GEN10
HD/SD Sync Generator

User Manual

GEN10

AJA
VIDEO SYSTEMS

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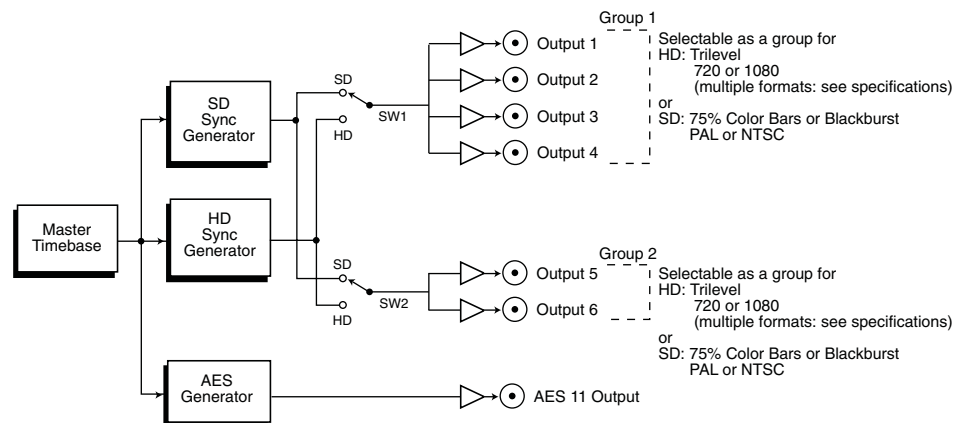
Introduction

The GEN10 is a cost effective and flexible SD/HD/AES sync generator. The GEN10 features 7 outputs including 2 groups of independently controlled SD/HD sync outputs and 1 AES-11 output. The SD outputs can be switched between Color Black or Color Bars. HD tri-level sync can be switched between 19 different HD formats including all that are in use today. The AES-11 output can be switched between SILENCE and TONE. All outputs are in sync with each-other and are sourced from an accurate master time base.

