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## **ADC-9532 User Guide**

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

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

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



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

## Ross Video Code of Ethics

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

# ADC-9532 · User Guide

- Ross Part Number: **9532DR-004-03**
- Release Date: December 19, 2017.

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## Patents

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

## Notice

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

## Safety Notices

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

## Statement of Compliance

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

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

## EMC Notices

### United States of America - FCC Part 15

This equipment has been tested and found to comply with the limits for a class A Digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a Commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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

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### Canada

This Class A device complies with Canadian ICES-003 and part 15 of the FCC Rules.

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

## European Union

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



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

## Australia/New Zealand

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

## Korea

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

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

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

## International

This equipment has been tested under the requirements of CISPR 22:2008 or CISPR 32:2015 and found to comply with the limits for a Class A Digital device.

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

## Maintenance/User Serviceable Parts

Routine maintenance to this GearLite 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 GearLite products are covered by a generous 3-year warranty and will be repaired without charge for materials or labor within this period. See the “Warranty and Repair Policy” section in this manual for details.

## Environmental Information

The equipment may contain hazardous substances that could impact health and the environment.

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

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



If you need more information on the collection, reuse, and recycling systems, please contact your local or regional waste administration. You can also contact Ross Video for more information on the environmental performances of our products.

## Company Address

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



# Introduction

This guide covers the installation, configuration, and use of the ADC-9532. The following chapters are included:

- “**Introduction**” summarizes the guide and provides important terms, and conventions.
- “**Hardware Overview**” describes the ADC-9532 hardware features and physical connections.
- “**Physical Installation**” provides instructions for the basic physical installation of the ADC-9532 in your system.
- “**Cabling**” provides an overview of connecting external devices to the ADC-9532.
- “**Setup**” provides information on the warranty and repair policy for your ADC-9532.
- “**Technical Specifications**” provides the technical specifications for your ADC-9532.

## Documentation Conventions

Special text formats are used in this guide to identify parts of the user interface, text that a user must enter, or a sequence of menus and sub-menus that must be followed to reach a particular command.

### Interface Elements

Bold text is used to identify a user interface element such as a dialog box, menu item, or button. For example:

In the **Edit** dialog, click **Apply**.

### User Entered Text

Courier text is used to identify text that a user must enter. For example:

In the **Language** box, enter **English**.

### Referenced Guides

Italic text is used to identify the titles of referenced guides, manuals, or documents. For example:

For more information, refer to the ***DAC-9516 User Manual***.

### Menu Sequences

Menu arrows are used in procedures to identify a sequence of menu items that you must follow. For example, if a step reads “**File > Save As**,” you would select the **File** menu and then select **Save As**.

### Important Instructions

Star icons are used to identify important instructions or features. For example:

- ★ Contact your IT department before connecting to your facility network to ensure that there are no conflicts. They will provide you with an appropriate value for the IP Address, Subnet Mask, and Gateway for your ADC-9532.

## Contacting Technical Support

At Ross Video, we take pride in the quality of our products, but if problems occur, help is as close as the nearest telephone.

Our 24-hour Hot Line service ensures you have access to technical expertise around the clock. After-sales service and technical support is provided directly by Ross Video personnel. During business hours (Eastern Time), technical support personnel are available by telephone. After hours and on weekends, a direct emergency technical support phone line is available. If the technical support person who is on call does not answer this line immediately,

a voice message can be left and the call will be returned shortly. This team of highly trained staff is available to react to any problem and to do whatever is necessary to ensure customer satisfaction.

- **Technical Support:** (+1) 613-652-4886
- **After Hours Emergency:** (+1) 613-349-0006
- **E-mail:** [techsupport@rossvideo.com](mailto:techsupport@rossvideo.com)
- **Website:** <http://www.rossvideo.com>



# Before You Begin

If you have questions pertaining to the operation of ADC-9532, contact us at the numbers listed in the section “**Contacting Technical Support**” on page 7. Our technical staff is always available for consultation, training, or service.

## Overview

The ADC-9532 is a broadcast quality Analog Audio to AES/EBU Converter used to convert two (2) analog audio channels to an AES/EBU signal. The ADC-9532 accepts one stereo (A, B) analog audio pair and provides three (3) copies of the AES/EBU signal. The conversion from analog to digital is performed with 20bit or 24bit precision. The ADC-9532 supports sampling rates of 32kHz and 48kHz (with a video or AES reference or free running) and 44.1kHz (with a valid AES reference signal only). The ADC-9532 has been designed for use in 75ohm coaxial (SMPTE 276M or AES-3id) systems but can be easily used in balanced (twisted pair) systems with the use of a 75ohm to 110ohm converter, such as the GearLite AES-9523 or AES-9525 AES converters.

The two analog audio signals are input through the 12-pin audio terminal block. The ADC-9532 uses a very high quality anti-aliasing filter on its inputs to ensure that the converted signal has very low noise and distortion artifacts. The A to D conversion process is performed by a state of the art 256X over-sampling Delta Sigma Modulator ADC. Three (3) copies of the unbalanced AES/EBU signal are provided on the BNC connectors on the rear of the unit.

