Flip

Digital scan reverser

USER MANUAL

Crystal Vision

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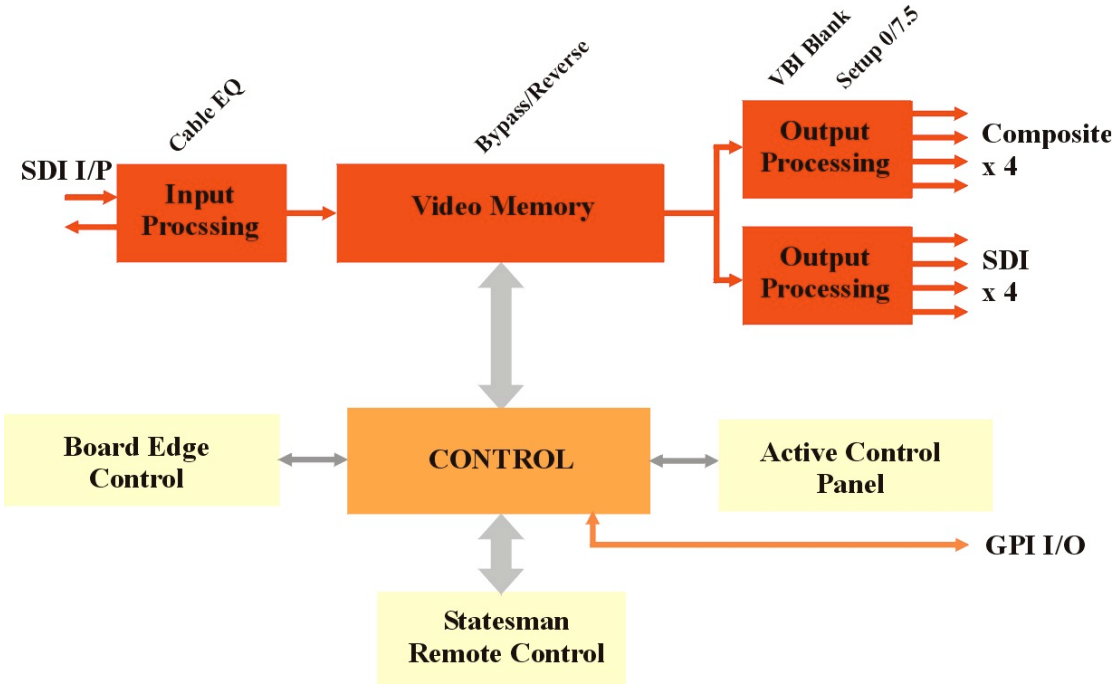
1 Introduction

Flip is an SDI scan reverser - it provides a mirror image of the active picture area while passing the rest of the video stream (VBI and HANC space) unchanged.

Flip has applications wherever a simple mirror image effect is required such as in virtual studio or for weather studio talent feedback monitoring.



Flip 10-bit active picture reverser

There are up to four SDI outputs and up to four composite video outputs and a SDI loop-through output.

The serial digital output is full 10-bit quality and the serial digital delay through the board is 55us.

Line 23 (625-line) and line 21 (525 line) are passed unchanged to allow Wide-Screen signalling and close caption data through.

The main features are as follows:

- Allows active picture to be laterally reversed whilst passing ancillary data
- 10-bit SDI digital processing
- 4 x SDI and 1 SDI loop-through output
- 4 x 8 bit composite video monitoring output
- Flexible control

Controls and indications

Control options include board edge, active frame front panel, and the Statesman PC Control System.

The controls are:

- Reverse/bypass - affects serial and composite outputs
- VBI blank/unblank - affects composite output only
- Setup on/off - affects composite output in 525-line operation only

The indications are:

- Input present
- Detected video standard

Frame and rear module options

Flip is based on a 100mm x 266mm module, which fits in the three standard frames and can be integrated with any boards from the company's full product range. It uses the RM01, RM02 and RM18 rear connectors.

2 Installing 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 the Flip with the benefit of see-at-a-glance status monitoring. Most functions can be accessed from Statesman menus.

