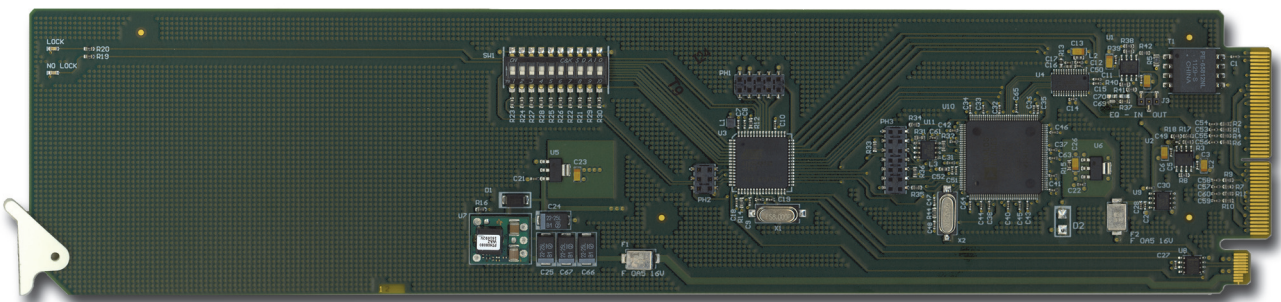


# ADA-8402-A

AES/EBU Distribution Amplifier (75ohm)

User Manual



# Thank You for Choosing Ross

You've made a great choice. We expect you will be very happy with your purchase of Ross Technology.

Our mission is to:

1. Provide a Superior Customer Experience
  - offer the best product quality and support
2. Make Cool Practical Technology
  - develop great products that customers love

Ross has become well known for the Ross Video Code of Ethics. It guides our interactions and empowers our employees. I hope you enjoy reading it below.

If anything at all with your Ross experience does not live up to your expectations be sure to reach out to us at [solutions@rossvideo.com](mailto:solutions@rossvideo.com).



David Ross  
CEO, Ross Video  
[dross@rossvideo.com](mailto:dross@rossvideo.com)

## Ross Video Code of Ethics

Any company is the sum total of the people that make things happen. At Ross, our employees are a special group. Our employees truly care about doing a great job and delivering a high quality customer experience every day. This code of ethics hangs on the wall of all Ross Video locations to guide our behavior:

1. We will always act in our customers' best interest.
2. We will do our best to understand our customers' requirements.
3. We will not ship crap.
4. We will be great to work with.
5. We will do something extra for our customers, as an apology, when something big goes wrong and it's our fault.
6. We will keep our promises.
7. We will treat the competition with respect.
8. We will cooperate with and help other friendly companies.
9. We will go above and beyond in times of crisis. *If there's no one to authorize the required action in times of company or customer crisis - do what you know in your heart is right. (You may rent helicopters if necessary.)*

# ADA-8402-A · User Manual

- Ross Part Number: 8402ADR-004-04
- Release Date: January 18, 2018.

The information contained in this Guide is subject to change without notice or obligation.

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## Patents

Patent numbers US 7,034,886; US 7,508,455; US 7,602,446; US 7,802,802 B2; US 7,834,886; US 7,914,332; US 8,307,284; US 8,407,374 B2; US 8,499,019 B2; US 8,519,949 B2; US 8,743,292 B2; GB 2,419,119 B; GB 2,447,380 B; and other patents pending.

## Notice

The material in this manual is furnished for informational use only. It is subject to change without notice and should not be construed as commitment by Ross Video Limited. Ross Video Limited assumes no responsibility or liability for errors or inaccuracies that may appear in this manual.

## Safety Notices

Refer to the “**Important Regulatory and Safety Notices**” document that accompanied your product.

## Statement of Compliance

This product has been determined to be compliant with the applicable standards, regulations, and directives for the countries where the product is marketed.

Compliance documentation, such as certification or Declaration of Compliance for the product is available upon request by contacting [techsupport@rossvideo.com](mailto:techsupport@rossvideo.com). Please include the product; model number identifiers and serial number and country that compliance information is needed in request.

## 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 the user will be required to correct the interference at his 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 and part 15 of the FCC Rules.

Cet appareil numérique de la classe “A” est conforme a la norme NMB-003 du Canada.

#### European Union

This equipment is in compliance with the essential requirements and other relevant provisions established under regulation (EC) No 765/2008 and Decision No 768/2008/EC referred to as the “New Legislative Framework”.



---

**Warning** — *This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.*

---

#### Australia/New Zealand

This equipment is in compliance with the provisions established under the Radiocommunications Act 1992 and Radiocommunications Labeling (Electromagnetic Compatibility) Notice 2008.