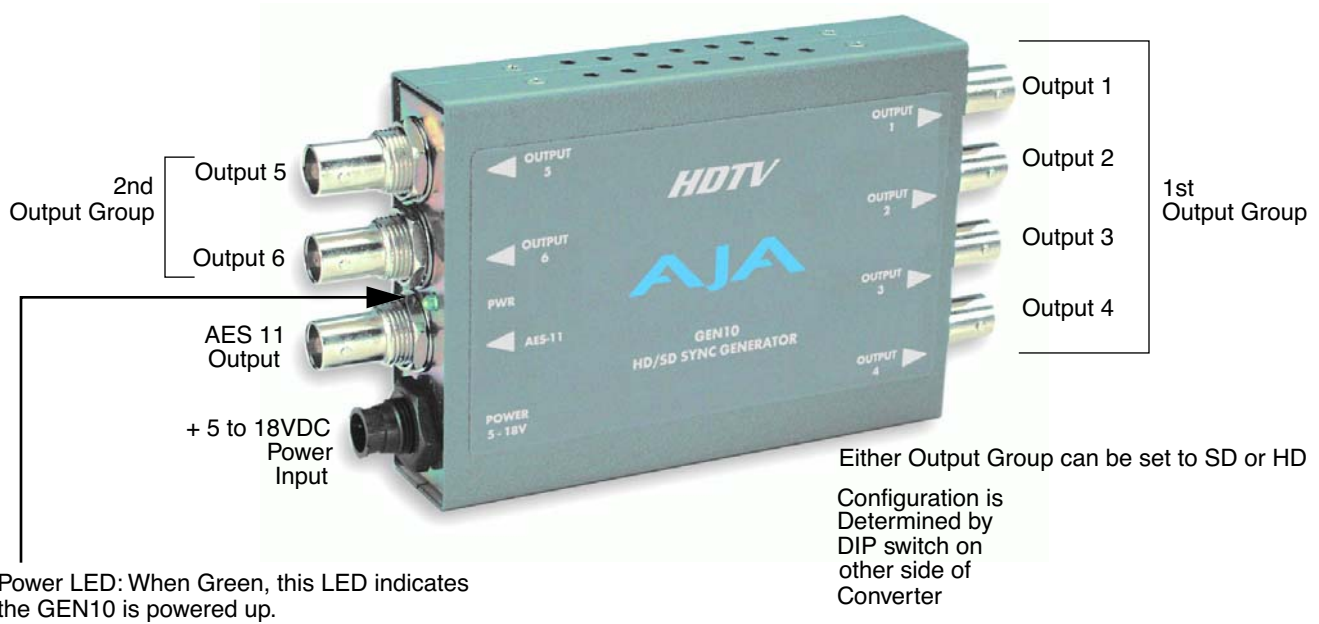## Features

- HD Tri-level sync generation
- SD Color Black or Color Bars
- Two groups of independently switchable outputs allows simultaneous HD and SD sync generation
- AES-11 output switchable between silence and tone
- Multiple outputs can synchronize entire systems without requiring a Sync DA
- 5-18VDC Power
- External Dip Switch Configuration

Block Diagram

GEN10, Block Diagram

I/O Connections

2nd Output Group — Output 5

Output 6

AES 11 Output

+ 5 to 18VDC Power Input

Output 1

Output 2

Output 3

Output 4

1st Output Group

Either Output Group can be set to SD or HD

Configuration is Determined by DIP switch on other side of Converter

Power LED: When Green, this LED indicates the GEN10 is powered up.

GEN10, Side View

User Controls

The user interface for the GEN10 is an 8-switch DIP accessible through a cut-out in the bottom of the unit. Use the DIP switches to configure outputs and formats.

Note: The combination of switch settings determines the overall operation of the GEN10.

The exact purpose of each DIP switch and what it controls is described on the following pages.

DIP Switch Setting
LEFT → RIGHT

SD	OUT 1-4	HD
SD	OUT 5-6	HD
BLK	SD OUT	BARS
59.94	FORMAT	50
1080	HD FMT	720
0	S1	1
0	S2	1
0	S3	1

MODEL GEN10

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Switch 1 (OUT 1-4)—Switches outputs 1-4 between SD and HD sync

LEFT (SD)	RIGHT (HD)
Selects SD Sync	Selects HD Sync

Switch 2 (OUT 5-6)—Switches outputs 5-6 between SD and HD sync

LEFT (SD)	RIGHT (HD)
Selects SD Sync	Selects HD Sync

Switch 3 (SD OUT)—Switches SD output between Color Black and Color Bars. Also switches AES output between BLK/Silence and BARS/TONE

LEFT (BLACK)	RIGHT (BARS)
SD Output is Color Black AES-11 output is silent	SD Output is 75% Color Bars AES-11 output with tone

Switch 4 (FORMAT)—Switches outputs between 59.94/60Hz and 50Hz

LEFT (59.94)	RIGHT (50)
Select NTSC related frame rates (for true 60/24Hz see chart that follows)	Select PAL related frame rates

Switch 5 (HD FMT)—Switches HD between 720 and 1080 formats

LEFT (1080)	RIGHT (720)
Select 1080 line formats	Select 720 line formats

Switches 6 (S1), 7 (S2), and 8 (S3)—Used for selecting "less popular" HD Formats

For the most popular HD formats switches 6, 7, and 8 should be set to the default position (all three switches set to LEFT or "000", as listed in the chart that follows). Switches 6, 7, and 8 should only be changed to select other HD formats that are more rarely used. The following chart in Table 1 shows how to select those formats using switches 4 through 8 in combination.

Table 1. Selection Matrix For Switches 6, 7 and 8
The following table shows the combinations of DIP switch settings required to configure various formats. To use the table, first locate the video format you want in the colored columns and then set switches as shown in the corresponding left hand gray column.