The ADC-9532 has the ability to phase and frequency lock to an external AES DARS reference (per AES11-1997) or to frequency lock to an external analog PAL or NTSC video reference. An LED on the front panel indicates the presence of an external reference signal. If there is a loss of the reference signal, the unit will switch to an internal reference. The unit will automatically switch back to the selected reference when the external reference returns.

The ADC-9532 has an extremely stable internal clock and can be operated without an external reference signal.

A coarse input attenuator switch (20dB or 24dB) and fine input attenuator potentiometers (+/-3dB, one for each channel) are provided to precisely match your facility's house reference audio levels. The ADC-9532 can accommodate any maximum input level in the +17dBu to +27dBu range.

The ADC-9532 is designed and manufactured to meet the highest quality broadcast industry standards. It is an ideal and cost effective solution for converting analog audio into an AES/EBU signal.

## Block Diagram

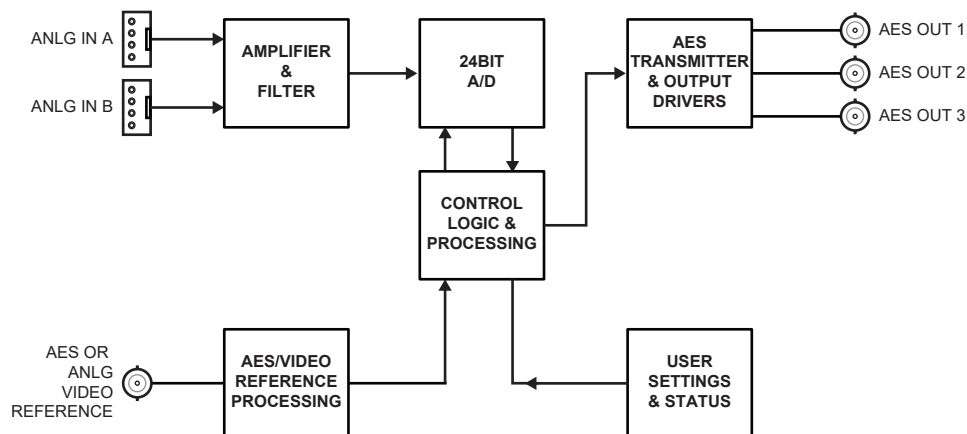


Figure 2.1 Simplified Block Diagram of ADC-9532 Functions

## Features

Some features of the ADC-9532 include:

- Support for 32kHz, 44.1kHz, and 48kHz sampling rates
- User selectable 20bit or 24bit ADC resolution
- Built in 75ohm reference termination
- External reference locking to either AES audio (DARS) or analog video (PAL or NTSC)
- Front panel indication of reference signal presence
- Adjustable input level range from +17dBu to +27dBu
- 3-year warranty

# Hardware Overview

This chapter presents information on the ADC-9532 hardware components and features.

## Chassis Faceplate Overview

The chassis faceplate of the ADC-9532 provides a silk-screen map of the connections available. **Figure 3.1** illustrates the ADC-9532 faceplate label.

The chassis of the ADC-9532 also includes status LEDs that display the status of power, and reference input.

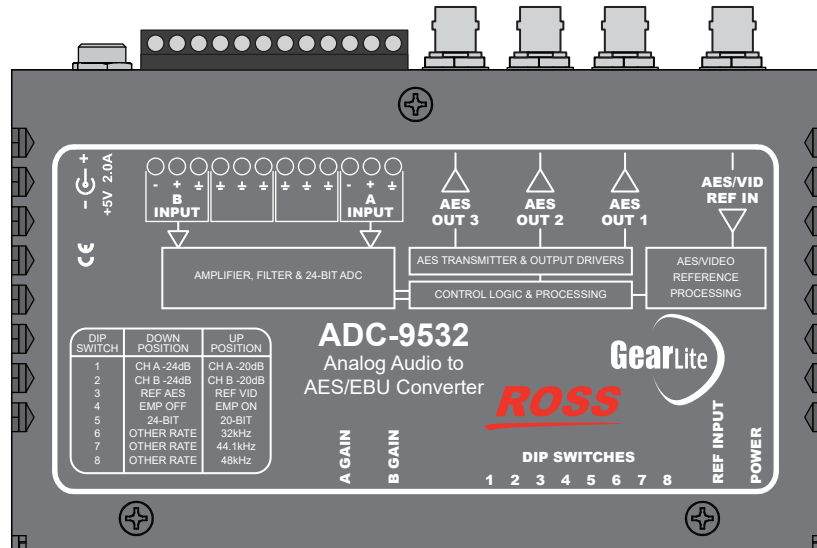


Figure 3.1 ADC-9532 — Faceplate Label

## POWER Connection

The ADC-9532 has a standard miniature power jack (center pin positive) that connects to the PS-9000 power supply. (**Figure 3.2**)

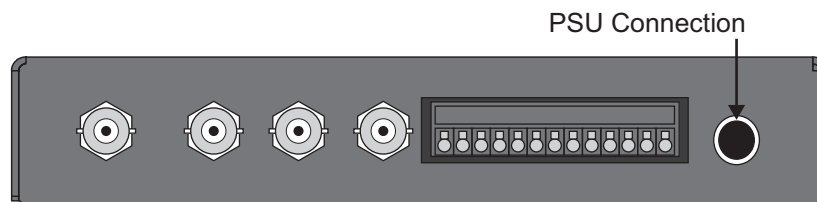


Figure 3.2 ADC-9532 — POWER

## POWER LED

The POWER LED is located on the bottom of the chassis. (**Figure 3.3**)