#### Korea

This equipment is in compliance with the provisions established under the Radio Waves Act.

Class A equipment (Broadcasting and communications service for business use)

This device is a business-use (Class A) EMC-compliant device. The seller and user are advised to be aware of this fact. This device is intended for use in areas outside home.

Type of Equipment	User's Guide
A급 기기 (업무용 방송통신기자재)	이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.
Class A Equipment (Industrial Broadcasting & Communication Equipment)	This equipment is <b>Industrial (Class A) electromagnetic wave suitability equipment</b> and seller or user should take notice of it, and this equipment is to be used in the places except for home.

#### International

This equipment has been tested under the requirements of CISPR 22:2008 or CISPR 32:2015 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 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. See the “**Warranty and Repair Policy**” section in this manual for details.

## Environmental Information

The equipment 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.

## Company Address



### **Ross Video Limited**

8 John Street  
Iroquois, Ontario, K0E 1K0  
Canada

### **Ross Video Incorporated**

P.O. Box 880  
Ogdensburg, New York  
USA 13669-0880

General Business Office: (+1) 613 • 652 • 4886

Fax: (+1) 613 • 652 • 4425

Technical Support: (+1) 613 • 652 • 4886

After Hours Emergency: (+1) 613 • 349 • 0006

E-mail (Technical Support): [techsupport@rossvideo.com](mailto:techsupport@rossvideo.com)

E-mail (General Information): [solutions@rossvideo.com](mailto:solutions@rossvideo.com)

Website: <http://www.rossvideo.com>



# Contents

- Introduction 1**
  - Overview..... 1-2
    - Features..... 1-2
  - Functional Block Diagrams ..... 1-3
  - User Interfaces ..... 1-4
    - DashBoard Control System ..... 1-4
    - Card-edge Controls..... 1-4
  - Documentation Terms and Conventions..... 1-5
  
- Installation 2**
  - Before You Begin ..... 2-2
    - Static Discharge..... 2-2
    - Unpacking..... 2-2
  - Installing the ADA-8402-A ..... 2-3
    - Rear Modules for the ADA-8402-A..... 2-3
    - Installing a Rear Module ..... 2-3
    - Installing the ADA-8402-A..... 2-4
  - Cabling for the ADA-8402-A ..... 2-5
    - DFR-8310 Series Frame Cabling Overview..... 2-5
    - DFR-8321 and OG3-FR Series Frame Cabling Overview ..... 2-5
  - Software Upgrades..... 2-6
  
- User Controls 3**
  - Card Overview ..... 3-2
  - Configuring the DIP Switches ..... 3-3
  - Control and Monitoring Features..... 3-5
    - Status and Selection LEDs on the ADA-8402-A ..... 3-5
  - Using DashBoard..... 3-6
  
- DashBoard Menus 4**
  - Status Tabs ..... 4-2
    - Status Tab ..... 4-2
    - Product Tab ..... 4-2
  - Settings Tab ..... 4-3
  
- Specifications 5**
  - Technical Specifications ..... 5-2
  
- Service Information 6**
  - Troubleshooting Checklist..... 6-2
  - Warranty and Repair Policy..... 6-3





# Introduction

---

## In This Chapter

This chapter contains the following sections:

- Overview
- Functional Block Diagrams
- User Interfaces
- Documentation Terms and Conventions

## A Word of Thanks

Congratulations on choosing an openGear ADA-8402-A AES/EBU Distribution Amplifier (75ohm). Thank you for joining the group of worldwide satisfied Ross Video customers!

Should you have a question pertaining to the installation or operation of your ADA-8402-A, please contact us at the numbers listed on the back cover of this manual. Our technical support staff is always available for consultation, training, or service.

---

# Overview

The ADA-8402-A is an AES/EBU distribution amplifier designed for broadcast use. It provides eight copies of the incoming unbalanced AES-3id signal when used with the 8320AR-030 Full Rear Module or four copies of the incoming signal when used with the 8320AR-031 Split Rear Module. The ADA-8402-A supports audio sampling frequencies from 32kHz to 96kHz. Cable equalization and reclocking techniques enable the ADA-8402-A to recover the incoming digital audio signal reliably.

The ADA-8402-A also includes built-in loudness measurement. The card is capable of reading the ITU1770 LKFS Audio Measurements and displaying the measurement in DashBoard.

The 8320AR-031 high density split rear module can accommodate up to two ADA-8402-A cards, each configured as a 1x4 DA, accommodating up to 20 channels of distribution per 2RU frame.

