sides. NTSC closed caption can be selectively passed to the output unprocessed by the aspect ratio conversion. The wide screen signalling flag on PAL line 23 can also be blanked if required.

The ARC-10MC passes embedded audio after applying the appropriate amount of delay to ensure it remains in sync with the video. This removes the need for an external audio delay.

Eight user configurable memory locations are available for storing and later recall of card set-ups. Initially, and after a factory reset recalling these locations by any of the four control means available, the preset aspect ratios available to the ARC-10MC will be selected.

There is automatic 625/525 line standard detection and a fixed propagation delay of one frame between input data and output data.

The ARC-10MC will also read video indexing and wide screen signalling, from which it can determine the aspect ratio of the input video and act upon it if required. Video indexing and wide screen signalling containing aspect ratio information can also be inserted in the output video for use by downstream equipment.

ARC-10MC has a selection of seven preset aspect ratio settings, three each for 4:3 to 16:9 and 16:9 to 4:3 plus a no conversion (anamorphic), and a user specified conversion where the user can control both picture size and position.

Input / Output format	Output aspect ratio
4:3 / 16:9	4:3 Full screen 14:9 Compromise (Pillarbox) 4:3 Full image (Pillarbox) 4:3 No conversion (stretched horizontally)

Input / Output format	Output aspect ratio
16:9 / 4:3	16:9 Full screen 14:9 Compromise (Letterbox) 16:9 Full image (Letterbox) 16:9 No conversion (stretched vertically)

Input / Output format	Output aspect ratio
16:9 or 4:3	User adjustable size (± 100 lines and samples) User adjustable position (± 100 lines/samples symmetrical)

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

No Conversion

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

No Conversion

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 ARC-10MC single height module uses the RM34 or RM43 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.

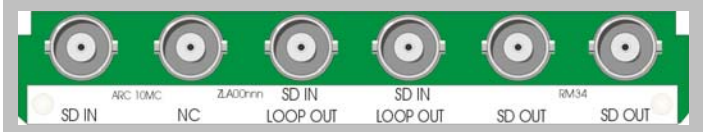
2.1 Rear modules and signal I/O

The Indigo 4U frame will house up to 24 single height modules with up to three power supplies. The Indigo 2U frame will house up to 12 single height modules and two power supplies. The Indigo 1U frame will house six single height modules and a single or dual power supply. The Indigo DT desk top boxes have 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

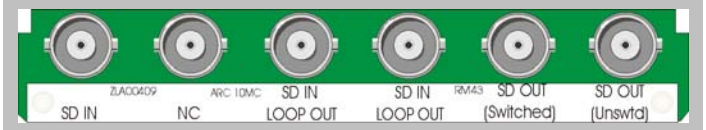
The RM34 being a single height module will allow maximum packing density with the maximum number of outputs available.

RM34 rear module connector	Description
	**RM34** • 24 ARC-10MC modules per Indigo 4 frame • 12 per Indigo frame • 6 per Indigo frame • 2 per Indigo DT • All frame slots can be used

BNC	I/O assignment
SDI OUT	Converted serial digital output
SDI OUT	Converted serial digital output
SDI IN LOOP	Serial digital input reclocked loop-through
SDI IN LOOP	Serial digital input reclocked loop-through
NC	No user connection
SDI INPUT	Serial digital input

Rear module connections with RM43

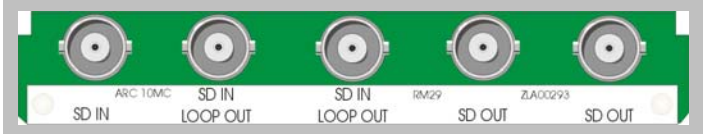
The RM43shares the same connections as the RM34 with the added benefit of relay bypass between the SD input and the first of the two SD outputs. The relay bypass is under the control of the ARC-10MC and will be actuated should either the ARC-10MC or the frame fail. Note the second SD output is not protected by relay bypass.

RM43 rear module connector	Description
	**RM43** • 24 ARC-10MC modules per Indigo 4 frame • 12 per Indigo frame • 6 per Indigo frame • 2 per Indigo DT • All frame slots can be used

BNC	I/O assignment
SDI OUT	Converted serial digital output (unswitched)
SDI OUT	Converted serial digital output (bypass switched)
SDI IN LOOP	Serial digital input reclocked loop-through
SDI IN LOOP	Serial digital input reclocked loop-through
NC	No user connection
SDI INPUT	Serial digital input

Rear module connections with RM29

The RM29 being a single height rear module is no longer available for new installations.

RM29 rear module connector	Description
	**RM29** • 24 ARC-10MC modules per Indigo 4 frame • 12 per Indigo frame • 6 per Indigo frame • 2 per Indigo DT • All frame slots can be used

BNC	I/O assignment
SD OUT	Converted serial digital output
SD OUT	Converted serial digital output
SD IN LOOP	Serial digital input reclocked loop-through
SD IN LOOP	Serial digital input reclocked loop-through
SD INPUT	Serial digital input

2.2 Module configuration

There are no user re-configurable jumper links on the ARC-10MC. All jumper links should be left in their factory set positions.

2.3 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.

The first three GPIs are used to recall user-saved configurations. Initially or after a factory reset these GPIs will call the preset aspect ratios until overwritten by a user stored configuration.

GPI			Low (<1V)	High (+5V)
1	‘a’	Recall preset bit 1	}	See following table for user preset control
2	‘b’	Recall preset bit 2		
3	‘c’	Recall preset bit 3		
4	‘d’	Not Used	No function assigned	
5	‘e’	Video missing	Alarm asserted	No alarm
6	‘f’	Not Used	Pulling low will operate the relay bypass (RM43)	

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.

GPI Preset	Bit 3	Bit 2	Bit 1	Initial Aspect ratio
1	0	0	0	Full screen 16:9 to 4:3
2	0	0	1	Full screen 4:3 to 16:9
3	0	1	0	Compromise 14:9 to 4:3
4	0	1	1	Compromise 4:3 to 14.9
5	1	0	0	Full image 16:9 to 4:3
6	1	0	1	Full image 4:3 to 16:9
7	1	1	0	Anamorphic
8	1	1	1	No selection

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	Upper	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)
Slot no.		**‘a’ pin**	**‘b’ pin**	**‘c’ pin**	**‘d’ pin**	**‘e’ pin**	**‘f’ pin**
1	Lower	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.

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.

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

1U frame GPI connections

GPI lines 'a' to 'f' of each card connect to the two rear remote connectors as follows:

Slot no.	'a' pin	'b' pin	'c' pin	'd' pin	'e' pin	'f' pin
1	8 (1)	9 (1)	18 (1)	26 (1)	19 (2)	20 (2)
2	7 (1)	16 (1)	17 (1)	25 (1)	10 (2)	11 (2)
3	5 (1)	6 (1)	15 (1)	24 (1)	1 (2)	2 (2)
4	4 (1)	14 (1)	13 (1)	23 (1)	3 (2)	4 (2)
5	3 (1)	12 (1)	22 (1)	21 (1)	12 (2)	13 (2)
6	10 (1)	11 (1)	19 (1)	20 (1)	21 (2)	22 (2)

Table shows pin number (remote number)

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

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

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

Indigo DT desk top box GPI connections

GPI lines ‘a’ to ‘f’ of each card connect to the 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

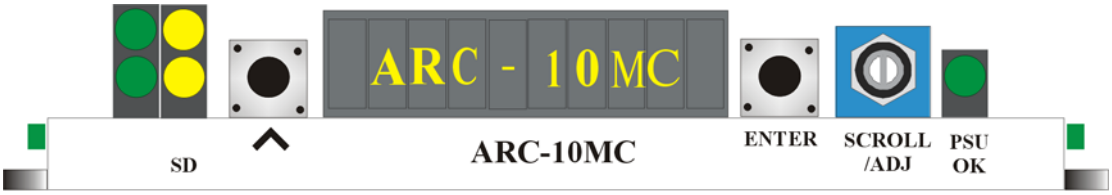
The +5V output is protected by self-resetting thermal fuses, which limit the total output current available from Remotes 1-2 to approximately 1A.

3 Card edge operation

3.1 Card edge controls

Once the start-up initialisation procedure is complete, the ARC-10MC 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.



ARC-10MC front edge view

3.2 Card edge buttons

The ARC-10MC is fitted with two tactile push button switches that allow the operator to navigate within the menu structure.

