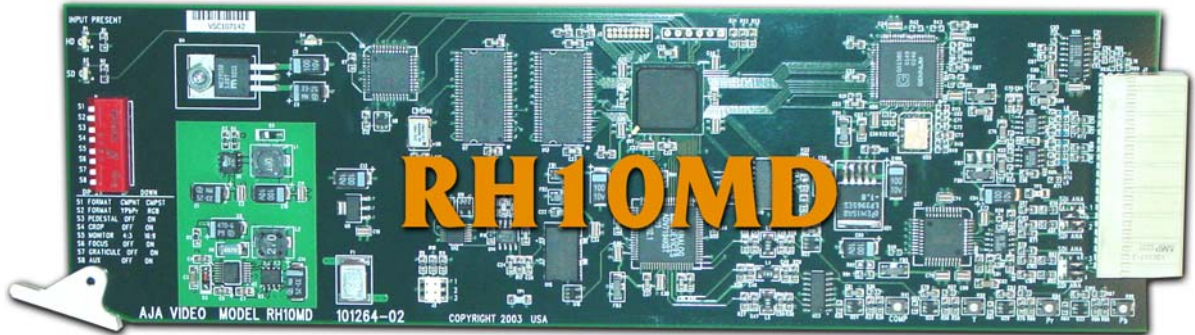


RH10MD

HD Down Converter and Re-clocking Distribution Amplifier (dual-rate) R-series Card Module

