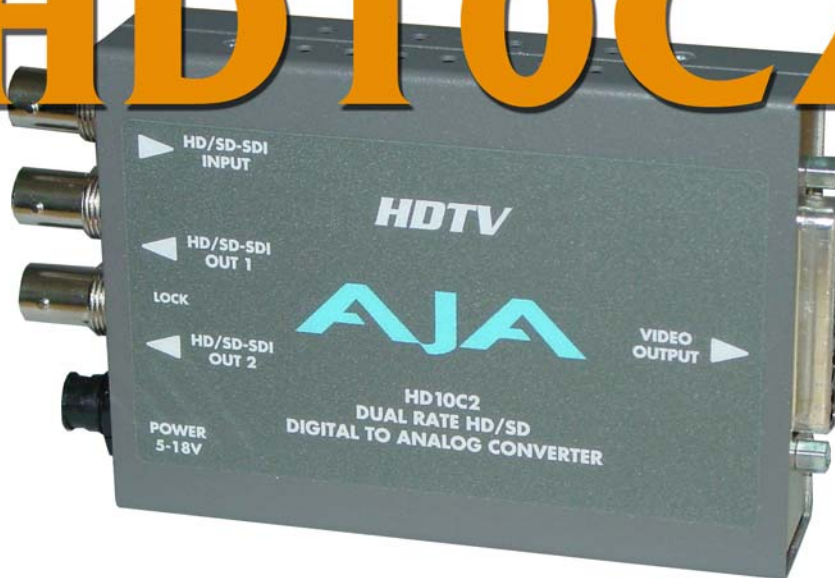


# HD10C2 HDTV Serial Digital To Analog Converter

## User Manual

# HD10C2



**AJA**  
AJA VIDEO SYSTEMS INC

August 11, 2004 P/N 101652-00

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## FCC Emission Information

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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

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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](mailto:support@aja.com)

Sales Email: [sales@aja.com](mailto:sales@aja.com)

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

## Limited Warranty

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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.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care. AJA Video shall not be obligated to furnish service under this warranty a) to repair damage resulting from attempts by personnel other than AJA Video representatives to install, repair or service the product, b) to repair damage resulting from improper use or connection to incompatible equipment, c) to repair any damage or malfunction caused by the use of non-AJA Video parts or supplies, or d) to service a product that has been modified or integrated with other products when the effect of such a modification or integration increases the time or difficulty of servicing the product.

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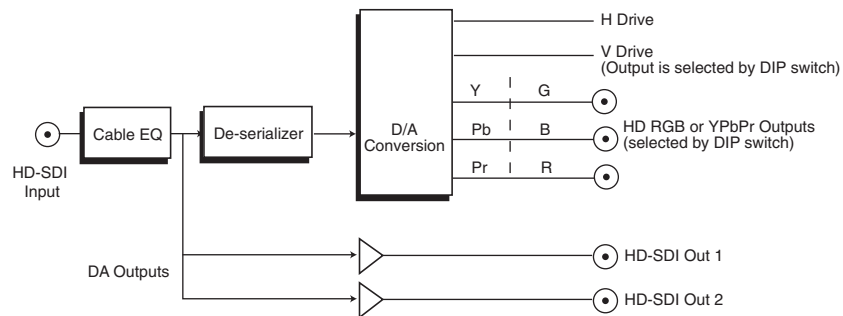
## Introduction

The HD10C2 is a high-quality 10-bit HD converter that's "dual-rate"—and works with both HD-SDI and SDI inputs. For HD-SDI inputs, the HD10C2 outputs full bandwidth HD component or "VGA" style RGBHV video. For SDI inputs, component or composite SD outputs are supported. When connected to a multi-format monitor like the Sony 20L5, the HD10C2 will automatically provide an image from almost any HD or SD input format. The HD10C2 also features 2 equalized HD-SDI outputs.

## Features

- High-Quality 10-bit Dual Rate HD/SD D/A Conversion
- Full Bandwidth HD Analog RGB or YPbPr Output (HD input)
- Component/Composite SD Output (SD input)
- 2 Equalized Loop-Thru HD-SDI/SDI Outputs
- 5 wire RGBHV VGA style HD output
- HD Sync Selectable Between Bi-level and Tri-Level
- 4:3 Safe Area Graticule (HD)
- 5-18VDC Power
- External Dip Switch Configuration

## Block Diagram



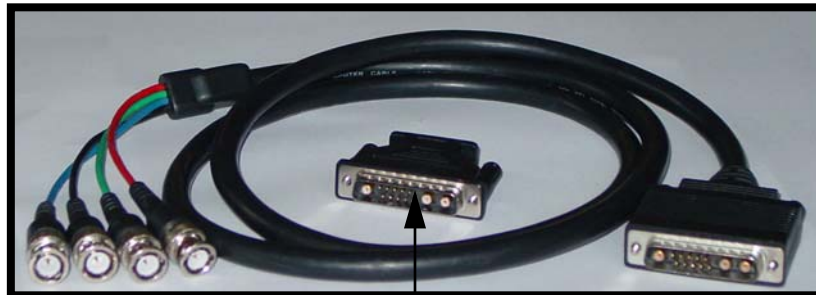
*HD10C2 HD-SDI to Analog Converter, Simplified Block Diagram*

