FS1

1RU Frame Sync and Converter

![AJA VIDEO SYSTEMS]

Because it matters.®

FS1

The Power to Convert

With support of all broadcast video formats, the FS family make matching up disparate video and audio systems simple with comprehensive analog and digital I/O, up, down, cross-conversion and frame synchronization.

AJA's FS family of frame synchronizing converters deliver power and flexibility for up/down/ cross conversion in just 1RU of space. Align mismatched signal types, including computer DVI signals, to establish a consistent format for post production or broadcast.

AJA's FS family brings the full power of our hardware conversion expertise in compact 1RU rack units that offer unrivaled flexibility.

Delivering AJA's industry standard up/down/cross conversion technology for the highest quality images, FS units are ideal for high-density applications such as mobile trucks and packed machine rooms, able to replace multiple hardware units in a single rack slot. The widest range of conversion possibilities makes them perfect for converting disparate sources to a common format, or handling whatever formats the production environment might throw at you. Easy to use and fully networkable via buit in 10/100/1000MB Ethernet ports, FS1 and FS2 are easily integrated into a facility and can be rapidly configured by any computer on the network via a standard web browser. FS units also accept automation control from external GPI commands.

With flexible I/O support, FS1 can simultaneously work with SD and HD video - as well as converting between both. FS2 adds the ability to process two independent streams of 3G/HD/SD 10-bit broadcast-quality video, including high-quality image scaling capabilities and two independent groups of 16-channel AES audio, opening a new world of conversion possibilities.

Built to the exacting standards of all AJA hardware, FS frame synchronizers are backed by our world-class support network, 5-year international warranty and advanced exchange service.

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Digital and analog I/O flexibility

FS frame synchronizers are loaded with comprehensive I/O that lets them handle the widest range of analog and digital signals - and convert between them.

Perfect for use in all broadcast and post production environments, FS units feature Dual HD/SD-SDI inputs and outputs, comprehensive multi-channel audio connections and I/O for analog video equipment, including HD and SD component. FS2 also features HDMI I/O with support for 3D output, and a Fiber connectivity option.

AJA hardware conversion technology

AJA's hardware conversion technology ensures the highest image quality for your productions. Key conversion features include:

• HD/SD up, down-conversion
• SD/SD aspect ratio conversion
• HD/HD cross-conversion (720p/1080i)
• Up, down, cross-conversion with both the input and converted formats on HD/SD-SDI outputs (both synchronized)
• HD cross-conversion with simultaneous down-converted SDI output
• Closed Caption conversion (CEA-608/CEA-708 standards)
• AFD conversion or pass-through (user-selectable)

Remote configuration and control

FS units are network ready and support SNMP monitoring and web-based remote control. Units can be connected to any Ethernet network via the built-in 10/100/1000MB Ethernet port, allowing control and configuration of multiple FS units from any web browser on a connected computer. Configurations can be saved and applied to multiple units, ensuring consistency and quick configuration in large installs.

To integrate smoothly with the existing automation of a facility, both FS1 and FS2 can also receive external GPI commands to trigger a variety of functions, from freezing an input source to switching between saved presets.

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Only $2,995 US MSRP*

Find a Reseller

FS1 is a powerful and flexible frame synchronizer and high quality converter that helps you work with mismatched signal types to establish a consistent format for post production or broadcast.

Universal Frame Synchronizer/Converter

Powerful functionality in a compact, easy-to-use package.

