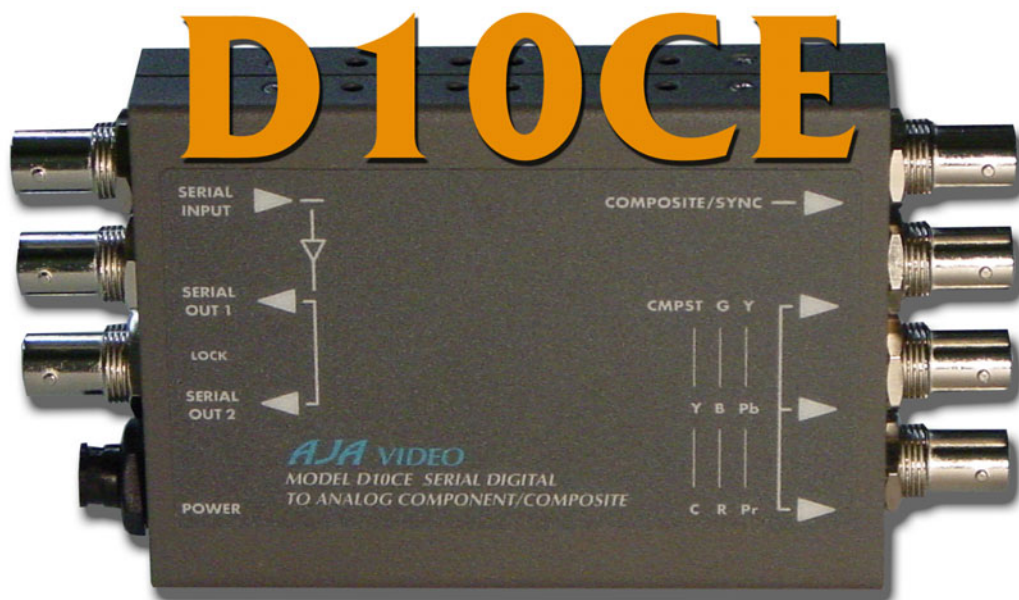


D10CE 10-bit Encoder SDI to Analog Converter

User Manual



AJA
AJA VIDEO SYSTEMS INC

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This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Changes or modifications not expressly approved by AJA Video can effect emission compliance and could void the user's authority to operate this equipment.

Contacting Support

To contact AJA Video for sales or support, use any of the following methods:

443 Crown Point Circle, Grass Valley, CA. 95945 USA

Telephone: +1.800.251.4224 or +1.530.274.2048

Fax: +1.530.274.9442

Web: <http://www.aja.com>

Support Email: support@aja.com

Sales Email: sales@aja.com

When calling for support, have all information on the product (serial number etc.) at hand prior to calling.

Limited Warranty

AJA Video warrants that this product will be free from defects in materials and workmanship for a period of five years from the date of purchase. If a product proves to be defective during this warranty period, AJA Video, at its option, will either repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product.

In order to obtain service under this warranty, you the Customer, must notify AJA Video of the defect before the expiration of the warranty period and make suitable arrangements for the performance of service. The Customer shall be responsible for packaging and shipping the defective product to a designated service center nominated by AJA Video, with shipping charges prepaid. AJA Video shall pay for the return of the product to the Customer if the shipment is to a location within the country in which the AJA Video service center is located. Customer shall be responsible for paying all shipping charges, insurance, duties, taxes, and any other charges for products returned to any other locations.

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Introduction

The D10CE converts Component Serial Digital (SDI) to analog Composite and Component outputs—simultaneously. Four analog outputs are provided, plus two equalized and re-clocked SDI loop-through outputs. The D10CE automatically detects and configures to 525 or 625 line component digital input and then outputs analog NTSC (525 line input), PAL (625 line input) or component as configured by an 8-section DIP switch.

