

HD10CEA

SDI/HD-SDI to Analog Audio/Video Converter

Published: 1/5/11

Installation and Operation Guide

Because it matters.

AJA[®]
VIDEO SYSTEMS

Trademarks

AJA®, KONA®, Ki Pro® and XENA® are registered trademarks of AJA Video, Inc. Io HD™ and Io™ are trademarks of AJA Video, Inc. HDMI, the HDMI logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing LLC. DVI is a registered trademark of DDWG. All other trademarks are the property of their respective holders.

Notice

Copyright © 2011 AJA Video, Inc. All rights reserved. All information in this manual is subject to change without notice. No part of the document may be reproduced or transmitted in any form, or by any means, electronic or mechanical, including photocopying or recording, without the express written permission of AJA Inc.

FCC Emission Information

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:

180 Litton Drive, Grass Valley, CA. 95945 USA

Telephone: 800.251.4224 or 530.274.2048

Fax: 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 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.

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.

THIS WARRANTY IS GIVEN BY AJA VIDEO IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED. AJA VIDEO AND ITS VENDORS DISCLAIM ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. AJA VIDEO'S RESPONSIBILITY TO REPAIR OR REPLACE DEFECTIVE PRODUCTS IS THE WHOLE AND EXCLUSIVE REMEDY PROVIDED TO THE CUSTOMER FOR ANY INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES IRRESPECTIVE OF WHETHER AJA VIDEO OR THE VENDOR HAS ADVANCE NOTICE OF THE POSSIBILITY OF SUCH DAMAGES.

Introduction

The HD10CEA converts SDI/HD-SDI video with embedded audio to analog video and 4 channel balanced analog audio. SD video outputs can be configured as YPbPr (Betacam or SMPTE/EBU-N10), RGB, composite or YC (S-Video). HD video outputs can be configured as YPbPr or RGB. The 4 audio channels can be selected from group 1-4. Audio and video output connections are available on a 25 pin "D" subminiature connector (breakout cable supplied). All video/audio configuration is done by external dipswitch selection. This versatile, low-cost, miniature monitoring solution also outputs two loop-thru SDI/HD-SDI outputs.

Features

- Digital to Analog Audio and Video Converter
- SDI/HD-SDI with Embedded Audio Input
- SD Component or Composite Video Outputs (SD Input)
- HD Component Video Outputs (HD Input)
- 4 Channel Balanced Audio Output
- 2 Equalized, Loop-Thru SD/HD-SDI Outputs
- Selectable Audio Channel Pair/Group
- Audio/Video Configurable via Dipswitch
- Uses 5-18Vdc power (supply sold separately)

Input Formats

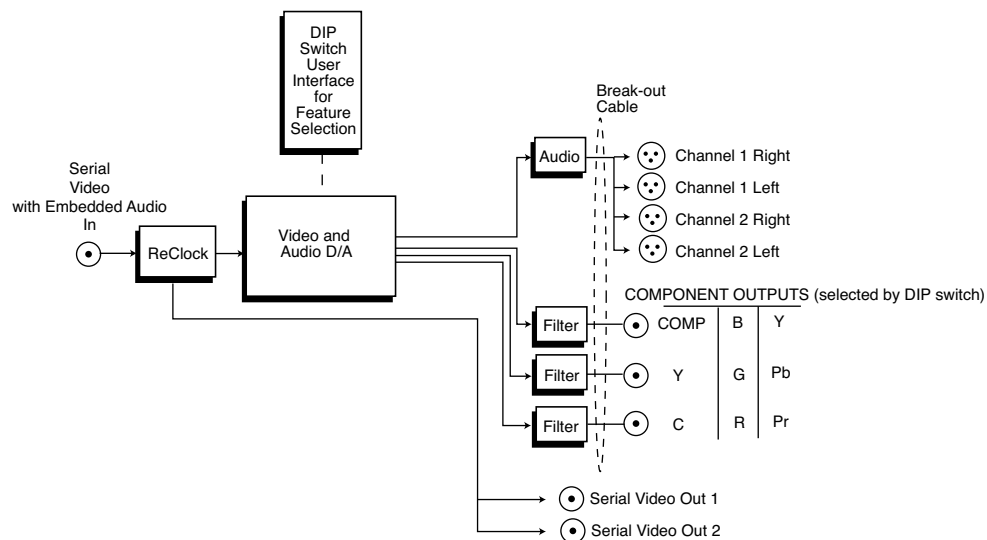
Standard Definition inputs supported:

- 525i 29.97 and 625i 25

High Definition inputs supported:

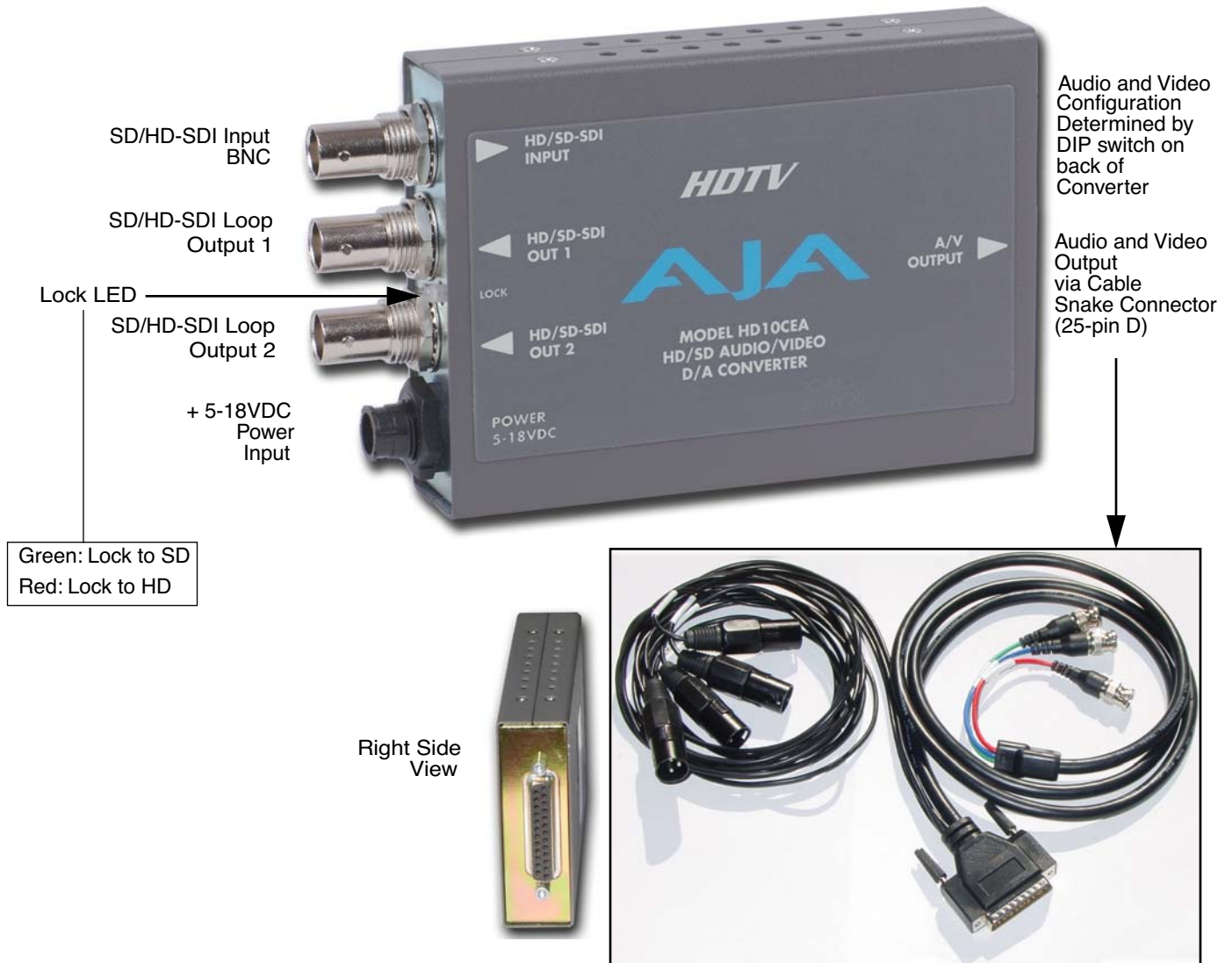
- 1080p component 23.98psf/24psf
- 1080i component 50/59.94/60
- 720p component 50/59.94/60

Block Diagram



HD10CEA Converter, Simplified Block Diagram

I/O Connections



HD10CEA Converter

User Controls

The user interface for the HD10CEA is an 8-switch DIP accessible through a cut-out in the bottom of the unit. Use the DIP switches to configure video outputs, pedestal, select audio channel groups, and set audio level.

Switches 1 through 3 configure video output format. Switches 4 through 7 select the audio channel group and audio level. The exact function of each DIP switch and what it controls is described on the following pages.