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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

Note: 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
	Green	No function at present	
	Green	No function at present	
	Yellow	No function at present	
SD	Yellow	Input video present	No valid input video present
PSU OK	Green	Good power supply (PSU) rails	One or more of the monitored supplies are out of specification

3.5 Navigating card edge menus

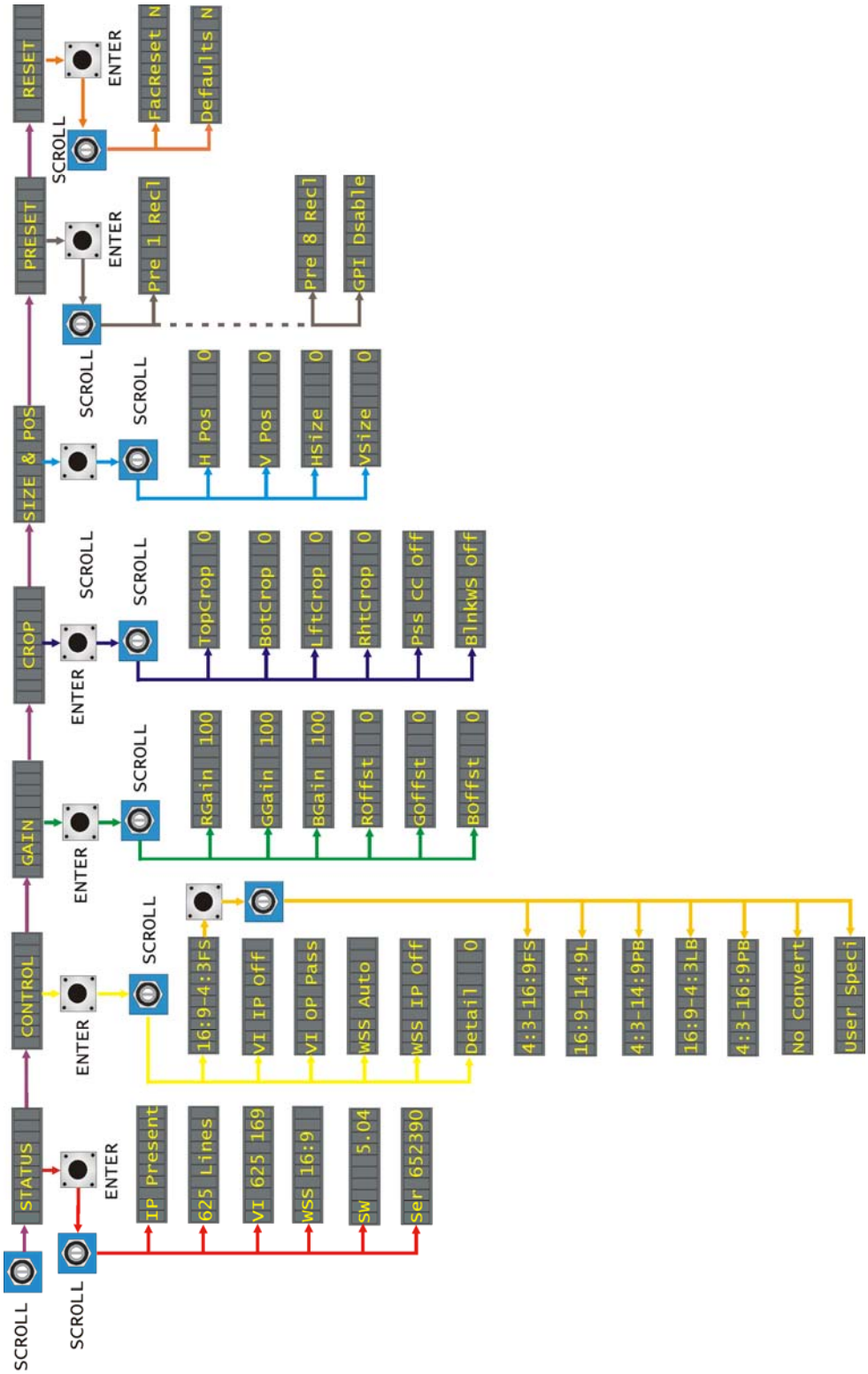
To access the card edge menu system proceed as follows:

- 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

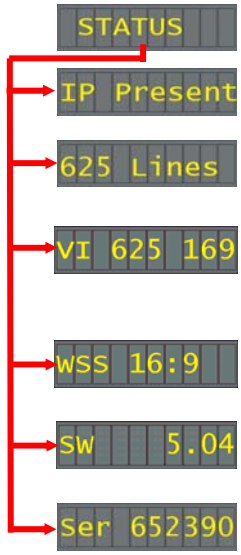
Menu Tree



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

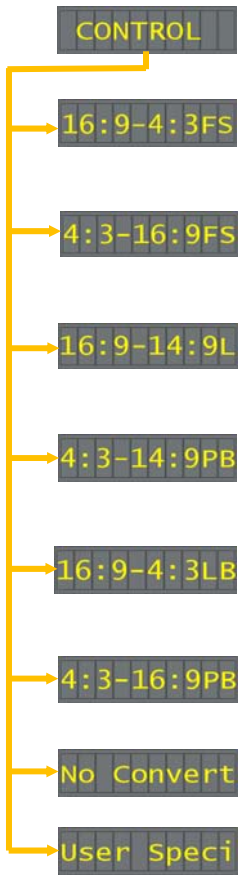
From the Status top menu press ENTER then SCROLL to access the Status menu options.



Menu	Comment
Valid video input present	Rotate the [SCROLL/ADJ] control to show input video status. ***IP Present, IP Missing***
Input video line rate	Rotate the [SCROLL/ADJ] control to show input video standard. ***625 Lines, 525 Lines, Unknown IP, IP Missing***
Video Index status	Rotate the [SCROLL/ADJ] control to show video indexing status. ***VI Absent, VI Bypass, VI 525 4:3, VI 625 4:3,VI 525 169, VI 625 169, VI Unknown.***
Wide screen signalling status	Rotate the [SCROLL/ADJ] control to show wide screen signalling status. ***WSS 4x3, WSS 16x9, WSS Unknown, WSS 14x9.***
Software version fitted	Rotate the [SCROLL/ADJ] control to show version number of the software currently fitted.
PCB serial number	Rotate the [SCROLL/ADJ] control to show the electronically stored PCB serial number.

Setting the output ARC configuration (Control)

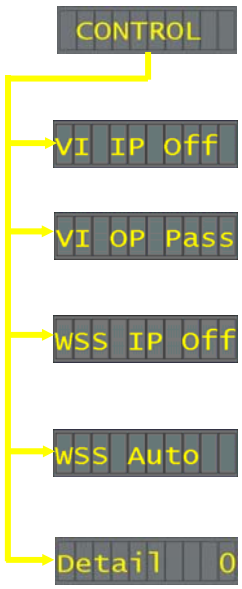
From the Control top menu press ENTER then SCROLL to access Aspect Ratio selection.



ARC Menu	Comment
Full screen 4:3	Central 75% of 16:9 source width stretched to 4:3 monitor width. Full source height mapped to monitor height. No black bands required, significant picture loses.
Full screen 16:9	Full 4:3 source width mapped to 16:9 monitor width. Central 75% of source height stretched to monitor height. No black bands required, significant picture loses.
Compromise 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 top and bottom. Minimal picture loses.
Compromise 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 both sides, minimal picture loses.
Full image 4:3 (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 loses.
Full image 16:9 (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 both sides, no picture loses.
No Conversion	Full source stretched or compressed to map to monitor. No picture loses but significant distortion.
User Specified Conversion	When activated this menu allows the user to produce custom aspect ratios using the position and size controls.

Setting the video indexing and output detail (Control)

From the Control top menu press ENTER then SCROLL to access either Aspect Ratio selection or Video Index and Detail control. Press ENTER to select Video Index and Detail control.



Menu	Comment
Video Index Input Bypass options	Rotate the [SCROLL/ADJ] control to select the video index input bypass option. ***VI BP 4:3, VI BP 16:9, VI IP Off.***
Video Index Output Insert options	Rotate the [SCROLL/ADJ] control to select the video index output option. ***VI OP 4:3, VI OP 16:9, VI OP Blnk, VI OP Pass.***
Wide Screen Signalling Input Bypass options	Rotate the [SCROLL/ADJ] control to select the wide screen signalling input option. ***WSS IP Off***, ***WSS BP 4:3, WS BP 16:9***
Wide Screen Signalling Insert options	Rotate the [SCROLL/ADJ] control to select the wide screen signalling Insert option. ***WSS Auto, WSS Blank, WSS Bypass, WSS Full43 WSS Box149, WSS Box169,WSS Fll169.***
Detail	Rotate the [SCROLL/ADJ] control to set the amount of detail enhancement required. Press enter to action change. Adjustment 0-50.

