FS3

Quick Start Guide

Introduction

This Quick Start Guide provides a basic overview of FS3 system connections and configuration.

The FS3 can be extremely simple to use, because of its ability to detect incoming signal formats and automatically apply the correct video processing for the selected output format. However, the FS3 is also extremely powerful and can be flexibly configured to perform a wide variety of tasks.

This Quick Start Guide is designed to help you get your FS3 up and running for the first time, and confirm it is operating properly. It also provides step-by-step instructions that demonstrate a few FS3 signal processing examples.

For additional information, please see the *FS3 Installation and Operation Guide* available on the AJA website.

Installation Summary

1. Unpack the shipping box, removing the FS3 and two power cords.
2. Install any physical options, such as fiber optic I/O modules.

NOTE: The "Stand Alone Tests" on page 2 can be performed with the FS3 sitting on a bench to test system operation before physically installing the unit.

3. Mount the physical chassis as desired: front rack, rear rack, or desk mount. If you are mounting multiple FS3 units, try to place them visually in the same area so you can use an attached computer to turn on and see the ID LED of the FS3 you're communicating with.
4. Connect the two FS3 power cords to mains AC. For redundancy, use both power supplies and connect them to separate branch circuits so that the FS3 will continue to operate even if a circuit breaker opens on one branch.
5. If you plan to use remote control, connect your computer to the FS3 directly using an Ethernet cable, or connect both the computer and the FS3 to a local area network through an appropriate hub or router. Also set the FS3 IP address in the menus, and then use a computer to test (ping) the FS3 over the network connection to verify communication.

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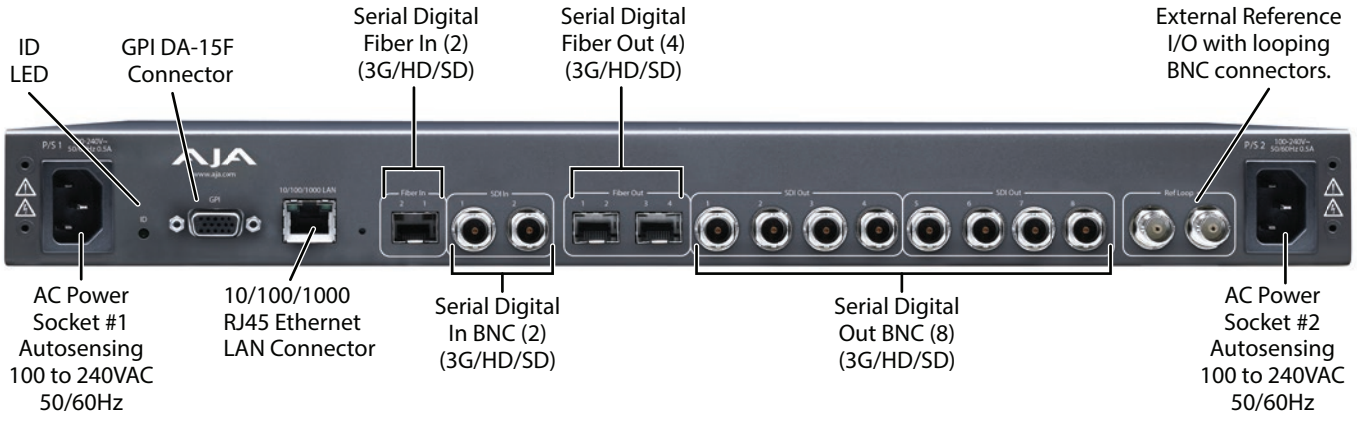
6. Install a web browser on your computer, if not already present, for accessing the FS3 web pages. You can access the pages simply by entering the FS3 IP address in the browser address field.
7. Make signal I/O connections to the FS3 back panel as shown in *Figure 1*.

Figure 1. FS3 Rear Panel



Stand Alone Tests

The stand alone tests can be performed without a computer, using the FS3 front panel controls and rear connections.

The following procedures assume the FS3 is at factory defaults (taken from a newly opened box). If not set to defaults, the FS3 may behave differently.

First Power Up

The following workflow powers up the FS3 and demonstrates some example alarms.

Setup

- Ensure the FS3 is completely disconnected (all video, audio, network, and power connector ports are empty).

Procedure

1. Connect both FS3 power cords to mains AC and allow time for the unit to boot up. Observe the front panel LEDs.
   - The ALARM LED will light red, indicating an alarm condition, and the REF LED will be off. By default the FS3 is configured to operate genlocked to an external reference signal.
2. Press the front panel STATUS button, then turn the SELECT knob to view various Status menus.
   - The Status menus will report No Input for the Video Processor video inputs (the ports are disconnected), and the GEN (Genlock) parameter will report Ref (configured for external reference) but will also report No Input or No Ref.