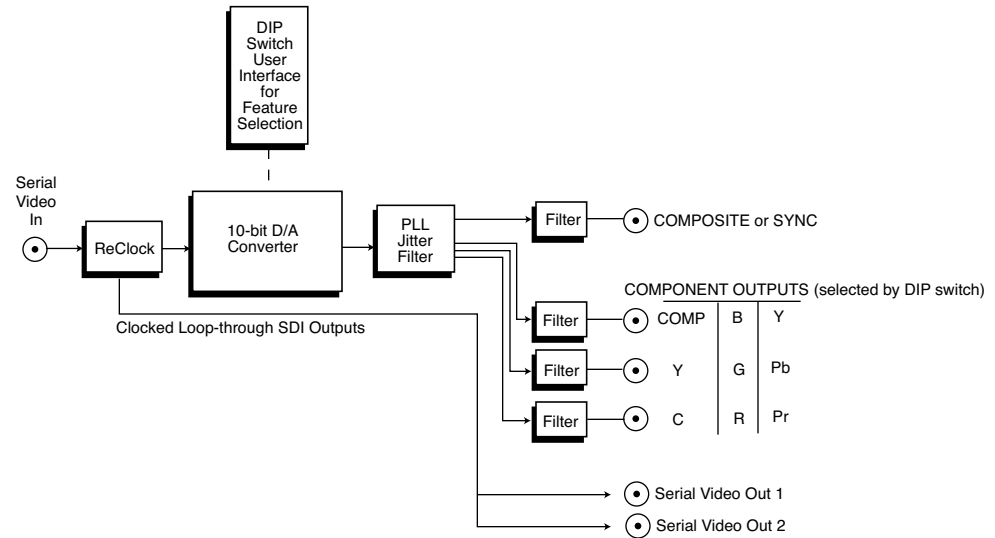
The full dynamic range of input component video values, below black and above white, are not clipped when the D10CE encodes. When the D10CE is in its NTSC mode, the 7.5 IRE pedestal can be disabled by DIP switch selection.

The component and composite outputs incorporate optimum chroma filtering and independent pedestal configuration. An exclusive PLL jitter filter/memory reduces the effects of SDI jitter on the output analog video. This feature, along with the precision 4x oversampled D/A filters, provides high quality analog outputs, with very low phase noise in the composite outputs.

Features

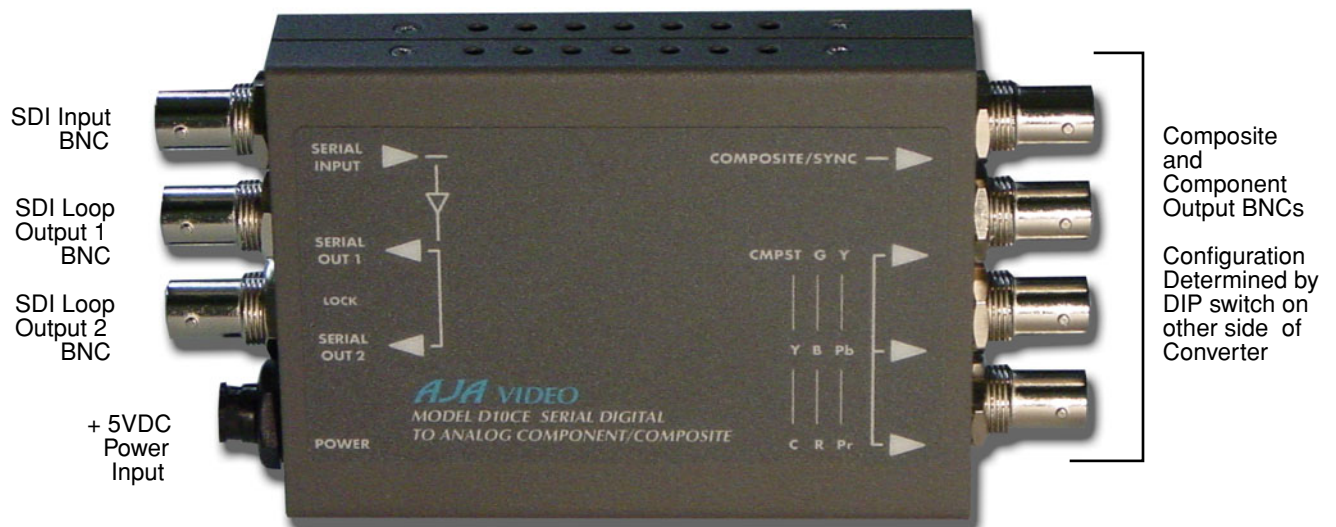
- High quality 10-bit encoding, 4 times oversampling
- SDI Input, SMPTE 259M
- Two loop-through SDI outputs (SMPTE 259M) (equalized and re-clocked copies of the SDI input)
- Four analog outputs (configurable as 1 composite or sync, and R/G/B, Y/Pb/Pr, or Y/C)i.
- Y/Pb/Pr selectable for SMPTE/EBU levels or Betacam levels (Y, R-Y, B-Y)
- Composite NTSC or PAL
- Configurable pedestal
- Digital noise reduction
- External DIP switch user interface for configuration

Block Diagram



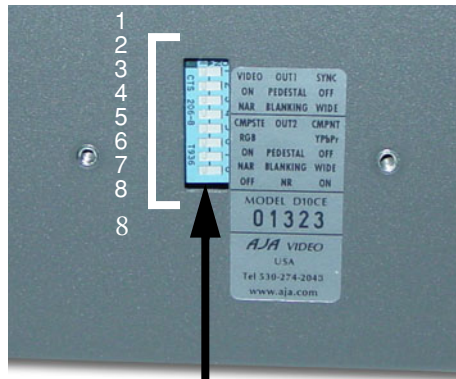
D10CE 10-bit SDI to Analog Component and Composite Converter, Block Diagram

I/O Connections



D10CE, Side View

User Controls



DIP Switches

OFF ↔ ON

The user interface for the D10CE is an 8-switch DIP accessible through a cut-out in the bottom of the unit. Use the DIP switches to configure outputs, pedestal, blanking, and enable or disable noise reduction.