Video Indexing

If video indexing information is present on its input video the ARC-10MC if enabled can use this information to determine and report the aspect ratio of the incoming video. This then gives ARC10-MC the ability to choose between automatically converting the incoming video to the selected output aspect ratio, and bypassing if the input is the same as the selected output.

Video indexing can also be inserted into the output video for use by downstream equipment. Output video indexing is enabled by selecting the required output aspect ratio. Although in most applications the output selection will mirror the conversion setting the output video index control remains independent from the conversion setting, so that a user specified aspect ratio can have assigned the most appropriate ratio information. It is also possible to either insert blank video index data or pass the input data to the output unchanged.

Wide Screen Signalling

Similarly the ARC-10MC can also use wide screen signalling to determine the aspect ratio of the input video. Again the ARC-10MC will convert or bypass depending on the various selections. WSS information as with video index can be placed on the output video.

Note: WSS and Video Index controls are completely independent. This will allow insertion of both types of date onto the video output. Should WSS and Video indexing both be present on the input video preference will be given to Video indexing.

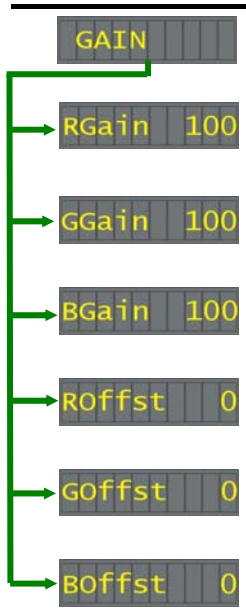
Detail Enhancement

The detail control sets the amount of enhancement applied to the 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.

Video gains and offsets (Gain)

The RGB gain and dc offset controls allow adjustment of the image brightness, contrast and colour.

From the Gain top menu press ENTER then SCROLL to access the video gain and offset controls.



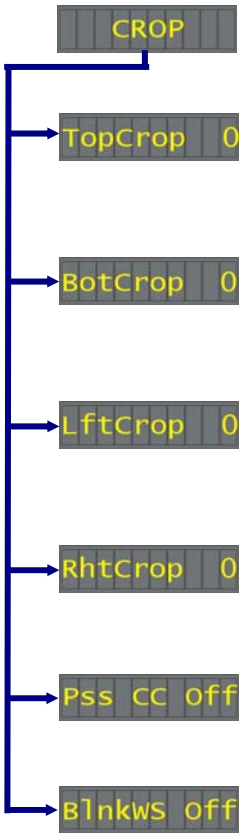
Menu	Comment
R Gain	Rotate [SHROLL] to show RGain and press ENTER to select. Rotate [ADJ] shaft encoder to set the R amplitude (80% to 120%).
G Gain	Rotate [SCROLL] to show GGain and press ENTER to select. Rotate [ADJ] shaft encoder to set the G amplitude (80% to 120%).
B Gain	Rotate [SCROLL] to show BGain and press ENTER to select. Rotate [ADJ] shaft encoder to set the B amplitude (80% to 120%).
R Offset	Rotate [SCROLL] to show ROffst and press ENTER to select. Rotate [ADJ] shaft encoder to set the R offset (0 ± 20%).
G Offset	Rotate [SCROLL] to show GOffst and press ENTER to select. Rotate [ADJ] shaft encoder to set the G offset (0 ± 20%).
B Offset	Rotate [SCROLL] to show BOffst and press ENTER to select. Rotate [ADJ] shaft encoder to set the B offset (0 ± 20%).

Picture Crop (Crop)

From the Crop top menu press ENTER then SCROLL to access the picture crop options along with the closed caption and wide screen signalling controls. These controls act to crop the input video so their action will be affected by the aspect ratio selection. Up to 31 lines of vertical crop both top and bottom are available and up to 31 pixels horizontally both left and right.

When an aspect ratio is selected which results in a vertical shortening of the picture any NTSC closed caption information would become visible and any horizontal scaling would corrupt this information. The closed caption control if selected will blank lines 20 and 21 of the input video to remove this information from the visible picture and reinsert the information in lines 20-21 of the output video so preserving its integrity.

PAL wide screen signalling on line 23 may also be selected for blanking.

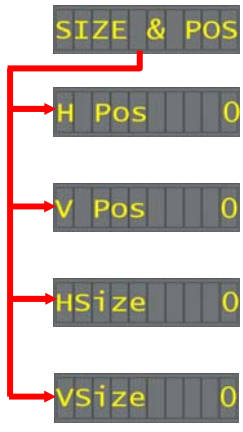


Menu	Comment
	Rotate [SCROLL] to show TopCrop and press ENTER to select.
Picture crop top	Rotate [ADJ] shaft encoder to set the amount of top of picture crop in lines (0-31 lines).
	Example: **TopCrop 10**
	Rotate [SCROLL] to show BotCrop and press ENTER to select.
Picture crop bottom	Rotate [ADJ] shaft encoder to set the amount of bottom of picture crop in lines (0-31 lines).
	Example: **BotCrop 10**
	Rotate [SCROLL] to show LftCrop and press ENTER to select.
Picture crop left	Rotate [ADJ] shaft encoder to set the amount of left side picture crop in pixels (0-31 pixels).
	Example: **LftCrop 10**
	Rotate [SCROLL] to show RhtCrop and press ENTER to select.
Picture crop right	Rotate [ADJ] shaft encoder to set the amount of right side of picture crop in pixels (0-31 pixels).
	Example: **RhtCrop 10**
	Rotate [SCROLL] to show Pss cc and press ENTER to select.
Pass Closed caption	Rotate [ADJ] shaft encoder to set ***On, Off, N/A*** = not NTSC
	Example: **Pss cc On**
	Rotate [SCROLL] to show Blnkws and press ENTER to select.
Wide screen signalling blanking	Rotate [ADJ] shaft encoder to set blanking ***On, Off***
	Example: **Blnkws On**

Position and Size menu

From the Position and Size top menu press ENTER then SCROLL to access the menu options.

With these controls the user is able to build a custom aspect ratio. Both picture horizontal and vertical size may be set as well as the position of the image within the screen area to allow caption or other data insertion.

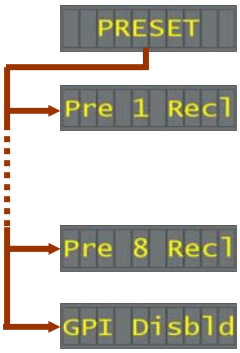


Menu	Comment
Picture horizontal position adjust	Rotate the [SCROLL/ADJ] control to move the picture horizontally in sample steps. ***±200, N/A***
Picture vertical position adjust	Rotate the [SCROLL/ADJ] control to move the picture vertically in line steps. ***±200, N/A***
Picture size horizontal (width)	Rotate the [SCROLL/ADJ] control to adjust the picture width in 2 sample symmetrical steps. ***±200, N/A***.
Picture size vertical (height)	Rotate the [SCROLL/ADJ] control to adjust the picture height in 2 line symmetrical steps. ***±200, N/A***.

Note: These controls are only active when the User Specified control in the control menu has been selected. When not selected the display will show N/A.

Preset menu

Up to eight set-ups may be stored for the board and recalled either from the board control, active front panel, Statesman or through the use of external GPIs. Presets store board setup data including operating mode and card status. The presets are numbered 1-8.



Menu	Comment
Save and recall Presets 1-8	Rotate the [SCROLL/ADJ]. control to show Preset Menu selected. Press ENTER and rotate Scroll/Adj. to select preset location. Press ENTER to select and rotate [SCROLL/ADJ]. to select Recall or Save Recall. Press ENTER to action.
Enable GPI control of presets	Selecting ENABLE allows the recall of previously saved user configurations via GPI inputs 1-4.

Note: Care should be taken when storing presets that the desired configuration is not changed by any external input prior to saving.

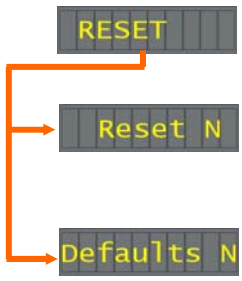
Although primarily for saving user configurations, the preset locations also contain the seven preset aspect ratios which can be called via the GPI inputs. Calling the first seven locations, until overwritten by a user configuration will load the seven available aspect ratios in the order shown. Once overwritten by a user-stored configuration the GPI aspect ratio selection can be restored by performing a factory reset.

Note: A factory reset will erase all user-stored presets.

