

AJA FS1-X Frame Sync/Converter with MADI audio

Video Input/Output Formats

The FS1-X supports a wide variety of video formats and connectors, as listed below.

SDI and Fiber

The FS1-X has two standard SDI video inputs and outputs, and two optional Fiber video inputs and outputs.

All SDI video inputs and outputs, including Fiber, are YCbCr 4:2:2 pixel format.

SD-SDI, 270Mb (SMPTE 259-C)

- 525i 59.94
- 625i 50

HD-SDI, 1.4835 Gb (SMPTE 292)

- 720p 59.94
- 1080i 59.94
- 1080PsF 23.98, 29.97
- 1080p 23.98, 29.97
- 2K 1080p 23.98, 29.97

Dual-link HD-SDI, 2x 1.4835Gb (SMPTE 372)

- 1080p 59.94
- 2K 1080p 59.94

Dual-link HD-SDI, 2x 1.485Gb (SMPTE 372)

- 1080p 50
- 2K 1080p 50

3G-SDI Level A 2.967 (2.97/1.001) Gb (SMPTE 425-A)

- 1080p 59.94 (SMPTE 274)
- 2K 1080p 59.94

3G-SDI Level A 2.97 Gb (SMPTE 425-A)

- 1080p 50 (SMPTE 274)
- 2K 1080p 50

3G-SDI Level B 2.967 (2.97/1.001) Gb (SMPTE 425-B / SMPTE 372)

- 1080p 59.94 (SMPTE 274)
- 2K 1080p 59.94

2.97 Gb 3G-SDI Level B (SMPTE 425-B / SMPTE 372)

- 1080p 50 (SMPTE 274)
- 2K 1080p 50

HDMI

The HDMI input only accepts SMPTE video formats, and accepts embedded audio. Video input formats are RGB or YCbCr 4:2:2 pixel format for consumer video scan formats. Computer scan rates are not supported.

- 525i 59.94
- 525p 59.94
- 625i 50
- 625p 50
- 720p 50, 59.94
- 1080i 50, 59.94
- 1080p 23.98, 24, 25, 29.97, 50, 59.94

Component HD/SD Analog

The Component Analog Input accepts YCbCr 4:2:2 pixel format, configurable to SMPTE or Betacam levels. If the composite input is used, the component input is not available.

- 525i 59.94
- 625i 50
- 720p 50, 59.94

- 1080i 59.94
- 1080PsF 23.98, 24, 25, 29.97
- 1080p 23.98, 24, 25, 29.97

Composite SD Analog

The FS1-X composite analog video input/output formats are listed below. If the component inputs are used, the composite input is not available.

- 525i 59.94 (switchable to NTSC 7.5 IRE or 0 IRE setup)
- 625i 50

Reference

- 525i 59.94, 625i 50 analog composite
- 720p 50, 59.94 tri-level sync
- 1080i 50, 59.94 tri-level sync
- 1080p 50 tri-level sync
- Genlock available to the current Video Processor 1 Input
- Free run

Format Exceptions

The following formats are not supported:

- 720p 23.98, 24, 25, 29.97
- All 30, 60 frame rates
- 4:4:4 YCbCr, RGB, or XYZ inputs
- 4:2:2 YCbCr 12-bit inputs

Video Format Conversion

Standard FS1-X Conversions

The standard FS1-X can convert almost any input format to nearly any output format, as long as the frame rates are of the same frame rate family. The three families are:

- 23.98, 29.97, 59.94
- 25, 50
- 24

See "Conversion Exceptions" below.

FRC FS1-X Enabled Conversion

When the factory installed Frame Rate Converter (FRC) option is present and active, conversions between different frame rate families are supported. An appropriate genlock reference format will be required.