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

2.1 Installation

Minimum pre-requisites:

- A PC running Windows 98, NT4 with SP 5 or higher Windows 2000 or Windows XP
- A parallel port dongle supplied with the Statesman software package
- An RS422 serial connection from the host PC to the Remote 2 connector on an FR1AV or FR2AV Crystal Vision frame with at least one Flip module and/or other Statesman compatible module
- An active control panel MUST be fitted to the frame with version 1.50 or above firmware
- An optional RS422 to RS232 converter if the PC has no RS422 ports

Installing Statesman

- Refer to the readme and/or help file on the CD before proceeding
- To view all application windows, set graphics resolution to at least 1024 x 768
- Remove any previous version of the Statesman software using the Add/Remove Programs application in the Windows Control Panel
- Ensure that the Statesman dongle is fitted to the parallel port of the host PC
- Insert the Statesman CD and the installation should start immediately – if it does not, run the setup.exe file on the CD
- Obey any installation program prompts and restart the PC when prompted

Running Statesman for the first time

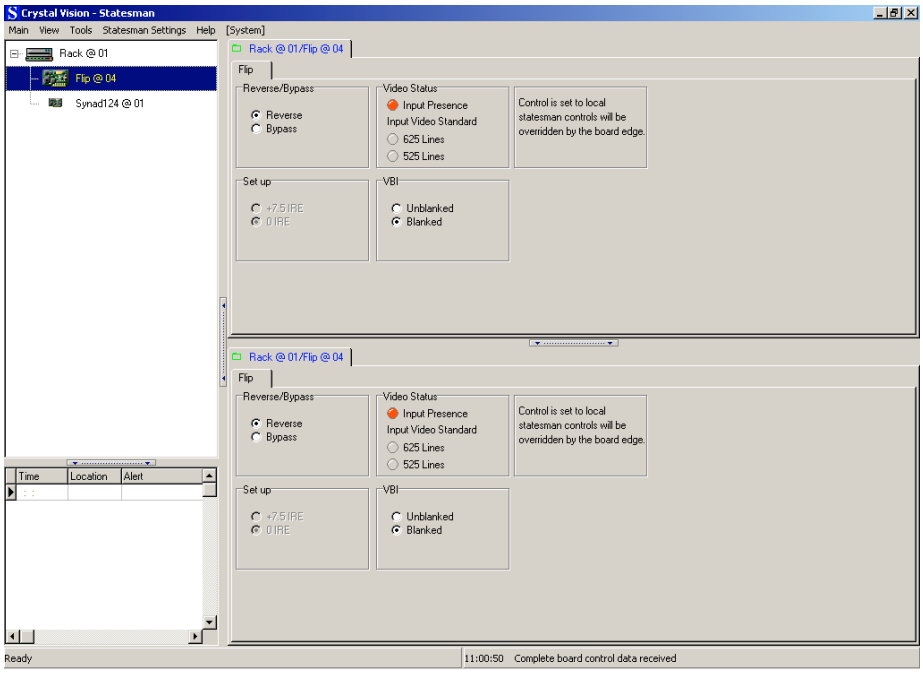
The Statesman PC Control System may be run from the Crystal Vision programs folder via the Start menu or by double-clicking on the Statesman.exe file in the installed program directory (default C: Program Files\Crystal Vision).

When the program runs it should automatically detect any statesman compatible modules in the connected frame or frames and display them in the main application left hand explorer-style window.

Open any frame by clicking on the '+' sign or by double clicking on a frame. Installed modules should be shown with module icons. Frame and module icons can be named as desired by right-clicking or using the edit menu.

2.2 Statesman operation

The initial view will show an explorer style view of the connected frames and modules. Double-click on a module to display the main application control panes.

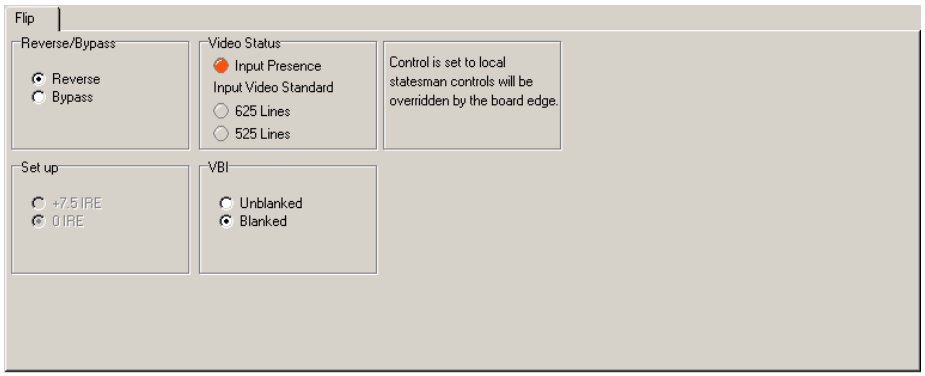


Statesman main application window

The two control panes may display different menus for the same card, or controls for different cards. Click on the horizontal button-bar between the two panes to close the lower plane or drag the button to vary the size of the panes.