GPI Preset	Bit 3	Bit 2	Bit 1	Initial Aspect ratio
1	0	0	0	Full screen 16:9 to 4:3
2	0	0	1	Full screen 4:3 to 16:9
3	0	1	0	16:9 - 14:9 Letterbox
4	0	1	1	4:3 - 14.9 Pillarbox
5	1	0	0	16:9 to 4:3 Letterbox
6	1	0	1	4:3 to 16:9 Pillarbox
7	1	1	0	No conversion
8	1	1	1	No selection

Recalling factory default settings (Reset)

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



Menu	Comment
Reset	Press ENTER to access Reset menu. Rotate the [SCROLL/ADJ] control to select Yes, press ENTER to action reset. Display will confirm reset done.
Default	Press ENTER to access Defaults menu. Rotate the [SCROLL/ADJ] control to select Yes, press ENTER to action reset. Display will confirm reset done.

Note: Factory reset will erase all saved preset configurations. To preserve contents of the preset locations use the Defaults command.

Parameter	Default value
Aspect Ratio	No Conversion
Detail	0
Gains	100%
Offsets	0
Crops	0
Pass Closed Caption	Off
Blank Wide Screen Signalling	Off
Presets	Erased (factory reset only)
GPI Enable	Not enabled

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 key 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 ARC-10MC

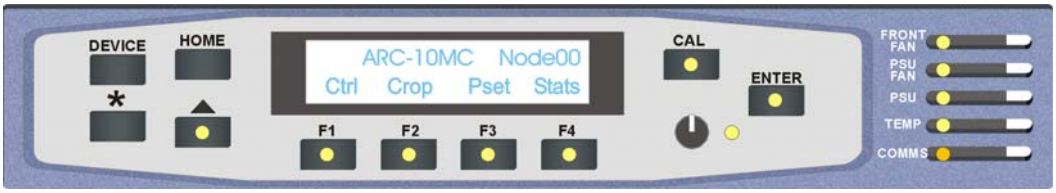
To select a particular card in a frame, press the DEVICE key to go to the Device menu. Note: There may be a delay whilst the frame is interrogated during which time the 'No cards Found' could be displayed.

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 ARC-10MC has been selected.



The ARC-10MC 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 ARC-10MC 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.

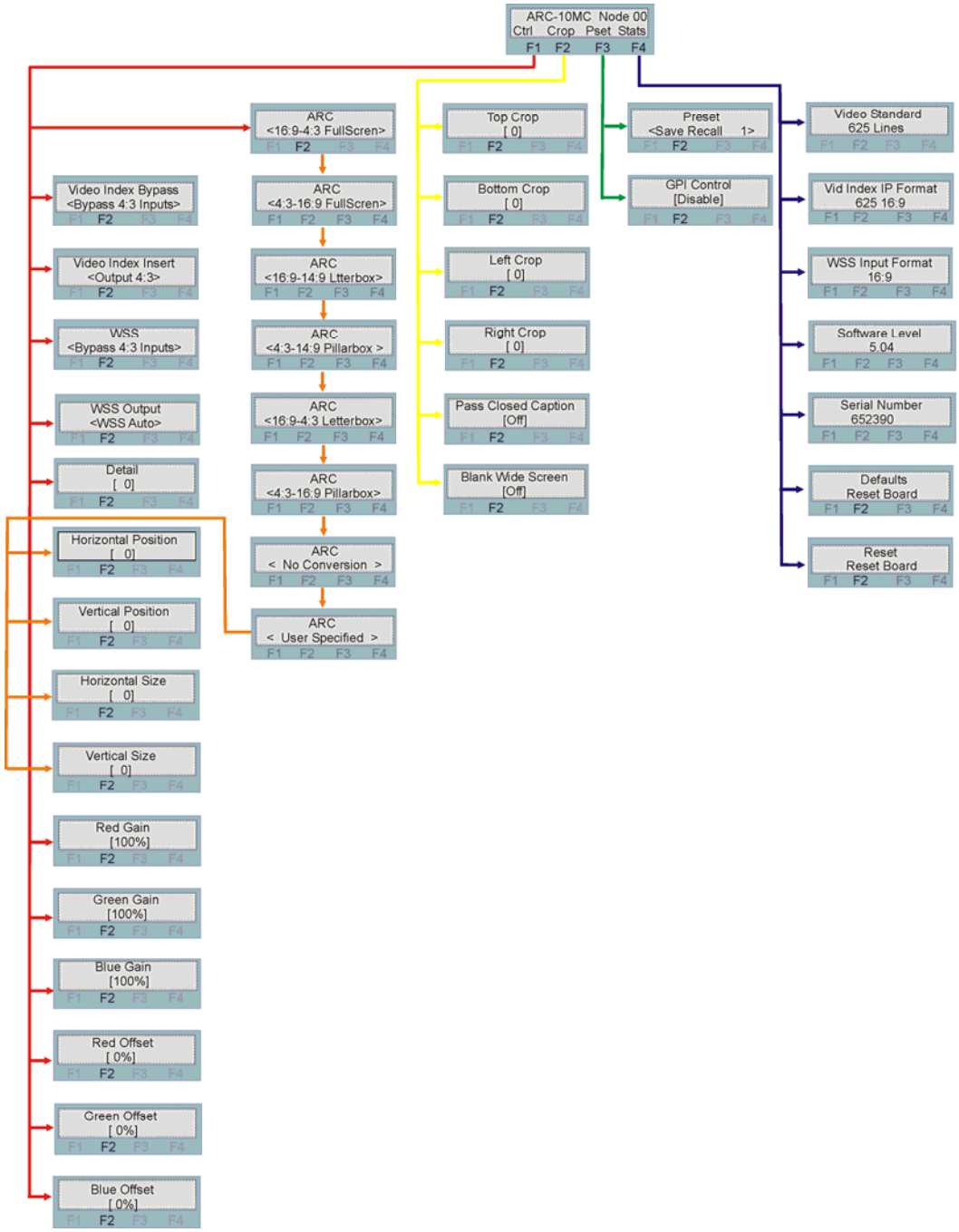
The main top-level menus for the ARC-10MC module are obtained by pressing the F1-F4 keys from the Home menu. Menu keys are illuminated when active and when further menus are available. The top-level menus are:

- Ctrl (Aspect ratio, detail, gain controls and factory reset) – press F1
- Crop (Picture crop, closed caption and WSS) – press F2
- Pset (User presets) – 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, <immediate>, [press ENTER to fix the new value].

The following chart shows the available ARC-10MC menus. The actual menus available may vary slightly as software is updated.

