RD10MD2

Dual HD to SD Down Converter
R-series Card Module

User Manual

AJA VIDEO SYSTEMS

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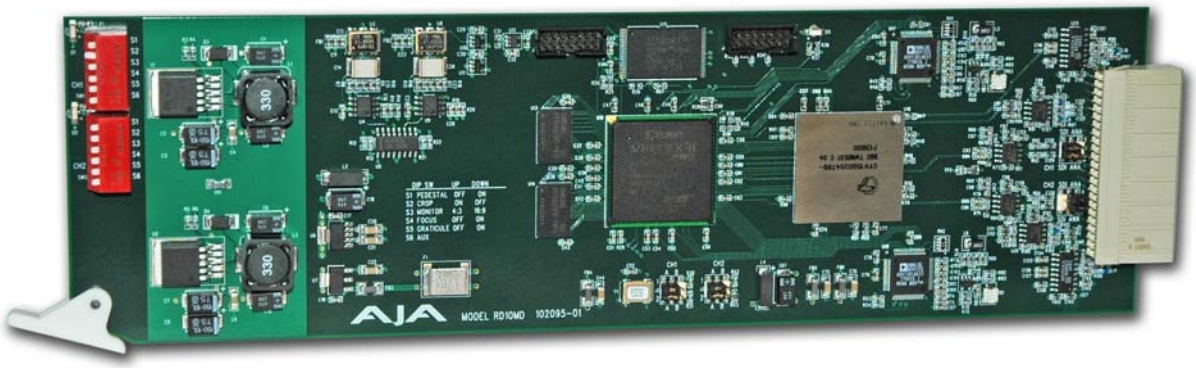
Introduction

The RD10MD2 is a 10-bit broadcast-quality Dual channel HD down converter. Channels 1 and 2 are fully independent. Channel 1 has 1 re-clocked HD/SD-SDI output and channel 2 has 1 re-clocked HD/SD-SDI output. Both Channel 1 and 2 have 2 down converted outputs, which can be independently configured as SDI or composite analog. All HD formats are supported including 24p/psf with 3:2 pulldown. The SD output can be formatted for either 4:3 or 16:9 monitors. For 4:3 monitors both Letterbox and Crop modes are supported. The RD10MD2 is dual-rate (HD/SD) and supports SDI inputs.

The RD10MD2 is compatible with AJA's FR1 or FR2 frames.