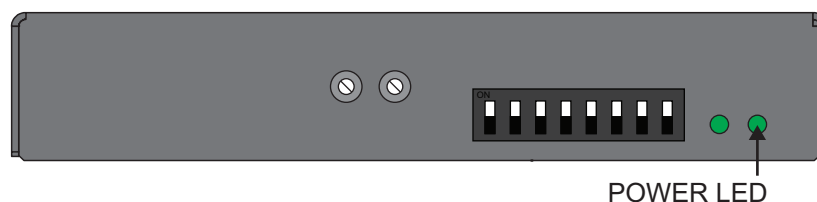


Figure 3.3 ADC-9532 — POWER LED

Table 3.1 describes the behavior the POWER LED.

**Table 3.1 POWER LED**

| Status | Description                                                                      |
|--------|----------------------------------------------------------------------------------|
| Green  | When this LED is <i>continually lit</i> green, power is supplied to the ADC-9532 |
| Off    | When unlit, this LED indicates a loss of power.                                  |

## AES Output Connections

The ADC-9532 provides three BNC connections for AES outputs. (Figure 3.4)

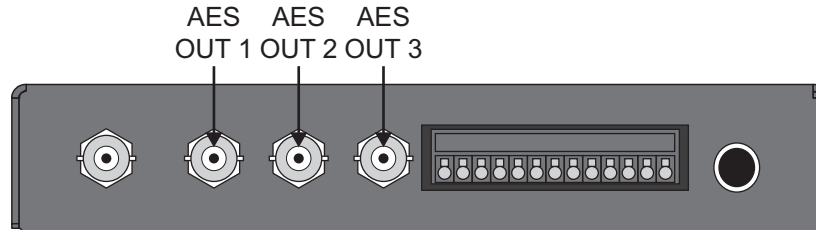


Figure 3.4 ADC-9532 — AES Connections

## Balanced Analog Audio Input Connections

On the bottom of the ADC-9532 there is a removable 12-pin audio terminal block which has slots for the positive, negative, and grounded wires of two balanced analog audio cables. (Figure 3.5)

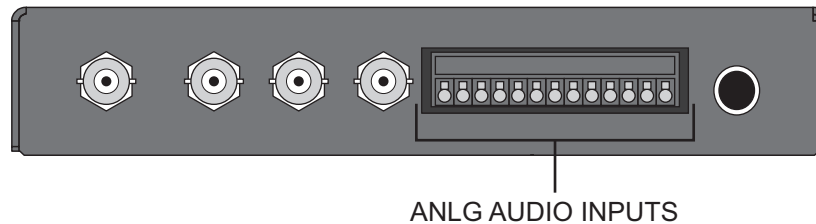


Figure 3.5 ADC-9532 — Analog Connections

## Reference Connection

The ADC-9532 provides a BNC for an analog video (NTSC or PAL) or an AES/EBU reference signal. (Figure 3.6)

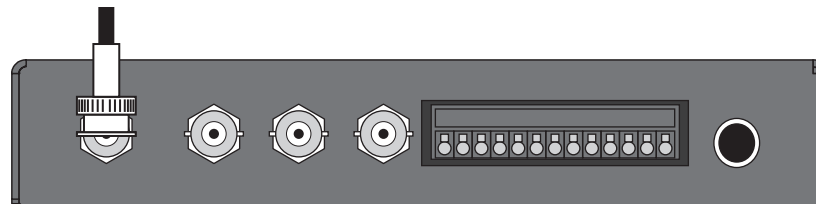


Figure 3.6 ADC-9532 — Reference Connection

## REF INPUT LED

The REF INPUT LED is located on the bottom of the chassis (next to the POWER LED). (Figure 3.7)

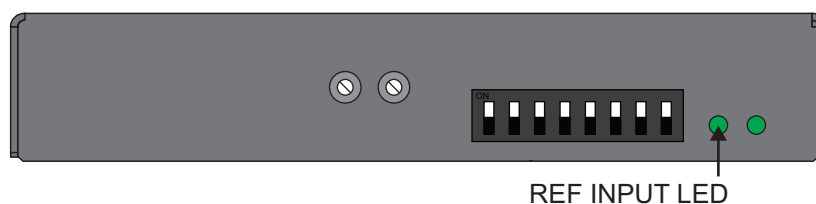


Figure 3.7 ADC-9532 — REF INPUT LED

Table 3.2 describes the behavior of the REF INPUT LED.

Table 3.2 REF INPUT LED

| Status         | Description                                                                                                                                |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Green          | When lit green, this LED indicates that the selected reference is present and DIP switch selections are valid.                             |
| Flashing Green | When flashing green, this LED indicates that the external reference is present, but the rate selection is invalid <sup>a</sup> .           |
| Off            | When unlit, this LED indicates a loss of reference, or that the external reference does not match the type of reference selected with SW3. |

a. The ADC-9532 will track the AES reference signal if the rate selection is incorrect.

