FS1

Installation and Operation Guide

B e c a u s e   i t   m a t t e r s .

AJA
VIDEO SYSTEMS

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Hazard!

This symbol, when used in the manual, indicates a serious health hazard with risk of injury or death.

Warning!

This symbol, when used in the manual, indicates a serious risk or threat to personal safety.

Caution!

This symbol, when used in the manual, indicates important safety and compliance information.

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Chapter 1:
Introduction

Overview

Featuring a flexible architecture, the FS1 Universal SD/HD Audio/Video Frame Synchronizer and Converter simultaneously works with both HD and SD video—all in full 10-bit broadcast quality video and 24-bit audio. The FS1 supports virtually any input or output, analog or digital, HD or SD:

- Converts up or down between SD and HD, and provides simultaneous HD and SD outputs.

- Cross-converts between HD formats with simultaneous output of both formats.

- Supports audio as 8-channel AES, balanced analog, or embedded audio with full flexibility.

- Handles closed captioning and closed captioning conversion between SD and HD formats.

- Offers network ready, web-based remote control.

Features

The FS1 product offers a large number of unique features for connectivity, control, and ease of use in any environment:

- Universal HD/SD audio/video frame synchronizer and converter

- SD⇔HD up/down conversion

- SD⇔SD aspect ratio conversion

- HD⇔HD cross conversion (720p/1080i)

- Up/down/cross-converting with both the input and converted formats on SD/HD SDI outputs (both synchronized)

1

- HD cross-converting with simultaneous downconverted SDI output

- AFD support

- Dual HD/SD SDI inputs and outputs

- Component analog HD/SD input and output

- Composite/S-Video input and output with TBC

- 8-channel AES and balanced analog audio inputs and outputs

- 16-channel embedded audio passed to SDI outputs

- Audio mapping and control with AFV (audio follows video)—
  16 channels of embedded audio can be mapped to any 8

- Storage of 10 preset system configurations in memory or external files

- Fully redundant power supplies standard

- 10/100 LAN with SNMP, embedded web server for remote control, and VTECS™
  open protocol

- Video Proc Amp

- Closed caption support—including SD-to-HD upconversion

- Chassis styling optimized for use in a wide variety of machine rooms with
  simple panel and remote web browser user interfaces

- Front panel alphanumeric and graphical display shows input and output
  settings, and is also used for parameter viewing/editing

- LED status indicators for at-a-glance system monitoring

- Two GPI inputs and outputs, TTL, isolated

- Sidebar Keyer

- 5-year international warranty with unlimited technical support

FS1 Front Panel Control

FS1 operation can be monitored and changed in a number of ways:

- Front panel control

- Remote web browser via Ethernet

- VTECS protocol via Ethernet

- SNMP monitoring (Simple Network Management Protocol)

Feature sets in each of the control methods vary, although the front panel and web browser interfaces offer many of the same features.

The front panel offers the most direct control of the device, which is ideal for machine rooms or wherever quick changes and status checks must be made. *Chapter 2, Controls and Indicators* describes front and rear panel features in detail.

Remote Web Browser Control

The FS1 internally contains an optimized web server that allows remote monitoring and parameter setting via a network-attached computer running a web-browser.

From a network-connected computer you can communicate with one or more FS1 devices, even getting them to identify themselves via LEDs on the front and rear panel (front: *Identify*, rear: *ID*).

Networks can be closed local area networks, a straight computer-to-FS1 cable, or for greatest flexibility, exposed through a firewall to a broadband WAN.

The FS1 uses a standard RJ45 LAN connector, but internally the connection is intelligent and communicates via standard "straight-through" CAT 5 ethernet cables or null-modem (cross-over) cables with no configuration or strapping.

Note: Firefox, Internet Explorer 8 and 9, and Chrome are the supported web browsers for FS1 control. Other browsers may work, but AJA cannot guarantee operation.

The browser GUI operation and features are discussed in Chapter 5.

SNMP Interface

SNMP offers remote network monitoring of alarm conditions. SNMP support is described in *Chapter 6*.

Block Diagram

Block Diagram Description

The FS1 features a very flexible architecture that allows simultaneous HD/SD operation. There are three separate frame synchronizers in the FS1: a full up/down/cross-converting synchronizer, a downconverting synchronizer, and a standard HD/SD non-converting synchronizer. This architecture allows the following functions:

- HD cross-converting with simultaneous downconverted SDI output

- Up/down/cross-converting with both the input and converted formats on SD/HD SDI outputs (both synchronized)

- Up/down/cross-converting with dual SD/HD-SDI outputs

- Composite and S-Video outputs are always active (dedicated down-converter for HD inputs)

For example, the FS1 can input 720p, and output both cross-converted 1080i HD-SDI and down-converted 525i SDI (or 1080i in and 720p and 525i out).

The FS1 also allows the user to set the output format, and the conversion will be automatic depending on what the input is. The FS1's output format can also be controlled by using the reference input (follows the reference input format).

SNMP Control
via Command Line

*Not supported in
the current version*

Remote Web
Browser
Control

LAN or
WAN
Ethernet
Connection

Front
Panel
Control

Embedded
Web
Server

*Not supported in
the current version*

GPI
Inputs
(2)

*Not supported in
the current version*

GPI
Outputs
(2)

FS1
CPU

Ref

Loop

Ref

Input

Genlock

Test to Down Converter

Test

Test
Signal
Generator

Test

No Conv

Norm/Key

Audio
Embed

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

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

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

w/Embedded Audio

Component YPbPr or
RGB In

S-Video In

Composite In

Video In
Select

Framesync

Framesync/no conversion

Test

Bypass

Sidebar
Keyer

Sidebar
Key

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

Normal/Key

Audio
Embed

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

Key

Test

Bypass

Component,
YPbPr, or
RGB Out

Down
Converter,
Framesync,
ARC[1]

Normal Conversion

Normal/Key

Down Conversion

S-Video Out

Composite Out

AES/EBU
Digital Audio
8-channels
(1 pair per BNC)
Input

SDI 1

SDI 2

AES/EBU

Audio In
Select

Analog

Audio
Processor

Audio for Embedding

AES and Analog Audio

AES/EBU digital
Audio
8-channels
(1 pair per BNC)
Output

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

Analog Audio
Output (8-ch)
Tascam-style cable

Notes:

ARC[1] = Aspect Ratio Converter

FS1 Simplified Block Diagram

What's In The Box?

When you unpack your AJA FS1 chassis, you'll find the following components:

- AJA FS1 Chassis

- AC Power cords (2)

- The manual you're reading (on CD)

- Optional: *Late-breaking News* or *Read-Me-First* notices (where applicable, AJA may include additional bulletins related to your product and software)

Please save all packaging for shipping the FS1 should you wish to do so when moving or sending it in for service.

Installation and Operation Manual
(PDF file on the CD)

AC Power Cords (2)
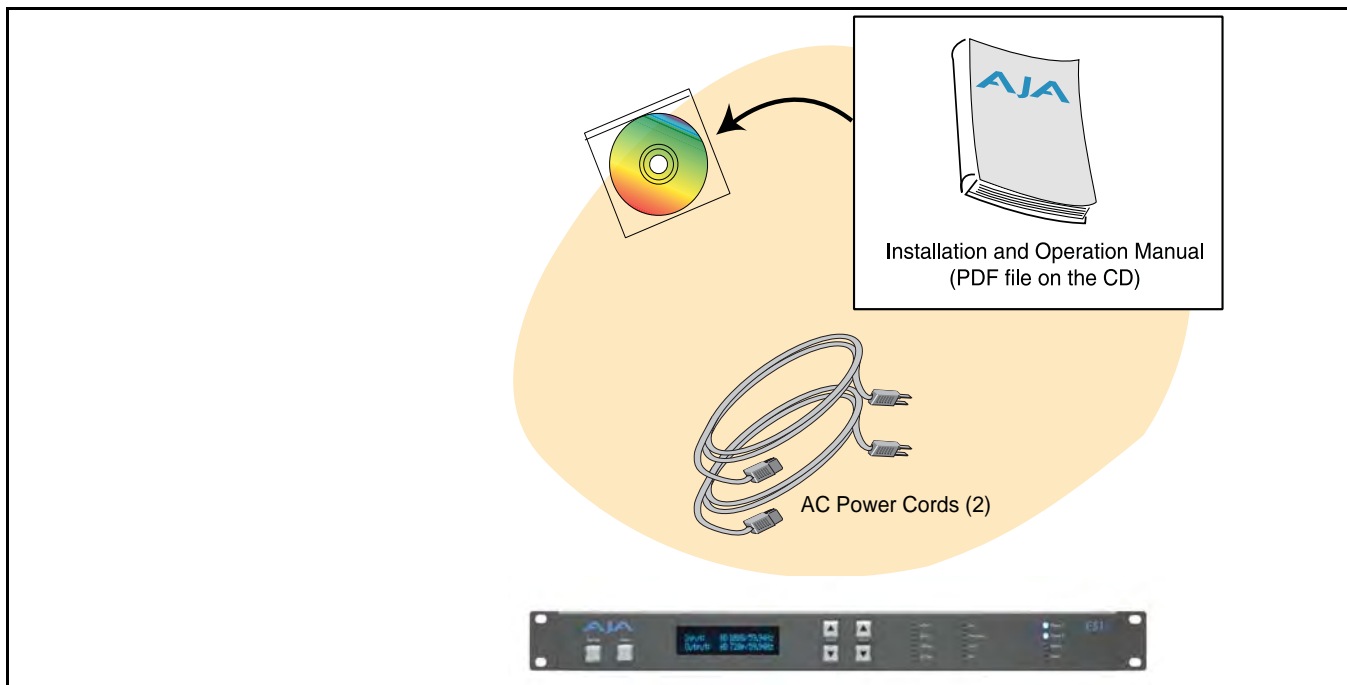
FS1 Shipping Box Contents

In This Manual

Chapter 1 Introduction presents the overview you're reading, listing features, box contents, and requirements.

Chapter 2 Controls and Indicators discusses the FS1 front and rear panel controls, connections, and indicators. Illustrations point out the various connectors and indicators with text discussions of each.

Chapter 3 Installation and Configuration provides complete instructions for installing and configuring the FS1 panel, from unpacking, cabling the system and then getting it up and running.

Chapter 4 Parameter Menus gets you started with setting up and using the FS1 via its front panel controls. Discussed are the Parameter Menu and the *Select* and *Adjust* buttons used to view and edit settings.

Chapter 5 Browser Remote Control discusses controlling the FS1 remotely via a network-attached computer with a web browser.

Chapter 6 SNMP discusses FS1 support of SNMP.

Appendix A Specifications presents technical specifications for the product.

Appendix B GPI Connector Pinout presents a GPI connector pinout.

Appendix C Analog Audio Connector Pinout shows a Tascam connector pinout.

Appendix D Safety Compliance lists important regulatory and safety information.

Appendix E Glossary defines essential terms that apply to the product.

Controls and Indicators

When installing the AJA FS1 chassis, you'll make media cable connections to a variety of equipment. After installation, the front panel indicators will be useful in monitoring what is happening on the system as well as troubleshooting problems that can occur. Becoming familiar with the FS1 front and rear panels will simplify installation, setup, and operation of the system. Use of the web browser user interface and Remote Control Panel option are described in a *Chapter 5*.

On the following pages are front and rear panel illustrations with notations that summarize all of the connectors and indicators. Detailed descriptions of each of the connectors and indicators follow afterward.

Full installation instructions are provided in Chapter 3 later in this manual.

Note: The AJA FS1 should be plugged into 3-prong 100-240 VAC power before you make connections to other equipment. The AC cords provide a path to ground for accidental static discharge to protect system equipment. The FS1 has two fully independent and redundant power supplies and will operate with one or both AC power cords plugged into the unit. However, fault-tolerance exists only if both power supplies are connected and plugged into separate branch circuits. Then if power is lost on a branch or a supply, the FS1 will continue to operate on the remaining circuit and power supply.

Warning: *To meet safety regulations for leakage current and to achieve full redundancy, connect the FS1 dual power supplies to separate branch circuits.*

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Front Panel

Control Menu
Buttons
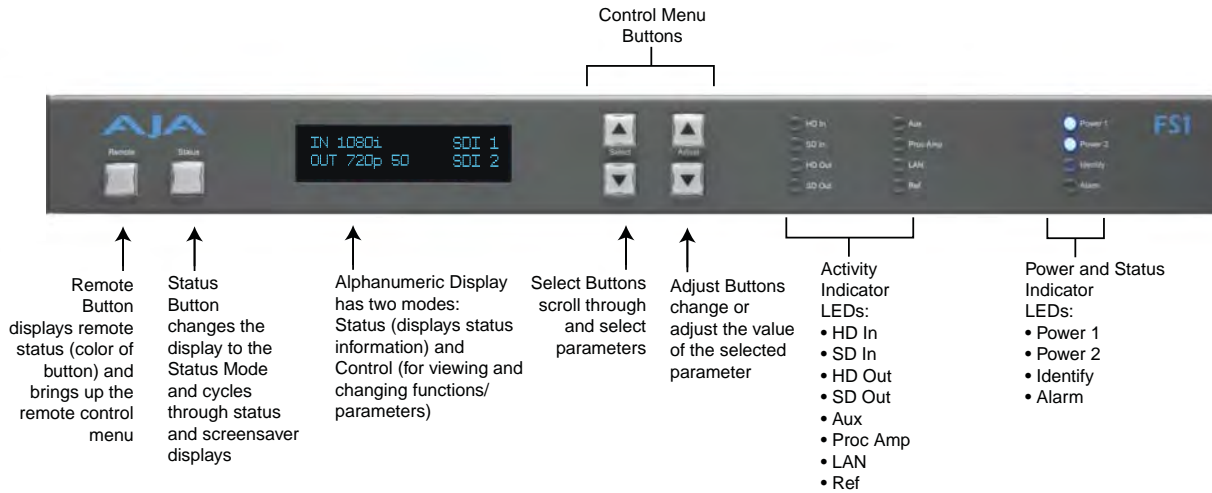
AJA FS1 Front Panel Indicators

Remote Button displays remote status (color of button) and brings up the remote control menu

Status Button changes the display to the Status Mode and cycles through status and screensaver displays

Alphanumeric Display has two modes: Status (displays status information) and Control (for viewing and changing functions/ parameters)

Select Buttons scroll through and select parameters

Adjust Buttons change or adjust the value of the selected parameter

Activity Indicator LEDs:
• HD In
• SD In
• HD Out
• SD Out
• Aux
• Proc Amp
• LAN
• Ref

Power and Status Indicator LEDs:
• Power 1
• Power 2
• Identify
• Alarm

Alphanumeric Display

The alphanumeric display has two modes:

Status: Displays current machine status and/or error conditions. The status display is enabled when you push the *Status* button.

Shows input format detected (or "No Input")

Shows Video input (top) and Audio Input (bottom) current selections

Shows output format you've selected (or "Follow Input" or "Follow Ref")

```
IN 1080i     SDI 1
OUT 720p 50  SDI 2
```
Status Display
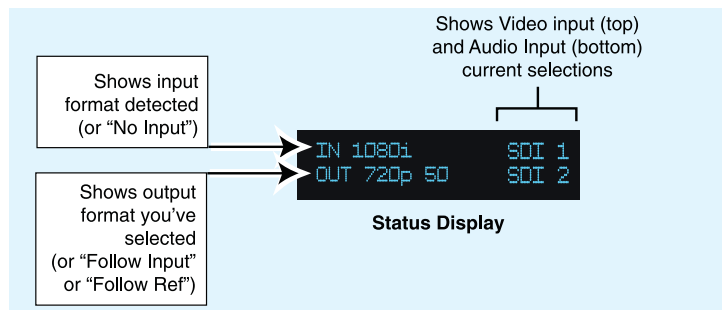
Control: The control mode displays the menu structure for selecting and changing/adjusting machine functions and parameters. The display changes from status to control mode when you press a *Select* or *Adjust* button.

Parameter Menu Selected For View/Edit

Select a new Parameter Menu by pushing the "Select" Buttons

```
1.2 Output Format
Follow INPUT
```
Control Display

Select   Adjust

Current Setting of Parameter

Change Setting by pushing the "Adjust" Buttons
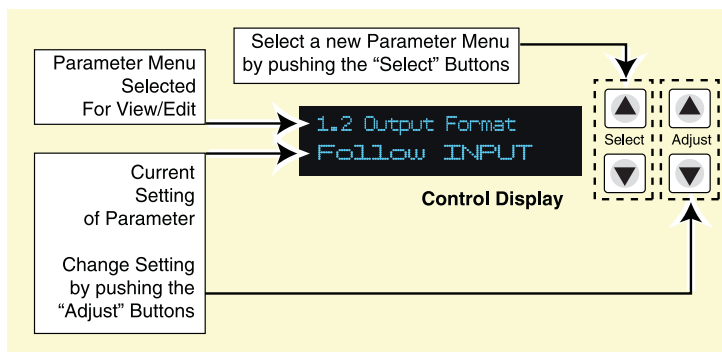
When the FS1 is powered up, the display will show an AJA logo and then the status display.

Status Display

Pressing the *Status* button under the AJA logo pages through the eight status displays. Normally, you'll be viewing the *main status screen* shown in a previous illustration. It's the default screen at powerup. Information contained in the status display shows the current primary settings for the FS1:

> • Input Format (upper left)
>
> • Output Format (lower left)
>
> • Selected Video Input setting (upper right)
>
> • Selected Audio Input setting (lower right)

Input Format	Video Input setting
Output Format	Audio Input setting

For example, if set up to do a cross-convert from 1080i59.94 to 720p59.94 using embedded audio in and out, the display would look as follows:

IN 1080i59.94	SDI 1
OUT 720p59.94	SDI 1

If the selected input has no valid signal present, the FS1 displays *IN No Input*.

Note: If the input is incompatible with the chosen output format, the default status screen will display the actual format, such as *IN 525i 59.94*. The *video format status* screen, however, would be the default status screen at that point (since the Alarm LED would be on), and it would display *IN Incompat*.

The other seven status displays are listed and described below:

The *video format status* screen shows the status of the active video input, the output format, the genlock source, and the format of the reference signal (if applicable). For example, if the *Output Format* is set to *Follow REF*, but there is no valid reference signal present, the *Output Format* section of the video format status screen will read *OUT No Ref*.

The *sidebar status* screen shows the main input format, sidebar input format, output format, and sidebar input select. Any incompatibilities between these formats are shown as *Incompat*.

The *sidebar input* screen always shows the detected formats of the main input and the sidebar input—to help resolve incompatibilities.

The *power/temperature status* screen displays power supply and temperature status. If a power supply is unplugged or an error is detected, the display top line reads *PS 1 OFF*, *PS 2 OFF*, *PS 1 Error*, or *PS 2 Error*, respectively. (When *Power Supply Alarm filter (60.1)* is set to *Suppress*; the display still reads *Power OK* even if a power supply is unplugged.) If the FS1 internal temperature threshold is exceeded, the display lower line reads *OVERHEATED* and video output may be compromised. If the front panel Alarm LED is lit, the reason should be evident if you check the video format and power/temperature status screens.

The *close-captioning* status screen shows whether closed caption data is present on the selected video input.

The *AJA logo* is displayed when no button activity occurs for 60 minutes.

The FS1's *System Name* has been previously defined (how to enter/edit it is described in Chapter 4, *Parameter Menus, System Name 50.5*).

Controlling the FS1—Using the Select and Adjust Buttons

The FS1's control system is designed to be easy to use and remember. All functions in the menu system are numbered for easy reference. Two pairs of up/down buttons named *Select* and *Adjust* provide control. Pressing any of these four buttons immediately puts the FS1 into control mode:
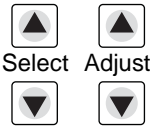
Select   Adjust

To operate the FS1, use the *Select* buttons to select a function or parameter. Then use the *Adjust* buttons to adjust the selected function or parameter.

The control display has two lines:

Parameter Number and Name

Current Parameter Setting

The top line contains a numbered and named FS1 parameter and or function.

The lower line contains the current setting.

The parameter *Select* buttons select a parameter to view or modify.

Pressing a parameter *Adjust* button changes the current parameter's value to a new one from the FS1's list of choices—repeating the list if you continue to press *Adjust* or adjusting a numerical value up or down. The exact choices displayed will vary depending on the parameter. Adjustment choices made with the *Adjust* buttons take effect immediately (except *1.1 Output Format* which has a 1/2 second delay). In most cases, changed parameters will be stored into the FS1's non-volatile memory after the parameter remains unchanged for 3 seconds. Exceptions are the *IP Address*, *IP Config*, *Subnet Mask* and all SNMP parameters; for these you must exit the selection to activate changes.

Holding down a *Select* or *Adjust* button continuously changes the choices automatically with acceleration if applicable.

Pressing either a *Select* or an *Adjust* button while on the Status or Screen Saver displays changes the display to the last remembered control menu.

Holding down *both* the *Adjust* (up) and *Adjust* (down) buttons—*at the same time* will set that parameter back to its factory default value.

For some parameters, once the parameter is selected, the first *Adjust* button pressed begins the editing. The top *Select* button then can be used to choose the position (left to right) within the parameter being edited.

Holding down *both* the *Select* buttons *at the same time* returns the front panel menu to parameter *1.1 Output Format*. If you are editing an octet, string or other parameter that requires a commit action (like editing a blinking IP address) and you press both *Select* buttons, the edit will terminate (will *not* take effect and will *not* be saved). On the other hand, if you are editing menu items that normally take effect as they are edited (e.g. procamp gain), the edited value will take effect.

Note: Parameter displays and adjustment choices and values are described in detail in *Chapter 4*.

Remote Control

Pressing the *Remote* button once results in a display showing how the FS1 is being controlled. Pressing the button again cycles the display through all control options:

LOCAL+REMOTE: Control is from the panel buttons, a web browser, or remote panel (VTECS). The *Remote* button glows white.

REMOTE ONLY: Control of the FS1 is from a web browser on a network attached computer or a remote control panel via the VTECS protocol (except for the remote control function). The *Remote* button glows red.

LOCAL ONLY: FS1 control is only allowed from the front panel buttons (except for the remote control function). The *Remote* button glows green.

Indicator Descriptions

Indicators on the front panel are multi-state LEDs that light when a condition is present. The following indicators are conveniently arranged in groups to show specific subjects; these LEDs are also discussed on the following pages.

- Activity LEDs
- Power and Status LEDs

Activity Indicators

HD In—Shows that an active HD signal is detected at the previously selected input.

SD In—Shows that an active SD signal is detected at the previously selected input.

HD Out—Shows that an HD signal is being output.

SD Out—Shows that an SD signal is being output.

Aux—This LED is ON whenever a GPI input trigger is active if that GPI affects the internal state of the FS1. If the associated *GPI In* parameter (*36.1 GPI In 1 Response* or *36.2 GPI In 2 Response*) is set to *No action*, the LED stays OFF.

Proc Amp—Shows that the ProcAmp values are different from the factory nominal values. If lit, the video passing through the FS1 is being altered according to changes in ProcAmp parameter settings (it's no longer at unity).

LAN—This LED will flash once whenever the FS1 is being controlled by a web browser input or remote panel. Web browser actions that do not affect the internal state of the FS1 will not cause the LED to blink.

Ref—Shows that the FS1 has an external reference video source applied to the *Ref* connector.

Power and Status Indicators

Power 1—Shows that the FS1 #1 power supply is connected to AC mains power via its power cord and is operational. Both the *Power 1* and *Power 2* LEDs must be lit to ensure redundant power is available.

Power 2—Shows that the FS1 #2 power supply is connected to AC mains power via its power cord and is operational.

Identify **and ID**—These two LEDs (one on the front panel and one on the rear) will blink when directed to do so via the FS1's Web browser interface *Identify* button. This action is useful for identifying which FS1 you're controlling when there are multiple FS1 units in a machine room being controlled by a laptop or computer. In the browser, simply click *Identify* and then watch for one of the FS1s *Identify* LEDs to blink. The *Identify* LED on the front panel and *ID* LED on the rear panel perform the exact same function. No matter which side of a rack you're facing, you'll be able to see one of the LEDs.

Alarm—If This LED is illuminated, press the Status button to see a description of the alarm event detected.

The Alarm LED may be lit because of a hardware failure, because of video incompatibilities, or because of genlock loss. (Any of these conditions may be filtered out using the *Alarm Filters* parameters.)

Note: Only having one power cord connected to the FS1 will cause the alarm LED to light—this may be filtered with the *Alarm Filters* parameters.

Video incompatibilities may be deduced from the "Alarm Status" screen. When the Alarm LED is lit, press the front panel *Status* button to go directly to the "Alarm Status" screen.

Video incompatibilities that the FS1 may detect include:

Video Incompatibility Detected	Alarm Status screen will show
6.1 Genlock Source is set to "Reference", but Reference signal format is not compatible with selected Output Format.	Alarm Status screen shows: "IN..... GEN Ref " "OUT.... REF Incompat"
6.1 Genlock Source is set to "Reference", and selected Output Format is compatible with detected Reference format, but Input signal format is not compatible with detected Reference format.	Example: if Reference and Output formats are 525, but Input is 625, Alarm Status screen shows: "IN Incompat GEN Ref " "OUT 525i 59 REF 525i 59 "
Input signal is not compatible with selected Output Format.	Alarm Status screen shows: "IN Incompat " "OUT 525i 59

Reference signal events that the FS1 may detect include:

Reference Alarm Event	Alarm Status screen will show
6.1 Genlock Source is set to "Reference", but no Reference signal is detected.	Alarm Status screen shows: "IN..... GEN Ref" "OUT.... REF No Ref"
1.1 Output Format is set to "Reference", but no Reference signal is detected.	Alarm Status screen shows: "IN..... GEN Ref" "OUT.... REF No Ref"

Sidebar incompatibility events that the FS1 may detect include:

Sidebar incompatibility Event	Alarm Status screen will show
Sidebar format incompatible with output format	Alarm Status screen shows: "IN..... SB Incompat" "OUT.... SB ..."
Main input format incompatible with Sidebar keyer	Alarm Status screen shows: "IN Incompat SB..." "OUT.... SB..."
Sidebar Input Select incompatible with Main Input Select (both Analog inputs)	Alarm Status screen shows: "IN.... SB Incompat" "OUT.... SB Incompat"

About Video and Format Compatibility

The table below shows at a glance all the conversions (and straight-through modes) possible for given input formats. In the case of interlace formats the table lists the field rate; for progressive formats the table lists the frame rate.

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[1] 1080i59.94 525i59.94
625i50	625i50 1080i50 720p50
720p50	625i50 1080i50 720p50
1080i50	625i50 1080i50 720p50
1080pSF24	1080pSF24 1080i60
1080i60	1080i60 720p60
720p60	720p60 1080i60

[1] When the main output (SDI 1) is not 1080pSF23.98, bypass mode will not be available.

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 adds 3:2 pulldown to get the correct frame rate. Similarly, in the case of 1080pSF/24 input, FS1 automatically adds 3:2 pulldown to get the correct frame rate.

2. When passing 24 or 60 framerate video, the standard definition outputs will not output valid video (the FS1 is not a framerate converter).

Rear Panel

RS422
DB9 Connector
(Reserved for Future Use)

Composite
In/Out

AC Power Supply
Socket #1
Autosensing
100 to 240VAC, 0.3A
50/60Hz

AES/EBU Digital
Audio In/Out
Channels 1 through 8

Analog Audio In/Out
Channels 1 through 8
(uses Tascam-style
cable)

GPI
9-pin
Connector

10/100
RJ45
Ethernet
LAN
Connector

Serial
Digital
In/Out
(SD-SDI
HD-SDI)

Component
YPbPr and
RGB In/Out

S-Video
In/Out

AC Power Supply
Socket #2
Autosensing
100 to 240VAC, 0.3A
50/60Hz

ID (Identify)
LED

External
Reference
with Loop-
Through

About Inputs and Outputs

The functions of the FS1 Inputs and Outputs depend on the operational mode.

The operational steps are simple:

1. Select an output format.
2. Select the desired input.

All outputs are active all the time. If you select an output format first and then the input source, the FS1 automatically performs up/down/cross conversion.

Audio embedding/disembedding is also automatic, according to the parameter settings you've selected. For example, even though the input selected might be HD-SDI with embedded audio, the analog audio output connectors will output proper analog audio that has been disembedded from the serial digital stream.

Please study *Chapter 4 Parameter Menus*, for a full understanding of all the possible FS1 settings.

Connectors

Connectors on the rear panel are arranged in groups for easy installation and maintenance:

- **P/S 1** and **P/S 2**—AC power connectors, each 3-pin (with Ground), one for each independent power supply. Each power supply is autosensing from 100 to 240VAC at 50/60Hz. Only one has to be connected for FS1 operation, but redundant operation is available only if both connectors are plugged into AC power.

- **AES/EBU Audio**—8 digital channels in and out, two pairs per BNC.

- **Analog Audio Ch.1-8 In/Out**—8 channels of analog audio in and out via a DB25 TASCAM-style cable (not supplied).

- **GPI—**connector providing dual isolated TTL compatible inputs and outputs. The functions of each are selectable in software.

- **10/100 LAN—**RJ45 Ethernet connector.

- **SDI In/Out**—digital video with embedded audio. There are two input and two output BNC connectors. The outputs are active all the time, although you must specify the output format (and thus whether any conversion takes place). SDI 2 can follow the input ("bypass")—see description on the following page.

- **Component In/Out YPbPr/RGB**—video, 3 BNCs for input, and 3 BNCs for output. Component can follow the input ("bypass")—see the description on the following page.

- **S-Video In/Out** (Y/C)—one 4-pinmini-DIN for input, and one 4-pin mini-DIN for output—see the description on the following page.

- **Composite In/Out** —NTSC/ PAL video, 1 BNC for input, and 1 BNC for output—see the description on the following page.

- **Ref Loop**—reference video (looping), 2 BNCs.

- **RS-422**—DE-9 connector reserved for future use.

Each of these groups of connectors are discussed on the following pages.

Connector Descriptions

8 Channel AES/EBU Audio Inputs And Outputs

One BNC is provided for each of four pairs of channels, both on the input and output: 1/2, 3/4, 5/6, and 7/8.

AES/EBU signals are handled by the FS1   internally as 24-bit digital.

Analog 8 Channel Audio

The two DB25 connectors, one for input and one for output, support a TASCAM-style cable snake for balanced 8-channel audio. Analog audio signals are converted internally to 24-bit digital audio inputs and outputs.

RS-422 Port

This DE-9 connector is reserved for future use.