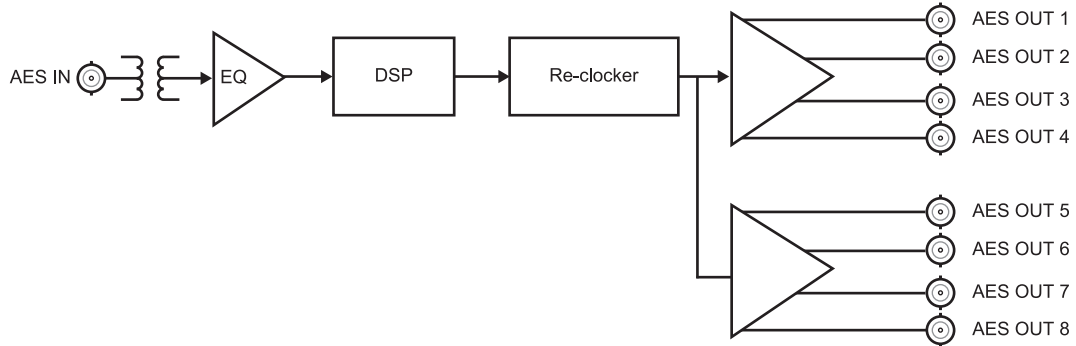
## Features

The following features make the ADA-8402-A the best solution for distributing digital audio signals:

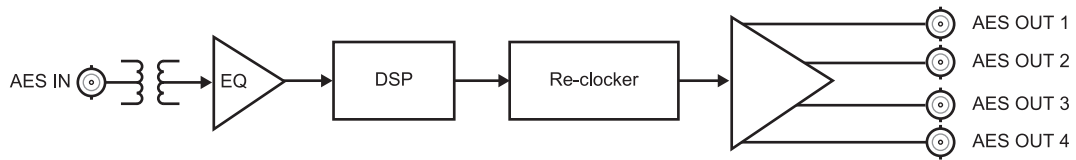
- Supports AES-3id (SMPTE 276M)
- 1x8 or 1x4 (high density) AES distribution amplifier
- 75ohm unbalanced I/O
- Ideal for distributing Dolby® E and Dolby® Digital signals
- Reports the ITU1770 LKFS Audio Measurements in DashBoard
- Cable equalization and data reclocking on the incoming AES/EBU signal
- Supports audio sampling frequencies from 32kHz to 96kHz
- Provides level matching and level control of output signals
- Fits in the openGear frames
- Higher density with up to 20 cards using the 8320AR-031 Split Rear Modules
- 5 year transferable warranty

# Functional Block Diagrams

This section provides functional block diagrams that outline the workflow of the ADA-8402-A.



**Figure 1.1** Simplified Block Diagram — 8310AR-030 and 8320AR-030 Full Rear Modules



**Figure 1.2** Simplified Block Diagram — 8320AR-031 Split Rear Module

---

# User Interfaces

The ADA-8402-A offers the following interfaces for control and monitoring.

## DashBoard Control System

The DashBoard Control System enables you to monitor and control openGear frames and cards from a computer. DashBoard communicates with other cards in the openGear frame through the Network Controller Card.

### *For More Information...*

- on the menus in DashBoard, refer to the chapter “**DashBoard Menus**” on page 4-1.
- on using DashBoard, refer to the *DashBoard User Manual*.

## Card-edge Controls

The front-edge of the ADA-8402-A features LED indicators for the power, video input status and communication activity.

### *For More Information...*

- on adjusting the output levels, refer to the section “**Card Overview**” on page 3-2.
- on monitoring the status using the card-edge LEDs, refer to the section “**Control and Monitoring Features**” on page 3-5.

---

# Documentation Terms and Conventions

The following terms and conventions are used throughout this manual.

## Terms

The following terms are used:

- “**Board**”, and “**Card**” refer to openGear terminal devices within openGear frames, including all components and switches.
- “**DashBoard**” refers to the DashBoard Control System.
- “**DFR-8300 series frame**” refers to all versions of the 10-slot (DFR-8310 series) and 20-slot (DFR-8321 series) frames and any available options unless otherwise noted.
- “**OG3-FR series frame**” refers to the OG3-FR series frames and any available options unless otherwise noted.
- “**openGear frame**” refers to DFR-8300 series and OG3-FR series frames that house the ADA-8402-A.
- “**Operator**” and “**User**” refer to the person who uses ADA-8402-A.
- “**System**” and “**Video system**” refer to the mix of interconnected production and terminal equipment in your environment.

## Conventions

The following conventions are used:

- The “**Operating Tips**” and “**Note**” boxes are used throughout this manual to provide additional user information.



# Installation

---

## In This Chapter

This chapter provides instructions for installing the Rear Module(s) for the ADA-8402-A, installing the card into the frame, cabling details, and updating the card software.