## DIP Switches

The DIP Switches enable you to configure the parameters outline in the chassis silk-screen. (Figure 3.8)

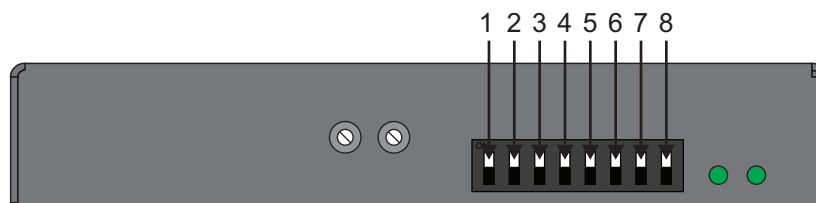


Figure 3.8 ADC-9532 — DIP Switches

## DIP Switch Settings

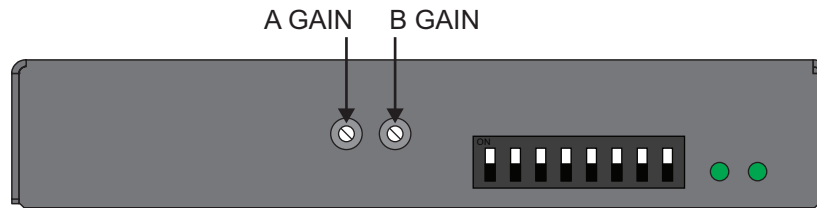
Table 3.3 summarizes the DIP Switch Positions. This information is also displayed on the chassis silk-screen.

Table 3.3 DIP Switch Positions

| DIP Switch | DOWN Position                    | UP Position                      |
|------------|----------------------------------|----------------------------------|
| 1          | Channel A Headroom Adjust +24dBu | Channel A Headroom Adjust +20dBu |
| 2          | Channel B Headroom Adjust +24dBu | Channel B Headroom Adjust +20dBu |
| 3          | AES Reference                    | Video Reference                  |
| 4          | Emphasis OFF                     | Emphasis ON                      |
| 5          | 24Bit                            | 20Bit                            |
| 6          | Other Rate                       | 32kHz                            |
| 7          | Other Rate                       | 44.1kHz                          |
| 8          | Other Rate                       | 48kHz                            |

## Potentiometers

Use the potentiometers on the bottom of the ADC-9532 chassis to adjust the fine input level of the analog stereo input signals. (**Figure 3.9**)



*Figure 3.9 ADC-9532 — Potentiometers*

# Physical Installation

If you have questions pertaining to the installation of ADC-9532, please contact us at the numbers listed in the section “**Contacting Technical Support**” on page 7. Our technical staff is always available for consultation, training, or service.

## For More Information on...

- the technical specifications for the ADC-9532, refer to the chapter “**Technical Specifications**” on page 25.

## Static Discharge

Throughout this chapter, please heed the following cautionary note:



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

## Mounting and Installation

The ADC-9532 can be mounted in any convenient location. However, to ensure long life for this product, observe the following precautions and operating requirements:

- Maintain an ambient temperature of 20° to 40°C (68°F – 104°F).
- Allow for air circulation around the chassis for convectional cooling.

Many different mounting positions are possible with the included mounting hardware. Some installation options are permanent and require careful consideration of the final positioning before installation.

★ In some mounting locations, the power adapter must be affixed in a similar manner as the chassis.

Other possible options include the use of adhesive magnetic sheets (not included) affixed to the chassis and the power adapter, for removable mounting on metal cabinets etc.

Cable ties may be necessary in some applications to relieve strain on the mounting hardware and the connectors.

## Surface Mount Strips

The included VELCRO® brand surface mount strips allow the GearLite module and power supply to be affixed to a permanent location during use and easily removed for adjustments. Carefully consider the installation location before proceeding; the adhesive is very aggressive and is not easily removed. The adhesive will cure fully in 24 hours.

### To install the Surface Mount Strips

1. Remove the **Protective Backing Film** from the adhesive on the bottom of the two VELCRO® brand **Surface Mount Strips**.
- ★ A third VELCRO® brand **Surface Mount Strip** is available to mount the power adapter.
2. Adhere the **Surface Mount Strips** to the bottom side of the chassis **Figure 4.1**.

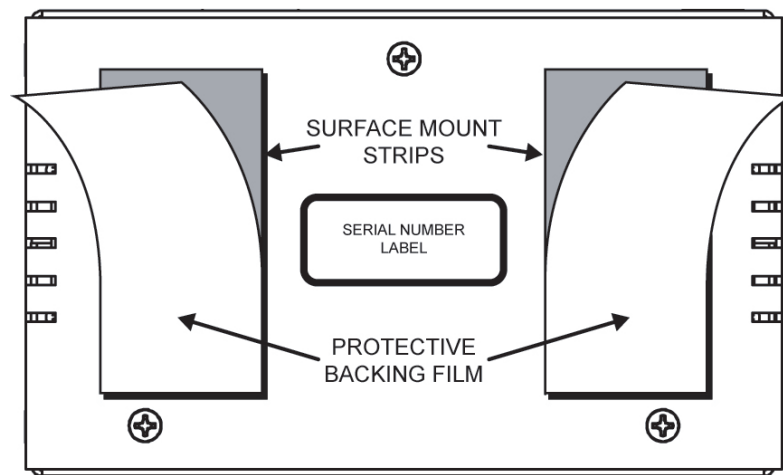


Figure 4.1 Surface Mount Installation Option

3. Remove the **Protective Backing Film** from the other side of the VELCRO® brand **Surface Mount Strips**.
4. Press the chassis into position on the surface you want to mount it to.