GPI

A female DE-9 connector provides connection to external equipment or circuits via an isolated TTL-compatible interface. *Appendix B* contains a pinout and specifications.

LAN

An RJ45 connector provides a 10/100 Ethernet port for connection directly to a computer or Ethernet hub or switch for connecting to a LAN.

The FS1is compatible with CAT-5 straight-through or cross-over Ethernet cables, automatically detecting which is used.

SDI Input and Outputs

BNC connectors are provided for two SDI inputs and two SDI outputs. SDI video connections include embedded audio In/Out (depending on your parameter settings).

The outputs are active all the time, although you must specify the output format (and thus whether any automatic conversion takes place). For example, with an SD-SDI input selected, you could set the SDI 1 output to HD 720p for an upconvert, and then set the SDI 2 output to "Follow Input" (bypass) to output the SD-SDI at the same format/framerate as the input.

SDI provides the best quality 10-bit video input and output. If peripheral equipment has a variety of inputs/outputs, use SDI I/O if it is available.

Component (YPbPr/RGB)

Connect SD or HD component YPbPr or RGB video cables from a VTR, camera, or other source to the three input BNCs. Then connect the YPbPr or RGB output BNCs to your destination component device.

Component video signals are A/D (input) and D/A (output) converted (10-bit). Like the SDI 2 output, Component can be set to Bypass (follow input). Output is affected by the *5.3 Aspect Ratio* and *1.3 Component Out* parameter settings (see *Chapter 4* for discussion of these parameters).

S-Video (Y/C)

S-Video input and output female 4-pin mini-DINs provide for connection of desktop video/prosumer level equipment, including camcorders, VCRs/VTRs, and monitors, to name a few. Use high quality shielded S-Video cables when making connections.

S-video signals are converted internally to 10-bit digital. Output is affected by *5.3 Aspect Ratio* and *1.3 Component Out* parameter settings (see *Chapter 4* for discussion of these parameters).

Composite NTSC/PAL

BNC connectors support composite NTSC or PAL standard definition input and output. Connect an NTSC or PAL composite video cable from a VTR, Camera, or other source to the Composite In BNC. Then connect the Composite Out BNC to a destination composite video device.

Composite video signals are 10-bit A/D (input) and D/A (output) converted. Output is affected by *5.3 Aspect Ratio* and *1.3 Component Out* parameter settings (see *Chapter 4* for discussion of these parameters).

Reference Video (looping)

These two BNC connectors allow you to synchronize FS1 outputs to your house reference video signal (blackburst or Tri-level for HD). If you have a sync generator or video equipment source to use for synchronizing other video equipment in your studio, connect its composite output here. When the FS1 outputs video, it locks to this reference signal. Reference video does not need to be the same format as the video input/outputs, but it must have the same vertical rate (for example, 1080i Tri-level reference video will work for 525 video input and output).

Examples of permissible reference video signals:
- 525 Color Black
- 625 Color Black
- 1080i Tri-level Sync
- 720p Tri-Level Sync

FS1

Chapter 3:
Installation & Configuration

Installation Overview

The installation and set up of an FS1 is very simple. Plug both AC supply cords into AC mains power (separate branch circuits for redundancy), connect the LAN connector to a LAN, WAN or local computer with a web-browser, and then connect source and destination video and audio equipment.

Hazard Warning!

High Voltage. This situation or condition can cause injury due to electric shock.

Warning!

Do not open the chassis. There are no user-serviceable parts inside. Opening the chassis will void the warranty unless performed by an AJA service center or licensed facility.

Warning!

Disconnect the external AC power supply line cord(s) from the mains power before moving the unit.

Warning!

Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

Warning!

Since the Mains plug is used as the disconnection for the device, it must remain readily accessible and operable.

Warning!

Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the device.

3

> **Warning!**
>
> To meet safety regulations for leakage current, connect the FS1 dual power supplies to separate branch circuits.

> **Warning!**
>
> Refer all servicing to qualified service personnel. Servicing is required when the device has been damaged in any wav, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the device, the device has been exposed to rain or moisture, does not operate normally, or has been dropped.

All of the steps of installation and configuration are documented in this chapter, summarized as follows:

1. Unpack the shipping box, removing the FS1 and two power cords.
2. Connect the FS1 to power, connecting the two power cords to mains AC.

    If you plan to use remote control of the FS1, ensure you have an Ethernet cable routed to where the FS1 will be placed. It can be connected over a LAN or attached directly to a locally attached computer. Ensure that the computer (whether communicating over a LAN or directly to the FS1 Ethernet port) has a web browser installed. If the FS1 will be attached to a LAN, talk to your IT administrator and obtain the details about how to configure the FS1 (DHCP or static IP, explained in this chapter).

    The following figure shows typical LAN connections, although your installation may differ.

3. If connecting to a network, configure the FS1 IP CONFIG, IP ADDR, IP MASK, and IP GATEWAY parameters according to the information obtained from your IT administrator in the last step. Connect it to the LAN. From a network attached computer or one directly connected to the FS1, "ping" the FS1 (explained later in this chapter).

4. Mount the physical chassis as desired: front rack, rear rack, or deskmount. If you are mounting multiple FS1 units, try to place them visually in the same area so if you communicate with them via a network attached computer, you can use the FS1's *Identify* feature to turn ON the corresponding LED of the FS1 you're communicating with.

5. Cable the system audio and video sources, VTR(s), monitors, and audio equipment.
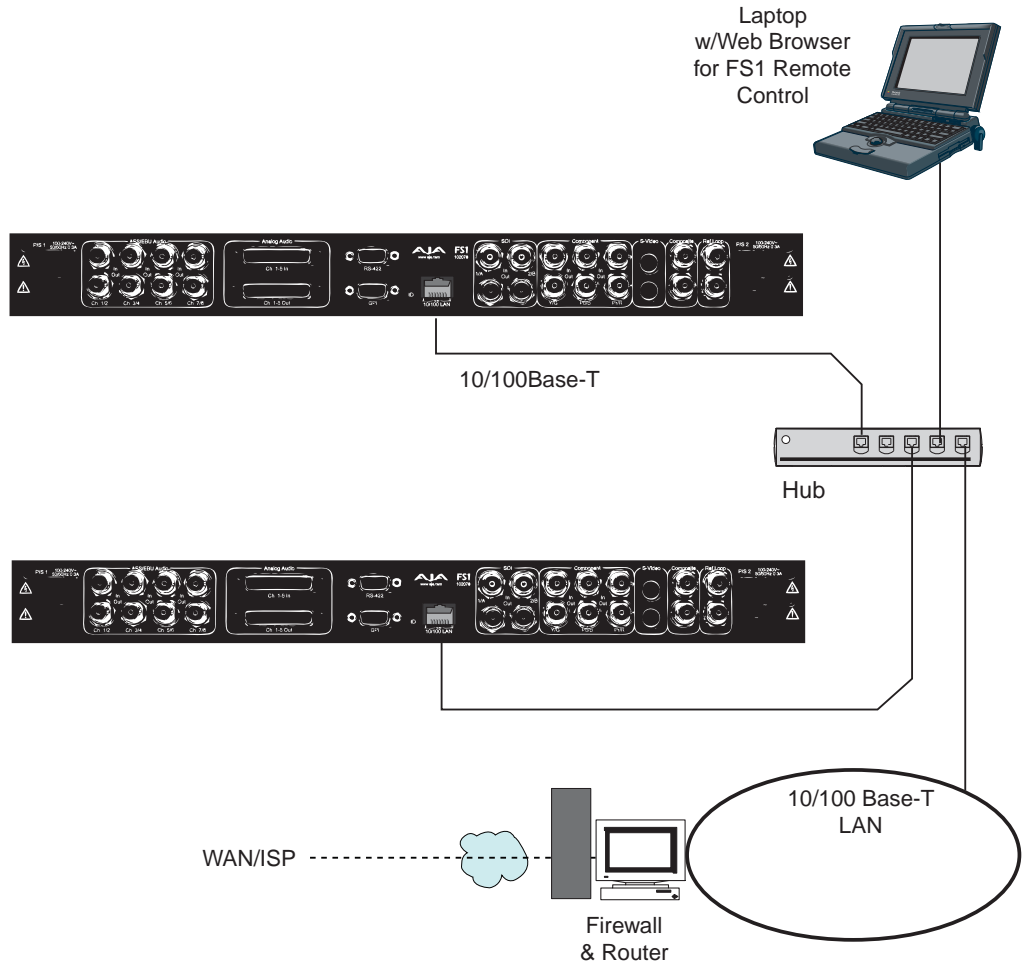
FS1 Network Example, Two FS1s on a LAN, with Laptop for Remote Control

Unpacking

Shipping Box Contents

An FS1 chassis is shipped with two AC power cords, a user manual CD, and any late-breaking news bulletins (if applicable). Chassis rackmount brackets are provided as part of the chassis with screws.

Installation and Operation Manual
(PDF file on the CD)

AC Power Cords (2)

AJA FS1 Panel Chassis
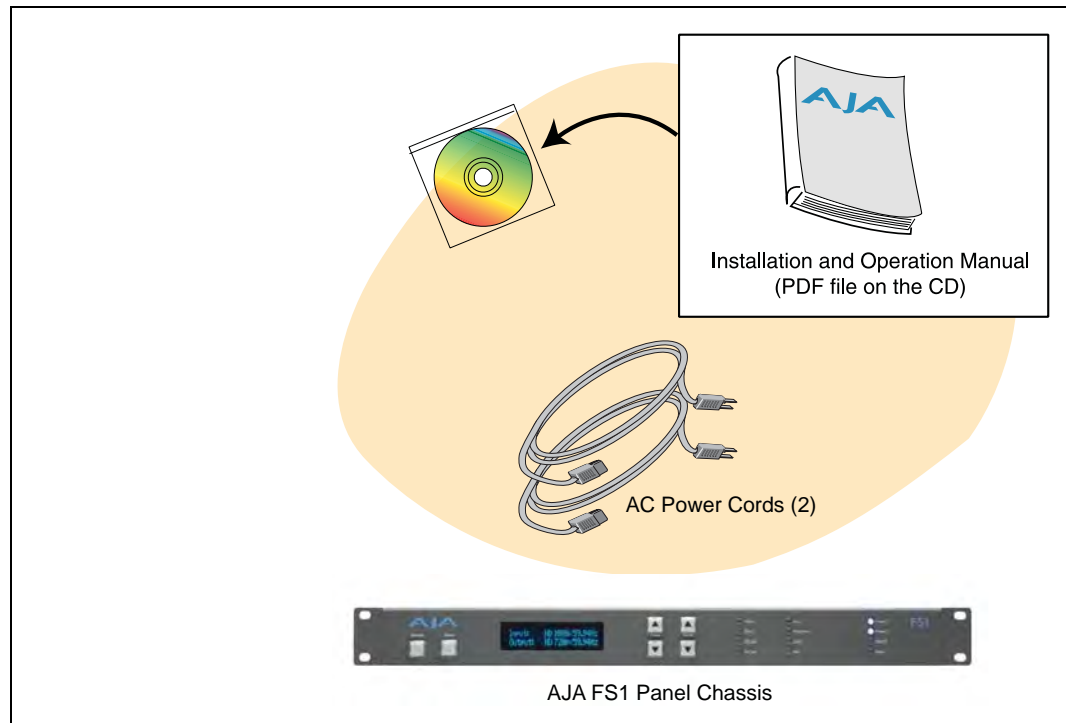
Box Contents

As you unpack the shipping box, carefully examine the contents. Ensure you received everything and that nothing was damaged during shipment. If you find any damage, immediately notify the shipping service and supply them with a complete description of the damage. AJA will repair or replace damaged items.

If you find shipping damage, contact your AJA dealer or distributor for details on how to have your FS1 repaired or replaced.

Note: Save packing materials and the shipping box. If you ever require service or move your system—use the packaging materials and box for safe shipment.

Mounting the FS1 Chassis

Physical Requirements

You can locate your chassis in two ways:

- Rackmounting—attach the FS1 (rear or front mounted) to a standard 19-inch wide equipment rack. The chassis occupies only one vertical rack unit.

- Desktop—lay it on a horizontal flat surface.

Chassis Dimensions

When planning the equipment location, consider the chassis dimensions:

Height—1 rack unit, 1.75 inches (4.445 cm)
Depth—12 inches (30.48 cm)
Width—17.25 inches (43.8 cm)

Connecting to a Network

You can network the FS1 directly to a laptop or other desktop computer using a single Ethernet cable (straight or cross-over), or connect it to a local area network (LAN). In either case, the FS1 connects via its 10/100Base-TX Ethernet connector. A LAN is a shared network that includes other Ethernet devices all attached via a hub or digital switch. LANs may be divided into zones separated by software or hardware routers. Routers may also be used to connect the LAN to an outside wide area network (WAN) such as the internet.

Devices on a LAN have IP addresses which may be fixed and permanent, or dynamically assigned by the network (DHCP). When attaching the FS1 to a LAN, talk to your network administrator to find out how they want it connected (static IP or DHCP). Your IT department will be able to supply the information you need to install the FS1 on a LAN.

TCP/IP Information You'll Need

If your LAN has a DHCP server that assigns IP addresses dynamically, then you don't have to configure anything (the FS1 defaults to DHCP). If for some reason your IT administrator prefers an assigned IP address that is fixed (static IP), then get the IP address—you'll be entering it in the "IP CONFIG parameter" of the FS1. If your LAN requires static IP addresses, also ask your IT administrator for the *Subnet Mask* and *default gateway* IP address (your LAN's internet router). The following two topics discuss two different ways to set up the FS1: via DHCP or via a static IP address.

Networking the FS1 via DHCP

The FS1 default configuration (from the factory) automatically looks for a DHCP server to issue an IP address. So, as long as your network has a DHCP server (usually part of your router), all you need to do is plug the FS1 into the network. Network configuration happens automatically.

If you prefer to manually select DHCP, use the *Select* buttons to navigate to parameter *50.1 IP CONFIG*, and use the *Adjust* buttons to select DHCP. That's it!
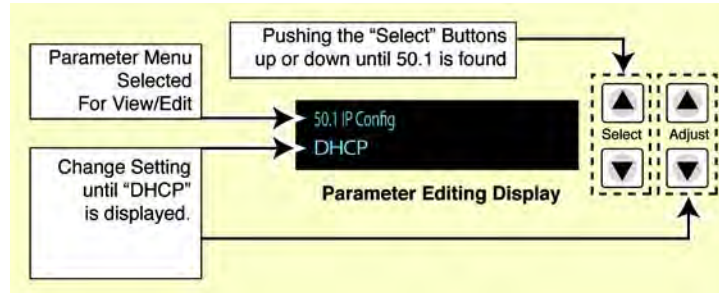
Here are the steps to communicate with the FS1 after choosing the DHCP selection:

1. Use the *Select* buttons to navigate to parameter *50.2*. Note on a piece of paper the DHCP-supplied IP address shown.

2. With your laptop or desktop computer connected to the same LAN as the FS1 and DHCP enabled, type the IP address you noted in step 1 into the browser address bar. You should now see the FS1's browser status screen.

If the FS1 cannot get an address from the DHCP server on the LAN while the FS1 is set to DHCP via parameter *50.1*, the FS1 will automatically drop back to a preset factory IP address of 192.168.0.2. In this instance you can follow these alternate steps to communicate with the FS1:

1. Set the computer's Ethernet IP address to 192.168.0.n (where n is not 2).

2. Set the computer's Subnet mask to 255.255.255.0 (most PCs default to the proper netmask when the address is set).

3. Run a browser on the computer and type "192.168.0.2" (the factory fallback IP address). You should now see the FS1's browser status screen.

Note: If the FS1 fails to find a DHCP server via its network connection, it will fall back to using the factory default static IP of 192.168.0.2—or whatever IP address you've previously defined. AJA recommends you define a Static IP address with parameter *50.2* so you'll be prepared in the event your DHCP server fails.

Networking the FS1 using a Static IP Address

To set a static IP address for the FS1's IP address, you'll need to make some simple Parameter Menu selections. The illustration below shows the four menu selections you need to make while entering the information provided to you by your IT administrator.
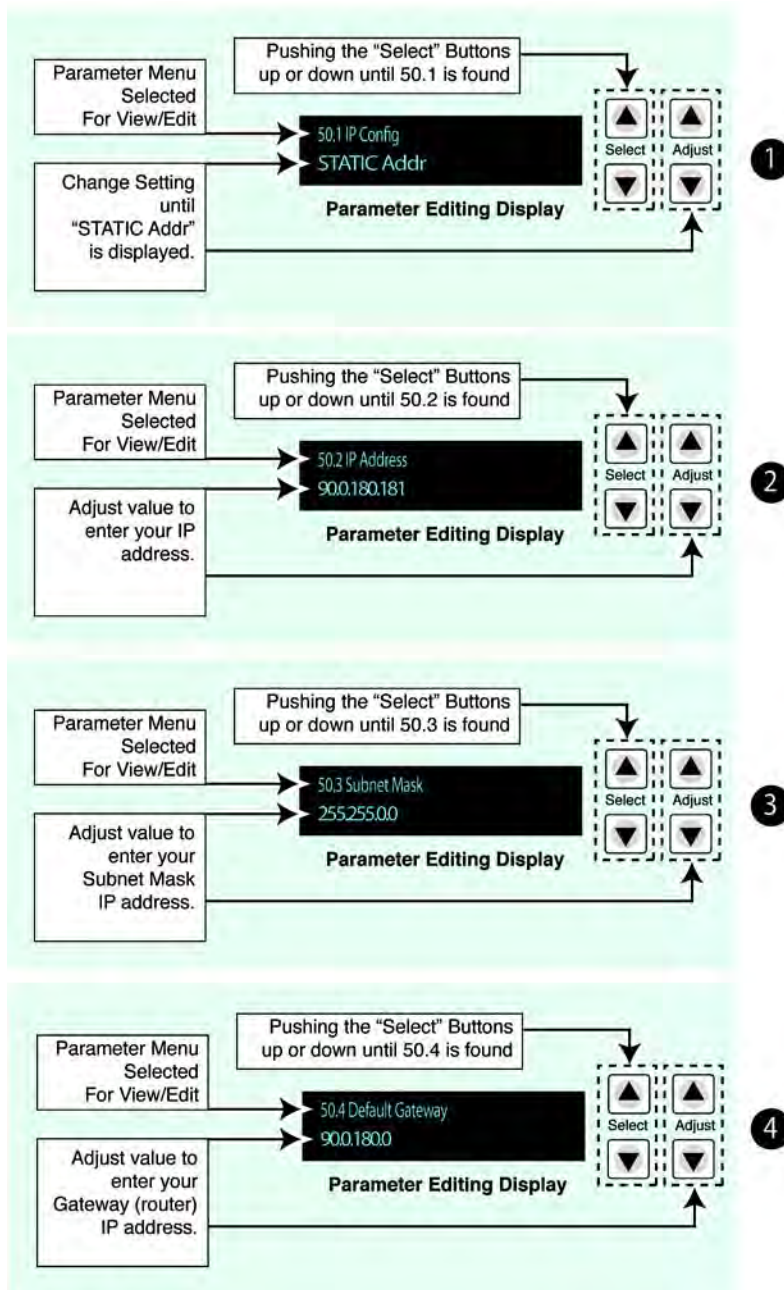
Parameter Menu Selected For View/Edit

Pushing the "Select" Buttons up or down until 50.1 is found

50.1 IP Config
STATIC Addr

Select   Adjust

Parameter Editing Display

Change Setting until "STATIC Addr" is displayed.

①

Parameter Menu Selected For View/Edit

Pushing the "Select" Buttons up or down until 50.2 is found

50.2 IP Address
90.0.180.181

Select   Adjust

Parameter Editing Display

Adjust value to enter your IP address.

②

Note: for parameters 50.2, 50.3, and 50.4, you will be setting IP addresses that consist of "octets" separated by a period (i.e., 90.0.180.0).

For these parameters, the *Select* button selects the octet and then the *Adjust* buttons select the desired number. Pressing Select again advances to the next octet. At the final octet, the address will flash—pressing Select at that point confirms the setting.

Parameter Menu Selected For View/Edit

Pushing the "Select" Buttons up or down until 50.3 is found

50.3 Subnet Mask
255.255.0.0

Select   Adjust

Parameter Editing Display

Adjust value to enter your Subnet Mask IP address.

③

Parameter Menu Selected For View/Edit

Pushing the "Select" Buttons up or down until 50.4 is found

50.4 Default Gateway
90.0.180.0

Select   Adjust

Parameter Editing Display

Adjust value to enter your Gateway (router) IP address.

④

Configuring the FS1 with a Static IP Address

Networking the FS1 using the Factory Default IP

If you don't want to use DHCP to network the FS1 and also don't want to set your own static IP address, you can simply use a *Default* setting to use a factory setting of 192.168.0.2. This might be useful for an application where you directly connect a laptop or computer to the FS1 and want to get your networking connection operating quickly. Here are the steps to set up this method of communication:

1. Use the *Select* buttons to navigate to parameter *50.1 IP CONFIG*, and then use the *Adjust* buttons to select *Default*.
2. Set your laptop or desktop computer Ethernet IP address to 10.m.n.m (where m is not 65 and n is not 74).
3. Also on the computer, set the Subnet mask to 255.0.0.0 (most PCs default to the proper netmask when the address is set, so you may not have to do anything here).
4. Run a browser on the computer and type "192.168.0.2" (the *Default* factory IP address). You should now see the FS1's browser status screen.

Using Ping to Test the Network Connection

After setting the IP address and other TCP/IP settings and connecting the FS1's Ethernet connection to a LAN or directly to a computer, ping the FS1 to ensure that you have a valid connection. Simply run the Ping utility from a Mac OS X or Windows PC computer attached directly or on the same LAN as the FS1:

Mac Ping Procedure

1. Find the Applications Folder, and then find the Utilities Folder inside of the Applications Folder.
2. Locate the "Terminal" utility application and double-click it.
3. On the FS1, go to parameter menu 50.2 and read the IP address.
4. At the terminal prompt, enter "ping" and the IP address noted in step 3. For example: ping 192.168.0.2
5. If successful, the ping utility will respond that packets were sent, received and how long it took. For example:
64 bytes from 192.168.0.2: icmp_seq=0 ttl=64 time=0.590 ms
6. If unsuccessful, check the FS1 network settings and resolve the problem with your IT administrator.

Windows PC Ping Procedure

1. From the Start button, select the All Programs menu.
2. Select Accessories/Command Prompt from the All Programs list.
3. On the FS1, go to parameter menu 50.2 and read the IP address.
4. From the *Command Prompt* utility's prompt, enter "ping" and the IP address noted in step 3. For example: ping 192.168.0.2
5. If successful, the ping utility will respond that packets were sent, received and how long it took. For example:
64 bytes from 192.168.0.2: icmp_seq=0 ttl=64 time=0.590 ms
6. If unsuccessful, check the FS1 network settings and resolve the problem with your IT administrator.

Controlling with a Web Browser

To control the FS1 from a web browser on a network attached computer, enter the FS1 IP address as a URL in the browser. For example, if the FS1 IP address were "90.0.6.31", you would then type into the web browser: http://90.0.6.31. This topic is explained in greater detail in *Chapter 5: Browser Remote Control.*

Note: The webUI (GUI) will keep up with (most) network changes (IP address and netmask) initiated at the GUI. On the other hand, the webUI may not reconnect to the FS1 when network changes are initiated at the FS1 Front Panel. The browser may or may not time out and display "Disconnected". To manually reestablish the webUI connection, type in the new address, if the IP address has changed, or click the *Refresh* button on the web browser.

Installing The Latest Software

Although the FS1 comes from the factory pre-installed with software, it may not be as up-to-date as software posted on our AJA website. This topic describes the steps required to upgrade the software in your AJA FS1.

Download the Latest FS1 Software

Current and past releases of FS1 software are available on the World Wide Web from AJA's website. To get the software, point your browser to:
http://www.aja.com/support/converters/converters-fs1.php

This link is also available at the bottom of the *Update Firmware* screen (discussed later in this chapter). Once you're at the update page, you can select FS1 software files to download to your Mac or PC for upgrading your local FS1 machine.
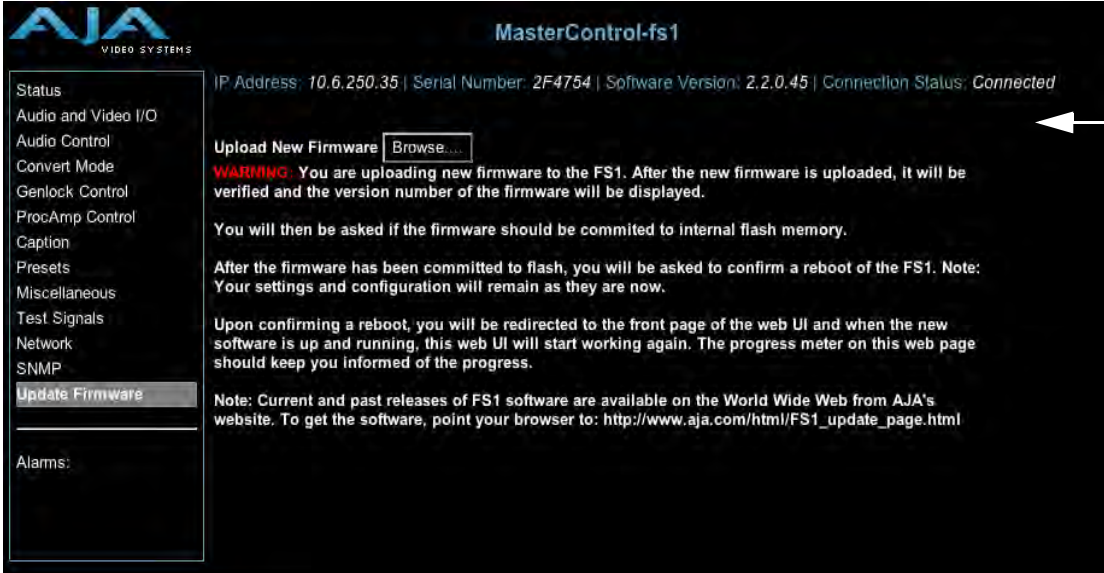
Unpack the Software

FS1 software update files are "ZIP" files that you can open with a number of standard and third party uncompressor applications. The software image that you'll install on the FS1 is a file with a name like *fs1_ver_2.2.0.10.bin* or similar.

Note: Depending on your PC or Mac operating system settings, the ".bin" extension may not be visible to you in a file directory.

Uploading and Installing the Software to the FS1

Uploading and installing the software update requires a PC or Mac that can "see" the FS1 via its ethernet connection. Follow this procedure to install the software:

1. Click the *Update Firmware* link at the bottom of the navigation box on the left-hand side of any FS1 web page.

2. Click the *Browse...* button to select the downloaded file. For example: *fs1_ver_2.2.0.10.bin* contained in the zipfile downloaded from AJA.
3. Click the *OK* button in the dialog box that appears, asking if you want to upload the firmware. The file you select uploads to the FS1.
4. Click the *Commit Uploaded Firmware* button to commit the firmware to FS1 flash memory, or click Cancel to abandon the update. Wait for the procedure to complete—it will take only a few minutes.
5. Click the *Restart FS1 With New Firmware* button to restart your FS1.
6. After restarting, the FS1 is running the new software and your existing FS1 configuration prior to the upgrade is preserved. Check the FS1 web page again to make sure the software version is displayed at the top of all FS1 web screens. If not, run the update steps again.

Notes:

On some browsers, the *Retry* page may appear even though the upgrade was successful. If this occurs, refresh the web page and check for the version number at the top of the page, indicating the upgrade was successful. If the old version appears, click *Retry*. Occasionally, it may be necessary to clear the browser history and re-enter the address before the browser connects with the FS1.

If there is a power outage or glitch during the software download, the FS1 will boot the older software version and you can restart the upgrade process. The FS1 has been designed with a safety feature where an internal "safe" copy of the previous software is retained in the event the updating process fails.

GPI Connections

Pin	Function	Pin	Function
1 -	GPI Input 1	6 -	I/O Ground 1
2 -	GPI Input 2	7 -	I/O Ground 2
3 -	GPI Output 1	8 -	I/O Ground 1
4 -	GPI Output 2	9 -	I/O Ground 2
5 -	Chassis Ground		

5 4 3 2 1

9 8 7 6

GPI Connector Pinout

The GPI inputs and outputs are electrically isolated from the power and ground on the FS1 frame. There are two inputs and two outputs. Electrical isolation is provided for up to two pieces of external equipment. The following guidelines apply to the two GPI inputs and outputs:

- Input 1 and Output 1 share a common isolated ground on pins 6 & 8 (I/O Ground 1).

- Input 2 and Output 2 share a common isolated ground on pins 7 & 9 (I/O Ground 2).

- Pin 5, local chassis ground, may only be used as a reference when isolation is not required.

- Both GPI inputs are internally pulled high through a 10K ohm resistor to an isolated 5V supply, so that a relay contact closure or any device sinking at least 0.4 mA to ground will register a logic low.

- Both GPI outputs are 5V TTL compatible, sourcing up to 6mA and sinking up to 4mA each.

Cabling the System

Where to Place the FS1

Observe these precautions when placing your FS1:

- Plan adequate space for cable routing from the back of the chassis. Ensure that cable connectors are not stressed and that cables are not bent or crimped.

- When rack mounting or stacking multiple FS1 chassis, ensure there is adequate airspace for cooling around the FS1 units. Note the location of cooling vents on all equipment next to the FS1 and ensure none are obstructed.

Note: FS1 units earlier than serial number 2F0482 should not be stacked more than two together; later units can be stacked vertically without limit as long as there is adequate cool air supply around the FS1 vents.

**Power
Requirements**

- Input Voltage—Chassis: autosensing 100VAC to 240VAC, 50/60Hz, fully redundant with both power supplies diode isolated

- Power Consumption—25 Watts

Hazard Warning!

High Voltage. This situation or condition can cause injury due to electric shock.

Warning!

Do not open the chassis. There are no user-serviceable parts inside. Opening the chassis will void the warranty unless performed by an AJA service center or licensed facility.

Warning!

Disconnect the external AC power supply line cord(s) from the mains power before moving the unit.

Warning!

Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

Warning!

Since the Mains plug is used as the disconnection for the device, it must remain readily accessible and operable.

Warning!

Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the device.

Warning!

To meet safety regulations for leakage current, connect the FS1 dual power supplies to separate branch circuits.

Warning!

Refer all servicing to qualified service personnel. Servicing is required when the device has been damaged in any wav, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the device, the device has been exposed to rain or moisture, does not operate normally, or has been dropped.

