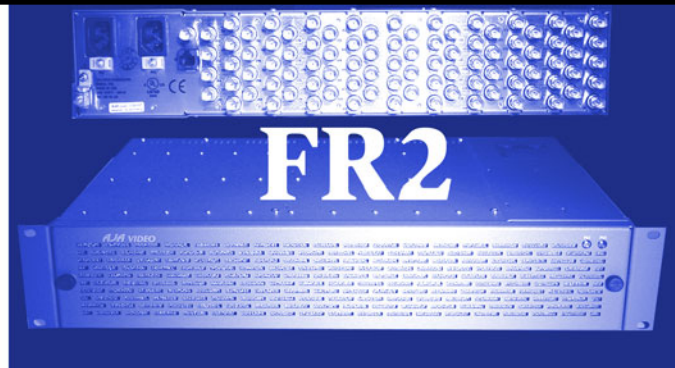


FR1 and FR2 Video Card Frames

User Manual



AJA
AJA VIDEO SYSTEMS INC

August 25, 2003 P/N 101642-00

Trademarks

AJA, Io, and Kona are trademarks of AJA Video, Inc. All other trademarks are the property of their respective holders.

Notice

Copyright © 2003 AJA Video, Inc. All rights reserved. All information in this manual is subject to change without notice. No part of the document may be reproduced or transmitted in any form, or by any means, electronic or mechanical, including photocopying or recording, without the express written permission of AJA Inc.

FCC Emission Information

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. 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. Changes or modifications not expressly approved by AJA Video can effect emission compliance and could void the user's authority to operate this equipment.

Contacting Support

To contact AJA Video for sales or support, use any of the following methods:

443 Crown Point Circle, Grass Valley, CA. 95945 USA
Telephone: +1.800.251.4224 or +1.530.274.2048
Fax: +1.530.274.9442

Web: <http://www.aja.com>
Support Email: support@aja.com
Sales Email: sales@aja.com

When calling for support, have all information on the product (serial number etc.) at hand prior to calling.

Limited Warranty

AJA Video warrants that this product will be free from defects in materials and workmanship for a period of five years from the date of purchase. If a product proves to be defective during this warranty period, AJA Video, at its option, will either repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product.

In order to obtain service under this warranty, you the Customer, must notify AJA Video of the defect before the expiration of the warranty period and make suitable arrangements for the performance of service. The Customer shall be responsible for packaging and shipping the defective product to a designated service center nominated by AJA Video, with shipping charges prepaid. AJA Video shall pay for the return of the product to the Customer if the shipment is to a location within the country in which the AJA Video service center is located. Customer shall be responsible for paying all shipping charges, insurance, duties, taxes, and any other charges for products returned to any other locations.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care. AJA Video shall not be obligated to furnish service under this warranty a) to repair damage resulting from attempts by personnel other than AJA Video representatives to install, repair or service the product, b) to repair damage resulting from improper use or connection to incompatible equipment, c) to repair any damage or malfunction caused by the use of non-AJA Video parts or supplies, or d) to service a product that has been modified or integrated with other products when the effect of such a modification or integration increases the time or difficulty of servicing the product.

THIS WARRANTY IS GIVEN BY AJA VIDEO IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED. AJA VIDEO AND ITS VENDORS DISCLAIM ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. AJA VIDEO'S RESPONSIBILITY TO REPAIR OR REPLACE DEFECTIVE PRODUCTS IS THE WHOLE AND EXCLUSIVE REMEDY PROVIDED TO THE CUSTOMER FOR ANY INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES IRRESPECTIVE OF WHETHER AJA VIDEO OR THE VENDOR HAS ADVANCE NOTICE OF THE POSSIBILITY OF SUCH DAMAGES.

Important Safety Information

For North American Customers: this unit ships with a 120 VAC-style AC plug connector.

Caution: *Ensure Mains Power is disconnected before installing the FR1 or FR2 frame, modules into the frame, or installing and removing options. If a mains switch is not provided, the power cord(s) of this equipment provide the means of disconnection. The socket outlet must be installed near the equipment and must be easily accessible.*

Caution: *FR2 Dual Power Cord Notice please read this. To reduce the risk of electrical shock, disconnect both power cords before servicing equipment.*

Warning: *The front fan door is heavy and is not hinged. Remove with Caution.*

Introduction

The AJA FR1 and FR2 are multiple-card frames that support both AJA's R-series video card modules and other industry standard modules. They bring high-density packaging, high capacity power supplies, and forced fan cooling to your rack—so you don't need to reserve space above or below the frames.