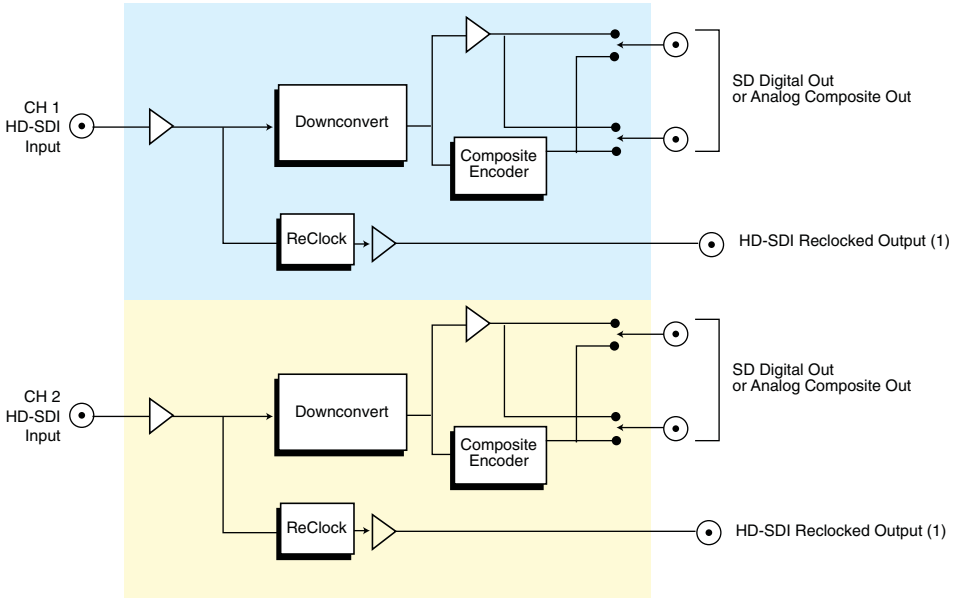
Features



RD10MD2 Card Module, Side View

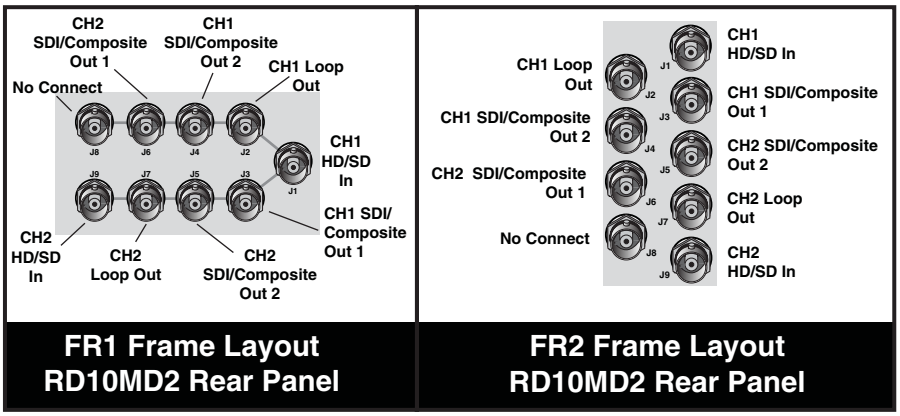
- Dual Independent Channel HD to SD Down Conversion
- Re-clocking HD-SDI/SDI input loop outputs
- Multi-Standard HD-SDI or SDI Input
- SDI and Composite Analog Outputs
- 3/2 Pulldown for 23.98/24 Hz P/PSF inputs
- Full 10-bit Data Path, Multi-point Interpolation
- Configurable for 16:9 or 4:3 Monitors
- Letterbox and Crop Modes
- 4:3 Safe-Zone Graticule
- Pedestal on Composite Analog Outputs

Block Diagram



RD10MD2, Block Diagram

I/O Connections

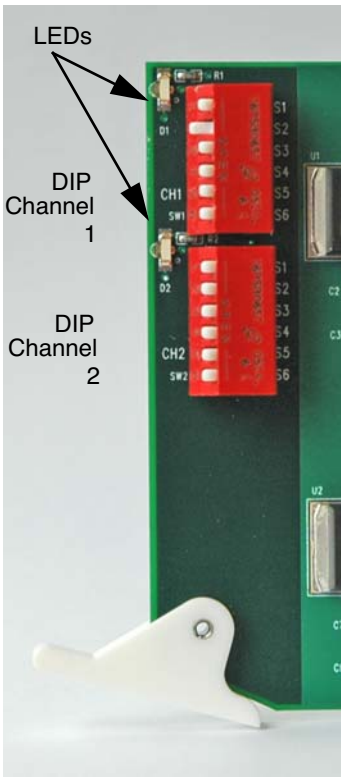


FR1 and FR2 BNC Connector Assignments, RD10MD2 Card Module

When the RD10MD2 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 RD10MD2.

Output configuration is discussed next in *User Controls*.