**System Video/
Audio Cable
Connections**

When installing your system, you'll make video and audio input/output connections. These connectors are explained individually in *Chapter 2*.

FS1 Audio Level Choices—Pro or Consumer

Since the FS1 handles both digital and analog audio and can convert between the two, it provides settings via the Parameter Menus and the remote web browser that allow you to control the relationship between audio level in analog versus the same audio level in the digital domain. The FS1 offers four settings to accommodate these different audio relationships in both professional and consumer audio applications.

The audio levels listed in the following table are defined in reference to 0 dBFS (where FS = full scale), which is the maximum level that can be represented digitally.

Note: the measurements mentioned here are made using a 1kHz sine wave.

FS1 Professional Audio Level Settings

FS1 Audio Setting	Meaning
+24 dBu analog = 0 dBFS SMPTE standard	With digital audio at maximum possible level (before clipping), the expected analog audio input level is +24 dBu, and the output will be scaled to this level.
+18 dBu analog = 0 dBFS EBU standard	With digital audio at maximum possible level (before clipping), the expected analog audio input level is +18 dBu, and the output will be scaled to this level.
+15 dBu analog = 0 dBFS	With digital audio at maximum possible level (before clipping), the expected analog audio input level is +15 dBu, and the output will be scaled to this level.

FS1 Consumer Audio Level Setting

FS1 Audio Setting	Meaning
+12 dBu analog = 0 dBFS.	With digital audio at maximum level (before clipping), the analog audio input level will be +12 dBu, and the output will be scaled to this level.
	These levels are provided for consumer equipment that outputs audio at levels lower than the professional levels.
	Note: In the consumer audio world, units are often given in terms of dBV, so +12.2dBu is equivalent to +10dBV. The standard operating level then corresponds to -10dBV (-7.8dBu). The "+12dBu" FS1 setting provides consumer audio levels with headroom.

How Do Audio Level Settings Relate to *Nominal Levels*?

Most users refer to audio levels at the *Standard Operating Level* for the U.S. and *Alignment Level* for the EU—a level not at maximum level, but rather at some lower point to allow headroom for audio to become louder without clipping.

In the U.S. most users use +4 dBu as their Standard Operating Level. This corresponds to -20dBFS in the digital domain (20 dB of headroom, per SMPTE RP-155), so the +24 dBu setting on the FS1 provides proper headroom levels for digital and analog audio.

Most users in the EU use 0dBu as their Alignment Level. This corresponds to -18dBFS in the digital domain (18 dB of headroom per EBU R68). Correspondingly, the +18dBu setting on the FS1 provides for this relationship. Alternatively, the FS1 +15 dBu setting provides safe headroom levels corresponding to some German professional audio equipment.

Parameter Menu Selected For View/Edit

Select a new Parameter Menu by pushing the "Select" Buttons

1.2 Output Format
Follow INPUT

Select   Adjust

Control Display

Current Setting of Parameter

Change Setting by pushing the "Adjust" Buttons
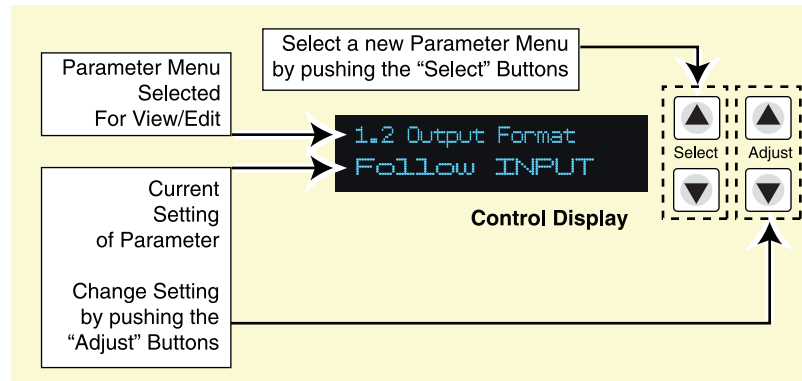
Controlling the FS1 via Front Panel Parameter Menus

There are three ways to control the FS1: (1) remotely from a web browser, (2) using a remote control panel, and (3) using the front panel *Select/Adjust* buttons and Parameter Menus. This chapter deals with the latter—the most direct and all-inclusive way to configure an FS1.

In *Chapter 2* we discussed the panel controls overall, so ensure you've read and understand that material first. In this chapter we discuss each of the Parameter Menus and their use.

In each parameter screen the parameter number and name appear on the top line of the display, and the parameter settings are shown on the bottom line of the display; remember, the current setting is what is shown.

As mentioned in *Chapter 2*, you enter the parameter menus whenever you press the *Select* or *Adjust* buttons. Here is the general format of the Parameter Menu display:

Parameter Number and Name

Current Parameter Setting

4

Pressing either a parameter *Select* or parameter *Adjust* button while on the Status or Screen Saver displays changes the display to the last remembered Parameter Adjust menu. If you're already viewing a Parameter Menu, pressing a *Select* or *Adjust* button causes a change to the next item.
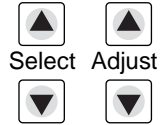
Select   Adjust

The parameter *Select* buttons to the right of the display select a parameter to view or modify.

Pressing one of the parameter *Adjust* buttons changes the current parameter's value to a new one from the FS1's list of choices—repeating the list if you continue to press *Adjust*—or adjusting a numerical value up or down. The exact choices displayed will vary depending on the parameter. Most adjustment choices made with the *Adjust* buttons take effect immediately and will be subsequently stored into the FS1s non-volatile memory if they remain unchanged for 3 seconds.

If a *Select* or *Adjust* button is held down continuously, the changes will begin to happen automatically with acceleration, if applicable.

Pressing either a *Select* or *Adjust* button while on the Status or Screen Saver displays changes the display to the last remembered Control Menu.

Holding down both the *Adjust* (up) and *Adjust* (down) buttons *at the same time* will set that parameter back to its factory default value.

The remaining topical headings in this chapter list all of the Parameter Menus by number and name. The number shows the order in the menu navigation system: pressing the up or down *Select* button shifts you numerically up or down in the order of their assigned parameter numbers. The name is what you'll see in the Parameter Menu display (for example, the first heading listed here is "1.1 Output Format" which is exactly what you'll see in the top line of the display when viewing this parameter).

1.1 Output Format

This parameter defines the SDI 1 output format. Depending on other settings, it may also apply to SDI 2 and the Component Video output.

1.1 Output Format	Description of Choices
Parameter Adjustments:	
Follow Input *(Default)*	Follow the format of the selected input.
Follow Ref	Follow the format of the reference video input (Ref).
SD <sd_rate>	Select standard definition (available SD rates are listed choices).
HD 720p <hd_rate1>	Select HD 720p (available rates are listed choices).
HD 1080i <hd_rate1>	Select HD 1080i (available rates are listed choices).
HD 1080psf <hd_rate2>	Select HD 1080psf (available rates are listed choices).

Notes:

1. Available rates that listed here depend on what has been chosen in the 3.3 Frame Rates parameter setting.

2. If the parameter *1.1 Output Format* is set to *Follow Ref*, and the *6.1 Genlock Source* is set to *Input*, and the *2.1 Video Input* is set to select one of the analog inputs, then the output format will follow the input format rather than the format of the signal on the *Ref BNC* as might be expected. (This combination of settings effectively disconnects the *Ref BNC*.)

3. Changing the *Output Format* selection automatically selects new values for H & V timing parameters (*6.2 Output Timing H*, *6.3 Output Timing* and *6.4 Analog Output Fine*). Each *Output Format* selection remembers its own H & V timing settings.

1.2 SDI 2 Out Format

This parameter defines the output format on the *SDI 2 BNC* connector.

1.2 SDI 2 Output Format	Description of Choices
Parameter Adjustments:	
Normal *(Default)*	SDI 2 output follows the *1.1 Output Format* parameter selection (both SDI outputs are the same format).
Bypass (Follow Input)	SDI 2 output follows the format of the selected input.
Standard Def	The output from Downconverter 2 (see block diagram in Chapter 1) is always standard definition.

Notes:

1. The output from Downconverter 2 (see block diagram in *Chapter 1*) is always standard definition.

2. *Bypass* mode is not offered in these cases (3:2 Pulldown):
   1080pSF/23.98 Input / 1080i/59.94 Output
   1080pSF/23.98 Input / 525i/59.94 Output
   1080pSF/24 Input / 1080i/60 Output
   In these cases, *Bypass* mode behaves like *Normal* mode—the output is the same format as the main *SDI1* output.

1.3 Component Out

This parameter defines the output format of the *Component Video Output* BNC connectors (*Composite Out* is a function of *Input Format* and the *1.3 Component Out* parameter setting).

1.3 Component Output	Description of Choices
Parameter Adjustments: Normal *(Default)* Bypass (Follow Input)	Component output follows the *1.1 Output Format* parameter selection. Component output follows the format of the selected input. **Notes:** *Bypass* mode does not work when the input is 1080pSF24 and output is 1080i60 (3:2 pulldown mode). The signal type of the Component output (RGB versus YPbPr) is defined in another parameter (*3.2 Component OUT Format*).
Standard Def	The output from Downconverter 2 (see block diagram in *Chapter 1*) is always standard definition.

Notes:

1. *Bypass* applies to all analog outputs (*Component*, *Composite*, and *S-Video*). When *1.3 Component Out* is set to Bypass, Input signal format is 525i/59.94, and *5.3 SD Aspect Ratio* is set to anything other than *Off*, the *Composite Out* and *S-Video* outputs will also bypass the Aspect Ratio Converter.

2. Setting parameter *1.3 Component Out* to *Bypass* causes *Composite Out* to bypass aspect ratio conversion (parameter *5.3*).

3. As in *1.2 SDI2 Out*, *Bypass* mode is not offered in these cases (3:2 Pulldown):
   1080pSF/23.98 Input / 1080i/59.94 Output
   1080pSF/23.98 Input / 525i/59.94 Output
   1080pSF/24 Input / 1080i/60 Output
   In these cases, *Bypass* mode behaves like *Normal* mode—the output is the same format as the main *SDI1* output.

2.1 Video Input

This parameter performs input video source selection for the FS1. Multiple input sources may be present at all the connectors on the FS1 rear panel, but the active input source routed through the FS1 will be the one selected here.

2.1 Video Input	Description of Choices
Parameter Adjustments: SDI 1 *(Default)* SDI 2 Composite S-Video Component	Select SDI 1 connector as the input source. Select SDI 2 connector as the input source. Select the Composite connector as the input source. Select the S-Video connector as the input source. Select the Component connector as the input source.

Notes:

1. Changing the *Video Input* selection automatically selects new values for Proc Amp parameters (10.1 through 10.5). Each video source remembers its own Proc Amp settings. This is referred to as Source Memory.

2. If *4.5 Audio Follow Video* is set to *On*, then changing the *Video Input* selection will also automatically select new values for all audio parameters associated with *Audio Follow Video* (see the list provided in the description of parameter *4.5 Audio Follow Video*). Audio Source Memory is enabled only when *4.5 Audio Follow Video* is set to *On*.

2.2 Audio Input

This parameter performsinput audio source selection for the FS1. Multiple input sources may be present at all the connectors on the FS1 rear panel, but the active input source routed through the FS1 will be the one selected here.

2.2 Audio Input	Description of Choices
Parameter Adjustments:	
Stereo Map	Select stereo inputs according to *Audio Map* parameters 2.21 through 2.24. Any channel pair (4 pair total) can be mapped to 16 different choices.
Channel Map	For 8 channels of embedded audio out, select and map inputs according to *Audio Map* parameters 2.11 through 2.18. Any of the 16 embedded channels can be mapped to one of the 48 possible choices.
Embed SDI 1	Use the embedded audio from the SDI 1 connector as the input source.
Embed SDI 2	Use the embedded audio from the SDI 2 connector as the input source.
AES unbal *(Default)*	Select the AES/EBU digital audio connectors (8-ch) as the audio input source.
Analog	Select the Analog audio connector (DB25, 8-ch) as the audio input source.

Note: If parameter 4.5 *Audio Follow Video* is set to *On*, then Audio Input selection is independently kept for each separate input: *SDI 1*, *SDI 2*, *Composite*, *S-Video*, and *Component*. If *Audio Follow Video* is set to *Off*, then another Audio Input selection is used.

2.11 Audio Map Ch1

This parameter is used with parameter 2.2—when *Channel Map* is selected—to specify the source of the audio output on channel 1. Possible choices (48 in all) are:

2.11 Audio Map Ch1	Description of Choices
Parameter Adjustments:	
AES Ch 1 *(default)*	Selects AES channel 1 and maps it to Channel 1 audio out.
AES Ch 2	Selects AES channel 2 and maps it to Channel 1 audio out.
AES Ch 3	Selects AES channel 3 and maps it to Channel 1 audio out.
AES Ch 4	Selects AES channel 4 and maps it to Channel 1 audio out.
AES Ch 5	Selects AES channel 5 and maps it to Channel 1 audio out.
AES Ch 6	Selects AES channel 6 and maps it to Channel 1 audio out.
AES Ch 7	Selects AES channel 7 and maps it to Channel 1 audio out.
AES Ch 8	Selects AES channel 8 and maps it to Channel 1 audio out.
Analog Ch 1	Selects Analog Channel 1 and maps it to Channel 1 audio out.
Analog Ch 2	Selects Analog Channel 2 and maps it to Channel 1 audio out.
Analog Ch 3	Selects Analog Channel 3 and maps it to Channel 1 audio out.
Analog Ch 4	Selects Analog Channel 4 and maps it to Channel 1 audio out.
Analog Ch 5	Selects Analog Channel 5 and maps it to Channel 1 audio out.
Analog Ch 6	Selects Analog Channel 6 and maps it to Channel 1 audio out.
Analog Ch 7	Selects Analog Channel 7 and maps it to Channel 1 audio out.
Analog Ch 8	Selects Analog Channel 8 and maps it to Channel 1 audio out.
SDI 1 Ch 1	Selects the SDI 1 Channel 1 and maps it to Channel 1 audio out.
SDI 1 Ch 2	Selects the SDI 1 Channel 2 and maps it to Channel 1 audio out.
SDI 1 Ch 3	Selects the SDI 1 Channel 3 and maps it to Channel 1 audio out.
SDI 1 Ch 4	Selects the SDI 1 Channel 4 and maps it to Channel 1 audio out.
SDI 1 Ch 5	Selects the SDI 1 Channel 5 and maps it to Channel 1 audio out.
SDI 1 Ch 6	Selects the SDI 1 Channel 6 and maps it to Channel 1 audio out.
SDI 1 Ch 7	Selects the SDI 1 Channel 7 and maps it to Channel 1 audio out.
SDI 1 Ch 8	Selects the SDI 1 Channel 8 and maps it to Channel 1 audio out.
SDI 2 Ch 1	Selects the SDI 2 Channel 1 and maps it to Channel 1 audio out.
SDI 2 Ch 2	Selects the SDI 2 Channel 2 and maps it to Channel 1 audio out.
SDI 2 Ch 3	Selects the SDI 2 Channel 3 and maps it to Channel 1 audio out.
SDI 2 Ch 4	Selects the SDI 2 Channel 4 and maps it to Channel 1 audio out.
SDI 2 Ch 5	Selects the SDI 2 Channel 5 and maps it to Channel 1 audio out.
SDI 2 Ch 6	Selects the SDI 2 Channel 6 and maps it to Channel 1 audio out.
SDI 2 Ch 7	Selects the SDI 2 Channel 7 and maps it to Channel 1 audio out.
SDI 2 Ch 8	Selects the SDI 2 Channel 8 and maps it to Channel 1 audio out.
SDI 1 Ch 9	Selects the SDI 1 Channel 9 and maps it to Channel 1 audio out.
SDI 1 Ch 10	Selects the SDI 1 Channel 10 and maps it to Channel 1 audio out.
SDI 1 Ch 11	Selects the SDI 1 Channel 11 and maps it to Channel 1 audio out.
SDI 1 Ch 12	Selects the SDI 1 Channel 12 and maps it to Channel 1 audio out.
SDI 1 Ch 13	Selects the SDI 1 Channel 13 and maps it to Channel 1 audio out.
SDI 1 Ch 14	Selects the SDI 1 Channel 14 and maps it to Channel 1 audio out.
SDI 1 Ch 15	Selects the SDI 1 Channel 15 and maps it to Channel 1 audio out.
SDI 1 Ch 16	Selects the SDI 1 Channel 16 and maps it to Channel 1 audio out.
SDI 2 Ch 9	Selects the SDI 2 Channel 9 and maps it to Channel 1 audio out.
SDI 2 Ch 10	Selects the SDI 2 Channel 10 and maps it to Channel 1 audio out.
SDI 2 Ch 11	Selects the SDI 2 Channel 11 and maps it to Channel 1 audio out.
SDI 2 Ch 12	Selects the SDI 2 Channel 12 and maps it to Channel 1 audio out.
SDI 2 Ch 13	Selects the SDI 2 Channel 13 and maps it to Channel 1 audio out.
SDI 2 Ch 14	Selects the SDI 2 Channel 14 and maps it to Channel 1 audio out.
SDI 2 Ch 15	Selects the SDI 2 Channel 15 and maps it to Channel 1 audio out.
SDI 2 Ch 16	Selects the SDI 2 Channel 16 and maps it to Channel 1 audio out.
Mute	Mute Channel 1 (no audio)

Note: If parameter 4.5 *Audio Follow Video* is set to *On*, then Audio Map Ch1 selection is independently kept for each separate input: *SDI 1*, *SDI 2*, *Composite*, *S-Video*, and *Component*. If *Audio Follow Video* is set to *Off*, then another Audio Map Ch1 selection is used. This note applies to Parameters 2.11 through 2.18.

2.12 Audio Map Ch2

This parameter is used with parameter 2.2—when *Channel Map* is selected—to specify the source of the audio output on channel 2. Possible choices are the same as parameter 2.11. *Default = AES Ch 2*.

2.13 Audio Map Ch3

This parameter is used with parameter 2.2—when *Channel Map* is selected—to specify the source of the audio output on channel 3. Possible choices are the same as parameter 2.11. *Default = AES Ch 3*.

2.14 Audio Map Ch4

This parameter is used with parameter 2.2—when *Channel Map* is selected—to specify the source of the audio output on channel 4. Possible choices are the same as parameter 2.11. *Default = AES Ch 4*.

2.15 Audio Map Ch5

This parameter is used with parameter 2.2—when *Channel Map* is selected—to specify the source of the audio output on channel 5. Possible choices are the same as parameter 2.11. *Default = AES Ch 5*.

2.16 Audio Map Ch6

This parameter is used with parameter 2.2—when *Channel Map* is selected—to specify the source of the audio output on channel 6. Possible choices are the same as parameter 2.11. *Default = AES Ch 6*.

2.17 Audio Map Ch7

This parameter is used with parameter 2.2—when *Channel Map* is selected—to specify the source of the audio output on channel 7. Possible choices are the same as parameter 2.11. *Default = AES Ch 7*.

2.18 Audio Map Ch8

This parameter is used with parameter 2.2—when *Channel Map* is selected—to specify the source of the audio output on channel 8. Possible choices are the same as parameter 2.11. *Default = AES Ch 8*.

2.21 Audio Map Ch 1/2

This parameter is used with parameter 2.2—when *Stereo Map* is selected—to specify the source of the channel pair for audio output channels 1 and 2. Possible choices (24 in all) are:

2.21 Audio Map Ch1/2	Description of Choices
Parameter Adjustments:	
AES Ch 1/2 *(default)*	Selects AES Channels 1/2, and maps them to Channel 1/2 audio out.
AES Ch 3/4	Selects AES Channels 3/4, and maps them to Channel 1/2 audio out.
AES Ch 5/6	Selects AES Channels 5/6, and maps them to Channel 1/2 audio out.
AES Ch 7/8	Selects AES Channels 7/8, and maps them to Channel 1/2 audio out.
Analog Ch 1/2	Selects Analog Channels 1/2, and maps them to Channel 1/2 audio out.
Analog Ch 3/4	Selects Analog Channels 3/4, and maps them to Channel 1/2 audio out.
Analog Ch 5/6	Selects Analog Channels 5/6, and maps them to Channel 1/2 audio out.
Analog Ch 7/8	Selects Analog Channels 7/8, and maps them to Channel 1/2 audio out.
SDI 1 Ch 1/2	Selects SDI 1 Channels 1/2, and maps them to Channel 1/2 audio out.
SDI 1 Ch 3/4	Selects SDI 1 Channels 3/4, and maps them to Channel 1/2 audio out.
SDI 1 Ch 5/6	Selects SDI 1 Channels 5/6, and maps them to Channel 1/2 audio out.
SDI 1 Ch 7/8	Selects SDI 1 Channels 7/8, and maps them to Channel 1/2 audio out.
SDI 2 Ch 1/2	Selects SDI 2 Channels 1/2, and maps them to Channel 1/2 audio out.
SDI 2 Ch 3/4	Selects SDI 2 Channels 3/4, and maps them to Channel 1/2 audio out.
SDI 2 Ch 5/6	Selects SDI 2 Channels 5/6, and maps them to Channel 1/2 audio out.
SDI 2 Ch 7/8	Selects SDI 2 Channels 7/8, and maps them to Channel 1/2 audio out.
SDI 1 Ch 9/10	Selects SDI 1 Channels 9/10, and maps them to Channel 1/2 audio out.
SDI 1 Ch 11/12	Selects SDI 1 Channels 11/12, and maps them to Channel 1/2 audio out.
SDI 1 Ch 13/14	Selects SDI 1 Channels 13/14, and maps them to Channel 1/2 audio out.
SDI 1 Ch 15/16	Selects SDI 1 Channels 15/16, and maps them to Channel 1/2 audio out.
SDI 2 Ch 9/10	Selects SDI 2 Channels 9/10, and maps them to Channel 1/2 audio out.
SDI 2 Ch 11/12	Selects SDI 2 Channels 11/12, and maps them to Channel 1/2 audio out.
SDI 2 Ch 13/14	Selects SDI 2 Channels 13/14, and maps them to Channel 1/2 audio out.
SDI 2 Ch 15/16	Selects SDI 2 Channels 15/16, and maps them to Channel 1/2 audio out.
Mute	Mute Channel pair 1/2 (no audio)

Note: If parameter 4.5 *Audio Follow Video* is set to *On*, then Audio Map Ch1/2 selection is independently kept for each separate input: *SDI 1*, *SDI 2*, *Composite*, *S-Video*, and *Component*. If *Audio Follow Video* is set to *Off*, then another Audio Map Ch1/2 selection is used. This note applies to Parameters 2.21 through 2.24.

2.22 Audio Map Ch 3/4

This parameter is used with parameter 2.2—when *Stereo Map* is selected—to specify the source of the channel pair for audio output channels 3 and 4. Possible choices are the same as parameter 2.21. *Default = AES Ch 3/4*.

2.23 Audio Map Ch 5/6

This parameter is used with parameter 2.2—when *Stereo Map* is selected—to specify the source of the channel pair for audio output channels 5 and 6. Possible choices are the same as parameter 2.21. *Default = AES Ch 5/6*.

2.24 Audio Map Ch 7/8

This parameter is used with parameter 2.2—when *Stereo Map* is selected—to specify the source of the channel pair for audio output channels 7 and 8. Possible choices are the same as parameter 2.21. *Default = AES Ch 7/8*.

3.1 Component In Format

This parameter configures the format of the *Component* video input.

3.1 Component In	Description of Choices
Parameter Adjustments:	
Beta YPbPr	Configure the Component video input source as Beta YPbPr (standard definition). If the selected Component video source is HD, this will default to SMPTE YPbPr.
SMPTE YPbPr *(Default)*	Configure the Component video input source as SMPTE YPbPr.

3.2 Component Out Format

This parameter configures the format of the *Component* video output.

3.2 Component Out	Description of Choices
Parameter Adjustments:	
Beta YPbPr	Configure the Component video output as Beta YPbPr (standard definition). If the Component video is HD, this will default to SMPTE YPbPr.
SMPTE YPbPr *(Default)*	Configure the Component video output as SMPTE YPbPr.
RGB	Configure the Component video output as RGB.

3.3 Frame Rate

This parameter selects the HD video frame rate associated with the video standard.

3.3 Frame Rate	Description of Choices
Parameter Adjustments:	
59.94/23.98 *(Default)*	Select the *59.94/23.98* item if your desired rate is either 59.94 *or* 23.98.
60/24	Select the *60/24"*item if your desired rate is either 60 or 24.
50/25	Select the *50/25* item if your desired rate is either 50 or 25 (PAL).

Note: Changing the *Frame Rates* selection automatically selects a new value for *1.1 Output Format*. Each *Frame Rates* selection remembers its own *Output Format* settings.

3.4 NTSC Standard

This parameter selects the NTSC video standard.

3.4 NTSC Standard	Description of Choices
Parameter Adjustments:	
NTSC *(Default)*	Select NTSC for North America NTSC standard.
NTSC Japan	Select NTSC Japan for Japan's NTSC standard.

4.1 Analog Audio Std

This parameter sets the analog audio input and output level of the FS1 with reference to full scale digital, from consumer levels (+12 dBu) all the way to professional (+24 dBu).

4.1 Analog Audio Std	Description of Choices
Parameter Adjustments:	
+24 dBu *(Default)*	Select +24 dBu as the expected analog audio level.
+18 dBu	Select +18 dBu as the expected analog audio level.
+15 dBu	Select +15 dBu as the expected analog audio level.
+12 dBu	Select +12 dBu as the expected analog audio level.
	Maximum amplitude (0 dBFS)

Note: Audio levels are discussed at the end of *Chapter 3* (*FS1 Audio Level Choices—Pro or Consumer*).

4.2 Audio Delay (mS)

This parameter allows you to adjust the delay to compensate for video timing issues (delay/latency). Pressing the *Adjust* buttons changes the delay from -16 to 256 ms (the default is zero delay).

4.2 Audio Delay (mS)	Description of Choices
Parameter Adjustments:	
Variable	Adjustment range increments from -16 to 256ms.
	Default = 0 (synchronized to Video Out).

Note: If parameter 4.5 *Audio Follow Video* is set to *On*, then the *Audio Delay* selection is independently kept for each separate input: *SDI 1*, *SDI 2*, *Composite*, *S-Video*, and *Component*. If *Audio Follow Video* is set to *Off*, then another *Audio Delay* selection is used.

4.3 Embed Audio Out

This parameter allows you to enable or disable audio output. SDI Embedded Audio output may be *On*, *Muted* (embedded silence) or turned *Off* (no embedded audio). Analog and AES audio outputs are not affected by 4.3 (they're left On).

4.3 Embed Audio Out	Description of Choices
Parameter Adjustments:	
On (*Default*)	Embedded audio will be passed.
Off	Do not pass embedded audio packets to the SDI outputs.
Mute	FS1 outputs SDI embedded audio packets containing silence.

4.4 Sample Rate Convert

This parameter controls audio sample rate conversion on input audio. *On* is the default (audio is rate-converted and synced with video) and *Off* is a setting for use when Dolby® 5.1 and similar schemes need to be preserved and the audio data passed unaltered. Normally, set this to *On* (default). Set it to *Off* only if the following are <u>both</u> true:

1. You want to pass digital encoded audio from either embedded or AES into embedded and/or AES out.

2. You have the embedded or AES input genlocked to the FS1 output. In other words, the encoded audio will not survive the frame-sync function (dropping or repeating frames) so it needs to be set to lock to the input. You can lock to a reference only if that reference is driving both the FS1 and the upstream source of the embedded or AES input to the FS1.

Note: If parameter 4.5 *Audio Follow Video* is set to *On*, the *Sample Rate Convert* selection is independently kept for each separate input: *SDI 1*, *SDI 2*, *Composite*, *S-Video*, and *Component*. If *Audio Follow Video* is set to *Off*, another *Sample Rate Convert* selection is used.

4.4 Sample Rate Conversion	Description of Choices
Parameter Adjustments:	
On (*Default*)	Normal operation. The FS1 performs audio sample rate conversion and keeps the video and audio synchronized.
Off	The FS1 does not sample rate convert the audio, leaving embedded audio as is, useful for Dolby® 5.1 embedded audio and other applications.

4.5 Audio Follow Video

This parameter determines whether audio settings are remembered for each video input.

***Audio Follow Video* applies to these parameters:**

- 2.2 Audio Input
- 2.11—2.18 Audio Map
- 2.21—2.24 Audio Map (Stereo)
- 4.2 Audio Delay
- 4.4 Sample Rate Convert
- 20.0 Audio Output Levels
- 20.1—20.8 Audio Level Ch (n)
- 21.0 Audio Output Phase
- 21.1—21.8 Audio Phase Ch (n)

***Audio Follow Video* does <u>not</u> apply to these parameters:**

- 4.1 Analog Audio Std
- 4.3 Embed Audio Out

Note: Turning *Audio Follow Video* (AFV) *On* results in the loss of the above settings. When AFV is turned *On*, the source-memory settings are written over the current settings. Turning AFV *Off* again will not restore the original settings, but instead will result in the source memory settings remaining in effect until edited again.

| 4.5 Audio Follow Video	Description of Choices
Parameter Adjustments: Off *(Default)*	Normal operation. Audio settings must be made separately from any video settings; they are not associated automatically.
On	The FS1 remembers the saved audio settings associated with the currently selected input. Whenever an input is selected, the corresponding audio settings will be recalled. This allows you to set up specific audio settings for the different video inputs (i.e., perhaps the SDI 1 has a specific embedded audio channel mapping while the component video input might always use AES audio input).

4.6 AFV Memory

Selecting this parameter and then pressing the up-arrow *Adjust* button saves the current audio settings to source-memory for the currently selected video input.

5.1 Upconvert Mode

This parameter selects the type of upconversion performed on the incoming selected SD source input. See the following illustration for visual representations of the upconversions.

5.1 Upconvert Mode	Description of Choices
Parameter Adjustments:	
4x3 Pillar	Results in 4x3 image in center of screen, with black sidebars.
14x9 Pillar *(Default)*	Results in 14x9 image, zoomed slightly to fill a 14x9 image with black sidebars.
Full Screen	Anamorphic full screen display.
LB to Full	Image is zoomed to fit the full screen (letterbox).
Wide Zoom	Using a combination of zoom and stretch, the image is sized to fit a 16x9 screen (this can introduce a small aspect ratio change).