Flip controls

Remote control MUST be enabled at the board edge with DIL switch lever 2 in the DOWN position to enable Statesman control.



If control is set to LOCAL (DIL switch lever 2 in the UP position, Statesman settings can be overridden by board edge controls.

Flipping the active picture

The active picture may be bypassed or flipped from left to right.

Reverse/Bypass	Notes
Reverse	The active picture only is reversed from left to right
Bypass	The SDI input is passed unaltered to the SDI and composite outputs

VBI and HANC data are not affected by the lateral inversion of the picture content and are always passed to the card outputs normally.

Line 23 (625-line) and line 21 (525 line) are passed unchanged to allow Wide-Screen signalling and close caption data through.

Using the analogue video monitor output

Data in the VBI (Vertical Blanking Interval) of the analogue composite monitor output can be blanked or passed and 7.5% IRE setup may be applied when a 525 standard SDI signal is used (composite monitor output will be NTSC).

Setup

When a 525 SDI input signal is used, the analogue NTSC composite output can have 7.5% IRE setup (pedestal) applied by checking the +7.5% box.

0/+7.5% IRE	Notes
0	No setup applied to NTSC composite output
+7.5%	7.5% black level lift or pedestal applied to NTSC composite output.

Setup has no effect on the composite output when a 625 SDI input signal is present.

Blanking the VBI signal

The VBI content of the analogue composite monitor output may be banked at black level or passed unchanged.

VBI	Notes
Unblanked	No VBI data blanking applied to composite output
Blanked	VBI data in the composite output is blanked at black

VBI blanking has no effect on the SDI outputs.

Input status

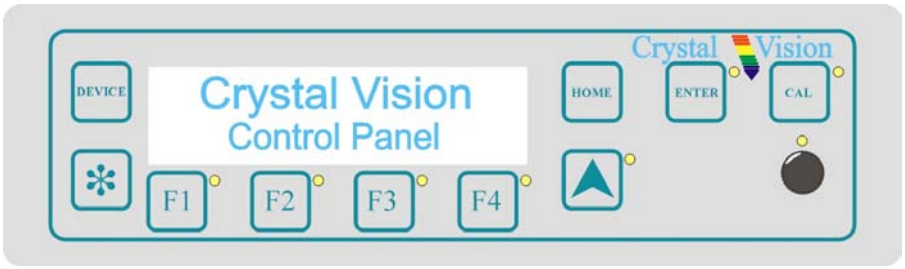
The status of the incoming signal is shown in the Video Status area of the Flip control window.

Video status	Notes
Input presence	Green when valid SDI input detected
625 lines	Yellow when 625 lines SDI input detected
525 lines	Yellow when 525 lines SDI input detected

Input video status is also shown at the board edge.

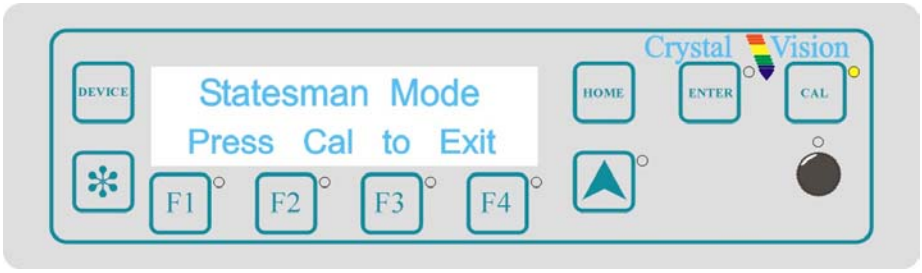
3 Using the active control panel

The Crystal Vision active control panel is available as an integral part of the FP2-LF front door for the FR2AV 2U frame, the FR1AV frame, and the DTBAV desktop box or as a remote panel. Only one control panel can be connected to any frame, although one panel can control two frames.