The following topics are discussed:

- Before You Begin
- Installing the ADA-8402-A
- Cabling for the ADA-8402-A
- Software Upgrades

---

## Before You Begin

Before proceeding with the instructions in this chapter, ensure that your openGear frame is properly installed according to the instructions in its user manual.

### Static Discharge

Whenever handling the ADA-8402-A 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 synthetic fiber clothing is worn. Always exercise proper grounding precautions when working on circuit boards and related equipment.*

---

### Unpacking

Unpack each ADA-8402-A you received from the shipping container and ensure that all items are included. If any items are missing or damaged, contact your sales representative or Ross Video directly.



---

# Installing the ADA-8402-A

This section outlines how to install a rear module and card in an openGear frame. The same procedure applies regardless of the frame or card type. However, the specific rear module you need to install depends on the frame you are using.

## Rear Modules for the ADA-8402-A

The Rear Module for the ADA-8402-A depends on the openGear frame you are installing the card into.

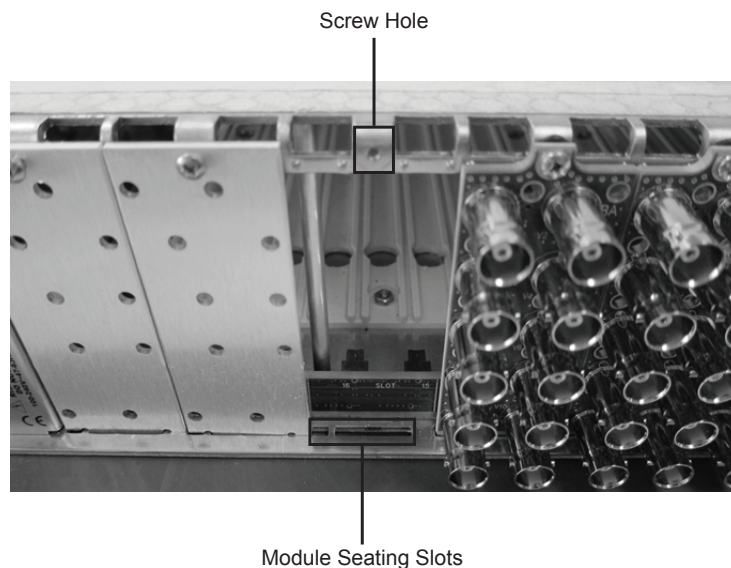
- **DFR-8310 series frame** — When installing the ADA-8402-A in the DFR-8310 series frames, the **8310AR-030** Rear Module is required.
- **DFR-8321 series and OG3-FR series frames** — When installing the ADA-8402-A in the DFR-8321 series or OG3-FR series frames, the **8320AR-030** Full Rear Module, or the **8320AR-031** Split Rear Module can be used. When using a Full Rear Module, use the even numbered slots, such as 2 or 4, to ensure that the card aligns with the rear module.

## Installing a Rear Module

If the Rear Module is already installed, proceed to the section “**Installing the ADA-8402-A**” on page 2-4.

### To install a rear module in your openGear frame

1. Locate the card frame slots on the rear of the frame.
2. Remove the Blank Plate from the slot you have chosen for the card installation.
3. Install the bottom of the Rear Module in the **Module Seating Slot** at the base of the frame’s back plane. (**Figure 2.1**)



**Figure 2.1** Rear Module Installation in an openGear Frame (ADA-8402-A not shown)

4. Align the top hole of the Rear Module with the screw on the top-edge of the frame back plane.

5. Using a Phillips screwdriver and the supplied screw, fasten the Rear Module to the back plane of the frame. Do not over tighten.
6. Ensure proper frame cooling and ventilation by having all rear frame slots covered with Rear Modules or Blank Plates.

## Installing the ADA-8402-A

Use the following procedure to install the ADA-8402-A in an openGear frame:

1. Locate the Rear Module you installed in the procedure “**Installing a Rear Module**” on page 2-3.
2. Hold the 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 plus is properly seated in the Rear Module.
4. Verify whether your label is self-adhesive by checking the back of the label before applying the label to the rear module surface.
5. Affix the supplied **Rear Module Label** to the BNC area of the Rear Module.

# Cabling for the ADA-8402-A

This section provides information for connecting cables to the installed Rear Modules on the openGear frames. Connect the input and output cables according to the following sections. The inputs are internally terminated in 75ohm and it is not necessary to terminate unused outputs.