Upconvert Illustrations—FS1
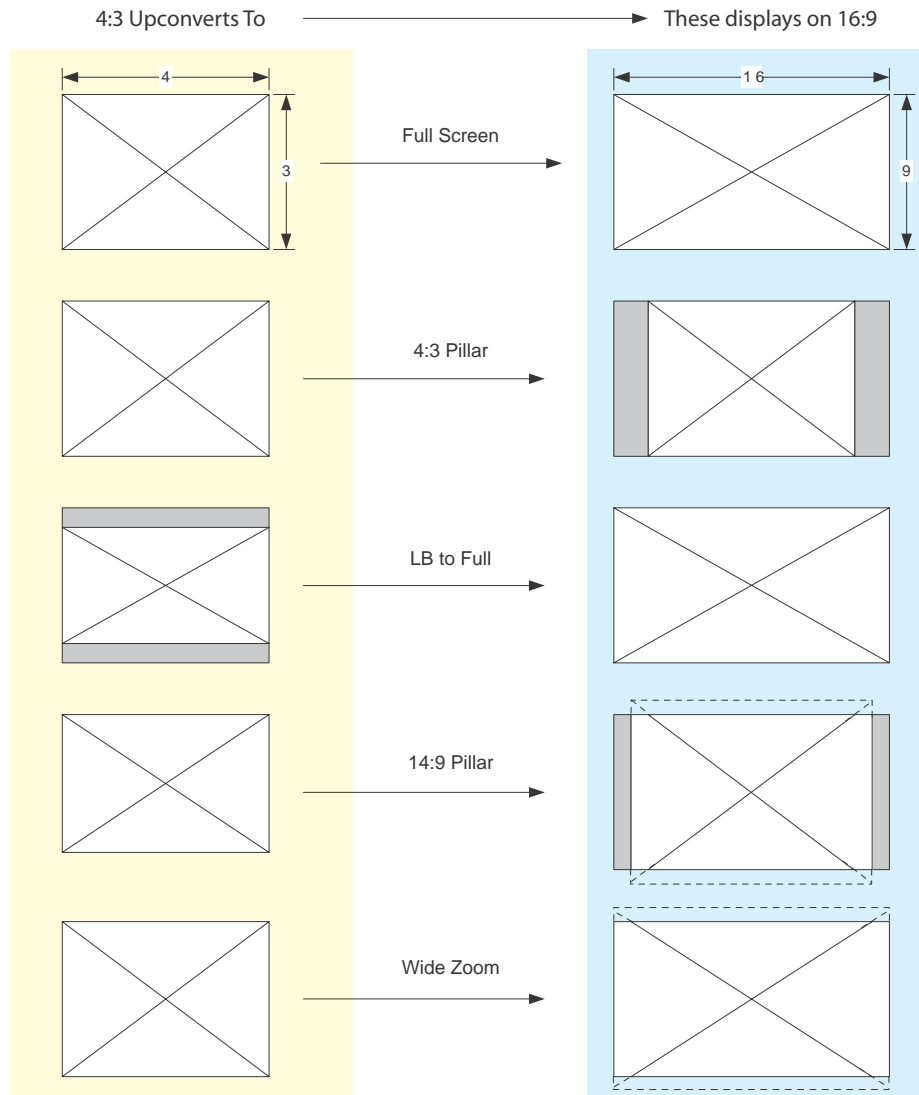
Upconvert Illustrations

5.2 Downconvert Mode

This parameter selects the type of downconversion performed on the incoming selected HD source input. See the following Downconvert Illustration for downconversion examples.

| 5.2 Downconvert Mode	Description of Choices
Parameter Adjustments:	
Letterbox *(Default)*	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.
Anamorphic	HD image is converted to full-screen SD with a 16x9 aspect ratio (anamorphic).
14:9	Image is reduced slightly with aspect ratio preserved. Black is added top and bottom, and the left and right sides are cropped.
Auto AFD	Automatically selects the best downconvert mode based on the input video's Active Format Description (AFD) code. If the input video is not carrying an AFD VANC code, the downconverter defaults to the mode specified in parameter menu *5.5 Downconvert AFD Default*.

Note: Active Format Description (AFD) codes are carried in the vertical ancillary (VANC) portion of HD SDI video signals, specified in SMPTE 2016 as follows: *"AFD information is intended to guide DTV receivers and/or intermediate professional video equipment regarding the display of video of one aspect ratio on a display of another aspect ratio."*

In the FS1 downconverter, the AFD code on the video input can be used to guide the downconverter in choosing which mode to use to best display the important content of the input 16:9 HD video on the 4:3 SD output. For example, if the input AFD code is 10 (Full Frame), it means that the input video has important picture information throughout the full 16:9 frame, so the downconverter should use Letterbox mode to be sure none of the content is cropped off. An AFD code of 9 (Pillarbox) says that the input video only has content within the center 4:3 area of the picture (usually because it originally came from an upconverted SD signal) so the downconverter Crop mode would be the best choice. There are 16 possible HD AFD codes, of which 8 are in common use. The FS1 does not process or use SD AFD codes.

FS1 AFD processing (passing, removing, and re-inserting) occurs based on the setting of parameters *5.2*, *5.5*, *5.6* and *5.7*.

Downconvert Illustrations—FS1

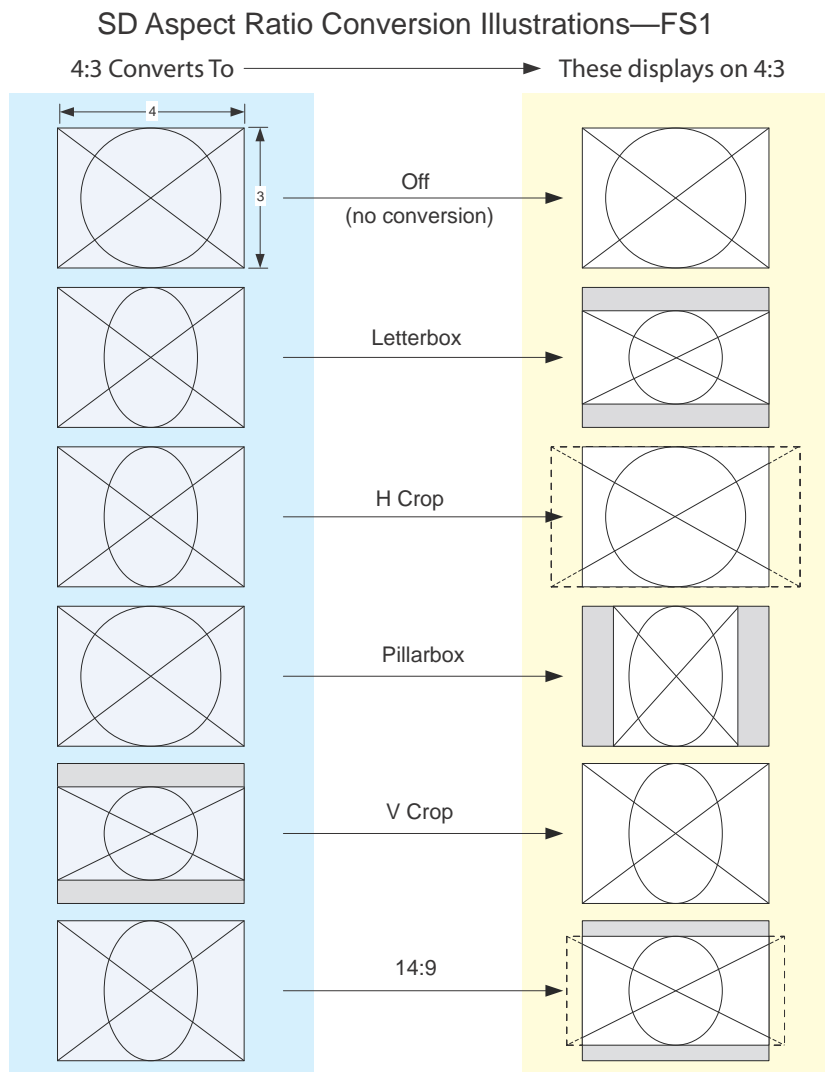16:9 Downconverts To⟶ These displays on 4:3
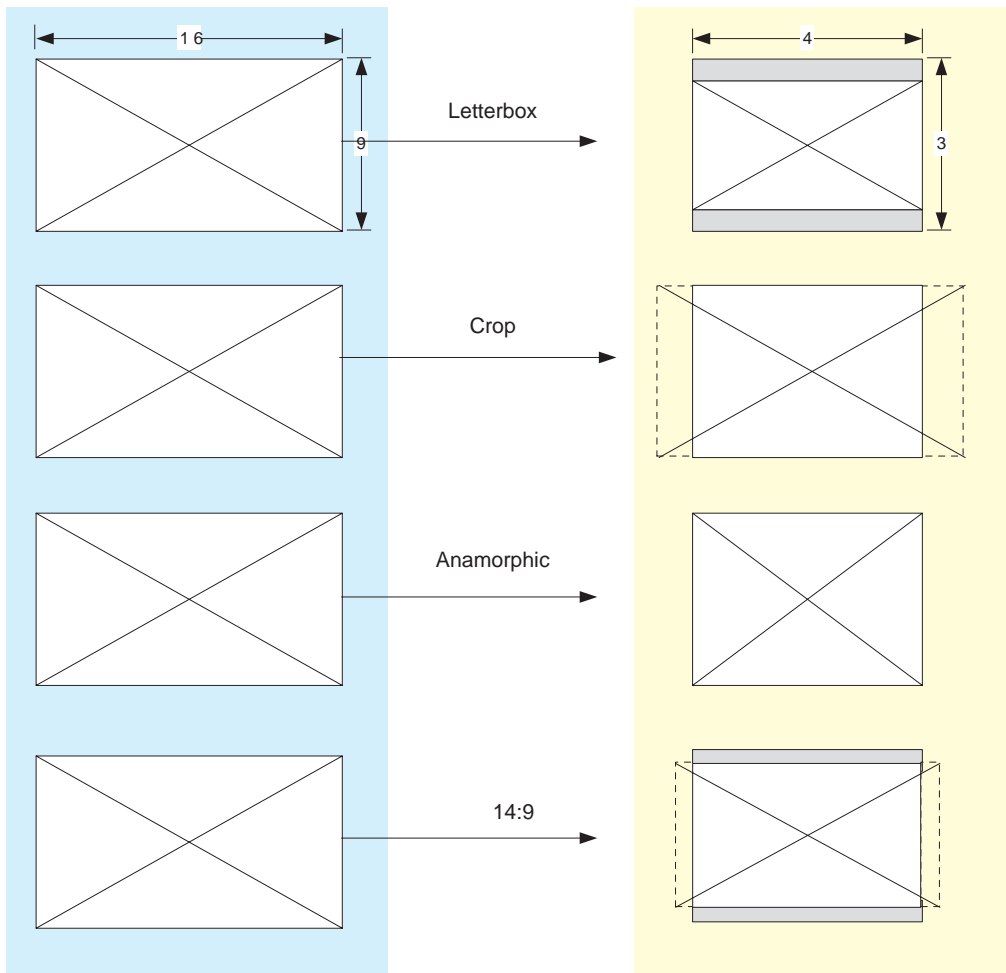
Downconvert Illustrations

5.3 SD Aspect Ratio Convert

This parameter selects an SD-to-SD aspect conversion mode for converting between normal 4:3 SD video and either 16:9 Anamorphic SD video or Letterbox SD video. (In Europe 16:9 Anamorphic video is also known as "wide screen" video.) See the following illustration for aspect ratio conversion visual examples.

5.3 SD Aspect Ratio Convert	Description of Choices
Parameter Adjustments:	
Off *(Default)*	Turns aspect ratio conversion *Off.*
Letterbox	Converts 16:9 Anamorphic video to Letterbox video.
H Crop	Converts 16:9 Anamorphic video to 4:3 Standard video (crops left and right edges of video).
Pillarbox	Converts 4:3 Standard video to 16:9 Anamorphic video.
V Crop	Converts Letterbox video to 16:9 Anamorphic video.
14:9	Converts 16:9 Anamorphic video to 14:9 Cropped video.

SD Aspect Ratio Conversion Illustrations—FS1

SD Aspect Ratio Conversions

5.5 Downconvert AFD Default

This parameter selects how the FS1 will operate when parameter *5.2 Downconvert Mode* has been set to *Auto AFD* and no AFD codes are detected at the selected input source (i.e., selects which default downconversion to use when no AFD is present).

5.5 Downcvt AFD Dflt	Description of Choices
Parameter Adjustments:	
Hold Last *(Default)*	Use the last AFD code detected and continue to use its aspect ratio selection until a new AFD code is detected again in the SDI meta data.
Letterbox	When an AFD code isn't present, switch the downconverter mode to Letterbox.
14x9	When an AFD code isn't present, switch the downconverter mode to 14x9.
Anamorphic	When an AFD code isn't present, switch the downconverter mode to Anamorphic.
Crop	When an AFD code isn't present, switch the downconverter mode to Crop.

5.6 AFD Out SDI 1

This parameter menu determines whether the FS1 inserts a SMPTE 2016 Active Format Descriptor (AFD) packet into the *SDI 1* output video. The inserted AFD code does not affect FS1 up/down/cross conversion, but it may affect downstream video processing if the signal is downconverted.

Note: AFD codes are only inserted into HD video outputs.

5.6 AFD Out SDI1	Description of Choices
Parameter Adjustments:	
OFF *(Default)*	The FS1 does not insert an AFD code into the output. If the video input has an AFD code and the FS1 is not up/down/cross-converting it, the input AFD code will be passed through to the output.
Auto	If the FS1 is not upconverting or downconverting the input video, the input AFD code is passed through. If there is no AFD code on the input video, a "Full Frame" (8) code is inserted. If the FS1 is upconverting, the appropriate AFD code will be chosen based on the upconvert mode.
>16:9	The FS1 always inserts a "Box > 16:9 (center)" AFD code (4), which indicates that the HD image has an aspect ratio greater than 16:9 as a vertically centered letterbox within the 16:9 frame.
Full Frame	The FS1 always inserts a "Full Frame" AFD code (8), which indicates that the HD image is full frame, with an aspect ratio that is 16:9.
Pillarbox	The FS1 always inserts a "4:3 (center)" AFD code (9), which indicates that the HD image has a 4:3 aspect ratio as a horizontally center pillarbox image within the 16:9 frame.
Letterbox	The FS1 always inserts a "16:9 (with complete 16:9 image protected)" AFD code (10), which indicates that the HD image is full frame, with a 16:9 aspect ratio and all image areas are protected.
14:9	The FS1 always inserts a "14:9 (center)" AFD code (11), which indicates that the HD image has a 14:9 aspect ratio as a horizontally centered pillarbox within the 16:9 frame.
4:3 Alt 14:9	The FS1 always inserts a "4:3 (with alternate 14:9 center)" AFD code (13), which indicates that the HD image has a 4:3 aspect ratio and with an alternative 14:9 centered pillarbox image within the 16:9 frame.
16:9 Alt 14:9	The FS1 always inserts a "16:9 (with alternative 14:9 center" AFD code (14), which indicates that the HD image has a 16:9 aspect ratio with an alternative 14:9 center within the 16:9 frame.
16:9 Alt 4:3	The FS1 always inserts a "16:9 (with alternative 4:3 center)" AFD code (15), which indicates that the HD image has a 16:9 aspect ratio with an alternative 4:3 center within the 16:9 frame.

5.7 AFD Out SDI 2

This parameter menu determines whether the FS1 inserts a SMPTE 2016 Active Format Descriptor (AFD) packet into the SDI 2 output video. The inserted AFD code does not affect FS1 up/down/cross conversion, but it may affect downstream video processing if the signal is downconverted.

Parameter selections are the same as for parameter 5.6 (*AFD Out SDI 1*).

6.1 Genlock Source

This parameter selects the reference video source used for genlocking, either automatically or explicitly.

6.1 Genlock Source	Description of Choices
Parameter Adjustments:	
Reference *(Default)*	Use the signal on the *Ref* connector as the genlock source.
Input	Use the signal on the currently selected input as the genlock source.
Free run	Free run mode (FS1 syncs to its own timebase, not locked to an external source).

6.2 Output Timing H

This parameter adjusts horizontal output timing with reference to the genlock source already selected. When adjusting the horizontal timing (H), this parameter specifies a number of pixels to offset, from zero to full line width.

6.2 Output Timing H	Description of Choices
Parameter Adjustments:	
Variable	Adjustment range increments from 0 to the width of the line in pixels. This could be 720, 1280, or 1920, depending on the format already chosen. *Default: 0*

Note: Independent horizontal and vertical timing values are kept for all available output formats.

6.3 Output Timing V

This parameter adjusts vertical output timing with reference to the genlock source already selected. When adjusting the vertical timing (V), this parameter specifies a number of lines to offset, moving the screen up to a half a frame up or down.

6.3 Output Timing V	Description of Choices
Parameter Adjustments:	
Variable	Adjustment range increments from half a frame up to a half a frame down in single line increments (where the frame size could be 525, 625, 750, or 1125, depending on the format already chosen). *Default: 0*

6.4 Analog Output Fine (Horizontal Timing)

Further adjusts the horizontal output timing of the analog output (only) in finer increments than 6.2 (above)—in this case by sub-pixels. Each adjustment of this control, from 0 to 127 adjusts the analog output timing by 1/128th of a pixel. Like 6.2, horizontal output timing is adjusted with reference to the Ref video selected.

6.4 Analog Output Fine	Description of Choices
Parameter Adjustments: Variable	Adjustment range increments from 0 to 127, with each increment moving the timing by 1/128th of a pixel. *Default: 0*

7.1 Sidebar Keyer

This parameter turns the Sidebar Keyer *On* or *Off*, and selects the source for sidebar video. Sidebar keying is useful when upconverting standard definition video to HD in 4:3 Pillar mode, as the sidebar key replaces the black on the sides of the 4:3 picture.

A switch controlled by parameter 7.1 selects whether normal video or the sidebar key gets routed to the outputs. If the Sidebar Keyer is On the key gets sent to the outputs; if the keyer is Off, normal video goes to the outputs.

When the Sidebar Keyer is turned *On*, a standard definition signal from the selected main input source (parameter 2.1) is upconverted to HD. The keyer then uses this upconverted video to fill the center of the 4:3 image and adds HD sidebars from the source selected here in parameter 7.1.

The input selected here (7.1) for the Sidebar must be an HD signal, and it must be the same format as that selected for parameter *1.1 Output Format*.

The sidebar width created by the keyer is specified in parameter 7.2.

Notes:

1. It is normal for SD sources used for the sidebar fill to sometimes have asymmetrical edges (if SD video isn't cropped to "real video"). This can be seen in some cases where digital video was digitized from analog.

2. The *Composite* and *S-Video* inputs are not available as the sidebar source since they only support SD and the sidebars must be HD to match the center video.

The *Component* input may be used as a sidebar input source for 7.1—but only if the main input selected by 2.1 is not *Composite* or *S-Video*. (There is only one A/D converter in the FS1, and it cannot be used for both inputs simultaneously.)

7.1 Sidebar Keyer	Description of Choices
Parameter Adjustments: OFF (*default*)	Turn the Sidebar Keyer off.
SDI 1	Turn the Sidebar Keyer on and route the video from the SDI 1 input into it.
SDI 2	Turn the Sidebar Keyer on and route the video from the SDI 2 input into it.
Component	Turn the Sidebar Keyer on and route the video from the Component analog input into it.

7.2 Sidebar Edge

This parameter selects the width of the sidebars when turned on via parameter *7.1. Sidebar Keyer*. The video selected in *7.1* will appear on the right and left of the active video input (selected in 2.1). *Sidebar Edge* can be set to *-128 through +128*. A value of *"0"* produces a 4:3 center. Positive values produce wider sidebars (and a narrower center).

Alarm conditions occur if conflicting video formats are selected, such as the following:

- Selecting different formats for *1.1 Output Format*, *7.1 Sidebar Keyer* input format, and the main *2.1 Video Input* format

- Selecting analog inputs for both the main input and the sidebar input

- Setting *7.1 Sidebar Keyer* to *On* while in *Follow Input* mode (since the sidebar keyer requires that the main input be upconverted).

When a sidebar-related *Alarm* condition appears, the sidebars will not appear on the video output. The Status menu displays sidebar (SB) status information to help you find the cause of the conflict.

7.2 Sidebar Edge	Description of Choices
Parameter Adjustments: NORMAL (*default*)	Selects a 4:3 aspect ratio center picture (2.1 selected input source) with sidebars keyed to fill the screen on the left and right from the Sidebar Keyer source selected by parameter *7.1*.
-128 to +128 (Variable)	Using the *Adjust* buttons, step through and select a width value from -128 through +128 to expand or shrink the sidebars. Selecting a larger value causes the center picture to become narrower while the sidebars expand.

10.1 Proc Amp

This parameter turns the Proc Amp *On* and *Off*. When it is *On*, you can set additional parameters (*10.1* to *10.5*) to control video gain, black level, hue, and saturation.

Note: Proc Amp parameter settings are independently kept for each separate input: *SDI 1*, *SDI 2*, *Composite*, *S-Video*, and *Component*.

10.1 Proc Amp	Description of Choices
Parameter Adjustments: On Off (*default*)	Turn Proc Amp *On*. Turn Proc Amp *Off*.

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10.2 Proc Amp Gain

This parameter adjusts the video gain from black to 1.5 times luma in steps of .01, each time an *Adjust* button is pressed.

10.2 Proc Amp Gain	Description of Choices
Parameter Adjustments: Variable	Adjustment range increments from zero to 1.5 in .01 steps. *Default (unity):* 1.0

10.3 Proc Amp Black

This parameter adjusts the video black level from -20 IRE to +20 IRE in .5 steps, each time an *Adjust* button is pressed.

10.3 Proc Amp Black	Description of Choices
Parameter Adjustments: Variable	Adjustment range increments from -20 IRE to +20 IRE in .5 steps. *Default (unity):* 0 IRE

10.4 Proc Amp Hue

This parameter adjusts the video color hue through 360 degrees (color wheel). Steps increment or decrement 1 degree each time an *Adjust* button is pressed.

10.4 Proc Amp Hue	Description of Choices
Parameter Adjustments: Variable	Adjustment range increments from -180 to +180 in steps of 1 degree. *Default (unity):* 0 degrees

10.5 Proc Amp Sat

This parameter adjusts the video color saturation from black and white to 1.5 times chroma in steps of .01, each time an *Adjust* button is pressed.

10.5 Proc Amp SAT	Description of Choices
Parameter Adjustments: Variable	Adjustment range increments from 0 (black & white) to 1.5 (Chroma) in steps of .01. *Default:* 1.0

11.1 Loss of Input

This parameter selects the automatic action that occurs if the video input is lost. The *Black* selection (default) cuts the video to black. The *Freeze* selection freezes video on the last available frame.

Note: Freeze on Loss of Input works only for SDI inputs. If a selected analog input is lost while Freeze is enabled, the output will not be valid video.

11.5 Loss of Input	Description of Choices
Parameter Adjustments:	
Freeze	Freezes on the last available video frame if input is lost.
Black (*default*)	Switches to black if input video is lost.

20.0 Audio Output Levels

This parameter enables or disables individual audio output level adjustment of the eight FS1 audio output channels. When *Adjust* is selected, parameters 20.1 through 20.8 are then used to select the output levels for each separate channel.

20.0 Audio Output Levels	Description of Choices
Parameter Adjustments:	
Unity (*default*)	Disable audio output level adjustments.
Adjust	Enable audio output level adjustments for the eight audio channels.

Note: If parameter 4.5 *Audio Follow Video* is set to *On*, then *Audio Output Levels* selection is independently kept for each separate input: *SDI 1*, *SDI 2*, *Composite*, *S-Video*, and *Component*. If *Audio Follow Video* is set to *Off* then another *Audio Output Levels* selection is used. This note applies to parameters *20.0* through *20.8*.

20.1 Audio Level Ch1

This parameter adjusts the audio level of audio channel 1 ± 18dB in steps of 0.5 dB.

20.1 Audio Level Ch1	Description of Choices
Parameter Adjustments:	
Variable	Adjustment of audio level ± 18dB range in steps of .5dB. *Default:* +0dB

Note: If parameter 4.5 *Audio Follow Video* is set to *On*, then *Audio Level Ch1* selection is independently kept for each separate input: *SDI 1*, *SDI 2*, *Composite*, *S-Video*, and *Component*. If *Audio Follow Video* is set to *Off*, then another *Audio Level Ch1* selection is used. This note applies to parameters *20.1* through *20.8*.

20.2 Audio Level Ch2

This parameter adjusts the audio level of audio channel 2 ± 18dB in steps of 0.5 dB. Parameter adjustments are the same as for *20.1*.

20.3 Audio Level Ch3

This parameter adjusts the audio level of audio channel 3 ± 18dB in steps of 0.5 dB. Parameter adjustments are the same as for *20.1*.

20.4 Audio Level Ch4

This parameter adjusts the audio level of audio channel 4 ± 18dB in steps of 0.5 dB. Parameter adjustments are the same as for *20.1*.

20.5 Audio Level Ch5

This parameter adjusts the audio level of audio channel 5 ± 18dB in steps of 0.5 dB. Parameter adjustments are the same as for *20.1*.

20.6 Audio Level Ch6

This parameter adjusts the audio level of audio channel 6 ± 18dB in steps of 0.5 dB. Parameter adjustments are the same as for *20.1*.

20.7 Audio Level Ch7

This parameter adjusts the audio level of audio channel 7 ± 18dB in steps of 0.5 dB. Parameter adjustments are the same as for *20.1*.

20.8 Audio Level Ch8

This parameter adjusts the audio level of audio channel 8 ± 18dB in steps of 0.5 dB. Parameter adjustments are the same as for *20.1*.

21.0 Audio Output Phase

This parameter enables or disables individual audio phase adjustment of the eight FS1 audio output channels. When *Adjust* is selected, parameters *21.1* through *21.8* are then used to adjust phase for the eight channels.

21.0 Audio Output Phase	Description of Choices
Parameter Adjustments: Normal (*default*) Adjust	Disable audio phase adjustments. Enable audio phase adjustments for the eight audio channels.

Note: If parameter 4.5 *Audio Follow Video* is set to *On*, then Audio Output Phase selection is independently kept for each separate input: *SDI 1*, *SDI 2*, *Composite*, *S-Video*, and *Component*. If *Audio Follow Video* is set to *Off*, then another *Audio Output Phase* selection is used. This note applies to Parameters *21.0* through *21.8*.

21.1 Audio Phase Ch1

This parameter selects whether audio phase is normal (same as passed from the input) or inverted on channel 1.

21.1 Audio Phase Ch1	Description of Choices
Parameter Adjustments: Normal (*default*) Invert	Phase is unaltered as it passes from the input to the output. Phase is inverted as it passes from the input to output. (This may be useful to correct analog audio signals that are incorrectly wired, placing audio out of phase at input.)

Note: If parameter 4.5 *Audio Follow Video* is set to *On*, then *Audio Phase Ch1* selection is independently kept for each separate input: *SDI 1*, *SDI 2*, *Composite*, *S-Video*, and *Component*. If *Audio Follow Video* is set to *Off*, then another *Audio Phase Ch1* selection is used. This note applies to parameters *21.1* through *21.8*.

21.2 Audio Phase Ch2

This parameter selects whether audio phase is normal (same as passed from the input) or inverted on channel 2. Parameter adjustments are the same as *21.1*.

21.3 Audio Phase Ch3

This parameter selects whether audio phase is normal (same as passed from the input) or inverted on channel 3. Parameter adjustments are the same as *21.1*.

21.4 Audio Phase Ch4

This parameter selects whether audio phase is normal (same as passed from the input) or inverted on channel 4. Parameter adjustments are the same as *21.1*.

21.5 Audio Phase Ch5

This parameter selects whether audio phase is normal (same as passed from the input) or inverted on channel 5. Parameter adjustments are the same as *21.1*.

21.6 Audio Phase Ch6

This parameter selects whether audio phase is normal (same as passed from the input) or inverted on channel 6. Parameter adjustments are the same as *21.1*.

21.7 Audio Phase Ch7

This parameter selects whether audio phase is normal (same as passed from the input) or inverted on channel 7. Parameter adjustments are the same as *21.1*.

21.8 Audio Phase Ch8

This parameter selects whether audio phase is normal (same as passed from the input) or inverted on channel 8. Parameter adjustments are the same as *21.1*.

30.1 Closed Captioning Translator

30.1 Caption Xlator	Description of Choices
Parameter Adjustments: On	When set to *On* and using the UpConverter, the FS1 will automatically translate incoming line 21 captions to CEA-708 format and insert the VANC packets into the converted HD video stream. This is a complete translation from CEA-608 format to CEA-708 format (including the embedded SD captions). When set to *On* and using the Downconverters, the FS1 will automatically intercept and reformat the SD caption data in the incoming CEA-708 VANC packets, and output it on line 21 of the standard definition outputs.
Off *(Default)*	When *Off*, translation is not performed.

FS1 Captioning Conversion				
Output	SD 525i59.94	HD 720p59.94	HD 1080i59.94	HD 1080pSF23.98
Input SD 525i59.94 HD 720p59.94 HD1080i59.94 HD1080pSF23.98	1 3 3 3	2 4 5 -	2 5 4 -	n/a n/a n/a 4

Output	SD 625i50	HD 720p50	HD 1080i50
Input SD 625i50 HD 720p50 HD1080i50	- - -	- - -	- - -

Key
1 - Line 21 (CEA-608) passthrough
2 - Line 21 (CEA-608) to SMPTE-334 (CEA-708) upconversion
3 - SMPTE-334 (CEA-708) to Line 21 (CEA-608) downconversion
4 - SMPTE-334 (CEA-708) passthrough
5 - SMPTE-334 (CEA-708) reframing for change in frame rate

In standard definition video (525i59.94), closed captioning data is encoded and sent on line 21 of both fields, using a format defined by the Consumer Electronics Association standard, CEA-608. This is traditionally called "line 21", "SD", or "608" captioning, and is used for analog composite, analog component, and serial digital (SDI) video.

In high definition video, closed captioning is encoded and sent as Vertical Ancillary (VANC) packets in SDI video, using a format defined by the Consumer Electronics Association standard CEA-708 (there is no equivalent for analog HD video). This is traditionally called "HD," "DTV," or "708" captioning. The data formatting and encoding for 708 captions is very different from the data contained in 608 (SD) captioning, reflecting the added features and capabilities available with the CEA-708 standard.

The FS1 UpConverter automatically translates incoming line 21 captions to CEA-708 format and inserts the VANC packets into the converted HD video stream. This is a complete translation from CEA-608 format to CEA-708 format (including the embedded SD captions).

