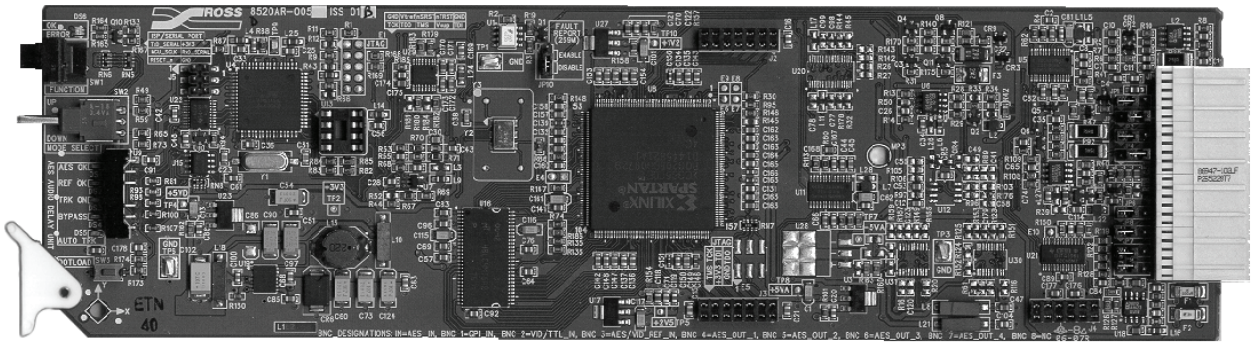
Ross Video Limited

ADL-8520A

AES/EBU Auto-Tracking Audio Delay Unit

(Includes -A and -B versions with AAM-8520A daughter-card and BNC adaptors)

User Manual



Ross Part Number: 8520ADR-004
Issue: 01A

Live Production Technology™

ADL-8520A • AES/EBU Auto-Tracking Audio Delay Unit User Manual

- Ross Part Number: **8520ADR-004**
- Document Issue: **01A**
- 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 RossGear 8000 series frame. Refer to the RossGear 8000 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

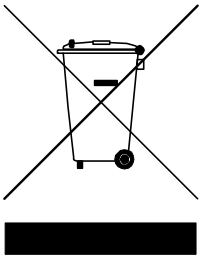
Routine maintenance to this RossGear product is not required. This product contains no user serviceable parts. If the module does not appear to be working properly, please contact Technical Support using the numbers listed under the "Contact Us" section on the last page of this manual. All RossGear products 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 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.

Contents

Introduction

In This Chapter

This chapter contains the following sections:

A Word of Thanks

Congratulations on purchasing the Ross Video **ADL-8520A**, **AES/EBU Auto-Tracking Audio Delay Unit**. The **ADL-8520A** is part of a full line of Digital Products within the RossGear Terminal Equipment family of products, backed by Ross Video's experience in engineering and design expertise since 1974.

You will be pleased at how easily your new **ADL-8520A** 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 or operation of your **ADL-8520A**, please contact us at the numbers listed at the end of the manual. Our technical support staff is always available for consultation, training, or service.

ADL-8520A Family Overview

The **ADL-8520A**, **ADL-8520A-A**, and **ADL-8520A-B** model types each provide specialized functionality catering to unique facility demands. **Table 1** outlines the analog and digital inputs and outputs available from each model. Detailed explanations of each model's capabilities are explained below.

Table 1. Product Feature Comparisons

Feature Comparisons				
Model	**AES Inputs**	**Analog Inputs**	**AES Outputs**	**Analog Outputs**
ADL-8520A	1		4	
ADL-8520A-A	1	2	1	
ADL-8520A-B	1	2		2

ADL-8520A Overview

The RossGear **ADL-8520A** is an ideal solution for solving problems related to audio-video synchronization. It is a broadcast quality digital audio delay unit ideal for correcting lip-sync errors and tracking video frame synchronizer delay.

The **ADL-8520A** accepts a coaxial AES/EBU signal (AES-3id), delays the signal in a number of flexible ways, and provides four coaxial AES-3id signal outputs. In order to achieve the highest level of precision, all signal processing is performed entirely in the digital domain.

To make configuration simple and easy, a rich set of board-level adjustment features are instantly accessible. Card-edge switches and controls, in conjunction with LEDs and a 4-character display, allow for convenient setup and operation.

The **ADL-8520A** can be configured to correct delay in one of three different modes. In the Fixed Delay mode, the **ADL-8520A** will delay incoming audio up to a total of 20 seconds, adjustable with millisecond accuracy or more quickly in field increments. In the Auto-Tracking mode, the unit automatically tracks the delay of a separate video frame synchronizer, aligning the audio with the video with a minimum of audio pitch change. In the Mixed Tracking mode, a fixed delay can be added to the auto-tracking mode, providing additional audio correction for other video processing equipment.

The **ADL-8520A** fits into the Ross 8000 and 8000A series digital distribution frames, with the DFR-8104 or -8104A (1RU) accommodating four cards, and the DFR-8110 or -8110A (2RU) holding up to ten cards. An ideal companion to the RossGear ADC-8032A-S Analog Composite to SDI Converter/Synchronizer or the DVB-8020A-S Video Frame Synchronizer, the **ADL-8520A** is designed to solve even the most demanding lip-sync problems with ease.

ADL-8520A Functional Block Diagram

The following is a simplified block diagram that outlines the functions of the **ADL-8520A** card.

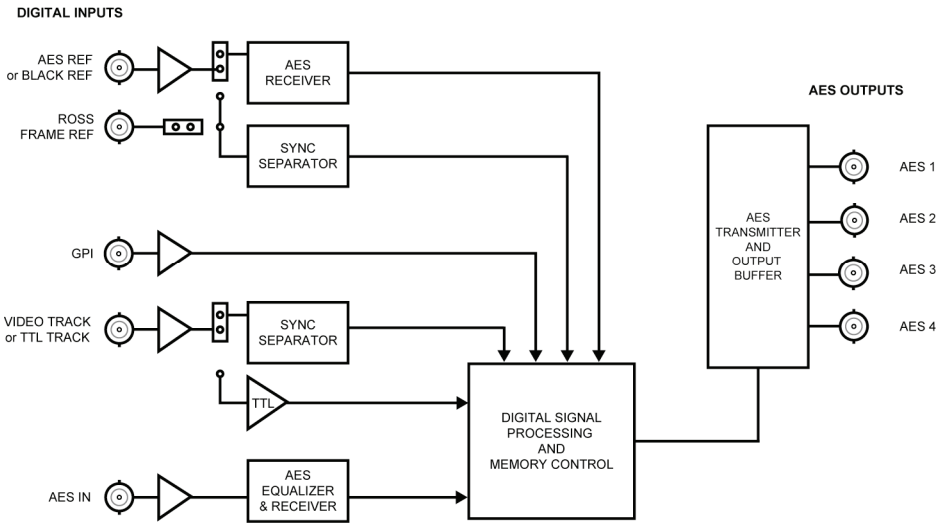


Figure 1. Simplified Block Diagram of ADL-8520A Functions

ADL-8520A-A Overview

Using the AAM-8520A daughter-card and the CON 8520-A Connector Module, the RossGear **ADL-8520A-A** provides the same digital audio delay features as the **ADL-8520A**, but with built-in support for either analog or AES audio inputs. Two balanced analog audio inputs are provided using the included CON 8520-A Connector Module rear-frame plug-on module.

Analog inputs are digitized using 24-bit analog to digital conversion circuitry, with selectable 20 or 24-bit signal encoding. A fixed 48kHz sample rate is used, and can be locked to the incoming AES signal or an external analog video reference.

The **ADL-8520A-A** fits into the Ross 8000A series digital distribution frames, with the DFR-8104A (1RU) accommodating four cards, and the DFR-8110A (2RU) holding up to ten cards. An ideal companion to the RossGear ADL-8032B-S Analog Composite to SDI Converter/Synchronizer, the **ADL-8520A** is designed to solve even the most demanding lip-sync problems with ease.

ADL-8520A-A Functional Block Diagram

The following is a simplified block diagram that outlines the functions of the **ADL-8520A-A** card.

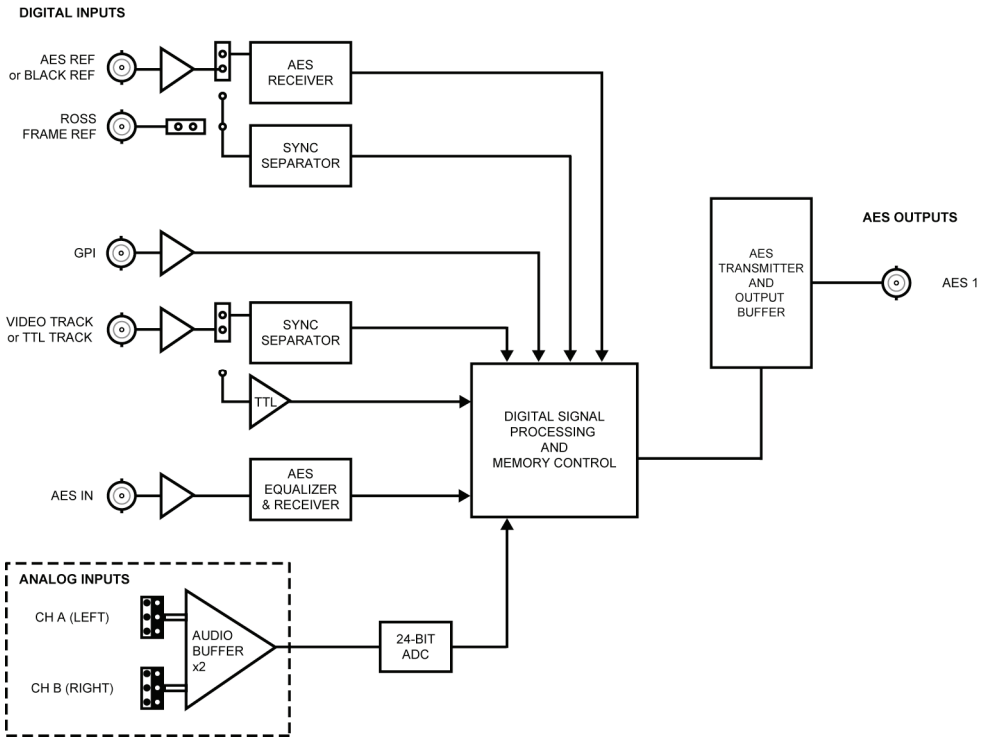


Figure 2. Simplified Block Diagram of ADL-8520A-A Functions

ADL-8520A-B Overview

Using the AAM-8520A daughter-card and the CON 8520-B Connector Module, the RossGear **ADL-8520A-B** provides the same digital audio delay features as the **ADL-8520A**, but with built-in support for either analog or AES audio inputs, and providing analog outputs instead of AES outputs. Two balanced analog audio inputs and outputs are provided using the included CON 8520-B Connector Module rear-frame plug-on module.

Analog inputs are digitized using 24-bit A to D conversion circuitry, with selectable 20 or 24-bit signal encoding. A fixed 48kHz sample rate is used, and can be locked to the incoming AES signal or an external analog video reference.

The **ADL-8520A-B** fits into the Ross 8000A series digital distribution frames, with the DFR-8104A (1RU) accommodating four cards, and the DFR-8110A (2RU) holding up to ten cards. An ideal companion to the RossGear ADL-8032A-S Analog Composite to SDI Converter/Synchronizer, the **ADL-8520A** is designed to solve even the most demanding lip-sync problems with ease.

ADL-8520A-B Functional Block Diagram

The following diagram illustrates the functions of the **ADL-8520A-B** card.

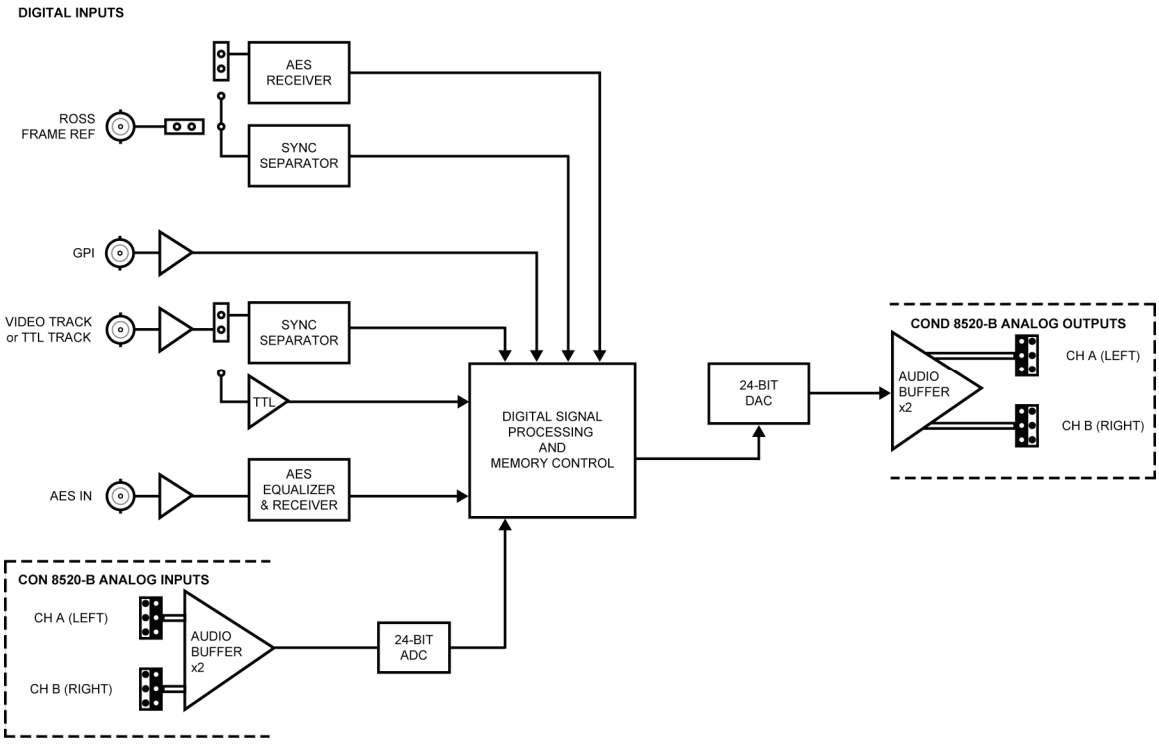


Figure 3. Simplified Block Diagram of ADL-8520A-B Functions

Features

The following features make the **ADL-8520A** the most versatile precision audio delay card for your professional audio-video requirements:

