

**RD5CE Dual Channel Digital to Analog Converter/Encoder (PRELIMINARY)****Introduction**

The AJA Video RD5CE Dual Channel Digital to Analog converter and Encoder produces quality NTSC/PAL encoded video or Component Analog Video from SMPTE 259M Serial Digital Component Video. The RD5CE has two D to A channels, one channel can be configured to output Component (SMPTE, RGB, or BETACAM525), 3 composite analogs, or YC (s-video) with one composite. The second channel can output composite video or Y (Luminance) only. Both channels' inputs have a looping output, which is reclocked and equalized.

**Features**

- Two channels of Digital to Analog conversion on one card
- SMPTE 259M Serial Digital input
- Reclocked Serial output (SMPTE 259M)
- Y/Pr/Pb selectable for SMPTE/EBU or Betacam levels
- Automatic NTSC/PAL selection
- Configurable pedestal and narrow/wide H/V blanking
- Reference input to provide correct Color Framing of analog composite output

**Specifications**

Serial Input	SMPTE 259M 270mb, (SDI)	
SDI Cable Equalization	300 meter 8281 typical	
Serial Output	Equalized, Re-clocked	
Frequency Response	+/- .25db to 5.5Mhz (Y)	
	+/- .25db to 2.0Mhz	(Chroma - Component, RGB)
	+/- .25db to 1.3Mhz	(Chroma - Composite) see Note 1
2T K factor	<1% (Y)	
Diff. Gain	<1.5%	
Diff. Phase	<1.5 degree	
Y/C delay	10ns max	
D/A Converters	10 bits	
Signal Path	8 bits see Note 2	
Delay (input to output)	1.5us	
Output level adjustment	+/-20% (internal)	
Output level matching	1.5% or 10mv (All outputs are separately buffered)	
Input Return Loss:	15 db to 300 Mhz	
Input loop Return loss:	15 db to 300 Mhz	
Power Consumption		
	+6.5V	6.0 W
	-6.5V	0.5 W

**Note 1** The RD5CE is programmed for a 1.3 MHz chroma bandwidth when in the composite video mode. This provides the best quality video when encoding component digital video. In certain situations with lower cost monitors, it may be desirable to reduce the composite chroma bandwidth to 650 KHz to reduce the effects of cross-color artifacts. This option is available from AJA Video as a special order.

**Note 2** The encoder / D to A chip used in the RD5CE has an 8 bit input for component digital video and 10 bit D to A converters for the analog outputs. This situation is often described as an 8 bit “signal path” and 10 bit “Quantization”. Due to the internal processing of the encoder chip, it is advantageous to use 10 bit D to A converters at the output even though the input is 8 bits .

## Reference Input

When a Valid (PAL or NTSC) Color Black Signal is connected to the reference input, it will force the Color Frame Sequence on the RD5CE outputs to be the same as the reference input. The reference MUST be within +/- 5 lines of the RD5CE outputs.

## User Controls and Indicators

The user interface for the RD5CE includes two dipswitches, a six position for control of Channel 1 and a four position for control of Channel 2 and 2 LEDs.

LED	FUNCTION
1	Video present on Channel 1
2	Video present on Channel 2

Channel 1 DIP Switches		
FUNCTION	DESCRIPTION	DETAILS
1	Output Selection	UP = Component DOWN = Composite
2	Output Selection	UP = YUV/YC if SW1=up Output = YUV, if SW1=down Output = YC + 1 composite DOWN = RGB is SW1=up, if SW1=down Outputs all composite
3	Output Selection	UP = BETACAM 525 levels DOWN = SMPTE/EBU-N10 Levels
4	Blanking	UP = Narrow: Vertical (line numbers indicate where video starts) line 13, field 1; line 12, field 2 (525 line) line 10, field 1; line 322, field 2 (625 line) Horizontal (active video line duration's) ITU-R.470 (720 pixels PAL/NTSC) DOWN = Wide: line 20, field 1; line 20, field 2 (525 line) line 23, field 1; line 336, field 2 (625 line) Horizontal (active video line duration) ITU-R/SMPTE (710 pixels NTSC, 702 pixels PAL)
5	Pedestal	UP = Add Pedestal DOWN = No Pedestal

6	<Reserved>	<td>
<b>Channel 2 DIP Switches</b>		
<i>FUNCTION</i>	<i>DESCRIPTION</i>	<i>DETAILS</i>
1	Output Selection	UP = Component DOWN = Composite
2	Blanking	UP = Narrow: Vertical (line numbers indicate where video starts) line 13, field 1; line 12, field 2 (525 line) line 10, field 1; line 322, field 2 (625 line) Horizontal (active video line duration's) ITU-R.470 (720 pixels PAL/NTSC) DOWN = Wide: line 20, field 1; line 20, field 2 (525 line) line 23, field 1; line 336, field 2 (625 line) Horizontal (active video line duration) ITU-R/SMPTE (710 pixels NTSC, 702 pixels PAL)
3	Pedestal	UP = Add Pedestal DOWN = No Pedestal
4	<reserved>	<td>

**SIGNAL I/O**

RD5CE  
Rear Panel Layout