Video Format Status screen			**Video Format Alarm Status screen**		
IN1	SDI 1	No Input	IN1	SDI 1	Incompat
BKGD	Black		BKGD	Black	
GEN	Ref	No Input	GEN	Ref	No Ref
OUT1		UHD59	OUT1		UHD59

3. Connect a 1080i59.95 HD tri-level sync reference signal to one of the FS3 Ref Loop BNCs.
   - The REF LED will light blue, indicating the FS3 is genlocked to an external reference signal.
   - The Status menu GEN parameters will report Ref and indicate the format of the incoming reference signal or OK.
   - The front panel ALARM LED will still be lighted red, however, because the FS3 is not receiving a compatible video input. No Input and Incompat will be reported for SDI 1.

Video Format Status screen			**Video Format Alarm Status screen**		
IN1	SDI 1	No Input	IN1	SDI 1	Incompat
BKGD	Black		BKGD	Black	
GEN	Ref	1080i59	GEN	Ref	OK
OUT1		UHD59	OUT1		UHD59

4. Connect a 1080i59.95 SDI video source to the SDI 1 input BNC.
   - The front panel ALARM LED will go off, indicating no alarm condition exists
   - The front panel will report 1080i59 and an OK status for SDI 1.

Video Format Status screen			**Video Format Alarm Status screen**		
IN1	SDI 1	1080i59	IN1	SDI 1	OK
BKGD	Black		BKGD	Black	
GEN	Ref	1080i59	GEN	Ref	OK
OUT1		UHD59	OUT1		UHD59

5. Disconnect one of the power cords, leaving the other attached.
   - The ALARM LED will light red, and the PWR LED of the power supply with the removed cord will turn off.
6. Reconnect the power cable. The ALARM LED will turn off and the PWR LED will light.

This workflow confirms the FS3 powers up successfully and reports reference and power supply alarms.

NOTE: FS3 Reference, Power Supply, and Video Format alarms can be disabled, if desired.

Internal Test Signals To All Outputs

This workflow generates bars and tone and sends them to all the FS3 outputs. This example uses the SDI 1-4 output connectors and a UltraHD video and embedded audio monitor. In the following procedures, where the terms select and adjust are used, turn the front panel SELECT and ADJUST knobs.

Setup

- Connect the FS3 SDI 1-4 output connectors to a UltraHD capable display equipped with embedded audio monitoring.

Procedure

1. Press the VIDEO PROC button.
   - Select 4 Output Mode, and adjust to Test Pattern.
   - Select 21 Test Pattern and adjust to 75% Bars.
2. Press the AUDIO PROC button.
   - Select 21 Global Audio Out and adjust to Sig Gen 1KHz.

   You should now be able to see and hear the test signals on the UltraHD display, and on any other devices connected to the FS3 outputs.

This workflow confirms the FS3 generates and outputs video and audio.

FS3 Network Setup

The following instructions summarize ways to configure the FS3 to communicate with a computer directly or over a network.

FS3 Default Network Settings

The FS3 ships from the factory set for DHCP networking, and can be manually reset to the following default network settings:

IP Address	192.168.0.2
Subnet Mask	255.255.255.0
Gateway	192.168.0.1

Networking Using DHCP or Default Static IP

The FS3 factory default configuration automatically looks for a DHCP server to issue an IP address. If your network includes a DHCP server, plug the FS3 into the network and connect with the unit as follows:

1. Press the CONFIG button.
2. Turn the SELECT knob to navigate to config parameter 2.2. Note on a piece of paper the DHCP-supplied IP address shown.
3. With your laptop or desktop computer connected to the same LAN as the FS3 and DHCP enabled, type the IP address you noted into the browser address field and press Enter. You should now see the FS3's browser Status screen.

If the FS3 cannot get an address from the network DHCP server, the FS3 will automatically use a preset factory static IP address of 192.168.0.2. You can access the FS3 using the default static address as follows:

1. Set your computer's IP address to whatever address you prefer in the 192.168.0 (class C) network.
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. Set the gateway address, if used, to match the FS3 default: 192.168.0.1. Alternatively, change the FS3 gateway address to match your gateway:
   A. Press CONFIG, turn SELECT to 2.4 Default Gateway, push and then turn ADJUST to change the first group of digits.
   B. Turn SELECT to advance to the next set of numbers, and turn ADJUST to set these numbers.
   C. Continue using SELECT and ADJUST to set the full address.
   D. When finished, push ADJUST momentarily to save the address.
5. Run a browser on the computer and type "192.168.0.2" (the factory static IP address). You should now see the FS3's browser status screen.