- Digital audio delay
- Selectable fixed delay and/or auto-tracking video frame synchronizer delay
- Up to 20 seconds total delay
- Audio Processing including gain, invert, and channel swapping
- 1 AES/EBU input, auto-equalized to >610m (2,000 ft)
- Automatic 20-to-100kHz input sampling rate selection
- Locks to AES or external analog video reference
- 4 AES/EBU outputs
- Power consumption 5.5 Watts
- 5-year transferable warranty

ADL-8520A-A Features

The **ADL-8520A-A** has the same features as the **ADL-8520A** but offers additional input/output choices with additional components:

- AAM-8520A daughter-card
- CON-8520-A analog audio input adaptor
- Selectable AES input or 2 balanced analog input channels
- 24-bit A to D conversion with fixed 48kHz sample rate
- 1 AES/EBU output

ADL-8520A-B Features

The **ADL-8520A-B** has the same features and input choices as the **ADL-8520A-A** but offers analog audio outputs with a different analog input/output adapter:

- AAM-8520A daughter-card
- CON-8520-B analog audio input/output adaptor
- 2 balanced analog input and output channels
- 24-bit A to D conversion with fixed 48kHz sample rate
- 1 AES/EBU input

Documentation Terms

The following terms are used throughout this guide:

- "**Frame**" refers to the **DFR-8104A** and **DFR-8110A** frames that house the **ADL-8520A** card.
- All references to the **DFR-8104A** and **DFR-8110A** also include the **DFR-8104A-C** and **DFR-8110A-C** versions with the cooling fan option. See the respective User Manuals for details.
- "**Operator**" and "**User**" both refer to the person who uses the **ADL-8520A**.
- "**Board**" and "**Card**" both refer to the **ADL-8520A** itself, including all components and switches.
- "**System**" and "**Video system**" refers to the mix of interconnected digital and analog production and terminal equipment in which the **ADL-8520A** operates.
- "**525-line mode**" refers to broadcast situations using **NTSC** composite (analog) signal reference inputs.
- "**625-line mode**" refers to broadcast situations using **PAL-B** composite (analog) signal reference inputs. All references to **PAL** in this manual imply that **PAL-B** is being used.

ADL-8520A Installation

In This Chapter

This chapter contains the following sections:

- Static Discharge
- Unpacking
- Jumper Setup
- Board Installation
- Cabling Connections
- Menu Settings

Static Discharge

Whenever handling the **ADL-8520A** 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 **ADL-8520A** you received from the shipping container and check the contents against the packing list to ensure that all items are included. If any items are missing or damaged, contact your sales representative or Ross Video directly.

Jumper Setup

The only user-components on the card (apart from the function switches) requiring setup are jumpers 2, 4, and 10. All other jumpers are set at the factory and should not be changed.

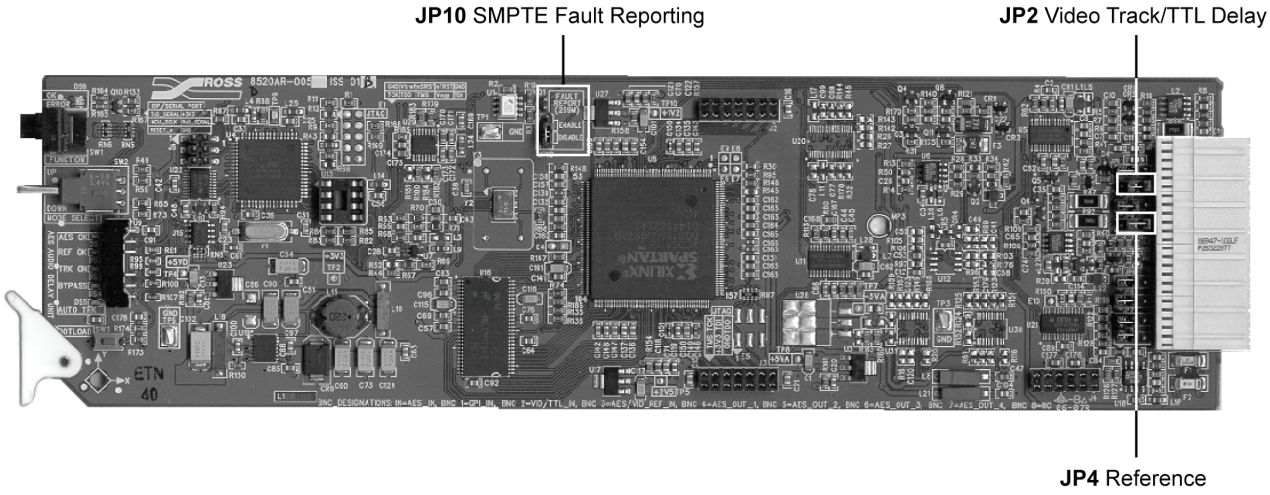


Figure 4. ADL-8520A Jumper Locations

The jumpers on the **ADL-8520A** can be set in one of two positions (**1+2**, and **2+3**). The following figure illustrates the two positions when selecting a feature:

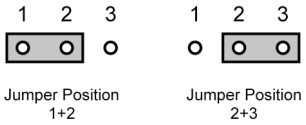


Figure 5. Jumper-on-Pin Position

To configure the **ADL-8520A** for specific functionality such as Video/TTL Tracking, Reference In, and SMPTE Fault Reporting, set the jumpers on the main card according to **Table 2**. As a reference, the table is also printed on the back of the card:

Table 2. Jumper-on-Pin Position

Jumper	Function	Position
JP2	Video Tracking	1+2
	TTL Tracking	2+3
JP4*	Reference from BNC 3	1+2
	Reference Frame	2+3
JP10	Fault Reporting	Enable Disable

* Even if **JP4** is set correctly, the **ADL-8520A** may still indicate an invalid reference signal if the user controls are not set correctly (**B4**, **B5**). Refer to the section "**Bank B — Function Menu Table**" for details on setting these user controls.

To re-configure the **ADL-8520A** as a **ADL-8520A-A**, or a **ADL-8520A-B**, refer to the **Jumper Settings Table** on the back of the card to ensure all other jumpers are in the correct positions as determined by the card version.

Board Installation

Use the following procedure to install the **ADL-8520A** in a RossGear 8000 series digital distribution frame:

1. Refer to the User Manual of the RossGear 8000 series frame, to ensure that the frame is properly installed according to instructions. If this card is to be installed in any compatible frame other than a Ross Video product, refer to the frame manufacturer's manual for specific 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 **ADL-8520A** card by the edges and carefully align the card-edges with the slots in the frame. Then fully insert the card into the frame until the rear connection plug is properly seated.

This completes the procedure to install the **ADL-8520A** in a RossGear 8000 series digital distribution frame.

Cable Connections

The following sections provide instructions for cable connections when mounting the **ADL-8520A** in a RossGear 8000 or 8000A series Digital Distribution Frame.

ADL-8520A Cable Connections

Use the diagram below to attach the required BNC cables such as the AES input and output streams, GPI, references, and tracking sources.

If this card is installed in a compatible distribution frame other than a RossGear frame, note that the cable designations may vary.

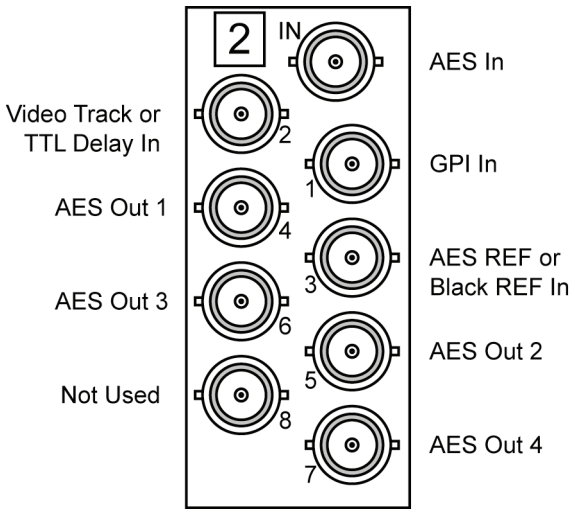


Figure 6. ADL-8520A BNC Designations for RossGear DFR-8110A (2RU Frame)

Menu Settings

In order to complete configuring the **ADL-8520A**, you must set the **Audio Input Selection** on the Main **ADL-8520A** to **AES**.

Use the following procedure to set the Audio Input Selection to **AES**:

1. On the front edge of the Main **ADL-8520A** card, set the Function Selector switch to the **Audio Input Selection Menu** by selecting **B1** as follows:
    - Dial the **SW1** — **Function Select Switch** to **F**.
    - Press up or down on the **SW2** — **Toggle Switch** to select **B**.
    - Dial the **SW1** — **Function Select Switch** to **1**.
2. Press up or down on the **SW2** — **Toggle Switch** to select **AES**.

This completes the procedure to set the **Audio Input Selection** to **AES**. For a complete discussion on the user controls, menus, and displays for the **ADL-8520A**, refer to Chapter 5, "**User Controls and Menu Items**".

ADL-8520A-A Installation

In This Chapter

This chapter contains the following sections:

- Static Discharge
- Unpacking
- Jumper Setup
- Board Installation
- Cable Connections
- Configuring the Audio Input Selection
- Potentiometer Setup

Static Discharge

Whenever handling the **ADL-8520A-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 wearing synthetic fiber clothing. Always exercise proper grounding precautions when working on circuit boards and related equipment.

Unpacking

Unpack each **ADL-8520A-A** you received from the shipping container and check the contents against the packing list to ensure that all items are included. If any items are missing or damaged, contact your sales representative or Ross Video directly.

Jumper Setup

The **ADL-8520A-A** card has an AAM-8520A daughter card installed on the **ADL-8520A** card. The AAM-8520A card has configurable jumpers as well, as described in the section "**AAM-8520A Jumper Setup**".

ADL-8520A-A Jumper Setup

The only user-components on the **ADL-8520A** card (apart from the function switches) requiring setup are jumpers 2, 4, and 10, as described in the section below. All other jumpers are set at the factory and should not be changed.

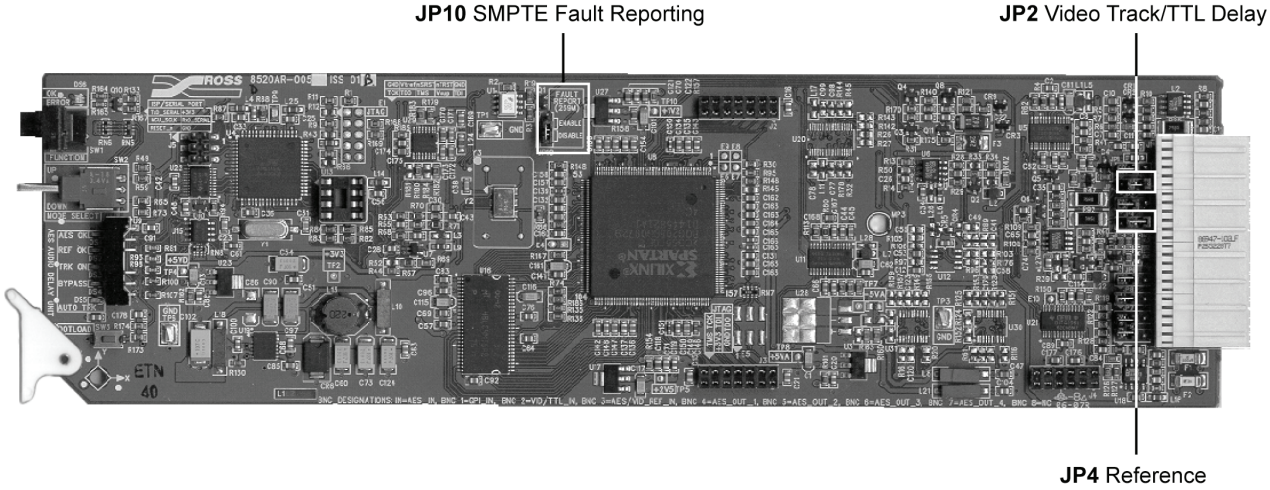


Figure 7. ADL-8520A Jumper Locations

The jumpers on the **ADL-8520A-A** can be set in one of two positions (**1+2**, and **2+3**). The following figure illustrates the two positions when selecting a feature:

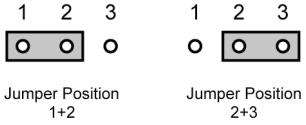


Figure 8. Jumper-on-Pin Position

To configure the **ADL-8520A-A** for specific functionality such as Video/TTL Tracking, Reference In, and SMPTE Fault Reporting, set the jumpers on the main card according to **Table 3**. As a reference, the table is printed on the back of the card:

Table 3. Jumper-on-Pin Position

Jumper	Function	Position
JP2	Video Tracking	1+2
	TTL Tracking	2+3
JP4*	Reference from BNC 3	1+2
	Reference Frame	2+3
JP10	Fault Reporting	Enable Disable

* Even if **JP4** is set correctly, the **ADL-8520A-A** may still indicate an invalid reference signal if the user controls are not set correctly (**B4**, **B5**). Refer to the section "**Bank B — Function Menu Table**" for details on setting these user controls.

To re-configure the **ADL-8520A-A** as a **ADL-8520A**, or a **ADL-8520A-B**, refer to the **Jumper Settings Table** on the back of the card to ensure all other jumpers are in the correct positions as determined by the card version.

AAM-8520A Jumper Setup

Use the following **Figure 9** and **Table 4** to make the daughter card jumper mode selections that determine the desired performance features of the **ADL-8520A-A**.

