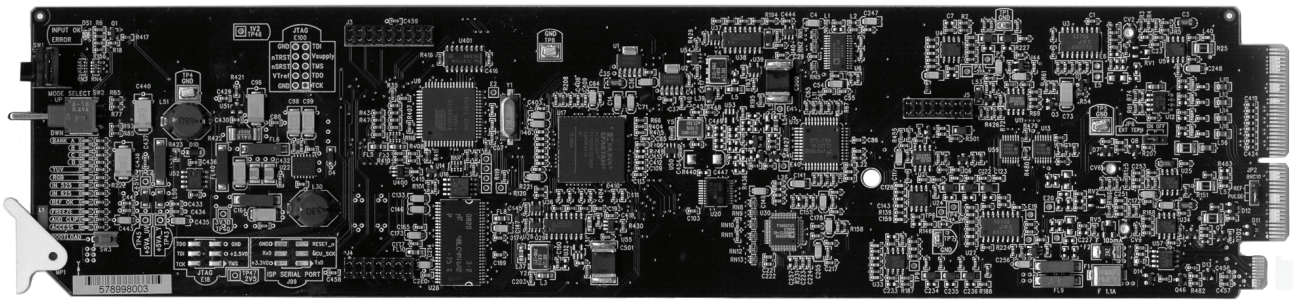
Ross Video Limited

ADC-8733A(-S,-C)

Analog Component to SDI Video Converter

User Manual



Live Production Technology™

openGear

Ross Part Number: 8733ADR-004
Issue: 02A

ADC-8733A(-S,-C) • Analog Component to SD-SDI Video Decoder User Manual

- Ross Part Number: **8733ADR-004**
- Document Issue: **02A**
- Printed in Canada.

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Trademarks

Important Regulatory and Safety Notices

Before using this product and any associated equipment, refer to the "Important Safety Instructions" listed below so as to avoid personnel injury and to prevent product damage.

Products may require specific equipment, and /or installation procedures be carried out to satisfy certain regulatory compliance requirements. Notices have been included in this publication to call attention to these Specific requirements.

Symbol Meanings

This symbol on the equipment refers you to important operating and maintenance (servicing) instructions within the Product Manual Documentation. Failure to heed this information may present a major risk of damage or injury to persons or equipment.

Warning

The symbol with the word **"Warning"** within the equipment manual indicates a potentially hazardous situation, which if not avoided, could result in death or serious injury.

Caution

The symbol with the word "**Caution**" within the equipment manual indicates a potentially hazardous situation, which if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

Notice

The symbol with the word "**Notice**" within the equipment manual indicates a situation, which if not avoided, may result in major or minor equipment damage or a situation which could place the equipment in a non-compliant operating state.

ESD Susceptibility

This symbol is used to alert the user that an electrical or electronic device or assembly is susceptible to damage from an ESD event.

Important Safety Instructions

Caution

This product is intended to be a component product of the openGear 8300 series frame. Refer to the openGear 8300 series frame User Manual for important safety instructions regarding the proper installation and safe operation of the frame as well as it's component products.

Warning

Certain parts of this equipment namely the power supply area still present a safety hazard, with the power switch in the OFF position. To avoid electrical shock, disconnect all A/C power cords from the chassis' rear appliance connectors before servicing this area.

Warning

Service barriers within this product are intended to protect the operator and service personnel from hazardous voltages. For continued safety, replace all barriers after any servicing.

This product contains safety critical parts, which if incorrectly replaced may present a risk of fire or electrical shock. Components contained within the product's power supplies and power supply area, are not intended to be customer serviced and should be returned to the factory for repair.

To reduce the risk of fire, replacement fuses must be the same type and rating.

Only use attachments/accessories specified by the manufacturer.

EMC Notices

US FCC Part 15

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 users will be required to correct the interference at their own expense.

Notice

Changes or modifications to this equipment not expressly approved by Ross Video Ltd. could void the user's authority to operate this equipment.

CANADA

This Class "A" digital apparatus complies with Canadian ICES-003.

Cet appareil numerique de classe "A" est conforme à la norme NMB-003 du Canada.

EUROPE

This equipment is in compliance with the essential requirements and other relevant provisions of **CE Directive 93/68/EEC**.

INTERNATIONAL

This equipment has been tested to **CISPR 22:1997** along with amendments **A1:2000** and **A2:2002** and found to comply with the limits for a Class A Digital device.

Notice

This is a Class A product. In domestic environments this product may cause radio interference in which case the user may have to take adequate measures.

Maintenance/User Serviceable Parts

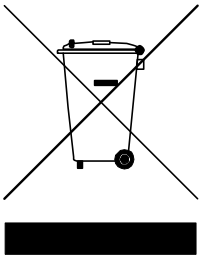
Routine maintenance to this openGear product is not required. This product contains no user serviceable parts. If the module does not appear to be working properly, please contact Technical Support using the numbers listed under the "Contact Us" section on the last page of this manual. All openGear products are covered by a generous 5-year warranty and will be repaired without charge for materials or labor within this period. Refer to the "Warranty and Repair Policy" section in this manual for details.

Environmental Information

The equipment that you purchased required the extraction and use of natural resources for its production. It may contain hazardous substances that could impact health and the environment.

To avoid the potential release of those substances into the environment and to diminish the need for the extraction of natural resources, Ross Video encourages you to use the appropriate take-back systems. These systems will reuse or recycle most of the materials from your end-of-life equipment in an environmentally friendly and health conscious manner.

The crossed-out wheeled bin symbol invites you to use these systems.



If you need more information on the collection, reuse, and recycling systems, please contact your local or regional waste administration.

You can also contact Ross Video for more information on the environmental performances of our products.

openGear Contents

Introduction

In This Chapter

This chapter contains the following sections:

- A Word of Thanks
- Overview
- Functional Block Diagram
- Features
- Documentation Terms

A Word of Thanks

Congratulations on choosing the Ross Video **ADC-8733A Analog Component to SDI Video Converter**. The ADC-8733A is part of a full line of Digital Conversion Products within the RossGear Terminal Equipment family of products, backed by our experience in engineering and design expertise since 1974.

You will be pleased at how easily your new ADC-8733A fits into your overall working environment. Equally pleasing is the product quality, reliability and functionality. Thank-you for joining the group of worldwide satisfied Ross Video customers!

Should you have a question pertaining to the installation and operation of your ADC-8733A, please contact us at the numbers listed in this publication. Our technical support staff is always available for consultation, training, or service.

Overview

The ADC-8733A is the perfect solution for converting analog component (YUV/RGB) sources such as VTRs, cameras, and character generators for use in the digital realm.

The component YUV/RGB video signal, with or without setup, is converted to four SD-SDI (SMPTE-259M) outputs with the highest level of precision. This is achieved because all signal processing and color space conversion is performed in the digital domain. A two times over-sampled 12-bit A-D conversion and high quality digital filtering ensure superb frequency response.

The ADC-8733A is available in the following models:

- **ADC-8733A —** The base model converter includes **Proc Amp**, **Line Delay,** and **Line Synchronizer** modes.
- **ADC-8733A-S —** The "**S**" model includes **Frame Delay** and **Frame Synchronizer** modes, along with all the features available on the ADC-8733A.
- **ADC-8733A-C —** The "**C**" model includes the **AAM-8581** daughter card and features four channels of analog audio embedding along with all the features available on the ADC-8733A.
- **ADC-8733A-SC —** The "**SC**" model includes the features of the "**S**" model in addition to all the features available on the "C" model and the ADC-8733A.

The ADC-8733A-S version comes with a full featured frame synchronizer, capable of synchronizing incoming video to house reference. Various timing modes are available to accommodate most situations. New techniques in frame synchronization contribute to the low power requirements and compact design. The complete circuit for the ADC-8733A-S, including color space converter, frame (or line) synchronizer, serializer, tracking delay pulse, three 12-bit A-D converters and a microprocessor are all contained on a single DA-sized card. Additional daughter cards are not required.

To simplify configuration, the ADC-8733A offers two methods. Note that changes made using either of the methods are reflected in the other.

- **DashBoard Control System™** — The ADC-8733A is fully compliant with all openGear technical specifications and supports remote monitoring and control via the DashBoard Control System.
- **Heads-Up Display** — The ADC-8733A includes an on-screen display that enables you to view adjustments made using the card-edge controls.
- Changes made using either of the above methods are reflected in the other interface.

The ADC-8733A converters are part of a full line of openGear digital distribution products engineered to satisfy the highest quality broadcast standards and the most demanding requirements of your facility.

ADC-8733A-S Overview

The ADC-8733A-S model comes with a full featured frame synchronizer, capable of synchronizing incoming video to house reference. Various timing modes are available to accommodate most situations.

ADC-8733A-C Overview

The ADC-8733A-C model includes the ADC-8733A or the ADC-8733A-S, the AAM-8581, and the appropriate Rear Module. The AAM-8581 is a daughter card that plugs onto the top of the ADC-8733A and enables you to add four channels of analog audio conversion and embedding to the SDI video output of the ADC-8733A. The AAM-8581 uses state of the art analog to digital converters that provide 24-bit resolution. The audio gain adjustment is provided in the analog domain through the use of digital potentiometers and has a range of ±10dBu.

