

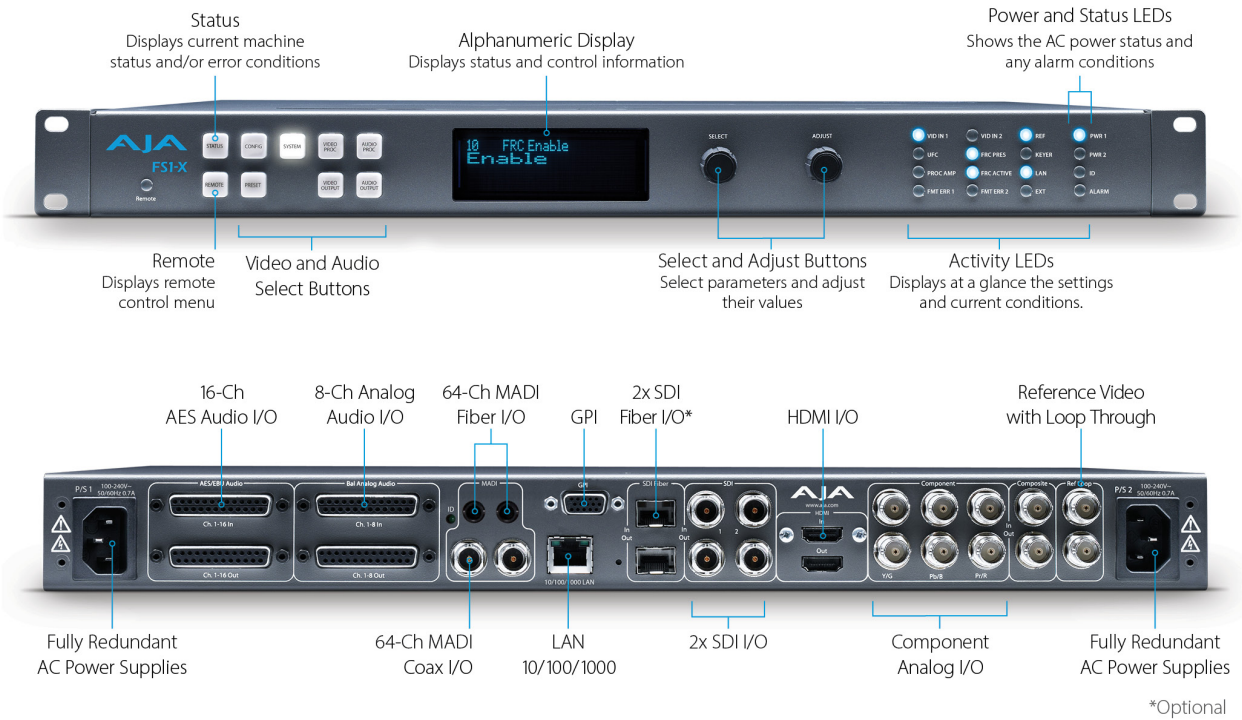


FS1-X

FS1-X is the next evolution in frame synchronization and conversion. Within its compact 1RU chassis, FS1-X integrates an amazing array of video and audio connectivity and processing, including 56- and 64-channel MADIs audio over coax or fiber. With its flexible architecture, FS1-X utilizes a high-quality, motion adaptive linear Frame Rate Converter for smooth motion conversion between a wide range of frame rates whether for broadcast, production or live events.

\$3,495 US MSRP

<https://www.aja.com/products/fs1-x>



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.
- Fiber connections support 3G-SDI, SMPTE-259/292/296, 8- or 10-bits (optional)
 - Single channel LC connector modules
 - Single channel SC connector modules
 - Dual channel LC connector modules
- 2.97 Gb 3G-SDI Level B (SMPTE 425-B / SMPTE 372)
 - 2K 1080p 50
 - 1080p 50 (SMPTE 274)
- 3G-SDI Level B 2.967 (2.97/1.001) Gb (SMPTE 425-B / SMPTE 372)
 - 2K 1080p 59.94
 - 1080p 59.94 (SMPTE 274)
- 3G-SDI Level A 2.97 Gb (SMPTE 425-A)
 - 2K 1080p 50
 - 1080p 50 (SMPTE 274)
- 3G-SDI Level A 2.967 (2.97/1.001) Gb (SMPTE 425-A)
 - 2K 1080p 59.94
 - 1080p 59.94 (SMPTE 274)
- Dual link HD-SDI, 2x 1.485 Gb (SMPTE 372)
 - 2K 1080p 50
 - 1080p 50
- Dual link HD-SDI, 2x 1.4835 Gb (SMPTE 372)
 - 2K 1080p 59.94
 - 1080p 59.94
- HD-SDI, 1.4835 Gb (SMPTE 292)
 - 2K 1080p 23.98, 29.97
 - 1080p 23.98, 29.97
 - 1080PsF 23.98, 29.97
 - 1080i 59.94
 - 720p 59.94
- SD-SDI, 270 Mb (SMPTE 259-C)
 - 625i 50
 - 525i 59.94

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

- 625i 50
- 525i 59.94

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

Reference

- 1080p 50 tri-level sync
- 1080i 50, 59.94 tri-level sync
- 720p 50, 59.94 tri-level sync
- 525i 59.94, 625i 50 analog composite
- 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

NOTE: 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)

Video A/D, D/A Converters

- 12-bits
- 2x oversampled (HD)
- 4x oversampled (SD)

Audio Inputs/Outputs

- The FS1-X can accept and route any audio inputs to any audio output.
 - 8-Channel balanced analog I/O, DB-25F 25-pin connector (Tascam pinout)
 - 16-Channel AES/EBU I/O (BNC), DB-25F 25-pin connector
 - 16-Channel SDI/HD-SDI embedded BNC (2)
 - 16-Channel SDI/HD-SDI embedded Fiber (2)
 - 64-Channels MADI digital audio. BNC
 - 64-Channels MADI digital audio. Fiber

Audio Analog Levels

- Analog audio input and output levels, as referenced to full scale digital, can be set to:
 - +12 dBu (consumer), +15 dBu, +18 dBu, +24 dBu (professional)

Audio Adjustments

- Individual audio channels (or channel pairs) can be adjusted for:
 - Level: +/- 18 dB
 - Phase: Normal or Reverse
 - Delay: -128 to +12288 samples (-2.7 ms to +256 ms)

LAN Interfaces

- 10/100/1000 automatic configuration
- Automatic cable crossover (auto MDI-X)
- Embedded web server
- SNMP

GPI Interace

- DB-15F: Single connector provides four inputs and four outputs. See Appendix B for a connector pinout and GPI specifications

Size (w x d x h)

- 19.0" x 16.0" x 1.75" (1RU) (482.6 x 406.4 x 44.45 mm)

Weight

- 7.9 lbs (3.6 kg)

Power

- 100-240 VAC 50/60 Hz, (Dual, redundant power supplies), 55W typical, 60W with FRC option; 70W max.

Environment

- Cooled via two internal fans and side vents
- Safe Operating Temperature: 0 to 40 C (32 to 104 F)
- Safe Storage Temperature (Power OFF): -40 to 60 C (-40 to 140 F)
- Operating Relative Humidity: 10-90% noncondensing
- Operating Altitude: <3,000 meters (<10,000 feet)