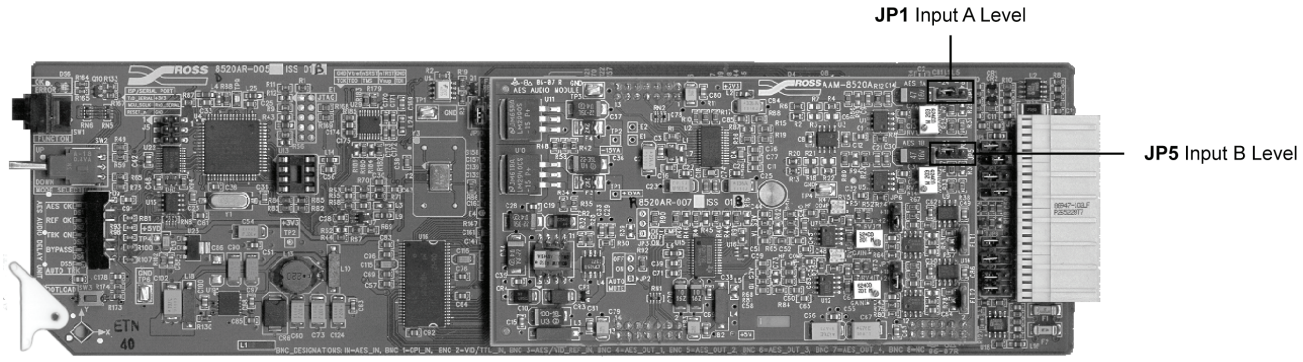


Figure 9. AAM-8520A Installed on ADL-8520A (configured as 8520A-A model)

Using the silk screen reference on the card, select the coarse analog audio input level -18 or -24dB for each channel using **JP1** and **JP5**. These jumpers put the available headroom of the A/D Converter in the -24dBFS or -18dBFS range.

Table 4. AAM-8520A Jumper Setup for ADL-8520A-A

Jumper	Designation	Mode	Description / Function
JP1	INPUT A LEVEL dBu	-24	Sets coarse Headroom level for A channel to -24dBu
		-18	Sets coarse Headroom level for A channel to -18dBu
JP5	INPUT B LEVEL dBu	-24	Sets coarse Headroom level for B channel to -24dBu
		-18	Sets coarse Headroom level for B channel to -18dBu

Board Installation

Use the following procedure to install the **ADL-8520A-A** in a RossGear series frame:

1. Refer to the User Manual of the RossGear 8000 series frame, to ensure that the frame is properly installed according to instructions. If this card is to be installed in any compatible frame other than a Ross Video product, refer to the frame manufacturer's manual for specific instructions.

Notice

The **ADL-8520A-A** card *must* be installed in a RossGear 8000 series digital distribution frame with a cooling module option installed. Refer to the section "**Optional Equipment**" for details.

Notice

> The 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 **ADL-8520A-A** card by the edges and carefully align the card edges with the slots in the frame. Then fully insert the card into the frame until the rear connection plug is properly seated.

This completes the procedure to install the **ADL-8520A-A** in a RossGear 8000 series frame.

Cable Connections

The **ADL-8520A-A** uses a rear sub-module (CON-8520-A) to access the balanced analog audio inputs. The sub-module plugs onto BNCs 5-8 on the rear of the RossGear DFR-8104A or DFR-8110A frames. A locking BNC on the CON-8520-A provides a secure fit to the RossGear frame.

The guiding pin on the CON-8520-A ensures proper orientation. The input consists of an A and B channel (left and right).

BNC Cables

The **ADL-8520A-A** version is shipped including the CON-8520-A to BNC Adaptor to allow analog audio inputs.

Use the following procedure to connect cables to the BNC connectors:

1. On the back of the RossGear digital rack frame, install the CON-8520-A Adaptor onto the corresponding BNC connectors for the slot the card will occupy. Refer to **Figure 10** for BNC designations.

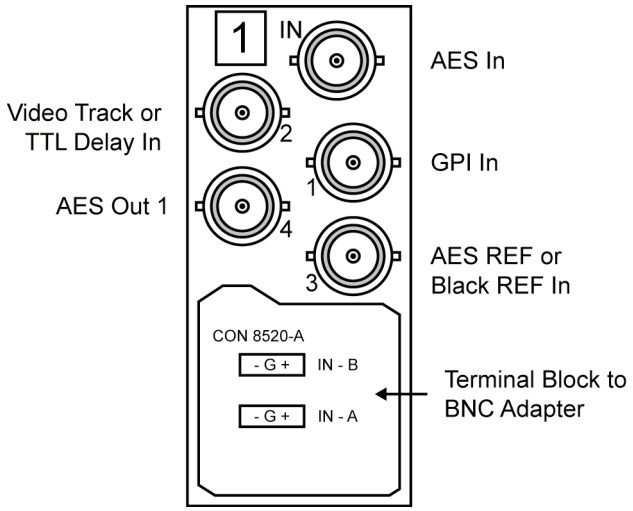


Figure 10. ADL-8520A-A BNC Designations for RossGear DFR-8110A (2RU Frame)

2. Using the above labeled diagram, attach the required BNC cables such as the AES input and output streams, GPI, references, and tracking sources.

This completes the procedure for connecting cables to the BNC connectors.

Analog Cables

On the CON-8520-A Adapter there are two removable connectors, for positions **IN-A** and **IN-B**. Each connector has sockets for the positive, negative, and grounded wires of a balanced analog audio cable. Wire the external cables as outlined in **Figure 11** and the following procedure.

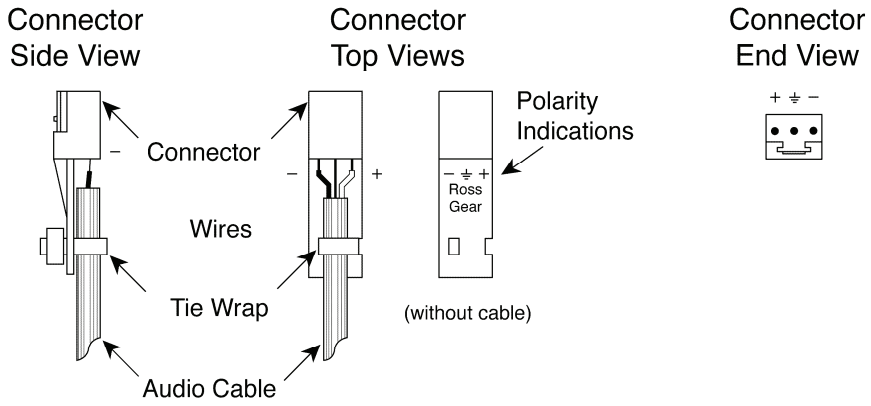


Figure 11. Connector Wiring for CON-8520-A

Use the following procedure to wire the external cables to the CON-8520-A Adapter:

1. Insert an analog audio wire to the designated polarity slot on the connector.
2. Use a tweaker screwdriver to tighten the corresponding screw on the underside of the connector.
3. Repeat steps 1 and 2 for each wire on each connector.
4. Once the cables have been wired to the connectors, install the connectors to the sockets on the CON-8520-A Adapter so that the slotted tongue fits in the grooves on the adapter socket.

This completes the procedure for wiring the external cables to the CON-8520-A adapter.

Configuring the Audio Input Selection

Before completing the setup of the **ADL-8520A-A**, you must configure the **Audio Input Selection** for the type of input cables you have connected to the card.

Note

> The **ADL-8520A-A** will only process the type of audio signal selected in **Audio Input Selection Menu**. Refer to Chapter 5, "**User Controls and Menu Items**" for details on these controls and menus.

Use the following procedure to configure the **Audio Input Selection** for the **ADL-8520A-A** card:

1. On the front edge of the main **ADL-8520A-A** card, set the Function Selector switch to the **Audio Input Selection Menu** by selecting **B1** as follows:
   - Press up or down on the **SW2** — **Toggle Switch** to select **B**.
   - Dial the **SW1** — **Function Select Switch** to **1**.

2. Press up or down on the **SW2** — **Toggle Switch** to select one of the following:
    - **AES** — Select this option if you have digital audio input cables connected.
    - **ANLG** — Select this option if you have analog audio input cables connected.

This completes the procedure for configuring the **Audio Input Selection** for the **ADL-8520A-A** card.

Potentiometer Setup

If necessary, use a tweaker screwdriver to adjust the fine analog audio input levels of pots **RV1** and **RV2** for each channel. Refer to **Figure 12** for potentiometer locations on the **ADL-8520A-A** card.

Note

All fine levels are factory set for unity gain and should not need adjusting.

An extender card is required (EXT-8100) to adjust potentiometer settings. Refer to the section "**Optional Equipment**" for details.

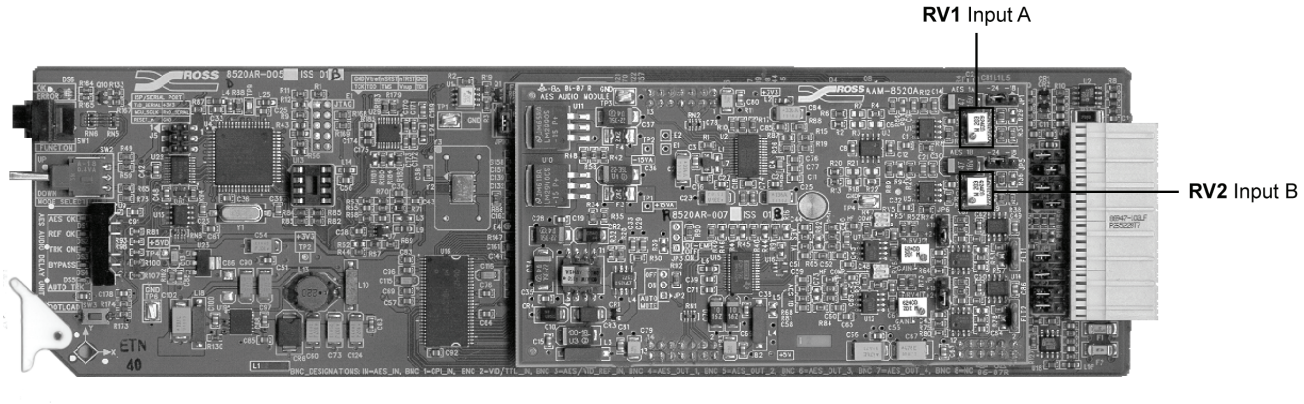


Figure 12. Potentiometer Locations

The fine input level and headroom adjustment is made using the **RV2** (**A Gain**) and **RV1** (**B Gain**) potentiometers. These potentiometers, in conjunction with the jumpers, provide a total headroom adjustment from –15 to –29dBFS.

*Table 5. AAM-8520A Potentiometer Adjustments/Functions for **ADL-8520A-A***

Potentiometer	Designation	Description / Function
RV1	Input A	Used to set fine level adjustment for Input A channel
RV2	Input B	Used to set fine level adjustment for Input B channel
RV3-6	Not Used	**ADL-8520A-B** only

ADL-8520A-B Installation

In This Chapter

This chapter contains the following sections:

- Static Discharge
- Unpacking
- Jumper Setup
- Board Installation
- Cable Connections
- Configuring the Audio Input Selection
- Potentiometer Setup

Static Discharge

Whenever handling the **ADL-8520A-B** 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 **ADL-8520A-B** you received from the shipping container and check the contents against the packing list to ensure that all items are included. If any items are missing or damaged, contact your sales representative or Ross Video directly.

Jumper Setup

The **ADL-8520A-B** card has an AAM-8520A daughter card installed on the **ADL-8520A** card. The AAM-8520A card has configurable jumpers as well, as described in the section "**AAM-8520A Jumper Setup**".

ADL-8520A-B Jumper Setup

The AAM-8520A card has configurable jumpers as well, as described in the section "**AAM-8520A Jumper Setup**" below. All other jumpers are set at the factory and should not be changed.

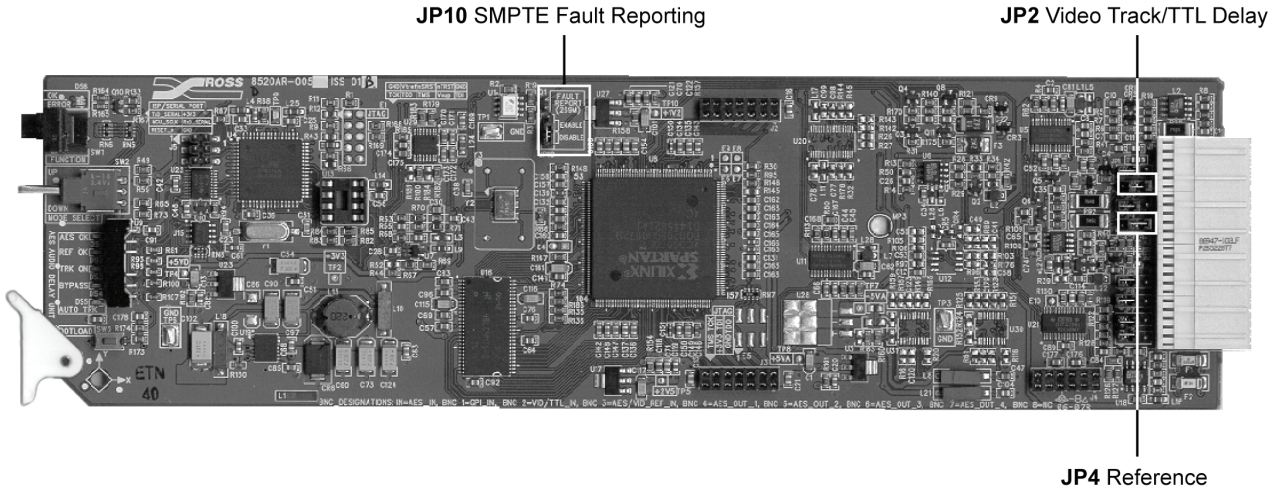


Figure 13. ADL-8520A Jumper Locations

The jumpers on the **ADL-8520A-B** can be set in one of two positions (**1+2**, and **2+3**). The following figure illustrates the two positions when selecting a feature:

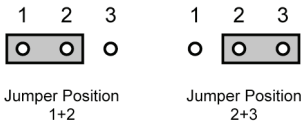


Figure 14. Jumper-on-Pin Position

To configure the **ADL-8520A-B** for specific functionality such as Video/TTL Tracking, Reference In, and SMPTE Fault Reporting, set the jumpers on the main card according to **Table 6**. As a reference, the table is printed on the back of the card:

Table 6. Jumper-on-Pin Position

Jumper	Function	Position
JP2	Video Tracking	1+2
	TTL Tracking	2+3
JP4*	Reference from BNC 3	1+2
	Reference Frame	2+3
JP10	Fault Reporting	Enable
		Disable

* Even if **JP4** is set correctly, the **ADL-8520A-B** may still indicate an invalid reference signal if the user controls are not set correctly (**B4**, **B5**). Refer to the section "**Bank B — Function Menu Table**" for details on setting these user controls.