Switches 1 through 3 control the COMPOSITE/ SYNC output BNC. Switches 4 through 8 control the video format of the three BNCs below. The exact function of each DIP switch and what it controls is described on the following pages.

Switch 1 Selects VIDEO or SYNC output from the Composite/Sync BNC

ON	OFF
Selects SYNC output for Component output (use when the device being fed the component signal requires a separate sync signal)	Selects composite video out

Switch 2 Configure Pedestal For Composite/Sync BNC

ON	OFF
7.5 IRE pedestal for NTSC (also selects BETA 525 levels for YPbPr)	No pedestal (also selects SMPTE levels for YPbPr)

Note: There is no effect with 625 input.

Switch 3 Configure Blanking For Composite/Sync BNC

ON	OFF
WIDE Blanking: Vertical— Line numbers indicate where video starts) 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)	NARROW (NAR) Blanking: 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 PAUNTSC)~-

Switch 4 Select Composite (CMPSTE) or Component (COMPNT) Out

ON	OFF
COMPNT: Selects component video output	CMPSTE: Selects composite video output

Switch 5 Select Video Format of Component Outputs

ON	OFF
YUVNC: Selects YPbPr/YC component output, if SW1 is set to "COMPNT,"	RGB: Selects RGB component output, if SW1 is set to "COMPNT"

Switch 6 Configure Pedestal For Component Output BNCs (3)

ON	OFF
7.5 IRE pedestal for NTSC (also selects BETA 525 levels for YPbPr)	No pedestal (also selects SMPTE levels for YPbPr)

Note: There is no effect with 625 input.

Switch 7 Configure Blanking For Component Output BNCs (3)

ON	OFF
<p>WIDE Blanking:</p> <p>Vertical— Line numbers indicate where video starts) line 20, field 1; line 20, field 2 (525 line) line 23, field 1; line 336, field 2 (625 line)</p> <p>Horizontal— Active video line duration ITU-R/SMPTE (710 pixels NTSC, 702 pixels PAL)</p>	<p>NARROW (NAR) Blanking:</p> <p>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)</p> <p>Horizontal— Active video line duration's) ITU-R.470 (720 pixels PAUNTS)~</p>

Switch 8 Configure Digital Noise Reduction

ON	OFF
Enables Digital Noise Reduction on input.	Disables Digital Noise Reduction

**Output Selection
Matrix For Output
2 (3 BNCs)**

The following table shows the combinations of DIP switch settings required to configure the three BNCs below the COMPOSITE/SYNC BNC.

Output Format	DIP Switch #4	DIP Switch #5	DIP Switch #6
1 Composite and 1 Y/C (Pedestal)	CMPSTE	N/A	ON
1 Composite and 1 Y/C (no pedestal)	CMPSTE	N/A	OFF
RGB	COMPNT	RGB	OFF
RGB with pedestal	COMPNT	RGB	ON
SMPTE component (BETA625)/ EBU-N10	COMPNT	YPbPr/YC	OFF
BETA 525 component	COMPNT	YPbPr/YC	ON

Installation

Typically, D10CE installation consists of the following:

1. disconnect +5VDC from the convertor
2. configure the DIP switch for the desired equipment configuration and video formats
3. connect video equipment to the convertor BNCs
4. apply +5VDC power to the converter ((AJA power supply model DWP)

Specifications

Item	Specification
Serial Input	SMPTE 259M 270MB, (SDI)
SDI Cable Equalization	300 meter 8281 typical
Serial Outputs	Equalized, Re-clocked
Frequency Response	+/- .15dB to 5.5MHz (Y) +/- .15dB to 2.5MHz (Chroma - Component, RGB) +/- .15dB to 1.3MHz (Chroma - Composite)
2T K factor	< 0.5% (Y)
Differential Gain	< 1 .5%
Differential Phase	< 1 .5 degree
Y/C delay	10ns maximum
D/A Converters	10 bits, 4X oversampling
Signal Path	10 bits
Delay (input to output)	2.5us
Output level adjustment	+/- 20% (internal)
Output level matching	1 .5% or 10mv (All outputs are separately buffered)
Power (AJA power supply model DWP)	5v DC regulated, 4 watt
Size	147 x 79 x 25 mm