Functional Block Diagram

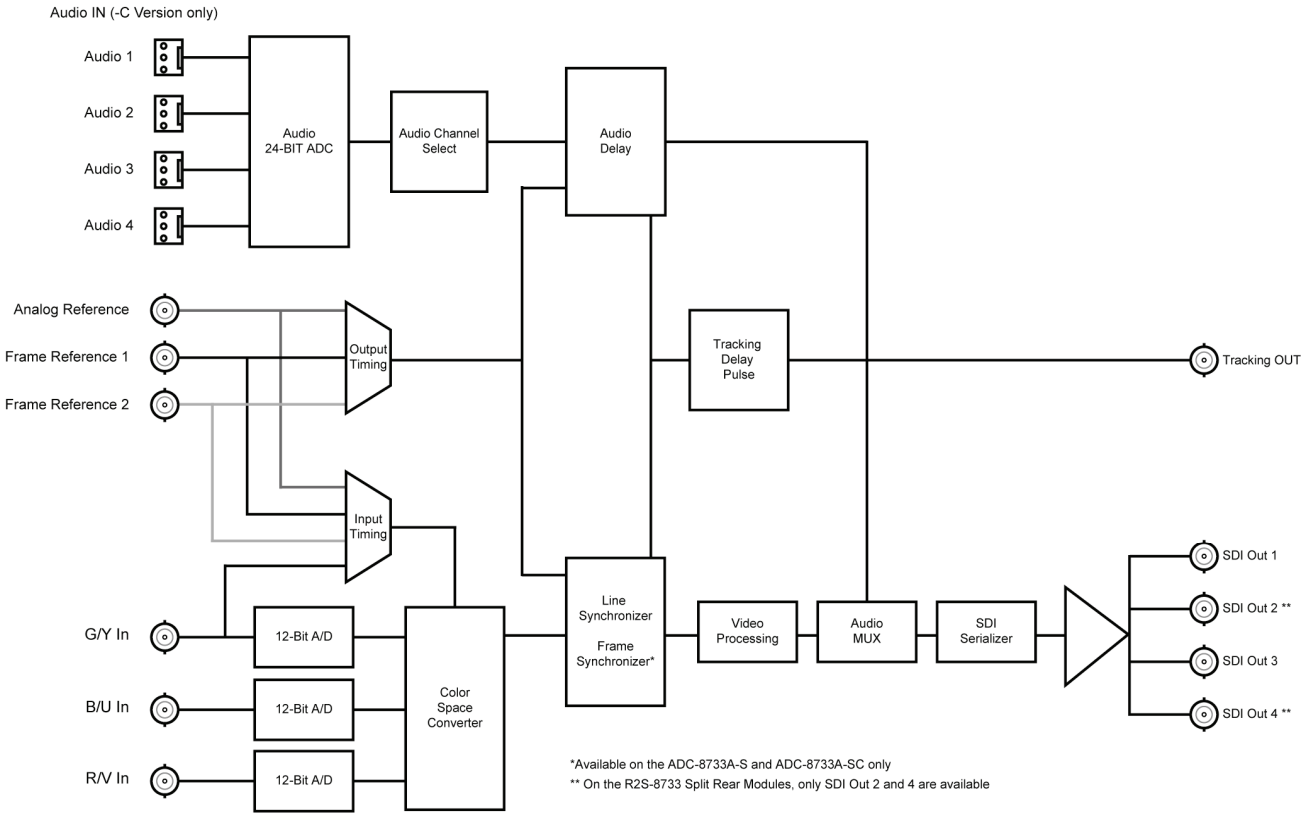


Figure 1. Simplified Block Diagram of ADC-8733A Functions

Features

The following features make the ADC-8733A the most flexible, high-quality decoding card for your analog to digital conversion requirements:

- YUV input from Betacam, MII and SMPTE/EBU formats
- RGB input from NTSC-related, MII and SMPTE EBU supported
- Four serial digital outputs
- 12-bit analog to digital conversion
- 2x over-sampling for excellent frequency response
- Automatic 525/625-line selection
- Can pass vertical interval signals
- Programmable vertical interval blanking
- Compact design on a single DA-sized card
- Heads-Up Display
- Optional Frame Synchronization (no daughter card required)
- Field-upgradeable Frame Synchronization option available
- Extensive Proc Amp controls

- Freeze modes
- Horizontal and vertical timing adjustments
- Setup adjustment
- Black level offset
- Pass or clip Super Black
- Status indicator LEDs on card edge
- Choice of input timing source
- Choice of reference inputs
- Tracking Delay Output for companion audio synchronizer
- Built-in test signals (FF color bars, SDI Checkfield)
- Reports status and configuration remotely via the DashBoard Control System™
- Fits DFR-8310 and DFR-8320 series frames
- 5-year transferable warranty
- Fully compliant with openGear specifications

ADC-8733A-C Features

- 4 channel audio embedding
- 24-bit ADC resolution
- Selectable maximum input level from -10dBu to +10dBu in 0.5dBu increments
- Audio gain in the analog domain via digital potentiometers
- ±0.05dB frequency response 20Hz to 22Hz
- Audio Clip LED on card-edge
- Alarm feature via DashBoard
- Silence alarm with threshold and alarm timeout settings
- Audio Delay up to 5 seconds

Documentation Terms

The following terms are used throughout this guide:

- "**Frame**" refers to the DFR-8300 series frames that houses the ADC-8733A card, as well as any openGear frames.
- All references to the DFR-8300 series frames also includes all version of the 10-slot (DFR-8310) and 20-slot (DFR-8320) frames and any available options.
- "**ADC-8733A**" refers to all variations of the ADC-8733A unless otherwise stated.
- "**Operator**" and "**User**" refer to the person who uses the ADC-8733A.
- "**Board**" and "**Card**" refer to the ADC-8733A itself, including all components, switches and options.
- "**System**" and "**Video system**" refers to the mix of interconnected production and terminal equipment in which the ADC-8733A operates.

Installation and Setup

In This Chapter

This chapter contains the following sections:

- Static Discharge
- Unpacking
- Rear Module Installation (Optional)
- Board Installation
- BNC Labels
- Cable Connections
- Frame Synchronizer Upgrade

Static Discharge

Whenever handling the ADC-8733A and other related equipment, please observe all static discharge precautions as described in the following note:

ESD Susceptibility

Static discharge can cause serious damage to sensitive semiconductor devices. Avoid handling circuit boards in high static environments such as carpeted areas, and when wearing synthetic fiber clothing. Always exercise proper grounding precautions when working on circuit boards and related equipment.

Unpacking

Unpack each ADC-8733A you received from the shipping container, and check the contents. If any items are missing or damaged, contact your openGear sales representative or Ross Video directly.

Rear Module Installation (Optional)

The ADC-8733A is compatible with the DFR-8310 and DFR-8320 series frames. The procedure for installing the Rear Module in your openGear frame is the same regardless of the frame or module used. However, a different module is required depending on the openGear frame you are using.

Rear Modules for the ADC-8733A

The Rear Module for the ADC-8733A depends on the openGear frame you are installing the card into.

- **DFR-8310 frames** — When installing the ADC-8733A in the DFR-8310 frames, the **R1-8733** Rear Module is required. The **R1C-8733** Rear Module is required when installing the ADC-8733A-C or ADC-8733A-SC in the DFR-8310 series frames. The ADC-8733A is also compatible with the DFR-8310-BNC frame.
- **DFR-8320 frames** — When installing the ADC-8733A in a DFR-8320 series frame, a Split Rear Module (**R2S-8733**) or a Full Rear Module (**R2-8733**) can be used. When installing the ADC-8733A-C or ADC-8733A-SC in the DFR-8320 series frames, the **R2C-8733** Full Rear Module is required.

Installing the Rear Module

If you are installing the ADC-8733A in a DFR-8310-BNC frame, or the Rear Module is already installed, skip this section.

Use the following procedure to install the rear module in an DFR-8300 series frame:

1. Refer to the DFR-8300 series frame User Manual, to ensure that the frame is properly installed according to instructions.
2. On the rear of the frame, locate the card frame slot.
3. Remove the Blank Plate from the rear of the slot you have chosen for the ADC-8733A installation. If there is no Blank Plate installed, proceed to the next step.
4. As shown in **Figure 2**, seat the bottom of the rear module in the seating slot at the base of the frame's back plane.

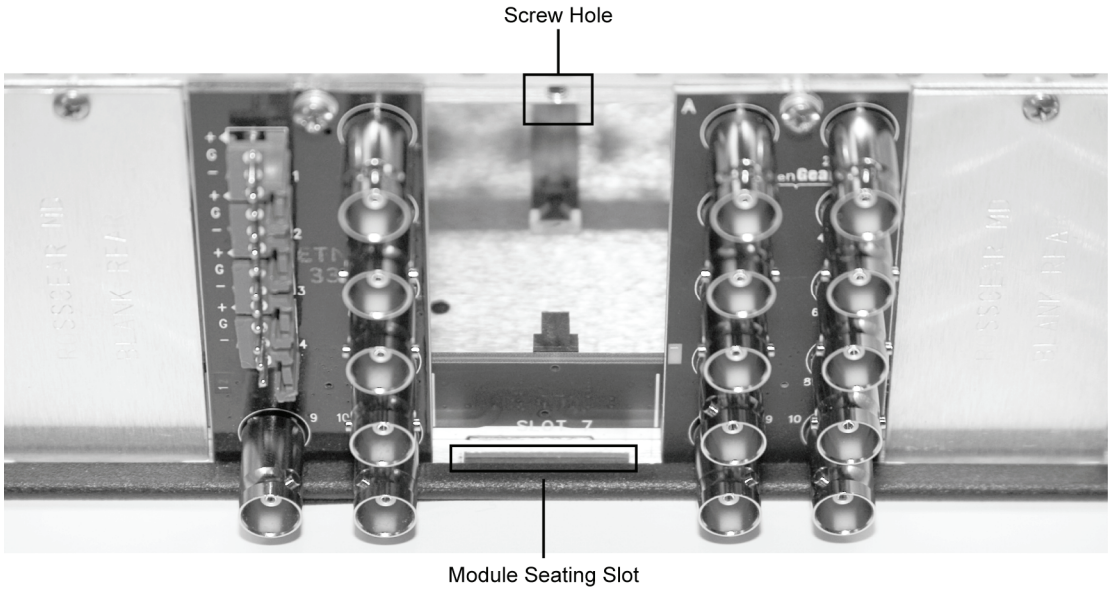


Figure 2. Rear Module Installation in a DFR-8310 Series Frame (ADC-8733A not shown)

5. Align the top hole of the rear module with the screw hole on the top edge of the frame back plane.
6. Using a Phillips driver and the supplied screw, fasten the rear module to the back plane. Do not over-tighten.
7. Ensure proper frame cooling and ventilation by having all rear frame slots covered with rear I/O modules or blank metal plates. If you need blanks, refer to the chapter, "**Ordering Information**" in your DFR-8300 series frame User Manual, and contact your Ross Video sales representative.

This completes the procedure for installing the rear module in a DFR-8300 series frame.

Board Installation

Use the following procedure to install the ADC-8733A in a DFR-8300 series frame:

1. Refer to the User Manual of your DFR-8300 series frame to ensure that the frame is properly installed according to instructions.

Heat and power distribution requirements within a frame may dictate specific slot placement of cards. Cards with many heat-producing components should be arranged to avoid areas of excess heat build-up, particularly in frames using convectional cooling.

2. After selecting the desired frame installation slot, hold the ADC-8733A card by the edges and carefully align the card edges with the slots in the frame.
3. Fully insert the card into the frame until the rear connection plugs are properly seated on the midplane and rear modules.

This completes the procedure for installing the ADC-8733A in a DFR-8300 series frame.

BNC Labels

Affix the supplied BNC label, as per the included instructions, to the BNC area on the rear of the rack frame.