Model FR1

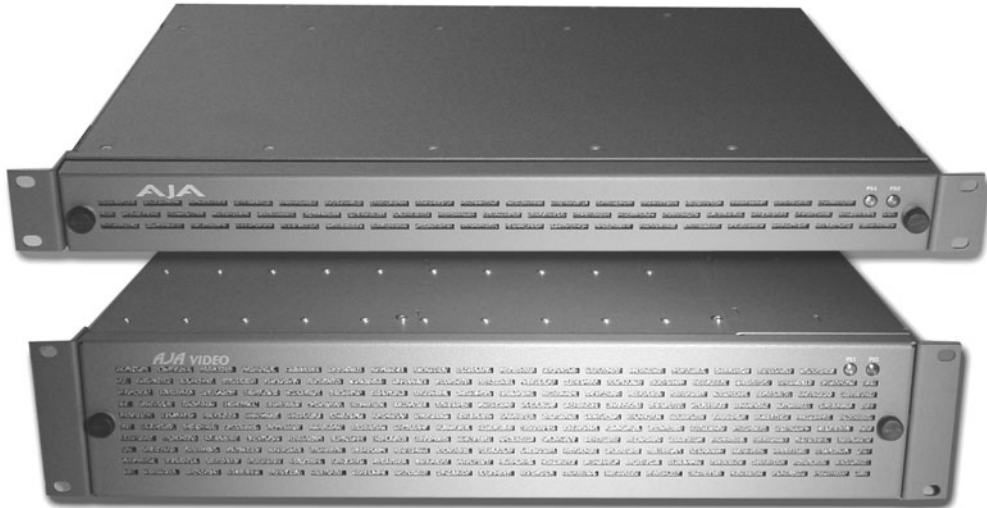
The FR1 frame offers space for four modules in a 1-RU space. AJA's own R5 and R20 modules fit into the frame, as well as industry standard modules. Color black reference can be connected at a rear panel BNC for distribution passively to all frame modules.

Model FR2

The FR2 frame provides greater space, housing up to ten modules in a 2-RU space. Like the FR1, the FR2 supports both AJA's own R-series modules as well as industry standard modules. Color black reference in the FR2 is also distributed to all modules, but it's actively distributed rather than passive. Optional redundant power supplies are available for the FR2 frame, and all power supplies are easily hot-swapped from the front of the unit (one screw on the rear panel must be removed on each prior to removal).

Features

The FR1 and FR2 frames offer a variety of unique features for easy connectivity and ease of installation in any environment.