## Flat Metal Plate

Use the flat metal plate for permanent mounting to a rack, a desk, or any other location where bolts or screws can be applied. Be sure to position the module to allow for operator adjustments, if required.

★ Mounting screws are not provided by Ross Video.

### To install the Flat Metal Plate

1. Remove the **2** screws from the bottom of the chassis.
2. Install the **Flat Metal Plate** onto the bottom of the chassis **Figure 4.2** using the screws removed in **Step 1**.

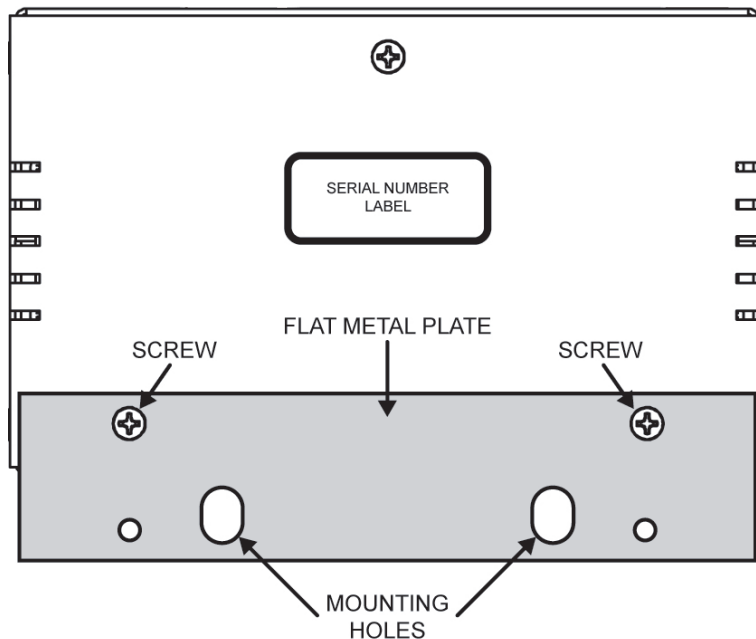


Figure 4.2 Flat Metal Plate Installation Option

3. Install the chassis in the desired location using the **Mounting Holes** on the **Flat Metal Plate**.



## Non-Slip Pads

Four non-slip adhesive pads have been supplied for desktop placements. Simply remove the protective backing film from the adhesive and affix one non-slip pad to each of the four corners on the bottom of the chassis.

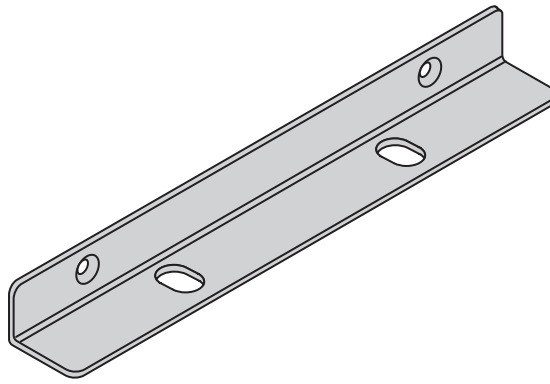
## Optional Mounting Accessories

Ross Video is committed to providing practical solutions for the needs of your high-quality broadcast facility. The following products may be ordered separately to expand your installation options.

### BPM-9000

The BPM-9000 Angle Mounting Bracket (**Figure 4.3**) allows a single GearLite module to be installed in positions not possible with the flat metal plate. The bracket has a 90° angle.

★ Mounting screws are not provided by Ross Video.



*Figure 4.3 BPM-9000 90° Mounting Bracket*



# Cabling

This chapter provides an overview of connecting external devices to the ADC-9532.

## AES Output Cabling

Connect the digital outputs as required from the three AES OUT BNCs. Refer to **Figure 5.1** and the chassis silk-screen label for cabling designations.

★ It is not necessary to terminate unused outputs.

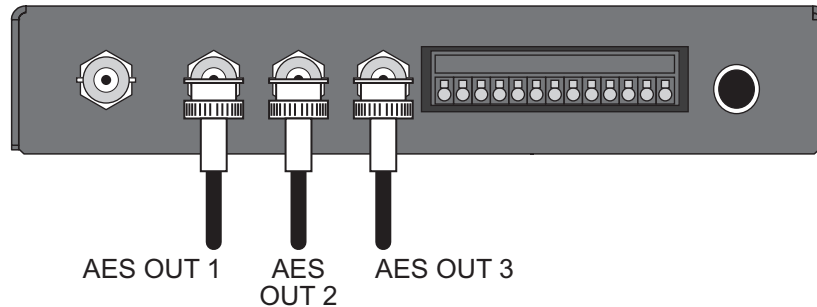


Figure 5.1 ADC-9532 — AES OUT Connections

## Analog Audio Cabling

The 12-pin audio terminal block has slots for the positive, negative, and grounded wires of two balanced analog audio cables.

### To wire the cables for the analog audio signals

1. Gently pull the block from the connector on the ADC-9532 chassis.

★ Make a note of the block orientation.