## DFR-8310 Series Frame Cabling Overview

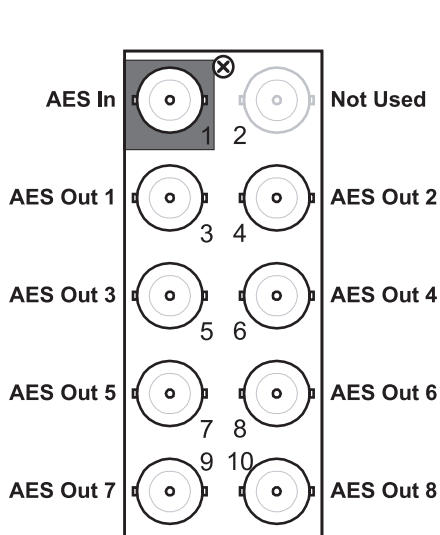
In the DFR-8310 series frames, the ADA-8402-A is used with the following Rear Modules:

- **8310AR-030** Rear Module — Each rear module occupies one slot and accommodates one card. This rear module provides one AES input and eight AES outputs. (**Figure 2.2**)

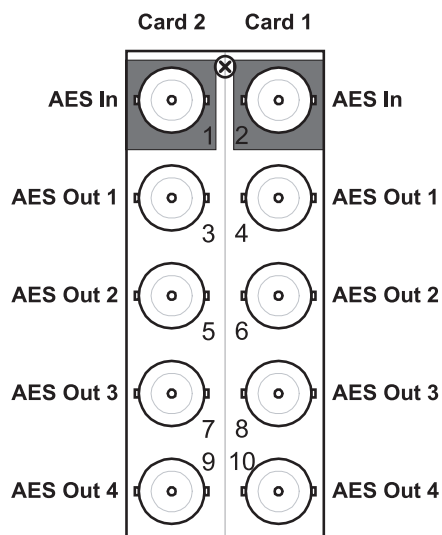
## DFR-8321 and OG3-FR Series Frame Cabling Overview

In the DFR-8321 and OG3-FR series frames, the ADA-8402-A is used with the following Rear Modules:

- **8320AR-030** Full Rear Module — Each rear module occupies two slots and accommodates one card. This rear module provides one AES input and eight AES outputs. (**Figure 2.2**)
- **8320AR-031** Split Rear Module — Each rear module occupies two slots and accommodates two cards. This rear module provides one AES input and four AES outputs per card. (**Figure 2.3**)



**Figure 2.2** Cable Connections for the 8310AR-030 and 8320AR-030 Rear Modules



**Figure 2.3** Cable Connections for the 8320AR-031 Split Rear Module

---

# Software Upgrades

The card can be upgraded in the field via the Network Controller card in your openGear frame.

---



**Note** — *DashBoard version 3.0.0 or higher is required for this procedure.*

---

## To upgrade the software on a card

1. Contact Ross Technical Support for the latest software version file.
2. Display the **Device View** of the card by double-clicking its status indicator in the **Basic Tree View**.
3. From the **Device View**, click **Upload** to display the **Select file for upload** dialog.
4. Navigate to the \*.bin upload file you wish to upload.
5. Click **Open**.
6. If you are upgrading a single card, click **Finish**. Proceed to step 8.
7. If you are upgrading multiple cards:
  - Click **Next >** to display the **Select Destination** menu. This menu provides a list of the compatible cards based on the card selected in step 2.
  - Specify the card(s) to upload the file to by selecting the check box(es) for the cards you wish to upload the file to.
  - Verify that the card(s) you wish to upload the file to. The **Error/Warning** fields indicate any errors, such as incompatible software or card type mismatch.
  - Click **Finish**.
8. Monitor the upgrade.
  - Monitor the upgrade progress bar displayed in DashBoard while the software is upgraded on your card.
  - The card(s) will automatically reboot and temporarily taken off-line during the re-boot process. The process is complete once the status indicators for the **Card State** and **Connection** fields return to their previous status.

# User Controls

---

## In This Chapter

This chapter provides a general overview of the user controls available on the ADA-8402-A.