Cable Connections

This section provides information for connecting cables to the installed rear modules on your DFR-8300 series frames. Connect the input and output cables according to the following diagrams.

Connections for the DFR-8310 Series Frames

In the DFR-8310 series frames, the ADC-8733A may be used with the following rear modules:

- **R1-8733** Rear Module — Each card occupies one slot and provides four SD-SDI outputs, one tracking pulse output, and a reference input. Connect cables according to **Figure 3**.
- **R1C-8733** Rear Module — Each card occupies one slot and provides four audio inputs, two SDI outputs, one tracking pulse output, and a reference input. Connect cables according to **Figure 4**.

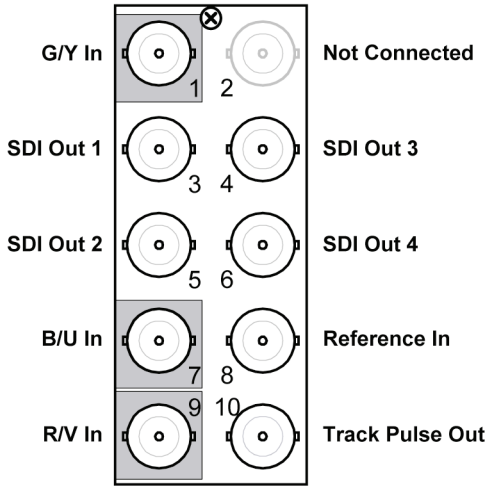


Figure 3. Cable Connections for the R1-8733 and the R2-8733 Rear Modules

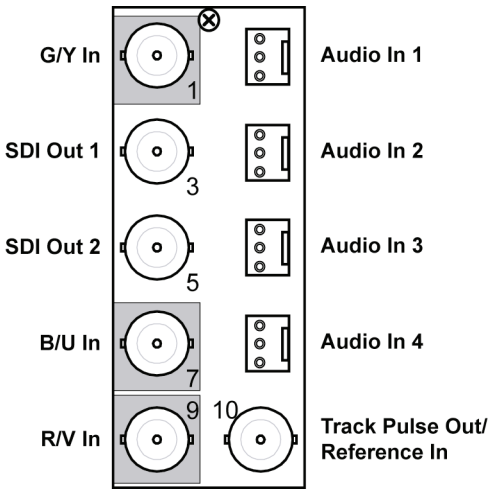


Figure 4. Cable Connections for the R1C-8733 and the R2C-8733 Rear Modules

Connections for the DFR-8320 Series Frames

In the DFR-8320 series frames, the ADC-8733A may be used with the following rear modules:

- **R2-8733** Full Rear Module — Each card occupies two slots and provides four SD-SDI outputs (**Figure 3**). Ensure that the ADC-8733A card is installed in an even slot number.
- **R2C-8733** Full Rear Module —Each card occupies two slots and provides four audio inputs, two SDI outputs, one tracking pulse output, and a reference input. Connect cables according to **Figure 4**.
- **R2S-8733** Split Rear Module — Each card occupies one slot and provides two SD-SDI outputs. Note that each rear module provides connections for two cards. (**Figure 5**)

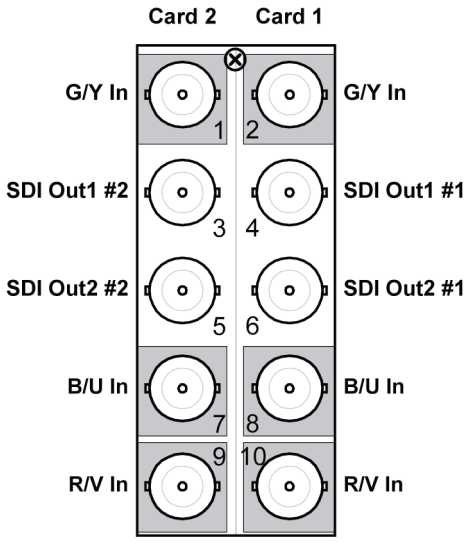


Figure 5. Cable Connections for the R2S-8733 Split Rear Module

BNC Cabling

Use the following procedure to connect the BNC cables to the ADC-8733A:

1. Input component signals connects to BNC **1** (G/Y), BNC **7** (B/U) and BNC **9** (R/V). If you are using the **R2S-8733** Split Rear Module, BNC **2**, **8** and **10** can be used, depending on the positioning of the ADC-8733A in the DFR-8300 series frame.
2. Downstream SD-SDI devices connect to BNCs **3** through **6** (**SD-SDI Out**). If you are using the **R2S-8733** Split Rear Module, connect to the required BNCs as shown in **Figure 4**.
3. Connect BNC **10** (**Track Pulse Out**) to any device that needs to track the video delay through the ADC-8733A or ADC-8733A-S.
    - The Tracking Pulse is a positive 5V pulse. Its width tracks the video delay as it passes through the card. The ADC-8733A tracking delay pulse tracks up to 2 video lines, the ADC-8733A-S up to two fields.
    - The Tracking Pulse is not available when using the **R2S-8733** Split Rear Module.
4. Connect a video reference one of two ways:
    - Connect to BNC **8** (**Reference**) on the Rear Module.
    - Connect to **REF1** or **REF2** on the back of the DFR-8300 series frame. If you are using the **R2S-8733** Split Rear Module, this the only way to connect the video reference.
5. Specify the reference source using DashBoard or the Heads-Up Display.

This completes the procedure for connecting the BNC cables to the ADC-8733A.

Audio Cabling

The **R1C-8733** and **R2C-8733** Rear Modules provide four audio terminal blocks with removable connectors for Audio In 1, 2, 3, and 4 (refer to **Figure 4** for cable designations). Each connector has locations for the positive, negative, and grounded wires of a balanced analog audio cable.

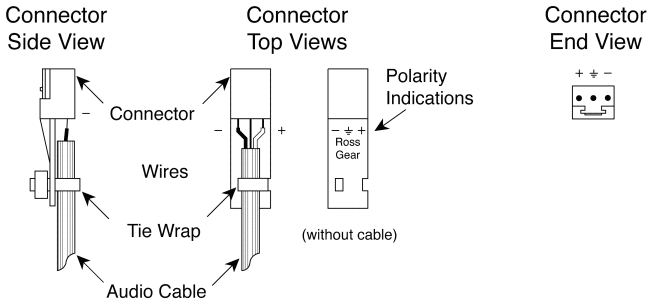


Figure 6. Connector Wiring for R1C-8733 Input Sockets

Use the following procedure to wire the analog audio for the **R1C-8733** and **R2C-8733** Rear Modules:

1. Insert an analog audio wire to the designated polarity slot on the connector. Refer to **Figure 6**.
2. Use a tweaker screwdriver to tighten the corresponding capture screw.
3. Repeat steps 1 and 2 for each wire on each connector.

4. Once the cables are wired to the connectors, install the connectors on the terminal blocks for the Rear Module.

This completes the procedure for wiring the analog audio for the **R1C-8733** and **R2C-8733** Rear Modules.

Frame Synchronizer Upgrade

This section provides instructions for upgrading your ADC-8733A for full frame synchronization (ADC-8733A-S). Upgrading your ADC-8733A requires installing a licensed key for the Frame Sync licensed feature.

Requirements

When installing a license key on the ADC-8733A:

- You must have the DashBoard Control System installed and communicating with the openGear frame that houses the ADC-8733A you wish to install the license key. The DashBoard Control System software and manual are available from the Ross Video website.
- Ensure that you are using version 2.0, or higher, of the Dashboard Control System. This information is available by selecting **Help ⇨ About DashBoard** from the DashBoard main toolbar.
- Refer to the ***DashBoard User Manual*** for details on using the DashBoard menus.

Installing a License Key

Use the following procedure to install the license key for the ADC-8733A using the DashBoard Control System:

1. Open DashBoard on your computer.
2. Open a tab in the Device View of DashBoard for the ADC-8733A you wish to install the license key.
3. Select the **Setup** tab in the Device View to display the setup information.
4. Make a note of the Request Code in the **Frame Sync License** box.
5. Contact Ross Video Technical Support using the information found in the "**Contact Us**" section of this manual.
    - When you speak to the Technical Support representative, tell them your name, your facility name, and the **Request Code** from the **Setup** tab.
    - You will be given a **License Key** that must be entered in the Frame Sync License box of the **Setup** tab.
6. Enter the **License Key** in the Frame Sync License box of the **Setup** tab.
7. When the installation is complete, verify that the following has occurred:
    - the **Setup** tab displays "**Licensed**" in the Frame Sync License box
    - the Frame Sync License box displays a green background
    - the device status indicator now displays "**ADC-8733A-S**" as the name

This completes the procedure for installing the license key for the ADC-8733A using the DashBoard Control System.

User Controls

In This Chapter

This chapter includes the following sections:

- Jumper Locations
- Tracking Pulse Output
- Card-edge Controls
- Status and Selection LEDs

Jumper Locations

Use the following section to set up the ADC-8733A jumper. This setup is performed *before* installing the card in the frame, but may be repeated as required. Refer to **Figure 7** for locations.

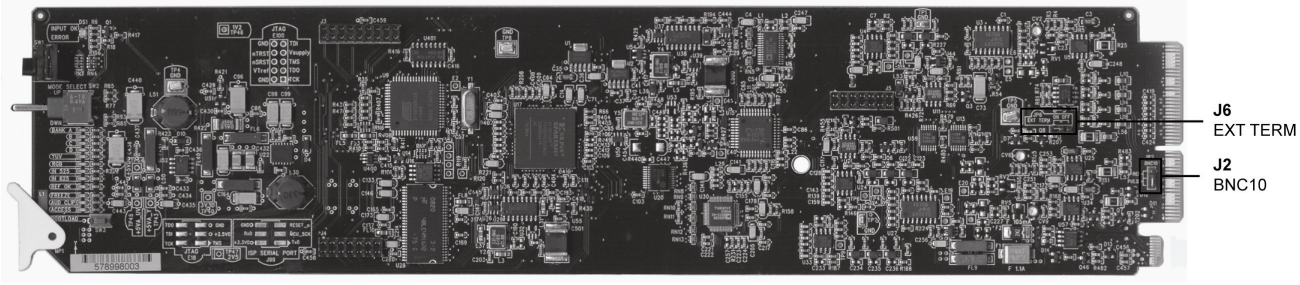


Figure 7. Jumper Locations (AAM-8581 not shown)

JP2 — BNC 10

Use **JP2** to configure BNC 10.

Set **JP2** as follows:

- **REF** — Select this option when using an input external reference on BNC 10.
- **PULSE** — Select this option to output the Tracking Pulse on BNC 10.