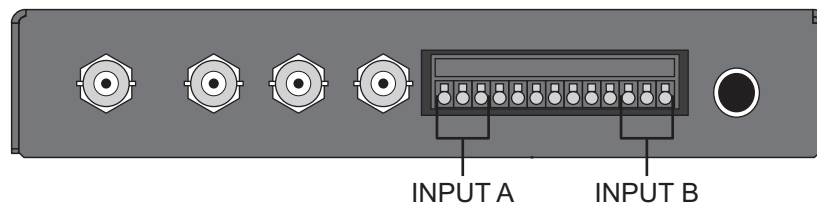


Figure 5.2 ADC-9532 — ANLG Audio Connections

2. Verify the silk-screen on the ADC-9532 chassis and **Figure 5.2** to locate the pins for each input (A, B).
3. Insert an analog audio wire into the designated polarity slot on the block.
4. Use a tweaker screwdriver to tighten the slot's connector clamp on the block.
5. Repeat steps 3 and 4 for each wire on each input.
6. Insert the block back onto the unit so that the slotted tongues fit in the grooved side on the block socket.

## Reference Input Cabling

This step is optional. The ADC-9532 may be operated without a reference input.

★ The reference input is internally terminated at 75ohm.

### To connect a reference source to the ADC-9532

1. Connect one of the following to the **REFERENCE IN** BNC:
  - An analog video (NTSC or PAL)
  - AES/EBU reference signal

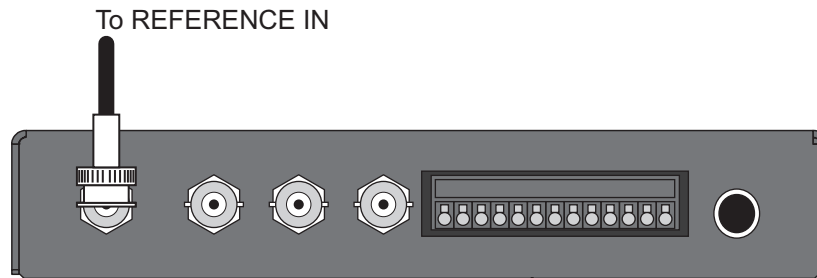


Figure 5.3 ADC-9532 — Reference Connection

2. Use DIP Switch **SW3** to specify the type of reference you connected in step 1. Choose from:
  - Video Reference — Set **SW3** to the UP position.
  - AES Reference — Set **SW3** to the DOWN position.

★ If you are using a video reference, do not set **SW7** to UP. Use **SW6** or **SW8** instead.

## Power Adapter and Supply

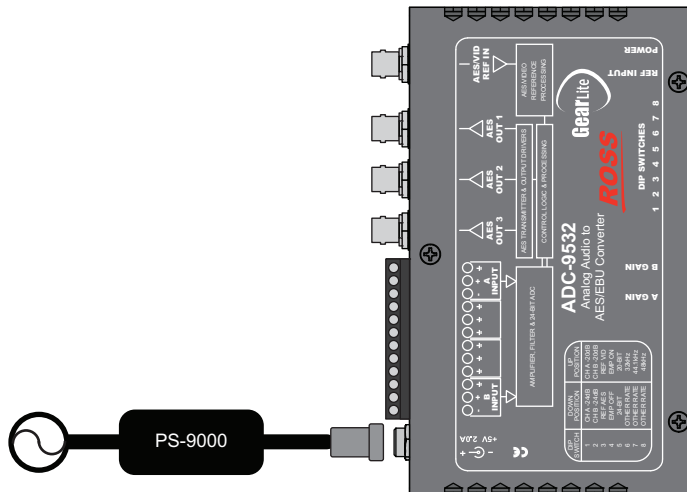
Connect the PS-9000 power adapter to the power supply connector. The PS-9000 provides regulated +5V DC (5%) @ up to 2A. The DC power cord has a locking connector that securely fastens into the power supply DC jack on the ADC-9532. The ADC-9532 has a standard miniature power jack (center pin positive).



**Caution** — Use of improper adapters may damage the SMC-9901 and will void the warranty.

### To connect the ADC-9532 to the PS-9000

1. Connect the female end of the PS-9000 cable into the socket marked **POWER** on the ADC-9532 chassis.



**Note:** It is recommended that you always connect the PS-9000 to the ADC-9532 before connecting to Mains Power.

Figure 5.4 ADC-9532 — Power Connection

2. Connect the PS-9000 to Mains Power.

# Setup

The DIP Switches on the bottom of the ADC-9532 enable you to further setup your module.

## Using the Potentiometers

The ADC-9532 can accommodate any full-scale digital (FSD) level in the -17dBFS to -27dBFS range. The analog stereo input signal from the 12-pin terminal block consists of an A and B channel (left and right).

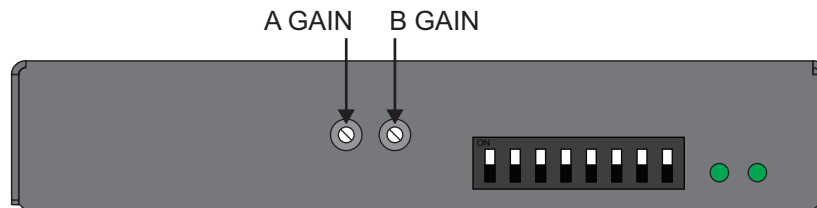


Figure 6.1 Potentiometer Locations

The fine input level and headroom adjustment is made using the **A Gain** and **B Gain** potentiometers. (**Figure 6.1** and **Table 6.1**).