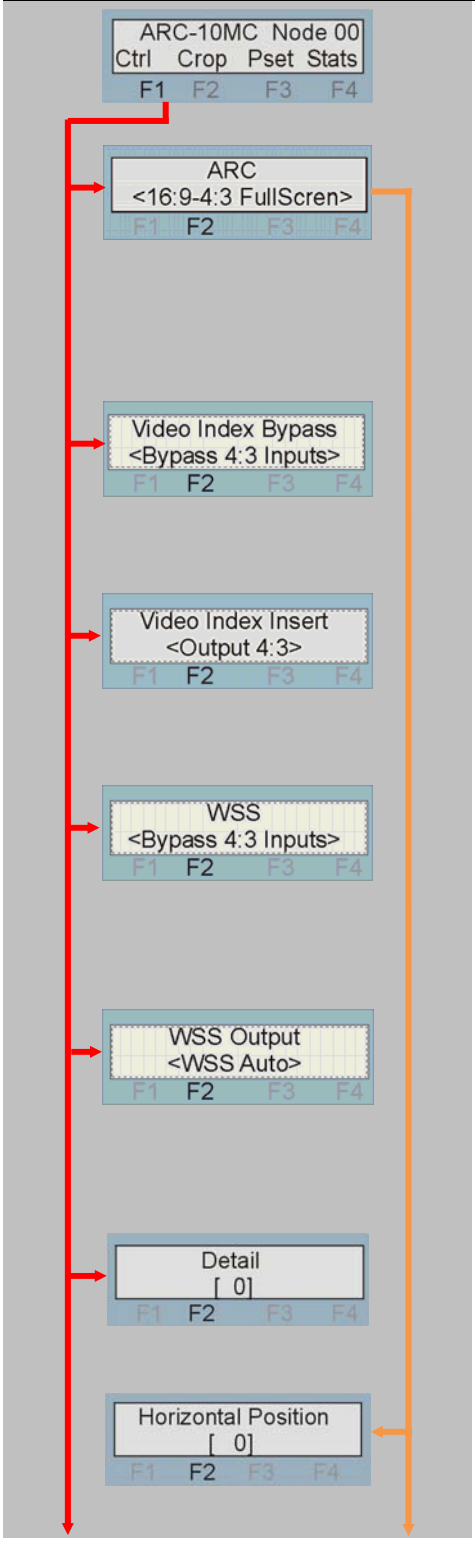
ARC-10MC Menu Structure

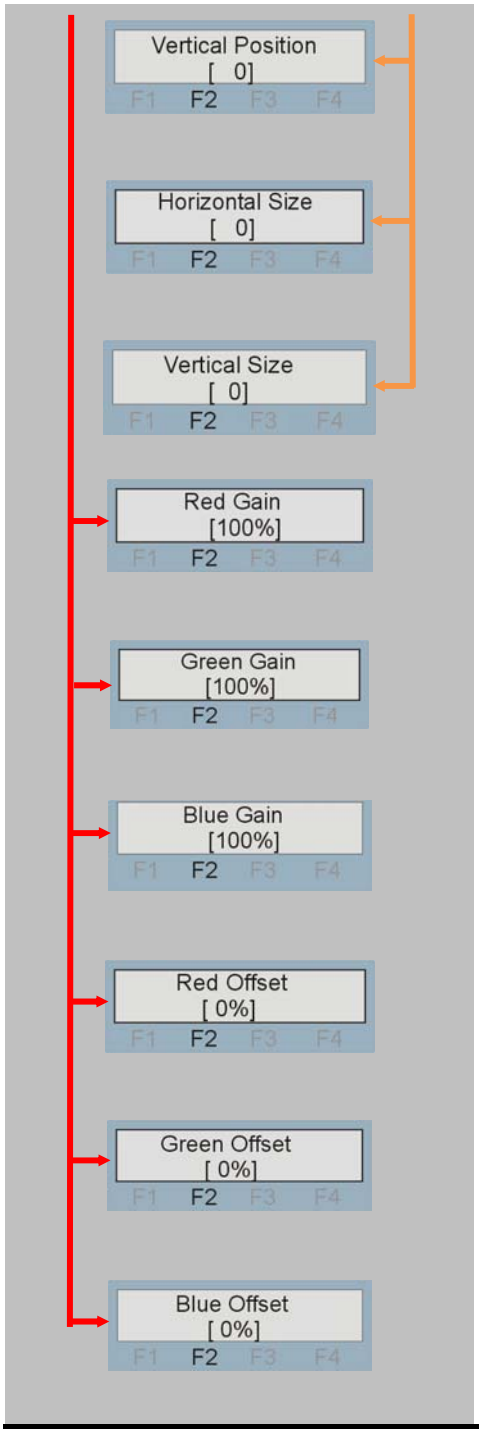


Note: The position and size controls are visible only when the User specified ARC control is selected.

Video Control Menu (ARC, WSS and Video index)

Aspect ratio, video indexing, detail enhancement, gains and custom ratios are all controlled from this menu.

ARC-10MC Video control menu	Description
	From the Home menu, press F1 to select the Control menu, which is then traversed by rotating the shaft control. Rotate shaft encoder to select the Aspect Ratio. Press F2 to select to change the selection. Rotate shaft encoder to make a new selection. ***16:9-4:3 Full Screen, 4:3-16.9 Full Screen, 16:9-14:9Letterbox, 4:3-14:9 Pillarbox, 16:9-4:3 Letterbox, 4:3-16:9 Pillarbox, No Conversion, User Specified.*** Press ENTER to accept the new selection. Rotate shaft encoder to select the Video Index Bypass control. Press F2 to select to change the selection. Rotate shaft encoder to make a new selection. ***Input Not Used. Bypass 4:3 Inputs, Bypass 16:9 Inputs.*** Press ENTER to accept the new selection. Rotate shaft encoder to select the Video Index Insert control. Press F2 to select to change the selection. Rotate shaft encoder to make a new selection. ***Pass, Output 4:3, Output 16:9, Blank.*** Press ENTER to accept the new selection. Rotate shaft encoder to select the Wide Screen Signalling control. Press F2 to select to change the selection. Rotate shaft encoder to make a new selection. ***Input Not Used. Bypass 4:3 Inputs, Bypass 16:9 Inputs.*** Press ENTER to accept the new selection. Rotate shaft encoder to select the WSS Output Insert control. Press F2 to select to change the selection. Rotate shaft encoder to make a new selection. ***WSS Auto, WSS Blank, WSS Bypass, WSS Full 4:3, WSS Box 14:9, WSS Box 16:9, WSS Full 16:9.*** Press ENTER to accept the new selection. Rotate shaft encoder to select the Detail control. Press F2 to select to change the value. Rotate shaft encoder to set the new value **(0-50).** Press ENTER to accept the new value. Rotate shaft encoder to select Horizontal Position. Press F2 to select to change the value. Rotate shaft encoder to select value (± 200 samples). Press ENTER to accept the new value.



Rotate shaft encoder to select Vertical Position.
Press F2 to select to change the value.
Rotate shaft encoder to select value (± 200 lines).
Press ENTER to accept the new value.

Rotate shaft encoder to select Horizontal Size.
Press F2 to select to change the value.
Rotate shaft encoder to select value (± 200 samples).
Press ENTER to accept the new value.

Rotate shaft encoder to select Vertical Size.
Press F2 to select to change the value.
Rotate shaft encoder to select value (± 200 lines).
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 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 Offset.
Press F2 to select to change the value.
Rotate shaft encoder to select value (0 ± 20%).
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 (0 ± 20%).
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 (0 ± 20%).
Press ENTER to accept the new value.

Note: At all times the output line rate will follow the input line rate, i.e. 50Hz, 59.94Hz.
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.

The size and position controls are only visible when the User Specified control in the ARC menu has been selected.

Video Index

If video indexing information is present on its input video, the ARC-10MC if enabled can use this information to determine and report the aspect ratio of the incoming video. This then gives ARC10-MC the ability to choose between automatically converting the incoming video to the selected output aspect ratio, and bypassing if the input is the same as the selected output.

Video indexing can also be inserted into the output video for use by downstream equipment. Output video indexing is enabled by selecting the required output aspect ratio. Although in most applications the output selection will mirror the conversion setting the output video index control remains independent from the conversion setting so that a user specified aspect ratio can have assigned the most appropriate ratio information. It is also possible to either insert blank video index data or pass the input data to the output unchanged.

Wide Screen Signalling

Similarly the ARC-10MC can also use wide screen signalling to determine the aspect ratio of the input video. Again the ARC-10MC will convert or bypass depending on the various selections. WSS information as with video index can be placed on the output video.

Note: WSS and Video Index controls are completely independent. This will allow insertion of both types of date onto the video output. Should WSS and Video indexing both be present on the input video preference will be given to Video indexing.

Detail Enhancement

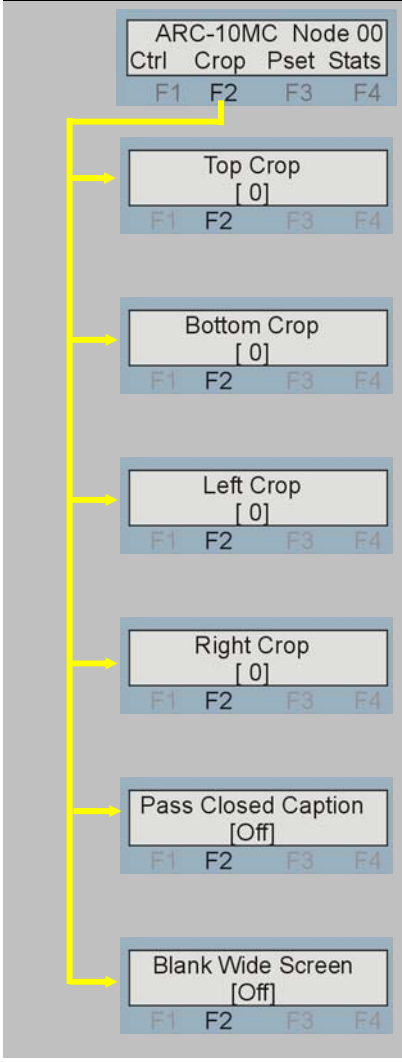
The detail control sets the amount of enhancement applied to the picture. The adjustable detail enhancement feature allows image sharpening. Fine edge detail processing additionally ensures that the picture remains clear and sharp without creating unpleasant jagged edges.