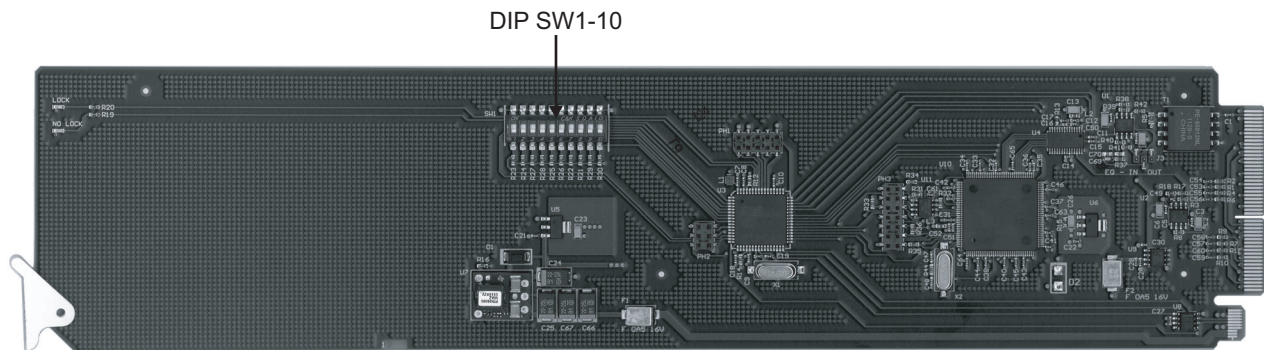
The following topics are discussed:

- Card Overview
- Configuring the DIP Switches
- Control and Monitoring Features
- Using DashBoard

---

## Card Overview

This section provides a general overview of the ADA-8402-A components.



*Figure 3.1 ADA-8402-A — DIP Switch Location*

### **SW1, SW2 — Remote Control**

**SW1** and **SW2** are used to specify whether control is via DashBoard or the card-edge DIP switches. Refer to the section “**Enabling Card-edge Control**” on page 3-3 for details.

### **SW3, SW4 — Output Mode Selection**

**SW3** and **SW4** are used in conjunction to set the output mode of the ADA-8402-A. Refer to the section “**Setting the Output Mode**” on page 3-3 for details.

### **SW5**

This DIP Switch is not implemented.

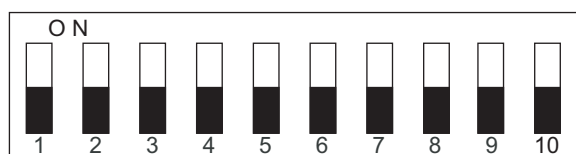
### **SW6 - SW10 — Gain Control**

These switches are used in conjunction to apply a specific Gain value (dB). Refer to the section “**Specifying the Gain**” on page 3-3 for details.

---

## Configuring the DIP Switches

This section provides a brief summary of the DIP Switches of the ADA-8402-A. Refer to **Figure 3.1** for the DIP Switch locations. **Figure 3.2** shows all the DIP Switches in the **OFF** position.



**Figure 3.2** DIP Switches — OFF Positions

### Enabling Card-edge Control

**SW1** and **SW2** are used in conjunction to enable/disable the card-edge DIP Switches to change settings on the card. You can still monitor the card status in DashBoard. **Table 3.2** lists the combinations of DIP Switch settings for **SW1** and **SW2**.

**Table 3.1** Configuring the Card-edge Control

SW1	SW2	Mode Selected
OFF	OFF	Control is from DashBoard only. The DIP switch settings are ignored. This is the default setting.
OFF	ON	Not implemented. Do not use.
ON	OFF	Not implemented. Do not use.
ON	ON	DashBoard control is disabled. The DIP switch settings are applied.

### Setting the Output Mode

**SW3** and **SW4**, are used in conjunction to set the output mode of the ADA-8402-A. **Table 3.2** lists the combinations of DIP Switch settings for **SW3** and **SW4**.

**Table 3.2** Setting the Output Mode

SW3	SW4	Mode Selected
OFF	OFF	Stereo
OFF	ON	Mono
ON	OFF	Left Only
ON	ON	Right Only

### Specifying the Gain

**SW6-SW10** are used in conjunction to specify the coarse level gain adjustment applied to the output of the ADA-8402-A. **Table 3.3** lists the combinations of DIP Switch settings for **SW6-SW10**.