User Controls

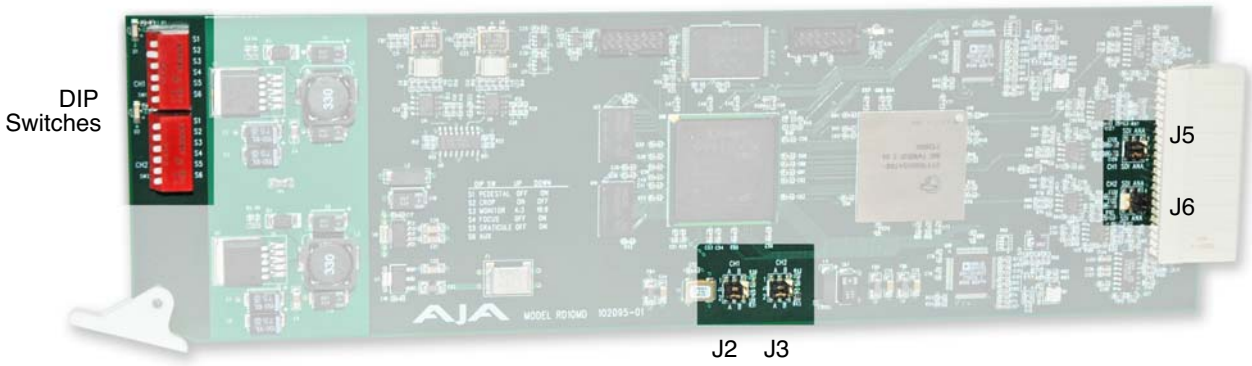


The user interface for configuring the RD10MD2 and selecting output formats is a pair of dipswitches at the front of the card and several jumpers in the middle and at the back of the card (see J2, J3, J5, and J6 in the photo below).

Two multi-color LEDs at the front of the card additionally show the type of input present at each channel (HD=Orange or SD=Green).

The loop outputs always reflect the reclocked input. Each channel has a reclocked looped output.

The format of the downconverter outputs, either SDI or analog composite, are configured by the jumpers J5 and J6. Jumpers J2 and J3 configure the HD to SD delay and the type of embedded timecode (RP188 or RP215). Tables later in the manual define the jumper settings and their corresponding meanings.