YPbPr	FORMAT	RGB
CMPNT	SD	CMPSTE
ON	SD PEDSTL	OFF
0	CH GRP 0	1
0	CH GRP 1	1
0	AUD LVL 0	1
0	AUD LVL 1	1
OFF	AUX	ON

DIP Switches
LEFT ↔ RIGHT
OFF ↔ ON

Note: The composite, S-video, component beta and pedestal switches (Switches 1 through 3) only function when the input is Standard Definition SDI. When supplied with HD-SDI, only component SMPTE or RGB video output is possible from the HD10CEA.

Switch 1—Selects YPbPr/YC or RGB Component Outputs

RIGHT	LEFT (default)
RGB: Selects RGB	YPbPr/YC: Selects YPbPr/YC component video out

Switch 2—Select Component (COMPNT) or Composite (CMPSTE) Out

RIGHT	LEFT (default)
CMPSTE: Selects composite video output	COMPNT: Selects component video output

Switch 3—Configure Pedestal For Composite

RIGHT	LEFT (default)
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.

Switches 4 and 5—Select an Audio Channel Group for Output

Together these two switches select the group of audio channels that will be routed to the XLR connectors on the break-out cable. Each audio group has four channels, corresponding to the four connectors. The following table shows the group and channel assignments selected by each switch position for the two DIP switches.

Group and Channels	S4	S5
Group 0 (default): Channels 1 to 4	Off (Left)	Off (Left)
Group 1: Channels 5 to 8	On (Right)	Off (Left)
Group 2: Channels 9 to 12	Off (Left)	On (Right)
Group 3: Channels 13 to 16	On (Right)	On (Right)

Switches 6 and 7—Select Audio Levels for Output

Together these two switches select audio output levels at the XLR outputs. The following table shows the level selected by each switch position for the two DIP switches.

Audio Level (dbu)	S6	S7
+24.00 dBu (default)	Off (Left)	Off (Left)
+18.00 dBu	On (Right)	Off (Left)
+15.00 dBu	Off (Left)	On (Right)
+12.00 dBu	On (Right)	On (Right)

Switch 8 (AUX)—Switches Component Levels to BETACAM-Japan

RIGHT	LEFT (default)
Select NTSC-J levels for Component BETACAM outputs	Normal operation (NTSC level outputs)

Format Selection

The table below shows how to configure dipswitches 1, 2, 3 and 8 for many popular formats.

Format	SW#1	SW#2	SW#3	SW#8
SD NTSC Composite and S-Video	N/A	Right	Left	N/A
SD NTSC Composite and S-Video-Japan	N/A	Right	Right	N/A
SD 60 Component SMPTE	Left	Left	Right	N/A
SD 60 Component BETACAM	Left	Left	Left	N/A
SD 60 Component BETACAM-Japan	Left	Left	Left	Right
SD 60 RGB with Pedestal	Right	Left	Left	N/A
SD 60 RGB without Pedestal	Right	Left	Right	N/A
HD 60/50 Component SMPTE	Left	N/A	N/A	N/A
HD 60/50 Component RGB	Right	N/A	N/A	N/A
SD PAL Composite and S-Video	N/A	Right	N/A	N/A
SD 50 Component N-10	Left	Left	N/A	N/A

Installation

Typically, HD10CEA installation consists of the following steps:

1. Ensure the HD10CEA is disconnected from power.
2. Connect equipment to the converter BNCs and cable snake BNCs/XLRs.
3. Apply +5-18VDC power to the converter (AJA power supply model DWP or DWP-U).

Specifications

Item	Specification
Inputs	SDI/HD-SDI w/Embedded Audio, 1x BNC
Formats	Standard Definition inputs supported: 525i 29.97 and 625i 25 High Definition inputs supported: 1080p component 23.98psf/24psf 1080i component 50/59.94/60 720p component 50/59.94/60
Outputs	SD Video: YPbPr - SMPTE, EBU-N10, Betacam, RGB, NTSC, PAL, YC (S-Video) HD Video: YPbPr, RGB Audio: 4 Channel Balanced Video/Audio Outputs on 25 Pin D Connector 2 SDI/HD-SDI Equalized Loop-Thru, 2x BNC
User Controls	External Dipswitch Video Format Pedestal H/V Blanking Audio Group 1 - 4 Audio Level (adjustable via switch selection): +24, +18, +15, +12 dBu, Full Scale Digital
Size	5.8" x 3.1" x 1" (147 x 79 x 25mm)
Power	+5-18VDC, Regulated, 4 Watts Requires Power Supply (AJA power supply model DWP or DWP-U recommended)