**Table 3.3 Specifying the Gain**

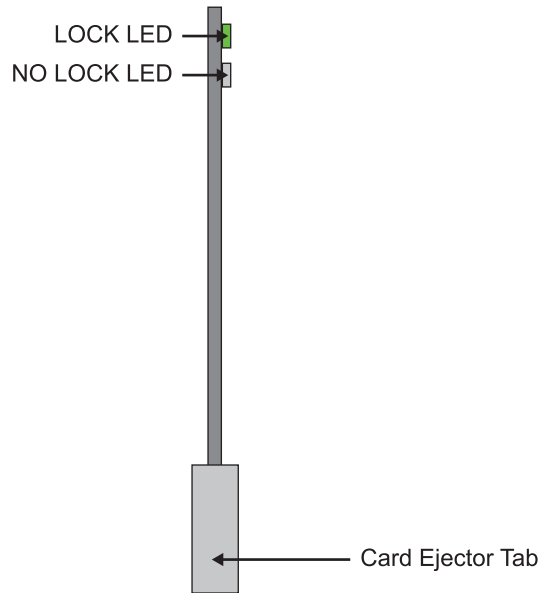
SW6	SW7	SW8	SW9	SW10	Gain (dB)
OFF	OFF	OFF	OFF	OFF	UNITY
OFF	OFF	OFF	OFF	ON	1
OFF	OFF	OFF	ON	OFF	2
OFF	OFF	OFF	ON	ON	3
OFF	OFF	ON	OFF	OFF	4
OFF	OFF	ON	OFF	ON	5
OFF	OFF	ON	ON	OFF	6
OFF	OFF	ON	ON	ON	7
OFF	ON	OFF	OFF	OFF	8
OFF	ON	OFF	OFF	ON	9
OFF	ON	OFF	ON	OFF	10
OFF	ON	OFF	ON	ON	11
OFF	ON	ON	OFF	OFF	12
OFF	ON	ON	OFF	ON	13
OFF	ON	ON	ON	OFF	14
OFF	ON	ON	ON	ON	15
ON	OFF	OFF	OFF	OFF	UNITY
ON	OFF	OFF	OFF	ON	-1
ON	OFF	OFF	ON	OFF	-2
ON	OFF	OFF	ON	ON	-3
ON	OFF	ON	OFF	OFF	-4
ON	OFF	ON	OFF	ON	-5
ON	OFF	ON	ON	OFF	-6
ON	OFF	ON	ON	ON	-7
ON	ON	OFF	OFF	OFF	-8
ON	ON	OFF	OFF	ON	-9
ON	ON	OFF	ON	OFF	-10
ON	ON	OFF	ON	ON	-11
ON	ON	ON	OFF	OFF	-12
ON	ON	ON	OFF	ON	-13
ON	ON	ON	ON	OFF	-14
ON	ON	ON	ON	ON	-15



---

# Control and Monitoring Features

This section provides information on the card-edge LEDs for the ADA-8402-A. Refer to **Figure 3.3** for the location of the LEDs.



*Figure 3.3 ADA-8402-A Card-edge Controls*

## Status and Selection LEDs on the ADA-8402-A

Basic LED displays and descriptions are provided in **Table 3.4**.

**Table 3.4 LEDs on the ADA-8402-A**

LED	Color	Display and Description
<b>LOCK</b>	Green	When lit, this LED indicates a valid AES/EBU input signal.
<b>NO LOCK</b>	Red	When lit, this LED indicates an invalid AES/EBU input signal.

---

# Using DashBoard

Before proceeding, ensure that the DashBoard is installed on a PC connected to your facility network. The DashBoard software and user manual are available from the Ross Video website.

## **For More Information on...**

- using DashBoard, refer to the *DashBoard User Manual*.

## **To launch DashBoard**

1. Ensure that you are running DashBoard software version 6.2.0 or higher.
2. Launch DashBoard by double-clicking its icon on your desktop.
3. Ensure that the openGear frame with the ADA-8402-A card is displayed in the Tree View located on the left-side of the DashBoard window. It may take 30 seconds or more to update the Tree View. Consult the *MFC-8300 Series* or *MFC-OG3 Series User Manual* and *DashBoard User Manual* should the Tree View not display the ADA-8402-A card.

## **To access a card in DashBoard**

1. From the **Tree View**, expand the node for the openGear frame your card is installed in. A list of cards installed in the frame is now displayed.
2. Double-click the node for a card to display its menus in the **Device View** of DashBoard (right-side of the DashBoard window).

# DashBoard Menus

---

## In This Chapter

This chapter briefly summarize the menus, items, and parameters available from the DashBoard Control System for the ADA-8402-A. Parameters marked with an asterisk (\*) are the factory default values.

The following topic is discussed:

- Status Tabs
- Settings Tab



---

**Operating Tip** — *Wait 30 seconds after the last setting change to ensure all changes are saved to the non-volatile memory of the card.*

---

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## Status Tabs

This section summarizes the read-only information displayed in the Status tabs. The fields in the **Status** tabs vary in severity from green (valid), yellow (caution), to red (alarm). DashBoard reports the most severe alarm for a single field.