## I/O Connections



**HD10C2 Converter**

**HD10C2 Cable and SVGA Adapter**



BNCs for HD-RGB  
or YPbPr equipment

Connects to Converter  
Output Connector for  
VGA Video

Connects to Converter  
Output Connector for  
HD-RGB or YPbPr  
Video

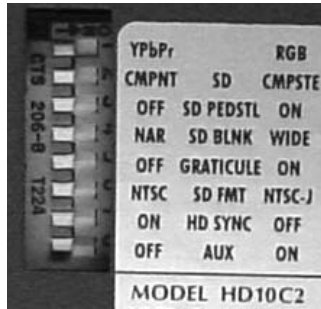
### *HD10C2 and Supplied Items: Component Video Cable and HD15 Adapter*

## Video Output Connector Pinout

The video output connector is a 13W3 D-sub. The pinout is listed below:

Pin	Description
1	no connection
2	V DRIVE
3	no connection
4	GROUND
5	H DRIVE
6 - 9	no connection
10	GROUND
A1	RED / Pr Video/C
A2	GREEN / Y Video?Composite
A3	BLUE/ Pb Video/Y

## User Controls



DIP Switches

LEFT ↔ RIGHT

The user interface for the HD10C2 is an 8-switch DIP accessible through a cut-out in the bottom of the unit. Use the DIP switches to configure output formats, enable/disable video sync and graticule.

The exact function of each DIP switch and what it controls is described on this page.

### Switch 1—Selects Component Video Output Format: RGB or YPbPr

LEFT	RIGHT
YPbPr: Selects YPbPr Component output	RGB: Selects RGB Component output

### Switch 2—Selects Type of SD Output Format: Component or Composite

LEFT	RIGHT
COMPONENT: Selects Component output (SD Input)	COMPOSITE: Selects Composite output (SD Input)

### Switch 3—Enable or Disable SD Pedestal

LEFT	RIGHT
OFF: Disable pedestal (SD Input)	ON: Enable pedestal (SD Input)

### Switch 4—Selects SD Blanking

LEFT	RIGHT
NARROW: Select narrow blanking	WIDE: Selects wide blanking

### Switch 5—Enable/Disable Graticule; in HD Mode Set 4:3 Safe Area

LEFT	RIGHT
OFF: Disable graticule	ON: Enable graticule

### Switch 6—Set SD Format for NTSC or NTSCJ

LEFT	RIGHT
NTSC: Selects NTSC format (SD Input)	NTSCJ: Selects Japan's NTSCJ format (SD Input)

### Switch 7—Enable or Disable HD Sync

LEFT	RIGHT
ON: Enable HD Sync	OFF: Disable HD Sync (remove sync on RGB)

### Switch 8—Aux

LEFT	RIGHT
Not currently used	Not currently used

## HD VGA MODE

For HD VGA mode use the supplied 15 pin D adapter and make the following DIP switch settings:

- S1 = RGB (right)
- S7 = HD SYNC OFF (right)—Note: only certain monitors require no sync on video

## Installation

Typically, HD10C2 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 +5 to +18VDC power to the converter (AJA power supply model DWP)

## Specifications

Item	Specification
Formats	1080i @ 50/59.94/60 Hz 1080p sf @ 23.98/24/25/29.97/30 Hz (displayed as interlaced) 1035i @ 59.94/60 Hz 720p @ 59.94/60 Hz 525i @ 59.94 Hz 625i @ 50 Hz
Input Selection	Automatic
Video Input	HD-SDI/SDI, SMPTE-259/292/296
Input Equalization	100/300 meter 1694 cable (SD/HD)
SDI Outputs	HD-SDI/SDI, active input loop, Equalizing
Video Output:	HD: YPbPr, RGB SD: YPbPr, RGB (component mode) Composite/YC (composite mode)
D/A converters:	12 bits
Sync	Bi-level, Tri-level, H/V drive
2T K factor	< 1% (Y)
Frequency Response	Y +/- .5db to 30 MHz C +/- .25db to 15 MHz
Y/C delay	< 2 ns
Power (AJA power supply model DWP)	+5 to +18v DC regulated, 4 watt
Size	147 x 79 x 25 mm

## Horizontal Scan rates

Format	H ScanRate
1080i	59.94 / 60 Hz    33.75 KHz
1080i	50                    28.125 KHz <sup>1</sup>
1080p sf	23.98 / 24 Hz    27.000 KHz <sup>1</sup>
720p	59.94 / 60 Hz    45.000 KHz

<sup>1</sup>Most VGA monitors are not compatible with an Horizontal scan rate below 30 KHz (including the SONY GDM-W900, a popular HD monitor). The Sony 20L5 and 14L5 are compatible with all formats supported on the HD10C2.