The FS1 DownConverters automatically intercept and reformat the SD caption data in the incoming CEA-708 VANC packets, and output it on line 21 of the standard definition outputs.

To pass closed captioning data to the outputs, parameter *31.1 UC Line 21* must also be set to *Pass*. The FS1 CrossConverters will reformat and pass any incoming CEA-708 VANC packets for the output frame rate.

31.1 Upconvert Line 21

31.1 Upconvert Line 21	Description of Choices
Parameter Adjustments: Blank *(Default)*	In UpConvert or SD Aspect Ratio Convert modes, this setting blanks input video Line 21 *before* conversion. This is used to blank Line 21 caption data.
Pass	Passes input video Line 21 to the converter and to the outputs.
Auto blank	The FS1 looks for Line 21 caption data on the video input. If present, Line 21 is blanked before video conversion occurs. If no caption data is found, Line 21 passes to the converter.

35.1 Remote Control

This parameter determines how the FS1 panel responds to controls locally from the front panel and from a network attached computer with a web browser (or both). The selected mode is indicated by the color of the *Remote* button. (**Note:** the *Remote* button and other front panel buttons and indicators are described in *Chapter 2*.)

35.1 Remote Control	Description of Choices
Parameter Adjustments: LOCAL + REMOTE *(Default)*	Allow FS1 control from the front panel, a remote control panel, or a network-attached browser. Selection lights the *Remote* button *white*.
REMOTE ONLY	Allow FS1 control only from a network attached browser or remote control panel. Selection lights the *Remote* button *red*.
LOCAL ONLY	Allow FS1 control only from the front panel (browsers cannot change parameters) Selection lights the *Remote* button *green*.

35.3 Authentication

This parameter determines whether password authentication is required in order to make FS1 changes.

35.3 Authentication	Description of Choices
Parameter Adjustments: Disabled *(Default)* Basic	No authentication. User's browser prompts for a username/password for access to the FS1.

Notes:

1. AJA recommends using the *Disabled* setting, unless it is absolutely necessary to use the *Basic* setting, since the authentication used is only as good as the underlying network security. This is due to the password being sent across the network in clear text. Security follows the "basic" authentication defined in RFC2617, which can be read at this URL: http://www.ietf.org/rfc/rfc2617.txt

2. The default value is *Disabled*. It will be reset by a two-button hold down factory reset, which will change this parameter back to *Disabled*; the single up button factory reset will not (see parameter *99.0* for information).

3. Changing Authentication to *Disable*d will also reset the *System Password* parameter to the default password, which is "password".

4. If you select *Basic* without first setting the password (via web), the default password will be used. See parameter *99.0* for more about the password.

5. After you select *Basic*, a password is required for webUI (browser) access to the FS1. Passwords cannot be entered at the front panel but must be entered via web browser. Your browser will prompt for a username/password. The FS1 ignores any supplied username and uses only the password during authentication. If your are prompted for a password more than once, please re-enter the proper password each time.

6. In the web browser, changing this parameter will show/hide the controls for setting the password.

7. If you are prompted for a password before you can set a new password, enter the default, which is "password". (Enabling the feature turns it on immediately, requiring authentication for all traffic to/from the FS1.)

36.1 GPI IN 1 Response

The setting of this parameter determines what happens when a GPI trigger is received at the FS1's first GPI input (pin 1 on DE-9). A GPI Trigger is defined as a TTL low voltage level (0 to 0.8V with respect to its isolated ground pin). The GPI interface pinout and specifications are discussed in *Appendix B*.

36.1 GPI IN 1 Response	Description of Choices
Parameter Adjustments:	*Selections below will occur when a GPI trigger is received at pin#1 and the corresponding parameter response is chosen (left column).*
No Action *(Default)*	FS1 performs no action if a GPI trigger is received at pin 1.
Freeze	FS1 freezes the current video frame at its outputs if a GPI trigger is received at pin 1. The freezing of the frame will stop when the GPI trigger is released.
SDI1 In	FS1 selects SDI1 as the video input if a GPI trigger is received at pin 1.
SDI2 In	FS1 selects SDI2 as the video input if a GPI trigger is received at pin 1.
Composite In	FS1 selects Composite In as the video input if a GPI trigger is received at pin 1.
S-Video In	FS1 selects S-Video In as the video input if a GPI trigger is received at pin 1.
Component In	FS1 selects Component In as the video input if a GPI trigger is received at pin 1. When either SDI1 In, SDI2 In, Composite In, S-Video In, or Component In are selected, the input video source selected will remain selected even after the GPI trigger is released (deactivated).
UC 14x9 Pillar	FS1 performs upconversion of SD source to 14x9 pillarbox (see parameter 5.1).
UC Fullscrn	FS1 performs upconversion of SD source to full screen (see parameter 5.1).
UC LB to Full	FS1 performs upconversion of SD source from letterbox to full (see parameter 5.1).
UC Wide Zoom	FS1 performs upconversion of SD source to a wide zoom (see parameter 5.1).
UC 4x3 Pillar	FS1 performs upconversion of SD source to 4x3 pillarbox (see parameter 5.1).
DC Letterbox	FS1 downconverts HD source to letterbox picture (see parameter 5.2).
DC Crop	FS1 downconverts HD source to cropped 4x3 picture (see parameter 5.2).
DC Anamorph	FS1 downconverts HD source to anamorphic picture (see parameter 5.2).
DC 14x9	FS1 downconverts HD source to 14x9 picture (see parameter 5.2).
DC Auto AFD	FS1 downconverts HD source, selecting the best downconvert mode based on the input video's Active Format Description (AFD) code (see parameter 5.2).
ARC Off	FS1 SD to SD aspect ratio conversion is turned off (see parameter 5.3).
ARC Lettrbox	Converts 16:9 anamorphic video to letterbox video (see parameter 5.3).
ARC H Crop	Converts 16:9 anamorphic video to 4:3 standard video (crops left and right edges of video—see parameter 5.3).
ARC Pillarbox	Converts 4:3 standard video to 16:9 anamorphic video (see parameter 5.3).
ARC V Crop	Converts letterbox video to 16:9 anamorphic video (see parameter 5.3).
ARC 14x9	Converts 16:9 anamorphic video to 14:9 cropped video (see parameter 5.3).
Recall Pst 1	FS1 recalls Preset 1
Recall Pst 2	FS1 recalls Preset 2
Recall Pst 3	FS1 recalls Preset 3
Recall Pst 4	FS1 recalls Preset 4
Recall Pst 5	FS1 recalls Preset 5
Recall Pst 6	FS1 recalls Preset 6
Recall Pst 7	FS1 recalls Preset 7
Recall Pst 8	FS1 recalls Preset 8
Recall Pst 9	FS1 recalls Preset 9
Recall Pst 10	FS1 recalls Preset 10

36.2 GPI IN 2 Response

The setting of this parameter determines what happens when a GPI trigger is received at the FS1's second GPI input (pin 2 on DE-9).

36.2 GPI IN 2 Response	Description of Choices
Parameter Adjustments:	*Selections below will occur when a GPI trigger is received at pin 2 and the corresponding parameter response is chosen (left column).*
No Action *(Default)*	FS1 performs no action if a GPI trigger is received at pin 2.
Freeze	FS1 freezes the current video frame at its outputs if a GPI trigger is received at pin 2. The freezing of the frame will stop when the GPI trigger is released.
SDI1 In	FS1 selects SDI1 as the video input if a GPI trigger is received at pin 2.
SDI2 In	FS1 selects SDI2 as the video input if a GPI trigger is received at pin 2.
Composite In	FS1 selects Composite In as the video input if a GPI trigger is received at pin 2.
S-Video In	FS1 selects S-Video In as the video input if a GPI trigger is received at pin 2.
Component In	FS1 selects Component In as the video input if a GPI trigger is received at pin 2.
	When either SDI1 In, SDI2 In, Composite In, S-Video In, or Component In are selected, the input video source selected will remain selected even after the GPI trigger is released (deactivated).
UC 14x9 Pillar	FS1 performs upconversion of SD source to 14x9 pillarbox (see parameter 5.1).
UC Fullscrn	FS1 performs upconversion of SD source to full screen (see parameter 5.1).
UC LB to Full	FS1 performs upconversion of SD source from letterbox to full (see parameter 5.1).
UC Wide Zoom	FS1 performs upconversion of SD source to a wide zoom (see parameter 5.1).
UC 4x3 Pillar	FS1 performs upconversion of SD source to 4x3 pillarbox (see parameter 5.1).
DC Letterbox	FS1 downconverts HD source to letterbox picture (see parameter 5.2).
DC Crop	FS1 downconverts HD source to cropped 4x3 picture (see parameter 5.2).
DC Anamorph	FS1 downconverts HD source to anamorphic picture (see parameter 5.2).
DC 14x9	FS1 downconverts HD source to 14x9 picture (see parameter 5.2).
DC Auto AFD	FS1 downconverts HD source, selecting the best downconvert mode based on the input video's Active Format Description (AFD) code (see parameter 5.2).
ARC Off	FS1 SD to SD aspect ratio conversion is turned off (see parameter 5.3).
ARC Lettrbox	Converts 16:9 anamorphic video to letterbox video (see parameter 5.3).
ARC H Crop	Converts 16:9 anamorphic video to 4:3 standard video (crops left and right edges of video—see parameter 5.3).
ARC Pillarbox	Converts 4:3 standard video to 16:9 anamorphic video (see parameter 5.3).
ARC V Crop	Converts letterbox video to 16:9 anamorphic video (see parameter 5.3).
ARC 14x9	Converts 16:9 anamorphic video to 14:9 cropped video (see parameter 5.3).
Recall Pst 1	FS1 recalls Preset 1
Recall Pst 2	FS1 recalls Preset 2
Recall Pst 3	FS1 recalls Preset 3
Recall Pst 4	FS1 recalls Preset 4
Recall Pst 5	FS1 recalls Preset 5
Recall Pst 6	FS1 recalls Preset 6
Recall Pst 7	FS1 recalls Preset 7
Recall Pst 8	FS1 recalls Preset 8
Recall Pst 9	FS1 recalls Preset 9
Recall Pst 10	FS1 recalls Preset 10

37.1 GPI 1 OUT

The setting of this parameter determines what (if any) FS1 event will generate a GPI trigger output at GPI 1, pin 3 on DE-9.

37.1 GPI 1 OUT	Description of Choices
Parameter Adjustments:	
No Action *(Default)*	FS1 does not trigger a GPI 1 output trigger regardless of event.
Alarm	FS1 generates a GPI 1 output trigger on pin 3 if an internal alarm condition occurs.
No Video	FS1 generates a GPI 1 output trigger on pin 3 if no video is detected at its selected input.
No Ref	FS1 generates a GPI 1 output trigger on pin 3 if no video is detected at its *Ref* video input.
Vid In SDI1	FS1 generates a GPI 1 output trigger on pin 3 if SDI1 is selected as the main video input.
Vid In SDI2	FS1 generates a GPI 1 output trigger on pin 3 if SDI2 is selected as the main video input.
Vid In Cmpst	FS1 generates a GPI 1 output trigger on pin 3 if Composite is selected as the main video input.
Vid In S-Vid	FS1 generates a GPI 1 output trigger on pin 3 if S-Video is selected as the main video input.
Vid In Cmpnt	FS1 generates a GPI 1 output trigger on pin 3 if Component is selected as the main video input.

37.2 GPI 2 OUT

The setting of this parameter determines what (if any) FS1 event will generate a GPI trigger output at GPI 2, pin 4 on DE-9.

39.1 GPI 2 OUT	Description of Choices
Parameter Adjustments:	
No Action *(Default)*	FS1 does not trigger a GPI 2 output trigger regardless of event.
Alarm	FS1 generates a GPI 2 output trigger on pin 4 if an internal alarm condition occurs.
No Video	FS1 generates a GPI 2 output trigger on pin 4 if no video is detected at its selected input.
No Ref	FS1 generates a GPI 2 output trigger on pin 4 if no video is detected at its *Ref* video input.
Vid In SDI1	FS1 generates a GPI 2 output trigger on pin 4 if SDI1 is selected as the main video input.
Vid In SDI2	FS1 generates a GPI 2 output trigger on pin 4 if SDI2 is selected as the main video input.
Vid In Cmpst	FS1 generates a GPI 2 output trigger on pin 4 if Composite is selected as the main video input.
Vid In S-Vid	FS1 generates a GPI 2 output trigger on pin 4 if S-Video is selected as the main video input.
Vid In Cmpnt	FS1 generates a GPI 2 output trigger on pin 4 if Component is selected as the main video input.

40.1 Freeze Output

This parameter tells the FS1 to freeze the current video frame on all outputs. This may be useful either for testing or in case of loss of the input source.

40.1 Freeze Output	Description of Choices
Parameter Adjustments:	
Off *(Default)*	Normal operation. The FS1 outputs video from the input.
On	The FS1 captures and freezes the most current video frame and displays it on the outputs as long as this parameter is set to *On*.

Note: The freeze feature can be controlled not only by the front-panel and web browser interface, but also by a GPI input. When a GPI input is causing the freeze condition, the AUX lamp will be lit on the front-panel.

41.2 Video SG

This parameter controls the video test signal produced by the FS1's internal test signal generator. When you set the parameter to OFF, test signals are turned off, and the normal video signals appear at the FS1 video outputs. When you set the parameter to a test pattern, that pattern gets switched into the video outputs.

41.2 Video SG	Description of Choices
Video Test Signal:	Select the video test signal output:
OFF (default)	Turn test signal output OFF.
Black	Video test signal output is color black.
75% Bars	Video test signal output is 75% color bars. This 75% amplitude,100% saturation test signal is useful to check low frequency response and video tilt as well as the performance of video clamping.
100% Bars	Video test signal output is 100% color bars. This 100% white full field bars test signal is helpful to check chroma amplitude versus overall video level.

41.3 Audio SG

This parameter determines the audio signal output from the FS1's internal test signal generator. When you set the parameter to OFF, test signals are turned off, and the normal audio signals appear at the FS1 audio outputs. When you set the parameter to an audio tone, that tone gets switched into the audio outputs.

41.3 Audio SG	Description of Choices
Video Test Signal:	Select the audio test signal output:
OFF (default)	Turn audio test signal output OFF.
Silence	Output an audio test signal containing silence only.
1 kHz	Output a standard 1 kHz test signal tone.

50.1 IP Config

This parameter determines the type of TCP/IP network configuration used by the FS1. (Networking is discussed in *Chapter 3, "Network Connection."*

Note: With parameters *50.1*, *50.2* and *50.3*, there is no timeout when editing— changes made in these menus will be saved and activated when the menu is exited.

50.1 IP Config	Description of Choices
Parameter Adjustments:	
DHCP *(Default)*	Select automatic IP address assignment from DHCP server on LAN. **Note:** if the FS1 cannot find a DHCP server to communicate with, it will fail over to the static IP address.
Static Addr	Assign a static IP address manually (parameters 50.2, 50.3, and 50.4 will have to be entered to accomplish this).
Default Addr	Use the factory default static IP address: 10.65.74.65

50.2 IP Address

This parameter determines the static IP address used by the FS1 for TCP/IP networking. (Networking is discussed in *Chapter 3, "Network Connection."*

50.2 IP Address	Description of Choices
Parameter Adjustments:	
variable	Using the *Adjust* buttons, enter an IP address compatible with your LAN (if you have one). If direct connecting to a computer, enter a legal IP address that you'll also enter in the computer's web browser. This is only needed for Static IP configurations. If 50.1 is set to *DHCP* and there is a DHCP failure, then the IP address is set to the static IP address. If 50.1 is set to *Default Addr*, the default static IP address is: 10.65.74.65

Note: For parameters *50.2*, *50.3*, and *50.4*, you will be setting IP addresses that consist of "octets" separated by a period (e.g., 90.0.181.0). When editing these, the *Select* button selects the octet and the *Adjust* buttons set the number.

Pressing the *Select* up arrow button again advances to the next octet. At the final octet, the address will flash. Pressing the *Select* up arrow button again confirms the setting.

When these parameters are edited, you can abort the editing process by backing out (press the *Select* down arrow button repeatedly until the edit passes the first octet). You'll notice that after completing the edit on the last octet, the display will blink— this is an indication that the edited IP address is about to be saved. You can save the edited IP address (press the *Select* arrow up button to save) or choose not to save by pressing the *Select* down arrow button.

50.3 Subnet Mask

This parameter determines the subnet mask used by the FS1 for TCP/IP networking. (Networking is discussed in *Chapter 3, "Network Connection."*

50.3 Subnet Mask	Description of Choices
Parameter Adjustments: variable	Using the adjust buttons, enter a subnet mask compatible with your LAN (if you have one). This is only needed for Static IP configurations. If 50.1 is set to DHCP, the Subnet Mask is set by the DHCP server and cannot be changed by the user. If 50.1 is set to *Default Addr*, the default *Subnet Mask* is: 255.0.0.0

Please read the "Note" about editing IP addresses in parameter *50.2* as it also applies to parameters *50.3* and *50.4*.

50.4 Default Gateway

This parameter determines the gateway or router used on your LAN for TCP/IP networking. (Networking is discussed in *Chapter 3, "Network Connection."*

Note: Without a properly configured default gateway (whether you have a router/gateway or not), the FS1 will be unable to see other FS1s on the network, although you may still be able to control this FS1 via a web browser. Also, without a proper gateway defined, the discovery feature "Available FS1s—Click to Refresh" on the *Network* web page will not work correctly and list other FS1s on the network.

50.4 Default Gateway	Description of Choices
Parameter Adjustments: variable	Using the *Adjust* buttons, enter the IP address for your LAN's gateway/router (if you have one). *Default:* 192.168.0.1

Please read the "Note" about editing IP addresses in parameter 50.2 as it also applies to parameters *50.3* and *50.4*.

50.5 System Name

This parameter defines a unique name for the FS1. This same name is used both when displaying systems via the web interface and for display on the FS1's screen saver (if *System Name* is chosen in parameter *70.1 Screen Saver*).

To eliminate trailing characters in order to shorten an existing system name, overwrite them with '-', and then press the top *Select* button twice to save the changes and exit. Press the bottom *Select* button to go back to the system name to verify your entry. Spaces may not be entered in the system name via the front panel. If spaces in the system name are required, the name must be entered from the web browser.

50.5 System Name	Description of Choices
Parameter Adjustments: variable	Using the *Select* and *Adjust* buttons, enter a name for the FS1, up to 20 characters. The top *Select* button advances to the next character, and the bottom *Select* button steps back to the previous character. The *Adjust* buttons scroll through the choices for each character. The character currently being changed flashes. The character set allowed is: '-', '.', A through Z (uppercase) and a through z (lowercase). To save the name, press the top *Select* button until you reach the end of the name and advance to the next item. *Default:* aja-fs1

50.6 MAC Address

Selecting this parameter allows you to view the FS1 MAC address. The MAC address is a unique value associated with the FS1's internal network adapter. MAC addresses are also known as hardware addresses or physical addresses. MAC addresses uniquely identify an Ethernet adapter on a LAN.

MAC address format: MM:MM:MM:SS:SS:SS
The value is 12-digit hexadecimal, where the first half identifies the manufacturer and the second half identifies the unique serial number.

51.1 SNMP Enable

This parameter turns ON and OFF all SNMP messaging between the FS1 and an external client. Refer to *Chapter 6* for a description of SNMP and how the FS1 supports it. When SNMP is enabled, one or more of 4 alarms may be sent by the FS1 as a trap message:

- Power supply failure or disconnection: fs1PSAlarm (see parameter *60.1*)

- Reference video: fs1REFAlarm (see parameter *60.3*)

- Format: fs1FMTAlarm (see parameter *60.2*)

- Temperature of FS1 is over limit (internally): fs1OVRAlarm

51.1 SNMP Enable	Description of Choices
Parameter Adjustments: Disable *(Default)* Enable 1 Enable Both	When set to *Disable*, the FS1 will not issue SNMP trap messages. When set to *Enable 1*, the FS1 issues SNMP trap messages to Trap Destination 1 (parameter *51.2*) and as defined in the MIB. When set to *Enable Both*, the FS1 issues SNMP trap messages to Trap Destination 1 and 2 (parameters *51.2* and *51.4*) and as defined in the MIB.

Note: With SNMP parameters *51.1* through *51.6*, there is no timeout when editing—changes made while in these menus will be saved and activated when the menu is exited. For example, changing from *Disable* to *Enable 1* does not turn SNMP on. You must exit the *51.1 SNMP Enable* parameter menu in order to turn SNMP on.

51.2 SNMP Trap Destination 1

This parameter determines the *SNMP Trap Destination* IP address where trap messages issued by the FS1 will be sent.

51.2 SNMP Trap Dest 1	Description of Choices
Parameter Adjustments: variable	Using the *Adjust* buttons, enter the IP address of the destination where SNMP command messages (called "traps") will be sent. This is usually an SNMP client somewhere on your LAN. *Default:* 192.168.0.3

When the *SNMP Trap Destination* IP addresses are edited, you can abort the editing process by backing out (press the *Select* down arrow button repeatedly until the edit passes the first octet). You'll notice that after completing the edit on the last octet, the display will blink—this is an indication that the edited IP address is about to be saved. You can save the edited IP address by pressing the *Select* up arrow to save or choose not to save by pressing the *Select* down arrow button.

51.3 SNMP Trap Port 1

This parameter determines the *SNMP Trap Port* used for sending destination #1 trap messages. UDP Port 162 is the default used for SNMP trap messages. However, if this port is being used by another protocol or service, you can change the setting by modifying this parameter.

51.3 SNMP Trap Port 1	Description of Choices
Parameter Adjustments: variable	Using the *Adjust* buttons, select a UDP port for sending FS1 trap messages. *Default:* 162

Note: The *SNMP Trap Port* number does not blink when changed (as does the Trap Destination IP address); if you change the port number and exit the parameter (moving to another parameter), the port will change immediately as edited.

51.4 SNMP Trap Destination 2

This parameter determines the secondary *SNMP Trap Destination* IP address where trap messages issued by the FS1 will be sent (if desired).

51.4 SNMP Trap Dest 2	Description of Choices
Parameter Adjustments: variable	Using the *Adjust* buttons, enter the IP address of the destination where SNMP command messages (called "traps") will be sent. This is usually an SNMP client somewhere on your LAN. *Default:* 192.168.0.3

When the *SNMP Trap Destination IP* addresses are edited, you can abort the editing process by backing out (press the *Select* down arrow button repeatedly until the edit passes the first octet). You'll notice that after completing the edit on the last octet, the display will blink—this is an indication that the edited IP address is about to be saved. You can save the edited IP address by pressing the *Select* up arrow to save or choose not to save by pressing the *Select* down arrow button.

51.5 SNMP Trap Port 2

This parameter determines the *SNMP Trap Port* used for sending destination #2 trap messages. UDP Port 162 is the default used for SNMP trap messages. However, if this port is being used by another protocol or service, you can change the setting by modifying this parameter.

51.5 SNMP Trap Port 2	Description of Choices
Parameter Adjustments: variable	Using the *Adjust* buttons, select a UDP port for sending FS1 trap messages. *Default:* 162

Note: The *SNMP Trap Port* number does not blink when changed (as does the Trap Destination IP address); if you change the port number and exit the parameter (moving to another parameter), the port will change immediately as edited.

60.1 Power Supply Alarm

This parameter controls how the FS1 alarm responds to power supply failures. The default (*Normal*) is that the alarm will be triggered anytime either of the internal power supplies fails or is disconnected from a power source (becomes unplugged). If the FS1 will only be connected to one power cord, you can suppress this alarm.

60.1 Pwr Supply Alarm	Description of Choices
Parameter Adjustments: Normal *(default)*	Alarm triggers if either internal power supply experiences a failure or is disconnected from mains power.
Suppress	Alarm will not be triggered by a power supply failure or disconnection from power.

60.2 Format Alarm

When set to *Normal* (default), an alarm will be triggered whenever the format of the selected input video signal is incompatible with the selected output format (refer to the matrix of inputs and compatibilities presented in *Chapter 2*). If you want the FS1 alarm to only trigger on hardware failures, you can suppress the *Format Alarm*.

60.2 Format Alarm	Description of Choices
Parameter Adjustments:	
Normal *(default)*	Alarm triggers if the format of the selected input video signal is incompatible with the selected output format.
Suppress	Alarm will not be triggered by a format incompatibility.

60.3 Reference Alarm

This parameter controls how the FS1 responds to various reference video signal conditions. When set to *Normal*, the alarm will trigger when:

1. The reference signal is incompatible with the selected output format or is not detected at all.

2. The reference signal is required, due either to *1.1 Output format* set to "*Follow Ref*" or *6.1 Genlock Source* set to "*Reference*."

If you want the FS1 alarm to only trigger on hardware failures, you can suppress the *Format Alarm*.

60.3 Reference Alarm	Description of Choices
Parameter Adjustments:	
Normal *(default)*	The alarm triggers if the reference is missing or incompatible with the selected output format.
Suppress	Alarms are not triggered if the reference is missing or incompatible with the output.

70.1 Screen Saver

When set to *AJA Logo*, a rolling AJA logo screen saver will appear on the alphanumeric display after 60 minutes of inactivity—defined as no button presses on the front panel. If disabled, the display just becomes dim. When the *Screen Saver* is on, the *Status* button will return the display to the last *Status* display, or any *Select* or *Adjust* button will return the display to the last parameter menu.

70.1 Screen Saver	Description of Choices
Parameter Adjustments:	
AJA Logo *(Default)*	Display horizontally rolling AJA logo after 60 minutes of button inactivity.
System Name	Display the FS1 system name (defined in parameter *50.5*).
Disabled	Dim display after 60 minutes of button inactivity.

70.2 Display Intensity

This parameter determines the brightness of the alphanumeric display and front panel LEDs.

70.2 Display Intensity	Description of Choices
Parameter Adjustments:	
variable	Using the *Adjust* buttons, you can dim or brighten the alphanumeric display and activity indicator LEDs in steps from 1 (dim) to 8 (brightest). *Default: 6*

80.1 Serial Number

This parameter displays the FS1's unique serial number.

80.2 Software Version

This parameter displays the FS1's software version level.

90.0 Reboot

This parameter reboots the FS1:

1. Use the *Select* buttons to scroll to parameter *90.0 Reboot*.

2. Press the top *Adjust* button to advance to the *[UP to Confirm]* menu field. (Press any other button to cancel.)

3. Press the top *Adjust* button again to advance to the *[Both=Reboot]* menu field.

4. Press both *Adjust* buttons at the same time to reboot.

The display shows *[Rebooting]*, goes dark momentarily, and then shows the percentage of progress as the system reboots. Rebooting takes a couple of minutes.

91.1 Preset Recall

This parameter recalls an FS1 Preset Configuration from memory. Ten named presets are available (1–10).

To recall an FS1 configuration stored in a preset:

1. Use the *Select* buttons to scroll to parameter *91.1 Preset Recall*.

2. Use the *Adjust* buttons to select a preset (default=1).

3. Press the top *Select* button to advance to the *[UP=Recall]* menu field. (Press the bottom *Select* button to cancel.)

4. Press the top *Adjust* button to recall the selected preset.

The display shows *[Recalling]* and the FS1 reconfigures to the recalled settings. The display then shows *[Recalled]*.

Caution: *When you press Adjust to recall a configuration, the recalled configuration immediately replaces the system's existing configuration. All previous settings are lost unless you have previously stored them in another preset or a file.*

92.1 Preset Save

This parameter stores the current FS1 configuration to a Preset Configuration. There are ten available presets (1–10).

To store the current FS1 configuration:

1. Use the *Select* buttons to scroll to parameter 92.1 Preset Save.

2. Use the *Adjust* buttons to select a preset (default=1).

3. Press the top *Select* button to advance to the *[UP=Save]* menu field. (Press the bottom *Select* button to cancel.)

4. Press the top *Adjust* button to save the configuration to the selected preset.

The display shows *[Saving]* and the FS1 stores the current configuration into the preset and displays *[Saved]*. Presets cannot be named from the front panel. To change a preset name, refer to the web interface *Presets Screen* description in *Chapter 5*. The FS1 displays the same name on the front panel and the web interface.

Parameters Not Stored

Only editable parameters are saved into presets. Example non-editable parameters that are **not** saved include *50.6 MAC Address*, *80.1 Serial Number,* and *80.2 SW Version*, as well as "trigger" parameters, such as *90.0 Reboot*, *91.1 Preset Recall*, *92.1 Preset Save*, and *99.0 Factory Settings*.

Additionally, editable parameters in the following list are *not* stored:

- 35.1 Remote Control
- 35.3 Password
- 40.1 Freeze Output
- 50.1 IP Config
- 50.2 IP Address
- 50.3 Subnet Mask
- 50.4 Default Gateway
- 50.5 System Name
- 51.1 SNMP Enable

- 51.2 SNMP Trap Dest 1
- 51.3 SNMP TrapPort 1
- 51.4 SNMP Trap Dest 2
- 51.5 SNMP Trap Port 2
- 60.1 Pwr Supply Alarm
- 60.2 Format Alarm
- 60.3 Reference Alarm
- 70.1 Screen Saver
- 70.2 Display Intens

99.0 Factory Settings

Selecting this parameter and then pressing the *Adjust* (up) button recalls the FS1's factory default settings.

Caution: *Selecting this parameter and recalling factory defaults will overwrite the current settings (except for the settings listed below). Existing settings will be lost.*

Recalling factory defaults using only the *Adjust* (up) button does not affect the following parameter settings. To apply defaults to these parameters, hold down <u>both</u> the *Adjust* (up) and *Adjust* (down) buttons at the same time.

- 35.3 Password
- 50.1 IP Config
- 50.2 IP Address
- 50.3 Subnet Mask
- 50.4 Default Gateway
- 51.1 SNMP Enable
- 51.2 SNMP Trap Dest 1
- 51.3 SNMP TrapPort 1

- 51.4 SNMP Trap Dest 2
- 51.5 SNMP Trap Port 2
- 60.1 Pwr Supply Alarm
- 60.2 Format Alarm
- 60.3 Reference Alarm
- 70.1 Screen Saver
- 70.2 Display Intens

Note: To set a single parameter to its factory default value, go to that parameter's "Adjust" menu, and hold down <u>both</u> the *Adjust* (up) and *Adjust* (down) buttons at the same time.

Remote FS1 Control Via a Web Browser

An optimized web server inside the FS1 allows you to remotely monitor and adjust parameter settings via a network-attached computer running a web-browser. The network can be a closed local area network, a straight computer-to-FS1 cable, or even exposed through a firewall to a broadband WAN (not generally recommended since anyone on the internet can then access the FS1). The LAN connection on the FS1 uses a standard RJ45 connector, but internally it's intelligent and communicates via standard "straight-through" CAT 5 ethernet cables or null-modem (cross-over) cables without configuration or strapping.