FR1 and FR2 Frames

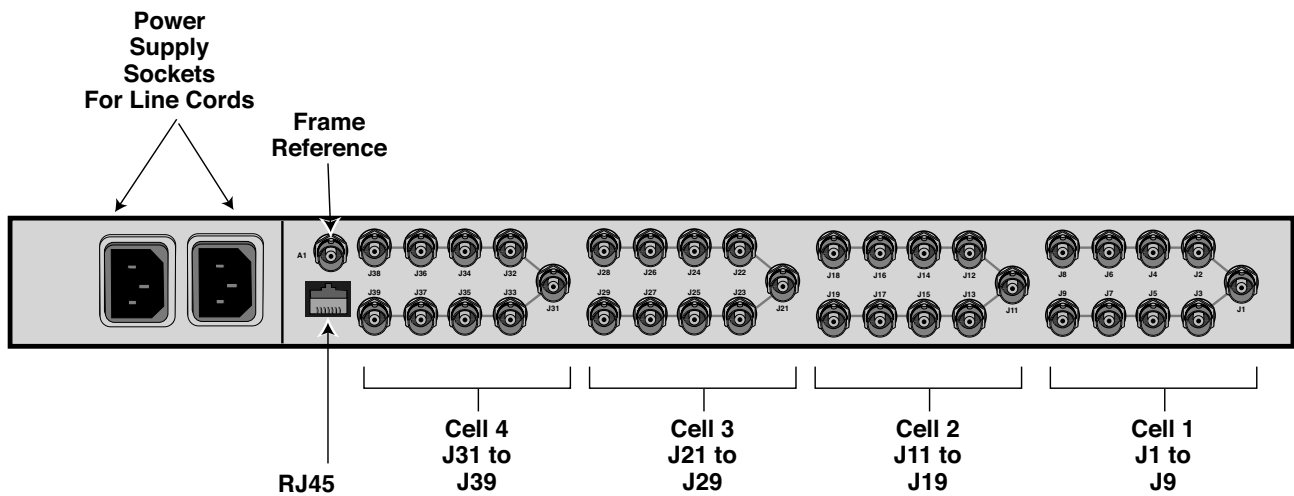
FR1 Features

- Dual fan forced-air cooling
- Optional redundant power supply, diode isolated
- Universal power supply is auto-ranging from 90 to 260 VAC with 40 Watts capacity
- 4 module slots (cells)
- Each module cell is provided with 9 BNC inputs or outputs
- Single frame reference BNC distributes passively to all cells
- Remote power supply monitoring via RJ45 port on rear panel
- Power LEDs on front panel show power status
- Compatible with common industry frames—video cards only (Leitch™ 6800-series)

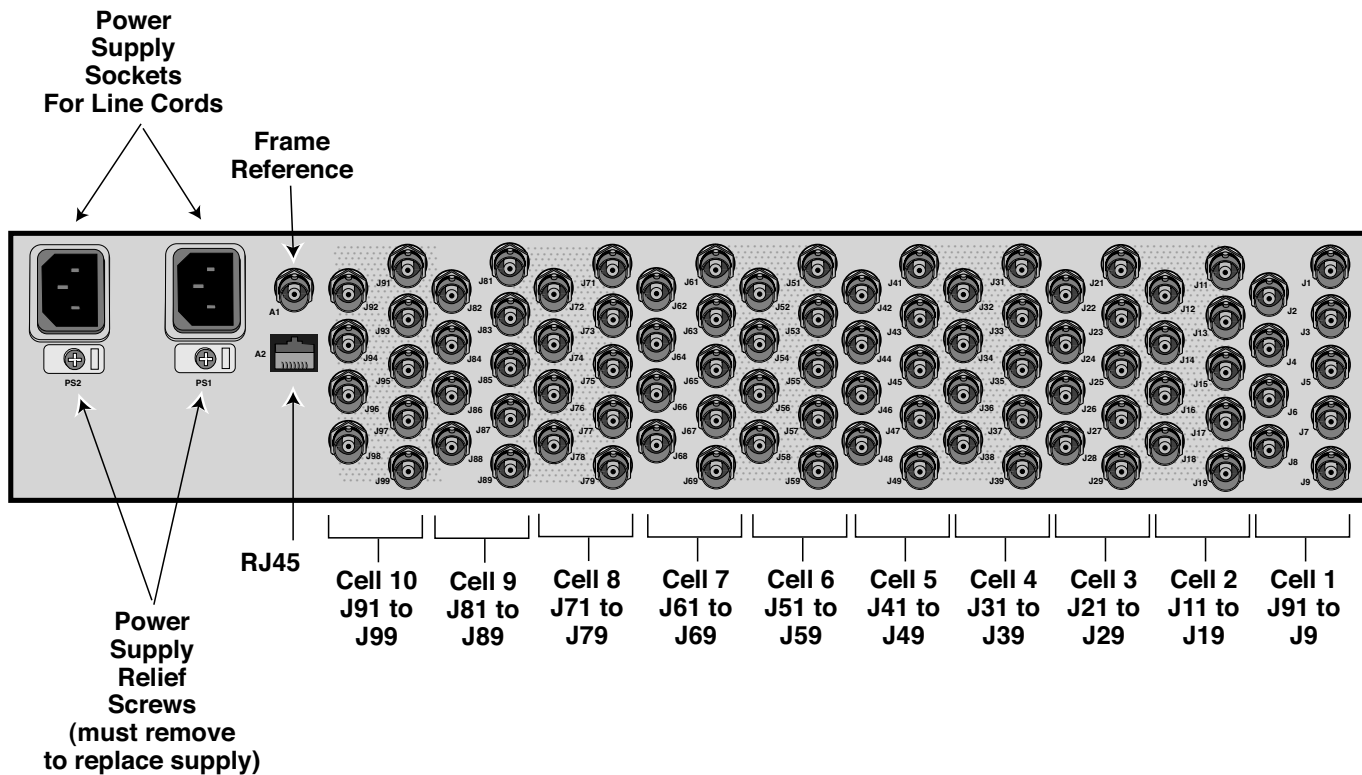
FR2 Features

- Triple fan forced-air cooling inside removable access door
- Hot-swappable power supplies
- Optional redundant power supplies, diode isolated
- Universal power supply is auto-ranging from 90 to 260 VAC with 100 Watts capacity
- 10 module slots (cells)
- Each module cell is provided with 9 BNC inputs or outputs
- Single frame reference BNC distributes actively to all cells via an internal distribution amplifier
- Remote power supply monitoring via RJ45 port on rear panel
- Power LEDs on front panel show power status
- Compatible with common industry frames—video cards only (Leitch™ 6800-series)