Supported Conversions, FRC Enabled

Input Format	Output Format	Genlock Source Formats Supported
525i 59.94	625i 50; 1080i 50	625i 50; 1080i 50
525i 59.94	720p 50; 1080p 25, 50	625i 50; 1080i 50; 720p 50
525i 59.94	1080PsF 25	625i 50; 1080i 50
525i 59.94	2K 1080PsF 25, 50	625i 50; 1080i 50; 720p 50
625i 50	525i 59.94; 1080i 59.94	525i 59.94; 1080i 59.94
625i 50	720p 59.94	525i 59.94; 1080i 59.94; 720p 59.94
625i 50	1080PsF 29.97	525i 59.94; 1080i 59.94
625i 50	1080p 29.97, 59.94; 1080PsF 29.97; 2K 1080p 29.97, 59.94	525i 59.94; 1080i 59.94; 720p 59.94
1080i 50	525i 59.94; 1080i 59.94; 1080PsF 29.97	525i 59.94; 1080i 59.94
1080i 50	720p 59.94; 1080p 29.97, 59.94; 2K 1080p 29.97, 59.94	525i 59.94; 1080i 59.94; 720p 59.94
1080i 59.94	625i 50; 1080i 50; 1080PsF 25	625i 50; 1080i 50
1080i 59.94	720p 50; 1080p 25, 50; 2K 1080p 25, 50	625i 50; 1080i 50; 720p 50
720p 50	1080p 29.97, 59.94; 1080PsF 29.97; 2K 1080p 29.97 59.94	525i 59.94; 1080i 59.94; 720p 59.94
720p 50	525i 59.94; 1080i 59.94; 1080PsF 29.97	525i 59.94; 1080i 59.94
720p 59.94	625i 50; 1080i 50; 1080PsF 25	625i 50; 1080i 50
720p 59.94	720p 50; 1080p 25, 50; 2K 1080p 25, 50	625i 50; 1080i 50; 720p 50

1080p 50	525i 59.94; 1080i 59.94; 1080PsF 29.97	525i 59.94; 1080i 59.94
1080p 50	1080p 29.97, 59.94; 1080PsF 29.97; 2K 1080p 29.97, 59.94	525i 59.94; 1080i 59.94; 720p 59.94
1080p 59.94	625i 50; 1080i 50; 1080PsF 25	625i 50; 1080i 50
1080p 59.94	720p 50; 1080p 25, 50; 2K 1080p 25, 50	625i 50; 1080i 50; 720p 50
1080PsF 24	625i 50; 1080i 50; 1080PsF 25	625i 50; 1080i 50
1080PsF 24	720p 50; 1080p 25, 50; 2K 1080p 25, 50	625i 50; 1080i 50; 720p 50
1080PsF 24	525i 59.94; 1080i 59.94; 1080PsF 29.97	525i 59.94; 1080i 59.94
1080PsF 24	720p 59.94; 1080p 29.97, 59.94; 2K 1080p 29.97, 59.94	525i 59.94; 1080i 59.94; 720p 59.94
1080PsF 23.98	625i 50; 1080i 50; 1080PsF 25	625i 50; 1080i 50
1080PsF 23.98	720p 50; 1080p 25, 50; 2K 1080p 25, 50	625i 50; 1080i 50; 720p 50
1080PsF 23.98	525i 59.94; 1080i 59.94; 1080PsF 29.97	525i 59.94; 1080i 59.94
1080PsF 23.98	720p 59.94; 1080p 29.97, 59.94; 2K 1080p 29.97, 59.94	525i 59.94; 1080i 59.94; 720p 59.94

Conversion Exceptions

Selecting the following format and frame rate conversions will cause a Video Format alarm.

Non-Supported Conversions

Input Format	Output Format
525i 59.94	1080p 23.98; 1080PsF 23.98
1080i 59.94	1080p 23.98; 1080PsF 23.98
720p 29.97, 59.94	1080p 23.98; 1080PsF 23.98
1080p 29.97; 1080PsF 29.97	1080p 23.98; 1080PsF 23.98
625i 50	1080p 24; 1080PsF 24
1080i 60	1080p 24; 1080PsF 24
720p 30, 60	1080p 24; 1080PsF 24
1080p 30	1080p 24; 1080PsF 24

Video Format Alarms

When incompatible I/O formats are detected, an alarm can be triggered with these results:

- Lights the relevant alarm LED on the front panel (FMT ERROR, 1 or 2).
- Displays an alarm in the browser user interface.
- Influences selection of the first-displayed status screen.
- Generates an SNMP trap (if configured).
- Triggers a GPI Output (if configured).