Note: Firefox, Internet Explorer 8 and 9, and Chrome are the supported web browsers for FS1 control. Other browser software may work, but AJA cannot guarantee operation.

To access the FS1, enter its IP address in the web browser. The IP address is defined in parameter *50.2* of the FS1's *Network* parameter menus—please note that parameters *50.1* through *50.4* must all be configured correctly to access the FS1 on your network. If the FS1 is using DHCP (the default), you can find the IP address by pressing the *Status* button on the FS1 front panel until the *Network Status* display is shown or you can go to parameter *50.2* and read it there. When the FS1 is shipped from the AJA factory, the FS1 defaults to DHCP operation.

If *50.1* is set to *DHCP,* and the DHCP server on the network fails to grant an IP address, the FS1 will fall back to the IP address set in *STATIC ADDR* (*50.2*).

If *50.1* is set to *Default Addr,* the factory default static IP address is: 10.65.74.65.

So, if *50.1* is set to *Default Addr*, you would type the following in the web browser: *http://10.65.74.65* to see the FS1 web interface *Main Status* screen.

FS1 Web Interface, Main Status Screen

5
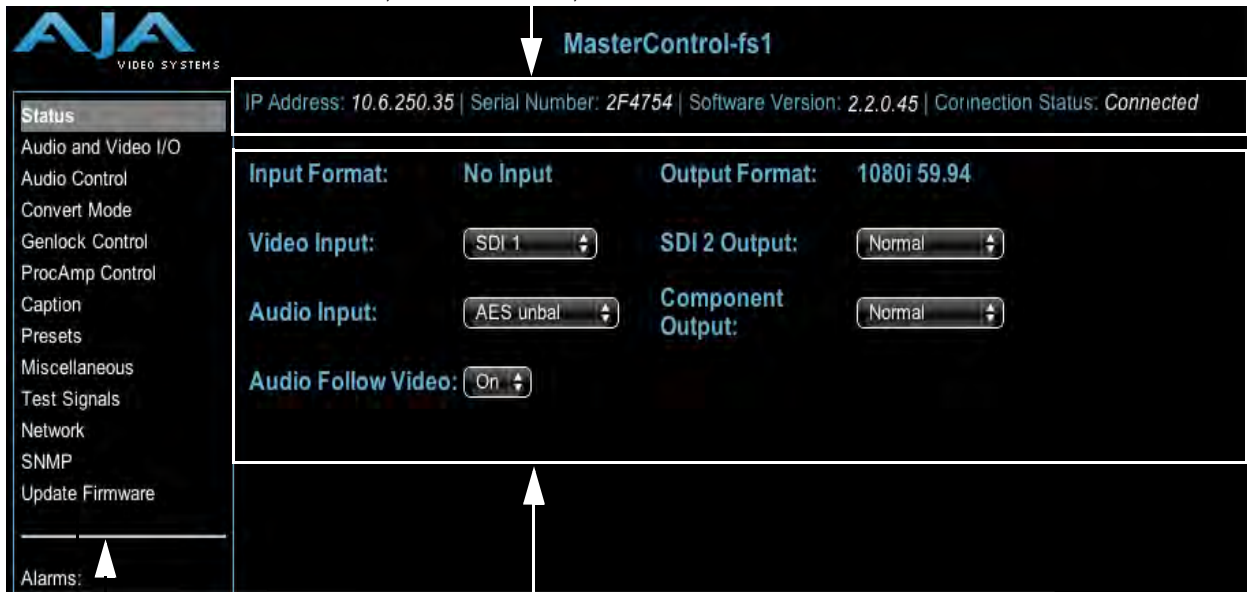
When the URL is entered in the browser and a connection is made the main Status screen will be displayed.

General Screen Information

All FS1 web screens have certain areas in common. On the left of each screen is a navigational list of the available FS1 screens. Click any of these items to jump to that screen. At the top of each screen you'll also find a heading showing the connection status and IP address in addition the FS1's serial number and software version. This latter information is useful if you ever have to call AJA Technical Support to discuss a problem or get help. In the middle of each screen are menu choices and information pertaining to the subject matter of that screen (i.e., the *Audio and Video I/O* screen has choices about audio and video).

FS1 web screens closely mirror the parameter menus displayed on its front panel. In each of the screens presented on the following pages, we'll list the parameter menu numbers that are related. Also, to make things easier for you to reference, we'll list the definitions redundantly here so you don't have to flip back and forth between chapters.

FS1 S/N, software version, and connection status

List of screens:
Click a screen name to
display the screen

Pull-down menu choices

FS1 Web Interface, Main Status Screen

Controlling Multiple FS1s

From the *Network* screen, you can see at-a-glance all of the FS1 devices present on the same local LAN as the current FS1 you are controlling. At the bottom of the screen under *Available FS1s—Click to Refresh*, the system names of all FS1s on the LAN are listed. Clicking on any of these will bring up the *Status* screen of that FS1. **Note:** the FS1 you control may be running a different software version, so screens may look different. As a rule, it's wise to have all your FS1 devices running the most current software and the same version. Also, you must have a properly configured default gateway to see the FS1s.

Note: If the *Default Gateway* (parameter *50.4*) is not configured properly, other FS1s will not be visible here. If it displays *No FS1's found*, check the gateway setting.

Resetting Values To Factory Settings

FS1 web browser screens feature many user controls that can be reset to factory values by simply "right-clicking" on the control, whether it be a drop-down menu or adjustable "spinner" control. When you right-click a control, the browser will display a *Reset to Factory* message that will cause the parameter to be reset.

Note: This only works with computers that allow right-clicking. Some models/brands of computers and laptops may not permit this operation.

To perform a global reset of the FS1 to factory settings, go to the *Miscellaneous* screen and click on the button at the bottom labelled *Reset all FS1 parameters to Factory Values*. (This functions the same as the FS1 front panel parameter *99.0*—another way to reset to factory values.)

Audio and Video I/O Screen

The Audio and Video I/O screen sets the audio and video input and output formats as well as other related parameters.

FS1 Web Interface, Audio and Video I/O Screen

Input Format—Information only field that displays the format the FS1 has detected at the selected input.

Output Format (1.1)

Follow Input (default)	Output follows the format of the selected input.
Follow Ref	Output follows the format of the reference video input (*Ref*).
SD <sd_rate>	Output is standard definition (available SD rates are listed choices).
HD 720p <hd_rate1>	Output is HD 720p (available rates are listed choices).
HD 1080i <hd_rate1>	Output is HD 1080i (available rates are listed choices).
HD 1080psf <hd_rate2>	Output is HD 1080psf (available rates are listed choices).

Video In (2.1)

SDI 1 (default)	Select *SDI 1* connector as the input source.
SDI 2	Select *SDI 2* connector as the input source.
Composite	Select the *Composite* connector as the input source.
S-Video	Select the *S-Video* connector as the input source.
Component	Select the *Component* connector as the input source.

NTSC Standard (3.4)

NTSC (default)	Select *NTSC* for US NTSC standard.
NTSC Japan	Select *NTSC Japan* for the Japanese NTSC standard.

Audio In (2.2)

Embed Auto (Follows Video Input select)	Use the embedded audio from the currently selected Video Input (SDI 1 or 2) as the input source. (This defaults to SDI 1 if Video In is not SDI.)
Embed SDI 1	Use the embedded audio from the *SDI 1* connector as the input source.
Embed SDI 2	Use the embedded audio from the *SDI 2* connector as the input source.
AES unbal (default)	Select thedigital *AES/EBU Audio* connectors (8-ch) as the audio input source.
Analog	Select the *Analog Audio* connector (DB25, 8-ch) as the audio input source.

Frame Rate (3.3)

59.94/23.98 (default)	Select the *59.94/23.98* item if your desired rate is either 59.94 *or* 23.98.
60/24	Select the *60/24* item if your desired rate is either 60 or 24.
50/25	Select the *50/25* item if your desired rate is either 50 or 25 (PAL).

Component In (3.1)

Beta YPbPr	Configure the *Component* video input source as Beta YPbPr (standard definition). If the selected *Component* video source is HD, this will default to SMPTE YPbPr.
SMPTE YPbPr (default)	Configure the *Component* video input source as SMPTE YPbPr.

Component Out (3.2) Signal Type

Beta YPbPr	Configure the *Component* video output as Beta YPbPr (standard definition). If the Component video is HD, this will default to SMPTE YPbPr.
SMPTE YPbPr (default)	Configure the *Component* video output as SMPTE YPbPr.
RGB	Configure the *Component* video output as RGB.

Analog Audio Standard (4.1)

+24 dBu (default)	Select +24 dBu as the analog audio level.
+18 dBu	Select +18 dBu as the analog audio level.
+15 dBu	Select +15 dBu as the analog audio level.
+12 dBu	Select +12 dBu as the analog audio level.
	Maximum amplitude (0 dBFS)

Embed Audio Out (4.3)

On (default)	Embedded audio will be passed.
Off	Do not pass embedded audio packets to the SDI outputs.
Mute	FS1 outputs SDI embedded audio packets containing silence.

Freeze Output (40.1)

Off (default)	Normal operation. The FS1 outputs video from the input.
On	The FS1 captures and freezes the most current video frame and displays it on the outputs as long as this parameter is set to On.

SDI 2 Output (1.2)

Normal (default)	*SDI 2* output follows the *1.1 Output Format* parameter selection (both *SDI 1* and *SDI 2* are the same)
Bypass	*SDI 2* output follows the format of the selected input
Standard Def	The output from Downconverter 2 (see block diagram in *Chapter 1*) is always standard definition.

Component Output (1.3)

Normal (default)	*Component* output follows the *1.1 Output Format* parameter selection.
Bypass	*Component* output follows the format of the selected input.
	Note: Bypass mode does not work when the input is 1080pSF24 and output is 1080i60 (3:2) pulldown mode.
	Note 2: The signal type of the component output is defined in another selection, *Component Out*, above in the screen (also parameter 3.2 from the parameter display)
Standard Def	The output from Downconverter 2 (see block diagram in *Chapter 1*) is always standard definition.

Audio Follow Video (4.5)—This parameter determines whether audio settings are remembered for each video input.

Off (default)	Normal operation. Audio settings must be made separately from any video settings; they are not associated automatically.
On	The FS1 remembers the audio settings associated with the currently selected input. Whenever an input is selected, the corresponding audio settings will be recalled. This allows you to set up specific audio settings for the different video inputs (i.e., perhaps the *SDI 1* input has a specific embedded audio channel mapping while the component video input might always use AES audio input).

Audio Follow Video applies to these parameters:
- 2.2 Audio Input
- 2.11—2.18 Audio Map
- 2.21—2.24 Audio Map (Stereo)
- 4.2 Audio Delay
- 4.4 Sample Rate Convert
- 20.0 Audio Output Levels
- 20.1—20.8 Audio Level Ch (n)
- 21.0 Audio Output Phase
- 21.1—21.8 Audio Phase Ch (n)

Audio Follow Video does not apply to these parameters:
- 4.1 Analog Audio Std
- 4.3 Audio Out

The *Audio Follow Video* control is also on the *Audio Control* screen.

Side Bar Keyer Source (7.1)

Off (default)	Turns the Sidebar Keyer *Off*.
SDI 1	Turns the Sidebar Keyer *On* and selects *SDI 1* as the HD input source for the Sidebar keyer.
SDI 2	Turns the Sidebar Keyer *On* and selects *SDI 2* as the HD input source for the Sidebar keyer.
Component	Turns the Sidebar Keyer *On* and selects *Component In* as the HD input source for the Sidebar keyer. (The FS1 input source selected by parameter *2.1* <u>cannot</u> be either *Composite* or *S-Video* when *Component* is chosen as the Sidebar Keyer source.)

Side Bar Edge (7.2)—Specify a value to widen or narrow the sidebar keyer. There are two ways to enter a value:

- Click and drag the slider.

- Click on the numeric value above the slider, enter a new value, and press Enter to commit the changed value.

0	Produces a 4:3 centered picture.
+1 to +128	Produces wider sidebars (larger number = larger sidebars).
-128 to -1	Produces narrower sidebars (smaller number = smaller sidebars).

Note: Please read the discussions in *Chapter 4, Parameter Menus*, for *7.1 Sidebar Keyer* and *7.2 Sidebar Edge* for complete information on use of the Sidebar keyer.

Loss of Input (11.1)—Select the automatic action that occurs if the video input is lost. The *Freeze* selection freezes video on the last available frame. The *Black* selection (default) cuts the video to black.

Note: Freeze on Loss of Input works only for SDI inputs. If a selected analog input is lost while Freeze is enabled, the output will not be valid video.

Black (default)	Select to replace a lost video input with black video.
Freeze	Select to replace a lost video input with the last available video frame.

Audio Control Screen

This screen offers settings for a variety of audio-related functions:

- Turning AFV on and off.

- Saving AFV settings for any selected video input.

- Changing channel adjustments (level and phase).

The actual appearance of this page can change, reflecting *Audio Output* choices. For example, if the *Level* control is not set to *Unity*, then controls will appear allowing you to set the levels of the eight channels. All of the sliders on this page provide two ways to enter a value:

- Click and drag the slider.

- Click on the numeric value above the slider, enter a new value, and press Enter to commit the changed value.

FS1 Web Interface, Audio Control Screen

Audio Follow Video (4.5)—This parameter determines whether audio settings are remembered for each video input.

Off (default)	Normal operation. Audio settings must be made separately from any video settings; they are not associated automatically.
On	The FS1 remembers the audio settings associated with the currently selected input. Whenever an input is selected, the corresponding audio settings will be recalled.
	This allows you to set up specific audio settings for the different video inputs (i.e., perhaps the SDI 1 has a specific embedded audio channel mapping while the component video input might always use AES audio input).

Audio Follow Video applies to these parameters:

- 2.2 Audio Input
- 2.11—2.18 Audio Map
- 2.21—2.24 Audio Map (Stereo)
- 4.2 Audio Delay
- 4.4 Sample Rate Convert
- 20.0 Audio Output Levels
- 20.1—20.8 Audio Level Ch (n)
- 21.0 Audio Output Phase
- 21.1—21.8 Audio Phase Ch (n)

Audio Follow Video does not apply to these parameters:

- 4.1 Analog Audio Std
- 4.3 Audio Out

Save AFV Settings for Video Input (4.6 AFV Memory)—Selecting a video input and then clicking on the *Save AFV Settings...* button saves the current audio settings and adjustments to source-memory for that video input.

Audio Out Level (20.1)—Enables or disables individual audio output level adjustment of the eight FS1 audio output channels.

Unity (default)	Disable audio output level adjustments.
Adjust	Enable audio output level adjustments for the eight audio channels. When set to *Adjust*, controls are provided for adjusting the eight channels ± 18dB in steps of 0.5 dB

Audio Out Phase (21.0)—Enables or disables individual audio phase adjustment of the eight FS1 audio output channels.

Normal (default)	Disable audio phase adjustments.
Adjust	Enable audio phase adjustments for the eight audio channels. When set to *Adjust*, controls are provided for setting each of the eight channels to *Normal* or *Inverted* phase.

Source (Audio Input 2.2)—Defines the input audio source selection for the FS1. Multiple input sources may be present at all the connectors on the FS1 rear panel, but the active input source routed through the FS1 will be the one selected here. This same control is also present in the *Audio and Video I/O* screen.

Note: If you select either *Stereo Map* or *Channel Map*, controls will appear allowing you to map input sources for each of the eight channels or pairs of channels (stereo).

Stereo Map	For the 8 channels of embedded audio out, select stereo inputs according to *Audio Map* parameters 2.21 through 2.24. Any channel pair (4 pair total) can be mapped to 24 different choices.
Channel Map	For the 8 channels of embedded audio out, select and map inputs according to *Audio Map* parameters 2.11 through 2.18. Any of the 16 embedded channels can be mapped to one of the 48 possible choices.
Embed SDI 1	Use the embedded audio from the *SDI 1* connector as the input source
Embed SDI 2	Use the embedded audio from the *SDI 2* connector as the input source
AES unbal *(Default)*	Select the digital *AES/EBU Audio* connectors (8-ch) as the audio input source
Analog	Select the *Analog Audio* connector (DB25, 8-ch) as the audio input source

Sample Rate Convert (4.4)

On (default)	Normal operation. The FS1 performs audio sample rate conversion and keeps the video and audio synchronized.
Off	The FS1 does not sample rate convert the audio, leaving embedded audio as is, useful for Dolby® 5.1 embedded audio and other applications.

Normally, set this to *On* (default). Set it to *Off* only if the following are both true:

1. You want to pass digital encoded audio from either embedded or AES into embedded and/or AES out.

2. You have the embedded or AES input genlocked to the FS1 output. In other words, the encoded audio will not survive the frame-sync function (dropping or repeating frames), so it needs to be set to lock to the input. You can lock to a reference only if that reference is driving both the FS1 and the upstream source of the embedded or AES input to the FS1.

Audio Delay, ms (4.2)—This slider allows you to adjust the delay to compensate for video timing issues (delay/latency). This slider changes the delay from -16 to 256 ms (the default is zero delay).

Convert Mode Screen

This screen offers settings for the FS1 upconverter, downconverter, and SD Aspect Ratio converters.

FS1 Web Interface, Convert Mode Screen

Upconvert Mode (5.1)

4x3 Pillar	Results in 4x3 image in center of screen with black sidebars.
14x9 Pillar (default)	Results in 14x9 image, zoomed slightly to fill a 14x9 image with black sidebars.
Full Screen	Anamorphic full screen display.
LB to Full	Image is zoomed to fit the full screen (letterbox).
Wide Zoom	Using a combination of zoom and stretch, the image is sized to fit a 16x9 screen (this can introduce a small aspect ratio change).

Downconvert Mode (5.2)

Letterbox (default)	Image is reduced and aspect ratio preserved with black top and bottom added to image area.
Crop	Image is cropped to fit new screen size.
Anamorphic	HD image is converted to full-screen SD with a 16x9 aspect ratio (anamorphic).
14x9	Image is reduced slightly with aspect ratio preserved. Black is added top and bottom, and the left and right sides are cropped.
Auto AFD	Automatically selects the best downconvert mode based on the input video's Active Format Description (AFD) code. If the input video is not carrying an AFD VANC code, the downconverter defaults to the mode specified in parameter menu 5.5 ("Downconvert AFD Default").

SD Aspect Ratio (5.3)

Off (default)	Turns aspect ratio conversion *Off*.
Letterbox	Anamorphic converted to *Letterbox* 16:9 to 4:3.
H Crop	Anamorphic 16:9 screen cropped to 4:3 screen.
Pillarbox	Converts standard 4:3 screen to *Pillarbox* (black sidebars) as an anamorphic screen.
V Crop	Transforms an SD Letterbox image to an anamorphic image.
14x9	Converts 16:9 Anamorphic video to *14:9* Cropped video.

Downconvert AFD Default (5.5)

Hold Last *(Default)*	Use the last AFD code detected and continue to use its aspect ratio selection until a new AFD code is detected again in the SDI meta data.
Letterbox	When an AFD code isn't present, switch the downconverter mode to *Letterbox*.
14x9	When an AFD code isn't present, switch the downconverter mode to *14x9*.
Anamorphic	When an AFD code isn't present, switch the downconverter mode to *Anamorphic*.
Crop	When an AFD code isn't present, switch the downconverter mode to *Crop*.

AFD Out SDI1 (5.6)

Off *(Default)*	The FS1 does not insert an AFD code into the output. If the video input has an AFD code and the FS1 is not up/down/cross converting it, the input AFD code will be passed through to the output.
Auto	If the FS1 is not upconverting or downconverting the input video, the input AFD code is passed through. If there is no AFD code on the input video, a "Full Frame" (8) code is inserted. If the FS1 is upconverting, the appropriate AFD code will be chosen based on the upconvert mode.
>16:9	The FS1 always inserts a "Box > *16:9* (center)" AFD code (4), which indicates that the HD image has an aspect ratio greater than 16:9 as a vertically centered letterbox within the 16:9 frame.
Full Frame	The FS1 always inserts a "Full Frame" AFD code (8), which indicates that the HD image is full frame, with an aspect ratio that is 16:9.
Pillarbox	The FS1 always inserts a "4:3 (center)" AFD code (9), which indicates that the HD image has a 4:3 aspect ratio as a horizontally center pillarbox image within the 16:9 frame.
Letterbox	The FS1 always inserts a "16:9 (with complete 16:9 image protected)" AFD code (10), which indicates that the HD image is full frame, with a 16:9 aspect ratio and all image areas are protected.
14:9	The FS1 always inserts a "14:9 (center)" AFD code (11), which indicates that the HD image has a 14:9 aspect ratio as a horizontally centered pillarbox within the 16:9 frame.
4:3 Alt 14:9	The FS1 always inserts a "4:3 (with alternate 14:9 center)" AFD code (13), which indicates that the HD image has a 4:3 aspect ratio and with an alternative 14:9 centered pillarbox image within the 16:9 frame.
16:9 Alt 14:9	The FS1 always inserts a "16:9 (with alternative 14:9 center" AFD code (14), which indicates that the HD image has a 16:9 aspect ratio with an alternative 14:9 center within the 16:9 frame.
16:9 Alt 4:3	The FS1 always inserts a "16:9 (with alternative 4:3 center)" AFD code (15), which indicates that the HD image has a 16:9 aspect ratio with an alternative 4:3 center within the 16:9 frame.

AFD Out SDI2 (5.7)

Parameter selections are the same as for *AFD Out SDI1*.

Genlock Control Screen

This screen selects the type of genlock source and then allows fine adjustment of the horizontal and vertical timing, and audio delay—relative to the source selected. There are two ways to enter a value:

- Click and drag the slider.

- Click on the numeric value above the slider, enter a new value and press Enter to commit the changed value.
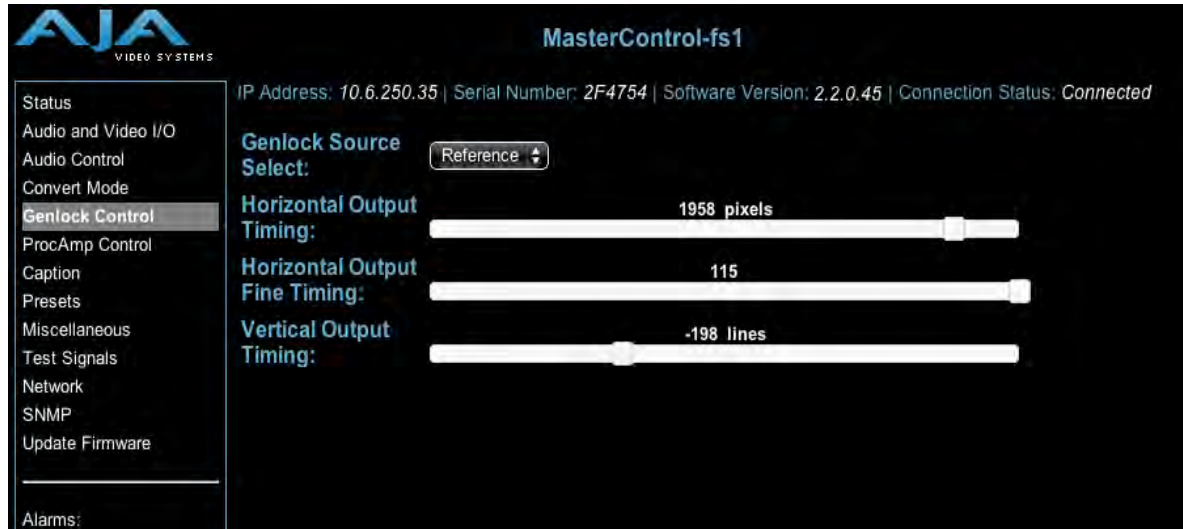
FS1 Web Interface, Genlock Control Screen

Genlock Source Select (6.1)

Reference (default)	Use the *Ref* connector as the genlock source
Input	Use the currently selected input as the genlock source
Free run	Free run mode (FS1 syncs to its own timebase, not locked to an external source)

Horizontal Output Timing, pixels (6.2)—This slider adjusts horizontal output timing relative to the reference video already selected. When adjusting the horizontal timing (H), this value specifies a number of pixels to offset, from zero to full line width.

Horizontal Output Fine Timing—Further adjusts the horizontal analog output timing (only) in finer increments than 6.2 (above)—in this case by sub-pixels. Each adjustment of the control, from 0 to 127 adjusts the timing by 1/128th of a pixel.

Note: This fine timing control only affects the analog outputs.

Vertical Output Timing, lines (6.3)—This slider adjusts vertical output timing relative to the reference video already selected. When adjusting the vertical timing (V), this value specifies a number of lines to offset, moving the screen up to a half a frame up or down.

**ProcAmp
Control Screen**

This screen selects whether the Processing Amplifier (ProcAmp) is *On* or *Off*, and if *On*, allows adjustment of gain, blacklevel, hue and saturation via slider controls.
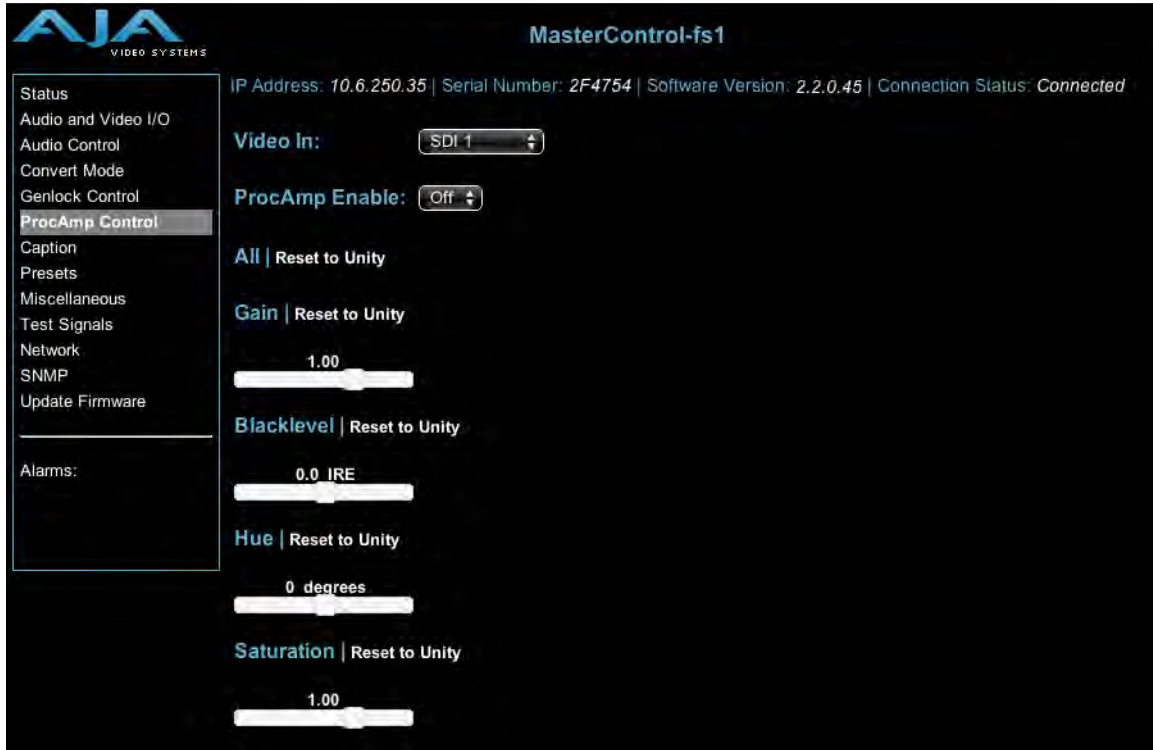
FS1 Web Interface, ProcAmp Control Screen

Video In—Selecting a value results in the *ProcAmp* screen showing the current ProcAmp settings for that specific input as well as changing the FS1's input to the one chosen.

Note: ProcAmp controls (Parameters *10.1* through *10.5*) are independently kept for each separate input: *SDI 1*, *SDI 2*, *Composite*, *S-Video*, and *Component*.

ProcAmp Enable (10.1)

On	The Processing Amplifier is turned *On* and all settings are applied to the currently selected input source
Off (default)	Turns the Processing Amplifier *Off*—video is passed unaltered.

All—Resets all Proc Amp settings to *Unity*, regardless of their current settings.

Gain (10.2)—Slider changes video gain from black to 1.5 times luma in steps of .01

Blacklevel (10.3)—Slider adjusts video black level from -20 IRE to +20 IRE in .5 steps.

Hue (10.4)—Slider adjusts video color hue through 360 degrees (color wheel). Slider can adjust in increments/decrements of 1 degree or more.

Saturation (10.5)—Slider adjusts video color saturation from black & white to 1.5 times chroma in steps as small as .01.

Caption Screen   This screen controls how the FS1 handles closed captioning ancillary data and whether it and VITC timecode are passed to the outputs or blanked.

Caption Translator (30.1)—When set to *On* and using the Upconverter, the FS1 will automatically translate incoming line 21 captions to CEA-708 format and insert the VANC packets into the converted HD video stream. This is a complete translation from CEA-608 format to CEA-708 format (including the embedded SD captions).

When set to *On* and using the downconverters, the FS1 will automatically intercept and reformat the SD caption data in the incoming CEA-708 VANC packets, and output it on line 21 of the standard definition outputs.

When *Off*, translation is not performed.

Upconvert Line 21 (31.1)

Blank (default)	In *UpConvert* or *SD Aspect Ratio Convert* modes, this setting blanks input video Line 21 *before* conversion. This is used to blank Line 21 caption data.
Pass	Passes input video Line 21 to the converter and to the outputs.
Auto blank	The FS1 looks for Line 21 caption data on the video input. If present, Line 21 is blanked before video conversion occurs. If no caption data is found, Line 21 passes to the converter.

Captioning Status—This field is a read-only informational display that shows whether Closed Caption data is present on the currently selected video input.

FS1 Web Interface, Caption Screen

Presets Screen   This screen allows you to save FS1 Preset Configurations into 10 separate memory registers and recall the presets whenever needed. This screen also includes Export and Import functions that allow exporting one or all FS1 presets to your computer as an XML file and importing an exported preset XML file from your computer. A message banner above the functions indicates successful or failed saves, recalls, exports, and imports.