Featuring a flexible input, output, and control architecture, the FS1 Universal HD/SD Video and Audio Frame Synchronizer and Converter can simultaneously work with both HD and SD video all in full 10-bit broadcast quality video and 24-bit audio.
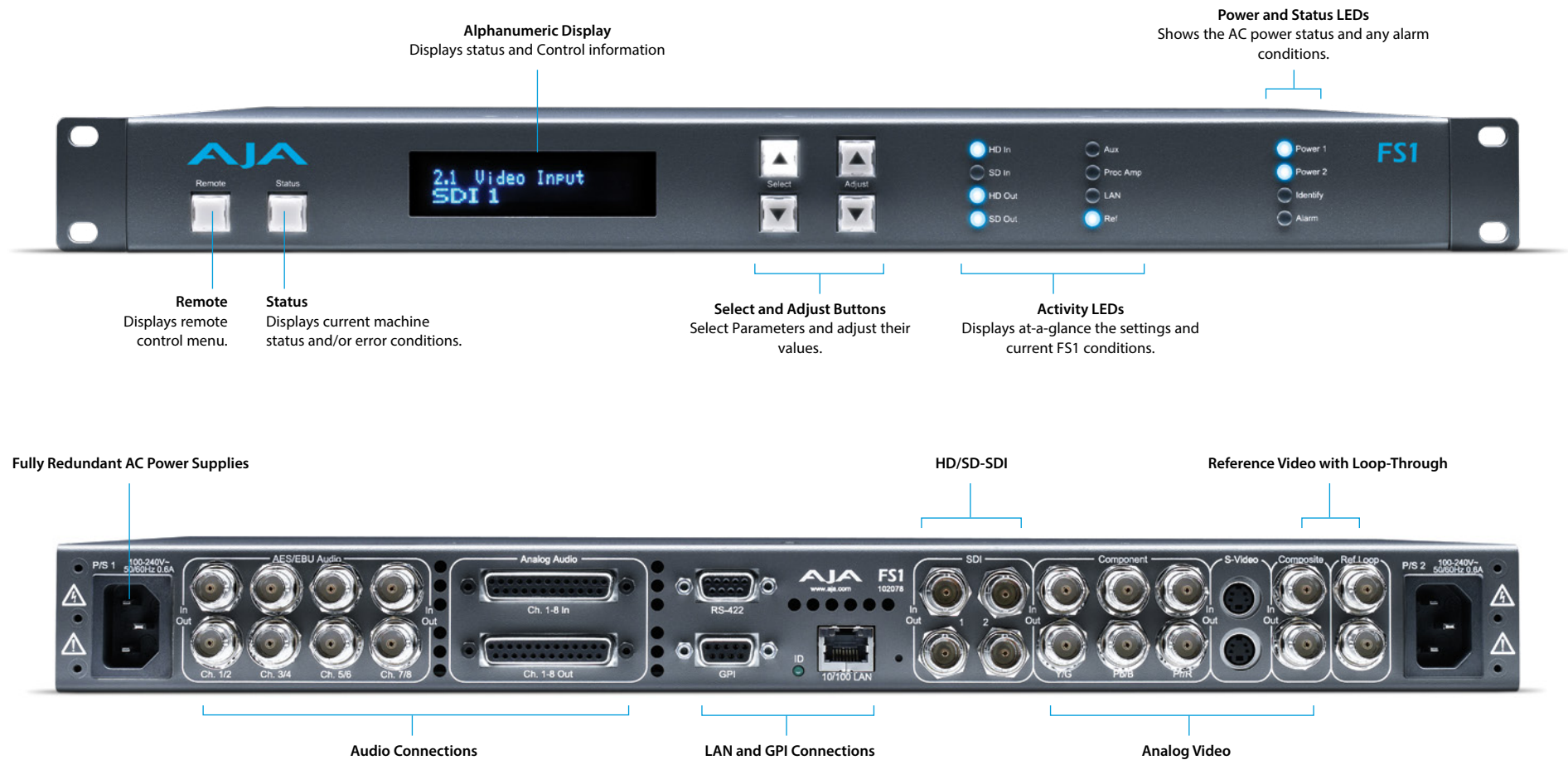
Supporting virtually any input or output, analog or digital, HD or SD, FS1 can up or down convert between SD and HD, and provide simultaneous HD and SD outputs. Up, down, cross conversion between HD formats is also supported, with simultaneous output of both formats.

For audio, FS1 supports 8-channel AES, balanced analog, or 16-channel embedded audio with full flexibility and audio processing controls. You can choose from any of the 4 groups of embedded audio for 8-channel output via AES or analog audio.

FS1 also supports closed captioning and the conversion of closed captioning between SD and HD formats—including full conversion of CEA-608 captions to the CEA-708 standard.