**Table 6.1 Potentiometer Adjustments**

|        | Function                                        |
|--------|-------------------------------------------------|
| A Gain | Used to set fine level adjustment for Channel A |
| B Gain | Used to set fine level adjustment for Channel B |

These potentiometers provide  $\pm 3\text{dB}$  adjustment on the -20dBFS and -24dBFS switch setting. Using these adjustments, the total headroom is adjustable over the -17 to -27dBFS range. Refer to the section “Audio Levels” on page 21 for further details.

## Audio Levels

**Figure 6.2** and **Figure 6.3** illustrate amplitude vs. distortion for analog and digital audio equipment show that digital audio does not gradually degrade (become more distorted) as the amplitude increases.

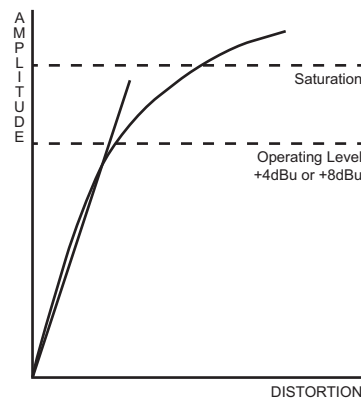


Figure 6.2 Analog Audio

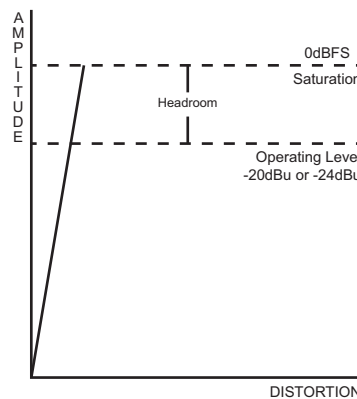


Figure 6.3 Digital Audio

Likewise, the digital audio signal does not exist above 0dBFS. For these reasons, the interface between existing analog house reference standards and digital audio standards are as shown in **Table 6.2**.

**Table 6.2 Analog House Reference and Digital Audio Interface**

| Reference | Headroom | Max. Input | Application                  |
|-----------|----------|------------|------------------------------|
| 0dBu      | 14dB     | +14dBu     | AES/EBU for Audio Production |
| +4dBu     | 20dB     | +24dBu     | AES/EBU for Audio Production |
| +8dBu     | 18dB     | +26dBu     | AES/EBU for 525 Video        |
| +4dBu     | 18dB     | +22dBu     | AES/EBU for 625 Video        |
| +4dBu     | 22dB     | +26dBu     | AES/EBU for 625 Video        |

## Configuring the AES Channels

Use the DIP Switches and potentiometers to adjust the headroom of each AES channel independently. The potentiometer provide  $\pm 3$ dB adjustment on the -20dBFS and -24dBFS switch setting. Using the potentiometers, the total headroom is adjustable over the -17 to -27dBFS range.

### To adjust the headroom of an AES channel

1. Use **SW1** to choose between 24dB or 20dB levels for AES Channel A.
2. Use the **A GAIN** potentiometer to add  $\pm 3$ dB continuous adjustment for Channel A.
3. Use **SW2** to choose between 24dB or 20dB levels for AES Channel B.
4. Use the **B GAIN** potentiometer to add  $\pm 3$ dB continuous adjustment for Channel B.

# Warranty and Repair

The ADC-9532 is warranted to be free of any defect with respect to performance, quality, reliability, and workmanship for a period of **THREE (3)** years from the date of delivery to the customer. In the event that your RossGear ADC-9532 proves to be defective in any way during this warranty period, Ross Video Limited reserves the right to repair or replace this piece of equipment with a unit of equal or superior performance characteristics.

Should you find that this ADC-9532 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 **THREE (3)** year warranty period.

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

This ADC-9532 User Manual provides all pertinent information for the safe installation and operation of your RossGear Product. Ross Video policy dictates that all repairs to the ADC-9532 are to be conducted only by an authorized Ross Video Limited factory representative. Therefore, any unauthorized attempt to repair this product, by anyone other than an authorized Ross Video Limited factory representative, will automatically void the warranty. Please contact Ross Video Technical Support for more information.

## In Case of Problems

Should any problem arise with your ADC-9532, please contact the Ross Video Technical Support Department. (Contact information is supplied at the end of this publication.)

A Return Material Authorization number (RMA) will be issued to you, as well as specific shipping instructions, should you wish our factory to repair your ADC-9532. 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.





# Technical Specifications

This chapter provides technical information for ADC-9532.

★ Specifications are subject to change without notice.

