

HA5 HDMI To HD-SDI/SDI Video and Audio Converter

User Manual



HDMI[™]
HIGH DEFINITION MULTIMEDIA INTERFACE

AJA
VIDEO SYSTEMS

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Fax: 530.274.9442 Web: <http://www.aja.com>

Support Email: support@aja.com

Sales Email: sales@aja.com

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Introduction

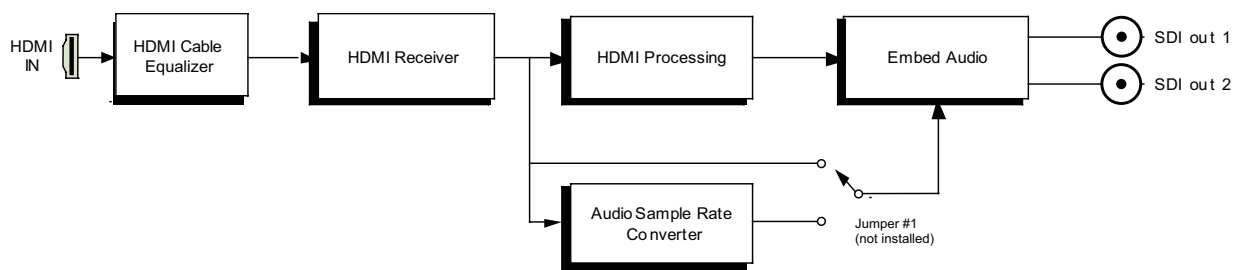
The HA5 converts HDMI to SDI or HD-SDI. Up to eight channels of HDMI audio are embedded into the SDI/HD-SDI output allowing a convenient single cable audio/video connection. The HA5 provides two SDI/HD-SDI outputs and supports long HDMI cables on the input. The HA5 is useful for connecting HDMI cameras and other sources to SDI/HD-SDI capture cards and equipment.

Features

- HDMI to SDI/HD-SDI
- Full 10-bit Conversion
- Full HDMI support including embedded audio
- Equalized HDMI input supports long HDMI cables up to 40m
- PLL clock filtering for low jitter SDI/HD-SDI outputs
- Lock LED shows type of input source: SD (green) or HD (red)
- HDMI cable supplied
- Uses 5V power (supply sold separately)

Note: The HA5 will not pass HDMI video with HDCP copy protection.

Block Diagram



HA5 Converter, Simplified Block Diagram

Audio

HA5 converter supports 8 audio channels (4 stereo pairs) at 24-bit/48 KHz which it dis-embeds from HDMI and embeds into SDI. For proper embedding, audio must be synchronous to video. However, if audio is not synchronous with video or the sample rate is not 48 KHz, then jumper #1 must be installed. Having jumper #1 installed forces an onboard Sample Rate Converter to convert audio to 24-bit/48 KHz and then synchronize it with input video before embedding. In this scenario only channels 1/2 are embedded—the other 6 channels are muted.

I/O Connections



HA5 Converter

User Controls

An internal jumper block (J2) with 3 jumpers provides controls for SDI output range and SDI audio. The Color Space is automatically detected to be either YCbCr, which is passed to SDI unmodified, or RGB—which can be a narrow or wide range before output to SDI. Each setting is described in the table below.

Internal Jumper

Jumper #1	Jumper #2	Jumper #3
Installed (default) = 2 channels (1/2) of audio with Sample Rate Conversion to 48 KHz	Installed (default) = Wide RGB in (0-1023) to YCbCr out (64-940)	Installed (default) = Auxiliary (not used)
Removed = 8 channels of audio at 48 KHz	Removed = Narrow RGB in (64-940) to YCbCr out (64-940)	

To access this jumper, remove the four phillips screws securing the back side of the HA5 case. Once the case cover is removed, locate the jumper block. Jumper positions 1 through 3 are clearly marked on the circuit board.

Installation

Typically, HA5 installation consists of the following steps:

1. Ensure the HA5 is disconnected from power.
2. Connect equipment to the converter BNCs and HDMI input connector.
3. Apply +5VDC power to the converter (AJA power supply model DWP or DWP-U).

Specifications

Item	Specification
Input	HDMI with embedded audio
Input Formats	525i, 625i 1080p23.98/24/25/29.97/30 1080i 50/59.94/60 720p 50/59.94/60
Outputs	SMPTE-259/292/296, SDI/HD-SDI, 2 x BNC
HDCP	Content not supported
Size	4.6" x 2.4" x 1" (117 x 61 x 25 MM.)
Power	+5 VDC regulated, 4 watts, Requires Power Supply (AJA power supply model DWP or DWP-U recommended)