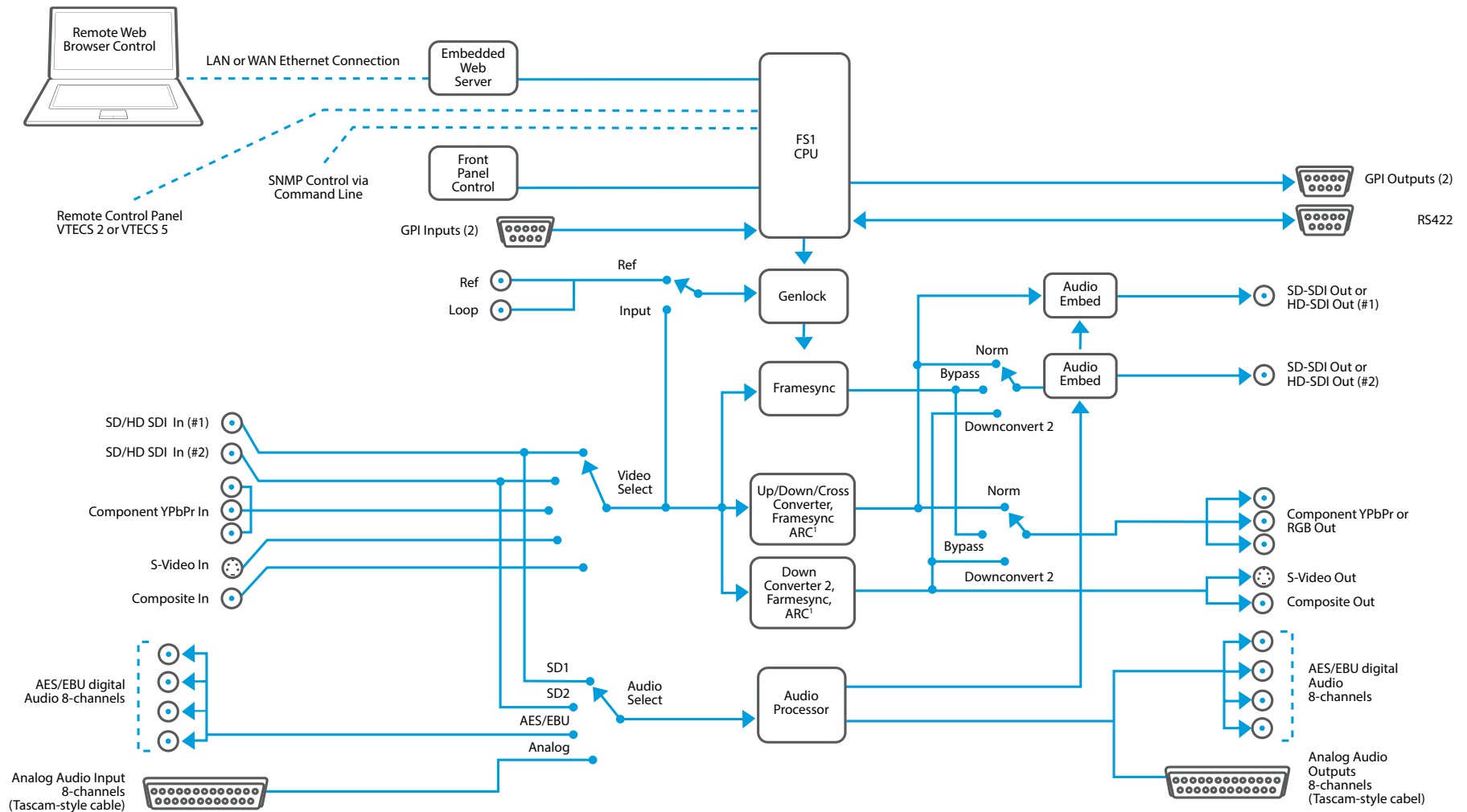*Pricing is for US only. International pricing will vary. Please contact a local AJA Reseller for pricing details.*

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Connections

Alphanumeric Display
Displays status and Control information

Power and Status LEDs
Shows the AC power status and any alarm conditions.

Remote
Displays remote control menu.

Status
Displays current machine status and/or error conditions.

Select and Adjust Buttons
Select Parameters and adjust their values.

Activity LEDs
Displays at-a-glance the settings and current FS1 conditions.