JP6 — EXT TERM

Use **JP6** to terminate the signal on the Reference In. This can be BNC 8 or BNC 10 depending on the rear module used.

Set **JP6** as follows:

- **ON** — Select this option to terminate the signal. This is the default setting.
- **OFF** — Select this option to leave the signal un-terminated.

Tracking Pulse Output

Both versions of the ADC-8733A offer a tracking delay output that pulses high in a two frame cycle on BNC 10. The pulse is a positive 5V signal. Its width is a measurement of the video delay through the card. The pulse tracks delay up to 2 video lines on the ADC-8733A and up to 2 fields on the ADC-8733A-S.

Card-edge Controls

This section discusses the card-edge controls such as switches and LEDs of the ADC-8733A. These card-edge controls can be used to monitor and control the ADC-8733A. To aid in this, the card includes a Heads-Up Display (HUD). All the card-edge control functions are locked by default. To unlock the card, refer to the section "**Edit Permission**".

The following are general descriptions of the user controls identified in **Figure 8**.

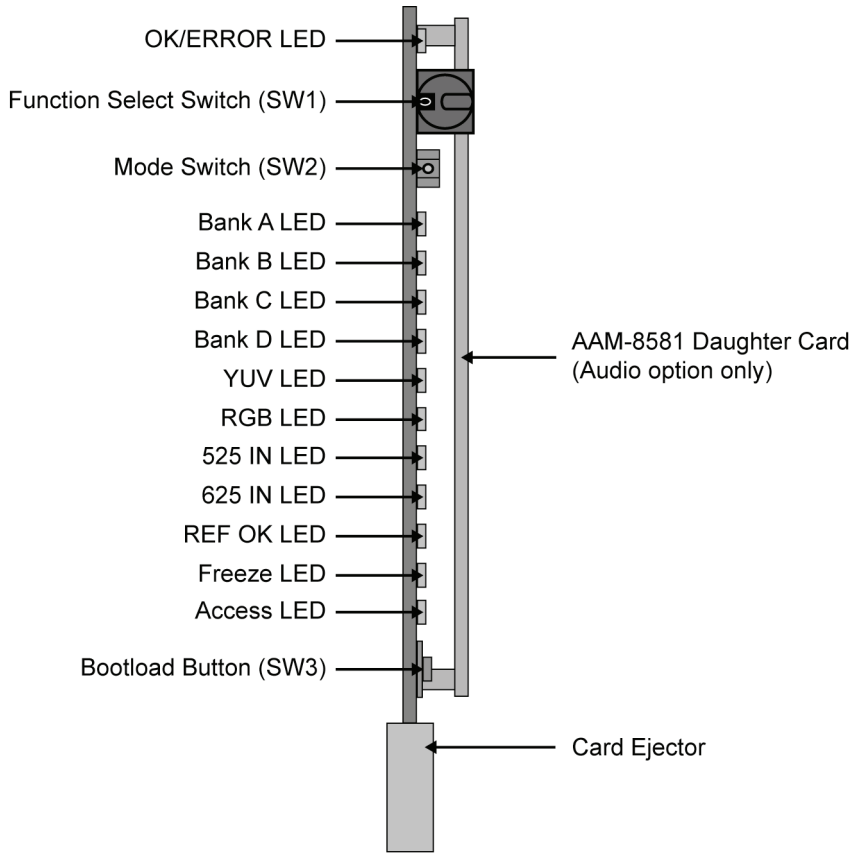


Figure 8. Card-edge User Controls

SW1 — Function Select Switch

The **SW1 – Function Select** switch is a 16-position rotary switch used to select functions such as proc amp controls and timing adjustment menu items. The **SW1** switch works in conjunction with the **SW2** toggle switch; first, the function category is selected with **SW1**, and then the **SW2** switch is used to select modes or configuration settings within that function selection. Refer to the section, "**Heads-Up Display Menus**" for more information.

SW2 — Mode Switch

The **SW2 – Mode** switch is used to enable, disable, and select specific ADC-8733A *functional modes*, or *configurations*, within the operational function menu (selected first with the **SW1** Function Select switch). The **SW2** switch is a 3-position momentary toggle switch with an automatic spring-return to the center position.

SW3 — Bootload Button

The **SW3 – Bootload** button is used for factory service in the unlikely event of a complete card failure. The Bootload process is further described in the chapter "**Service Information**" of this manual.

Status and Selection LEDs

The front edge of the card uses eleven LEDs that display the status of the input signals, and indicate menu function and configuration selections. Refer to **Figure 8** for LED locations. Basic LED displays and descriptions are provided in **Table 1**.

Table 1. Selection and Status LED Descriptions

LED	Color	Display and Description
OK ERROR	Green	When lit, this LED indicates that the card is functioning normally and that no anomalies have been detected. The following conditions must be satisfied: • a valid input timing signal is present and selected. • a valid reference signal is present when a reference is required, and that the reference standard matches the input standard. Selecting Line Sync or Frame Sync modes require that a reference signal be present.
	Red	When lit, this LED indicates one of the following errors: • a valid input timing signal is not present or selected • a valid reference signal is not present or selected • the reference signal does not match the input signal
BANK A	Green	When lit, this LED confirms that Bank A is selected.
BANK B	Green	When lit, this LED confirms that Bank B is selected.
BANK C	Green	When lit, this LED confirms that Bank C is selected.
BANK D	Green	When lit, this LED confirms that Bank D is selected.
YUV	Green	When lit, the input signal is selected to be YUV.
RGB	Green	When lit, the input signal is selected to be RGB.
525 IN	Green	When lit, this LED indicates that the input signal standard is 525-lines.
625 IN	Green	When lit, this LED indicates that the input signal standard is 625-lines.
REF OK	Green	When lit, this LED indicates a reference signal is present at the Frame REF or reference BNC input, and that the reference signal is locked. The reference standard matches the input standard.
	Flashing	When flashing, this LED indicates that the reference standard does not match the input standard.
	Off	When not lit, this LED indicates that a reference is not present.
FREEZE	Yellow	When lit, this LED indicates that the output is frozen (ADC-8733A-S only).
ACCESS	Yellow	When lit, this LED indicates that Switch Access is unlocked. ADC-8733A card-edge controls are accessible.

Control and Monitoring

In This Chapter

This chapter provides a detailed explanation of the ADC-8733A control and monitor features. The ADC-8733A can be monitored or controlled locally through the card-edge controls or remotely through DashBoard. Both can be active at the same time. Changes made to the card using either method are immediate and reflected in both interfaces.

The following topics are discussed:

- SNMP Monitoring and Control
- DashBoard Control System
- Heads-Up Display Menus
- Menu Parameters

Note

For each of the supported line standards (525 and 625) the ADC-8733A stores the default and user-adjusted video settings independently in non-volatile memory. The selection of settings is determined by the input timing source. In the tables of this chapter, values stored in the non-volatile memory are notated with an ^{m}.

SNMP Monitoring and Control

The MFC-8310-N Network Controller card in the DFR-8300 series frame provides optional support for remote monitoring of your frame and ADC-8733A using SNMP (Simple Network Management Protocol), which is compatible with many third-party monitoring and control tools.

Refer to your ADC-8733A MIB (Management Information Base) file for a breakdown of SNMP controls on this card. Refer to the manual for your DFR-8300 series frame for additional information on SNMP Monitoring and Control.

DashBoard Control System

The DashBoard Control System™ enables you to monitor and control openGear frames and cards from a computer. DashBoard communicates with the cards in the DFR-8300 series frame through the Network controller card. This controller card is required in order to use DashBoard to monitor the ADC-8733A(-S).

The DashBoard software and manual can be downloaded from the Ross Video website.

Using the Menus

You must first install the DashBoard Control System on your computer. Refer to the ***DashBoard User Manual*** for software installation procedures and using the DashBoard interface.

The following tables and sections describe the menus, items, and parameters available from the DashBoard Control System for the ADC-8733A. In the tables, values stored in the non-volatile memory are notated with an [m].

Status Menus

The following table summarizes the **Status Menu** options for the ADC-8733A available through DashBoard.

Table 2. Status Menu Functions

Tab	Item	Parameters	Description
Product (Read-only)	Product	ADC-8733A	
	Supplier	Ross Video Ltd.	
	Board Rev	##	
	Serial Number	#########	
	Software Rev	#.###	
	Firmware Rev	#.###	
Hardware (Read-only)	HW Status	Green – OK	Normal operation; no hardware errors
		Red – FPGA load invalid	The card failed to load the FPGA firmware
		Red – Incomp I/O module	Card is connected to the wrong rear module model
	Voltage (mV)	#	Supply Voltage
	Current (mA)	#	Current consumption of card
	Rear Module	#	Type of rear module in this slot
	CPU Headroom	#	Process power available
	RAM Available (bytes)	#	On-board processing memory available
	EE Bank	#	Storage count

Tab	Item	Parameters	Description
Signal (Read-only)	Signal Status	Green	Indicates that the card is functioning normally and no anomalies are detected. Refer to the section "**Signal Status**" for details.
		Red	The reference does not match the input standard or an error has occurred. Refer to the section "**Signal Status**" for details.
	Input Status	Signal Present	
		No Signal	
	Reference†	Reference OK	
		No Reference	
	Line Standard	525	
		625	

† The ADC-8733A only accepts BLS Reference signals.

Signal Status

When the Signal Status indicator in Dashboard is green, the following conditions are present:

- A valid input timing signal is present and selected.
- A valid reference signal is present when a reference is required and that reference standard matches the input standard. Selecting Line Sync or Frame Sync modes require that a reference signal be present.

When the Signal Status indicator in Dashboard is red, one of the following errors have occurred:

- A valid input timing signal is not present or selected.
- A valid reference signal is not present or selected.
- The reference does not match the input standard.

Configuration Menus

The following tables summarize the **Configuration Menus** for the ADC-8733A available through DashBoard.

Setup Tab

This section outlines the options and parameters in the **Setup** tab available in DashBoard for the ADC-8733A. The **Setup** tab includes parameters such as input standard, setup removal, and a field for installing license keys for features such as Frame Sync.

Table 3. Setup Tab Functions

Tab	Item	Parameters	Description
Setup	Input Standard	RGB SMPTE	
		RGB MII†	
		RGB NTSC†	
		YUV SMPTE	
		YUV MII†	
		YUV BETA	
	Setup[m]	Off	Disables setup removal
		On	Enables setup removal
	Edit Permission	Unlocked	All menu options are unlocked
		Locked	All menu items, except this one, are locked and read-only
	Factory Defaults	Reset	Resets all parameters to factory defaults
	Licensable Features	Frame Sync	Indicates if the software key for the Frame Sync option is installed

† Available for 525-line standard only.