### Status Tab

**Table 4.1** summarizes the read-only information of the **Status** tab.

**Table 4.1 Status Tab Items**

Tab Title	Item	Parameters	Description
<b>Status</b>	AES Audio Status	Locked (Green)	Card is functioning properly and a valid AES audio signal is present
		Not Locked (Red)	AES audio signal is not present
	LKFS (10Sec)	#	Card reads and reports the ITU1770 LKFS Audio Measurements

### Product Tab

**Table 4.2** summarizes the read-only information of the **Product** tab.

**Table 4.2 Product Tab Items**

Tab Title	Item	Parameters	Description
<b>Product</b>	Card Name	Level Matching AES Distribution Amplifier (75ohm)	
	Product	ADA-8402-A	
	Supplier	Ross Video Ltd.	
	Serial Number	#	Indicates the serial number of the board
	Software Rev	###	Indicates the software version

# Settings Tab

Table 4.3 summarizes the Settings options available in DashBoard.

**Table 4.3 Settings Menu Items**

Tab Title	Item	Parameters	Description
Settings	Mode	Mono	<p>Channel A and B are summed together</p> <ul style="list-style-type: none"> <li>• Use the CHA Trim Control to alter the gain of the Channel A input</li> <li>• Use the CHB Trim Control to alter the gain of the Channel B input</li> <li>• Note that the STEREO Gain will adjust the output after the channels are summed.</li> </ul>
		Stereo	<p>Channel A and B are independent.</p> <ul style="list-style-type: none"> <li>• Use the CHA Trim Control to alter the gain of Channel A input</li> <li>• Use the CHB Trim Control to alter the gain of Channel B input</li> <li>• Note that the STEREO Gain will adjust the output of both channels.</li> </ul>
		L Only	<p>Specifies Channel A as the output on both channels.</p> <ul style="list-style-type: none"> <li>• Use the CHA Trim Control to alter the output gain</li> <li>• The CHB Trim Control has no effect on the output</li> <li>• Note that the STEREO Gain will adjust the output Channel A only.</li> </ul>
		R Only	<p>Specifies Channel B as the output on both channels.</p> <ul style="list-style-type: none"> <li>• The CHA Trim Control has no effect on the output</li> <li>• Use the CHB Trim Control to alter the output gain</li> <li>• Note that the STEREO Gain will adjust the output Channel B only.</li> </ul>
	STEREO Gain Control	0 to 100	Specifies the coarse level gain adjustment applied to the output of the card
CH# Trim Control (dB)	-15 to +15	<p>Alters the input gain for the specified channel.</p> <p>How the Mode is set determines what channel(s) the Trim Control affects.</p>	



# Specifications

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## In This Chapter

This chapter provides the technical specification information for the ADA-8402-A. Note that specifications are subject to change without notice.

The following topics are discussed:

- Technical Specifications

# Technical Specifications

This section provides the technical specifications for the ADA-8402-A.

**Table 5.1 ADA-8402-A Technical Specifications**

Category	Parameter	Specification
<b>AES Input</b>	Number of Inputs	1
	Standards	AES-3id (SMPTE 276M)
	Sampling Rates	32kHz to 96kHz
	Impedance (transformer balanced)	75ohm
	Connector	BNC
	Input Level	1V p-p nominal
<b>AES Outputs</b>	Number of Outputs	8310AR-030 and 8320AR-030: 8
		8320AR-031: 4
	Standards	AES-3id (SMPTE 276M)
	Resolution	24Bit
	Return Loss	-25dB
	Impedance	75ohm
	Signal Level	1.0V p-p $\pm$ 10%
	Rise and Fall Time	30-44ns
Output Jitter	<5ns	
<b>Power</b>	Max. Power Consumption	>2.2W



# Service Information

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## In This Chapter

This chapter contains the following sections:

- Troubleshooting Checklist
- Warranty and Repair Policy

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# Troubleshooting Checklist

Routine maintenance to this openGear product is not required. In the event of problems with your ADA-8402-A, the following basic troubleshooting checklist may help identify the source of the problem. If the frame 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.

1. **Visual Review** — Performing a quick visual check may reveal many problems, such as connectors not properly seated or loose cables. Check the card, the frame, and any associated peripheral equipment for signs of trouble.
2. **Power** — 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. **Re-seat the Card in the Frame** — Eject the card and reinsert 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.

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## Warranty and Repair Policy

The ADA-8402-A 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 ADA-8402-A 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 ADA-8402-A 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 ADA-8402-A 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 ADA-8402-A 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 ADA-8402-A, 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 ADA-8402-A. If required, a temporary replacement frame 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.

# 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

## Technical Support

Telephone: +1 613 • 652 • 4886  
After Hours Emergency: +1 613 • 349 • 0006  
Email: [techsupport@rossvideo.com](mailto:techsupport@rossvideo.com)

## General Information

Telephone: +1 613 • 652 • 4886  
Fax: +1 613 • 652 • 4425  
Email: [solutions@rossvideo.com](mailto:solutions@rossvideo.com)  
Website: <http://www.rossvideo.com>

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