To re-configure the **ADL-8520A-B** as a **ADL-8520A**, or a **ADL-8520A-A**, refer to the **Jumper Settings Table** on the back of the card to ensure all other jumpers are in the correct positions as determined by the card version.

AAM-8520A Jumper Setup

This section includes information on making AAM-8520A jumper mode selections that determine the desired performance features of the **ADL-8520A-B** card. Refer to **15** and **Table 7** while configuring your **ADL-8520A-B** card.

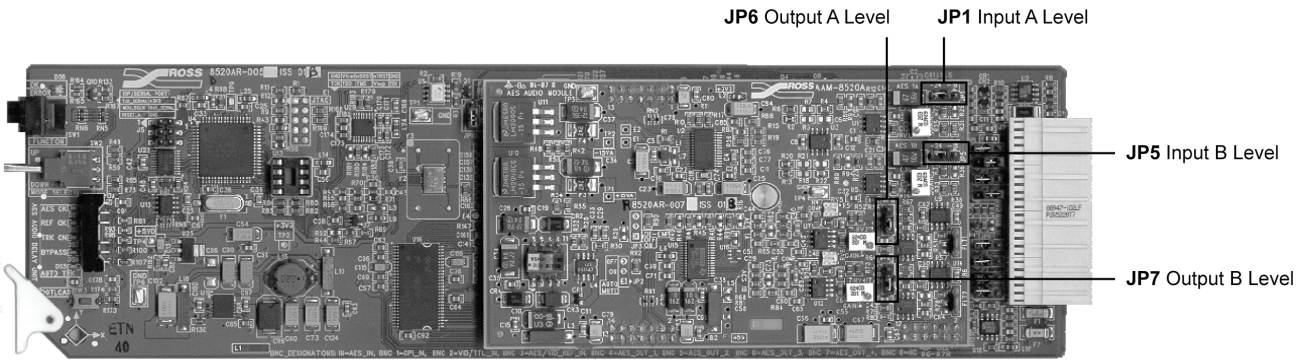


Figure 15. AAM-8520A Card Installed on ADL-8520A (configured as 8520A-B model)

Use the following procedure to configure the features on the **ADL-8520A-B** card:

1. On the front edge of the main **ADL-8520A-B** card, set the Function Selector switch to the **Daughter Card De-Emphasis Menu** as follows:
    - Dial the **SW1** — **Function Select Switch** to **F**.
    - Press up or down on the **SW2** — **Toggle Switch** to select **B**.
2. Dial the **SW1** — **Function Select Switch** to **A**.
3. Toggle the **SW2** — **Toggle Switch** to set the Daughter De-Emphasis as follows:
    - **OFF** — No output filter is applied.
    - **ON** — Select this option to apply a 50µs + 15µs filter to output audio.
    - **AUTO** — Select this option to apply a filter to the output only when the incoming audio has Emphasis Bits appropriately set in the Channel Status information.
5. Select the coarse analog audio input level -18 or -24dB for each channel using **JP1** and **JP5**. These jumpers put the available headroom of the A/D Converter in the -24dBFS or -18dBFS range. Refer to **Figure 15** for jumper locations.
6. Select the coarse analog audio output level +18 or +24dB for each channel using **JP6** and **JP7**. Refer to **Figure 15** for jumper locations.

This completes the procedure for configuring the features on the **ADL-8520A-B** card.

Table 7. AAM-8520A Jumper Setup for ADL-8520A-B

Jumper	Designation	Mode	Description / Function
JP1	INPUT A LEVEL dBu	-24	Sets coarse Headroom level for A channel to -24dBu
		-18	Sets coarse Headroom level for A channel to -18dBu
JP5	INPUT B LEVEL dBu	-24	Sets coarse Headroom level for B channel to -24dBu
		-18	Sets coarse Headroom level for B channel to -18dBu
JP6	OUTPUT A LEVEL dBu	+24	Sets coarse Headroom level for A channel to +24dBu
		+18	Sets coarse Headroom level for A channel to +18dBu
JP7	OUTPUT B LEVEL dBu	+24	Sets coarse Headroom level for B channel to +24dBu
		+18	Sets coarse Headroom level for B channel to +18dBu

Board Installation


Notice

The **ADL-8520A-B** card *must* be installed in a RossGear 8000A series digital distribution frame with a cooling module option installed. Refer to the section, "**Optional Equipment**" for details.

Use the following procedure to install the configured **ADL-8520A-B** card:

1. Refer to the User Manual of the RossGear 8000A series frame, to ensure that the frame is properly installed according to instructions. If this module is to be installed in any compatible frame other than a Ross Video product, refer to the frame manufacturer's manual for specific instructions.


Notice

The 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 **ADL-8520A-B** card by the edges and carefully align the card edges with the slots in the frame. Then fully insert the card into the frame until the rear connection plug is properly seated.

This completes the procedure for installing the configured **ADL-8520A-B** card.

Cable Connections

The **ADL-8520A-B** uses a rear sub-module (CON-8520-B) to access the balanced analog audio inputs and outputs. The sub-module plugs onto BNCs 3-8 on the rear of the RossGear DFR-8104A or DFR-8110A frames. A locking BNC on the CON-8520-B provides a secure fit to the RossGear frame.

The guiding pin on the CON-8520-B ensures proper orientation. The output consists of a stereo pair A and B channel (left and right) input and output.

BNC Cables

The **ADL-8520A-B** version is shipped including the CON-8520-B terminal block to BNC adaptor to allow analog audio inputs.

Use the following procedure to attach the required BNC cables to the CON-8520-B adaptor:

1. On the back of the RossGear digital rack frame, install the CON-8520-B adaptor onto the corresponding BNC connectors for the slot the card will occupy. Refer to the figure below.

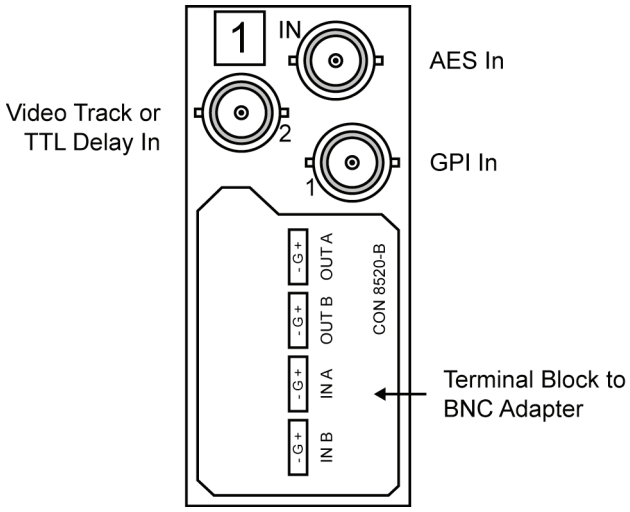


Figure 16. ADL-8520A-B BNC Designations for RossGear DFR-8110A (2RU Frame)

2. Using the above labeled diagram, attach the required BNC cables such as the AES input streams, GPI, and tracking sources.

This completes the procedure for attaching the required BNC cables to the CON-8520-B adaptor.

Analog Cables

On the CON-8520-B Adapter, there are removable connectors, for positions **IN-A**, **IN-B**, **OUT-A**, and **OUT-B**. Each connector has sockets for the positive, negative, and grounded wires of a balanced analog audio cable. Wire the external cables as outlined in **Figure 17** and the following procedure.

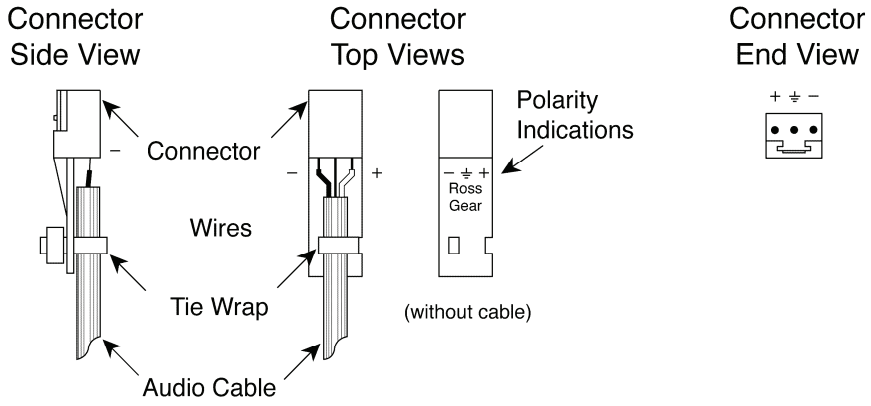


Figure 17. Connector Wiring for CON-8520-B Adapter

Use the following procedure to wire the external cables to the CON-8520-B Adapter:

1. Insert an analog audio wire to the designated polarity slot on the connector.
2. Use a tweaker screwdriver to tighten the corresponding screw on the underside of the connector.
3. Repeat steps 1 and 2 for each wire on each connector.
4. Once the cables have been wired to the connectors, install the connectors to the sockets on the CON-8520-B Adapter so that the slotted tongue fits in the grooves on the adapter socket.

This completes the procedure for wiring the external cables to the terminal block connectors.

Configuring the Audio Input Selection

Before completing the setup of the **ADL-8520A-B**, you must configure the **Audio Input Selection** for the type of input cables you have connected to the card.

Note

> The **ADL-8520A-B** only processes the type of audio signal selected in the **Audio Input Selection Menu** (**B1**). Refer to the section "**Bank B — Function Menu Table**" for details.

Use the following procedure to configure the **Audio Input Selection** for the **ADL-8520A-B** card:

1. On the front edge of the main **ADL-8520A-A** card, set the Function Selector switch to the **Audio Input Selection Menu** by selecting **B1** as follows:
   - Dial the **SW1** — **Function Select Switch** to **F**.
   - Toggle the **SW2** — **Toggle Switch** to select **B**.
   - Dial the **SW1** — **Function Select Switch** to **1**.
2. Toggle the **SW2** — **Toggle Switch** to select one of the following:
   - **AES —** Select this option if you have digital audio input cables connected.
   - **ANLG —** Select this option if you have analog audio input cables connected.

This completes the procedure for configuring the **Audio Input Selection** for the **ADL-8520A-B** card.

Potentiometer Setup

If necessary, use a tweaker screwdriver to adjust the fine analog audio input and output levels of each channel as per **Table 8**. Refer to **Figure 18** for potentiometer locations.

The fine input level and headroom adjustment is made using the **RV2** (**A Gain**) and **RV1** (**B Gain**) potentiometers. These potentiometers, in conjunction with the jumpers, provide a total headroom adjustment from –15 to –29dBFS.

The fine output level and headroom adjustment is made using the **RV3** (**A Gain**) and **RV4** (**B Gain**) potentiometers. These potentiometers, in conjunction with **JP6** and **JP7**, provide a total headroom adjustment from +15 to +27dBFS.

Note

All fine levels are factory set for unity gain and should not need adjusting.

An extender card is required (EXT-8100) to adjust potentiometer settings. Refer to the section, "**Optional Equipment**" for details.

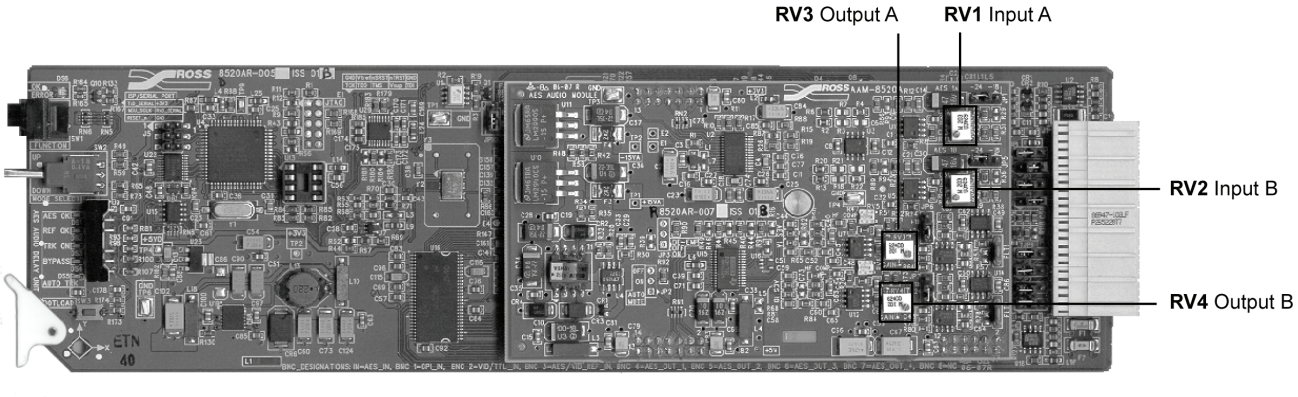


Figure 18. Potentiometer Locations on the ADL-8520A-B

Use the following procedure to adjust the potentiometer functions on the **ADL-8520A-B** card:

1. Rotate the fine analog audio input level adjust potentiometer for each channel using **RV1** and **RV2**.
2. Rotate the fine analog audio output level adjust potentiometer for each channel using **RV3** and **RV4**.

Using these adjustments, the total headroom is adjustable over the +15 to +27dBFS range.

Table 8. AAM-8520A Potentiometer Adjustments/Functions for ADL-8520A-B

Potentiometer	Designation	Description / Function
RV1	Input A	Used to set fine level adjustment for Input A channel
RV2	Input B	Used to set fine level adjustment for Input B channel
RV3	Output A	Used to set fine level adjustment for Output A channel
RV4	Output B	Used to set fine level adjustment for Output B channel

User Controls

In This Chapter

This chapter contains the following sections:

Card-edge User Controls

The following figure illustrates the card-edge user controls of the **ADL-8520A** card.