Timing Tab

This section outlines the options and parameters in the **Timing** tab available in DashBoard for the ADC-8733A.

Table 4. Timing Tab Functions

Tab	Item	Parameters	Description
Timing	Reference[m]	Frame Ref 2	The reference source is the analog reference connected to the frame REF2 port
		Frame Ref 1	The reference source is the analog reference connected to the frame REF1 port
		BNC 8	The reference source is the analog reference connected to BNC 8
	Input Timing[m]	Frame Ref 2	The timing source is the analog signal connected to the frame REF2 port
		Frame Ref 1	The timing source is the analog signal connected to the frame REF1 port
		BNC 8	The timing source is the analog signal connected to BNC 8
		Y/G	The timing source is the analog signal connected to BNC 1
	Timing Mode[m]	Line Delay	Output timing is based on input timing
		Line Sync	Output timing is based on the reference
		Frame Delay [§]	Output timing is based on input timing
		Frame Sync [§]	Output timing is based on the reference
	Horizontal Delay[m]	0 to 1715[†]	Adjusts the horizontal delay
	Horizontal Delay[m]	0 to 1727[‡]	
	Vertical Delay[m]	0 to 524[†]	Adjusts the vertical delay
	Vertical Delay[m]	0 to 624[‡]	
	Minimum Delay[m]	Reset	Resets the delay

[§] This option is only available for the ADC-8733A-S.

[†] When in 525-line standard.

[‡] When in 625-line standard.

Output Tab

This section outlines the options and parameters in the **Output** tab available in DashBoard for the ADC-8733A such as selecting the Input Loss Mode, Forced Freeze Mode, and Freeze Mode.

Table 5. Output Tab Functions

Tab	Item	Parameters	Description
Output	Input Timing Loss [m]	Black [§]	When the input timing signal is lost or invalid, SD-SDI black is the output.
		No Output	When the input timing signal is lost or invalid, there is no output present
		Freeze [§]	When the input timing signal is lost or invalid, the last valid image is frozen, as determined by the Freeze Mode option, and used as the output.
	Forced Black	Off	Disables Forced Black
		On	Forces the output to (SD-SDI) black
	Forced Monochrome	Off	Disables Forced Monochrome
		On	Forces the output to monochrome (SD-SDI)
	Test Pattern	Off	Disables the Test Pattern feature
		Full Field Color Bars	
		SDI Check Field	
	Forced Freeze	Off	Disables Forced Freeze
		On	Freezes the output. The frozen output video displayed will be determined by the Freeze Mode setting
	Freeze Mode	Field 1	When a freeze occurs, the last Field 1 is the output
		Field 2	When a freeze occurs, the last Field 2 is the output
		Frame	When a freeze occurs, the last full frame is the output

[§] This option is only available for the ADC-8733A-S.

Framing

This section outlines the options and parameters in the **Framing** tab available in DashBoard for the ADC-8733A. The **Framing** tab includes parameters for configuring the vertical interval.

Table 6. Framing Tab Functions

Tab	Item	Parameters	Description
Framing	Vertical Interval Blanking[m]	Pass Through	Pass the vertical interval
		Blank	Blank the vertical interval
	Vertical Interval End[m]	19 to 21[†]	Selects the line on which the vertical interval ends
		23[‡]	
	Lock V Bit On Line[m†]	10	Active video starts on line 10
		20	Active video starts on line 20
	Horizontal Crop	Off	Disable Horizontal Crop
		On	Enable Horizontal Crop
	Crop Left	0 to 350	Number of pixels to crop from the beginning of the line
	Crop Right	0 to 350	Number of pixels to crop from the end of the line backwards

[†] When in 525-line standard.

[‡] When in 625-line standard, the Vertical Interval End is fixed at 22.

Proc Amp

This section outlines the options and parameters in the **Proc Amp** tab available in DashBoard for the ADC-8733A. The **Proc Amp** tab includes parameters such as the gain, and black level offset.

Table 7. Proc Amp Tab Functions

Tab	Item	Parameters	Description
Proc Amp	Video Gain (%)[m]	50 to 150	Adjusts the output video gain level
	Chroma Gain (%)[m]	50 to 150	Adjusts the output video chroma gain
	CB Gain (%)[m]	50 to 150	Adjusts the output C_B gain
	Black Level Offset (IRE)[m]	-7.2 to 51.7	Adjusts the output black level of the card
	Super Black	Pass	Enables the input to pass without clipping
		Clip	Clips any value below black
	Proc Amp	Reset	Resets all Proc Amp controls to factory defaults

Audio

This section outlines the options and parameters in the **Audio** tab available in DashBoard for the ADC-8733A-C.

Table 8. Audio Tab Functions

Tab	Item	Parameters	Description
Analog Audio Inputs	Audio Input Gain (dB) [m]	-10.0 to +10.0	Adjusts the audio gain for each input of the AAM-8581
	Audio Input Status [m]	OK	Indicates that audio is present above the selected **Silence Threshold** value
		Clip	Indicates that the audio input level is too high and is causing distortion
		No Input	Indicates that the input audio level is below the selected **Silence Threshold** value
	Notify Audio Input Alarm	Checkbox enabled	An alarm is trigged when the selected audio input is clipping or if it is silent for longer than the selected **Silence Alarm Timeout** value
		Checkbox disabled	Disables this feature
	Silence Threshold [m]	-6dBFS (minimum)	Selects the audio threshold for silence measurement and defines the audio silence threshold in 6 dBFS steps
		-84dBFS (maximum)	
	Silence Alarm Timeout(s) [m]	0-60	Selects the duration of silence before an alarm is displayed in the **Signal** tab
Embedded Audio	Audio Mux Enable	Checkbox enabled	Embeds audio channels into the horizontal interval of the digital video
		Checkbox disabled	Disables this feature
	Embed to [m]	Group 1	Selects which group to embed the audio into
		Group 2	
		Group 3	
		Group 4	

Tab	Item	Parameters	Description
	Audio Delay (ms) [m]	0-5000	Selects the amount of additional audio delay to add to the input audio before it is embedded
	Channel Source [m]	Analog Input 1	Assigns Analog Input 1 to the selected embedded channel
		Analog Input 2	Assigns Analog Input 2 to the selected embedded channel
		Analog Input 3	Assigns Analog Input 3 to the selected embedded channel
		Analog Input 4	Assigns Analog Input 4 to the selected embedded channel
	Audio Configuration	Reset	Resets the audio settings to factory defaults

[m] This value is stored in the non-volatile memory of the ADC-8732B.

Alarms

This section outlines the options and parameters in the **Alarms** tab available in DashBoard for the ADC-8733A. The **Alarms** tab allows you to configure the Loss of Input and Loss of Reference notifications in DashBoard.

Table 9. Alarms Tab Functions

Tab	Item	Parameters	Description
Alarms	Loss of Input Timing	Ignore	**Signal Status** parameter in the **Signal** tab ignores loss of input conditions
		Notify	**Signal Status** parameter in the **Signal** tab reports loss of input conditions when they occur
	Loss of Reference	Ignore	**Signal Status** parameter in the **Signal** tab ignores loss of reference
		Notify	**Signal Status** parameter in the **Signal** tab reports loss of reference when they occur

Heads-Up Display Menus

This section summarizes the menu system of the Heads-Up Display (HUD) and how to navigate the menus and options using the **SW1** and **SW2** switches on the ADC-8733A card-edge. A list of the available menus and parameters is also provided. In the tables, values stored in the non-volatile memory are notated with an [m].

Overview

The menus are split into Banks: A, B, C and D. Each bank has 16 positions, 0 through F, with position 0 (zero) always reserved for the Bank designation. Positions 1 to F may contain menu items (see **Tables 10**, **11**, **12** and **13** for details). The following tables list the functions in numerical order based on the value selected on **SW1**.

A particular menu is referred to as: **Bank-Menu**, for example **A-9**. The card must be unlocked to be able to adjust the parameters. To unlock the card, refer to the section for A-F. By default whenever the card is powered up, it is locked.

Parameters in the menus can be adjusted without turning on the Heads-Up Display (HUD), but using the HUD gives visual feedback to ensure the parameter is adjusted correctly. The HUD is superimposed over all video outputs. To enable the HUD, refer to section for A-1.

Note

When the card is powered up or is unlocked, it defaults to Bank A and the HUD is disabled.

Menu Navigation

To navigate the menus, use **SW1-Function Select** switch and **SW2-Mode** switch as follows:

1. Rotate **SW1** to position **0**.
2. Toggle **SW2** up or down to select the Bank.
3. Rotate **SW1** to the required menu.
4. Toggle **SW2** to select the required parameter.

Operating Conventions

The following tables list all the menus and the possible parameters. To activate some of these parameters, it may be necessary to toggle **SW2** in either direction, or it may require that **SW2** be held in either direction for a few seconds.

The following rules apply to the tables that are used throughout this section:

- The label " **+** " instructs you to toggle the **Mode** switch (**SW2**) *up* momentarily.
- The label " **-** " instructs you to toggle the **Mode** switch (**SW2**) *down* momentarily.
- The label " **+** (h) " instructs you to *hold* the **Mode** switch (**SW2**) *up* for one second.
- The label " **-** (h) " instructs you to *hold* the **Mode** switch (**SW2**) *down* for one second.

Ballistics

In those menus where there is a wide adjustment range, a mechanism to help speed up the selection process is provided. If **SW2** is pressed and held in either direction, the values in the menu will change at an increasingly faster rate. The rate of change will reach its peak after approximately 2 seconds.

Bank A Menus

This section summarizes the functions available on Bank A.

Table 10. Function Select: Bank A Function Table

Menu Select	Menu	Parameters	HUD Label and Value
0	Bank Select	+ A B – C	BANK A B C
1	Heads-Up Display	+ (h) On – Off	HEADS UP ON OFF
2	Input Standard [m]	+ YUV BETA YUV MII[†] YUV SMPTE RGB NTSC[†] RGB MII[†] – RGB SMPTE	IN STD YUV BETA YUV MII YUV SMPTE RGB NTSC RGB MII RGB SMPTE
3	N/A		
4	Input Timing [m]	+ FRM 2 FRM 1 BNC 8 – Y/G	IN TIMING FRM 2 FRM 1 BNC 8 Y/G
5	Test Pattern	+ SDI Check Field Full Field Color Bars – Off	TEST PTN PATH FF BARS OFF
6	N/A		
7	N/A		
8	Video Gain [m]	+ Increase – Decrease	VID GAIN (###.#)%
9	Black Level Offset [m]	+ Increase – Decrease	BLK OFF (##.#) IRE
A	Chroma Gain [m]	+ Increase – Decrease	CHROMA (###.#)%
B	N/A		
C	C_B Gain [m]	+ Increase – Decrease	C_B GAIN (###.#)%
D	N/A		
E	Factory Defaults	+ (h) Reset All – (h) Reset Proc Amp	DEFAULT ALL RST PROC RST
F	Switch Access	+ (h) Locked – (h) Unlocked	ACCESS LOCKED UNLOCKED

[m] This value is stored in the non-volatile memory of the ADC-8733A.