FS1 Web Interface, Presets Screen

Save (92.1)—Lets you save up to 10 FS1 Preset Configurations, each of which may be uniquely named. To save the current FS1 Preset Configuration, click the *Save* button associated with (to the right of) that preset name. A dialog box asks you to confirm the save—click *OK* to save, *Cancel* to cancel.

(Preset) Save	Click Save to store the current FS1 as a preset configuration.

Recall (91.1)— Recalls a saved FS1 Preset Configuration. To recall a preset, click the *Recall* button associated with (to the right of) the preset name. A dialog box asks you to confirm the recall—click *OK* to recall, *Cancel* to cancel.

(Preset) Recall	Click Recall to recall the saved Preset Configuration.

Caution: *When you click Yes to recall a Preset Configuration, the recalled preset immediately replaces the system's existing configuration. All previous settings are lost unless you have previously stored them in a Preset Configuration or an exported file.*

Pst<number>—Click a *Pst<number>* field to enter a name for the selected Preset. The text turns red to indicate it is ready to edit. Type the new name and press Enter. The name changes to the name you typed.

Only editable parameters are saved in the presets. Example non-editable parameters that are **not** saved include *50.6 MAC Address*, *80.1 Serial Number*, and *80.2 SW Version*, as well as "trigger" parameters, such as *90.0 Reboot*, *91.1 Preset Recall*, *92.1 Preset Save*, and *99.0 Factory Settings*.

Additionally, these editable parameters are **_not_** stored in the presets:

- 35.1 Remote Control
- 35.3 Password
- 40.1 Freeze Output
- 50.1 IP Config
- 50.2 IP Address
- 50.3 Subnet Mask
- 50.4 Default Gateway
- 50.5 System Name
- 51.1 SNMP Enable

- 51.2 SNMP Trap Dest 1
- 51.3 SNMP TrapPort 1
- 51.4 SNMP Trap Dest 2
- 51.5 SNMP Trap Port 2
- 60.1 Pwr Supply Alarm
- 60.2 Format Alarm
- 60.3 Reference Alarm
- 70.1 Screen Saver
- 70.2 Display Intens

Export—Saves the associated preset contents to a *.presets* XML file on your computer.

The *.presets* file gets exported to the default download location specified in your browser options. The file name is the same as the preset name with a *.presets* extension. If you export multiple files for the same preset, a number gets appended to ensure a unique file name. The file size is small, usually less than 100 kilobytes.

Export	Click *Export* to save the preset contents to a *.presets* file on your computer.

Import—Use this function to browse for and import into a preset the contents of a previously exported preset from a file on your computer. A dialog box warns you that **the operation will overwrite the current preset contents** with the contents stored in the file. Click *OK* to import the configuration from the file or *Cancel* to cancel.

Import	Click *Import* to replace a preset's contents with the contents of a previously exported file.

Export All—Saves the contents of all 10 presets to an *all.presets* XML file on your computer.

The *all.presets* file gets exported to the default download location specified in your browser options. If you export multiple files, a number gets appended to ensure a unique file name. The file size is usually about 2.5 Megabytes.

Export All	Click *Export All* to save the contents of all 10 presets to an *all.presets* file on your computer.

Import All—Use this function to browse for and import a previously exported *all.presets* file from your computer. A dialog box warns you that **the operation will overwrite all 10 current preset contents** with the contents stored in the file. Click *OK* to import the configuration from the file or *Cancel* to cancel.

Import All	Click *Import* to replace the contents of all 10 presets with the contents of a previously exported file.

Miscellaneous Screen

This screen provides access to a number of FS1 general functions:

- Lighting the Identify (ID) LED.
- Setting the Screen Saver.
- Setting the System Name.
- Selecting GPI actions.
- Choosing Front Panel Lock Out.
- Setting up Authentication and setting the Password.
- Setting alphanumeric display brightness.
- Resetting All FS1 Parameters to Factory Values.
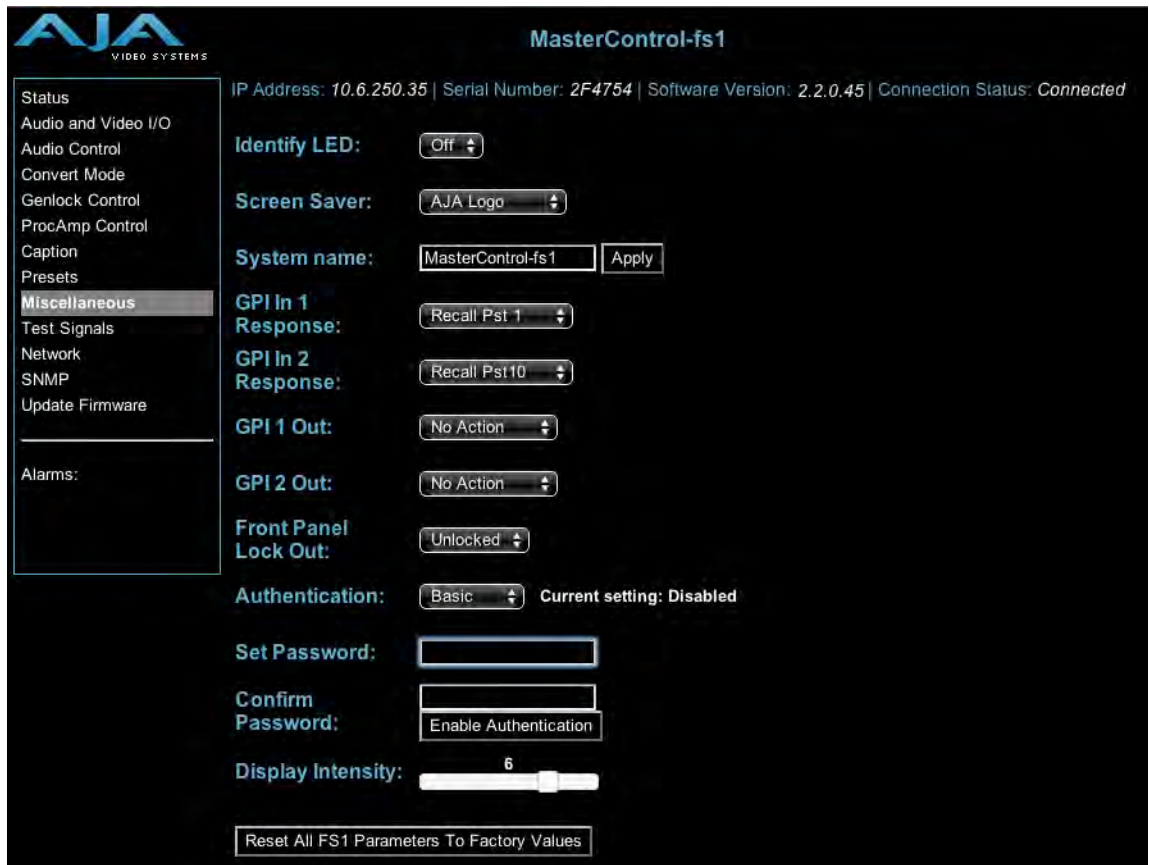
FS1 Web Interface, Miscellaneous Screen

Identify LED

On	Turn the front and rear panel "ID" LED lights *On*.
Off (default)	Turn the front and rear panel "ID" LED lights *Off*.

Screen Saver (70.1)

AJA Logo (default)	Display horizontally rolling AJA logo after 60 minutes of FS1 front panel button inactivity
System Name	Display horizontally rolling *System Name* after 60 minutes of FS1 front panel button inactivity
Disabled	Dim display after 60 minutes of button inactivity

System Name (50.5)—Defines a name for the FS1 and gives it a unique identifier. This same name is used both when displaying systems via the web interface and for display on the FS1's screen saver (if *System name* is chosen in parameter *70.1 Screen Saver*). If you enter a change in this field, click Apply to enter the change. Non-English characters entered in the System Name field may not display properly on the front panel. Characters that cannot be used as part of the System Names include the following: ; < > ' \ | } {

The FS1 will not allow you to enter any of these illegal characters into the system name field. If you cut/copy and paste text containing illegal characters into the field, the background will change to the color red and the FS1 won't allow you the change (an error will be displayed when *Apply* is clicked).

GPI In 1 Response (36.1), when a GPI trigger is received at pin 1.

No Action (default)	FS1 performs no action if a GPI trigger is received at pin 1 (*GPI* DE-9 Connector)
Freeze	FS1 freezes the current video frame at its outputs if a GPI trigger is received at pin 1. The freezing of the frame will stop when the GPI trigger is released
SDI1 In	FS1 selects SDI1 as the video input if a GPI trigger is received at pin 1
SDI2 In	FS1 selects SDI2 as the video input if a GPI trigger is received at pin 1
Composite In	FS1 selects Composite In as the video input if a GPI trigger is received at pin 1
S-Video In	FS1 selects S-Video In as the video input if a GPI trigger is received at pin 1
Component In	FS1 selects Component In as the video input if a GPI trigger is received at pin 1
	When either *SDI1 In*, *SDI2 In*, *Composite In*, *S-Video In*, or *Component In* are selected, the selected input video source will remain selected even after the GPI trigger is released (deactivated).
UC 14x9 Pillar	FS1 performs upconversion of SD source to 14x9 pillarbox (see parameter *5.1*)
UC Fullscrn	FS1 performs upconversion of SD source to full screen (see parameter 5.1)
UC LB to Full	FS1 performs upconversion of SD source from letterbox to Full (see parameter *5.1*)
UC Wide Zoom	FS1 performs upconversion of SD source to a wide zoom (see parameter *5.1*)
UC 4x3 Pillar	FS1 performs upconversion of SD source to 4x3 pillarbox (see parameter *5.1*)
DC Letterbox	FS1 downconverts HD source to letterbox picture (see parameter *5.2*)
DC Crop	FS1 downconverts HD source to cropped 4x3 picture (see parameter *5.2*)
DC Anamorph	FS1 downconverts HD source to anamorphic picture (see parameter *5.2*)
DC 14x9	FS1 downconverts HD source to 14x9 picture (see parameter *5.2*)
DC Auto AFD	FS1 downconverts HD source, selecting the best downconvert mode based on the input video's Active Format Description (AFD) code (see parameter *5.2*)
ARC Off	FS1 SD to SD aspect ratio conversion is turned off (see parameter *5.3*)
ARC Lettrbox	Converts 16:9 anamorphic video to letterbox video (see parameter *5.3*)
ARC H Crop	Converts 16:9 anamorphic video to 4:3 standard video (crops left and right edges of video—see parameter *5.3*)
ARC Pillarbox	Converts 4:3 standard video to 16:9 anamorphic video (see parameter *5.3*)
ARC V Crop	Converts letterbox video to 16:9 anamorphic video (see parameter *5.3*)
ARC 14x9	Converts 16:9 anamorphic video to 14:9 cropped video (see parameter *5.3*)
Recall Pst 1	FS1 recalls Preset 1
Recall Pst 2	FS1 recalls Preset 2
Recall Pst 3	FS1 recalls Preset 3
Recall Pst 4	FS1 recalls Preset 4
Recall Pst 5	FS1 recalls Preset 5
Recall Pst 6	FS1 recalls Preset 6
Recall Pst 7	FS1 recalls Preset 7
Recall Pst 8	FS1 recalls Preset 8
Recall Pst 9	FS1 recalls Preset 9
Recall Pst 10	FS1 recalls Preset 10

GPI In 2 Response (36.2), when a GPI trigger is received at pin 2

No Action (default)	FS1 performs no action if a GPI trigger is received at pin#2 (*GPI* DE-9 Connector).
Freeze	FS1 freezes the current video frame at its outputs if a GPI trigger is received at pin 2.
SDI1 In	FS1 selects *SDI1* as the video input if a GPI trigger is received at pin 2.
SDI2 In	FS1 selects *SDI2* as the video input if a GPI trigger is received at pin 2.
Composite In	FS1 selects *Composite In* as the video input if a GPI trigger is received at pin 2.
S-Video In	FS1 selects *S-Video In* as the video input if a GPI trigger is received at pin 2.
Component In	FS1 selects *Component In* as the video input if a GPI trigger is received at pin 2.
	When either *SDI1 In*, *SDI2 In*, *Composite In*, *S-Video In*, or *Component In* are selected, the input video source selected will remain selected even after the GPI trigger is released (deactivated).
UC 14x9 Pillar	FS1 performs upconversion of SD source to 14x9 pillarbox (see parameter *5.1*).
UC Fullscrn	FS1 performs upconversion of SD source to full screen (see parameter *5.1*).
UC LB to Full	FS1 performs upconversion of SD source from letterbox to Full (see parameter *5.1*).
UC Wide Zoom	FS1 performs upconversion of SD source to a wide zoom (see parameter *5.1*).
UC 4x3 Pillar	FS1 performs upconversion of SD source to 4x3 pillarbox (see parameter 5.1).
DC Letterbox	FS1 downconverts HD source to letterbox picture (see parameter *5.2*).
DC Crop	FS1 downconverts HD source to cropped 4x3 picture (see parameter *5.2*).
DC Anamorph	FS1 downconverts HD source to anamorphic picture (see parameter *5.2*).
DC 14x9	FS1 downconverts HD source to 14x9 picture (see parameter *5.2*).
DC Auto AFD	FS1 downconverts HD source, selecting the best downconvert mode based on the input video's Active Format Description (AFD) code (see parameter *5.2*).
ARC Off	FS1 SD to SD aspect ratio conversion is turned off (see parameter *5.3*).
ARC Lettrbox	Converts 16:9 anamorphic video to letterbox video (see parameter *5.3*).
ARC H Crop	Converts 16:9 anamorphic video to 4:3 standard video (crops left and right edges of video— see parameter *5.3*).
ARC Pillarbox	Converts 4:3 standard video to 16:9 anamorphic video (see parameter *5.3*).
ARC V Crop	Converts letterbox video to 16:9 anamorphic video (see parameter *5.3*).
ARC 14x9	Converts 16:9 anamorphic video to 14:9 cropped video (see parameter *5.3*).FS1 recalls FS1
Recall Pst 1	FS1 recalls Preset 1
Recall Pst 2	FS1 recalls Preset 2
Recall Pst 3	FS1 recalls Preset 3
Recall Pst 4	FS1 recalls Preset 4
Recall Pst 5	FS1 recalls Preset 5
Recall Pst 6	FS1 recalls Preset 6
Recall Pst 7	FS1 recalls Preset 7
Recall Pst 8	FS1 recalls Preset 8
Recall Pst 9	FS1 recalls Preset 9
Recall Pst 10	FS1 recalls Preset 10

Note: For information on GPI connections, including pinout, refer to *Appendix B*.

GPI 1 Out (37.1)

No Action (default)	FS1 will not trigger a GPI 1 output trigger regardless of event.
Alarm	FS1 generates a GPI 1 output trigger on pin 3 if an internal alarm condition occurs (GPI DE-9 Connector). See Chapter 2 for alarm descriptions.
No Video	FS1 generates a GPI 1 output trigger on pin 3 if no video is detected at its selected input.
No Ref	FS1 generates a GPI 1 output trigger on pin 3 if no video is detected at its *Ref* video input.
Vid In SDI1	FS1 generates a GPI 1 output trigger on pin 3 if SDI1 is selected as the main video input.
Vid In SDI2	FS1 generates a GPI 1 output trigger on pin 3 if SDI2 is selected as the main video input.
Vid In Cmpst	FS1 generates a GPI 1 output trigger on pin 3 if Composite is selected as the main video input.
Vid In S-Vid	FS1 generates a GPI 1 output trigger on pin 3 if S-Video is selected as the main video input.
Vid In Cmpnt	FS1 generates a GPI 1 output trigger on pin 3 if Component is selected as the main video input.

GPI 2 Out (37.2)

No Action (default)	FS1 will not trigger a GPI 2 output trigger regardless of event.
Alarm	FS1 will generate a GPI 2 output trigger on pin 4 if an internal alarm condition occurs (GPI DE-9 Connector). See Chapter 2 for alarm descriptions.
No Video	FS1 will generate a GPI 2 output trigger on pin 4 if no video is detected at its selected input.
No Ref	FS1 will generate a GPI 2 output trigger on pin 4 if no video is detected at the *Ref* input.
Vid In SDI1	FS1 generates a GPI 2 output trigger on pin 4 if SDI1 is selected as the main video input.
Vid In SDI2	FS1 generates a GPI 2 output trigger on pin 4 if SDI2 is selected as the main video input.
Vid In Cmpst	FS1 generates a GPI 2 output trigger on pin 4 if Composite is selected as the main video input.
Vid In S-Vid	FS1 generates a GPI 2 output trigger on pin 4 if S-Video is selected as the main video input.
Vid In Cmpnt	FS1 generates a GPI 2 output trigger on pin 4 if Component is selected as the main video input.

Front Panel Lock Out—When set to *Locked*, this setting locks out FS1 front panel access, the same as setting *35.1* to *REMOTE ONLY*. This menu can be enabled or disabled only from the web browser.

Unlocked (default)	Panel will respond as set in *35.1 REMOTE CONTROL*.
Locked	Lock out front panel access; the same as setting *35.1* to *REMOTE ONLY*.

Authentication (35.3)—Setting determines whether password protection is applied to the FS1 web browser interface.

Disabled (default)	Selects no password protection.
Basic	Selects password protection. When selected you will be prompted for a *Name* and *Password*.
	Ignore the *Name* field, but enter the correct password to allow web access. The factory value for password is *password*—if you select *Basic Password* you will have to initially enter the factory password before you can enter a new password using the *Set Password* field below *Authentication*. Once a password is entered, enter the same exact password in the *Confirm Password* field and then click the *Change Password* button to the right of it. Please read the "Notes" below.

FS1 Web Interface, Miscellaneous Screen: Authentication set to "Basic Password"

Notes:

1. AJA recommends using the *Disabled* setting, unless it is absolutely necessary to use the *Basic* setting, since the authentication used is only as good as the underlying network security. This is due to the password being sent across the network in clear text.
Security follows the *Basic* authentication defined in RFC2617, which can be read at this URL: http://www.ietf.org/rfc/rfc2617.txt.

2. The default value is *Disabled*. Once changed to *Basic*, only entering the password or a dual button factory reset will change this parameter back to *Disabled*, the single UP button factory reset will not (see parameter *99.0* for information).

3. Changing *Authentication* to *Disable*d resets the *System Password* parameter to the default password, which is "password".

4. If you select *Basic Password* authentication, the default password will initially be used (until you set a password with *Set Password*).

5. After you select *Basic Password* authentication, your browser immediately requires a password before further interaction is allowed, as indicated by a browser dialog box. The browser then prompts for a username/password for all access to the FS1. The FS1 ignores any supplied username and uses only the password during authentication. If prompted for a password more than once, please re-enter the proper password each time you are asked. Some browsers may store the password, which may require you to turn off or clear password caching in the browser before you can use a new password. Consult the browser help feature for instructions.

6. In the web browser, changing this parameter will show/hide the *Set Password* and *Confirm Password* controls for setting the password.

7. You may be prompted for a password before you are able to set a new password. In this case, you need to enter the default password. (This happens because enabling the feature enables it with the default password already set to "password" and all traffic to/from the FS1 needs to be authenticated once this happens.)

Set Password—the field used to enter a password (this field will not be visible if *Authentication* is set to *Disabled).*

Confirm Password and *Change Password button*—the field used to confirm the password entered above; contents must match, and the password will not be final until the *Change Password* button is clicked (these controls will not be visible if *Authentication* is set to *Disabled).*

Display Intensity (70.2)—Either by using the slider or by entering a value, you can dim or brighten the alphanumeric display and activity indicator LEDs in steps from *1* (dim) to *8* (brightest).

Reset All FS1 Parameters To Factory Values (99.0)—As this button title implies, clicking it will cause all current FS1 parameter settings to revert to the original AJA factory values (except network settings—which are retained). Any settings you have made to date will be overwritten.

Recalling factory defaults does not affect these network settings: *IP Config*, *IP Address*, *Subnet Mask*, or *Default Gateway*. To clear network settings and recall factory defaults, hold down both *Adjust* buttons at the same time from the FS1 front panel.

Test Signals Screen

This screen allows you to select the video and audio test signals produced by the internal test signal generator.

FS1 Web Interface, Test Signals Screen
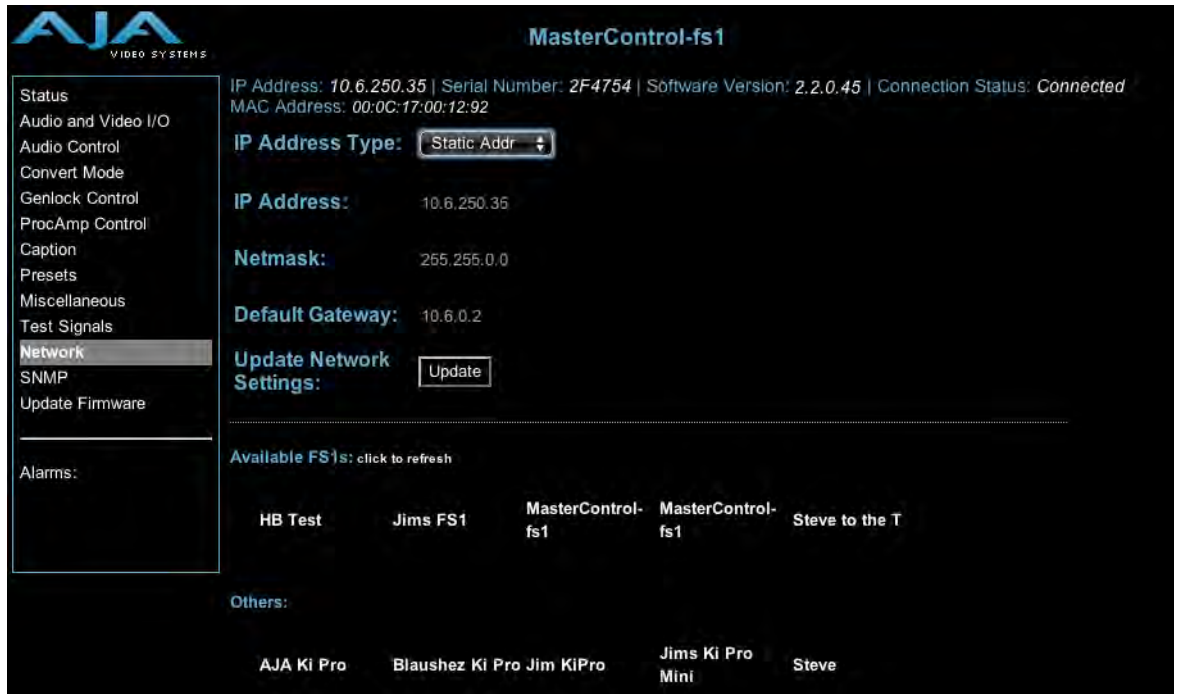
Video SG (41.2): This parameter controls the video test signal produced by the FS1's internal test signal generator. When you set the parameter to *OFF*, test signals are turned off, and the normal video signals appear at the FS1 video outputs. When you set the parameter to a test pattern, that pattern gets switched into the video outputs. Available test signals are *Black*, *75% Bars*, or *100% Bars*.

Audio SG (41.3): This parameter determines the audio signal output from the FS1's internal audio test signal generator: *OFF (default)*, *silence*, or *1 kHz tone*. When you set the parameter to *OFF*, test signals are turned off, and the normal audio signals appear at the FS1 audio outputs. When you set the parameter to an audio tone, that tone gets switched into the audio outputs.

Network Screen

This screen contains all of the information required to set up FS1 TCP/IP networking. The screen also shows all FS1s that are on the same LAN as the FS1 the web browser is communicating with.

Note: FS1 IP Address and netmask fields filter keystrokes and only allow legal characters. The FS1 also checks the format of the entry to ensure it is valid; if found to be invalid, the background of the IP Address or netmask will turn red. If you click the *Update* button while an invalid entry exists in one of the these fields, the FS1 will display an error dialog—you must correct the error before updating.

FS1 Web Interface, Network Screen

IP Address Type (50.1)—Use to change the IP address for the FS1. When you enter an IP address and click the *Update* button, the FS1 IP address will change, and the browser will display a "redirecting to..." page which should send the browser to the new IP address entered. (You can also click on a link on the redirect page.)

DHCP (default)	Select automatic IP address assignment from DHCP server on LAN Note: if the LAN DHCP server fails to grant an IP address, the FS1 will default to using the static address (factory default is 192.168.0.2)
Default Addr	Use the factory default IP address: 10.65.74.65
Static Addr	Assign a static IP address manually (parameters 50.2, 50.3, and 50.4 will have to be entered to accomplish this).

IP Address (50.2)—Enter an IP address compatible with your LAN (if you have one). When you network the FS1 to a computer, this is the IP address that you'll enter in the computer's web browser to bring up the FS1's web interface from its embedded web server. You must also click the *Update* button to update the FS1 with the IP address entered here.

Netmask (50.3)—Enter a subnet mask compatible with your LAN (if you have one). You must also click the *Update IP Address* button to update the FS1 with the changed information entered here.

Default Gateway (50.4)—Enter the IP address for your LAN's gateway/router (if you have one). You must also click the *Update IP Address* button to update the FS1 with the changed information entered here.

Update Network Settings—Pressing this button requests the FS1 to update its IP information with what you have entered on this screen.

Available FS1s- Click to Refresh—All of the FS1 devices present on the same local LAN as the current FS1 are listed below this heading (see note below). The serial numbers of all FS1s on the LAN, or their defined *System Names* (see parameter *50.5*) are listed—and clicking on any of these will bring up the Status screen of that FS1. Note: the FS1 you control may be running a different software version so screens may look different. As a rule, it's wise to have all your FS1 devices running the most current software and the same version. Also, without a properly configured default gateway (whether you have a router/gateway or not), the discovery feature, *Available FS1s—Click to Refresh*, on the Network page may not work.

Below the FS1s listed are *Others*, which are other AJA devices. Items that may appear here include AJA Ki Pro recorders and AJA KUMO routers.

Note: AJA devices shown are cached and may not reflect the realtime state of all devices on the LAN. As FS1s and other AJA devices are added or removed from the network they may take awhile to appear in the listing. If, at anytime you want a current view of the network (clearing the cache and showing the realtime state), then press the *Control* key on your keyboard while clicking the *Available FS1s—Click to Refresh* link.

SNMP Screen   This screen contains all of the information required to set up SNMP messaging to the FS1.

FS1 Web Interface, SNMP Screen

SNMP Disabled, Enable 1 or Enable Both (51.1)—Select *Enable 1* if you want the FS1 to issue trap messages to the defined trap 1 destination. To issue trap messages to both Trap 1 and Trap destinations, Select *Enable Both*. Select *Disabled* (default) when you don't want the FS1 to issue trap messages.

Trap Receivers (51.2 to 51.5)—Enter the IP address of the destination where SNMP command messages (called "traps") will be sent (default is 191.168.0.3). This is usually an SNMP client ("NMS" or Network Management System) somewhere on your LAN. You must also click the *Update* submit button to update the FS1 with the IP address entered here. A Port number for the TCP/IP port to be used for trap messages from the FS1 to the NMS must also be specified (UDP Port 162 is the default). Two sets of Trap Destination IP and Port numbers are provided so you can send trap messages in parallel to two NMS.

Note: Illegal data, such as out of range addresses or text, entered on the SNMP web page will generate an error page containing a message similar to the following:

```
Something is missing or out of range
trap IP 1:192.168.0.4
port 1: 162
trap IP 2: 0.0.0.0
port 2: 162
PRESS YOUR BROWSER'S BACK BUTTON TO CONTINUE
```

Update (Submit button)—Pressing this button requests the FS1 to update its SNMP information with that entered on this screen.

Update Firmware   The *Update Firmware* screen and the firmware download and installation procedure are described in *Chapter 3 Installation*.

FS1 Simple Network Management Protocol

SNMP is defined as a "simple network management protocol" and was specified as a component of the internet protocol suite by the Internet Engineering Task Force (IETF). The FS1 can act as a *network element* that issues SNMP trap messages signalling a detected alarm condition or other system condition.

Before the FS1 can respond to SNMP requests, parameter *51.1* must be set to enable SNMP communication.

51.1 SNMP Enable	Description of Choices
Parameter Adjustments:	
Disable *(Default)*	When set to *Disable*, the FS1 will not issue SNMP trap messages.
Enable 1	When set to *Enable 1*, the FS1 issues SNMP trap messages to Trap Destination 1 (parameter 51.2) and as defined in the MIB.
Enable Both	When set to *Enable Both*, the FS1 issues SNMP trap messages to Trap Destination 1 and 2 (parameters 51.2 and 51.4) and as defined in the MIB.

When SNMP is enabled, one or more of 4 alarms may be sent by the FS1 to the client NMS as a trap message:

```
Power supply failure or disconnection: fs1PSAlarm (see parameter 60.1)
Reference video: fs1REFAlarm (see parameter 60.3)
Format: fs1FMTAlarm (see parameter 60.2)
Temperature of FS1 is over limit (internally): fs1OVRAlarm
```

6

The trap message would be sent to server-based external network management systems (NMS). These trap destinations must have a fixed IP address that you have pre-defined (FS1 parameters *51.2* and *51.4* must be set to point to these, if used).

51.2 SNMP Trap Dest 1	Description of Choices
Parameter Adjustments: variable	Using the *Adjust* buttons, enter the IP address of the destination where SNMP command messages (called "traps") will be sent. This is usually an SNMP client ("NMS" or Network Management System) somewhere on your LAN. *Default:* 192.168.0.3

51.4 SNMP Trap Dest 2	Description of Choices
Parameter Adjustments: variable	Using the *Adjust* buttons, enter the IP address of the destination where SNMP command messages (called "traps") will be sent. This is usually an SNMP client ("NMS" or Network Management System) somewhere on your LAN. *Default:* 192.168.0.3

For example, the FS1 could send a trap message if one of its redundant power supplies becomes unplugged. A client software agent that communicates with the NMS might then get a message telling the operator what has happened.

Parameter *51.3* and *51.5* determine the SNMP Port(s) used for sending the trap messages. UDP Port 162 is the default used for SNMP trap messages. However, if this port is being used by another protocol or service, you can change the setting by modifying these parameters.