The Crystal Vision control panel

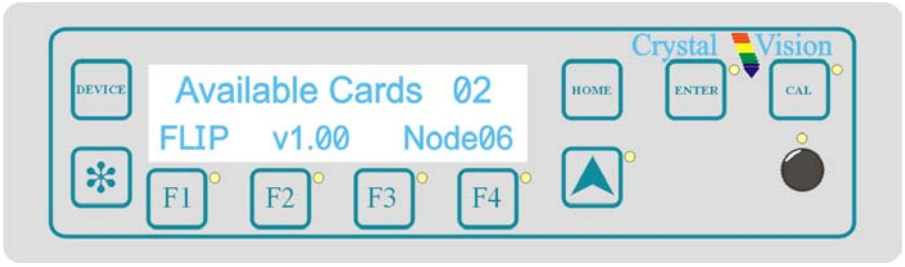
At power up, the two line 20-character screen will display 'Crystal Vision' followed by the firmware version number for the control panel. If the control panel firmware has been updated for Statesman control, Statesman Mode will be entered and the message, 'Press CAL to Exit' will be displayed.



Statesman mode is entered by default

To continue with active control panel operation or configurations press the 'CAL' button once. A second press of the 'CAL' button will return to Statesman control.

Each module in a frame is polled during control panel initialisation. Modules that have completed their own initialisation will respond with a node address.



Control panel showing available cards

To select a particular module in a frame, press the DEVICE key. The top line of the display will change to show 'Available Cards X', where X is the number of cards that have responded so far to the polling request. Rotating the shaft encoder will cause the bottom row of the display to cycle through the successfully polled cards by name and node number.

Flip home menu

When the Flip module is selected press the ENTER key to access that module's HOME menu. Then press the HOME menu to initialise menu access.

Note: In the 2U frame the node address is calculated in one of two ways:
*slot number minus 1 – giving a range of 0 – 11 in frame #1, OR
*slot number plus fifteen – giving a range of 16 – 27 in frame #2
Two ranges allow one control panel to control two frames.
1 U frame address range is 0-5 OR 16-21.
Please refer to the frame manual for further information on node addresses.

3.1 Navigating the display

The control panel keys are assigned the following functions when controlling Flip:

- DEVICE – selects a card or module to control
- Asterisk – no function assigned
- F1 to F4 – soft keys, function assigned within each menu
- HOME – moves the display to the home menu
- ENTER – press to enable or disable data entry mode or accept device selection
- CAL – update display or enter/leave Statesman mode from Device menu
- Upward arrow – used to move up the menu structure
- Rotary control – shaft encoder used to scroll through sub-menus or assign value to parameter

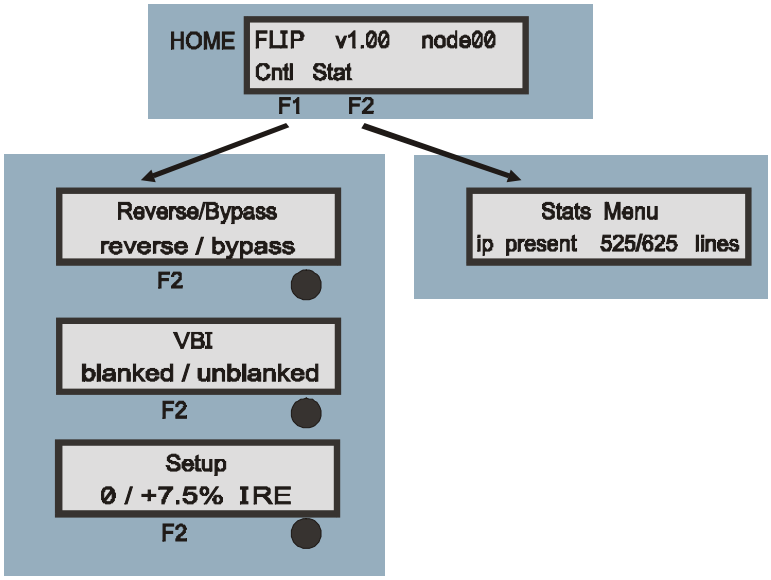
Sub-menus and data entry:

The shaft encoder is used to scroll through available sub-menus and the ENTER key acts as a guard key. Press the ENTER key to enter data-entry mode, press it again to leave data-entry mode and continue navigating through the menu system.

3.2 The Flip active panel menu structure

The main top-level menus for the Flip module are obtained by pressing the F1 or F2 keys from the HOME menu.

The following chart shows the available menus.