Networking the FS3 Using Your Own Static IP

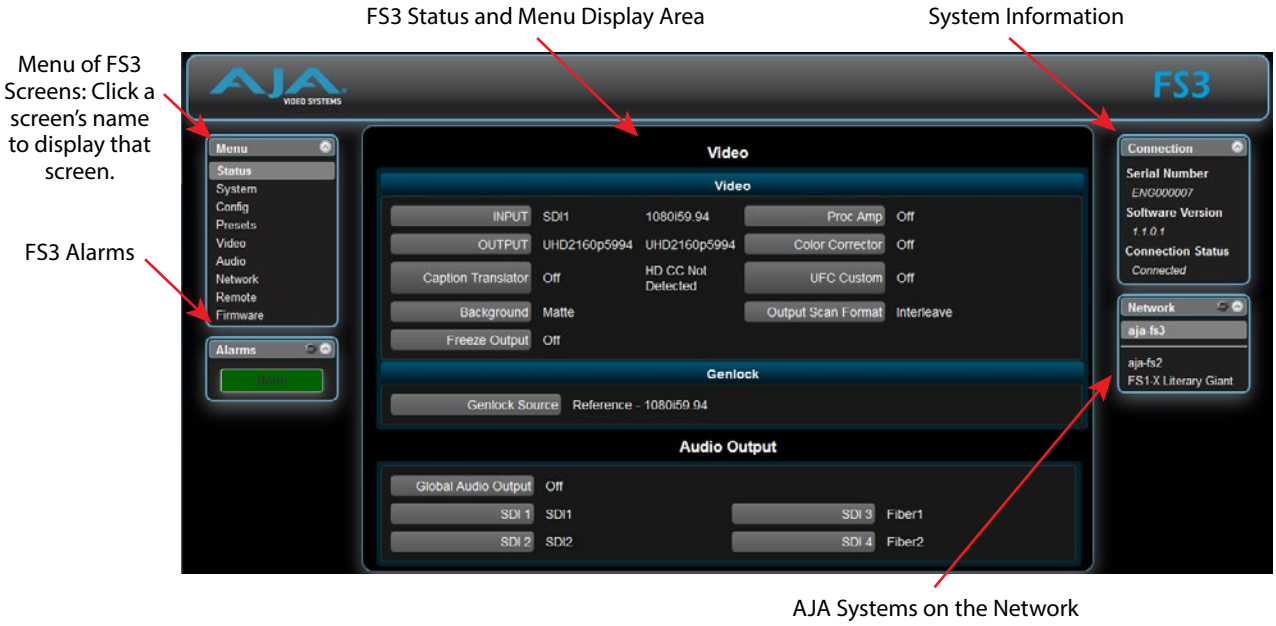
If you don't want to use DHCP or the default static IP address, you can set your own static IP address:

1. Select the CONFIG button and use the SELECT knob to navigate to parameter 2.1 IP CONFIG. Use the ADJUST knob to select Static.
2. Turn SELECT to navigate to parameter 2.2 IP ADDRESS. The display shows the default static IP address: 192.168.0.2.
3. Change the IP address as follows.
   A. Push the ADJUST knob momentarily so that the first octet (set of numbers) blinks, and then turn ADJUST to change the numbers.
   B. Turn SELECT to advance to the next set of numbers, and turn ADJUST to set these numbers.
   C. Continue using SELECT and ADJUST to set the full address.
   D. When finished, push ADJUST momentarily to save the address.
5. Turn SELECT to advance to 2.3 Subnet Mask. Use the SELECT and ADJUST knobs as in the previous step to set the desired subnet mask.
6. Turn SELECT to advance to 2.4 Default Gateway. Use the SELECT and ADJUST knobs as in the previous step to set the desired gateway address.
7. Run a browser on the computer and type in the IP address you set for the FS3. You should now see the FS3's Status screen.

Web Browser Menu Summary

Figure 2 summarizes web browser menu operation. The settings generally correspond to the front panel display parameters, providing you two methods of controlling the FS3. To see the equivalent front panel display parameter number, hover the cursor over a setting.

Figure 2. FS3 Web Interface, Main Status Screen



FS3 Processing Examples

In the following procedures, your exact actions depend on which FS3 interface you are using.