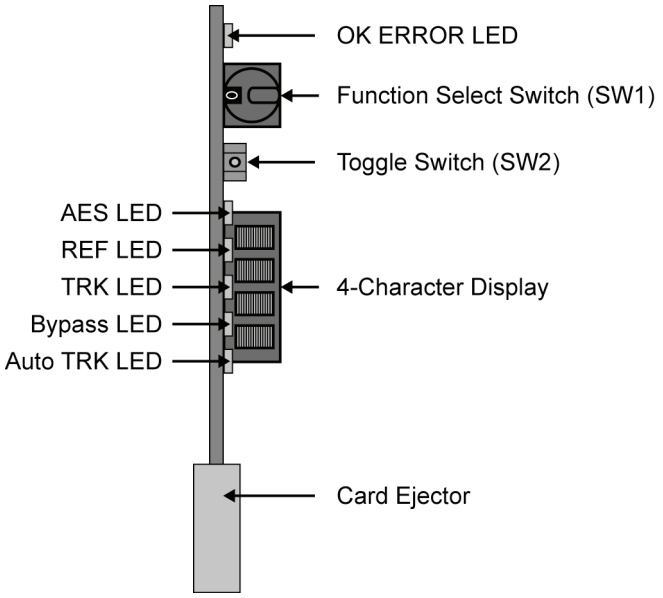


Figure 19. ADL-8520A Card-edge User Controls

General Operating Rules

When selecting and configuring all **ADL-8520A** board-level setup functions from Bank A and Bank B, the following general rules and conventions apply:

- The 4-character display shows each segment of the menu item and value display through sequential views. For example if **Menu 0: Total Delay** is selected, the LED will display TOTL for a second, then DLY for a second, then the delay value #### for 10 seconds, in a repeating cycle until another menu or option is selected.
- When the module is powered up, the previous settings are reinstated from the settings stored in non-volatile EEPROM memory.
- Current settings are saved to EEPROM after 3 seconds of operator inactivity.
- When Continuous Delay Mode (**B0**) is selected, fixed delay is applied or removed from the module at a rate of 8 mS per second.
- The AES inputs in the Continuous or Direct Delay modes can be non-synchronous. The inputs can be 20-100 kHz data rates with 16 to 24-bit structures.
- Always check to see that the reference LED is lit if a reference signal is being used. If the LED is not lit and AES or VID is selected for a reference, check that the signal is valid and that the correct jumper positions are being used. Refer to **Table 12** for information on verifying Error Codes (**BE**).
- Always check that the correct number of bits for the output AES is set to compliment the AES down steam device(s). The 20 and 24-bits are selectable via the menu set up system.
- If GPI Bypass operation is required, ensure that GPI has been enabled via the menu set up system.

- Before setting any fixed delay, check which unit has been selected. Either incrementing or decrementing in milliseconds or fields is possible. Selecting between these two units of measure is done via the menu setup system. (NTSC = 17mS, PAL = 20mS)
- Total delay displayed will be fixed plus auto tracking delay if selected.

Status and Selection LEDs

The front card-edge includes LEDs that display the status of input signals, and indicate selected menu functions and configurations. The LED displays are described in **Table 9**.

Table 9. Selection and Status LED Descriptions

LED	Color	Display and Description
OK/ERROR	Green	When lit green, this LED indicates there is an input signal and the card is configured properly.
	Red	When lit red, this LED indicates one or more of the following errors: • Indicates AES is selected as the **Audio Input Selection** (**B1**), but the AES input signal is not present or valid. • Indicates that Data Mode is selected for the **Delay Mode** (**B0**), but the AES input is not 48 kHz. • Indicates a hardware problem. Contact Ross Technical Support.
	Flashing Red/Green	When flashing red and green, this LED indicates an AES input problem is detected.
AES OK	Green	When lit, this LED: • Indicates presence of a valid AES input signal. • Shows that the incoming signal is sampled at 20-100 kHz.
	Flashing Green	When flashing, the card is experiencing a Data Slip.
REF OK	Green	When lit, this LED confirms the presence of a valid AES or video reference input signal and no anomalies have been detected. Selection between AES or video reference will determine what the card is referenced to, if both are present.

	Flashing Green	When flashing, this LED indicates one or more of the following errors:
		• If Video Reference (**B5**) is selected, an incorrect selection of video standard from the System Mode Menu (**B4**). Ensure when the Reference Selection (**B5**) is configured for video reference (**VID**) that the System Mode configuration agrees with the actual reference, or timing delay will be incorrect and a fault detected, the LED will illuminate.
		• If AES Reference (**B5**) is selected, and one or more of the following problems have occurred:
		  o Data Slip
		  o AES Rate is not at 48 kHz or 96 kHz.

LED	Color	Display and Description
TRK ON	Green	When lit, this LED confirms the presence of a valid tracking signal as follows: • If TTL Mode is selected and a valid TTL signal is detected, the LED will illuminate. • If the Video Mode is selected and a valid video signal is detected, the LED will illuminate.
BYPASS	Yellow	When lit, this LED confirms that the delay memory is bypassed. Refer to **Table 11** for determining the Minimum Delay through the card.
	Flashing Yellow	When flashing, this LED indicates the output is muted.
AUTO TRK	Yellow	When lit, this LED confirms that Auto-Tracking Mode is selected. The card will track either Video-Track or TTL Tracking depending upon which mode has been selected.

Using the SW1 and SW2 Switches

This section describes the **SW1** and **SW2** switches which enable you to select and configure the features and operational modes of the **ADL-8520A** card. Refer to **Figure 19** for switch locations. For specific information on the features and modes available on Bank A and Bank, refer to the respective sections in this chapter.

SW1 — Function Select Switch

The **SW1** – **Function Select** switch is a 16-position rotary switch used to select general operational functions such as delay units, tracking mode, and reference selection menu items. The **SW1** Function Select switch works in conjunction with the **SW2** – **Toggle Switch** in the following order:

1. Use **SW1** to select the function category.
2. Use **SW2** to select the modes or configuration settings within that function selection.

Refer to **Table 10** for complete details on Bank A Function Menus. For information on Bank B Menu Functions, refer to **Table 12**.

SW2 — Toggle Switch

The **SW2** toggle switch is used to enable, disable, and select specific **ADL-8520A** *configurations*, within the operational functional modes 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 (null or unity) position. Selection is made according to two basic menu design types:

- menu selections utilizing a scrolling *wrap-around* style of selection (from last menu item directly back to first menu item)
- menu selections utilizing a *bi-directional* upper and lower range limit

Refer to **Table 10** for complete details on Bank A Function Menus. For information on Bank B Menu Functions, refer to **Table 12**.

Two methods of toggling **SW2** are used to select basic and advanced level menu items. Selection of basic functions is performed by normal toggling of **SW2** with a *momentary* click of the switch:

- The menu label " **+** " instructs you to *momentarily* toggle **SW2** upwards to move to the desired menu selection
- The menu label " **-** " instructs you to *momentarily* toggle **SW2** downwards to move to the desired menu selection

For enabling or disabling specific functions that carry a higher level of importance, selection is performed by *holding* **SW2** in the UP or DOWN position for at least two seconds:

- The menu label "**+ (h)**" instructs you to *hold* **SW2** upwards to achieve selection of the desired menu item
- The menu label "**- (h)**" instructs you to *hold* **SW2** downwards to achieve selection of the desired menu item
- Hold **SW2** up or down longer to speed-scroll through the option's value range.

Bank A — Function Menu Table

The following table includes information for selecting and configuring the Bank A functions of the **ADL-8520A** card. For information on configuring Bank B functions, refer to the section "**Bank B — Function Menu Table**".

Table 10. Bank A Function Setup and Configuration Menu

SW1 Switch Position	Function Menu	SW2 Toggle Switch - Configuration Menu		4- Character Display			Default Value
				View 1	View 2	View 3	
0	Total Delay	Holds total delay in the display		TOTL	DLY	####(mS) *	Milliseconds (mS)
1	Fixed Delay	+ (h) - (h)	Increase Decrease	FIXD	DLY	#### (mS)* #### (Fields)	0 mS 0 Fields
2	Bypass Delay	+ -	Selection toggle Selection toggle	BYPS	MODE	OFF ON	OFF
3	Gain Mode	+ -	Selection toggle Selection toggle	GAIN	MODE	BOTH INDV	BOTH
4	Gain Left	+ (h) - (h)	Increase Decrease	GAIN	LEFT	##	0
5	Gain Right	+ (h) - (h)	Increase Decrease	GAIN	RGHT	##	0
6	Phase Left	+ -	Selection toggle Selection toggle	PHSE	LEFT	NORM INVT	NORM
7	Phase Right	+ -	Selection toggle Selection toggle	PHSE	RGHT	NORM INVT	NORM

SW1 Switch Position	Function Menu	SW2 Toggle Switch - Configuration Menu		4- Character Display			Default Value
				View 1	View 2	View 3	
8	Swap Channels	+ -	Selection toggle Selection toggle	SWAP	CHNL	L R R L L L R R SUM	L R
9	Mute Output	+ -	Selection toggle Selection toggle	MUTE	O/P	OFF ON	OFF
A	Preset A	+ -	Saved Current Presets Recall Current A Presets	PREA		SAV? RCL?	
B	Preset B	+ -	Saved Current Presets Recall Current B Presets	PREB		SAV? RCL?	
C	Preset C	+ -	Saved Current Presets Recall Current C Presets	PREC		SAV? RCL?	
D	Preset D	+ -	Selection toggle Selection toggle	PRED		SAV? RCL?	
E	Factor Default	+ -	Selection toggle Selection toggle	FACT	DFLT	RCL?	
F	Bank	+ -	Selection toggle Selection toggle	BANK	BANK	A B	A

* When the View 3 value in milliseconds is over 9999, the LED displays 10.0 and up to 20.0 seconds, the maximum delay available on the card.

Bank A Menu Items

This section describes the menu items in the Bank A Function Setup and Configuration Menu. You must have Bank A selected before proceeding to configure the parameters described in this section.

0 — Total Delay

Use the following procedure to determine the total delay going through the **ADL-8520A** card:

1. Select Bank **A** and Position **0** from the **SW1** Function Select switch.
2. "**TOTL DLY**" is displayed on the 4-Character Display of the card.
3. The total delay of the card is displayed in milliseconds.

When the value in milliseconds is over 9999, the LED displays 10.0 and up to 20.0 seconds, the maximum delay available on the card.

SW1 Position	Function	+ Toggle SW2 Up - Toggle SW2 Down	4-Character Display	Default Value
0	Total Delay	Holds total delay in the display	TOTL DLY	Milliseconds

Minimum Delay

The **Minimum Delay** is determined by the Delay Mode, Audio Input Selection, and the Bypass Mode of the card. Refer to **Table 11** when setting up the Minimum Delay for an **ADL-8520A** card.

Table 11. Minimum Delay Values

Delay Mode Selection	Audio Input Selection	Bypass Mode Selection	Minimum Delay
CONST or DIR	AES	OFF	1 mS
CONST or DIR	AES	ON	1 mS
CONST or DIR	ANALOG	OFF	2 mS
CONST or DIR	ANALOG	ON	2 mS
DATA	AES	OFF	271 µS
DATA	AES	ON	63 µS
DATA	ANALOG	OFF	1 mS
DATA	ANALOG	ON	1 mS

1 — Fixed Delay

The Fixed Delay allows the user to add a fixed delay from 0 to 20 seconds. Note that if 0mS is selected, refer to **Table 11** for information on determining the Minimum Delay.

Use the following procedure to set the desired Fixed Delay through the **ADL-8520A** card:

1. Select Bank **A** and Position **1** from the **SW1** Function Select switch. The Fixed Delay of the **ADL-8520A** module is displayed on the 4-Character Display of the card.
2. Toggle **SW2** to select the Fixed Delay. You can also hold **SW2** up or down to scroll through the range.

SW1 Position	Function	+ / - Toggle SW2 Up / Toggle SW2 Down	4-Character Display	Default Value
1	Fixed Delay	+ (h) Increase - (h) Increase	FIXD DLY XXXX (mS) XXXX (fields)	0 mS 0 Fields

2 — Bypass Mode

This menu item will remove any fixed and or auto-tracking delay out and provide the minimum input to output processing delay.

Use the following procedure to set the Delay Bypass Mode:

1. Select Bank **A** and Position **2** on the **SW1** Function Select switch.
2. Toggle **SW2** up or down to switch between bypass **ON** or **OFF**.

SW1 Position	Function	+ / - Toggle SW2 Up / Toggle SW2 Down	4-Character Display	Default Value
2	Delay Bypass	+ Selection toggle – Selection toggle	BYPS MODE OFF ON	OFF

Note

If the **GPI Mode** (**B8**) is set to **ON**, and the **GPI Selection** is set to **Bypass**, the Bypass Mode setting overrides the GPI contact closure signal. Refer to the section, "**GPI Mode**" for information on setting a mode.

3 — Gain Mode

The Gain Mode menu enables you to select whether to adjust the Gain Left and Right values individually (**INDIV**), or simultaneously (**BOTH**).

Use the following procedure to set the Gain Mode:

1. Select Bank **A** and Position **3** on the **SW1** Function Select switch.
2. Toggle **SW2** up or down to select a mode.

SW1 Position	Function	+ / - Toggle SW2 Up / Toggle SW2 Down	4-Character Display	Default Value
3	Gain Mode	+ Selection toggle – Selection toggle	GAIN MODE BOTH INDV	BOTH

4 — Gain Left

This menu allows you to adjust the digital Gain value of the audio signal for the Left channel up to ± 20 dB. If you have selected "**BOTH**" as the **Gain Mode** (**A3**), the Gain Right values will also change as you adjust the Gain Left values.

Note

> The **Gain Left** value should only be adjusted when you are using a PCM (Pulse Code Modulated) digital audio data signal.

Use the following procedure to set the Gain Left value:

1. Select Bank **A** and Position **4** on the **SW1** Function Select switch.
2. Toggle **SW2** up or down to select a new value.

SW1 Position	Function	+ Toggle SW2 Up - Toggle SW2 Down	4-Character Display	Default Value
4	Gain Left	+ (h) Increase - (h) Increase	GAIN LEFT 0	0

5 — Gain Right

This menu allows you to adjust the digital Gain value of the audio signal for the Right channel up to ± 20 dB. If you have selected "**BOTH**" as the **Gain Mode** (**A3**), the Gain Left values will also change as you adjust the Gain Right values.

Note

> The **Gain Right** value should only be adjusted when you are using a PCM (Pulse Code Modulated) digital audio data signal.

Use the following procedure to set the Gain Right value:

1. Select Bank **A** and Position **5** on the **SW1** Function Select switch.
2. Toggle **SW2** up or down to select a new value.

SW1 Position	Function	+ Toggle SW2 Up - Toggle SW2 Down	4-Character Display	Default Value
5	Gain Right	+ (h) Increase - (h) Increase	GAIN RGHT 0	0

6 — Phase Left

This menu enables you to invert the polarity of the audio signal for the Left channel.

Use the following procedure to set the polarity of the Left channel:

1. Select Bank **A** and Position **6** on the **SW1** Function Select switch.
2. Toggle **SW2** up or down to select a new value.