The Flip menu tree

Note: If the display shows 'Remote Ctrl Disabled', ensure that the card-edge DIL switch lever number 2 is in the DOWN position to enable active panel control.

Accessing sub-menus

Use the function keys initially to access the top menus. Rotating the shaft encoder then cycles through the sub-menus provided.

If the shaft encoder fails to access further menus check that the HOME key has been pressed to initialise menu access.

Changing assigned parameters

To change an assigned parameter press the ENTER key. This will enter parameter mode. The current parameter assigned will then appear within square brackets i.e. [bypass]. Rotate the shaft encoder to change the parameter i.e. [reverse].

Press ENTER again to leave parameter mode and return to sub-menu mode.

Tip: Function key F2 may be used to change assigned parameters instead of the shaft encoder in parameter mode.

Using Flip control menus

Press F1 from the home menu to bring up the Control menu.

This menu provides access to the following:

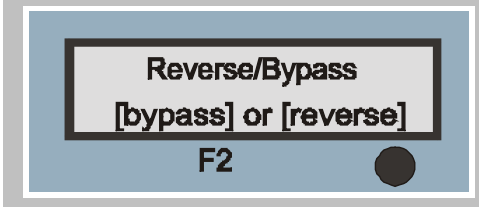
- Bypass/Reverse – mirror image the active picture
- VBI – blank the VBI content of the NTSC/PAL composite output
- Setup – apply +7.5% IRE pedestal to the NTSC composite output

Rotate the shaft encoder to access the control sub-menus. Press the ENTER key when the chosen menu is displayed to enter parameter mode. Rotate the shaft encoder to change the assigned parameters. Press ENTER again to leave the data-entry mode and continue navigating the available menus.

Notes: Parameters appear within square brackets in parameter mode.
It may be necessary to press the HOME key when first navigating available menus.

Flipping the active picture

The active picture may be bypassed or flipped from left to right.

Cntl menus – Reverse/Bypass	Description
	Press the ENTER key when the Reverse/Bypass menu displayed to enter parameter mode. Rotate the shaft encoder or press F2 to choose between bypass and reverse. Press ENTER again to leave the data-entry mode and continue navigating the available menus.

VBI and HANC data are not affected by the lateral inversion of the picture content and are always passed to the card outputs normally.

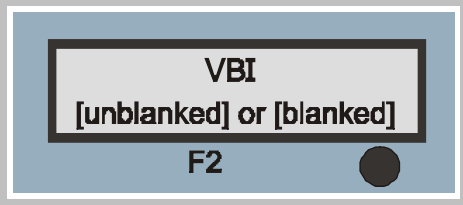
Line 23 (625-line) and line 21 (525 line) are passed unchanged to allow Wide-Screen signalling and close caption data through.

Monitor output options

Data in the VBI (Vertical Blanking Interval) of the analogue composite monitor output can be blanked or passed and 7.5% IRE setup may be applied when a 525 standard SDI signal is used (composite monitor output will be NTSC).

Blanking the VBI signal

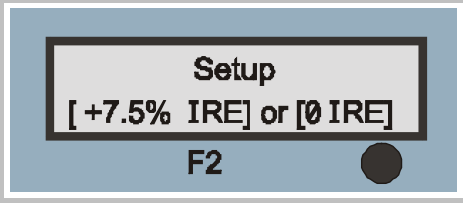
The VBI content of the analogue composite monitor output may be banked at black level or passed unchanged.

Cntl menus – Reverse/Bypass	Description
	Press the ENTER key when the VBI menu is displayed to enter parameter mode. Rotate the shaft encoder or press F2 to choose between blanked or unblanked. Press ENTER again to leave the data-entry mode and continue navigating the available menus.

VBI blanking has no effect on the SDI outputs.

Setup

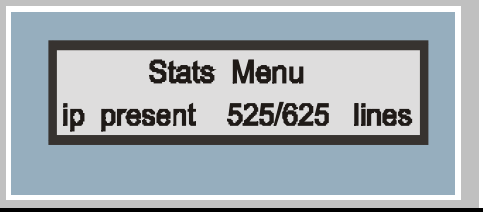
When a 525 SDI input signal is used, the analogue NTSC composite output can have 7.5% IRE setup (pedestal) applied.

Cntl menus – Setup	Description
	Press the ENTER key when the Setup menu displayed to enter parameter mode. Rotate the shaft encoder or press F2 to choose between 0 IRE or +7.5% IRE. Press ENTER again to leave the data-entry mode and continue navigating the available menus.