Note: the switches numbers and labels are both shown on the chart, with the labels in parentheses (for example, switch 4 is labelled "FORMAT" and switch 8 is labelled "S3").

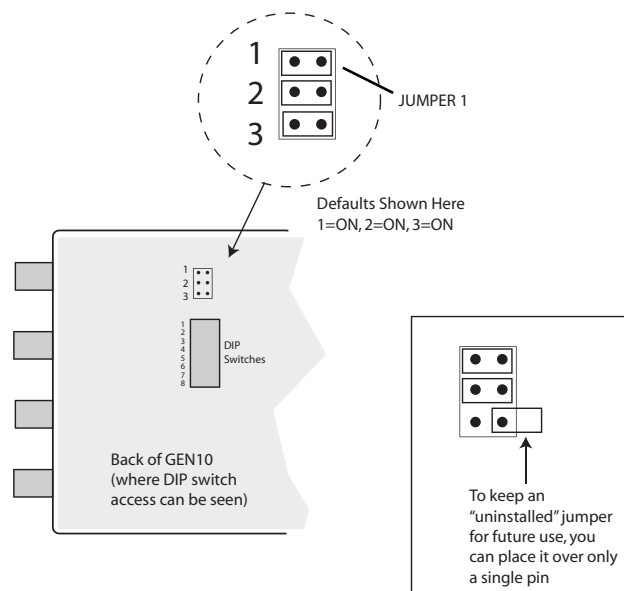| SW 4 (FORMAT)	59.94		50	
SW 5 (HD FMT)	1080	720	1080	720
SW8 (S3) - SW7 (S2) -SW6 (S1): These three switches form a binary value shown in the left hand column below. A "0" = switch LEFT, a "1" = switch RIGHT.				
SW8-SW7-SW6 (S3) (S2) (S1)				
0 0 0	1080i59.94	720p59.94	1080i50	720p50
0 0 1	1080psf23.98	720p23.98	1080i50	720p25
0 1 0	1080p23.98	720p23.98	1080p25	720p25
0 1 1	1080p29.97	720p29.97	1080p25	720p25
1 0 0	1080i60	720p60	1080i50	720p50
1 0 1	1080psf24	720p24	1080i50	720p25
1 1 0	1080p24	720p24	1080p25	720p25
1 1 1	1080p30	720p30	1080p25	720p25

Note: for 1080psf29.97   use 1080i59.94
for 1080psf30   use 1080i60
for 1080psf25   use 1080i50

Internal Jumper

An internal jumper block with 3 jumpers determines the offset to Pedestal for NTSC. For most instances, the factory default (all jumpers in place) will be the proper setting.

- Jumper 1 installed (default): NTSC with Setup (54 mV pedestal offset)
- Jumper 1 removed : NTSC without Setup (no offset)

Note: Jumpers 2 and 3 are ignored—installed or not, they do not affect operation.

JUMPER 1

Defaults Shown Here
1=ON, 2=ON, 3=ON

DIP Switches

Back of GEN10 (where DIP switch access can be seen)

To keep an "uninstalled" jumper for future use, you can place it over only a single pin

GEN10 Internal Jumper (remove back of case to access)

Specifications

Item	Specification
HD Sync	Tri-level
SD Sync	Color Black, 75% Color Bars
AES-11 Output	AES-11, 48KHz, Silent or 1KHz Tone (-20dBFS for NTSC, -18dBFS for PAL), 1 BNC
Video Sync Outputs	Assignable in two groups to either HD or SD: 4 BNCs—Outputs 1 to 4 2 BNCs—Outputs 5 and 6
Accuracy	3 ppm
Formats	525i, 625i 720p23.98/24/25/29.97/30/50/59.94/60 1080i50/59.94/60 1080psF23.98/24/25/29.97/30 1080p23.98/24/25/29.97/30
User Controls	External Dipswitch
Size	5.8" x 3.1" x 1 (147 x 79 x 25mm)
Power	5-18VDC, 2 watts. Requires power supply.