51.3 SNMP Trap Port 1	Description of Choices
Parameter Adjustments: variable	Using the *Adjust* buttons, select a UDP port for sending FS1 trap messages. *Default:* 162

51.5 SNMP Trap Port 2	Description of Choices
Parameter Adjustments: variable	Using the *Adjust* buttons, select a UDP port for sending FS1 trap messages. *Default:* 162

FS1

Formats

525i
625i
1080i 50/59.94/60 Hz
1080psf 23.98/24 Hz
720p 50/59.94/60 Hz

Video Inputs and Outputs

Dual SDI/HD-SDI, SMPTE 259/274/292/296
HD component YPbPr/RGB (RGB is output only), SMPTE-274
SD component/composite/YC (S-Video)

Video A/D, D/A

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

Audio Inputs and Outputs

8 Channel Balanced, 25 pin D (Tascam pinout)
8 Channel AES (BNC)
8 Channel SDI/HD-SDI Embedded

Audio levels

+12dBu, +15dBu, +18dBu, +24dBu, (Full Scale Digital)

LAN

10/100 automatic configuration
Automatic cable crossover (auto MDI-X)
Embedded web server HTTP v1.1
SNMP
VTECS™ protocol for Remote Control Panel

A

RS422

DE-9: Reserved for future use.

GPI

DE-9: single connector provides two inputs and two outputs. See Appendix B for pinout and specifications

Physical

Width: 17.25" (43.81cm)
Depth: 12.5" (31.75cm)
Height: 1RU, 1.75" (4.44cm)
Weight: 6.5lbs (2.94kg)
Operating temperature range: 0–40 degrees C
Convection cooled

Power

Voltage: 100-240 VAC
Power Consumption: 25W (30W maximum)
Two independent power supplies: fully redundant, diode isolated

GPI Connections

Pin	Function	Pin	Function
1 -	GPI Input 1	6 -	I/O Ground 1
2 -	GPI Input 2	7 -	I/O Ground 2
3 -	GPI Output 1	8 -	I/O Ground 1

5 4 3 2 1

9 8 7 6

GPI DE-9 Connector Pinout

The GPI inputs and outputs are electrically isolated from the power and ground on the FS1 frame. There are two inputs and two outputs. Electrical isolation is provided for up to two pieces of external equipment. The following guidelines apply to the two GPI inputs and outputs:

• Input 1 and Output 1 share a common isolated ground on pins 6 & 8 (I/O Ground 1),

• Input 2 and Output 2 share a common isolated ground on pins 7 & 9 (I/O Ground 2).

• Pin 5, local chassis ground, may only be used as a reference when isolation is not required.

• Both GPI inputs are internally pulled high through a 10K ohm resistor to an isolated 5V supply, so that a relay contact closure or any device sinking at least 0.4 mA to ground will register a logic low.

Both GPI outputs are 5V TTL compatible, sourcing up to 6mA and sinking up to 4mA each.

B

The following illustration shows typical external wiring to the GPI connector. The GPI inputs require some kind of contact closure between the input pin and the input ground pin to register the logic low that triggers the GPI input.

You can connect the outputs to TTL buffers that communicate the GPI output logic levels to other devices. For example, you could use an opto-isolator controlling a relay to activate other equipment as shown below.
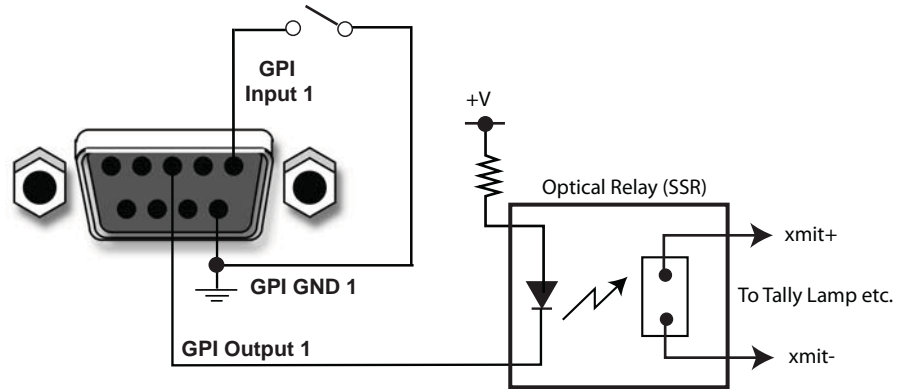
Typical GPI Input and Output Connections

Analog Audio Connections
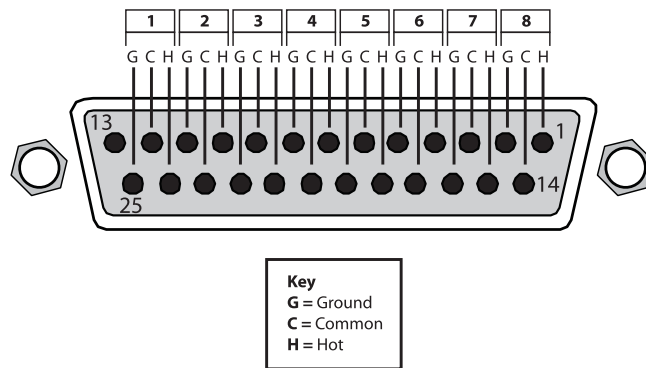
Connector Pinout

The two DB25 connectors on the FS1 rear panel support a TASCAM-style cable snake for balanced 8-channel analog audio. The pinout is the same for both input and output connectors, each following the TASCAM DB-25 standard shown in the drawing above.

C

Federal Communications Commission (FCC) Compliance Notices

Class A Interference Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15, Subpart B of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commericial installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Canadian ICES Statement

Canadian Department of Communications Radio Interference Regulations

This digital apparatus does not exceed the Class A limits for radio-noise emissions from a digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications. This Class A digital apparatus complies with Canadian ICES-003.

D

Règlement sur le brouillage radioélectrique du ministère des Communications

Cet appareil numérique respecte les limites de bruits radioélectriques visant les appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique du ministère des Communications du Canada. Cet appareil numérique de la Classe A est conforme à la norme NMB-003 du Canada.

European Union and European Free Trade Association (EFTA) Regulatory Compliance

This equipment may be operated in the countries that comprise the member countries of the European Union and the European Free Trade Association. These countries, listed in the following paragraph, are referred to as The European Community throughout this document:

AUSTRIA, BELGIUM, BULGARIA, CYPRUS, CZECH REPUBLIC, DENMARK, ESTONIA, FINLAND, FRANCE, GERMANY, GREECE, HUNGARY, IRELAND, ITALY, LATVIA, LITHUANIA, LUXEMBOURG, MALTA, NETHERLANDS, POLAND, PORTUGAL, ROMANIA, SLOVAKIA, SLOVENIA, SPAIN, SWEDEN, UNITED KINGDOM, ICELAND, LICHTENSTEIN, NORWAY, SWITZERLAND

Declaration of Conformity

Marking by this symbol indicates compliance with the Essential Requirements of the EMC Directive of the European Union 2004/108/EC.

$C\epsilon$

This equipment meets the following conformance standards:

Safety:

CB- IEC 60065:2001 + A1:2005

NRTL - UL 60065:2003 R11.06, CSA C22.2 NO. 60065:2003 + A1:06

GS - EN 60065:2002 + A1

Additional licenses issued for specific countries available on request.

Emissions:

EN 55103-1: 1996

EN61000-3-2:2006, EN61000-3-3:1995 +A1:2001 +A2:2005

Immunity:

EN 55103-2: 1996

EN61000-4-2:1995 + A1:1999 + A2:2001, EN61000-4-3:2006, EN61000-4-4:2004,

EN 61000-4-5: 2005, EN 610004-6:2007, EN61000-4-11:2004

The product is also licensed for additional country specific standards as required for
the International Marketplace.

Warning!

This is a Class A product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take appropriate measures.

Achtung! Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten, in welchen Fällen der Benutzer für entsprechende Gegenmaßnahmen verantwortlich ist.

Attention! Ceci est un produit de Classe A. Dans un environnement domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilisateur de prendre les mesures spécifiques appropriées.

Korea KCC Compliance Statement

1) Class A ITE

A급 기기 (업무용 방송통신기기)	이 기기는 업무용 (A 급) 으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

1) Class A device

Class A (Broadcasting and Communication Equipment for Business Use)	Please note that this equipment has obtained EMC registration for business use (Class A), and it is intended to use in other than home area.

Taiwan Compliance Statement

警告使用者 ： 這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

This is a Class A product based on the standard of the Bureau of Standards, Metrology and Inspection (BSMI) CNS 13438, Class A.

Japanese Compliance Statement

1. Class A ITE この装置は、クラスA 情報技術装置です。この装置を家庭環境で使用すると電波妨害 を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求され ることがあります。 ＶＣＣＩ－Ａ

This is a Class A product based on the standard of the VCCI Council (VCCI V-3/2008.04). If this equipment is used in a domestic environment, radio interference may occur, in which case, the user may be required to take corrective actions.

Translated Caution Statements, Warning Conventions and Warning Messages

The following caution statements, warning conventions, and warning messages apply to this product and manual.

Warning Symbol   **Hazard Warning**   **Caution Symbol**

Before Operating Your FS1 Unit, Please Read the Instructions in This Document

Warning!

Read and follow all warning notices and instructions marked on the product or included in the documentation.

Avertissement ! Lisez et conformez-vous à tous les avis et instructions d'avertissement indiqués sur le produit ou dans la documentation.

Warnung! Lesen und befolgen Sie die Warnhinweise und Anweisungen, die auf dem Produkt angebracht oder in der Dokumentation enthalten sind.

¡Advertencia! Lea y siga todas las instrucciones y advertencias marcadas en el producto o incluidas en la documentación.

Aviso! Leia e siga todos os avisos e instruções assinalados no produto ou incluídos na documentação.

Avviso! Leggere e seguire tutti gli avvisi e le istruzioni presenti sul prodotto o inclusi nella documentazione.

Warning!

Do not use this device near water and clean only with a dry cloth.

Avertissement! N'utilisez pas cet appareil près de l'eau et nettoyez-le seulement avec un tissu sec..

Warnung! Das Gerät nicht in der Nähe von Wasser verwenden und nur mit einem trockenen Tuch säubern.

¡Advertencia! No utilice este dispositivo cerca del agua y límpielo solamente con un paño seco.

Aviso! Não utilize este dispositivo perto da água e limpe-o somente com um pano seco.

Avviso! Non utilizzare questo dispositivo vicino all'acqua e pulirlo soltanto con un panno asciutto.

Warning!

Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.

Avertissement ! Ne bloquez aucune ouverture de ventilation. Suivez les instructions du fabricant lors de l'installation.

Warnung! Die Lüftungsöffnungen dürfen nicht blockiert werden. Nur gemäß den Anweisungen des Herstellers installieren.

¡Advertencia! No bloquee ninguna de las aberturas de la ventilación. Instale de acuerdo con las instrucciones del fabricante.

Aviso! Não obstrua nenhuma das aberturas de ventilação. Instale de acordo com as instruções do fabricante.

Avviso! Non ostruire le aperture di ventilazione. Installare in conformità con le istruzioni del fornitore.

Warning!

Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

Avertissement ! N'installez pas l'appareil près d'une source de chaleur telle que des radiateurs, des bouches d'air de chauffage, des fourneaux ou d'autres appareils (amplificateurs compris) qui produisent de la chaleur.

Warnung! Nicht in der Nähe von Wärmequellen wie Heizkörpern, Heizregistern, Öfen oder anderen Wärme erzeugenden Geräten (einschließlich Verstärkern) aufstellen.

¡Advertencia! No instale cerca de fuentes de calor tales como radiadores, registros de calor, estufas u otros aparatos (incluidos amplificadores) que generan calor.

Aviso! Não instale perto de nenhuma fonte de calor tal como radiadores, saídas de calor, fogões ou outros aparelhos (incluindo amplificadores) que produzam calor.

Avviso! Non installare vicino a fonti di calore come termosifoni, diffusori di aria calda, stufe o altri apparecchi (amplificatori compresi) che emettono calore.

Warning!

Refer all servicing to qualified service personnel. Servicing is required when the device has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the device, the device has been exposed to rain or moisture, does not operate normally, or has been dropped.

Avertissement ! Référez-vous au personnel de service qualifié pour tout entretien. L'entretien est exigé quand l'appareil a été endommagé de quelque manière que ce soit, par exemple lorsque le cordon d'alimentation ou la prise sont endommagés, que du liquide a été versé ou des objets sont tombés dans l'appareil, que l'appareil a été exposé à la pluie ou à l'humidité, ne fonctionne pas normalement ou est tombé.

Warnung! Das Gerät sollte nur von qualifizierten Fachkräften gewartet werden. Eine Wartung ist fällig, wenn das Gerät in irgendeiner Weise beschädigt wurde, wie bei beschädigtem Netzkabel oder Netzstecker, falls Flüssigkeiten oder Objekte in das Gerät gelangen, das Gerät Regen oder Feuchtigkeit ausgesetzt wurde, nicht ordnungsgemäß funktioniert oder fallen gelassen wurde.

¡Advertencia! Consulte al personal calificado por cuestiones de reparación. El servicio de reparación se requiere cuando el dispositivo ha recibido cualquier tipo de daño, por ejemplo cable o espigas dañadas, se ha derramado líquido o se han caído objetos dentro del dispositivo, el dispositivo ha sido expuesto a la lluvia o humedad, o no funciona de modo normal, o se ha caído.

Aviso! Remeta todos os serviços de manutenção para o pessoal de assistência qualificado. A prestação de serviços de manutenção é exigida quando o dispositivo foi danificado mediante qualquer forma, como um cabo de alimentação ou ficha que se encontra danificado/a, quando foi derramado líquido ou caíram objectos sobre o dispositivo, quando o dispositivo foi exposto à chuva ou à humidade, quando não funciona normalmente ou quando foi deixado cair.

Avviso! Fare riferimento al personale qualificato per tutti gli interventi di assistenza. L'assistenza è necessaria quando il dispositivo è stato danneggiato in qualche modo, ad esempio se il cavo di alimentazione o la spina sono danneggiati, è stato rovesciato del liquido è stato rovesciato o qualche oggetto è caduto nel dispositivo, il dispositivo è stato esposto a pioggia o umidità, non funziona correttamente o è caduto.

Caution!

This device is a Class A product. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to take whatever measures may be necessary to correct the interference at their own expense.

Attention! Le périphérique est un produit de Classe A. Le fonctionnement de cet équipement dans une zone résidentielle risque de causer des interférences nuisibles, auquel cas l'utilisateur devra y remédier à ses propres frais.

Achtung! Dies ist ein Gerät der Klasse A. Bei Einsatz des Geräts in Wohngebieten kann es Störungen des Radio- und Fernsehempfangs verursachen. In diesem Fall muss der Benutzer alle notwendigen Maßnahmen ergreifen, die möglicherweise nötig sind, um die Störungen auf eigene Rechnung zu beheben.

¡Precaución! Este es un producto clase A. El uso de este equipo en áreas residenciales puede causar interferencias nocivas, en cuyo caso, se requerirá que los usuarios tomen cualquier medida necesaria para corregir la interferencia por cuenta propia.

Cuidado! Este dispositivo é um produto Classe A. Operar este equipamento em uma área residencial provavelmente causará interferência prejudicial; neste caso, espera-se que os usuários tomem as medidas necessárias para corrigir a interferência por sua própria conta.

Attenzione! Questo dispositivo è un prodotto di Classe A. Il funzionamento di questo apparecchio in aree residenziali potrebbe causare interferenze dannose, nel cui caso agli utenti verrà richiesto di adottare tutte le misure necessarie per porre rimedio alle interferenze a proprie spese.

Warning!

Disconnect the external AC power supply line cord(s) from the mains power before moving the unit.

Avertissement! Retirez le ou les cordons d'alimentation en CA de la source d'alimentation principale lorsque vous déplacez l'appareil.

Warnung! Trennen Sie die Wechselstrom-Versorgungskabel vom Netzstrom, bevor Sie das Gerät verschieben.

¡Advertencia! Cuando mueva la unidad desenchufe de la red eléctrica el/los cable(s) de la fuente de alimentación CA tipo brick.

Advertência! Remova os cabos CA de alimentação brick da rede elétrica ao mover a unidade.

Avvertenza! Scollegare il cavo dell'alimentatore quando si sposta l'unità.

Hazard Warning!

High Voltage. This situation or condition can cause injury due to electric shock.

Avertissement ! Tension élevée. Cette situation ou condition peut causer des blessures dues à un choc électrique.

Warnung! Hochspannung. Diese Situation oder Bedingung kann zu Verletzungen durch Stromschlag führen.

¡Advertencia! Alto voltaje . Esta situación o condición puede causar lesiones debidas a una descarga eléctrica.

Aviso! Alta Tensão . Esta situação ou condição pode causar danos devido a choques elétricos.

Avviso! Alta tensione. Questa situazione o condizione può causare lesioni a causa di scosse elettriche.

Warning!

Only use attachments and accessories specified and/or sold by the manufacturer.

Avertissement ! Utilisez seulement les attaches et accessoires spécifiés et/ou vendus par le fabricant.

Warnung! Verwenden Sie nur Zusatzgeräte und Zubehör angegeben und / oder verkauft wurde durch den Hersteller.

¡Advertencia! Utilice solamente los accesorios y conexiones especificados y/o vendidos por el fabricante.

Aviso! Utilize apenas equipamentos/acessórios especificados e/ou vendidos pelo fabricante.

Avviso! Utilizzare soltanto i collegamenti e gli accessori specificati e/o venduti dal produttore.

Warning!

Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

Avertissement ! La sécurité de la prise polarisée ou de la prise de type mise à la terre ne doit en aucun cas être empêchée de fonctionner. Une prise polarisée a deux broches, l'une étant plus large que l'autre. Une prise de type mise à la terre a deux broches et une troisième broche pour la mise à la terre. La broche large ou la troisième broche sont fournies pour votre sécurité. Si la prise fournie ne s'insère pas dans votre prise femelle, consultez un électricien pour le remplacement de la prise femelle obsolète.

Warnung! Der Sicherheitszweck des gepolten bzw. Schukosteckers ist zu berücksichtigen. Ein gepolter Stecker verfügt über zwei Pole, von denen einer breiter als der andere ist. Ein Schukostecker verfügt neben den zwei Polen noch über einen dritten Pol zur Erdung. Der breite Pol bzw. der Erdungspol dienen der Sicherheit. Wenn der zur Verfügung gestellte Stecker nicht in Ihren Anschluss passt, konsultieren Sie einen Elektriker, um den veralteten Anschluss zu ersetzen.

¡Advertencia! No eche por tierra la finalidad del tipo de enchufe polarizado con conexión a tierra. Un enchufe polarizado tiene dos espigas, una más ancha que la otra. Un enchufe con conexión a tierra tiene dos espigas iguales y una tercera espiga que sirve para la conexión a tierra. La expiga ancha, o la tercera espiga, sirven para su seguridad. Si el enchufe suministrado no encaja en el tomacorriente, consulte con un electricista para reemplazar el tomacorriente obsoleto.

Aviso! Não anule a finalidade da segurança da ficha polarizada ou do tipo ligação terra. Uma ficha polarizada tem duas lâminas sendo uma mais larga do que a outra. Uma ficha do tipo de ligação à terra tem duas lâminas e um terceiro terminal de ligação à terra. A lâmina larga ou o terceiro terminal são fornecidos para sua segurança. Se a ficha fornecida não couber na sua tomada, consulte um electricista para a substituição da tomada obsoleta.

Avviso! Non compromettere la sicurezza della spina polarizzata o con messa a terra. Una spina polarizzata ha due spinotti, di cui uno più largo. Una spina con messa a terra ha due spinotti e un terzo polo per la messa a terra. Lo spinotto largo o il terzo polo sono forniti per motivi di sicurezza. Se la spina fornita non si inserisce nella presa di corrente, contattare un elettricista per la sostituzione della presa obsoleta.

Warning!

Since the Mains plug is used as the disconnection for the device, it must remain readily accessible and operable.

Avertissement ! Puisque la prise principale est utilisée pour débrancher l'appareil, elle doit rester aisément accessible et fonctionnelle.

Warnung! Da der Netzstecker als Trennvorrichtung dient, muss er stets zugänglich und funktionsfähig sein.

¡Advertencia! Puesto que el enchufe de la red eléctrica se utiliza como dispositivo de desconexión, debe seguir siendo fácilmente accesible y operable.

Aviso! Dado que a ficha principal é utilizada como a desconexão para o dispositivo, esta deve manter-se prontamente acessível e funcional.

Avviso! Poiché il cavo di alimentazione viene usato come dispositivo di sconnessione, deve rimane prontamente accessibile e operabile.

Warning!

Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the device.

Avertissement ! Protégez le cordon d'alimentation pour que l'on ne marche pas dessus ou qu'on le pince, en particulier au niveau des prises mâles, des réceptacles de convenance, et à l'endroit où il sort de l'appareil.

Warnung! Es muss verhindert werden, auf das Netzanschlusskabel zu treten oder dieses zu knicken, besonders an den Steckern, den Steckerbuchsen und an dem Punkt, an dem das Kabel aus dem Gerät heraustritt.

¡Advertencia! Puesto que el enchufe de la red eléctrica se utiliza como dispositivo de desconexión, debe seguir siendo fácilmente accesible y operable.

Aviso! Proteja o cabo de alimentação de ser pisado ou de ser comprimido particularmente nas fichas, em tomadas de parede de conveniência e no ponto de onde sai do dispositivo.

Avviso! Proteggere il cavo di alimentazione in modo che nessuno ci cammini sopra e che non venga schiacciato soprattutto in corrispondenza delle spine e del punto in cui esce dal dispositivo.

Warning!

Unplug this device during lightning storms or when unused for long periods of time.

Avertissement ! Débranchez cet appareil pendant les orages avec éclairsou s'il est inutilisé pendant de longues périodes.

Warnung! Das Gerät ist bei Gewitterstürmen oder wenn es über lange Zeiträume ungenutzt bleibt vom Netz zu trennen.

¡Advertencia! Desenchufe este dispositivo durante tormentas eléctricas o cuando no se lo utilice por largos periodos del tiempo.

Aviso! Desconecte este dispositivo da tomada durante trovoadas ou quando não é utilizado durante longos períodos de tempo.

Avviso! Utilizzare soltanto i collegamenti e gli accessori specificati e/o venduti dal produttore, quali il treppiedi e l'esoscheletro.

Warning!

Do not open the chassis. There are no user-serviceable parts inside. Opening the chassis will void the warranty unless performed by an AJA service center or licensed facility.

Avertissement! Ne pas ouvrir le châssis. Aucun élément à l'intérieur du châssis ne peut être réparé par l'utilisateur. La garantie sera annulée si le châssis est ouvert par toute autre personne qu'un technicien d'un centre de service ou d'un établissement agréé AJA.

Warnung! Öffnen Sie das Gehäuse nicht. Keine der Geräteteile können vom Benutzer gewartet werden. Durch das Öffnen des Gehäuses wird die Garantie hinfällig, es sei denn, solche Wartungsarbeiten werden in einem AJA-Service-Center oder einem lizenzierten Betrieb vorgenommen.

¡Advertencia! No abra el chasis. El interior no contiene piezas reparables por el usuario. El abrir el chasis anulará la garantía a menos que se lo haga en un centro de servicio AJA o en un local autorizado.

Advertência! Não abra o chassi. Não há internamente nenhuma peça que permita manutenção pelo usuário. Abrir o chassi anula a garantia, a menos que a abertura seja realizada por uma central de serviços da AJA ou por um local autorizado.

Avvertenza! Non aprire lo chassis. All'interno non ci sono parti riparabili dall'utente. L'apertura dello chassis invaliderà la garanzia se non viene effettuata da un centro ufficiale o autorizzato AJA.

Warning!

To meet safety regulations for leakage current, connect the FS1 dual power supplies to separate branch circuits.

Reference Terms

3:2 Pull Down 3:2 pull down is a process where six frames are added to a film's original 24-frames-per-second format so that it can work within the 30 fps NTSC standard.

24P A term for 24 full frames per second digital video progressively captured. It generally refers to the HD format of 1920x1080, although it is also used with 1280x720 images as well.

1080i Refers to a picture resolution of 1920 vertical pixels by 1080 horizontal pixels. The "i" stands for interlaced scanning. Interlaced scanning is based on the principle that the screen shows every odd line at one scan of the screen and then all the even lines in a second scan.

1080p Refers to a picture resolution of 1,920 vertical pixels by 1,080 horizontal pixels. The "p" stands for progressive scanning. This format works on the same principle as 720p; the only difference is that in this type there are more pixels and the resolution is better.

1080psf 1080psf differs from 1080p defined previously; PSF is an acronym for "Progressive Segmented Frame". Like 1080p, psf is progressive, but it differs in that the data is written as two separate "fields" (but without inter-field motion as interlaced video carries). This provides psf with the temporal motion characteristics of progressive video, but with the data transport ease of interlaced video. There should be no visual difference between the display of a progressive frame communicated as 1080p, and the same frame communicated as 1080psf.

E

16:9

Refers to the aspect ratio of movie screen and widescreen DTV formats used in all HDTV (High Definition TV) and some SDTV (Standard Definition TV). The ratio is 16 arbitrary units of width for every 9 arbitrary units of height.

4:3

The aspect ratio of traditional National Television Systems Committee (NTSC) TV screens. The ratio refers to four units of width for every three units of height.

720p

Refers to a picture that is 1,280 vertical pixels by 720 horizontal pixels. The "p" stands for progressive scanning. Progressive scanning offers a smoother picture as 720 horizontal lines are scanned progressively or in succession in a vertical frame repeated 30 times a second.

Anamorphic video

Refers to video images that are "squeezed" or "stretched" (depending on whether the video is being upconverted or downconverted) to fit a video frame. When 16:9 anamorphic video is displayed on a 4:3 screen size (downconvert), the images will appear unnaturally tall and narrow.

Aspect Ratio

A ratio of screen width to height. It may be traditional 4:3 or 16:9 widescreen.

ATSC

An acronym for Advanced Television Systems Committee, which is responsible for developing and establishing Digital-HDTV Standards. It is also the name of the DTV system used by broadcasters in the U.S.

Barn Doors

When a 4:3 image is viewed on a 16:9 screen, the viewer sees black bars on the sides of the screen, sometimes referred to as "barn doors."

Codec

A short term used for both "Compressor-decompressor" and "Coder-decoder." In terms of Final Cut Pro and most editing and graphics applications, codec generally means "Compressor-decompressor", which, whether hardware or software, converts video and audio signals to and from a compressed digital format. ("Coder-decoder" is generally a device that converts analog video and audio signals into a digital format for transmission, and also converts digital signals back into an analog format; depending on the application, it can also have alternate meanings.)

Crossconvert

Refers to format conversion from one video standard to a similar video standard, such as 720p HD to 1080i HD.

Decoder

See "codec." A device or program that translates encoded data into its original format (i.e., it decodes the data.).

Deinterlacing

The process of converting an interlaced-scan video signal (where each frame is split into two sequential fields) to a progressive-scan signal (where each frame remains whole). Advanced de-interlacers include a feature called 3-2 pulldown processing. Sometimes de-interlacing is referred to as "line-doubling."

Downconvert

Refers to format conversion from a higher resolution input standard to a lower one. For example, converting a 1080 input to a 525 display (HD to SD).

DTV (Digital Television)

DTV stands for Digital Television. It refers to all digital television formats and standards established by the Advanced Television Systems Committee (ATSC). Two basic DTV standards are HDTV (high-definition television) and SDTV (standard-definition television)

Embedding

Refers to inserting a digital signal into the blank parts of another digital signal, such as embedding digital audio into the horizontal blanking interval of a digital video signal.

Frame Rate

The rate at which frames are displayed per second. Frame rates are used in synchronizing audio and pictures for video and film. In motion pictures and television, the frame rates are standardized by SMPTE (Society of Motion Picture and Television Editors). SMPTE frame rates of 24, 25 and 30 frames per second are very common, with a great number of others also used. Frame rates have different applications and uses in different workflows. For motion pictures 24 frames per second is common, while in standard definition television 30 frames per second is common in the US (NTSC). Higher frame rates produce smoother motion but also create larger file storage requirements.

Frame Sync

A circuit that automatically adjusts video signal timing to match the timing of a reference signal, such as the signal from a genlock circuit.

Genlock

A circuit that phase-locks to a reference video input and produces timing signals used by other circuits, such as a frame sync, to lock video to the reference.

HDTV (High-Definition Television)

High Definition Television refers to the highest-resolution formats of the DTV formats. Offering twice the vertical and horizontal picture resolution of standard definition, an HD picture is much sharper. HDTV has a widescreen aspect ratio of 16:9. HD formats 1080i and 720p both offer reduced motion artifacts like ghosting and dot crawl.

HD-SDI

Refers to a high definition signal provided on a serial digital connection.

High Definition

A video format consisting of either 720 active lines of progressive video or 1080 active lines, using either progressive or interlaced scanning.

Interlaced Scanning

A scanning method based on the visible screen showing every odd line at one scan of the screen and the even lines in a second scan.

Keyer

A circuit that inserts one video signal into another. For example, a caption might be inserted into background video.

Letterbox

Letterbox refers to the image of a wide-screen picture on a standard 4:3 aspect ratio screen. Usually black bars are shown above and below the picture to fill the unused space. Letter-boxing maintains the original aspect ratio of the source (often a film source of 16:9 aspect ratio or wider).

Luminance

The brightness or black-and-white component of a color video signal. Luminance determines the level of picture detail.

Processing Amplifier (Proc Amp)

A circuit that cleans up a video signal by correcting the signal gain, black level, hue, and saturation to desired specifications.

Progressive Scanning

Progressive scanning provides a picture made up of 720 or 1080 horizontal lines scanned progressively in succession, within a vertical frame. The frame repeats 30 times a second.

Resolution　　　　Resolution usually refers to the density of lines, and dots per line, that represent an image. It is measured by the number of pixels displayed. A higher number of lines and dots provides sharper and more detailed picture content. Analog television pictures have over 200,000 color pixels while HDTV—at 1080 vertical pixels by 1920 horizontal pixels— offer greater than 2 million pixels per picture.

Sampling　　　　A digital process by which analog information is measured in intervals to convert analog to digital.

SDTV (Standard-Definition Television)　　　　Standard Definition Television pictures are higher quality than NTSC, however, they do not reach the quality and resolution of HD. SDTV is based on 480 lines of vertical resolution, available with both interlaced and progressively scanned formats.

SD-SDI　　　　Refers to a standard definition signal provided on a serial digital connection.

Sidebars　　　　See "Barn Doors."

Upconverting　　　　Process by which a standard definition picture is changed to a simulated high-definition picture.

Widescreen　　　　Widescreen TV is a picture with a 16:9 aspect ratio. 16:9 is the aspect ratio of movie screen and widescreen DTV formats used in all HDTV (High Definition TV) and some SDTV (Standard Definition TV); it stands for 16 units of width for every 9 units of height.

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