[†] This value is only available when using 525-line standards.

Bank B Menus

This section summarizes the functions available on Bank B.

Table 11. Function Select: Bank B Function Table

Menu Select	Menu	Parameters	HUD Label and Value
0	Bank Select	+ A B – C	BANK A B C
1	Setup[m†]	+ On – Off	SETUP ON OFF
2	N/A		
3	Vertical Interval Blanking[m]	+ Blank – Pass Through	VI BLANK BLANK PASS
4	Vertical Interval End[m]	+ Increase – Decrease	VI END (##)
5	SuperBlack[m]	+ Clip – Pass Through	SUPER BLK CLIP PASS
6	V Bit Lock[m†]	+ Line 20 – Line 10	V BIT LOCK 20 10
7	N/A		
8	N/A		
9	N/A		
A	H Crop [m]	+ On – Off	H CROP ON OFF
B	Crop Left [m]	+ Increase – Decrease	CROP LEFT (##)
C	Crop Right [m]	+ Increase – Decrease	CROP RIGHT (##)
D	N/A		
E	N/A		
F	N/A		

† When in 525-line standard.

m This value is stored in the non-volatile memory of the ADC-8733A.

Bank C Menus

This section summarizes the functions available on Bank C.

Table 12. Function Select: Bank C Function Table

Menu Select	Menu	Parameters		HUD Label and Value	
0	Bank Select	+ + 	A B C	BANK	A B C
1	Timing Mode [m]	+ –	Frame Sync[§] Frame Delay[§] Line Sync Line Delay	TIME MODE	FS FD LS LD
2	Horizontal Delay [m]	+ –	Increase Decrease	H DELAY	(####)
3	Horizontal Reset	+ –	Zero No Action	H RESET	ZERO
4	Vertical Delay[m]	+ –	Increase Decrease	V DELAY	(#)
5	Vertical Reset	+ –	Zero No Action	V RESET	ZERO
6	Min. Delay	+ –	Zero No Action	MIN DEL	ZERO
7	N/A				
8	Freeze Mode [m]	+ –	Frame Field 2 Field 1	FRZ MODE	FRAME FLD 2 FLD 1
9	Forced Freeze	+ –	Freeze** Pass Through	FREEZE	ON OFF
A	Input Loss Mode [m]	+ –	Freeze** No Output Black	IN LOSS	FREEZE NO OUTPUT BLACK
B	N/A				
C	Forced Black	+ (h) – (h)	Off On	FRCD BLK	ON OFF
D	Forced Monochrome	+ (h) – (h)	Off On	FRCD MONO	ON OFF
E	N/A				
F	Reference [m]	+ –	BNC8 FRM 2 FRM 1	REFERENCE	BNC8 FRM2 FRM1

[§] This option is only available for the ADC-8733A-S and the ADC-8733A-SC.

** When Freeze mode is activated, the freeze is determined by Freeze Mode (Bank C-8).

[m] This value is stored in the non-volatile memory of the ADC-8733A.

Bank D Menus

This section summarizes the functions available on Bank D when using the AAM-8581 daughter card.

Table 13. Function Select: Bank D Function Table

Menu Select	Menu	Parameters	HUD Label and Value
0	Bank Select	A – B – C D	BANK A B C D
1	Audio MUX Enable[m]	+ On – Off	MUX ENABL ON OFF
2	Embed Group Select[m]	+ 1 2 3 – 4	EMBEDDED 1 2 3 4
3	Audio Delay[mα]	+ Increase – Decrease	AUD DELAY (####)MS
4	Channel Source[m]	+ Increase – Decrease	CHANNEL 1 MUTE 1 2 3 4
5	Channel Source[m]	+ Increase – Decrease	CHANNEL 2 MUTE 1 2 3 4
6	Channel Source[m]	+ Increase – Decrease	CHANNEL 3 MUTE 1 2 3 4
7	Channel Source[m]	+ Increase – Decrease	CHANNEL 4 MUTE 1 2 3 4
8	Audio Input Gain[m]	+ Increase – Decrease	IN 1 GAIN (#.#)DB
9	Audio Input Gain[m]	+ Increase – Decrease	IN 2 GAIN (#.#)DB
A	Audio Input Gain[m]	+ Increase – Decrease	IN 3 GAIN (#.#)DB
B	Audio Input Gain[m]	+ Increase – Decrease	IN 4 GAIN (#.#)DB
C	Silence Threshold[m]	+ Increase – Decrease	THRESH HL -(##)DBFS
D	Silence Alarm Timeout	+ Increase – Decrease	TIMEOUT (##) seconds
E	Audio Configuration Reset	Hold **SW2** up for 3 seconds	AUD RST 0
F	N/A		

[α] The minimum Audio Delay is based on the Timing Mode, Horizontal Delay, Vertical Delay, and Video Standard settings.

Menu Parameters

The following section provides a brief overview of the menu parameters available in the DashBoard interface and the Heads-Up Display (HUD).

Note

The card defaults with switch access set to the locked position. To unlock the access refer to the section, "**Edit Permission**" before attempting to make any adjustments.

Overview

Table 14 lists the menus available for the ADC-8733A.

Table 14. Menu Location Comparison

Menu	DashBoard Tab	HUD Label	Factory Default Value
Audio Configuration Reset[α]	Audio Tab	Bank D-E	N/A
Audio Delay[α]	Audio Tab	Bank D-3	3
Audio Input Gain[α]	Audio Tab	Bank D-8,9,A,B	0.0
Audio Input Status[α]	Audio Tab	No HUD access	N/A
Audio MUX Enable[α]	Audio Tab	Bank D-1	Enable
Black Level Offset	Proc Amp Tab	Bank A-9	0 IRE
C_B Gain	Proc Amp Tab	Bank A-C	100%
Chroma Gain	Proc Amp Tab	Bank A-A	100%
Crop Left	Framing Tab	Bank B-B	8
Crop Right	Framing Tab	Bank B-C	8
Edit Permission	Setup Tab	Bank A-F	N/A
Embed to[α]	Audio Tab	Bank D-3	Group 1
Factory Defaults	Setup Tab	Bank A-E	N/A
Forced Black	Output Tab	Bank C-C	Off
Forced Freeze	Output Tab	Bank C-9	Off
Forced Mono	Output Tab	Bank C-D	Off
Freeze Mode	Output Tab	Bank C-8	Field 1
Heads-up Display	No DashBoard access	Bank A-1	Off
Horizontal Crop	Framing Tab	Bank B-A	Off
Horizontal Delay	Timing Tab	Bank C-2	0
Horizontal Reset	No DashBoard access	Bank C-3	N/A
Input Loss Mode	Output Tab	Bank C-A	Black
Input Timing	Timing Tab	Bank A-4	Y / G
Input Standard	Setup Tab	Bank A-2	YUV SMPTE
Licensable Features	Setup Tab	No HUD access	N/A

Menu	DashBoard Tab	HUD Label	Factory Default Value
Lock V Bit On Line	Framing Tab	Bank B-6	20
Loss of Input Alarm	Alarms Tab	No HUD access	Ignore
Loss of Reference Alarm	Alarms Tab	No HUD access	Ignore
Minimum Delay	Timing Tab	Bank C-6	N/A
Proc Amp Reset	Proc Amp Tab	Bank A-E	N/A
Reference	Timing Tab	Bank C-F	Frame Reference 1
Setup	Setup Tab	Bank B-1	ON† OFF‡
Silence Threshold[α]	Audio Tab	Bank D-C	-84 DBFS
Silence Alarm Timeout[α]	Audio Tab	Bank D-D	10s
SuperBlack	Proc Amp Tab	Bank B-5	Pass
Test Pattern	Output Tab	Bank A-5	Off
Timing Mode	Timing Tab	Bank C-1	Line Sync Frame Sync§
Vertical Delay	Timing Tab	Bank C-4	0
Vertical Interval Blanking	Framing Tab	Bank B-3	Pass
Vertical Interval End	Framing Tab	Bank B-4	19† 23‡
Vertical Reset	No DashBoard access	Bank C-5	N/A
Video Gain	Proc Amp Tab	Bank A-8	100%

† When in 525-line standard.

‡ When in 625-line standard.

§ Only available on the ADC-8733A-S.

α Only available on the ADC-8733A-C and ADC-8733A-SC.

Menu Parameter Definitions

This section briefly summarizes the menu parameters available in DashBoard and the HUD of the ADC-8733A.

Audio Configuration Reset

This feature enables you to reset the audio settings to the factory default values. (ADC-8733A-C and ADC-8733A-SC only)

Audio Delay

This menu controls the amount of additional delay to be added to the input audio before it is embedded. The audio delay is entered in milliseconds and has a range of 0-5000ms (5 seconds). Note that the minimum audio delay is based on the **Timing Mode**, **Horizontal Delay**, **Vertical Delay**, and **Video** settings and is in *addition* to the **Minimum Delay**. (ADC-8733A-C and ADC-8733A-SC only)

- If the **Timing Mode** is set to **Frame Sync**, 1 frame of delay is added to the minimum audio delay. When using NTSC, this is equal to 33mS. When using PAL, this is equal to 40mS.
- The **Horizontal Delay** and **Vertical Delay** settings are also applied to the minimum audio delay.
- If the card is not set to **Frame Sync Mode**, and the Horizontal and Vertical delay settings are set to 0, the minimum inherent delay for the audio is 3mS.

Audio Input Gain

Use this menu to adjust the audio gain for each input of the AAM-8581 over a range of ±10dBu in increments of 0.05dBu. The audio is adjusted on the AAM-8581 in the analog domain before the A-D conversion for maximum signal resolution. (ADC-8733A-C and ADC-8733A-SC only)

Audio Input Status

This DashBoard feature indicates if one or more of the audio inputs are:

- below the Silence Threshold (**No Input**), or
- present and above the Silence Threshold (**OK**), or
- too high (**Clip**).