Setup has no effect on the composite output when a 625 SDI input signal is present.

Using the status menu

Press F2 from the home menu to bring up the Status menu.

Cntl menus – Setup	Description
	This menu shows if a valid SDI input is present and indicates its standard as 525 or 625 lines.

The ENTER key and shaft encoder have no effect in this menu.

4 Card edge control

The controls are implemented using a 4-way DIL switch at the front left of the card edge.

Flip front edge view

Switch lever	Up	Down
1 (left)	Active picture is reversed	Active picture passed unchanged
2	Control from board edge. Front Panel and Statesman are disabled, GPI inputs continue to have effect.	Remote control enabled. Other board edge switches are disabled, Front Panel, Statesman, and GPI controls are enabled.
3	VBI is forced to black (composite output only)	VBI data is passed unchanged.
4 (right)	No setup is applied	7.5 IRE setup is applied (525-line, composite output only).

Flipping the active picture

VBI and HANC data are not affected by the lateral inversion of the picture content and are always passed to the card outputs normally.

Line 23 (625-line) and line 21 (525 line) are passed unchanged to allow Wide-Screen signalling and close caption data through.

Monitor output options

Data in the VBI (Vertical Blanking Interval) of the analogue composite monitor output can be blanked or passed and 7.5% IRE setup may be applied when a 525 standard SDI signal is used (composite monitor output will be NTSC).

Setup

When a 525 SDI input signal is used, the analogue NTSC composite output can have 7.5% IRE setup (pedestal) applied. Setup has no effect on the composite output when a 625 SDI input signal is present.

Blanking the VBI signal

The VBI content of the analogue composite monitor output may be blanked at black level or passed unchanged. VBI blanking has no effect on the SDI outputs.

Note: Control MUST be set to LOCAL (DIL switch lever 2 in the UP position) for card-edge control.

Status LEDs

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

Status	Led Colour	Description
SDI	Green	SDI input OK
625/525	Amber	Upper LED illuminates for 625, lower for 525
PSU	Green	Power OK

5 Installation

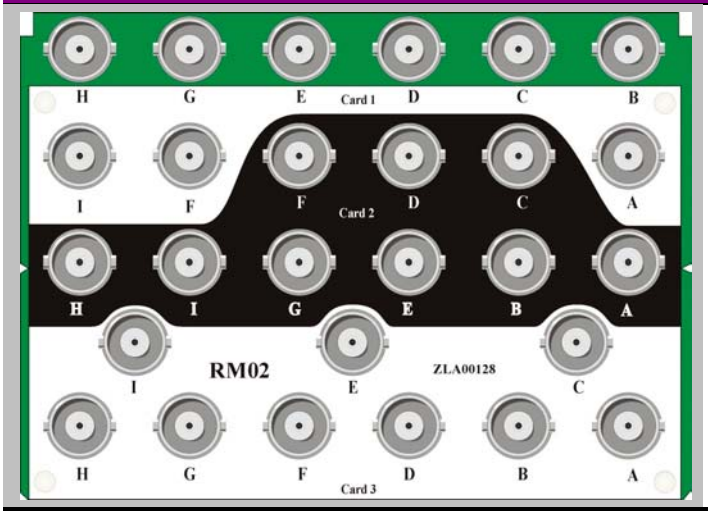
The Flip SDI active picture reverser is a single height module that fits into all Crystal Vision rack frames. All modules can be plugged in and removed while the frame is powered without damage.

5.1 Rear modules and signal I/O

FR2AV, FR1AV & DTBAV rear connectors

The FR2AV 2U frame takes up to 12 single height Crystal Vision modules, 6 single height modules fit in the FR1AV 1U frame and 2 single height modules fit in the DTB2AV 1U desk-top box.