- On the front panel interface, press the indicated Menu Group Selection button and then turn the SELECT and ADJUST knobs to choose the parameter and change the setting. The Front Panel menu numbers are included in the procedures.
- On the web browser interface, use your mouse to select the name of the Menu Screen and then choose the parameter and setting using the drop down list or slider. Menu numbers are not present on the FS3 web pages.

HD to UltraHD 4-Link Quadrant 59.94

The following workflow demonstrates up-converting an HD SDI input to a UltraHD SDI 4-Link Quadrant (Square Division) output. This example uses a 1080i 59.94 input and reference, and generates a UltraHDp59.94 output.

Setup

- Ensure the FS3 is receiving a valid reference signal. Connect a 1080i59.95 HD tri-level sync signal to one of the Ref Loop BNC connectors, and terminate the other Ref Loop BNC connector (either with a terminator or by connecting to terminated equipment). Once connected the FS3 front panel REF LED will light.
- Connect a 1080i59.94 HD SDI signal to the SDI1 input on the rear of the FS3. Once connected the FS3 front panel VID IN LED will light.
- Connect the four FS3 SDI1-4 video output connectors to a compatible UltraHD monitor.

NOTE: Alternatively, you can monitor each UltraHD quadrant at full resolution on a standard SDI monitor by connecting each of the four outputs individually.

Procedure

If the FS3 has factory default settings, the UltraHD signal should be present on the four BNC output connectors. If not, check the following:

1. SYSTEM menu:
   - Select 5 Genlock Source, and adjust to Reference.
   - Select 6 Output Frame Rates, and adjust to 59.94/23.98.
2. VIDEO PROC menu:
   - Select 1 Input, and adjust to SDI1 (factory default).
   - Select 2 Video Output Format, and adjust to UltraHD59.94 (factory default).
   - Select 3 Output Scan Format and adjust to Quadrant (factory default).
   - If necessary, select 4 Output Mode and adjust to Normal (factory default).

SD to 4K 4-Link 2SI 50 with Sidebar Matte

The following workflow demonstrates converting an SD SDI input to a 4K SDI 4-Link 2SI (Two Sample Interleave) output with a matte sidebar. This example uses a 625i 50 input, 1080i 50 reference, and generates a 4Kp50 output.

Setup

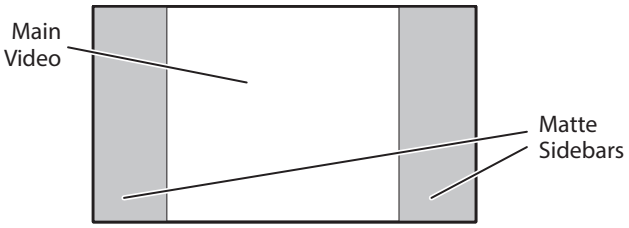
- Ensure the FS3 is receiving a valid reference signal. Connect a 1080i50 HD tri-level sync signal to one of the Ref Loop BNC connectors, and terminate the other Ref Loop BNC connector (either with a terminator or by connecting to terminated equipment). Once connected the FS3 front panel REF LED will light.
- Connect a 625i SD SDI signal to the SDI1 input on the rear of the FS3. Once connected the FS3 front panel VID IN LED will light.
- Connect the four FS3 SDI1-4 video output connectors to a compatible 4K monitor.

NOTE: Alternatively, you can monitor the entire raster of the 2SI signal at lower resolution on a standard SDI monitor by connecting just one of the four outputs.

Procedure

1. SYSTEM menu:
   - If necessary, select 5 Genlock Source, and adjust to Reference (factory default).
   - Select 9 Output Frame Rates, and adjust to 50/25.
2. VIDEO PROC menu:
   - If necessary, select 1 Video Input, and adjust to SDI1.
   - Select 2 Video Output Format, and adjust to 4K1080p50.
   - Select 3 Output Scan Format and adjust to Interleave.
   - If necessary, select 4 Output Mode and adjust to Normal (factory default).
   - Select 7 Background Fill and adjust to Matte.
   - If necessary, select 8 Upconvert Mode and adjust to 4x3 Pillar (factory default).

   You should now see the processed sidebar image on the SDI monitor.



- Select 11.3 Matte Hue and adjust to different degree settings. You should see the sidebar color hue change as you adjust.
- If vertical black bars exist between the matte and up-converted image, you can go to 9 Sidebar Edge and adjust the matte to the edge of the image.

This workflow confirms the FS3 up-converts incoming video with sidebar matting.