Fully Redundant AC Power Supplies

HD/SD-SDI

Reference Video with Loop-Through

Audio Connections

LAN and GPI Connections

Analog Video

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Architecture

Remote Web Browser Control

LAN or WAN Ethernet Connection

Embedded Web Server

FS1 CPU

SNMP Control via Command Line

Remote Control Panel VTECS 2 or VTECS 5

Front Panel Control

GPI Inputs (2)

GPI Outputs (2)

RS422

Ref

Ref

Ref

Loop

Input

Genlock

Framesync

Audio Embed

SD-SDI Out or HD-SDI Out (#1)

Norm

Bypass

Audio Embed

SD-SDI Out or HD-SDI Out (#2)

Downconvert 2

SD/HD SDI In (#1)

SD/HD SDI In (#2)

Component YPbPr In

S-Video In

Composite In

Video Select

Up/Down/Cross Converter, Framesync ARC[1]

Norm

Component YPbPr or RGB Out

Down Converter 2, Farmesync, ARC[1]

Bypass

Downconvert 2

S-Video Out

Composite Out

AES/EBU digital Audio 8-channels

SD1

SD2

AES/EBU

Analog

Audio Select

Audio Processor

AES/EBU digital Audio 8-channels

Analog Audio Input 8-channels (Tascam-style cable)

Analog Audio Outputs 8-channels (Tascam-style cabel)

Notes: ARC[1]=Aspect Ratio Converter

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Tech Specs

Video Formats

- 525i 29.97
- 625i 25
- 720p 50, 59.94, 60
- 1080i 25, 29.97, 30
- 1080PsF 23.98, 24
- 1080p 24, 25, 30

Video Input Digital

- Dual HD/SD-SDI, SMPTE-259/292/296, 8- or 10-bits
- Single Link 4:2:2 (1 x BNC each)

Video Input Analog

- HD component YPbPr, SMPTE-274 (3 x BNC)
- 12-bit A/D, 2x oversampling
- SD Component (3 x BNC)
- SMPTE/EBU N10, Betacam 525 line, Betacam 525J
- 12-bit A/D, 4x oversampling
- +/- .25 dB to 5.5 MHz Y Frequency Response
- +/- .25 dB to 2.5 MHz C Frequency Response
- 0.5% 2T pulse response
- <2 ns Y/C delay inequity
- SD Composite/YC (S-Video)
- 12-bit A/D, 4x oversampling

Video Output Digital

• Dual SD/HD SDI, SMPTE-259/292/296, 8- or 10-bits
• Single Link 4:2:2 (1 x BNC each)

Video Output Analog

- HD component YPbPr/RGB, SMPTE-274 (3 x BNC)
- 12-bit D/A, 2x oversampling
- SD Component (3 x BNC)
- SMPTE/EBU N10, Betacam 525 line, Betacam 525J
- 12-bit D/A, 4x oversampling
- +/- .25 dB to 5.5 MHz Y Frequency Response
- +/- .25 dB to 2.5 MHz C Frequency Response
- 0.5% 2T pulse response
- <2 ns Y/C delay inequity
- SD Composite/YC (S-Video)
- 12-bit D/A, 4x oversampling

Audio Input Digital

- 16-channel, 24-bit SDI embedded audio, 48kHz sample rate, Synchronous
- 8-channel, 24-bit AES/EBU audio, 48kHz sample rate, Synchronous or Non-synchronous, Internal sample rate conversion (4 x BNC)
- +12 dBu, +15 dBU, +18 dBu, +24 dBu (Full Scale Digital)
- +/- 0.2 dB 20Hz to 20kHz Frequency Response

Audio Input Analog

- 8-channel, 24-bit A/D analog audio, 48kHz sample rate balanced (8 x XLR via 25-pin breakout cable)
- +12 dBu, +15 dBU, +18 dBu, +24 dBu (Full Scale Digital)
- +/- 0.2 dB 20Hz to 20kHz Frequency Response

Audio Ouput Digital

- 16-channel, 24-bit SDI embedded audio, 48kHz sample rate, Synchronous
- 8-channel, 24-bit AES/EBU audio, 48kHz sample rate, Synchronous or Non-synchronous, Internal sample rate conversion (4 x BNC)

Audio Ouput Analog

- 8-channel, 24-bit D/A analog audio, 48kHz sample rate, balanced (8 x XLR via 25-pin breakout cable)
- +12 dBu, +15 dBU, +18 dBu, +24 dBu (Full Scale Digital)
- +/- 0.2 dB 20Hz to 20kHz Frequency Response