SW1 Position	Function	+ Toggle SW2 Up - Toggle SW2 Down	4-Character Display	Default Value
6	Phase Left	+ Selection toggle – Selection toggle	PHSE LEFT NORM INVT	NORM

7 — Phase Right

This menu enables you to invert the polarity of the audio signal for the Right channel.

Use the following procedure to set the polarity of the Right channel:

1. Select Bank **A** and Position **7** on the **SW1** Function Select switch.
2. Toggle **SW2** up or down to select a new value.

SW1 Position	Function	+ / -	Toggle SW2 Up / Toggle SW2 Down	4-Character Display	Default Value
7	Phase Right	+ –	Selection toggle Selection toggle	PHSE RGHT NORM INVT	NORM

8 — Swap Channels

This menu enables you to select what input channel will be routed to a given output channel.

Use the following procedure to swap channels:

1. Select Bank **A** and Position **8** on the **SW1** Function Select switch.
2. Toggle **SW2** up or down to select the channels to route as follows:
   - **L R** — The Left input channel is routed to the Left output channel; the Right input channel is routed to the Right output channel.
   - **R L** — The Left input channel is routed to the Right output channel; the Right input channel is routed to the Left output channel.
   - **L L** — The Left input channel is routed to the left and Right output channels.
   - **R R** — The Right input channel is routed to the left and Right output channels.
   - **SUM** — The Left input channel and the Right input channel are summed together and then are routed *together* to both the Left output channel and the Right output channel.

     If the **Gain Mode** (**A3**) is set to **INDV**, the Left and Right mix can be adjusted using the Left Gain and Right Gain.

SW1 Position	Function	+ / -	Toggle SW2 Up / Toggle SW2 Down	4-Character Display	Default Value
8	Swap Channels	+ –	Selection toggle Selection toggle	SWP CHNL L R R L L L R R SUM	L R

9 — Mute Output

This menu enables you to mute the output on the Left and Right channels.

Note

> If the **GPI Mode** (**B8**) is set to **ON**, and the **GPI Selection** is set to **Mute**, the Mute Mode setting overrides the GPI contact closure signal. Refer to the section, "**GPI Mode**" for information on setting a mode.

Use the following procedure to configure the Mute Output feature:

1. Select Bank **A** and Position **9** on the **SW1** Function Select switch.
2. Toggle **SW2** up or down to **ON** (enable) or **OFF** (disable) the mute feature.

SW1 Position	Function	+ -	Toggle SW2 Up Toggle SW2 Down	4-Character Display	Default Value
9	Mute Output	+ –	Selection toggle Selection toggle	MUTE O/P OFF ON	OFF

A, B, C, D — Presets

Each Preset allows individual settings to be stored and recalled to enable fast configuration. There are two operations in this mode: **Saving** a preset, and **Recalling** a preset. The following descriptions explain the procedure to save and recall presets. The following example uses Preset A, but the same procedure is also used to configure the B, C, and D presets.

Saving a Preset

Use the following procedure to save a preset to Preset A:

1. Make the required configurations to the **ADL-8520A** setup.
2. Select Bank **A** and Position **A** on the **SW1** Function Select switch.
3. Toggle **SW2** up momentarily to set the display into the Save mode.
   - "**SAV?**" displays for **3 seconds**, in which time the **SW2** switch must be toggled up again to confirm saving the preset.
   - "**STOR**" will then display to confirm the current settings have been Stored, or saved, in the memory (EEPROM).
4. If after **3 seconds** no selection is made, the opportunity to load the presets will be aborted and the display will return to "**PREA**".

This completes the procedure for saving a preset to Preset A.

Recalling a Preset

Use the following procedure to recall a preset for Preset A:

1. Select Bank **A** and Position **A** on the **SW1** Function Select switch to recall the previously saved configurations stored in the EEPROM.
2. Toggling **SW2** *down* momentarily to set the EEPROM into the Recall mode.
   - "**RCL?**" displays for **3 seconds**, in which time the **SW2** switch must be toggled down again to confirm recalling the previously saved preset.

- "**LOAD**" will then be displayed to confirm loading the preset settings from the EEPROM to make them the active configurations.

3. If after **3 seconds** no selection is made, the opportunity to load the presets will be aborted and the display will return to "**PREA**".

This completes the procedure for recalling a preset for Preset A.

SW1 Position	Function	+ Toggle SW2 Up - Toggle SW2 Down	4-Character Display	Default Value
A	Preset A	+ Saved Current Presets - Recall Current A Presets	PREA SAV? RCL?	Not Set
B	Preset B	+ Saved Current Presets - Recall Current B Presets	PREB SAV? RCL?	Not Set
C	Preset C	+ Saved Current Presets - Recall Current C Presets	PREC SAV? RCL?	Not Set
D	Preset D	+ Saved Current Presets - Recall Current D Presets	PRED SAV? RCL?	Not Set

E — Factory Default

The **ADL-8520A** can be quickly returned back to the factory default settings as detailed on the function menu table.

Use the following procedure to recall and set the factory default settings:

1. Select Bank **A** and Position **E** on the **SW1** Function Select switch.
2. Recall the factory default as follows:
   - Toggle **SW2** down momentarily to set the display into the Recall mode.
   - "**RCL?**" displays for **3 seconds** in which time the **SW2** switch must be toggled down *again* to confirm the setting of the factory defaults.
3. If after **3 seconds** no selection is made, the opportunity to load the presets will be aborted and the display will return to "**FACT**" indicating that the current operator-selected settings are still active and no factory default settings have been recalled.

SW1 Position	Function	+ Toggle SW2 Up - Toggle SW2 Down	4-Character Display	Default Value
E	Factory Default	- Selection toggle	FACT DFLT RCL?	Refer to **Tables 10** and **12**.

F — Bank Selection

This menu enables you to select Bank A and configure the options listed in **Table 10**.

Use the following procedure to select Bank A:

1. Select Position **F** on the **SW1** Function Select switch.
2. Toggle **SW2** up or down to select **A**.

SW1 Position	Function	+ Toggle SW2 Up - Toggle SW2 Down	4-Character Display	Default Value
F	Bank	- Selection toggle	BANK A B	A

Bank B — Function Menu Table

The following table includes information for selecting and configuring the Bank B functions of the **ADL-8520A** card. For information on configuring Bank A functions, refer to the section "**Bank A — Function Menu Table**".

Table 12. Bank B Function Setup and Configuration Menu

SW1 Switch Position	Function Menu	SW2 Toggle Switch - Configuration Menu		4- Character Display			Default Value
				View 1	View 2	View 3	
0	Delay Mode	+ -	Selection toggle Selection toggle	DLY	MODE	CONT DIR DATA	CONT
1	Audio Input Selection	+ -	Selection toggle Selection toggle	AUD	I/P	AES ANLG	AES
2	Output Word Size	+ -	Selection toggle Selection toggle	BIT	O/P	20 24	20
3	Delay Units	+ -	Selection toggle Selection toggle	DLY	UNIT	FLDS MILS	FLDS
4	REF System Mode	+ -	Selection toggle Selection toggle	SYS	MODE	NTSC PAL	NTSC
5	Reference Selection	+ -	Selection toggle Selection toggle	REF	SEL	AES VID INT I/P	AES
6	Tracking Mode	+ -	Selection toggle Selection toggle	TRK	MODE	FIXD AUTO BOTH	FIXD
7	Tracking Input	+ -	Selection toggle Selection toggle	TRK	I/P	+TTL -TTL VID	+TTL
8	GPI Mode	+ -	Selection toggle Selection toggle	GPI	MODE	OFF ON	OFF
9	GPI Selection	+ -	Selection toggle Selection toggle	GPI	SEL	MUTE BYPS	MUTE
A	Daughter Card De-Emphasis	+ -	Selection toggle Selection toggle	DAUG	DEEM	OFF ON AUTO	OFF

SW1 Switch Position	Function Menu	SW2 Toggle Switch - Configuration Menu		4- Character Display			Default Value
				View 1	View 2	View 3	
B	Not Implemented						
C	Not Implemented						
D	Not Implemented						
E	Error Code	+ -	Selection toggle Selection toggle	ERR	CODE	##	0
F	Bank	+ -	Selection toggle Selection toggle	BANK	BANK	A B	A

Bank B Menu Items

The menu items in the Bank B Function Setup and Configuration Menu Table is explained here in detail. You must have Bank B selected before proceeding to configure the parameters described in the following sections.

0 — Delay Mode

The **ADL-8520A** card uses three modes of delay: Continuous, Direct, or Data.

Use the following procedure to set the desired Delay Mode:

1. Select Bank **B** and Position **0** on the **SW1** Function Select switch.
2. Toggle **SW2** up or down to select a Delay Mode as follows:
    - **CONT** — In Continuous Mode, delay increases or decreases (ramps) at a rate of 8 mS per second. No audio is lost in transition as the audio stream is continuous. Continuous Mode is selected if Auto-Tracking Mode (**B6**) is to be used (**SW1** position **3**, Tracking Mode menu).
    - **DIR**— In Direct Mode, audio output is muted until the buffer reaches the selected delay in real-time. All Fixed Delay changes will be immediate with no ramping in or out of delay. Tracking Delay is disabled in this mode.
    - **DATA** — In Data Mode, audio output is muted until the buffer reaches the selected delay in real-time and the Sample Rate Converter (SRC) is bypassed. Therefore, the AES Input must be 48 kHz.

SW1 Position	Function	+ -	Toggle SW2 Up Toggle SW2 Down	4-Character Display	Default Value
0	Delay Mode	+ –	Selection toggle Selection toggle	DLY MODE CONT DIR DATA	CONT

1 — Audio Input Selection

Use the following procedure to select the Audio Input source of an **ADL-8520A** card:

1. Select Bank **B** and Position **1** on the **SW1** Function Select switch.
2. Toggle **SW2** up or down to select the desired Audio Input Mode.
    - **AES** — When selecting the **AES** Mode, ensure that a 75-ohm AES-3-id digital audio input is connected to BNC IN.
    - **ANLG** — To select **Analog** audio, the complete **ADL-8520A-A** or **ADL-8520A-B** versions must be installed, which include the optional AAM-8520A daughter-card, and CON-8520-A or CON-8520-B rear panel audio adaptor connections, in order to make analog audio a selectable option.

SW1 Position	Function	+ / -	Toggle SW2 Up / Toggle SW2 Down	4-Character Display	Default Value
1	Audio Input Selection	+ –	Selection toggle Selection toggle	AUD I/P AES ANLG	AES

2 — Output Word Size

The correct word size for the AES output must be set to compliment the AES downstream device(s). Word size selection must be performed for the **ADL-8520A** and the **ADL-8520A-A** as both versions use AES inputs and outputs. In the **ADL-8520A-A**, the optional analog inputs are digitized using 24-bit A to D conversion circuitry, with selectable 20 or 24-bit AES word size output signal encoding. If 24-bit word size selection is not made, then the factory default rate of 20-bit word size encoding will be used. Word size selection is not required for the **ADL-8520A-B**, which uses only analog audio outputs.

Use the following procedure to select the AES output word size:

1. Select Bank **B** and Position **2** on the **SW1** Function Select switch.
2. Toggle **SW2** up or down to select between 20-bit or 24-bit AES input/output.

SW1 Position	Function	+ / -	Toggle SW2 Up / Toggle SW2 Down	4-Character Display	Default Value
2	Input/Output Bit Selection	+ –	Selection toggle Selection toggle	BIT O/P 20 24	20

3 — Delay Units

The Delay Units menu determines the unit of measure used for setting delay values. There are two selectable options for adjusting the delay in either milliseconds or fields. Note that the selection must be correct before setting the value in the Fixed Delay menu (**A1**). Refer to the section "**4 — System Mode**" for details on Field values.

Use the following procedure to select the delay units of measure for the **ADL-8520A** card:

1. Select Bank **B** and Position **3** on the **SW1** Function Select switch.
2. Toggle **SW2** up or down to select between milliseconds or fields as follows:
    - **MILS** — Select this option when making adjustments requiring millisecond (ms) accuracy.
    - **FLDS** — Select this option when making quick coarse-level adjustments using Field increments.

SW1 Position	Function	+ -	Toggle SW2 Up Toggle SW2 Down	4-Character Display	Default Value
3	Delay Units	+ –	Selection toggle Selection toggle	DLY UNIT MILS FLDS	FLDS

4 — System Mode

The **System Mode** has implications for determining delay, as the time value of a field differs according to the signal standard selected. As such, the **Delay Units** (**B3**) must be set to **Fields** (**FLDS**). There are 2 fields per frame of video: 1 Field = 17mS in NTSC, 1 Field = 20mS in PAL. Total delay is recalculated if the system mode is changed:

- If in NTSC mode with XXXX fields of fixed delay, and PAL mode is selected, the number of fields stays the same and a new total delay is calculated and executed.
- If a switch is made from PAL to NTSC, delay time will decrease.
- If a switch is made from NTSC to PAL, delay time will increase.
- If Video Reference is selected (**B5**), the video standard must be set to the same as the System Selection (**B4**).

Use the following procedure to select the standard for the system mode being used:

1. Ensure that the **Delay Units** (**B3**) is set to **Fields** (**FLDS**).
2. Select Bank **B** and Position **4** on the **SW1** Function Select switch.
3. Toggle **SW2** up or down to select the desired signal standard.

SW1 Position	Function	+ -	Toggle SW2 Up Toggle SW2 Down	4-Character Display	Default Value
4	System Mode	+ –	Selection toggle Selection toggle	SYS MODE NTSC PAL	NTSC

5 — Reference Selection

Note

The AES output is always 48 kHz regardless of what is selected as the reference source.

Use the following procedure to select the reference source for the **ADL-8520A** card:

1. Select Bank **B** and Position **5** on the **SW1** Function Select switch.
2. Toggle **SW2** up or down to select the reference source as follows:
   - **AES** — Select this option to enable the AES output to be locked and synchronized to a 48 kHz or 96 kHz AES Reference signal. The AES frame boundaries as well as the clocks will be synchronized. This gives the most complete synchronized AES outputs.
   - **VID** — Select this option to have the card referenced to the VIDEO reference signal, the AES output will have the AES clocks locked and phased to the video signal.
   - **INT** — Select this option to default to internally generated clocks if an AES or VIDEO reference signal is not present. The AES output in this

mode will, therefore, have no external timing relationship to other AES sources.