I/O Connections



FR1 Multiple Card Frame, Rear Panel Connectors



FR2 Multiple Card Frame, Rear Panel Connectors

Input/Output BNCs (groups of 9 per cell)—Each unique slot in the FR1/FR2 frames connect to a group of 9 BNCs on the frame rear panel. The actual function of the BNC connectors is dependent on the video card installed. Each group of 9 BNCs corresponds to the card installed in the same position; for example the right-most card connects to the right-most group of connectors at the position on the rear panel.

Frame Reference BNC—Both the FR1 and FR2 frames have this frame reference input BNC connector, which feeds an external reference video signal to all modules installed in the frame. How the signal is distributed differs for the FR1 and FR2 frames. Additionally, individual modules can usually be strapped as to whether external reference is distributed from the frame or directly to BNCs on the module's corresponding cell group (the 9 BNCs on the rear panel). *See the "Note" below for more information on looping reference inputs in the cell group.*

FR1 Frame: the external reference signal is distributed passively to all frame modules. Cards installed in the frame should have "FRAME" reference selected, and one and only one card in the frame should have "TERMINATION" set to "ON." All other cards in the frame should have TERMINATION set to "OFF."

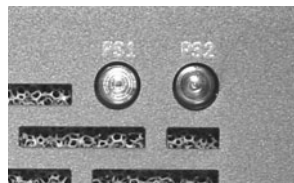
FR2 Frame: the external reference signal is distributed by an in-frame distribution amplifier to all frame modules. This system terminates the Frame Reference input BNC and buffers the signal to all slots. Cards installed in the FR2 frame should have "FRAME" set for reference select, and all cards should have TERMINATION set to "OFF."

Note: Each cell group of 9 BNCs contain two BNCs that can be used for a looping reference connection for the corresponding card module. If this method is used, then the reference select setting on that module should be set to "LOOP" and the TERMINATION setting on the module should be set to "OFF" (no termination). Optionally, if you're using only one of the looping reference BNCs, then the TERMINATION setting should be set to "ON."

Power Supply Monitoring RJ45 Port—standard RJ45 10BaseT-style connector offers access for monitoring power supply voltages (see pinout at back of manual).

AC Power Connectors (2 female)—The FR1 has one AC power connection socket and the FR2 has two, one for each of its power supplies.

User Controls



Power LEDs (2)—The PS1 and PS2 LEDs on the FR1/FR2 front door indicate which (if any) power supply is currently powered up and supplying power to the frame modules. You can tell at a glance if a supply is powered up and functional by its associated LED.

Note: If the front door is removed while power is applied, the fans in the front door and the power monitoring LEDs will not operate until the door is replaced.

Installation

Typically, installation consists of the following:

1. disconnect power from the frame (remove line cord)
2. remove the FR1/FR2 front panel
3. install AJA R-series or other industry-standard card modules
4. apply external color black reference at the frame's External Reference BNC
5. apply power to the frame by connecting a north american-style power cord from the frame to mains power (90 to 260 VAC)

Please follow all manufacturer's instructions for the video cards being installed, noting any cautions or special instructions.

Instructions for removing the front door for module installation and power supply exchange/removal (FR2 only) are provided in the following discussions.

Front Door Removal/Installation

To remove the front door, firmly grasp both removal knobs and rotate them in opposite directions. Hang on to the knobs so that as the door releases you can hold on to the door and remove it without it falling off.