Picture Crop

From the Home menu press F2 then SCROLL to access the picture crop options along with the closed caption and wide screen signalling controls. These controls act to crop the input video so their action will be affected by the aspect ratio selection. Up to 31 lines of vertical crop both top and bottom are available and up to 31 pixels horizontally both left and right.

When an aspect ratio is selected which results in a vertical shortening of the picture any NTSC closed caption information would become visible and any horizontal scaling would corrupt this information. The closed caption control if selected will blank lines 20 and 21 of the input video to remove this information from the visible picture and reinsert the information in lines 20-21 of the output video so preserving its integrity.

PAL wide screen signalling on line 23 may also be selected for blanking.

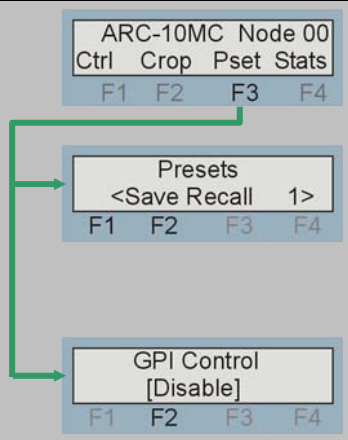
ARC-10MC crop menu	Description
	From the Home menu, press F2 to select the Crop menu, which is then traversed by rotating the shaft control. Rotate shaft encoder to select the Top Crop control. Press F2 to select to change the value. Rotate shaft encoder to set the new value **(0-31 lines).** Press ENTER to accept the new value. Rotate shaft encoder to select the Bottom Crop control. Press F2 to select to change the value. Rotate shaft encoder to set the new value **(0-31 lines).** Press ENTER to accept the new value. Rotate shaft encoder to select the Left Crop control. Press F2 to select to change the value. Rotate shaft encoder to set the new value **(0-31 samples).** Press ENTER to accept the new value. Rotate shaft encoder to select the Right Crop control. Press F2 to select to change the value. Rotate shaft encoder to set the new value **(0-31 samples).** Press ENTER to accept the new value. Rotate shaft encoder to select Pass Closed Caption. Press F2 to select to change the attribute. Rotate shaft encoder to set. ***On, Off, N/A*** = not NTSC. Press ENTER to accept the new value. Rotate shaft encoder to select Blank wide screen. Press F2 to select to change the attribute. Rotate shaft encoder to set ***On, Off.*** Press ENTER to accept the new value.

Presets Menu

Up to eight set-ups may be stored for the board and recalled either from the board control, active front panel, Statesman or through the use of external GPIs. The presets will store board setup data including operating mode and board configuration. The presets are numbered 1-8.

The GPI lines used to recall user saved presets can be disabled to prevent inadvertent triggering whilst under active control by Statesman or a front panel.

Note: Care should be taken when storing presets that the desired configuration is not changed by any external input prior to saving.

ARC-10MC presets menu	Description
	From the Home menu, press F3 to select the Preset menu, which is then traversed by rotating the shaft control. Rotate shaft encoder to select Presets. Press F1 or F2 to initiate selection. Rotate shaft encoder to select the preset location. Press F1 to save current configuration. Press F2 to recall stored configuration. Rotate shaft encoder to select GPI Control. Press F2 to select to change selection. Rotate shaft encoder to select enable or disable. Press ENTER to accept the new selection.

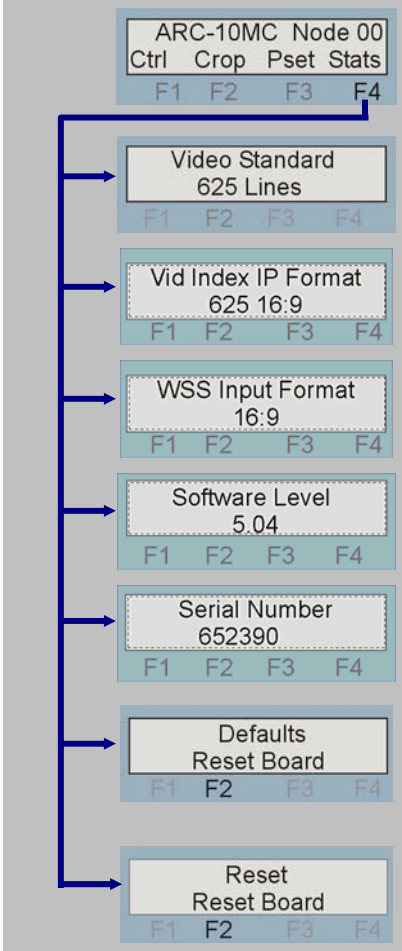
Although primarily used for saving user configurations, the preset locations also contain the seven preset aspect ratios which can be called via the GPI inputs. Calling the first seven locations will load the seven available aspect ratios in the order shown until overwritten by user configurations. Once overwritten by a user-stored configuration GPI aspect ratio selection can be restored by performing a factory reset.

Note: A factory reset will erase all user-stored presets.

GPI Preset	Bit 3	Bit 2	Bit 1	Initial Aspect ratio
1	0	0	0	Full screen 16:9 to 4:3
2	0	0	1	Full screen 4:3 to 16:9
3	0	1	0	16:9 - 14:9 Letterbox
4	0	1	1	4:3 - 14.9 Pillarbox
5	1	0	0	16:9 to 4:3 Letterbox
6	1	0	1	4:3 to 16:9 Pillarbox
7	1	1	0	No conversion
8	1	1	1	No selection

Status

The Status menu contains information about the board and its video input. This includes the electronically stored board serial number, software version and factory reset controls.

ARC-10MC status menu	Description
	From the Home menu, press F4 to select the status menu, which is then traversed by rotating the shaft control. Rotate the shaft control to view the video input standard and line rate. ***525 Lines, 625 Lines, Unknown Input, No Valid Input*** Rotate the shaft control to view the video index input status. ***Absent, Bypassed ,525 4:3, 625 4:3, 525 16:9, 625 16:9, Unknown*** Rotate the shaft control to view the video index input status. ***4:3, 16:9, Unknown, 14:9*** Rotate the shaft control to view the currently fitted software version. Rotate the shaft control to view the electronically stored board serial number. Rotate shaft encoder to select Defaults. Press F2 to select. ***Are you sure? Y (F3)*** Press F3 to confirm reset. Rotate shaft encoder to select Defaults. Press F2 to select. ***Are you sure? Y (F3)*** Press F3 to confirm reset.

Reset (factory defaults)

Performing a factory reset will return all values to their default levels and erase all stored presets. Default aspect ratio control by GPI inputs will be restored. If user stored presets require preserving use the Default control which will return all values to their default levels but leave user stored presets intact.

Parameter	Default value
Aspect Ratio	No conversion
Detail, Offsets and Crop	0
Gains	100%
Pass Closed Caption	Off
Blank Wide Screen Signalling	Off
Presets	Erased (factory reset only)
GPI Enable	Not enabled
WSS Input Bypass	WSS not used
WSS Insert	Auto

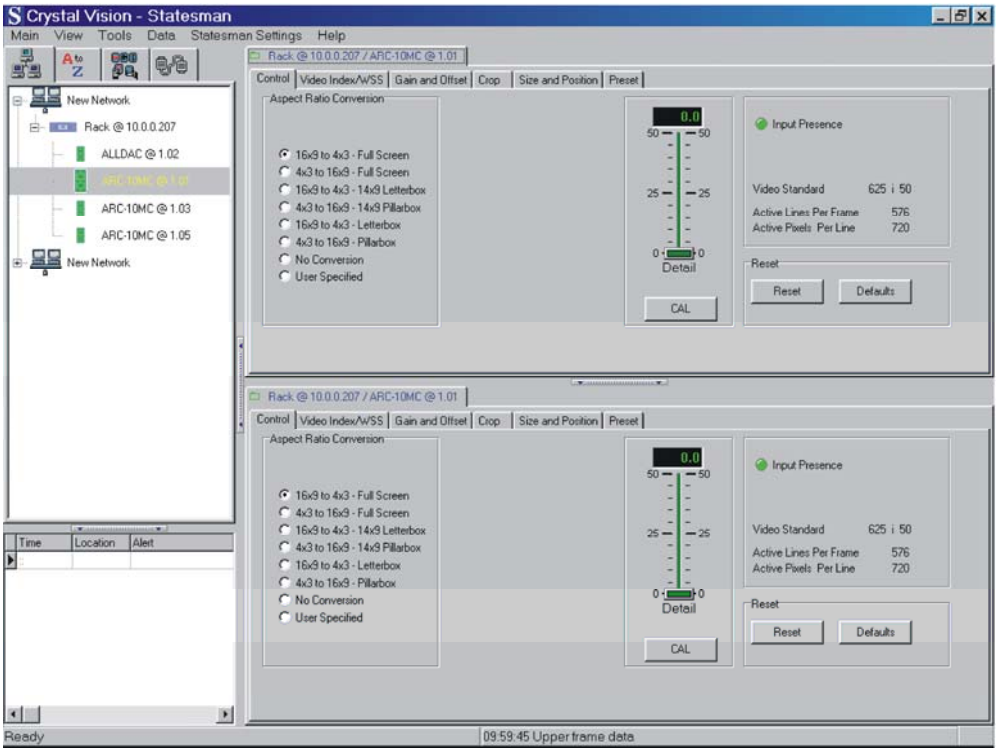
5 Statesman

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.