- **I/P** — Select this option if there is a valid AES input at 48 kHz or 96 kHz. The AES output will lock to the input.

SW1 Position	Function	+ / - Toggle SW2 Up / Toggle SW2 Down	4-Character Display	Default Value
5	Reference Select	+ Selection toggle – Selection toggle	REF SEL AES VID INT I/P	AES

6 — Tracking Mode

Note

> If the **Delay Mode** (**B0**) is set to **DIR** or **DATA**, the Tracking Modes are disabled. Refer to the section "**Delay Mode**" for details.

The Minimum Delay is determined by the Delay Mode, Audio Input Selection, and the Bypass Mode selections of the card. Refer to **Table 11** for information on determining the Minimum Delay through your card.

Use the following procedure to change the Tracking Mode for the **ADL-8520A** card:

1. Select Bank **B** and Position **6** on the **SW1** Function Select switch.
2. Toggle **SW2** up or down to select the desired Tracking Mode as follows:
   - **FIXD** — The only delay that is applied to the card is the value that has been set by the Fixed Delay (**A1**). The Minimum Delay is 0 mS and the maximum is 20 seconds.
   - **AUTO** — The only delay that is applied to the card is what the TTL or VIDEO tracking delay is currently tracking. The Minimum Delay is 0 mS, Maximum TTL delay is 2 seconds, Maximum VIDEO delay is 1 frame.
   - **BOTH** — The delay is the total of the **Fixed Delay** (**A1**) set and the amount of Tracking Delay.

SW1 Position	Function	+ / - Toggle SW2 Up / Toggle SW2 Down	4-Character Display	Default Value
6	Tracking Mode	+ Selection toggle – Selection toggle	TRK MODE FIXD AUTO BOTH	FIXD

7 — Tracking Input

There are three external tracking reference options: +TTL, -TTL and VIDEO. Each mode is described in the following subsections.

+ or - TTL Tracking Delay Modes

In these modes, the AES output is delayed by the amount of pulse width of the TTL signal. The RossGear ADC-8032A NTSC/PAL to SDI Synchronizer provides a TTL tracking delay output suitable for use with the **ADL-8520A** delay module. Ensure that jumper **JP2** on the main board is set to the **TTL Delay position** when using this mode. Refer to the following figure.

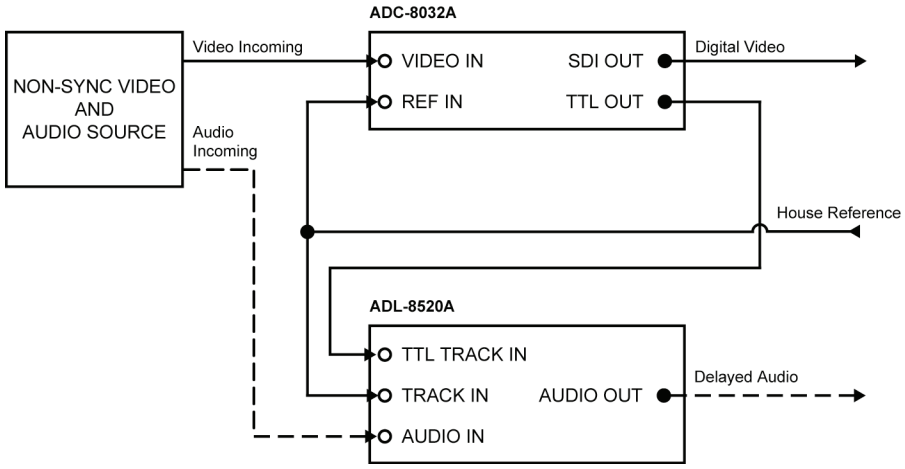


Figure 20. Video with TTL Tracking

VIDEO Tracking Mode

In this mode, the delay is calculated using the external VIDEO reference and VIDEO track inputs. Ensure that both these signals are connected. Ensure that jumper **JP2** on the main **ADL-8520A** card is set to the **TTL Delay position** when using this mode. For a sample wiring diagram, see the following figure. These two signals will be the same signals that are being fed to the synchronizer module. The delay module will then track the delay introduced in the video synchronizer module.

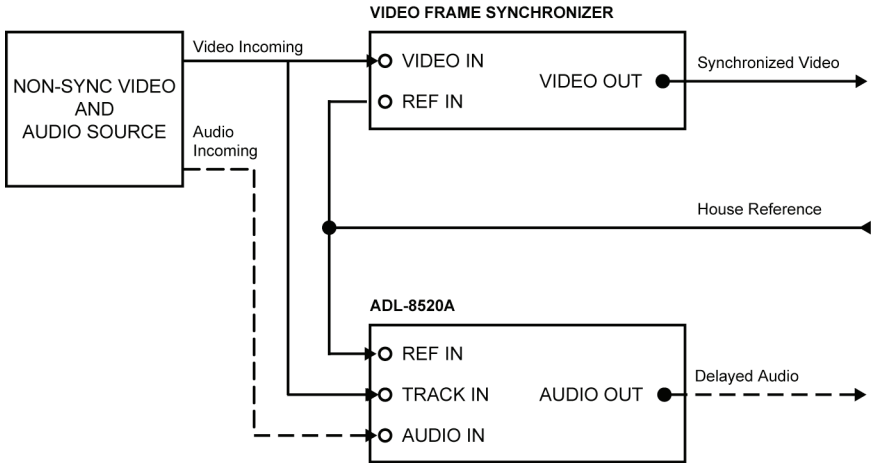


Figure 21. Video with Reference Tracking

If there is no reference input, see the following figure for a sample wiring diagram.

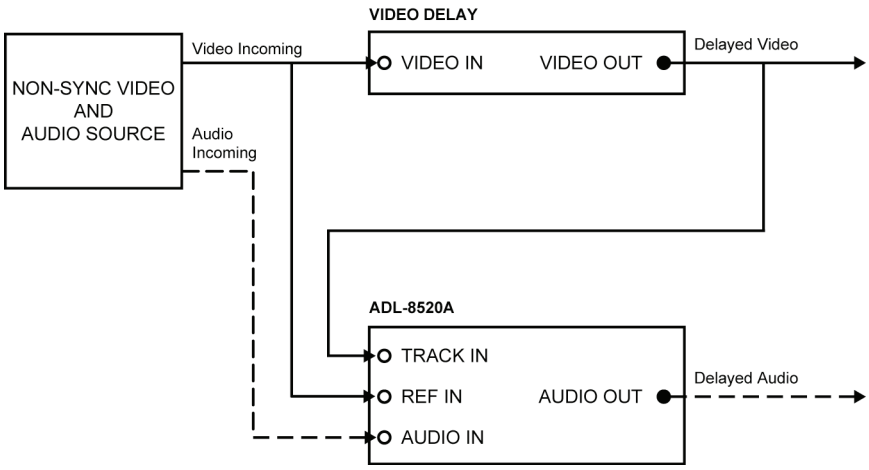


Figure 22. Video without Reference Tracking

Selecting a Tracking Input Source

Use the following procedure to select the Tracking Input source for your card:

1. Select Bank **B** and Position **7** on the **SW1** Function Select switch.
2. Toggle **SW2** up or down to select the tracking input source.

SW1 Position	Function	+ / -	Toggle SW2 Up / Toggle SW2 Down	4-Character Display	Default Value
7	Tracking Input	+ + –	Selection toggle Selection toggle Selection toggle	TRK MODE +TTL -TTL VID	+TTL

8 — GPI Mode

A level sensitive GPI connection may be input to the card via BNC 1 to activate GPI Selection without any user interaction.

Use the following procedure to configure the module for GPI selection:

1. Select Bank **B** and Position **8** on the **SW1** Function Select switch
2. Toggle **SW2** up or down to select between **ON** (enabled) or **OFF** (disabled).

SW1 Position	Function	+ / -	Toggle SW2 Up / Toggle SW2 Down	4-Character Display	Default Value
8	GPI Mode	+ –	Selection toggle Selection toggle	GPI SEL OFF ON	OFF

9 — GPI Selection

This menu enables you to select what will happen when the GPI Mode is enabled (**B8**) and a valid GPI signal is applied to the input.

Use the following procedure to configure the **ADL-8520A** for GPI selection:

1. Select Bank **B** and Position **9** on the **SW1** Function Select switch.
2. Toggle **SW2** up or down to configure the GPI selection:
   - **MUTE** — Select this option to keep the **ADL-8520A** in MUTE as long as the GPI input is valid.
   - **BYPS** — Selection this option to keep the **ADL-8520A** in BYPASS as long as the GPI input is valid.

SW1 Position	Function	+ -	Toggle SW2 Up Toggle SW2 Down	4-Character Display	Default Value
9	GPI Selection	+ –	Selection toggle Selection toggle	GPI SEL MUTE BYPS	MUTE

A — Daughter Card De-Emphasis

The parameters on this menu are only applicable when the AAM-8520A option is installed on the **ADL-8520A** card.

Use the following procedure to configure the AAM-8520A output filter:

1. Select Bank **B** and Position **A** on the **SW1** Function Select switch.
2. Toggle **SW2** up or down to configure the output filter as follows:
   - **OFF** — No output filter is applied.
   - **ON** — Select this option to apply a 50µs + 15µs filter to output audio.
   - **AUTO** — Select this option to apply a 50µs + 15µs filter to the output only when the incoming audio has its Emphasis Bits appropriately set in the Channel Status information.

SW1 Position	Function	+ -	Toggle SW2 Up Toggle SW2 Down	4-Character Display	Default Value
A	Daughter Card De-Emphasis	+ –	Selection toggle Selection toggle	DAUG DEEM OFF ON AUTO	OFF

E — Error Code

This menu enables you to troubleshoot errors on the **ADL-8520A** card in conjunction with the **OK/ERROR LED** on the card-edge.

Use the following procedure to view Error Codes for the **ADL-8520A**:

1. Determine the status of the **OK/ERROR LED** on the card-edge. Refer to **Table 9** for more information.
2. Select Bank **B** and Position **E** on the **SW1** Function Select switch.
3. Refer to **Table 13** for information on the type of Error Code your **ADL-8520A** card may be experiencing.

Table 13. Error Code Descriptions

4-Character Display	Error Code Description	Solution
ERR CODE 0	No errors	
ERR CODE 1	FPGA Read/Write Error	Contact Ross Video Technical Support
ERR CODE 2	AES Receive Read/Write Error	Contact Ross Video Technical Support
ERR CODE 3	AES Reference Read/Write Error	Contact Ross Video Technical Support
ERR CODE 4	AES Transmit Read/Write Error	Contact Ross Video Technical Support
ERR CODE 5	Audio Input Selection (**B1**) is set to AES but the AES Input is invalid	• Check the input signal and ensure it is a valid AES signal; or • Use the correct Audio Input Selection (**B1**) for the AES Input
ERR CODE 6	The Delay Mode (**B0**) is set to **DATA** but the input AES signal is not 48 kHz.	The input AES signal must be 48 kHz when in Data Mode (**B0**).
ERR CODE 7	A Data Slip error has occurred. The Delay Mode (**B0**) is set to **DATA** but has a valid 48 kHz AES signal that is not synchronized to the Reference Source selected (**B5**)	• Synchronize the incoming AES signal to the selected reference; or • Select **I/P** as the Reference Source for the card (**B5**)
ERR CODE 8	The Reference selection, or input, is not compatible with the card configuration.	Verify the card configuration, the Reference Input and **JP4**.

F — Bank Selection

This menu enables you to select Bank B and configure the options listed in **Table 12**.

Use the following procedure to select Bank B:

1. Select Position **F** on the **SW1** Function Select switch.
2. Toggle **SW2** up or down to select **B**.

SW1 Position	Function	+ / -	Toggle SW2 Up / Toggle SW2 Down	4-Character Display		Default Value
F	Bank	+	Selection toggle	BANK	A	A
		–	Selection toggle		B	

Upgrades

In This Chapter

This chapter provides instructions to properly upgrade your **ADL-8520A**. and contains the following sections:

- Equipment Supplied
- Chip Removal
- Software or Firmware Upgrades

Equipment Supplied

- An **ADL-8520A** User Manual
- Required upgrade chip(s)
- Chip Removal

For all possible upgrades to the **ADL-8520A** use socket **U13**. If there is a chip already inserted into **U13**, remove it as described in the following procedure and **Figure 23**.

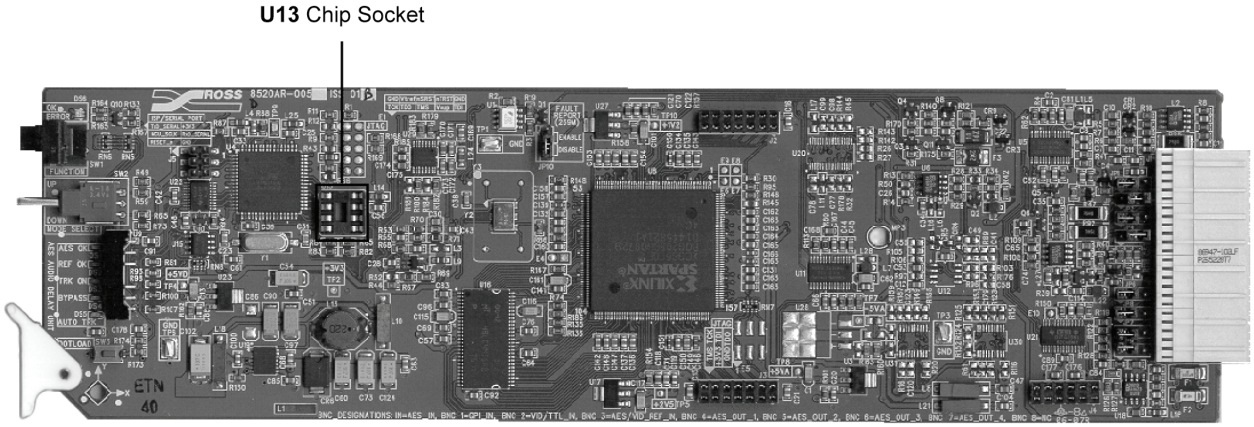


Figure 23. ADL-8520A Upgrade Socket and Label Locations

Removing the Chip from the ADL-8520A

Use the following procedure to remove the chip from socket **U13**:

1. With the card out of the frame, refer to **Figure 23** and the card labeling to locate chip socket **U13**.
2. Use a IC chip removal tool (not supplied) to gently pry the chip out of the socket.
3. Store the chip in a labeled static-free container.