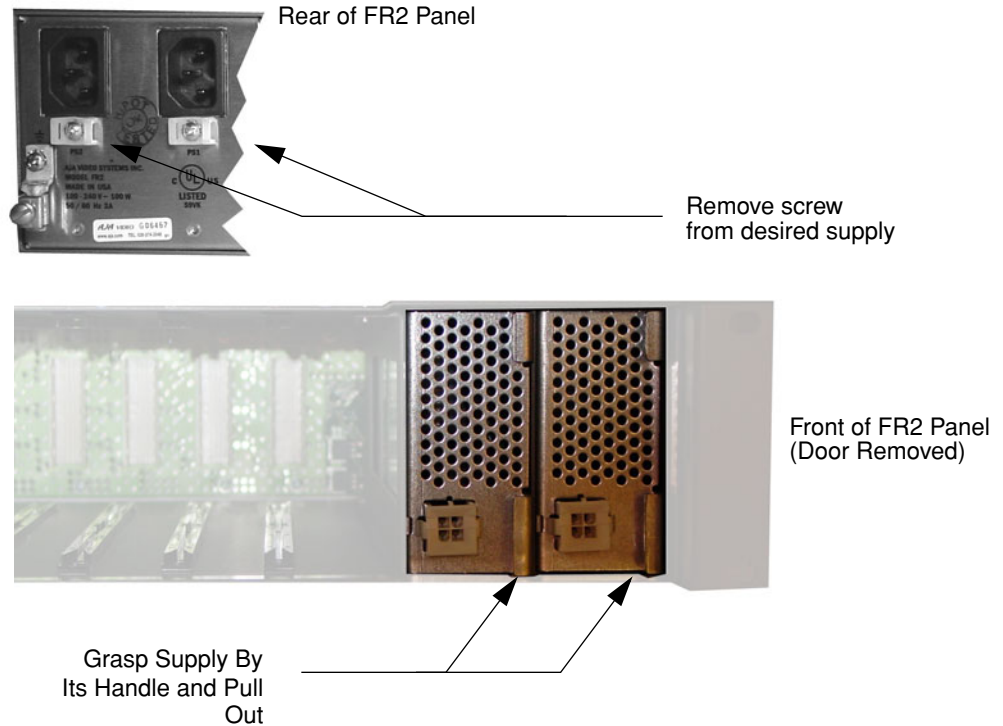
Caution: *If you don't hang on to the front door knobs as the door is removed from the frame, the door could fall and become damaged or cause injury.*

Power Supply Removal (FR2)

To remove an FR2 power supply, follow these steps:

1. Remove the frame front panel door as explained earlier.
2. Locate which of the two supplies you wish to remove. On the rear panel, remove the strain relief screw that secures the power supply to the frame, saving the screw.
3. From the front of the frame, grasp the two pull handles on the front of the desired power supply and gently pull it out of the frame.

Installation of a new supply is the reverse of this removal procedure.



FR2 Power Supply Removal

Note: FR1 power supply replacement requires disassembly of the chassis frame. It is not user-serviceable; power supply replacement should be referred to a qualified AJA service center.

Specifications

FR1 Specifications

Item	Specification
Capacity	4 slots, 1 Rack Unit
Inputs	<ul style="list-style-type: none"> • Group of 9 BNCs (I/O) for each module (4 groups) • Reference Input BNC
Power	50 Watt Capacity Universal Input 90-120 VAC Power Supply Optional Redundant Power Supply, Diode-Isolated
Cooling	Dual fan, forced-air

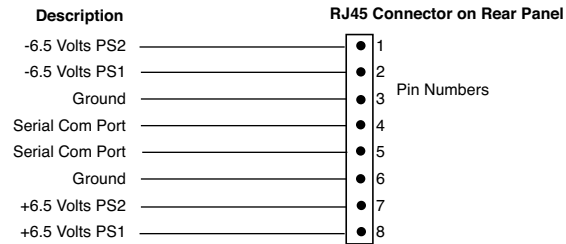
Item	Specification
Physical Dimensions	Width: 19" Height: 1.75" Depth: 14.75" Rack Units: 1
Compatibility	Leitch™ 6800-series
Options	FR1-PS Power Supply Module for FR1 Frame
Models	FR1—FR1 frame with one power supply FR1-D—FR1 frame with two (redundant) power supplies
Certifications	UL, CSE, and CE certifications

FR2 Specifications

Item	Specification
Capacity	10 slots, 2 Rack Units
Inputs	<ul style="list-style-type: none"> • Group of 9 BNCs (I/O) for each module (10 groups) • Reference Input BNC, active DA to all slots
Power	100 Watt Capacity Universal Input 90-240 VAC Power Supply Optional Redundant Power Supply, Diode-Isolated
Cooling	3-fan, forced-air
Physical Dimensions	Width: 19" Height: 3.5" Depth: 13" Rack Units: 2
Compatibility	Leitch™ 6800-series
Options	FR2-PS Power Supply Module for FR2 Frame
Models	FR2—FR2 frame with one FR2-PS power supply FR2-D—FR2 frame with dual power supplies FR2-PS—FR2 Power supply
Certifications	UL, CSE, and CE certifications

FR1/FR2 Power Monitoring

The power supply outputs can be monitored via the RJ45 connector on the rear panel. The following diagram shows the pinouts where supply values can be measured.



Pinout for RJ45 Connector On Rear Panel