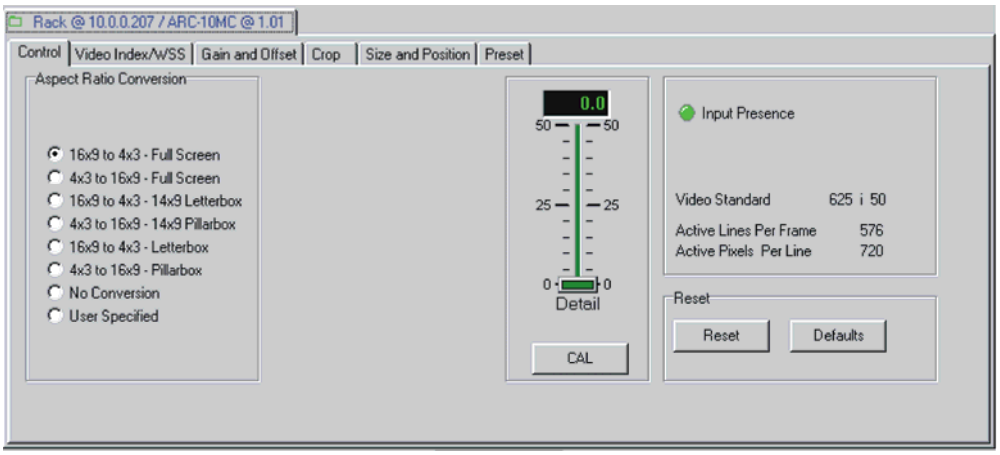
The Statesman main application window

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.

ARC-10MC has four Statesman menu tabs, one that provides status information and allows configuration of the Aspect ratio conversion and detail enhancement, a second for RGB gain and dc offset, the third contains the crop and closed caption/wide screen controls, and the fourth for storing and recalling user presets.

Control

The control pane is divided into four sections: Aspect Ratio Conversion, Detail Enhancement, Input Status and Factory Reset.



ARC-10MC Control menu

Aspect Ratio Conversion

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. Selecting User Specified will enable the size and position controls which allow the setting of custom aspect ratios.

Detail Enhancement

The detail control sets the amount of enhancement applied to the 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.

The enhancement slider can be affected 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.

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.

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)

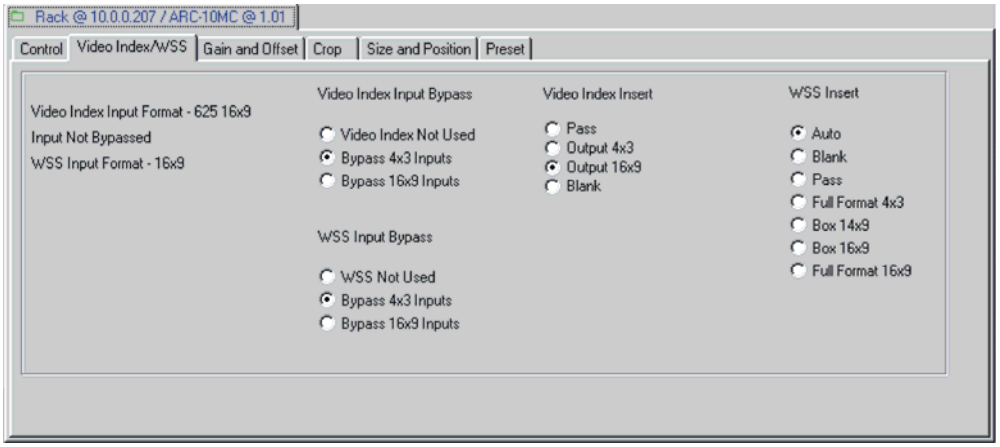
Performing a factory reset will return all values to their default levels and erase all stored presets. Default aspect ratio control by GPI inputs will be restored. If user stored presets

require preserving use the Default control which will return all values to their default levels but leave user stored presets intact.

Parameter	Default value
Aspect Ratio	No conversion
Detail, Offsets and Crop	0
Gains	100%
Pass Closed Caption	Off
Blank Wide Screen Signalling	Off
Presets	Erased (factory reset only)
GPI Enable	Not enabled
WSS Input Bypass	WSS not used
WSS Insert	Auto

Video index and wide screen signalling

The Video Index and Wide Screen Signalling menu contains three groups consisting of status, input selection and output insertion.



ARC-10MC Video index and Wide Screen Signalling menu

Video Index

If video indexing information is present on its input video, the ARC-10MC if enabled can use this information to determine and report the aspect ratio of the incoming video. This then gives ARC10-MC the ability to choose between automatically converting the incoming video to the selected output aspect ratio and bypassing if the input is the same as the selected output. Check the require bypass radio button to enable video index decoding.

Video indexing can also be inserted in the output video for use by downstream equipment. Output video indexing is enabled by checking the selected video index output radio button. Although in most applications the output selection will mirror the conversion setting the output video index control remains independent from the conversion setting so that a user specified aspect ratio can have assigned the most appropriate ratio information. It is also possible to either insert blank video index data or pass the input data to the output unchanged.

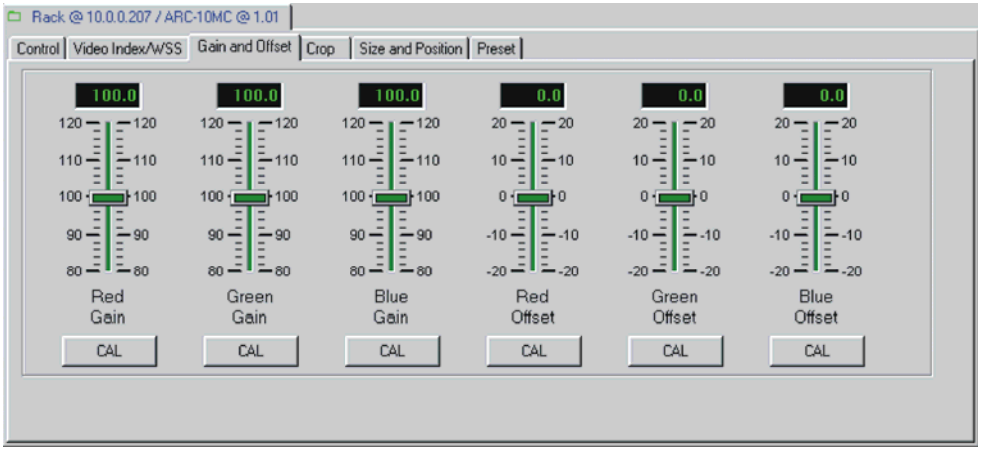
Wide Screen Signalling

Similarly the ARC-10MC can also use wide screen signalling to determine the aspect ratio of the input video. Again the ARC-10MC will convert or bypass depending on the various selections. WSS information as with video index can be placed on the output video.

Note: WSS and Video Index controls are completely independent. This will allow insertion of both types of data onto the video output. Should WSS and Video indexing both be present on the input video preference will be given to Video indexing.

Gains and Offsets

RGB picture level controls gain and dc offset allows control of the video image brightness, contrast and colour.



ARC-10MC Gain and Offset menu

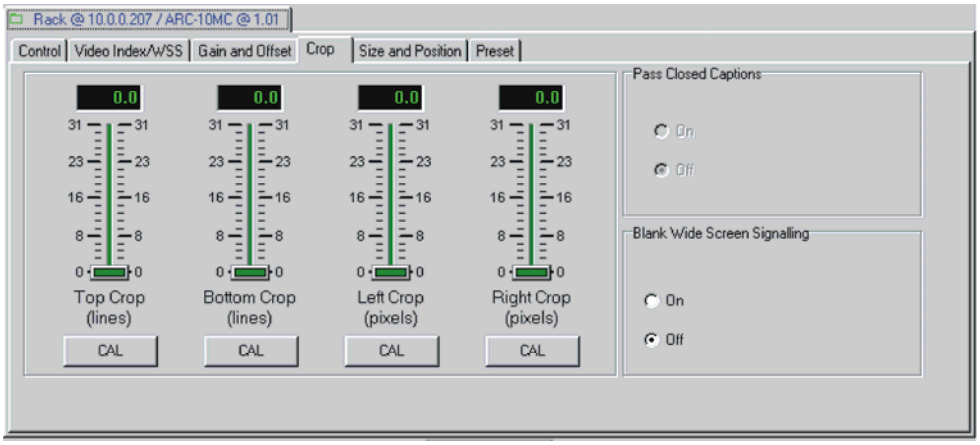
The required value may be typed directly into the numeric display or if the cursor is placed over the slider left clicking with the mouse will cause the slider bar to jump directly to that value.