Software or Firmware Upgrade

This procedure applies to any software or firmware upgrade you may perform on the **ADL-8520A**. If you are upgrading multiple cards, repeat this procedure for each card to be upgraded.

Use the following procedure to upgrade the software or firmware of your **ADL-8520A**:

1. With the card out of the frame, refer to **Figure 23** and the card labeling to locate the **U13** socket.
2. If the socket is occupied, complete the **Chip Removal** procedure.
3. Carefully remove the new chip from the packaging.
4. Align the new chip over the socket with the keyed sides together and the legs over the socket holes.
5. Gently and firmly press the chip into the socket.
6. Press the **Bootload** button while inserting the card into the powered frame and wait for the upgrade to start. Alternately, you can insert the card and power up the frame if it is off.
   - When the green **OK LED** starts flashing, the upgrade is in progress and you can release the **Bootload** button. The **OK LED** flashes at various rates throughout the upgrade. The upgrade is done when the LED stops flashing.
7. Remove the card from the frame and complete the **Chip Removal** procedure.
8. Replace the card in the frame and verify the software or firmware version as follows:
   - Select Bank **A** and Position **0** on the **SW1** Function Select switch.
   - Hold **SW2** up for three seconds to display the **Software version** on the 4-Character Display of the card.
   - Hold **SW2** down for three seconds to display the **Firmware version** on the 4-Character Display of the card.

This completes the procedure for upgrading the software or firmware for your **ADL-8520A**.

SMPTE 269M Fault Reporting

In This Chapter

This chapter contains the following sections:

- Overview
- Jumper Setup
- Frame Connections
- Details

Overview

The SMPTE 269M Fault Reporting system, also known as an SMPTE “alarm”, provides indication if one or more frame modules encounter a fault or an abnormal condition. The **ADL-8520A** module provides a jumper to enable SMPTE 269M fault reporting. The card connects by means of an internal interface circuit to an auxiliary telco connector on RossGear 8000 and 8000A series frames. When the frame connection is interfaced with a customer-designed system of LED's or audible alarms, faults can be traced to a specific frame when a card fault occurs within that frame.

The following diagram illustrates a general arrangement for SMPTE 269M alarm reporting:

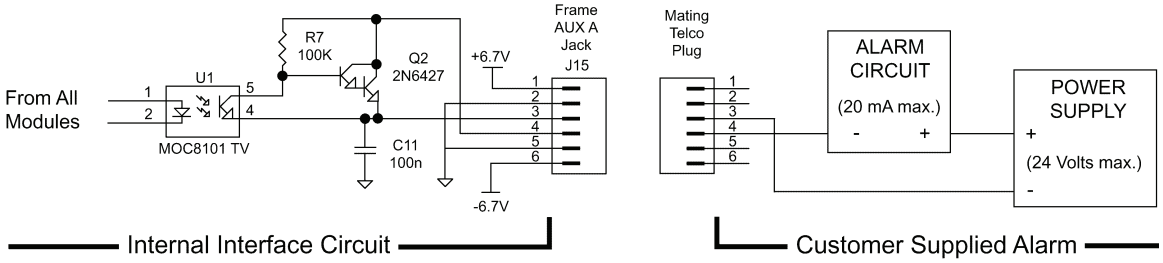


Figure 24. SMPTE 269M Alarm Reporting: Internal Interface and Typical Connections

Jumper Setup

If fault reporting for the **ADL-8520A** is desired, use main card jumper **JP10 - 269M FAULT REPORT** to set up the card.

1. To access the jumper, remove the card from the frame by pressing down the white card ejector tab and pulling the card from the frame slot.
2. Observing all static discharge and handling precautions, place the card with the component side facing up on a clean flat surface.
3. To enable SMPTE fault reporting, set jumper **JP10** to the **ENABLE** position.
4. To disable SMPTE fault reporting, set jumper **JP10** to the **DISABLE** position.

See Figure 4 in Chapter 2, "**ADL-8520A Installation and Setup**" for jumper location details.

Frame Connections

The SMPTE 269M Fault Reporting connection on RossGear 8000 series frames is provided by the auxiliary telco connector, **AUX A**, for interfacing with a customer-designed alarm system.

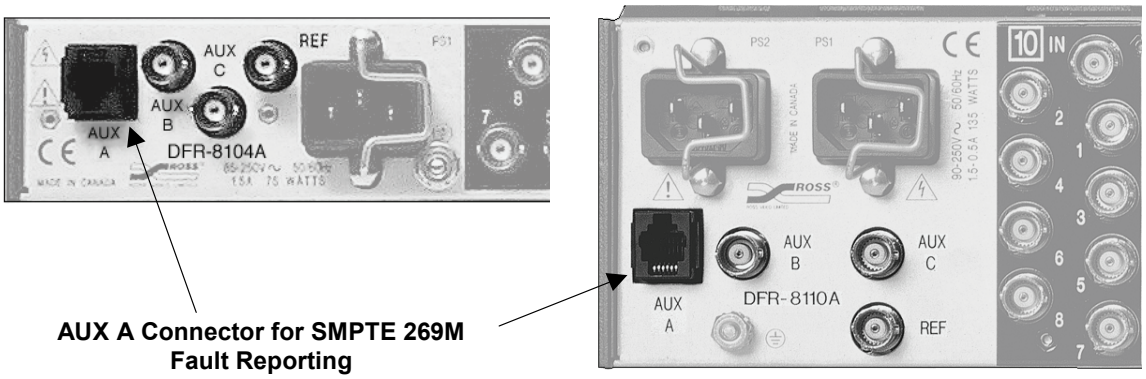


Figure 25. SMPTE 269M Alarm Reporting Frame Connections

Details

The fault report contacts are closed when the card detects a failure condition, such as failure to detect a valid AES or reference input signal to the card. For additional information on alarm system design, refer to the SMPTE document ***ANSI/SMPTE 269M - 1999***.

Specifications

In This Chapter

This chapter contains the Technical Specifications for the **ADL-8520A** card.

Technical Specifications

The following table includes the technical specifications for the **ADL-8520A** card.

Table 14. ADL-8520A Technical Specifications

Category	Parameter	Specification
AES Input (available on all models)	Number of Inputs	1 AES-3-id
	Connector	BNC
	Input Impedance	75Ω
	Input Return Loss	>40dB (0.1 to 6MHz)
	Input Resolution	20-bit or 24-bit
	Minimum Input	100mV p-p
	Maximum Input	2.5V p-p
	Sampling Rate	20-96kHz
Analog Audio Input (available on the **ADL-8520A-A** and **ADL-8520A-B**)	Number of Inputs	2 via CON-8520-A or CON-8520-B
	Connector	3-Pin Plug to BNC Adaptor Modules: CON-8520-A or CON-8520-B
	Input Impedance	> 20kΩ
	Maximum Input Level	+27dBu into 20kΩ
	A to D conversion	24 Bit
	Input Level Range	+15 to +27dBu continuously variable via jumper and 12-turn potentiometer
	Frequency Response	20Hz - 20kHz ±0.05dB @ Fs = 48kHz
	Signal to Noise Ratio	101dB 103dB 'A' weighted 114dB CCITT weighting 20Hz - 20kHz AES 17 filter @ 48kHz -20dBFS
	THD	>83dB
	Phase Linearity	0.35º @ 20kHz
	Amplitude Linearity	0.3dB @ -100dBFS
	Crosstalk	-100dB
	Reference Levels	Headroom -27dBFS to -15dBFS
GPI Input (available on all models)	Number of Inputs	1
	Connector	BNC
	Signal Type	Contact Closure
Tracking Input (available on all models)	Number of Inputs	1
	Connector	BNC
	Tracking Mode (selectable)	TTL: 0 - 5 Volts DC Max
		Video: NTSC/PAL analog video

Category	Parameter	Specification
Reference Input (available on all models)	Number of Inputs	1, plus 1 frame input
	Connector	BNC, or Frame Reference
	Signal Type (selectable)	Digital Audio: AES-3id 48kHz or 96kHz DARS
		Analog Video: NTSC/PAL
	Input Impedance	75Ω
	Input Return Loss	>35dB (0.1 to 6MHz)
	Input Level	Min: 100mV p-p Max: 2.5V p-p
AES Output (available on **ADL-8520A** and **ADL-8520A-A**)	Number of Outputs	Up to 4 AES-3-id
	Connector	BNC
	Output Impedance	75Ω
	Rise / Fall Time	37ns (30 - 44ns AES-3-id [10 - 90%])
	DC Offset	< 50mV (AES-3-id)
	Output Amplitude	1V p-p ± 10% (AES-3-id)
	Signal to Noise Ratio	-120dBFS @ 24-bit, -113dBFS @ 20-bit
	Added Jitter	1.5 mUI Peak wideband jitter (50Hz -100kHz)
	Output Return Loss	>44dB (0.1 to 6MHz)
	Sampling Rate	48kHz
Analog Audio Output (available on **ADL-8520A-B**)	Number of Outputs	2 via CON-8520-B
	Connector	3-Pin Plug to BNC Adaptor Module: CON-8520-B
	Output Impedance	57Ω
	Maximum Output Level	+27dBu into 20kΩ
	Quantization	20-bit or 24-bit
	Frequency Response	20Hz - 20kHz ±0.05dB @ Fs = 48kHz
	Signal to Noise Ratio	>100dB (20Hz - 20kHz AES 17 filter, 48kHz sampling rate, -20dBFS or -60dBFS signal input)
	THD	>90dB
	Phase Linearity	>1º 20-20hKz
	Amplitude Linearity	± 1dB @ -90dBFS
	Crosstalk	>90dB
	Reference Levels	Headroom -27dBFS to -15dBFS
Model Components	ADL-8520A	ADL-8520A - PCB mother-card only
	ADL-8520A-A	ADL-8520A - PCB mother-card
		AAM-8520A - PCB daughter-card
		CON-8520-A - 3-Pin Plug to BNC Adaptor Module

Category	Parameter	Specification
	ADL-8520A-B	ADL-8520A - PCB mother-card
		AAM-8520A - PCB daughter-card
		CON-8520-B - 3-Pin Plug to BNC Adaptor Module
	Distribution Frame	Ross Video Ltd., RossGear 8000A-series (or compatible)
Power	Consumption	3.0W (ADL-8520A mother card only)
		6.0W (ADL-8520A mother card with AAM-8520A daughter card and CON-8520-A or CON-8520-B installed)
Environmental (all models)	Operating Range	5°C - 40°C ambient

Specifications are subject to change without notification

Service Information

In This Chapter

This chapter contains the following sections:

- Troubleshooting Checklist
- Warranty and Repair Policy

Troubleshooting Checklist

Routine maintenance to this Ross Gear product is not required. In the event of problems with your **ADL-8520A**, the following basic troubleshooting checklist may help identify the source of the problem. If the module still does not appear to be working properly after checking all possible causes, please contact your openGear products distributor, or the Ross Video 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. **Reseat 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. **Module Exchange** – Exchanging a suspect module with a module that is known to be working correctly is an efficient method for localizing problems to individual modules.

Warranty and Repair Policy

The RossGear **ADL-8520A** 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 **ADL-8520A** 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 **ADL-8520A** 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 **ADL-8520A** User Manual provides all pertinent information for the safe installation and operation of your Product. Ross Video policy dictates that all repairs to the **ADL-8520A** 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 **ADL-8520A**, 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 **ADL-8520A**. 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

ADL-8520A and Related Products

Your **ADL-8520A** AES/EBU Auto-Tracking Audio Delay Unit is a part of the RossGear family of products. Ross Video offers a full line of RossGear terminal equipment including distribution, conversion, monitoring, synchronizers, encoders, decoders, keyers, switchers, as well as analog audio and video products.

Standard Equipment

- **ADL-8520A**, AES/EBU Auto-Tracking Audio Delay Unit
- **ADL-8520A-A**, AES/EBU Auto-Tracking Audio Delay Unit (includes AAM-8520A daughter-card and CON-8520-A 2-channel analog audio adaptor)
- **ADL-8520A-B**, AES/EBU Auto-Tracking Audio Delay Unit (includes AAM-8520A daughter-card and CON-8520-B 2-channel analog audio adaptor)
- **8520ADR-004**, AES/EBU Auto-Tracking Audio Delay Unit User Manual

Optional Equipment

Important!

The **ADL-8520A-A** and **-B** card configurations must be installed in a frame with a cooling module option installed.

- **8520ADR-004**, additional AES/EBU Auto-Tracking Audio Delay Unit User Manual
- **ADC-8032A**, NTSC / PAL / PAL-M / PAL-N to SDI Decoder (A-D converter and video frame synchronizer)
- **DFR-8104A**, Digital Products Frame and Power Supply (PS-8102) (1RU, holds 4 modules, includes 1 power supply)
- **DFR-8104A-C**, Digital Products Frame with Cooling Fan Module and Power Supply (PS-8102) (1RU, holds 4 modules, includes 1 power supply)
- **DFR-8110A**, Digital Products Frame and Power Supply (PS-8102) (2RU, holds 10 modules, includes 1 power supply)

- **DFR-8110A-C**, Digital Products Frame with Cooling Fan Module and Power Supply (PS-8102)
  (2RU, holds 10 modules, includes 1 power supply)
- **CFM-8104A**, Cooling Fan Module
  (upgrade cooling kit for standard DFR-8104A)
- **CFM-8110A**, Cooling Fan Module
  (upgrade cooling kit for standard DFR-8110A)
- **PS-8102**, Power Supply (85-264 volts)
  (redundancy option power supply for Ross 8000A series 2RU digital product frames)
- **EXT-8100**, Extender Board
  (module servicing extension)
- **FSB-7110**, Rear Support Bars and Brackets
  (additional support for rear frame-to-rack mounting)
- **CRB-8110A**, Card Retaining Bracket
  (module retainer used in field installations such as mobile trucks etc.)
- **CSB-8100**, Cable Support Bracket
  (cable support bar for rear of digital frames)

Ross Video Limited offers a full line of RossGear professional broadcasting products to accompany your **ADL-8520A, AES/EBU Auto-Tracking Audio Delay Unit**. Please visit our website (www.rossvideo.com) to obtain more product information from our on-line catalog, and then contact your local representative for further details. Contact information is supplied on the following page.

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 Support	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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