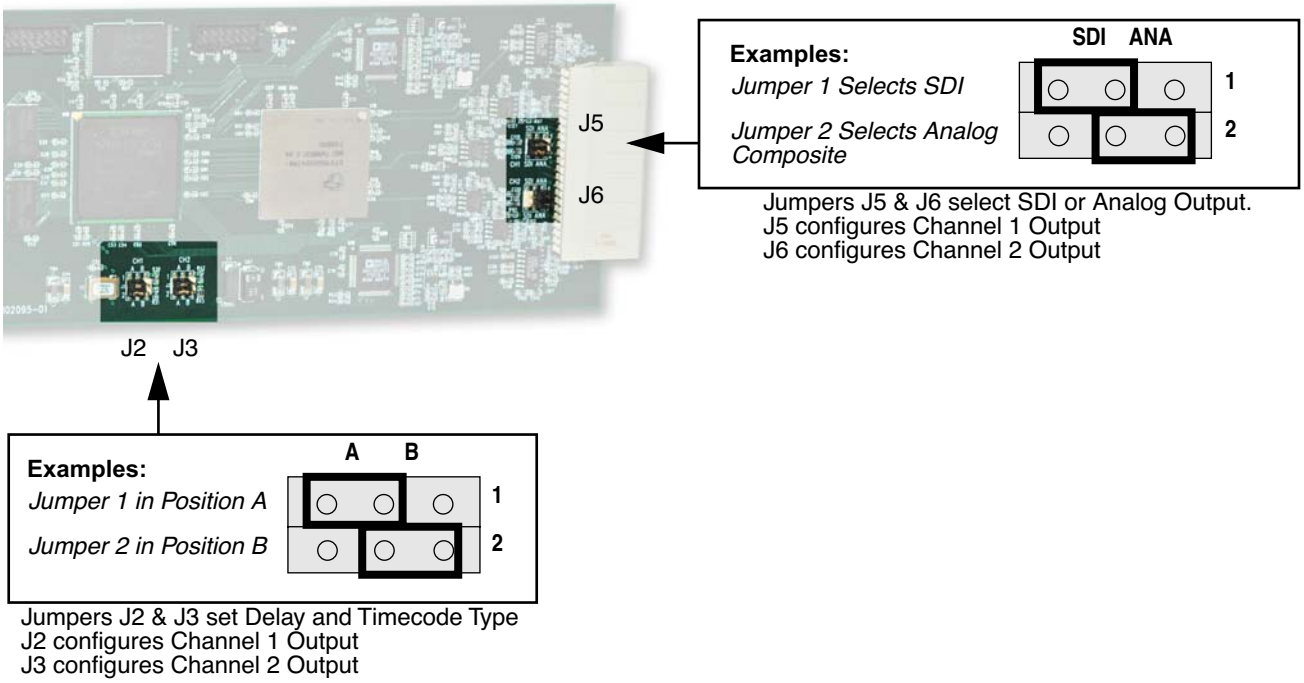
RD10MD2 Card Module, User Controls

DIP Switch Settings

There is a separate 6-position dipswitch for each channel that controls a number of configuration settings for the RD10MD2 card. The top dipswitch controls channel 1 and the one beneath it, channel 2. Settings are the same for both dipswitches. These are described in the following table.

Switch Number	Description	Details
1	Pedestal	UP = Pedestal Off DOWN = Pedestal On
2	Crop	UP = Crop On—the Horizontal Edges are cropped off from the input lines; all output lines are used DOWN = Crop Off—black bars are on top and bottom; all of the input line is visible horizontally
3	Monitor	UP = 4:3 monitor DOWN = 16:9 monitor
4	Focus	UP = Off, not in focus mode DOWN = On, in focus mode: passes the middle 720 pixels and 486 lines without filtering
5	Graticule	UP= Graticule Off DOWN = Display Graticule showing safe area for 4:3 material on the 16:9 raster
6	AUX	Unused

Jumper Settings



RD10MD2 Card Module, Jumper Settings

Jumper	Meaning of Settings
J2 Channel 1	Jumper placed in 1A: Sets Channel 1 HD to SD delay to align with VSYNC (per Panasonic deck) Jumper placed in 1B: Sets Channel 1 HD to SD delay to align with the end of active (per Nvision gen) Jumper placed in 2A: Select Channel 1 to have RP188 embedded timecode Jumper placed in 2B: Select Channel 1 to have RP215 embedded timecode
J3 Channel 2	Jumper placed in 1A: Sets Channel 2 HD to SD delay to align with VSYNC (per Panasonic deck) Jumper placed in 1B: Sets Channel 2 HD to SD delay to align with the end of active (per Nvision gen) Jumper placed in 2A: Select Channel 2 to have RP188 embedded timecode Jumper placed in 2B: Select Channel 2 to have RP215 embedded timecode
J5 Channel 1	Jumper placed in 1 SDI: Set Channel 1 output 1 to SDI Jumper placed in 1 ANA: Set Channel 1 output 1 to Analog Composite Jumper placed in 2 SDI: Set Channel 1 output 2 to SDI Jumper placed in 2 ANA: Set Channel 1 output 2 to Analog Composite
J6 Channel 2	Jumper placed in 1 SDI: Set Channel 2 output 1 to SDI Jumper placed in 1 ANA: Set Channel 2 output 1 to Analog Composite Jumper placed in 2 SDI: Set Channel 2 output 2 to SDI Jumper placed in 2 ANA: Set Channel 2 output 2 to Analog Composite

Installation

Typically, RD10MD2 installation consists of the following:

1. disconnect power from the frame (remove line cord)
2. remove the FR1/FR2 front panel
3. install RD10MD2 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
Formats:	HD: 1080i 50/59.94/60 Hz 1080p/psf 23.98/24/25/29.97/30 Hz 720p 23.98/24/25/29.97/30/50/60 Hz
Inputs:	2 Channels, HD-SDI or SDI SMPTE 259/292/296, 10-bit, 2x BNC
Outputs:	Each Channel has two outputs configurable for either SDI (SMPTE 259M, 10-bit) or analog composite NTSC/PAL, 2x BNC Channel 1 has one reclocked loop-through output, 1 BNC Channel 2 has one reclocked loop-through output, 1 BNC
Downconversion:	Multi-point interpolation, 10-bit processing 3:2 conversion for 23.98/24p/psf inputs
Size:	Fits AJA R-Series Frames
Power Consumption:	7 watts