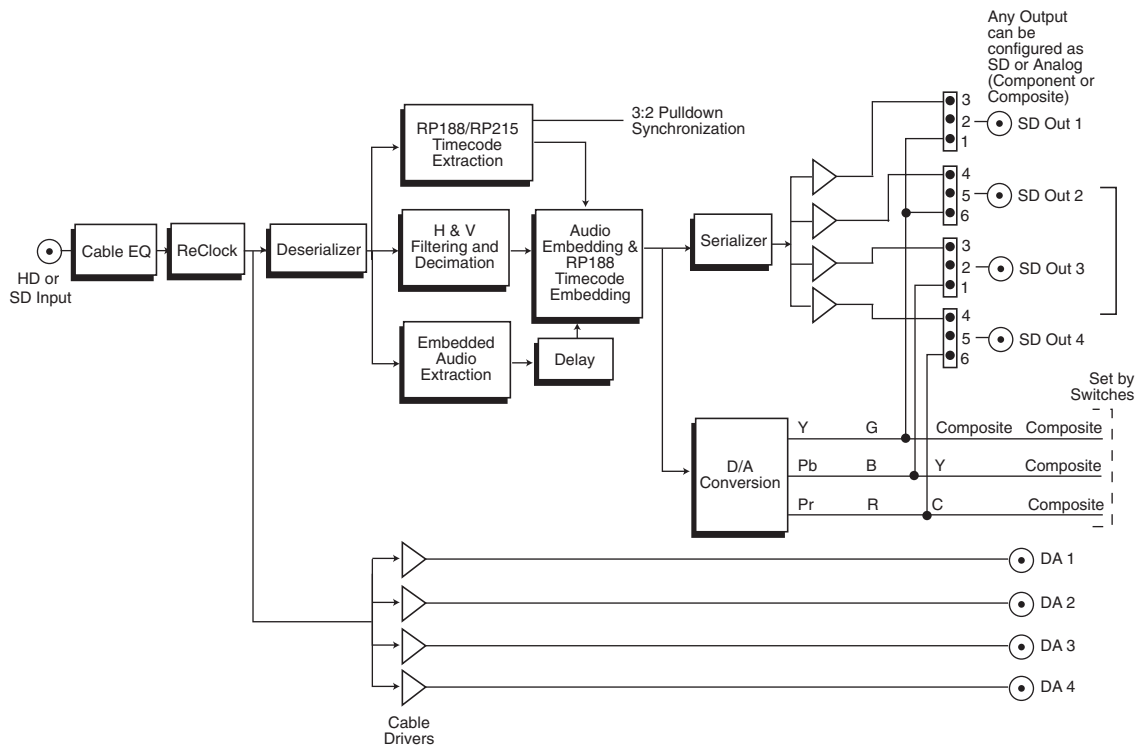
User Manual



AJA
AJA VIDEO SYSTEMS INC

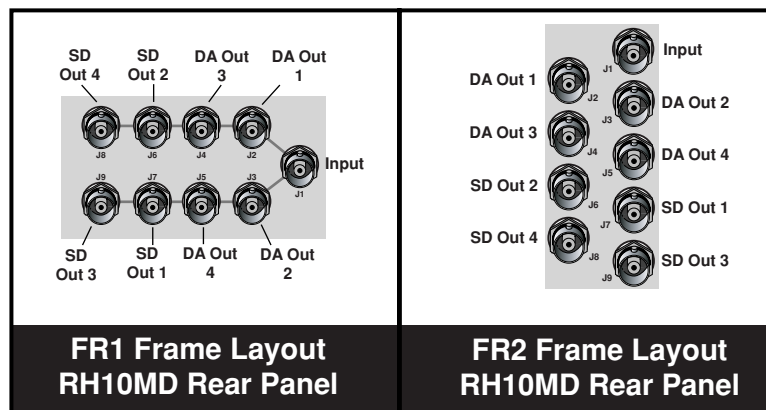
September 21, 2006 P/N 101647-00

Block Diagram



RH10MD, Block Diagram

I/O Connections

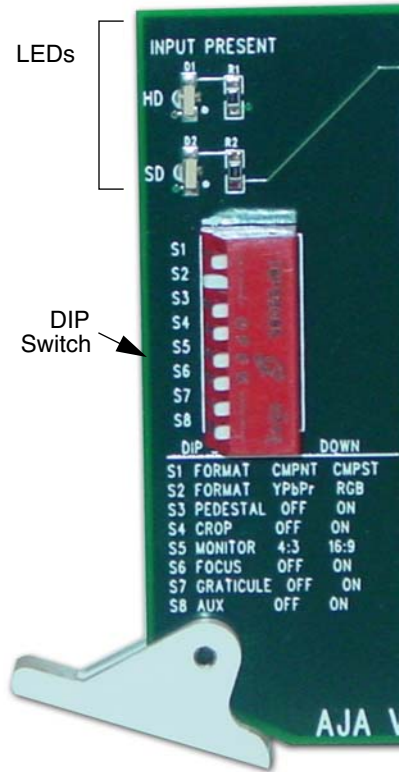


FR1 and FR2 BNC Connector Assignments, RH10MD Card Module

When the RH10MD module is installed in an AJA FR1 or FR2 frame, a corresponding group of 9 BNCs on the rear panel then provide I/O for the module. The illustration above shows the connector assignments for both the FR1 and FR2 when used with the RH10MD.

Output configuration is discussed next in *User Controls*.

User Controls

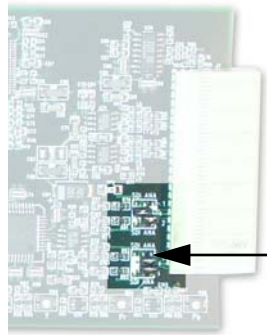


The user interface for configuring the RH10MD and selecting output formats is a dipswitch at the front of the card and some jumpers at the back of the card. Two LEDs at the front card additionally show the type of input present (HD or SD).

The four outputs labeled *DA Out* 1-4 are always serial digital, either HD or SD, depending on the input format detected. They are cable-equalized, and reclocked. The four outputs labeled *SD Out* 1-4 may be configured as either SDI or analog via 4 jumpers on the circuit board. These jumpers are located at the end of the board next to the large backplane connector where the card plugs into an FR1/FR2 chassis. These jumpers are labeled as “1”, “2”, “3”, or “4”, corresponding to the four SD output BNCs. This arrangement supports any combination of SDI or analog output. For example, 4 SDI, 4 composite, 2 SDI and 2 composite, etc. If a jumper is set for analog, then the corresponding output is defined by the dipswitch settings of S1, S2, and S8 as shown in the table below.

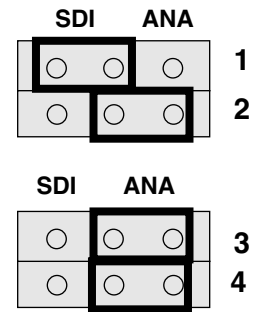
A jumper (J2) on the card allows you to select further options described later.