## Analog Audio Input

**Table 8.1 Technical Specifications — Analog Audio Input**

| Item                   | Specifications                                                   |
|------------------------|------------------------------------------------------------------|
| Number of Inputs       | 2 balanced channels (1 stereo pair) via removable terminal strip |
| Impedance              | >25kohm                                                          |
| CMRR                   | >70dB (20Hz to 20kHz)                                            |
| Max. Input Level Range | +17 to +27dBu (limit is variable)                                |
| Connector Type         | 12pin screw-type                                                 |

## Reference Input

**Table 8.2 Technical Specifications — Reference Input**

| Item            | Specifications                             |
|-----------------|--------------------------------------------|
| Type            | AES-3id or analog video (NTSC/PAL)         |
| Sampling Rates  | 32kHz, 44.1kHz, 48kHz                      |
| Impedance       | 75ohm                                      |
| Return Loss     | >36dB (0.1 to 6MHz)                        |
| AES Input Level | 100mV minimum                              |
|                 | 2.5V p-p maximum (continuous signal level) |
| Connector Type  | BNC                                        |

## AES/EBU Output

**Table 8.3 Technical Specifications — AES/EBU Output**

| Item               | Specifications                    |
|--------------------|-----------------------------------|
| Number of Outputs  | 3 AES-3id (coaxial)               |
| Sample Rate        | AES Ref: 32kHz, 44.1kHz, or 48kHz |
|                    | Video Ref: 32kHz or 48kHz         |
|                    | No Ref: 32kHz or 48kHz            |
| Impedance          | 75ohm                             |
| Output Level       | 1.0Vp-p +/-5%                     |
| Output Isolation   | 45dB                              |
| Output Return Loss | >45dB (0.1 to 6MHz)               |

**Table 8.3 Technical Specifications — AES/EBU Output**

| Item      | Specifications |
|-----------|----------------|
| DC Offset | <50mV          |
| Connector | BNC            |

## Performance

**Table 8.4 Technical Specifications — Performance**

| Item                      | Specifications                                                                           |
|---------------------------|------------------------------------------------------------------------------------------|
| Quantization              | 20bit or 24bit                                                                           |
| Frequency Response        | ±0.10dB @ 48kHz (20Hz to 20kHz)                                                          |
| Signal to Noise Ratio     | Measured at -20dBFS<br>-102dB unweighted<br>-105dB 'A' weighted<br>-112dB CCITT weighted |
| THD+N                     | Measured at -20dBFS<br>-102dB (<0.006%)                                                  |
| Linearity                 | 0.002dB to -120dBFS                                                                      |
| Phase Linearity           | 0.0° (20Hz to 20kHz)                                                                     |
| Crosstalk                 | <80dB (20Hz to 20kHz)                                                                    |
| AES Reference Phase Error | <5% of frame period per AES 11-1997                                                      |
| Delay                     | 0.75mx                                                                                   |
| Jitter                    | <2.5ns @ 48kHz<br><0.015UI @ 48kHz                                                       |

## Power

**Table 8.5 Technical Specifications — Power**

| Item              | Specifications |
|-------------------|----------------|
| Power Consumption | <3.5W          |

## Environment

**Table 8.6 Technical Specifications — Environment**

| Item                        | Specifications       |
|-----------------------------|----------------------|
| Maximum Ambient Temperature | 20°C to 40°C ambient |

## Dimensions

**Table 8.7 Technical Specifications — Dimensions**

| Item                | Specifications                      |
|---------------------|-------------------------------------|
| Physical Dimensions | 13cm x 8.5cm x 3cm (5" x 3.5" x 1") |
| Weight              | 340g (12oz)                         |

## Channel Status Data Table

**Table 8.8** indicates fixed and configurable channel status bit information.

**Table 8.8 Channel Status Data**

| Byte         | Bit | Function                                             | Transmitted                                                                         |
|--------------|-----|------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>0</b>     | 0   | Professional or Consumer use of Channel Status Block | Professional (1)                                                                    |
|              | 1   | Normal Audio or Non-audio mode                       | Normal Audio (0)                                                                    |
|              | 2-4 | Emphasis: user selectable                            | Not indicated or No emphasis (000)<br>50/15us Emphasis (110)                        |
|              | 5   | Source Sampling Rate Locked (0)                      |                                                                                     |
|              | 6-7 | Sampling Rate: user selectable                       | Set according to current sampling rate:<br>32kHz (11)<br>44.1kHz (10)<br>48kHz (01) |
| <b>1</b>     | 0-3 | Channel Mode                                         | 2 channel stereo (0001)                                                             |
|              | 4-7 | User Bit Mode                                        | 192-bit (0001)                                                                      |
| <b>2</b>     | 0-2 | Auxiliary Bit Usage                                  | 20-bit audio sample, Aux bits undefined (000)<br>24-bit audio sample (001)          |
|              | 3-5 | Sample Word Length: user selectable                  | 20bit or 24bit (101)                                                                |
| <b>3</b>     | 0-7 | Multi-channel Modes (0)                              |                                                                                     |
| <b>4</b>     | 0-7 | AES 11 Sync Reference (0)                            |                                                                                     |
| <b>5</b>     | 0-7 | Unused (0)                                           |                                                                                     |
| <b>6-9</b>   |     | ASCII Source ID (0)                                  |                                                                                     |
| <b>10-13</b> |     | ASCII Destination ID (0)                             |                                                                                     |
| <b>14-17</b> |     | Local Sample Address (0)                             |                                                                                     |
| <b>18-21</b> |     | Time of Day Address (0)                              |                                                                                     |
| <b>22</b>    | 0-7 | C data reliability (0)                               |                                                                                     |
| <b>23</b>    | 0-7 | CRCC                                                 | Calculated CRC                                                                      |