RM02

RM02 fits in FR2AV frame	Description
	**RM02 (ZLA00128 artwork)** • 9 modules per FR2AV frame • 3 modules per rear connector • 9 connections available • Card 1 fits in slots 1, 5 and 9 • Card 2 fits in slots 2, 6 and 10 • Card 3 fits in slots 4, 8 and 12 • No card fits in 3, 7 or 11

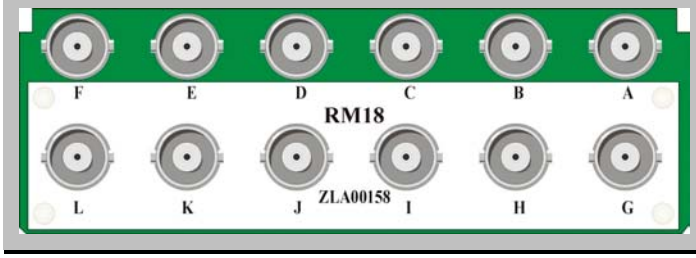
BNC – ZLA00110	BNC – ZLA00128	Signal
IN	A	SDI In
1	B	SDI loop through output
2	C	SDI output 1
3	D	SDI output 2
4	E	SDI output 3
5	F	Composite monitor out
6	G	SDI output 4
7	H	No connection
8/IN2	I	No connection

RM01

RM01 fits in FR2AV, FR1AV & DTBAV frames	Description
	**RM01 (ZLA00085 artwork)** • 12 modules per FR2AV, 6 per FR1AV & 2 per DTBAV frame • All frame slots can be used

BNC – ZLA00073	BNC – ZLA00085	Signal
V/R/OPC	**A**	Composite monitor out
SDI /1	**B**	SDI In
SDI 2	**C**	SDI loop through output
Y/G/OPA	**D**	SDI output 1
U/B/OPB	**E**	SDI output 2
SYNC/OPD	**F**	No connection

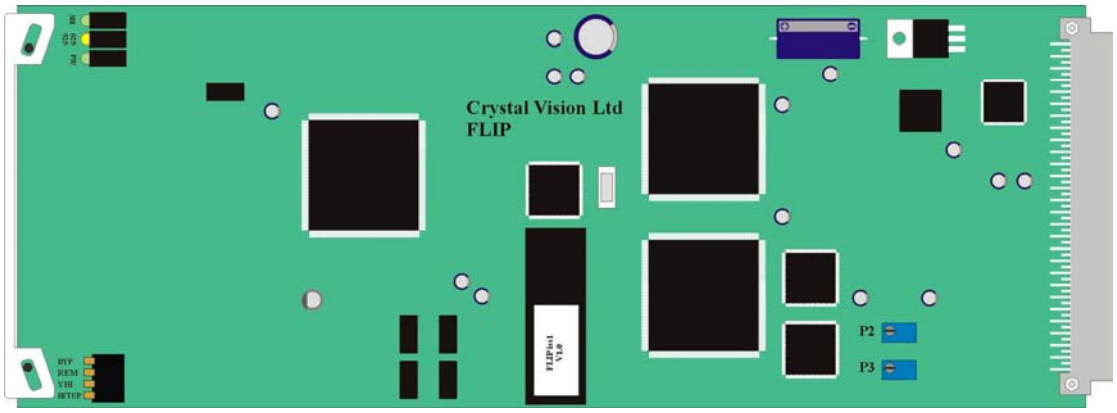
RM18

RM18 fits in FR2AV, FR1AV & DTBAV frames	Description
	**RM18 (ZLA00158 artwork)** • 6 modules per FR2AV frame, 3 per FR1AV, 1 per DTBAV • 1 module per rear connector • 10 connections available • Card fits in upper slot • No card fits in lower slot

BNC – ZLA00158	Signal
A	Composite monitor out 1
B	SDI In
C	SDI loop through output
D	SDI output 1
E	No connection
F	No connection
G	Composite monitor out 2
H	SDI output 2
I	SDI output 3
J	SDI output 4
K	Composite monitor out 3
L	Composite monitor out 4

Configuration

There are no user configuration controls on the Flip module.



Flip module top view

The unit is fully tested before despatch and any settings should be left as set at the factory.

5.2 GPI connections

There is one control GPI and two GPI used for indication.

Frame GPI pinout

Each slot has an associated set of connections on the frame rear-panel remote connectors. For convenience, GPI lines are associated with reference codes ‘a’ to ‘f’ in the connector pin-out tables for each frame.

GPI ‘a’ acts as a reverse/bypass control. Inactive (high) = reverse; active (low) = bypass.

GPI 'b' acts as a video standard indicator Inactive (high) = 525; active (low) = 625.

GPI 'e' acts as an input present indication. Inactive (open, pulled high internally) = no input, active (pulled low) = input present.