Audio MUX Enable

This menu allows you to enable the audio embedding feature on the card. (ADC-8733A-C and ADC-8733A-SC only)

- **ON** — The audio channels are embedded into the horizontal interval of the digital video based on the **Embed To**, **Audio Delay**, and **Channel Source** settings.
- **OFF** — The audio embedding feature is disabled.

Black Level Offset

This menu configures the black level offset that is *not* affected by the **Setup** function. The range is between -7.2 to 51.7 IRE. This menu uses ballistics.

For example, with **Black Level Offset** at 1 IRE, a setup level of 7.5 IRE on the video input, and **Setup** off (e.g. The setup on the input video is not removed before converting to SDI output), the black level will be 8.5 IRE.

C_B Gain

Use this menu to adjust the C_B portion of the output signal. The range is 50% to 150%. This menu uses ballistics.

Chroma Gain

This menu allows you to adjust the Chroma (C_R and C_B) portion of the output signal. The range is 50% to 150%. This menu uses ballistics.

Crop Left

The output SDI video line can be cropped starting at the beginning of the line in increments of one pixel up to 350.

Crop Right

The output SDI video line can be cropped from the end of the line backwards toward the beginning of the line in increments of one pixel up to 350.

Edit Permission

The ADC-8733A can be monitored using DashBoard at any time while it is powered. To be able to adjust its parameters the card has to be unlocked. On power-up the Edit Permission always reverts to its default value of locked.

The **ACCESS** LED lights whenever the card is unlocked.

The **Switch Access** function allows you to lock or unlock user access to all adjustment parameters from the card-edge controls. The "lock" function should be performed after installation to secure all settings, and to prevent accidental setting changes.

Note the following rules:

- When access is locked, no adjustments can be made and the HUD is automatically turned off. The **ACCESS** LED is off.
- When access is unlocked, adjustments can be made. The **ACCESS** LED is lit. The HUD must be manually turned on again if needed.

Embed to

Use this menu to specify which group to embed the audio into (Group 1 to 4).

Factory Defaults

This function allows you to return all controls to their default values except the Heads-Up Display and Edit Permission menu parameters.

Forced Black

This menu forces the output to SD-SDI Black. The output can be forced to SDI Black only if:

- in Line/Delay modes the input timing signal is valid; or
- in Line/Frame Sync modes the input timing signal or reference is valid.

Forced Freeze

The output can be manually frozen (ADC-8733A-S only) using the **Forced Freeze** menu. When enabled, it will freeze Field 1 only, Field 2 only, or the entire frame as determined by the **Freeze**

Mode function. If **Forced Freeze** is set to **ON**, the output is frozen only if the Timing Mode is set to Frame Sync.

Forced Mono

This menu turns off the color portion of the output SD-SDI signal.

Freeze Mode

The **Freeze Mode** function allows you to set what will be the output when a freeze occurs (as set by the **Forced Freeze** menu).

The output is be frozen (ADC-8733A-S only) if any of the following conditions occur:

- The user freezes the output manually. Refer to the section, "**Forced Freeze**".
- There is a loss of input signal. Refer to the section, "**Input Loss Mode**".

Heads-up Display

The Heads-Up Display (HUD) is used to provide visual feedback to the user while altering parameters with the card-edge controls. It is not necessary to have the HUD on while adjusting parameters.

Note

The display is superimposed over all ADC-8733A video outputs. Do not use this feature with "on-air" signals.

Horizontal Crop

The active video portion of an SDI video line is wider than that of an analog component video line. The smaller active analog video is centered on that of the SDI video. Use this card to crop the leading, the trailing, or both video samples on the output SDI video line. This will avoid possible errors downstream if converting back to analog component video.

Horizontal Delay

Delay can be added to the output video in half-pixel increments up to a maximum of 1715 in 525-line standard or 1727 in 625-line standard. This menu uses ballistics.

Note the following points when adjusting the Horizontal Delay:

- If you cross over the maximum Horizontal Delay, the value returns to 0 (zero) and the Vertical Delay value increments by 1.
- Crossing the minimum delay returns the Horizontal Delay value to 1715 (525-line standard) or 1725 (625-line standard) and decrements the Vertical Delay value by 1.
- If at maximum Horizontal Delay and maximum Vertical Delay, incrementing the Horizontal Delay value will cause the Vertical Delay value to wrap from maximum value to the minimum value.
- If at minimum Horizontal Delay and minimum Vertical Delay, decrementing the Horizontal Delay value will cause the Vertical Delay value to wrap from minimum value to the maximum value.

Horizontal Reset

This menu resets the Horizontal Delay to 0 (zero).

Input Loss Mode

The **Input Loss Mode** function selects what type of video appears at the card's outputs when the input signal is lost or invalid.

Note

> Before selecting the **Black** or **Freeze** options, first ensure that the **Reference** is not set to the same value as the **Input Timing**.

The following options are available:

- **Black** — The output is set to SD-SDI black. The **Timing Mode** must be set to **Frame Sync** and the reference must be valid.
- **No Output** —No signal is present on the output.
- **Freeze** — The last valid image is automatically frozen (ADC-8733A-S only). The freeze is determined by the **Freeze Mode** menu. The **Timing Mode** must be set to **Frame Sync** and the reference must be valid.

Input Timing

The Input Timing function selects where the input signal timing will come from.

Normally, the card obtains synchronization from the Y or G channel of the input signal. However, if the input does not contain sync, an external sync source must be used. The timing of any external sync must be co-timed to within ± 1µs to the normal position of sync on the input signal.

Input Standard

The Input Standard function allows you to select from five input video standards.

Licensable Features

This DashBoard only menu parameter indicates when a licensed feature, such as Frame Sync, is enabled on the card.

Lock V Bit On Line

Some types of equipment require that the transition from vertical interval to active video to be locked to either line 10 or line 20. Use this menu to select the V Bit location.

Note

> **V Bit** location can only be moved in the 525-line standards.

Loss of Input Alarm

Use this menu to allow DashBoard to report the loss of the input as an alarm condition. The alarm condition shows up in the **Signal** tab as **Signal Status**.

Loss of Reference Alarm

Use this menu to allow DashBoard to report the loss of the reference as an alarm condition. The alarm condition shows up in the **Signal** tab as **Reference OK**.

Minimum Delay

This menu resets both the Horizontal Delay and Vertical Delay values to 0 (zero). Note that this resets the Horizontal and Vertical Delay values across all Timing Modes.

Proc Amp Reset

Use this menu to reset the following Proc Amp controls to their default values:

- Video Gain
- Chroma Gain
- C_B Gain
- Black Level Offset
- Super Black

Reference

The sync timing modes of the ADC-8733A require a reference. The recommended signal is a stable composite analog black signal. This menu selects where the card will look for that reference. The choices are BNC 8, Frame Reference 1, and Frame Reference 2.

Setup

This menu controls what the card does to the incoming signal with respect to setup as follows:

- If the incoming signal has setup on it set this parameter to **ON**. The card will remove it before it converts the component signal to SD-SDI.
- If the incoming signal does not have setup on it set this parameter to **OFF**.

SuperBlack

Use this menu to clip SuperBlack values from the input video signal as follows:

- Allow the input's active video signal to pass through unaltered
- Clip any value below black

Test Pattern

The **Test Pattern** function allows you to select from two test pattern types or disable the test pattern option.

Note

When using the SD-SDI Check Field test pattern, the HUD must be Off for the test pattern to provide accurate results.

Timing Mode

The ADC-8733A has the following timing modes:

- Line Delay
- Line Sync

The ADC-8733A-S has the following timing modes:

- Line Delay

- Line Sync
- Frame Delay
- Frame Sync

The available Timing Modes are summarized in the following sections.

Line Delay (ADC-8733A & ADC-8733A-S)

This mode uses the input timing signal to generate the output timing. There is a constant delay between the input and the output. The reference is not used. This is useful in applications where a constant delay through the card is required.

The minimum delay through the card is given in the chapter, "**Specifications**". Output timing can be adjusted from this minimum delay up to an additional two lines in half-pixel increments. Refer to the sections "**Horizontal Delay**" and "**Vertical Delay**".

Line Sync (ADC-8733A & ADC-8733A-S)

This mode uses the reference to generate the output timing on a line-by-line basis, but uses the input timing signal to decide when a frame begins.

Whenever a signal is received, the output-timing generator waits for the next falling edge of H Sync on the reference signal before outputting the received signal. The advantage of this mode is that as long as all input sources are timed to be on the same line, the output timing stays constant, regardless of which input is selected. This is very useful in that all sources to the ADC-8733A (for example, from a routing switcher) only need to be lined up to the same line.

Up to two extra lines of delay can be added to the output in half-pixel increments in this mode.

Note

If two input sources are not on the same line, then switching from one source to the other causes a jump in the output timing by an exact number of lines. For example, if the two sources are 2.5 lines apart, the output jumps by either 2 or 3 lines depending on the position of the sources with respect to the reference.

Threshold Point

A finite amount of time is needed to process an input signal before it can be output. This is called the minimum delay. In Line Sync operation the start of the input line is delayed beyond the minimum delay until the start of the next reference line, then it is output. If the input signal's timing slips enough, the start of its line will not have enough time to get processed and be output in time to be aligned with the start of the reference line. This point is called the threshold point. When the input signal slips to the threshold point the output will be delayed until the next reference line.

The threshold point is measured as the amount of time the input signal's line start must lead the reference's line start. This is 2 lines plus 38µs.

In addition, there is built in hysteresis so that if an input source is near the threshold point, the output timing will be constant and will not jump back and forth by a line if the input signal varies slightly. However, if the input signal is exactly on the threshold point, the output timing may vary from one power up to the next. In other words, the card may power up with different timing than the previous time it was powered-up. To avoid this condition, it is recommended to keep the input signal away from the threshold point. Two microseconds can be considered a safe distance.

Note

In Line Sync Mode, the falling edge of the incoming video's Sync should be kept away from the threshold point.

Frame Delay (ADC-8733A-S only)

The **Frame Delay** mode is identical to the **Line Delay** mode, except that the output timing can be delayed by up to a full frame of video. By using almost a full frame of delay, it is possible to set apparent negative timing, making it look like the output occurs before the input.

Frame Sync (ADC-8733A-S only)

The **Frame Sync** mode makes it possible to use asynchronous sources. The output timing is generated entirely based on the reference. Whether a synchronous or an asynchronous source is used, output timing is constant. The delay through the card will be:

- one full frame of buffered video;
- an additional delay of anything from the minimum latency of the ADC-8733A-S (an amount in the order of less than a microsecond) up to an additional full frame of delay (two frames total).