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

Picture Crop

The Crop tab gives access to the picture crop options along with the closed caption and wide screen signalling controls. These controls act to crop the input video so their action will be affected by the aspect ratio selection. Up to 31 lines of vertical crop both top and bottom are available and up to 31 pixels horizontally both left and right. Adjust the appropriate slider control to crop the top, bottom, left side and right side of the picture. Pressing the cal button under each slide control will return that slider to 0 (no crop).

When an aspect ratio is selected which results in a vertical shortening of the picture any NTSC closed caption information would become visible and any horizontal scaling would corrupt this information.



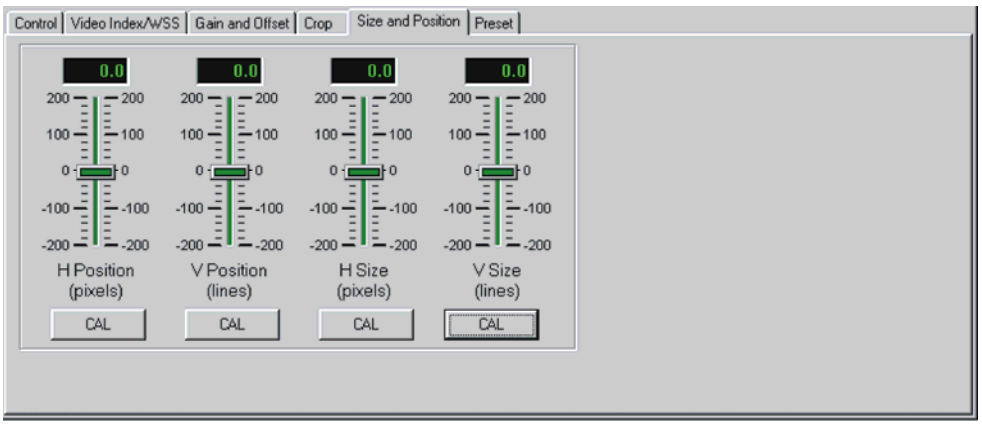
ARC-10MC Crop menu

The closed caption control if selected will blank lines 20 and 21 of the input video to remove this information from the visible picture and reinsert the information in lines 20-21 of the output video so preserving its integrity.

PAL wide screen signalling on line 23 may also be selected for blanking.

Size and Position

When user specified control is selected these sliders set the height, width and position of the output picture. When user specified control is not selected these controls with be inactive and their slider T bars greyed out. A previously made selection will remain for later activation.



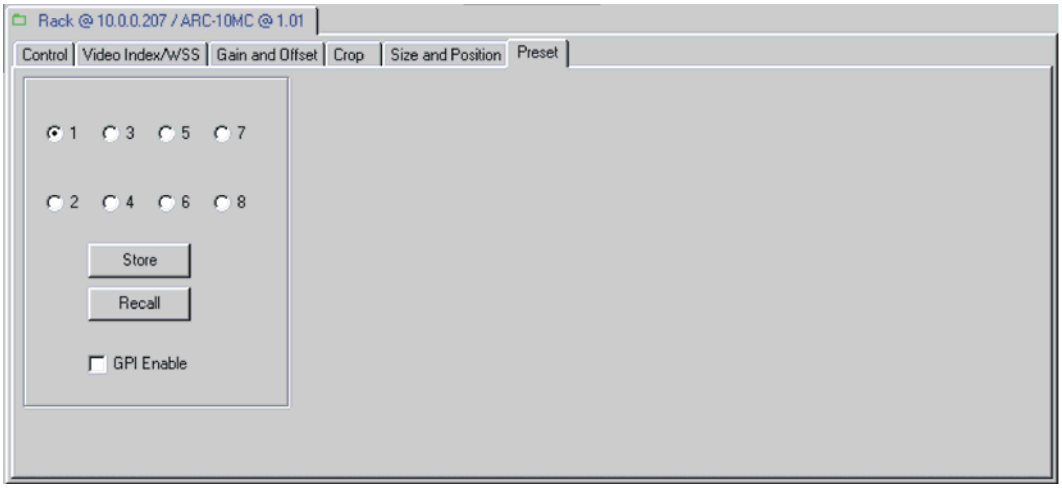
ARC-10MC Size and Position menu

Presets

Up to eight board configurations may be stored as presets and recalled either from the board control, active front panel, Statesman or through the use of external GPIs. The presets will store board setup data including operating mode and board configuration. The presets are numbered 1-8. Select a preset location and then store or recall.

The GPI lines used to recall user saved presets can be disabled to prevent inadvertent triggering whilst under active control by Statesman or a front panel.

Note: Care should be taken when storing presets that the desired configuration is not changed by any external input prior to saving.



ARC-10MC Presets menu

Although primarily used for saving user configurations the preset locations also contain the seven fixed aspect ratio conversions which can be called via the GPI inputs. Calling the first seven locations will load the seven available aspect ratios in the order shown until overwritten by user configurations. Once overwritten by a user-stored configuration GPI aspect ratio selection can be restored by performing a factory reset.

Note: A factory reset will erase all user-stored presets.

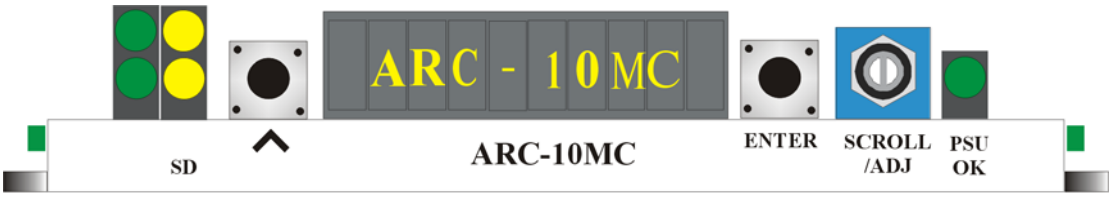
GPI Preset	Bit 3	Bit 2	Bit 1	Initial Aspect ratio
1	0	0	0	Full screen 16:9 to 4:3
2	0	0	1	Full screen 4:3 to 16:9
3	0	1	0	Compromise 14:9 to 4:3
4	0	1	1	Compromise 4:3 to 14.9
5	1	0	0	Full image 16:9 to 4:3
6	1	0	1	Full image 4:3 to 16:9
7	1	1	0	Anamorphic
8	1	1	1	No selection

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	Colour	Function when ON	Function when Off
	Green	No function	
	Green	No function	
	Yellow	No function	
SD	Yellow	Input video present	No valid input video present
PSU OK	Green	Good power supply (PSU) rails	One or more of the monitor supplies is out of specification

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 266mm module with DIN 41612 connector
Weight	225g
Power consumption	8 Watts

Inputs

Video SDI input	SDI 270Mbit to EBU 3267-E & SMPTE 259M
Cable equalisation	>200m Belden 8281 or equivalent
Input return loss	> -15dB 50MHz-1.5GHz
Line selection	Auto 625/525 line selection
Blanking	Pass through of ancillary data and embedded audio
Video index	Aspect ratio, SMPTE RP186#
Wide Screen Signaling (WSS)	As per ETSI EN 300 294 V1.4.1

Outputs

Video SDI outputs	4 reclocked SDI outputs 270Mb/s SMPTE 259M (2 x scaler outputs and 2 x input loop-throughs)
Jitter	Typically 0.2UI @ 1kHz.
Wide Screen Signaling (WSS)	WSS can be inserted on the output

Horizontal and Vertical picture conversions	Both horizontal and vertical conversion
Delay through board	1 Frame
Picture processing	10 bit active picture only
GPI input	Recall of user stored presets or aspect ratio selection
GPI output	Input missing
Local control	Conversion set by card edge menu
Remote control	Front panel control from frame active panel and remote panel Statesman allows control from any PC on a network