	S1 = Component (UP)	S1 = Composite (Down)
SD Out 1	Y if S2 = YPbPr (up) G if S2 = RGB (down)	Composite
SD Out 2	Y if S2 = YPbPr (up) G if S2 = RGB (down)	Composite
SD Out 3	Cb if S2 = YPbPr (up) B if S2 = RGB (down)	Composite if S8 = up Y of YC pair if S8 = down
SD Out 4	Cr if S2 = YPbPr (up) R if S2 = RGB (down)	Composite if S8 = up C of YC pair if S8 = down



Jumpers to
Select Output
Format

This example shows SDI selected for output 1 BNC, analog output for 2 BNC, and analog for 3 and 4 BNCs.



Control Functions

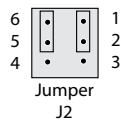
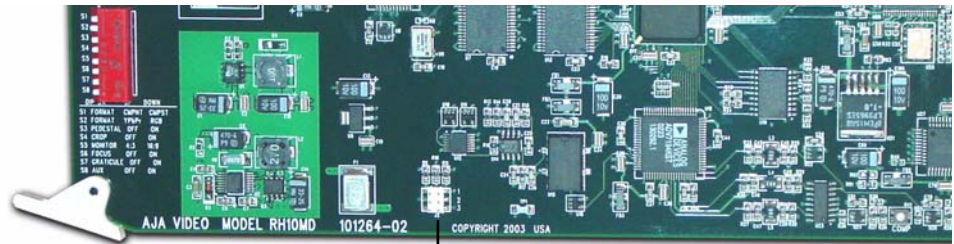
In addition to selecting output format, the 8-position dipswitch also controls many other configuration settings of the RH10MD card. These are described in the following table.

Switch Number	Description	Details
1	Analog Format	UP = Component DOWN = Composite
2	Component format	UP = YPbPr DOWN = RGB
3	Pedestal	UP = Pedestal Off DOWN = Pedestal On
4	Crop	UP = Horizontal Edges cropped off from input lines; all output lines are used DOWN = Black Bars top and bottom; all of input line is visible horizontally
5	Monitor	UP = 4:3 monitor; S4 selection in effect DOWN = 16:9 monitor; S4 has no effect; uses all input lines and pixels to make a full screen raster
6	Focus	UP = not in focus mode DOWN = Focus mode; overrides S4 & S5. Passes the middle 720 pixels and 486 lines with no filtering
7	Graticule	UP = Graticule Off DOWN = Display Graticule showing safe area for 4:3 material on the 16:9 raster
8	Composite All	UP = Composite on all analog outputs. S1 must be down for this switch to take effect DOWN = Do not force composite on all outputs

* For Betacam 525 levels, select *Component*, *YPbPr*, and set *Pedestal* to "On."

Jumper J2 Settings

Jumper J2 is located at the bottom of the card (shown in the photo below). The meaning of the jumper settings is detailed in the illustration:



Jumper Between Pins 1 and 2:

ON = RP215 is used to synchronize 3:2 pulldown sequence

OFF = RP188 is used.

In both cases the "A Frame" is synchronized to frame with timecode "xx:00"

Jumper Between Pins 5 and 6:

ON = Output start of vertical blanking lines up with input start of vertical blanking

OFF = Output start of vertical sync lines up with input start of vertical sync (per RP168)

Installation

Typically, RH10MD installation consists of the following:

1. disconnect power from the frame (remove line cord)
2. remove the FR1/FR2 front panel
3. install RH10MD card module
4. apply power to the frame by connecting a north american-style power cord from the frame to mains power (90 to 260 VAC)

Instructions for removing the frame front door for module installation is discussed in the *FR1/FR2 User Manual*.

Specifications

Item	Specification
Input Formats:	1035i/1080i/1080psf/1080p/720p SMPTE 292/296, or 525/625i SMPTE 259M 23.98/24/25/50/59.94/60 Hz Frame Rates 23.98 -> 525/59.94 (3:2 pulldown) 24 -> 525/59.94 (3:2 pulldown) (drop frame) 25 -> 625/50 50 -> 625/50 59.94 -> 525/59.94 60 -> 525/59.94 (drop frame)
Delay:	1 frame, audio and video
Outputs:	SDI, SMPTE, 259M, 10-bits, BNC HD-SDI SMPTE, 292/296, 10-bits, BNC YPbPr- (SMPTE, EBU-N10, Betacam) RGB, NTSC, PAL, YC (S-Video), 10-bits
Power Consumption:	6 watts