FR1AV FRAME, FR1-6 FRAME

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)

Note: Remote 1: 26 way high-density D-type socket. Frame ground is pin 2.
Remote 2: 26 way high-density D-type plug. Frame ground is pin 6. Table shows Pin number (Remote number).

DTB-2, DTB-AV FRAMES

Slot no.	‘a’ pin	‘b’ pin	‘c’ pin	‘d’ pin	‘e’ pin	‘f’ pin
1	1	2	3	4	5	6
2	9	10	11	12	13	14

Note: Remote connector is 15 way normal density D-type socket. Frame ground is pin 15.

FR2-8 FRAME

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

Note: Remote 1 and Remote 2: 26 way high density D-type sockets. Frame ground is pin 1. PSU Relay connection on pin 10. Table shows Pin number (Remote number).

FR2AV GPI Connections

GPI lines 'a' to 'f' of each card are brought to one of the four remote connectors at the rear of the FR2AV frame 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)

Note: Remote 1 and Remote 3 are 26 way high density 'D' type female sockets and frame ground is pin 2 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. Table shows Pin number (Remote number).

FR2-12 FRAME

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)

Note: Remote 1 and Remote 3: 26 way high density D-type sockets. Frame ground is pin 2. Remote 2 and Remote 4: 26 way high density D-type plugs. Frame ground is pin 6. Table shows Pin number (Remote number).

6 Problem solving

Once the start-up initialisation procedure is complete, the Flip card can be controlled or configured from active control panel or the Statesman PC interface. Operation from the card edge is not possible unless the REM DIPswitch lever is in the UP position.

The front edge of the card provides status LEDs for input presence, detected input line standard and power rail monitoring.

Flip front edge view

Trouble shooting may be performed by using the card edge, remote status panel display or from Statesman.

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

Status	Led Colour	Description
SDI	Green	SDI input OK
625/525	Amber	Upper LED illuminates for 625, lower for 525
PSU	Green	Power OK

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 SDI is present and that any cabling is intact

Check that the rear connector outputs used are correct for the signal expected

Note: There will be no output until the 20 second power-up initialisation has completed

The video output exhibits jitter

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

The card no longer responds to Statesman 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 the rack power and re-applying power after a few seconds or by removing the card from the rack and then re-inserting the card

It is safe to re-insert the card whilst the rack is powered

7 Specification

General

Dimensions	100mm x 266 mm module with DIN 41612 connector
Weight	180g
Power consumption	6 W

Input

Video	270Mb/s serial digital to EBU Tech 3267-E and SMPTE-259M
	Cable equalisation >200m Belden 8281 or equivalent
	Auto 525/625 selection

Outputs

SDI	Maximum of 4 reclocked SDI outputs to EBU Tech 3267-E and SMPTE-259M with embedded audio with up to selected audio groups
	Will drive >200m Belden 8281 or equivalent
	1 reclocked SDI loop-through output to EBU Tech 3267-E and SMPTE-259M
	Will drive >200m Belden 8281 or equivalent
Composite	Maximum of 4 PAL/NTSC (follows input) 8-bit analogue monitor outputs

Processing

Power up initialisation	20 seconds
Vertical data	Passes entire SDI stream, including HANC and VANC
Delay	Typical input to output delay approx. 55µs

Control

Card edge	Four-way DIL switch
Local/remote control panel	Multi-drop 19200 Baud, 8 bits, no parity – control from local frame active front panel / remote panel
Statesman	RS422 control via 9-way Remote 2 connector on FR2AV and FR1AV frames

GPI Inputs

Type	Control
Reverse/bypass	GPI ‘a’
	Connect to ground = bypass, High impedance, or 5 volts = reverse
Input current	Input current <50µA

GPI Outputs

Type	Indicator
Video standard indicator	GPI ‘b’
	Inactive (high) = 525; active (low) = 625.
Input present indicator	GPI ‘e’
	Inactive (open, pulled high internally) = no input, active (pulled low) = input present.

Ordering information

FLIP	Single channel SDI video reverser
FR2AV	2U frame for up to 12 modules
FR1AV	1U frame for up to 6 modules
DTB-AV	1U Desk top box for up to 2 modules
RM01	Single slot frame rear module
FP2-LF	Active front control panel for 2U frame
FP1-LAV	Active front control panel for 1U frame
FP1-SAV	Active front control panel for desk-top box
REM1U	19” remote control panel
REM1US	Narrow (231mm wide) 1U remote control panel
Statesman	PC Control System