Up-Conversion

- Hardware 10-bit
- Anamorphic: full-screen
- Pillar box 4:3: results in a 4:3 image in center of screen with black sidebars
- Zoom 14:9: results in a 4:3 image zoomed slightly to fill a 14:9 image with black side bars
- Zoom Letterbox: results in image zoomed to fill full screen
- Zoom Wide: results in a combination of zoom and horizontal stretch to fill a 16:9 screen; this setting can introduce a small aspect ratio change

Down-Conversion

- Hardware 10-bit
- **Anamorphic:** full-screen
- **Letterbox:** image is reduced with black top and bottom added to image area with the aspect ratio preserved
- **Crop:** image is cropped to fit new screen size

Cross-Conversion

- Hardware 10-bit
- 1080i to 720p
- 720p to 1080i
- 720p to 1080PsF

SD to SD Aspect Ratio Conversion

- **Letterbox:** This transforms SD anamorphic material to a letterboxed image.
- **H Crop:** Will produce a horizontally stretched effect on the image; transforms anamorphic SD to full frame
- **SD Pillarbox:** Will produce an image in the center of the screen with black borders on the left and right sides and an anamorphized image in the center
- **V Crop:** Will transform SD letterbox material to an anamorphic image.

Timecode

- SDI RP188 via SDI BNC

Reference Input

- Analog Color Black (1V) or Composite Sync (2 or 4V)
- Looping, non-terminating.

Network Interface

- 10/100 Ethernet (RJ-45)
- Embedded web server for remote control
- VTECS™ protocol for Remote Control Panel

User Interface

- Alphanumeric display, with dedicated buttons

Control

- GPI in/out, 9-pin D-connector
- Pinout is as follows:

1	GPI IN 1
2	GPI IN 2-
3	GPI OUT 1
4	GPI OUT 2
5	Chassis ground
6	I/O GROUND 1
7	I/O GROUND 2
8	I/O GROUND 1-
9	I/O GROUND 1

- RS-422, Sony 9-pin protocol (reserved for future use)
- 9-pin D-connector pinout is as follows:

1	GND
2	RX-
3	TX+
4	GND
5	No Connection
6	GND
7	RX+
8	TX-
9	GND
Shell	GND

Physical

- Width: 17.25" (43.81cm)
- Depth: 12.5" (31.75cm)
- Height: 1RU, 1.75" (4.44cm)
- Weight: 6.5lb (2.94kg)
- Power: 100-240 VAC 50/60Hz (Dual, redundant power supplies), 25W typical; 30W max. 15A max.
- Operating temperature: 0 to 40 degrees C
- Relative humidity: 0 to 90%, non-condensing

Click here For the most recent product specifications visit www.aja.com/products/fs1/#techspecs

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Tech Specs *(Continued)*

Input/Output Combinations

Input	Possible Output Formats		
525i59.94	525i59.94	720p59.94	1080i59.94
720p59.94	525i59.94	720p59.94	1080i59.94
1080i59.94	525i59.94	720p59.94	1080i59.94
1080pSF23.98	1080pSF23.98	1080i59.94	525i59.94
625i50	625i50	1080i50	720p50
720p50	625i50	1080i50	720p50
1080i50	625i50	1080i50	720p50
1080pSF24	1080pSF24	1080i60	Input
1080i60	1080i60	720p60	Input
720p60	720p60	1080i60	

Notes:

1. *In the case of 1080pSF/23.98 input - and when 1080i59.94 (or 525) is selected as an output format, the FS1 automatically does 3:2 pulldown to get the correct frame rate.*
2. *When passing 24 or 60 framerate video, output is high definition.*

5 Year Warranty

AJA Video warrants that FS products will be free from defects in materials and workmanship for a period of five years from the date of purchase.

About AJA Video Systems, Inc.

Since 1993, AJA Video has been a leading manufacturer of video interface and conversion solutions, bringing high quality, cost effective digital video products to the professional, broadcast and post production markets. AJA products are designed and manufactured at our facilities in Grass Valley, California, and sold through an extensive sales channel of resellers and systems integrators around the world. For further information, please see our website at **www.aja.com**

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