Up to one extra frame of delay can be added to the output in half-pixel increments in this mode.

Vertical Delay

Extra delay can be added to the output video in line increments. Vertical Delay can add up to a maximum of 524 lines in the 525-line standard or 624 lines in the 625-line standard. This menu uses ballistics.

Note the following points when adjusting the Vertical Delay:

- If you cross over the maximum Vertical Delay, the value returns to 0 (zero).
- Crossing the minimum delay returns the Vertical Delay value to 524 (525-line standard), or 624 (625-line standard).

Vertical Interval Blanking

Use this menu to blank the vertical interval, or allow the signals in the vertical interval to pass through the ADC-8733A.

Vertical Interval End

The ADC-8733A has a programmable Vertical Interval that allows you to set where the VI ends and the first line of active video begins. Everything up to (but not including) the first line of active video is considered part of the Vertical Interval and will be affected by this function.

- In 525-line standard, signals in the vertical interval are passed without setup even if setup is enabled. The Vertical Interval End can be set to line 19, 20, or 21.
- In 625-line standard, the Vertical Interval End is not adjustable and is set at 22.

Vertical Reset

This menu resets the Vertical Delay value to 0 (zero).

Video Gain

Use this menu to adjust the gain of the output signal. The range is 50% to 150%. This menu uses ballistics.

Specifications

In This Chapter

This chapter includes the Technical Specifications Table for the ADC-8733A.

Table 15. ADC-8733A — Technical Specifications

Category	Parameter	Specification
Component Video Input	Signal Standards Accepted	YUV (SMPTE, BETA and MII) RGB (SMPTE, NTSC-Rel, MII)
	Number of Inputs	1
	Component Video	1V p-p nominal
	Impedance	75Ω terminating
	Return Loss	>43.5dB to 6MHz
SDI Output	Signal Standards	SMPTE 259M-C, 270Mbps 525/625-lines, 10 bits
	Number of Outputs	4*
	Return Loss	>20.0dB to 270MHz
	Signal Level	800mV ± 10%
	DC Offset	<50mV
	Rise and Fall Time	>800pS (20 - 80%, ±15%)
	Overshoot	<5% typical
Audio Input [α]	Number of Inputs	4
	Connector	3-Pin Plug to BNC
	Impedance	>10KΩ
	Maximum Input Level	+34dBu (input gain set to –10dBu)
	Input Level Range	± 10dBu
	Frequency Response	± 0.05dB 20Hz – 22kHz @ Fs = 48kHz

Category	Parameter	Specification
Audio Performance [α]	Signal to Noise Ratio	100dB 101dB 'A' weighted 107dB CCITT weighting
	Total Harmonic Distortion	<100dB
	Phase Linearity	1.2° @ 20kHz
	Amplitude Linearity	0.6dB @ -100dBFS
	Crosstalk	>95dB
	Minimum Audio Delay	3ms
	Maximum Audio Delay	5sec
Analog Reference	Signal Standards Accepted	NTSC, PAL-B, PAL-M, PAL-N
	Number of Inputs	1
	Input Impedance	75Ω
	Return Loss	>46dB to 6.75MHz
Minimum Delay in Line/Frame Delay Mode	Minimum Delay	525-line standard: 1 Line + 3.3µs 625-line standard: 1 Line + 3.6µs
Power Consumption	Total without Audio Option	4.5W
	Total with Audio Option	9.5W
Tracking Delay Pulse	ADC-8733A	up to 2 video lines
	ADC-8733A-S	up to 2 video frames

[*] When using the R1-8733 or the R2-8733 Rear Module.

[α] When using the R1C-8733 or the R2C-8733 Rear Module.

Specifications are subject to change without notice

Service Information

In This Chapter

This chapter contains the following sections:

- Troubleshooting Checklist
- Power LED Conditions
- Bootload Button
- Warranty and Repair Policy

Troubleshooting Checklist

Routine maintenance to this openGear product is not required. In the event of problems with your ADC-8733A, the following basic troubleshooting checklist may help identify the source of the problem. If the card still does not appear to be working properly after checking all possible causes, please contact your openGear products distributor, or the Technical Support department at the numbers listed under the "**Contact Us**" section at the end of this manual.

1. **Visual Review —** Performing a quick visual check may reveal many problems, such as connectors not properly seated or loose cables. Check the module, the frame, and any associated peripheral equipment for signs of trouble.
2. **Power Check —** Check the power indicator LED on the distribution frame front panel for the presence of power. If the power LED is not illuminated, verify that the power cable is connected to a power source and that power is available at the power main. Confirm that the power supplies are fully seated in their slots. If the power LED is still not illuminated, replace the power supply with one that is verified to work.
3. **Reset the Card in the Frame** — Eject the card and re-insert it in the frame.
4. **Check Control Settings** — Refer to the Installation and Operation sections of the manual and verify all user-adjustable component settings.
5. **Input Signal Status —** Verify that source equipment is operating correctly and that a valid signal is being supplied.
6. **Output Signal Path —** Verify that destination equipment is operating correctly and receiving a valid signal.
7. **Card Exchange** — Exchanging a suspect card with a card that is known to be working correctly is an efficient method for localizing problems to individual cards.

Power LED Conditions

The top front edge of the module has a Power LED which indicates card status. The Power LED displays the following conditions:

- **Off** — no power to the card.
- **Amber** — the card is running internal diagnostics while powering up.
- **Green** — normal operation.
- **Flashing Green** — the card is waiting for a software upgrade.
- **Red** — solid or flashing means the card is not operational. Reseat card in frame, check the Rear Module type and connections, or call Technical Support.

Bootload Button

In the unlikely event of a complete card failure, you may be instructed by a Ross Technical Support specialist to perform a complete software reload on the ADC-8733A.

Use the following procedure to perform a complete software reload on the card:

1. Eject the card.
2. Press and hold the **Bootload** button, while re-inserting the card into the frame.
3. Release the button.

   The **PWR LED** will flash GREEN while the card is waiting for a new software load.

   If a new software load is not sent to the card within 60 seconds, the card will attempt to restart with its last operational software load.

Contact Ross Technical Support for the latest software load for your ADC-8733A.

Warranty and Repair Policy

The ADC-8733A is warranted to be free of any defect with respect to performance, quality, reliability, and workmanship for a period of FIVE (5) years from the date of shipment from our factory. In the event that your ADC-8733A proves to be defective in any way during this warranty period, Ross Video Limited reserves the right to repair or replace this piece of equipment with a unit of equal or superior performance characteristics.

Should you find that this ADC-8733A has failed after your warranty period has expired, we will repair your defective product should suitable replacement components be available. You, the owner, will bear any labor and/or part costs incurred in the repair or refurbishment of said equipment beyond the FIVE (5) year warranty period.

In no event shall Ross Video Limited be liable for direct, indirect, special, incidental, or consequential damages (including loss of profits) incurred by the use of this product. Implied warranties are expressly limited to the duration of this warranty.

This ADC-8733A User Manual provides all pertinent information for the safe installation and operation of your openGear Product. Ross Video policy dictates that all repairs to the ADC-8733A are to be conducted only by an authorized Ross Video Limited factory representative. Therefore, any unauthorized attempt to repair this product, by anyone other than an authorized Ross Video Limited factory representative, will automatically void the warranty. Please contact Ross Video Technical Support for more information.

In Case of Problems

Should any problem arise with your ADC-8733A, please contact the Ross Video Technical Support Department. (Contact information is supplied at the end of this publication.)

A Return Material Authorization number (RMA) will be issued to you, as well as specific shipping instructions, should you wish our factory to repair your ADC-8733A. If required, a temporary replacement module will be made available at a nominal charge. Any shipping costs incurred will be the responsibility of you, the customer. All products shipped to you from Ross Video Limited will be shipped collect.

The Ross Video Technical Support Department will continue to provide advice on any product manufactured by Ross Video Limited, beyond the warranty period without charge, for the life of the equipment.

Ordering Information

ADC-8733A and Related Products

Your ADC-8733A Analog Component to SD-SDI Video Decoder is a part of the openGear family of products. Ross Video offers a full line of openGear terminal equipment including distribution, conversion, monitoring, synchronizers, encoders, AES, keyers, switches, as well as analog audio and video products.

Standard Equipment

- **ADC-8733A** Analog Component to SD-SDI Video Decoder
- **ADC-8733A-S** Analog Component to SD-SDI Video Decoder with Frame Synchronizer
- **ADC-8733A-C** Analog Component to SD-SDI Video Decoder with Audio
- **ADC-8733A-SC** Analog Component to SD-SDI Video Decoder with Frame Synchronizer and Audio
- **8733ADR-004** Analog Component to SD-SDI Video Decoder User Manual

Optional Equipment

- **8733ADR-004** Analog Component to SD-SDI Video Decoder User Manual (additional)
- **FSU-8733A** Frame Synchronizer licensed software feature
- **R1-8733** openGear Rear Module for the DFR-8310 series frames
- **R1C-8733** openGear Rear Module when using the AAM-8581 daughter card for the DFR-8310 series frames
- **DFR-8310-N** Digital Products Frame and Power Supply with cooling fans, and MFC-8310-N card (2RU, holds 10 cards)
- **DFR-8320-CNS** Digital Products Frame, Power Supply, Cooling Fans, MFC-8310-N, COMM I/O Module and SNMP-8310 (2RU, holds up to 20 cards)
- **R2-8733** openGear Full Rear Module for the DFR-8320 series frames
- **R2C-8733** openGear Full Rear Module when using the AAM-8581 daughter card for the DFR-8320 series frames
- **R2S-8733** openGear Split Rear Module for the DFR-8320 series frames

Please contact your openGear sales representative for a complete list of the available options.

Notes:

Notes:

Contact Us

Contact our friendly and professional support representatives for the following:

- Name and address of your local dealer
- Product information and pricing
- Technical support
- Upcoming trade show information

PHONE	**General Business Office and Technical Support**	613 • 652 • 4886
	After-hours Emergency	613 • 349 • 0006
	Fax	613 • 652 • 4425
E-MAIL	**General Information**	solutions@rossvideo.com
	Technical Support	techsupport@rossvideo.com
POSTAL SERVICE	**Ross Video Limited**	8 John Street, Iroquois, Ontario, Canada K0E 1K0
	Ross Video Incorporated	P.O. Box 880, Ogdensburg, New York, USA 13669-0880

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- On-line catalog
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- News
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www.rossvideo.com